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The Repercussions of Financial Integration on Macroeconomic Performance, Poverty, and Financial Fragility in Developing Economies

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Declaration

I, Saim Amir Faisal Sami, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

This thesis examines the impact of financial integration on growth, poverty and inequality and crises. Chapter 1 surveys the theoretical linkages proposed in the literature between financial integration and growth, poverty and inequality and crises.

Chapter 2 examines the impact of financial integration on growth using a panel dataset covering 175 countries over the time period 1970-2013. The Panel Threshold Regression (PTR), Logistic Smooth Transition Regression (LSTR) and OLS estimation methods are deployed. For developing countries, a high threshold level is observed above which increasing openness is severely damaging for growth. On the contrary, for emerging markets, with increasing financial liberalization, growth increases both below and above the threshold. For transition economies, the threshold level is low, but above this threshold increase in financial openness results in decreasing growth.

Chapter 3 looks at the impact of financial integration on poverty and inequality using 79 developing countries over the time period 1980-2013. Similar to chapter 2, the PTR, LSTR and OLS estimation methods are used. A low threshold level is found when measuring the impact on poverty, above this threshold it is observed that increasing openness decreases poverty. When measuring the impact on income groups, below the threshold it is observed that income share increases for all income groups, but above the threshold income only increases for the richest 20% and 10%. On the contrary income share decreases for the poorest 10% and 20%. Increased openness also results in increased income inequality.

Finally, chapter 4 examines the impact of the intensity of financial liberalization on the likelihood of crises using 93 developing countries over the time period 1980-2013 using multivariate probit regression models. It is observed that increasing the intensity of financial liberalization reduces the likelihood of a banking, currency and twin crises. Improvements in the conditions of political institutions lowers the likelihood of crises but rising political polarization increases the likelihood of crises.

Impact Statement

In examining the linkage between financial integration and growth, poverty and inequality, and crises in developing economies, this thesis makes important contributions to the associated field of research. Given the nature of the findings obtained in this thesis, it is expected that it can have a beneficial impact both within and outside the realms of academia.

There are numerous benefits that can be drawn from this thesis within academia. Firstly, this thesis, in exploring key researching avenues, it provides a thorough understanding of the benefits and shortcomings of financial integration and thereby opens a multitude of avenues for further research that can be hugely beneficial from the researching viewpoint for academic scholars in this researching arena. For example, an avenue for further research that should be examined in greater detail is the role political factors play both independently and jointly with financial integration on macroeconomic stability. Secondly, the research methodologies used in this thesis, predominantly the Panel Threshold Regression (PTR) and Logistic Smooth Transition Regression (LSTR) methodologies are effective tools to not only examine the relationship between two variables, but to determine thresholds, thereby making it applicable on a policy level. These methodologies could be used in other researching fields; for example, various other sectors that focus on public policy and politics.

This thesis also has the potential to have great practical relevance particularly to governments and the relevant ministries of developing countries along with officials in central banks, think tanks and policymaking agencies. Government officials, particularly that of the Ministry of Finance and the Ministry of Planning can take into consideration the shortcomings and benefits of financial integration outlined in this thesis. They can take into consideration the recommended level of financial liberalization that can ensure that the benefits of financial integration are fully realized, while minimizing poverty and inequality, and reducing the risk of crises. Therefore, this thesis should serve as a guide and thereby assist policymakers to determine the level of financial openness that is best suited for the relevant financial markets and also ensure macroeconomic stability in an increasingly interdependent global market. For instance, policymakers can better dictate and determine the

appropriate level of portfolio inflows and/or foreign direct investments. Government officials can also have a better understanding of the extent to which they should regulate financial markets without compromising growth.

The intention is to publish this thesis in Bangladesh and present this to the general audience there and perhaps, eventually, attract an audience that extends beyond South Asia. Even if the findings of this thesis do not drastically affect policymaking decisions, at the very least it should be seriously considered by government officials and think tanks, because even if it does not help to determine their policies, it could still be used as a bedrock for further research.

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Introduction

The identification of the macroeconomic repercussions of financial integration is integral for effective policy making decisions. While there have been extensive studies, both theoretical and empirical, in the associated field of research, due to the nature and the complexity of financial integration, inferences and opinions are highly polarized. The degree of integration of financial markets in the global context, increased significantly in the last two decades of the 20th century. The fundamental driver behind this underlying process is the increased level of financial investments in the global financial market, seeking high rates of return while having the availability of diversifying these investments internationally. Governments and policymakers have loosened restrictions and capital controls by deregulating the domestic financial markets and liberalising restrictions of capital inflow and outflow. For instance, many developing, transition and emerging economies in Latin America, Eastern Europe and East Asia annulled restrictions on international financial restrictions. These countries also reduced the degree of (domestic) financial market regulations, in turn, moving away from regimes of financial repression.

Baele et al. (2004) give a broad definition of financial integration[1]. They state that a market can be considered an integrated financial market when all potential market participants with the same relevant characteristics (1) face a single set of rules when they decide to deal with those financial instruments or financial services, (2) have equal access to financial instruments or financial services and (3) are treated equally when actors are active in the market. They specify that full integration require that there is no discrimination among market participants based on their country of origin. Moreover, they suggest that the definition of financial integration can be linked to the law of one price[2]. Kaminsky and Schmukler (2003) provide a

[1] Financial integration can broadly be measured in three distinctive categories: (1) price-based measures, (2) quantity-based measures, and (3) regulatory measures. The price based measures stem from the LOOP and is related to the interest rate differentials and equity price movements. The quantity-based measures include the various forms of capital flows and are based on stocks and flows of assets (de facto measures) e.g. foreign direct investment, equity portfolio inflow, and non-resident bank loans. The regulatory measures include primarily the de jure measures, for instance, the de jure measure of capital account openness e.g. capital account openness index developed by Chinn and Ito (2006).

[2] The law of one price states that if assets have identical risks and returns, then they should be priced identically regardless of where they are transacted (Baele et al, 2004).

multidimensional definition of financial liberalization stating that financial liberalization consists of (1) deregulation of the financial/capital account, the (2) liberalization of the domestic financial sector and the (3) liberalization of the equity/stock market.

The increase of financial globalisation of the world capital markets has resulted in a significant rise in private capital flows to the developing and emerging economies (Agenor, 2003). For example, there was a sharp increase in FDI inflow to developing economies in the 1980s and this accelerated in the 1990s. Portfolio flows on the other hand, increased until the mid-1990s; however, there was a sharp decline soon afterwards, indicating macroeconomic fragility and financial volatility. In the periods of global financial market volatility, intermediated bank flows (as a proportion of total capital flows) fell significantly. This is because cross-border lending or cross-border flows became responsive to changes in the relative rates of return, particularly due to the increased linkages between the world capital markets.

There are numerous benefits attributed to financial integration, however, there is a pressing need to weigh the scales of benefits and negatives. The Mexican Peso Crisis of 1994, the Asian Financial Crisis of 1997, the Russian Financial Crisis of 1998, the Brazilian Currency Crisis of 1999, and the Argentinean Peso Crisis of 2002 suggest the need to explore these issues further. If there are benefits, to what extent are these benefits maximized? The key issue from the policymaking perspective is to identify the prerequisites and determine (on a country to country basis) the appropriate level of regulation or liberalisation in order to minimize the risks and at the same time, realize and exploit the gains of financial integration.

The benefits of an open capital account or increased financial openness/integration are the benefits of international risk sharing for consumption smoothing, capital flows boosting domestic investment and stimulating growth, enhanced macroeconomic discipline and improved efficiency (Dooley, 1995). The consumption smoothing argument states that access to the world capital market allows countries to engage in risk sharing. This means, during slumps or recessionary periods, countries are able to borrow and during times when economic conditions are stable, they are able to lend. This allows domestic households to smooth their

consumption path over time, thereby enhancing welfare. In developing economies, the capacity to save is constrained due to the low level of income (Agenor, 2002). If for instance, the marginal return from investment is equal to or greater than the cost of capital, then capital inflow will stimulate domestic saving, which in turn increases the efficiency of capital per worker, in turn causing enhanced growth levels and improving standard of living (Obstfeld, 1999). It has been observed, in both the developed and the developing world that free flow of capital across borders results in countries adapting and following constructive and disciplined macroeconomic policies. This reduces the risk of making poor policymaking decisions (Obstfeld, 1998). Furthermore, Bartolini and Drazen (1997) state that external financial liberalisation is, in fact, a signal that indicates the country is ready to adopt sound macroeconomic policies. Economists tend to argue that financial openness increases the efficiency of the banking system, resulting in financial stability. The theoretical argument states that financial openness increases the depth of the domestic financial market leading to efficiency of the process of financial intermediation. Improved efficiency tends to result in lower mark-up rates in the banking sector, thereby reducing the cost of borrowing and cost of investment and hence increasing growth (Baldwin and Forslid, 2000). Foreign banking penetration is said to improve the quality and availability of financial services and to mobilize financial resources. It is also said to improve the technical sophistication of the banking sector through advanced integration of technology in the domestic economy (Levine, 1996).

The macroeconomic vulnerability associated with financial liberalization and openness leads to the recognition of the failings financial of integration. Financial openness tends to lead to concentration of capital flows. For instance, historical evidence, for developed and developing countries, particularly those in Latin America and Asia, shows that cross-border lending tends to be highly concentrated in only a few recipient countries (Fernandez-Arias and Montiel, 1996). In the sub-Saharan countries, foreign capital is only directed to countries with natural resources, for example, Angola, Nigeria, and South Africa (Basu and Srinivasan, 2002). Therefore, despite the pro-liberalisation camp stating that it allows for risk sharing, borrowing and lending during ‘bad’ and ‘good’ times respectively, it is undeniable that some of these developing countries could be ‘rationed out’ of the global capital market, even if their financial markets are highly liberalised.

There is also an argument that capital flows, especially if certain macroeconomic policy and institutional prerequisites are not in place, may lead to misallocation of financial resources i.e. financing low-quality domestic investments, for instance, in the non-tradable sector e.g. real estate. These low productivity investments, in the non-tradable sector, can also cause external imbalances by weakening the exporting prowess of the domestic economy. A highly liberalized capital account may result in a volatile movement of capital across borders. This comes with the risk of having reversals in short-term flows intertwined with speculative attacks on the currency. Short-term equity flows, tend to be rather sensitive on a purely reactionary basis amongst investors. These herding behaviours and other contagion effects can cause large inflows or outflows to the detriment of the domestic economy.

There are some arguments supporting foreign banking penetration, but there are also drawbacks associated with this form of financial integration. There is a tendency for foreign banks to allocate credit to firms that may be in the non-tradable sector (housing), and is, therefore, detrimental to the external balance. There is also a tendency for foreign banks to concentrate their credit allocation on selected domestic firms; this monopolization thereby hampers domestic competition. There is also the fear that foreign banks may abruptly withdraw from the domestic economy if they fail to meet their expected profit levels. The final argument of criticism of financial globalization is the notion of 'rationing out' the people of the lower income bands. This is a concept that is theoretically explored, but, in terms of empirical analysis, there is a major concentration on growth in general; however, these issues will be addressed in this thesis.

Regardless of the substantial interest in the concept of financial integration over the past few decades, the inconclusiveness of the empirical evidence invites academic scholars to revisit this relationship, both from the theoretical viewpoint as well as that of empirical research. This study makes an arduous attempt to provide a comprehensive picture of the relationships between financial integration, macroeconomic performance, poverty and inequality and crises.

Researching Objectives, Motivation and Contribution

This thesis comprises four chapters[3], excluding the introductory and the concluding chapter. The first chapter presents the theoretical arguments and thoroughly examines and evaluates the existing empirical literature in the associated field of research. The second chapter investigates the link between financial integration and growth using threshold regression analysis and also executes a comparative study for developing, emerging and transition economies. The third chapter examines the effect of financial integration on poverty and inequality using threshold regression analysis for developing countries. The fourth chapter examines the impact of financial integration[4] and crises by investigating the likelihood of banking, currency and twin crises at various levels of financial liberalization.

Through the examination and evaluation of the theoretical arguments along with the empirical evidence, the first chapter revealed loopholes in the literature, and more importantly, outlined the scope for contribution in the researching arena. The second chapter[5] used threshold techniques in the form of the Panel Threshold Regression (PTR) methodology and the Logistic Smooth Transition Regression (LSTR) methodology to examine the impact of financial integration on growth for developing, emerging and transition economies over the time period 1970-2013. The key objective of this chapter was to determine threshold levels, thereby facilitating effective decision making for policymakers in developing and emerging economies. It addresses a fundamental issue that concerns governments in developing countries in an interdependent and interconnected global economy by examining the impact of financial integration on growth. The results suggest that thresholds and coefficients both below and above the thresholds, vary across the developing, emerging and transition economies. For developing countries, above the threshold[6], increase in openness is severely damaging to growth. For emerging economies, the threshold

[3] For detailed descriptions of the empirical research, refer to the abstract sections of each research paper, or alternatively, for a concise description, refer to the abstract section in the preceding section of the thesis.

[4] The proxy variable that is used for the empirical chapters (chapter 2, 3 and 4) is the de jure measure of capital account openness, which is the Chinn-Ito index developed by Chinn and Ito (2006).

[5] This is the first empirical chapter of the thesis as the first chapter only reviews the theoretical arguments along with the empirical evidence.

[6] The threshold level is the threshold for the key independent variable of interest that is used in the all the empirical chapters (chapter 2, 3 and 4) which is the Chinn-Ito Index, the proxy variable used for financial integration.

level is low, for which the growth effects are positive below and above the threshold. For transition economies, the threshold is significantly low, and below this threshold it is growth retarding. The fundamental contribution that this research paper makes is through the use of the LSTR model, as the PTR methodology is commonly deployed in the literature. This chapter also identifies an exact threshold level, which is an aspect that is left obscure or unclear in the literature. On a technical note, in the threshold literature, the PTR methodology fails to account for the problem of heteroscedasticity but this chapter tackles this problem. The research paper also tests the validity of the thresholds in the sense that it tests the accuracy of nonlinearities then it also tests for remaining nonlinearities i.e. if there is more than one threshold. Generally, the literature tends to assume that there is a single threshold with two regimes, however, this research paper addresses this key technical fallacy.

Chapter 3 empirically examines the impact of financial integration on poverty and inequality using 79 developing economies over the time period 1980-2013 while deploying the PTR and LSTR techniques (these threshold regression methods are also used in chapter 2). The fundamental objective of this research paper and the basis upon which the trajectory of the research route was selected is in part due to the fact that there is a tendency to systematically focus on growth and avoid inclusive growth. In the empirical examination, it was observed that increase in the intensity of financial liberalization (KAOPEN) decreases poverty above the threshold. Increase in openness, below the threshold, also results in an increase in the income share of the poorest and richest 10% and 20%. However, above the threshold, it is observed that, with increasing openness income share of the richest 10% and 20% increases, whereas the income shares of the poorest 10% and 20% decreases. Furthermore, in analyzing the impact of de jure measure of financial integration on inequality, it is observed that increased openness results in increased inequality both below and above the threshold. Although, and rather interestingly, it is observed that below the threshold, when the level of financial openness is low, inequality increases faster as opposed to when it is above the threshold. In the context of developing countries, while there is substantial growth in the emerging economies, inclusive growth, which should also include the poorest 20% and 10%, are often overlooked in the empirical assessment. Thus, it was important to address this issue also due to the fact that there is a scarcity of empirical studies examining the linkages of financial integration on

poverty and inequality. Furthermore, the threshold techniques have not been previously used in the literature focusing on the relationship between financial integration and poverty.

Chapter 4 empirically investigates the impact of the intensity of financial liberalization on the likelihood of banking, currency and twin crises using 93 developing countries over the time period 1980-2013. This research paper also examines the impact of political institutions and political polarization on the likelihood of banking, currency and twin crises, both independently and jointly (with financial liberalization). The research paper deploys the multivariate probit regression method in order to measure the scale of the impact on crises. It is observed that for developing countries, increasing the intensity of financial liberalization reduces the likelihood of crises, which includes banking, currency and twin crises. It is also observed that while improvement in the conditions of political institutions generally reduce the likelihood of crises, rather interestingly, increase in political polarization increases the likelihood of banking, currency and twin crises. The fundamental contribution that this research paper makes to the existing literature is the assessment using the de jure measure of capital account openness or, the intensity of financial liberalization. Typically, the literature tends to use the de jure measure of financial liberalization, which would usually be a binary variable, taking the values of 0 and 1, indicating closed and liberalized financial markets respectively. Furthermore, this research paper also examines the impact of key political variables on the likelihood of crises, not to serve as controls, but treating it as the bedrock for macroeconomic stability.

The concluding chapter summarizes all the findings, contextualizing them within the literature, and it also discusses the policy-making implications of the study executed in this thesis.

Chapter 1: Theoretical and Literature Review

In this chapter, section 1 presents the key concepts of financial integration. Section 2 explores the theoretical linkages linking financial integration with growth, poverty and crises are examined, highlighting various channels of influence. Section

3 provides a concise summary of the empirical evidence of the linkage between financial integration, growth, poverty and crises. Section 4 concludes.

1.1 Key Concepts of Financial Integration

In order to understand the concept of financial integration, the notion of the Law of One Price (LOOP) must be understood; the Law of One Price (LOOP) states that despite the geographical location, identical goods must always have the same price. The LOOP concept was initially only applicable to the international trade of goods; however, as global capital markets developed, LOOP became applicable to financial markets, particularly for financial instruments. In the case of financial markets, the definition of the LOOP states that despite the variation in geographical location, identical risks should provide identical returns. In the case that the LOOP does not hold, the opportunity of arbitraging arises, and this opportunity is exploited by investors until the LOOP holds.

The LOOP concept was introduced in the 1760s, but more recently, the concept of globalization, or more specifically financial globalization, is an alternative approach that is used to define financial integration. The notion of globalization that is of significance for this research is that of economic globalization citing the increasing economic and financial interdependence between economies through increases in cross-border movement of goods and services, technology and capital. This is otherwise referred to as economic integration between countries, which eventually, at least in theory would lead to the emergence of a single world market. Historically, globalization can be divided into three phases, the first phase being the archaic globalization, the second being the proto-globalization phase, and the third being modern globalization phase. The first phase of globalization, otherwise known as archaic globalization, refers to the idea of Eastern Origins, or Eastern ideas being adapted by Western states from the earliest of civilizations up until the 1600s (Martell, 2000). Proto-globalization or 'Early modern' globalization is thought to span from 1600 to 1800 (Chaudhuri, 1999). This term specifically describes the phase in which there was an increase in trade linkages and cultural exchanges. Modern globalization, according to historians, was in the latter stages of the 1800s. It was during the 19th century that globalization intertwined with the Industrial Revolution.

Innovations in transportation technology reduced trading costs substantially and thereby allowing nation states to embrace international trade. In the aftermath of World War I, globalization came to a standstill. At the end of World War II, after the agreement of the Bretton Woods Conference, the formation of the General Agreement on Tariffs and Trade (GATT), which was later succeeded by World Trade Organization (WTO), provided a solution to formalize trading agreements and resolve trading disputes. This caused a resurgence in globalization. The wave of globalization that the world currently resides in is the one that began in the 1980s. This wave of globalization marks the end of the Bretton Woods era along with the introduction of the elimination of tariffs, creation of free trade zones, reduction in capital controls, harmonization of intellectual property and various other measures to improve free trade.

1.1.1 Measures of Financial Integration: De Jure and De Facto Measures

The broad consensus of the measurement framework of financial integration can be classified in two categories, the de jure measures and de facto measures of financial integration. The commonly used indicators of the de jure measures of financial integration are computed based on the information that is publicly available in IMF's Annual Report on Exchange Rate Arrangements and Exchange Restrictions (AREAER). Up until 1995, the AREAER used binary codes to denote the following categories: (1) capital account openness, (2) openness of the current account, (3) requirements for repatriation and/or surrender of export proceeds and (4) existence of multiple exchange rates for capital account transactions. After 1995, these categories were disaggregated. In the literature, it is evident that researchers tend to use either a de jure measure of capital account openness that is binary (taking the value of 0 or 1 depending on financial market regulation) or one that is an index. For the de jure measures of capital account openness, as is used by the author in this study as a proxy for financial integration, a major advantage lies in the fact that AREAER has been available since 1967 and moreover, it covers 184 countries. While binary indicators have the notable shortcoming of failing to incorporate the intensity of controls or market regulations, but an index, as the one developed by Chinn and Ito (2006), otherwise known as the Chinn-Ito index incorporates these factors and develops an index that scales from -2.66 to 2.66, where -2.66 is full regulation and 2.66 indicates

full liberalization. Similarly, Quinn (1997) and Montiel and Reinhart both developed their own set of indices to measure the intensity of capital controls. Mody and Murshid (2005) on the other hand developed an index to measure financial integration.

De facto measures of financial integration are proxied using various forms of capital flows in the associated researching arena. There is a distinction to be made between private capital flows and foreign capital stock as proxies for financial integration used by researchers in this field. Private capital flows include Foreign Direct Investment (FDI), cross-border lending and portfolio investments. Financial integration is proxied using both capital outflow as well as capital inflows. This is due to the fact that this reflects the ability of foreign investors to invest in a country, as well as domestic investors having the capacity to invest abroad. On the contrary, there is the argument that stock data is a better measure of financial integration than capital flows. Stocks could include gross holding of foreign assets and liabilities and this cannot be incorporated using flows.

There are benefits and drawbacks to using de jure or de facto measures proxying financial integration. However, for the purposes of this paper, the de jure measure capital account openness is used to proxy for financial integration. The index developed by Chinn and Ito (2006) has the advantage that it measures the intensity of financial liberalization and the intensity of capital controls in one index. Furthermore, this is also lucrative from the policy viewpoint as policymakers need to be made aware the level of openness that fosters the highest levels of growth, reduces poverty to the lowest levels and minimizes the risk of financial crashes.

1.2 Theoretical Arguments

For policymakers in developing, transition and emerging economies, this particular research topic is still of particular researching and practical relevance. Financial integration is not only intriguing due to the sheer policy relevance, but due to the fact that the nature, approach, and repercussions of financial globalization is constantly varying, and therefore there is always scope for contribution in a constantly evolving interdependent global market. The literature tends to examine and focus on the indirect relationship of financial integration and growth. However, recently, newer theoretical approaches tend to overlook the standard neoclassical framework that resulted due to the early wave of financial integration. The fundamental conceptual notion that can be deduced from both the theoretical arguments as well as the overview of the empirical literature is that the merits of financial integration can only be realized when it is indirect. From this particular perspective, there is increasing theoretical and empirical studies that tend to show that increasing financial openness tends to develop the domestic financial system, induces efficiency gains by exposing domestic firms to foreign entities, instigates macroeconomic policymaking discipline and results in better corporate governance.

Indirect benefits of financial integration are expected to be realized in empirical studies when using de facto[7] measures of financial integration. Direct benefits are often observed using de jure measures of financial openness. The indirect benefits are particularly significant because despite the theoretical arguments, in the empirical literature, while equity market liberalization (taking place with various policy reforms and this is a de jure measure) is observed as having a positive and

[7] It is fundamental to distinguish between the differences between de jure and de facto measures of financial integration. De jure measures of financial integration are associated with regulatory policies on capital account liberalization and the de facto measures of financial integration refer to capital movement. The de jure measures computed and regularly used are those developed by IMF's Annual Report on Exchange Rate Arrangements and Exchange Restrictions (AREAER). AREAER reported binary in the past for the following categories: (1) capital account openness, (2) current account openness, (3) export and importing and trading stringencies, and (4) existence of multiple exchange rates for capital account transactions. The de facto measures can be broadly classified into private capital flows and foreign capital stocks. Private capital flows for instance, include FDI, portfolio flows, and cross-border lending. Foreign capital stock includes for example international investment position (IIP) and stock measures developed by Lane and Milessi-Ferretti (2007).

statistically significant effect on growth, portfolio inflows (de facto measure) tend to have a significantly weaker effect on growth.

1.2.1 Financial Integration and Growth

The ever-present question that divides policy makers is whether or not financial integration spurs long term economic growth in developing countries. The benchmark or the simplest one-sector neoclassical growth model suggests that financial integration will cause capital flows from countries rich with capital to countries starved off capital. This is because the returns to capital in the capital-poor economies should in theory, be higher. The remainder of this subsection looks at the theoretical arguments between financial integration and growth.

The World Bank, the International Monetary Fund, and the World Trade Organization believe that financial integration does indeed enhance growth, even in the cases of developing countries. Krugman (1993) opposes this claim and argues that financial integration is incapable of fostering economic development for specific case of developing economies. He pins his argument on the basis that large capital flows have never occurred from rich to poor countries; this indicates that financial integration will not enhance domestic capital stock and would only result in a marginal improvement to long-run economic growth. Blomstrom, Lipsey and Zejan (1996) assess whether or not fixed investment is the key to economic growth by examining 100 countries over the time period 1965 to 1985. They complement the argument presented by Krugman, and find that more investment does not cause faster growth. International financial integration, in the presence of existing institutional and legal distortion, can have a growth retarding effect.

Levine (2000) examines the theoretical implications of international financial liberalization on economic growth and opposes the claims made by Krugman. Levine bases his arguments on the following points: (1) TFP (total factor productivity) accounts for the cross-country differences in the growth rate of GDP per capita; (2) substantial evidence exists supporting the claim that domestic financial systems have a significantly high causal impact on economic growth by boosting TFP growth and, (3) liberalization of capital controls and financial markets enhances the functional

capacity of the domestic financial system. Therefore, the arguments stated by Levine suggest that financial integration can potentially increase the operational capacity of the domestic financial systems and as a result stimulate efficient resource allocation which in turn will foster economic growth. Levine makes the following theoretical inferences: (1) liberalization of the financial markets and removal of capital controls results in enhanced stock market liquidity which in turn accelerates economic growth by boosting productivity levels, (2) exposure to foreign banking systems causes a significant enhancement of the efficiency levels of the domestic banking systems resulting in increased productivity growth and as a result, increased economic growth and, (3) international financial integration enhances the capacity to absorb capital inflow which translates to greater growth levels.

An important consideration to make in the FI-growth nexus is the channels of influence as the "collateral" influence is of fundamental importance (Kose et al. 2009). For example, the impact of financial integration on boosting and invigorating the credibility and the fluidity of the banking sector is an integral argument in support of financial integration. Levine, Loayza and Beck (2000) infer that the development of the domestic banking system has a direct causal impact upon economic growth. Moreover, they infer that domestic banking system progression influences growth by predominantly affecting the TFP growth levels. Domar (1946) forecasted that growth is proportional to the ratio of investments over GDP; this implies that higher levels of investment would translate into higher growth levels. This view reinforces the argument set out by Levine in suggesting that developing countries should look for strategies that induce improvements in domestic savings, use international financing to fill the domestic financing gaps via international development bank loans and by opening the financial markets to international capital flows. This for instance, supports the need for financial integration, without explicitly defining the level of financial openness. However, Levine (2000) and Easterly (1999) point out that Domar's model (denoted by Domar himself) should not be used as a model for long-run growth. Easterly and Levine (2000) deduce that TFP growth accounts for 90% of the cross-country growth differences. This claim is supported by Klenow and Rodriguez-Clare (1997). They argue that cross-country growth differences are due to the differences in TFP growth levels.

Baile et al. (2004) denote risk sharing, improved capital allocation and higher growth to be three fundamental benefits of financial integration. Financial integration offers extra opportunities to share the level of risks and to smooth out the consumption levels inter-temporally. Baile et al. (2004) also stress that financial integration increases economic growth by inducing greater financial development[8] i.e. financial integration increases the flow of funds for investment opportunities in otherwise capital starved regions. With greater access to capital, projects that were initially deemed to be unfeasible due to the sheer magnitude of the financial requirements, can become a reality. However, they do point out that the essentiality of financial integration is the increased availability of intermediated investment opportunities i.e. in the form of external financing, domestic or international banking lending or through portfolio flows which in turn also enhances the liquidity of the stock markets. The impact of financial intermediaries on growth is explored in the subsequent sub-section as this is an important channel of influence.

1.2.1.1 Financial Development and Growth

It would be fundamentally misleading for the reader if the theoretical effect of financial development on growth was to be overlooked in this analysis. As previously stated, financial development is one of the routes via which financial integration indirectly affects growth. The assessment of the linkages between financial development and growth are highly polarized. One position argues that financial development is an essential stimulus for industrialization as it facilitates the necessary capital to mobilize and enhance the functionality of the case specific industry or firm. This could for example include the effectiveness of fully functional banks that may enhance technological innovations as it will have the capacity to find the most capable entrepreneur (Hicks, 1969). Bencivenga and Smith (1991) emphasize the importance of the development of financial institutions, which in turn enhances the relationship between financial intermediaries and economic growth. They also suggest that the development of financial institutions enhances the efficiency of investments; leading to optimal allocation of capital. However, the opposing argument suggests that, "where enterprise leads, finance follows" (Robinson, 1952). This view suggests that

[8] This linkage will be explored later in this section.

economic progression fulfills a vacuum with financial intermediaries and enhanced credit providing facilities.

In order to conceptualize the effect of financial intermediation on growth consider the following equation: $y_t = f\ (k_t)$, where y_t denotes output and k_t is the stock of capital at time *t*; note that y_t and k_t are both in per capita terms. If this equation is differentiated then the following equation is derived: $\hat{y_t} = \frac{dk_t}{y_t} f'(k_t) = s_t \emptyset_t$, where $\hat{y_t}$ is the growth rate, s_t is the savings rate, and $\emptyset_t$ is the marginal productivity of capital. This equation implies that the rate of output growth is the product of the savings rate and the marginal productivity of capital. The theoretical notion in the existing neo-classical literature suggests that via a dynamic process the economy will reach a steady-state equilibrium in which the growth rate of output would diminish gradually over time. Theoretically, the assumption of the declining marginal productivity of capital is an essential lynchpin in the convergence to the steady-state level i.e. as k_t grows over time, $\emptyset_t$ and $\hat{y_t}$ tend towards zero[9]. However, endogenous growth literature argues that marginal productivity of capital does not converge to zero with increase in levels of capital as a result of positive productive externalities from the knowledge component of capital. Development of the domestic financial institutions and the domestic financial markets enhances the efficiency of capital accumulation, thereby increasing $\emptyset_t$. Moreover, improvement of domestic financial systems will enhance the efficiency of financial intermediation and thereby increase the savings rate. This will result in an increase in the investment rate and consequently the growth rate (Gregorio and Guidotti, 1995).

Goldsmith (1969) finds that there is positive association between financial development and the level of real GNP per capita. Furthermore, McKinnon (1973) and Shaw (1973) find that financial deepening results not only in increased productivity of capital, but also in an increase in the level of savings and therefore increase in the investment levels. McKinnon (1973) and Shaw (1973) also argue that financial repression policies may lead to negative real interest rates. As a result, this will erode the incentives to have savings, which will mean lower investments and therefore lower growth. However, Diaz-Alejandro (1985) oppose this view presented

[9] Gregorio and Guidotti (1995) examine this theoretical relationship.

by McKinnon and Shaw and use the Latin American example to show that financial deepening does not induce higher savings, thereby suggesting the fulcrum of growth depends on the increasing levels of the marginal productivity of capital rather than on the level of investments or savings. Bencivenga and Smith (1991) illustrate using their model that growth increases when financial development improves, even when financial development reduces the level of savings. This suggests that financial development has a large effect on the efficiency of investments, which overrides the negative effect of financial development on the savings level.

There is a substantial debate surrounding the assessment of the linkage between domestic financial systems and growth. Financial intermediation is the channel via which the merits of financial integration are often realized. Therefore, it is important (albeit briefly discussed) to understand the theoretical linkages of financial intermediation and growth. This would serve as a backdrop in deducing the linkages between financial integration and growth. Schumpeter (1912) stresses the importance of the banking system and its effective functionality on actively spurring innovation and long-term growth; as banks supposedly have the technical and informational capacity to effectively identify and fund productive investments due to their profiteering motives. However, Lucas (1998) argues that economists systemically over-exaggerate the impact of financial intermediaries on growth. King and Levine (1993) highlight the importance of financial intermediaries in assisting long-run economic growth, capital accumulation and increasing productivity growth. Levine (1991) uses a theoretical model to illustrate that the higher the liquidity levels of the stock market the less expensive it is to trade securities, which in turn decreases the disincentive to invest in long-term projects as investors always have the option of selling their stakes before the project matures. He also shows that increased liquidity will facilitate higher investment levels in the long run, especially for projects that yield higher returns and this as a result will be a major factor in boosting productivity growth. Smith (1994) and Obstfeld (1994) through their theoretical discussions illustrate that increased international risk sharing through international financial integration (resulting in integrated stock markets) will cause a shift in the portfolio demands from safe and low-risk investments to the high-risk and high return investments. This accelerates productivity growth. However, the theoretical discussion also points out that international stock market integration have an

ambiguous effect on the savings rate; savings rate may fall to the extent that financially integrated markets may in fact slow down overall growth levels. On the contrary, Bhide (1993) argues that higher levels of stock market liquidity may not necessarily induce a shift to demanding high-risk and high return projects, which is a prerequisite that would boost productivity growth. He makes this argument based on the presumption that increased liquidity makes it easier for investors to sell off their shares. Moreover, increased liquidity causes stakeholders to have reduced incentives to monitor the management schemes of firms. This causes a deterioration of the corporate governance, which hinders effective allocation of resources and as a result weakens productivity growth.

Stock markets enhance growth by increasing the efficiency of capital (resource) allocation. From the theoretical viewpoint, when stock markets become increasingly liquid, agents of interest will have incentives to disburse their financial resources in a wide variety of firms (Holmstrom and Tirole, 1993). Moreover, stock market enhancements result in improved corporate control and increase the possibility of facilitating takeovers, especially in the case of malfunctioning firms (Stein, 1988). In turn, agents can take over the firms that tend to underperform and change the managerial and infrastructural set up of the respective firms they have made investments in and improve the overall efficiency levels on the whole. Therefore, it can be said that stock market performance is associated with effective managerial alterations, which, in turn, boosts resource allocation. Empirical evidence investigating the relationship between stock market progression and growth suggests that there is a positive linkage between stock market liquidity and growth. Moreover, stock market liquidity affects growth by increasing the total factor productivity growth. Therefore, if financial integration does have an impact on the liquidity levels of stock markets, this could have a significant effect on growth (Levine, 2000). Levine (1992) analyzes the effects of alternative financial infrastructures and systems and their consequent effect on economic growth via a theoretical model. The model shows that financial institutions raise the proportion of total savings set for investment and also shows that enhancement of these institutions results in the avoidance of premature liquidation of credit. Furthermore, he reiterates that banks, stock markets, mutual funds, and investment banks enhance growth by inducing efficient allocation of investment.

Liberalization of equity markets gives foreign investors the opportunity to invest in domestic equity securities and gives domestic investors the ability to carry out transactions in foreign equity securities. When the assessment is carried out from the neoclassical perspective, intuitively, the results confirmed by Bekaert, Harvey and Lundblad (2005) suggesting equity market liberalization increases real GDP growth per capita by 1%, makes sense theoretically. Improved risk sharing post-equity market liberalization reduces the cost of equity capital. Equity market liberalization reduces financing constraints as foreign investment and capital become readily available. Foreign investors could also potentially improve corporate governance which, as a result, could reduce the cost of internal and external financing (Bekaert and Harvey, 2000). Better corporate governance and improvement in investor protection could enhance financial development and consequently growth (King and Levine, 1993).

1.2.1.2 Financial Integration and Investment

Capital controls are a means to ensuring domestic savings remain in the country. Capital controls increase transaction costs and theoretically would reduce the prospect of capital flight. There is an argument that states that capital control can funnel foreign investment directly to specific domestic investment projects while, at the same time, deterring domestic capital outflows. In the presence of capital controls, central banks will also not have to take precautions i.e. fearing shifts in market sentiments and as a result, stacking up international reserves; which in turns leaves more capital for domestic investments. When capital controls are lifted and the economy is open to private capital flows, if the marginal returns to capital are higher in relation to the world interest rate, then, theoretically, substantial capital will enter the domestic economy, which will boost domestic savings, resulting in a robust linkage between foreign capital inflows and domestic investments (Mody and Murshid, 2005).

The entrance of Portugal and Greece into the European Monetary Union, otherwise considered as lifting of capital controls and entering the world capital market, resulted in a significant rise in capital inflows, which in turn fueled domestic investments and increased consumption levels (Blanchard and Giavazzi, 2002).

However, in the case that when the domestic economy is open to capital flows and domestic returns are lower than or equal to the world interest rate, then foreign capital will enter the country simply to achieve the notion of portfolio diversification on the part of foreign investors (Kray and Ventura, 1999). According to Mody and Murshid (2005), some developing countries often have domestic returns that are lower than or equal to the world interest rate and are often scapegoats to foreign diversification motives by foreign investors. Technological spillover is regarded as an essential motive for developing countries in opening up to capital inflows.

Mody and Murshid (2005) question the inability of capital inflows in developing countries to transform into fruitful domestic investments. They question the assessment that shortage of capital is attributed to the lack of progress in developing countries, and why inflow of capital did not increase domestic investments in developing nations. They attribute the inability to foster domestic investment to: (1) the inability of developing countries to absorb external capital and smoothly transform to domestic investment, (2) governments of developing nations diverting the capital inflow into reserve holdings, (3) foreign investors having a diversification motive and (4) capital inflow being offset by capital outflow as domestic residents invest abroad to diversify their portfolios. Bosworth and Collins (1999), in their study of capital flows to developing countries find that, on average, a dollar of external finance increases domestic investment by more than 50 cents. This corresponds to the findings made by Mody and Murshid (2005) and reiterates the effectiveness of financial integration in fostering fruitful domestic investments.

1.2.1.3 Financial Integration and Precautionary Savings Motive

Keynes (1963) indicated that corporate cash holdings[10] are affected by the 'precautionary savings motive' and that precautionary demand for cash or liquid holdings increases with growing levels of uncertainty. Intuitively, the theory suggests that integrated capital markets should enhance the capacity of firms to develop their ability to raise funds. On the other hand, the argument states that financial integrated

[10] The level of corporate cash holdings is the balance between the marginal cost of raising additional funds and the marginal benefit of holding liquid assets or cash and equivalents divided by net assets (Senay Agca, 2012).

markets are prone to contagion risk that has the potential to increase macroeconomic instability. Financially integrated markets are associated with enhanced capital flows, which can potentially lead to volatility in exchange rates and domestic interest rates. In periods where economies are exposed to financial risk, a contraction in capital inflows is often observed, having adverse consequences on the economy (Bhagwati, 1998). Therefore, heightened levels of uncertainty have the potential to increase precautionary savings when economies are exposed to risk and hence it is presumed and empirically evident that firm liquid holdings levels increase in times of high contagion risk. Conversely, as long as financial integration reduces transaction costs (financial integration, at least in theory, reduces capital market distortions which causes a reduction in the transaction cost of raising capital in the domestic market), the marginal cost of raising funds will also decline which therefore reduces the marginal value of cash holdings. Therefore, firms will depend less on cash holdings (Stulz and Williamson, 1999).

The following authors support the theoretical linkage between financial integration and cash holdings: Forbes (2006), Bekaert, Harvey and Lundblad (2005), Almeida, Campello and Weisbach (2004) and Faulkender and Wang (2006). Forbes (2006) finds that increased capital flows cause a reduction in the financial constraints of small-to-medium sized firms. Bekaert, Harvey and Lundblad (2005) reiterate the fact that capital account liberalization has positive and statistically significant effect on growth due to reduced cost of capital. Faulkender and Wang (2006)[11] examine the cross-sectional variation in the marginal value of corporate cash holdings that arises due to differing corporate financial policies. They find that marginal value of cash increases (hence the incentive to hold liquid assets increase) when firms are faced with financial constraints.

1.2.2 Financial Integration and Poverty

The neoclassical view, linking financial integration or external financial liberalization to poverty is that financial integration helps mobilize savings, induces

[11] Faulkender and Wang (2006) examine the variation in excess stock returns over the period of one fiscal year. They find that marginal value of cash declines when (1) cash holdings are larger, (2) leverage level increases and (3) access to capital markets enhances; enhanced access to capital markets could be attributed to financial integration.

investments and allocates capital to productive investments, which thereby increases efficiency of physical capital and hence productivity. As a result, this means that financial liberalization stimulates growth, which results in higher income levels and therefore reduces poverty. Fry (1995) states that financial repression and this resulting credit rationing worsens income distribution. In other words, this implies that financial liberalization and freeing of credit markets will improve income distributions and therefore reduce poverty. However, it would be naïve to presume that financial liberalization reduces poverty merely through this growth channel. There are two distinctive channels via which the effect of financial integration can be felt for the impoverished and on poverty and they are the growth channel and the crises channel (Arestis and Caner, 2004).

The growth channel that looks at the linkages between financial liberalization and financial integration on growth are discussed in both the theoretical arguments section as well as in the empirical review. The important factor that needs to be investigated here is the relationship between growth and poverty. This linkage needs to be settled before focusing on other issues of relevant importance. The World Bank (2001) states "for a given growth rate, the extent of poverty reduction depends on how the distribution of income changes with growth and on initial inequalities in income, assets, and access to opportunities that allow poor people to share in growth." Broadly speaking, there are two ways growth benefits the poor, that is by direct and indirect channels of influence (Klasen, 2001). The empirical evidence tends to depict the message that when growth increases, and as countries get richer, incidence of income poverty falls. Dollar and Kray (2002) uses 80 countries to empirically assess this relationship and they find that income share of the poor (bottom 20% of the population) rises, almost equal to, one-for-one with overall growth in GDP per capita. Kray (2004) finds that most of the variations in poverty are accounted for mostly by growth. However, Ravallion (2001) states that there is always the need to go and look beyond averages, because, benefits are often not realized by the poor to the extent that it is realized by the rich and the growing inequality today is testament to this fact. Perhaps, as a motivation for this thesis, it would be interesting to decompose the effect of financial integration on growth, and thereby take a closer look at poverty as a result.

The crises channel focuses on the effect of financial liberalization on financial fragilities and how this affects the poor. The empirical evidence for these issues will be presented in the empirical review section under the section focusing on financial integration and poverty. Therefore, the question ultimately to look for in this section is how do crises (banking and/or balance of payment crises) affect poverty? There are various channels through which crises can affect poverty. Banking, currency or twin crises typically leads to fall in income levels of workers in both the formal and informal sectors, firstly due to job losses in the formal sector and a decline in the demand of services from workers in the informal sector (e.g. household cleaning services). Changes in relative prices due to crises can have effects on the distribution of income. For instance, currency depreciation results in decline in the price of goods and services in the non-tradable sector, this causes in a fall in earnings of workers in the non-tradable sector. Fiscal contractionary policies, which may include social welfare cuts, can be detrimental particularly for the poor. Agenor (2002) refers to the concept of "labor hoarding" which suggests that in times of economic downturns, the poor are the first to lose their jobs as firms tend to not hire due to existence of high costs. Furthermore, the poor tend to have their wealth in liquid form and during inflationary periods suffer more than the rich (Easterly and Fischer, 2001).

It may well be undeniable that financial liberalization has profound effects on the availability of credit, and often it is argued that this credit is also more available for the poor when liberalized as opposed to when it is highly regulated. However, this is always going to require closer empirical and evidential scrutiny as there is a distinction between the formal financial sector and the informal sector, the latter being more prominent in developing countries. Therefore, an important and rather interesting research question is to see the whether or not financial integration improves availability of financial services and credit for the bottom fifth of the population.

1.2.3 Financial Integration and Crises

From the theoretical perspective, the impact of financial integration on growth volatility is ambiguous. Financial integration allows for countries that are capital-poor to diversify, typically away from agriculture or resource dependent production

frontiers, this in turn reduces macroeconomic volatility. However, when the economy reaches an advanced stage of development, financial integration is supposed to trigger specialization. This could in turn cause developing countries that fall in the middle-income category, to be vulnerable to industry-specific shocks, thereby causing volatility. Furthermore, heavy reliance on foreign capital flows, in the form of, for instance, external debt, could expose these developing countries to world interest rate shocks, thereby leading to growth volatility (Kose, Prasad, and Terrones, 2004).

In terms of the crises, the balance of payment crisis is an important channel to consider. This was explored heavily by Krugman (1979) and as a result garnered international attention. Initially, the literature assumed that crises were caused by fundamental economic indicators being weak, for instance, excessive expansion of fiscal or monetary policies (results in loss of foreign reserves). Krugman (1979) shows that in a fixed exchange rate regime, heavy domestic credit expansion (that exceeds money demand), will lead to a persistent loss of foreign reserves, thereby resulting in a speculative attack on the domestic currency. This will ultimately lead to a crisis because agents will tend to believe that the fixed exchange rate regime will collapse. Therefore, the gist of the model suggests that there will be a loss of international reserves preceding the crisis. Recent models however, have shown that a crisis can occur even when the macroeconomic signal indicators are unperturbed. For these particular models, macroeconomic policies are not predetermined, however, they are responsive to changes to the economic conditions and agents in the economy take this into account when forming their own set of expectations. This opens up the notion of the possibility of multiple equilibria and the concept of the self-fulfilling crisis.

Stiglitz (2000) analyzes the macroeconomic repercussions of capital market liberalization, focusing specifically on the short-term speculative capital flows. The following are the key inferences:

1. Banking, currency, twin and debt crisis have been more prevalent following the era of globalization, which is indicative of a fundamental weakness in the current global arrangements. The fact that the East Asian Crisis spread to Russia, and then to the Latin American countries suggest that even economies

that have sound institutional infrastructures and prominent policy makers can be adversely affected.

2. The key purpose of financial and capital markets is to ensure sound information transmission mechanisms, in terms of assessing which projects or firms are likely to give the highest returns and ensuring the allocated funds are used efficiently. The theoretical proposition supporting capital market liberalization is based on standard efficiency arguments, which employs the conventional neoclassical model i.e. capital account liberalization leads to higher output levels and increased efficiency.
3. Even in developed countries, following a period of macroeconomic instability, the poor bear a disproportionate burden, for example, increased unemployment (Furman and Stiglitz, 1999). The notion that improved transparency reduces the chances of a crisis was ousted when the most transparent countries (Norway, Sweden, and Finland) could not prevent a crisis.

A follow up from Stiglitz' (2002) analysis, would be to consider the mechanisms via which the global recession of 2008-09 was triggered. Marcel Fratzscher (2011) analyzes the drivers behind the global financial crisis of 2007-2008 by determining whether it was push factors or pull factors[12] that have been the defining factor in the global capital flow. They find that (push factors) specific banking, currency, twin or debt crises, variations in global liquidity and risk levels have a substantial effect on global capital flows. The rise in the level of risk and key crises results in the reallocation of capital from the emerging market economies to the advanced economies (in the duration of the crisis); which they denote as the "flight-to-safety" hypothesis. They also find that the existing cross-country heterogeneity to common shocks is due to the country-specific determinants; the findings indicate that push factors (i.e. shocks to liquidity, risk levels, macroeconomic conditions, policies of the developed economies) have had a significant effect on the capital flows to and from (post-recovery capital flow) the emerging market economies. However, the authors do underline that pull factors have been fundamental for post-crisis recovery.

[12] Push factors refer to shocks in the form of currency or twin crisis that any economy is susceptible to, be it emerging or developed. Pull factors refer to specific countries macroeconomic fundamentals such as the institutions, the policies implemented (Agenor and Montiel, 2008).

1.3 Literature Review: Empirical Evidence

There are not many issues that have triggered such polarized opinions amongst economists, governments and policymakers in general than the benefits and drawbacks of financial integration. This section summarizes the key results deduced by researchers in the associated field of research. This is a concise summary prepared for the convenience of the reader. Tables 1.1, 1.2 and 1.3 present the scholarly papers that explore the relationship between financial integration and growth, financial integration and poverty and inequality, and financial integration and crises respectively. For a detailed description of these papers along with various other research studies, refer to the literature review sections of chapters 2, 3 and 4.

Table 1.1 summarizes the scholarly papers that explored the relationship between financial integration and growth. There are other studies in this researching arena that ventured into similar researching avenues, however, the research papers that added value to this thesis are presented here.

Table 1.1: Review of FI-Growth Literature

Author and Dataset	*Estimation Method*	*Key Findings*
Author: Masten, Coricelli and Masten (2008) Time: 1996-2004 Data: Macro and Industry Level Countries: 31 European Economies	GMM	(1) Financial integration and financial development enhance growth. (2) Essential for financial development to reach certain threshold before benefits of financial integration are realized.
Author: Edison, Levine, Ricci and Slock (2002) Time: 1980-2000 Data: Macro-level Countries: 57 (includes high income, middle income and lower middle-income countries)	OLS, 2SLS, GMM	(1) Financial integration does not accelerate growth. (2) Financial integration improves growth only with sound institutional factors.
Author: Schularick and Steger (2010) Time: 1980-2002 Data: Macro-level Countries: 24	GMM	(1) Financial integration is not associated with positive growth levels. (2) Financial integration does not induce increased aggregate investment.
Author: Bekaert, Harvey and Lundblad (2005) Time: 40 years Data: Macro-level Countries: 95	OLS, GMM	(1) Equity market liberalization increases real GDP per capita growth by 1%. (2) Higher levels of financial development results in greater growth benefits from equity market liberalization.

Author: Galindo, Micco and Ordonez (2002) Time: 1973-1998 Data: Macro and Industry Level Countries: 95	OLS, Fixed Effects	(1) Financial liberalization boosts growth rate of industries. (2) Firms with higher external financing benefit more with financial liberalization.
Author: Kray (1998) Time: 1985-1997 Data: Macro Countries: 42	OLS, 2SLS	(1) Higher levels of capital account openness does not lead to higher levels of growth or investment. (2) Capital account liberalization has no statistically significant effect on growth.
Author: Bosworth and Collins (1999) Time: 1978-1995 Data: Macro Countries: 58 Developing Countries	OLS, Fixed Effects, 2SLS	(1) FDI increases domestic savings and investments, which in turn leads to higher growth.
Author: Mody and Murshid (2005) Time: 1979-1999 Data: Macro Countries: 60 Developing Countries	GMM	(1) Inflow of capital caused investors to diversify rather than fulfill unmet investment needs in the domestic economy. (2) Developing countries are scapegoats to foreign diversification motives.
Author: Chen and Quang (2014) Time: 1984-2007 Data: Macro Countries: 80	Panel Threshold Regressions by Caner and Hansen (2004)	(1) Financial integration enhances growth if institutional quality and financial depth meet a specific threshold level.
Author: Ding and Jinjarak (2012) Time: 1980-2003 Data: Macro Countries: 130	Panel Threshold Regression by Hansen (1999)	(1) For low income countries, capital flight increases with rising income level, but after income level reaches a specific (threshold) income level, capital flight declines.
Author: Karadam and Ocal (2014) Time: 1970-2010 Data: Macro Countries: 82	Panel Smooth Transition Regression Model	(1) Improved financial systems and stable macroeconomic policies result in financial integration enhancing growth.

It is quite evident in table 1.1 that numerous researching studies have attempted to explore and examine the FI-growth nexus as only the most relatable and value enhancing papers are enlisted in the table. However, it is quite evident that there is a shortage of papers that examine this nexus using threshold regression methods. The reason why emphasis must be placed on the use of threshold estimation methods is in part due to the fact that it can play an instrumental role in assisting policymakers set their policies in order to foster the highest growth levels possible. While, there is no doubt that understanding the benefits and shortcomings of financial integration is important, as is the channels of influence, the level of financial integration that helps

the economy realize its economic potential hinges on threshold models. Therefore, economists and policymakers must be aware of the intensity of controls or the level of financial openness that is appropriate in order to maximize growth levels. Therefore, this research paper uses threshold techniques to address the FI-growth nexus.

Table 1.2 presents the research studies that explored the linkages between financial integration and poverty.

Table 1.2: Review of FI-Poverty Literature		
Author and Dataset	*Estimation Method*	*Key Findings*
Author: Arestis and Caner (2010) Time: 1985-2005 Data: Macro-level Countries: Developing Economies	GMM	(1) Increase in capital account openness does not result in reduced poverty or increase in income share of the poor.
Author: Santarelli and Figini (2002) Time: 1970-1998 Data: Macro-level Countries: Developing Economies	OLS	(1) Financial globalization leads to higher levels of relative poverty.
Author: Lundberg and Squire (2004) Time: 1960-1997 Data: Macro Countries: 125	OLS, 3SLS	(1) Increased openness results in reduction in income share of lowest two income quintiles.

It is observable in table 1.2 that there is a scarcity of empirical research that surrounds the FI-poverty nexus. Although it is not prominently highlighted in this table, there are researching studies that tend to discuss the shortcomings of globalization. However, there are very few research papers that directly look at the relationship between financial integration and poverty. The case is similar when assessing the impact of financial integration on inequality. While research studies tend to discuss these issues, particularly that of the lack of inclusive growth due to financial globalization, there are no empirical attempts to decipher the relationship. Furthermore, there is no evidence of threshold estimations executed in order to provide fruitful policy level solutions to government agencies and policymakers. Therefore, in addressing the FI-poverty and FI-inequality nexus, not only is an empirical assessment executed to understand, explore and examine this relationship further, but, threshold estimates are also in place to understand the intensity of financial liberalization at which poverty and inequality can best be minimized. The empirical examination for this research trajectory is available in chapter 3 of this thesis.

Table 1.3 presents the research studies that examine the linkage between financial integration and banking, currency and twin crises. It is noteworthy that only the research papers that were relevant and added value to the thesis were included.

Table 1.3: Review of FI-Crisis Literature		
Author and Dataset	*Estimation Method*	*Key Findings*
Author: Demirguc-Kunt and Detriagache (1998) Time: 1980-1994 Data: Macro-level Countries: Industrial and Developing Economies	Logit	(1) This researching study does not incorporate financial integration as a key independent variable of interest, but, it allows for the author of this thesis to incorporate the 'benchmark' control variables, particularly that of explicit deposit insurance scheme, which is positively linked to the likelihood of a banking crisis.
Author: Hardy and Pazabasioglu (1999) Time: 1980-1994 Data: Macro-level Countries: 50	Logit	(1) Heavy capital flows increase the likelihood of banking crises.
Author: Kaminsky and Reinhart (1999) Time: 1970-1995 Data: Macro-level Countries: 20	N/A	(1) Banking and currency crises are preceded by financial liberalization. (2) Twin crises prominent in emerging economies that are liberalized.
Author: Eichengreen and Arteta (2002) Time: 1975-1997 Data: Macro-level Countries: 75 Emerging Economies	Probit	(1) Capital account liberalization does not lead to a crisis but internal liberalization (liberalization of the interest rate) does. (2) When countries are liberalized internally, capital account liberalization increases the likelihood of banking crises.
Author: Noy (2004) Time: 1975-1997 Data: Macro-level Countries: 61 non-OECD countries	Probit	(1) Financial liberalization is a medium run threat to the health of the banking sector. They specify that the danger with financial liberalization is in the fact that domestic banks lose monopoly power.
Author: Edwards (2004) Time: 1970-2001 Data: Macro-level Countries: 157	Probit	(1) Restriction of financial openness or capital account liberalization does not reduce the probability of experiencing current account reversals.
Author: Jomo (1998) Time: 1997 Data: Macro-level Countries: Malaysia	N/A	(1) Financial liberalization, not financial regulation resulted in the Malaysian Ringgit crisis in 1997.
Author: Glick and Hutchinson	Probit	(1) Occurrence of banking and

(1999) Time: 1975-1997 Data: Macro-level Countries: 90 Industrial and Developing Countries		currency crisis at the same time is only evident in emerging market economies. (2) There is no observable evidence that suggests financial liberalization results in increased likelihood of a currency crisis.

From table 1.3 and from the FI-crisis literature in general, it is observed that there is a tendency to use binary indicators to proxy for financial liberalization which in turn proxies for financial integration. However, there is a scarcity of papers that uses the intensity of capital controls or the intensity of financial liberalization to proxy for financial openness or financial integration. Therefore, this is an important gap in the literature that must be fulfilled effectively using appropriate variables. The other fundamental researching loophole that is observable in the FI-crisis literature is the avoidance of the usage of key political variables in empirical examinations. Often, it is observed that political variables are only used to serve as control variables. However, for developing countries in particular, political factors are fundamental in determining economic outcomes. Therefore, in this thesis, in the context of developing countries, political factors are given the importance that they demand, due to the effect they have on macroeconomic stability. Furthermore, this thesis uses the intensity of financial liberalization instead of binary indicators to account for financial integration.

1.4 Conclusion

This chapter contributes to the debate on the financial integration and macroeconomic performance nexus by providing an in-depth examination of the theoretical linkages and analysis of the existing empirical evidence. This issue has been researched vigorously, however, due to the nature of the opinions being largely polarized, economists and policymakers tend to address and redress these issues. The close analysis of the existing body of literature allows the reader to formulate the necessary synopsis to further examine the causal linkages from different theoretical perspectives or to use different econometric techniques to deduce plausible inferences. The researching routes examined in the associated field of literature is not to be understated, however, as there are researching avenues and researching routes that have not been examined to the desired extent of the author.

For policymaking decisions, it is important for government officials, economists and policymakers alike to be adequately equipped in terms of the level of financial openness that is best suited for the country. For this particular reason, an avenue that must be explored with urgency and greater intensity, is the determination of the level of financial liberalization that yields the highest growth levels, while minimizing poverty and inequality at the same time. In order to venture into this researching route, the use of the threshold regression methods is quintessential. However, in the literature, while it is commonly observed that there is a tendency to locate and fixate on the impact of one variable on the other, there is an insufficiency in the examinations that uses the threshold techniques for the determination of the appropriate level of financial liberalization for the country or, for a particular income group.

In the FI-crisis literature, there is a series of discussion and determination of precursors of crises, however, the empirical literature does not use continuous variables to proxy for financial liberalization. From the policymaking viewpoint, it is important that policymakers know the risks that financial markets and the economy on the whole are susceptible to at different levels of financial liberalization. Furthermore, an observable loophole in the FI-crisis literature is the lack of theoretical and empirical importance given to the key political factors. Due to the fact that this

research paper focuses on developing and emerging nations, political factors remain decisive players in ensuring macroeconomic stability. Often, it is addressed and left to the sidelines of the theoretical discussion and in the empirical analysis, these political variables are often only used as control variables, but no special significance is given to these variable in the context of the empirical analysis that is evident in the existing literature. There is a select group of papers that discuss these issues, but there are interesting researching trajectories that must be examined, particularly from the viewpoint of effective policy level decisions in developing countries, as politics plays an instrumental role in the economic arena.

Chapter 2: Impact of Financial Integration on Growth in Developing, Transition and Emerging Market Economies: Quest for Threshold Analysis

Abstract

This research paper assesses the impact of financial integration proxied by de-facto measures, namely, various forms of capital flows, and de jure measures, namely, capital account openness, on economic growth. Panel Threshold regression (PTR) and logistic smooth transition regression (LSTR) methods are deployed to find the threshold estimates for each of these proxy variables for international financial integration. These nonlinear growth regressions are carried out for 175 countries over the period 1970-2013. The prime focus of this research paper is the threshold determination of the de jure measure of financial integration. The de jure measure of capital account openness issued for threshold analysis is the (1) Chinn-Ito Index (KAOPEN). Proxy variables are also employed when taking into account the de facto[13] measures of financial integration and this includes the following: (2) Net Inflows of Foreign Direct Investment (FDI as % of GDP), (3) Equity Foreign Portfolio Inflow (EFPI as % of GDP), (4) Cross-Border Lending e.g. Loans from Non-Resident Banks (CBL or NRBL as % of GDP), and (5) Net Financial Account (NFA as % of GDP). However, these results should be interpreted with caution given the problem of endogeneity due to reverse causality between de facto measures of financial integration and growth. The obtained results acquired for these IFI proxy variables are not uniform across all measures of financial integration utilized in this research and country groups focused on here, to suggest that the effect of financial integration on growth is positive. There are distinctive thresholds for different income groups, some that are very interesting for policymaking purposes. The results that are of notable importance are related to the de jure measure of capital account openness.

[13] With respect to the de facto measures of financial integration, FDI tends to have a positive association with growth (both below and above the threshold) for all income groups, except for transition economies. The threshold level for EFPI approximates between 0 to 4% for all income groups, indicating positive growth effects below the threshold and negative growth effects above the threshold. For cross-border lending, growth effects are negative above the threshold, but inconclusive below for all income groups other than the emerging markets. Increase in cross-border lending, is surprisingly associated with negative growth effects for all income groups. The results for the relationship between the financial account and growth are inconclusive given their statistical insignificance, sensitivity to robustness checks and low number of observations. However, these results are impractical for usage in policymaking purposes due to the problem of endogeneity.

These results indicate that transition economies have the lowest threshold, followed by emerging economies, whereas developing economies have the highest threshold. However, while it is growth retarding above the threshold (growth enhancing below the threshold) for all income groups, for emerging markets, it is growth enhancing both below and above the threshold. The accuracy of these threshold estimates is validated via various robustness checks.

2.1 Introduction

Determination of the optimal level of financial integration has been at the forefront of policymaking objective for governments and policymakers in developing, transition, and emerging market economies[14]. Maximizing output growth with varying levels of financial integration is a conundrum that leaves economists, politicians, and policymakers alike, highly polarized. Maximizing output growth with varying levels of financial integration is a policy-level conundrum. For instance, what is the optimal level of (net) capital inflow that reaps the highest growth levels? Is there a tipping point for capital flows or capital account openness after which macroeconomic performance may be growth retarding? The existing literature examines various channels via which financial integration or various forms of capital flows may increase or diminish growth. However, the existing literature fails to sufficiently examine the tipping point for various measures of financial integration i.e. various forms of capital flows, including, for example, the de jure measure of capital account openness – the Chinn-Ito index.

This research paper assesses the impact of financial market liberalization by deploying the (de jure) capital account openness and various forms of capital flows on growth. The focus of this research paper centers around the threshold determination of the de jure measure of financial integration, this is proxied by the (1) Chinn-Ito Capital Account Openness Index. However, associations between various forms of capital flows are also explored, such as the following proxies: (2) net inflows of foreign direct investment (% of GDP), (3) equity foreign portfolio inflow (% of GDP), (4) cross-border lending e.g. loans from non-resident banks (% of GDP), and (5) net financial account (% of GDP). These are the four de facto measures of financial integration. Panel Threshold regression (PTR) and logistic smooth transition regression (LSTR) methods are utilized to find the threshold estimates for each of these variables. This non-linear growth regression is carried out for 175 countries over the period of 1970-2013. The accuracy of these threshold estimates is validated predominantly via various robustness checks.

[14] The classifications for developing economies are determined based on the categorization made by the World Bank which, in the context of this researching study, excludes the high-income economies. The classifications for transition and emerging market economies are determined by the IMF.

The key research questions that this particular research paper seeks to address are the following:

1. What are the effects of different financial integration proxy variables on growth? Are such relationships linear or non-linear? How do they differ for developing, transition, and emerging economies?
2. If FI-growth relationships are non-linear, what is the threshold level for each of the FI proxy variables and how does it differ for developing, transition, and emerging economies?
3. Which FI proxy variables have multiple thresholds (more than 2 regimes)?
    a. *Do the coefficients signify a large difference from one regime to the other?*
    b. *Is there a positive and negative relationship, thereby indicating a kink?*
    c. *Is the tipping point applicable for all countries on a policy making level?*
4. What is the speed of transition from one regime to another i.e. is it a 'smooth' transition?

The fundamental contribution[15] of this research paper stems around the usage of the de jure measure of capital account openness (as an IFI proxy variable) using the LSTR methodology. The research papers in the associated field of research tend to generally use de facto measures of financial integration and deploy the panel threshold model. However, the LSTR method has not been previously used in the FI-growth literature. Furthermore, this research paper also uses the test for nonlinearity developed by Gonzalez, Terasvirta, and van Dijk (2005). It is a notable flaw in the existing literature to not incorporate the test for nonlinearities; this test determines the validity of the result by testing whether or not the model is linear and by determining the number of regimes/thresholds, it may have.

The research paper is structured as follows; the first section illustrates the theoretical linkages of financial integration and growth. The second, third, and fourth

[15] The contribution that this research paper makes to the associated field of research is discussed extensively in the conclusion (refer to the conclusion).

sections include the methodology, the empirical framework, and the variable description. Section 5 illustrates the results and section 6 concludes. The appendix (refer to sections 2.9, 2.10 and 2.11) includes the explorative data analysis and the robustness checks.

2.2 Theoretical Framework

The theoretical disposition of the growth effects of international financial integration is highly polarized. For instance, some theories suggest that IFI induces increased risk sharing and thereby enhances specialization of production, production capacity, allocation of capital and growth (Obstfeld, 1994). The standard neoclassical growth model suggests that the international financial integration facilitates and eases the flow of capital, to capital-starved economies, accompanying positive growth effects in the process. Furthermore, the theory also suggests that IFI enhances the functionality of the domestic financial systems via the means of intensification of competition and the fundamental importation of international financial services; from the neoclassical theoretical viewpoint, this is growth enhancing. On the contrary, the theoretical assumptions that suggest that IFI may in fact be growth retarding argue that IFI, in the presence of pre-existing institutional distortions (e.g. weak institutions, institutional policies, under-developed legal and financial systems), may be growth retarding (Boyd and Smith, 1992). Therefore, this theory argues that financial integration is only growth enhancing in the presence of effective policymaking ordeals and sound institutional setup.

Baile et al. (2004) illustrate the three widely accepted benefits of financial integration: (1) risk sharing, (2) improved capital allocation and (3) higher growth. Financial integration offers extra opportunities to share the level of risks and to smooth out the consumption levels inter-temporally. Kalemli-Ozcan et al. (2001) show that risk sharing across differing regions does enhance specialization in production, which also improves productivity growth. Adjaoute and Danthine (2003) find that the growth rates of consumption in the Euro Area are less correlated than that with growth rates of GDP per capita; this means that risk sharing potential has not been tapped. Adam et al. (2002) support this view by rejecting the notion that consumption growth rates are unaffected by idiosyncratic variations in GDP growth

rates. Therefore, financial integration can reap added benefits; however, even in the Euro Area, these potential additional gains have not been exploited fully. The removal of the barriers to trade, easing restrictions of capital control, induces improved allocation of capital. This will also induce investors to invest in productive and promising investment projects, which will stir competition and result in efficiency gains.

Smith (1994) and Obstfeld (1994), through their theoretical discussions, illustrate that increased international risk sharing through international financial integration (resulting in integrated stock markets) will cause a shift in the portfolio demands from safe and low-risk investments to the high-risk and high return investments. This will accelerate productivity growth. International financial integration, in the presence of existing institutional and legal distortion can have a growth retarding effect. Boyd and Smith (1992) infer that international financial integration induces capital outflow from the capital-scarce countries to capital-abundant countries in countries that have relatively weaker financial and legal institutions.

2.3 Literature Review: Empirical Evidence

This section looks at the existing empirical literature in the associated field of research. The literature assessing international financial integration (or external financial liberalization) and growth predominantly addresses these key research questions: Is there a robust relationship between financial integration and growth? What are the channels via which international financial integration influences growth? Is there an optimal level (threshold) of financial integration? Is there the supposed 'kink' in the relationship that may suggest that up until a certain threshold it is growth enhancing, after which it is growth retarding? What are the institutional prerequisites for financial integration to effectively transcend to escalated growth levels? This chapter aims to pinpoint the threshold level and determine the effects of IFI below and above this threshold. This research paper deploys the logistic smooth transition regression (LSTR) and the panel threshold regression model (PTR) introduced by Hansen (1999). The logistic smooth transition regression (LSTR) model has not been previously used in the international financial integration and growth literature.

2.3.1 Financial Integration and Growth Literature

The existing empirical evidence assessing the relationship between IFI and growth provide conflicting and polarizing inferences. Financial globalization includes the integration of equity, bond, and money markets as well as for instance the direct ownership of foreign capital or FDI. Economists and policymakers see financial globalization as a stepping-stone for the middle-income emerging markets; for them to aspire to reach the levels of income and financial stability achieved by the developed industrial economies. Schularick and Steger (2010) look at the effect of financial integration (globalization) on growth in two different eras. The first time period stretches from 1880 to 1913, consisting of 24 countries. The second time frame stretches from 1980 to 2002. They use the econometric methodology used by Edison et al. (2012) i.e. they run both a cross-sectional regression analysis as well as a GMM dynamic panel regression. They use a total of three econometric regression models and run it using both the historical dataset as well as the contemporary dataset. When they use the GMM panel estimation, they use 5-year averages in order to reduce the cyclicality of the data. It is also important to consider that the GMM estimation helps

to address the bias of reverse causality i.e. increased growth rates causing an increase in the capital flow (something that the OLS regressions fail to consider). The results show that financial integration had a strong positive association with economic growth before 1915; however, they imply that this is not the case when results are drawn using the more contemporary dataset. Moreover, opening up to international capital markets (using the contemporary dataset) do not lead to increased aggregate investment.

Brezigar Masten, Coricelli and Igor Masten (2008) investigate nonlinear effects of financial development and financial integration on growth in Europe, using both macro and industry level data. The empirical analysis[16] is divided into two sections. The first empirical section comprises of the cross-country panel of macroeconomic data; which measures the effect of financial integration on growth. A total of 31 European countries are taken over the period of 1996 to 2004 with a host of control variables. The GMM estimation method is used to carry out the regression analysis; this also controls for potential endogeneity biases. The second empirical section uses industry level data to investigate how increased availability of external finance affects growth. This approach directly investigates the extent to which the effect of financial integration on growth is dependent on the absorptive capacity[17] of institutional factors; the proxy variable used to measure the absorptive capacity is financial depth. This approach looks at the effect of financial integration on the growth of real sales in various industries, in 30 European countries over the time period 1996 to 2003. Furthermore, the authors also use a multiple threshold model[18] to effectively measure the nonlinear effects on growth. The key inference deduced from this paper suggests that financial integration and development of financial markets do have a positive but nonlinear effect on growth. They find that a sufficient absorptive capacity (measured by financial depth noted above) must be in place for financial integration to have a significantly positive effect on growth i.e. financial

[16] Brezigar Masten, Coricelli and Igor Masten (2008) use the WDI database. For robustness purposes, several measures of financial integration are taken into consideration: (1) stock of total foreign assets and liabilities as a percent of GDP, (2) total liabilities as a percent of GDP and (3) sum of stocks of portfolio equity and other debt inflows and outflows as a share of GDP.

[17] Absorptive capacity is the appropriate supply of human capital, infrastructural functionality and technological capability to be able to generate new technologies and consequently use productive resources efficiently. In turn, this is expected to translate into productivity growth for firms as well as countries (Narula, 2004).

[18] The threshold model used in this paper replicates the approach taken by Hansen (1999).

integration becomes beneficial for growth only after the development of the financial markets pass a specific threshold. The authors stipulated at the time, that the emergence of the European Monetary Union would accelerate the process of financial integration and the repercussions would be positive; convergence of the new EU member states, however, and the European Debt Crisis post 2009 illustrates the risks associated with financial integration.

Edison and Warnock (2003)[19] analyze the effect of capital flows to emerging market economies. The capital flows data are monthly equity flows from the U.S. to the emerging market countries. They use a regional panel dataset and fixed effects estimation method to carry out their regression analysis. The dependent variable is the average monthly equity inflows from one month to the next and is also scaled by the local market capitalization. The inferences deduced from this paper imply that effects of changes in capital controls on financial flows are dependent on whether or not controls were binding.

Bosworth and Collins (1999) investigate the effect of capital flows to developing economies and intensively examine the implication this has on savings and investments. They use a panel dataset that comprises 58 developing countries over the time period 1978 to 1995. They use OLS and fixed effect estimation (allows the authors to account for relationships between the variables of interest over time) methods to deduce regression inferences. They use an instrumental variable, as they believe that domestic conditions are likely to influence capital inflows; this accounts for the endogeneity and the reverse causality problem. The authors conclude the following: (1) that a large proportion of capital inflows are used to finance the deficits the developing countries have in their current accounts; where the majority of the resource transfer is for investment, as a result, consumption is compromised, (2) capital inflows are heavily concentrated on a small number of developing economies

[19] Edison and Warnock (2003) use Montiel and Reinhart (1999) measure of capital controls; they measure capital controls by using the 0, 1 and 2 categorical variable to measure intensity of capital control. They also use the dummy variable measured by Bekaert, Harvey and Lumsdaine (2002) where 1 indicates the initial opening of a market to foreign investment and 0 indicates the closed market. Edison and Warnock (2003a) use the capital controls measure, which captures the opening date of the market as well as the intensity of subsequent change in controls. The data for the portfolio equity flows from the U.S. to the emerging markets is taken from U.S. Treasury International Capital Reporting System.

i.e. the emerging markets of Asia, (3) portfolio capital inflow does not have a significant effect on domestic investment and, (4) FDI often generates large increases in domestic savings and investments. Borensztein, Gregorio and Lee (1997) find that foreign capital inflows (predominantly in the form of FDI) result in increasing investment and growth levels when there is a certain threshold of human capital; in order for the economy and the domestic entrepreneurs to absorb the spillover of technical knowledge.

Edison, Levine, Ricci, and Slok (2002) examine the growth effects of IFI. They incorporate nonlinearities by assessing whether or not these growth effects are reliant on the level of financial development, institutional sophistication, economic development and broad macroeconomic policies. They use three econometric methods to determine this relationship. They use the OLS regressions (one observation per country) over the period 1980-2000, the two-stage least squares instrumental variable estimator (cross-country), and generalized method of moments (GMM). For the two-stage least squares method, they use two sets of instrumental variables, an exogenous indicator that accounts for the legal tradition and the other that uses geography and its subsequent effect on economic institutions and policies. They use 57 countries. Their results indicate that IFI does not accelerate economic growth per se, even when controlling for economic, financial, institutional, and policy characteristics. However, the authors do state a positive association between real per capita GDP and IFI, but still underline that it does not stimulate growth.

Mody and Murshid (2005) examine the relationship between capital flows and domestic investments using 60 developing economies over the time period 1979 to 1999. Using econometric regression analysis, the authors measure the effect of gross long-term capital flows (measured as a percentage of GDP; key independent variable of interest) on domestic investment (measured as a percentage of GDP), with a host of macroeconomic control variables. They use the GMM estimation method. The authors find that each dollar of long-run flows raised domestic investment by 66 cents. The authors conclude that despite the theoretical notion suggesting that foreign capital inflow adds to the existing capital stock and raises the marginal returns, it also raises a significant argument stating that financial integration could simply mean agents optimize their portfolio by investing in developing countries; this plays no part

in increasing domestic investment. The authors conclude that the surge in capital flows (predominantly through portfolio flows or through FDI) in developing countries during the 1990s did increase international reserves and led domestic residents to diversify by investing abroad, but inflow of capital, can be attributed to the "diversification motive" (as previously discussed in this thesis) rather than fulfilling unmet investment needs domestically. Moreover, they conclude that sounder policy environments enhanced the association between inflow and investments. According to Mody and Murshid (2005), some developing countries often have domestic returns that are lower than or equal to the world interest rate and are often scapegoats to foreign diversification motives. Technological spillover is regarded as an essential motive for developing countries in opening up to capital inflows.

2.3.1.1 Financial Liberalization and Growth

In this thesis, financial integration and financial liberalization are used interchangeably, as financial liberalization is considered to be a proxy measure for financial integration. The research papers cited in this subsection use financial liberalization (without associating it with financial integration directly) and measure the its impact on growth. For instance, Bekaert, Harvey and Lundblad (2005) investigate the effect of financial liberalization[20] on economic growth using a panel dataset of 95 countries over a period of 40 years. The empirical model tests the effect of equity market liberalization (allowance for foreign investors to have freedom to transact in domestic securities, vice versa) on growth; this is their contribution to the existing literature. The OLS and GMM estimation methods are used. They reiterate the existence of an endogeneity problem i.e. whether or not the decision to liberalize the equity markets had a political implication; where the political reformation had a bearing that is perhaps even unaccounted for. Their analysis shows that when countries do liberalize the respective equity markets, it is associated with the removal of restrictions on foreign exchange, the deregulation of the banking systems,

[20] Bekaert, Harvey and Lundblad (2005) use the three following measures for financial liberalization: (1) Intensity equity market liberalization indicator (IFC Global Index for each country); measures liberalization intensity, (2) IMF capital account openness indicator (AREAER), (3) Quinn capital account openness indicator; scored from 0-4, using half integer units, where 4 indicates a fully liberalized economy and (4) official equity market liberalization dates. For the latter parts of the paper, UNIDO (United National Industrial Development Organization) Industrial Statistics Database has been used. Judicial efficiency measured based on Business International Corporation's assessment of the legal environment.

improvement in judicial structure and investor protection and enhancement of financial development. In order to avoid the omitted variable bias, a host of control variables have been used, accounting for macro, financial and legal reforms. The authors conclude that equity market liberalization leads to an approximate and statistically significant 1% increase in annual real GDP per capita growth. However, the authors reiterate that this could merely be an association between the variables of interest, rather than a direct causal impact, as the indirect linkages may not have been taken into consideration. Therefore, the 1% increase in growth of real GDP per capita may be partially higher, if all the indirect channels of growth were accounted. Moreover, they find that countries that have higher levels of financial development experience a larger boost from equity market liberalization. The magnitude of the effect of equity market liberalization on growth is larger when the legal systems, institutions and investor protections are robust.

Galindo, Micco and Ordonez (2002)[21] assess the repercussions of financial liberalization. They define financial liberalization as the removal of restrictions on the domestic financial system and the capital account. The empirical model of interest that they look at has the growth rate of real value added of a particular sector in a given country at a particular time, as the key dependent variable of interest. The independent variables of interest are the requirement of a particular industry for external funds and the measures of financial liberalization. They use a host of control variables and interact with the key variables of interest with legal protection and external dependence. They find the following results from their econometric regression analysis: (1) on average, financial liberalization boosts the growth rates of industries that depend on external funding, (2) firms that have higher external funding dependence grows 1.3 percent higher after liberalization as opposed to firms that are not dependent on external financing, (3) countries that are associated with a low level of legal and judicial protections benefit less from financial liberalization than countries that have higher levels of institutional protections.

[21] Galindo, Micco and Ordonez (2002) use the data for the indicator 'Value Added' from the Industrial Statistics Yearbook database of the UNSD (United Nations Statistical Division).

Kraay (1998)[22] examines the medium to long-run macroeconomic effects of capital account liberalization and tests the predetermined notion that the benefits of capital account liberalization are offset by the increased level of volatility associated with it and that capital account liberalization is only beneficial for countries with a sound financial and institutional infrastructure. The dataset includes a host of different countries from the time period 1985 to 1997. The dependent variables are real GDP growth per capita, gross domestic investment as a share of GDP and the logarithmic form of the annual CPI inflation rate. The key independent variable of interest is capital account openness. He uses the OLS and IV estimation methods. The IV instrument (accounting for endogeneity) is the financial openness average for the years 1975 to 1984. The cross-sectional regression shows no evidence of growth or domestic investment levels being higher in countries with higher levels of financial openness. Moreover, for event study, capital account liberalization has no statistically significant effect on growth, investment or inflation. Kraay also tests the hypothesis that benefits of capital account liberalization are offset by capital reversals, as observed in the Asian Financial Crisis of 1997. He finds no statistically significant evidence that volatility is higher in countries with a higher degree of financial openness.

[22] Kraay (1998) uses three measures to account for capital mobility: (1) IMF's annual report on exchange arrangements and exchange restrictions (AREAER), (2) Quinn's (1997) measure of openness and (3) constructs his own index i.e. the sum of inward and outward FDI, portfolio investment and other investment items in the financial account of the balance of payments, representing it as a share of GDP. Note that cross sectional regression analysis is carried out. To account for the effect of volatility

2.3.2 Threshold Literature

This subsection presents the empirical findings for those papers that deploy various threshold techniques. Both the developing and the developed countries have illustrated over the years that countries' characteristics are signals that precondition the impact of capital flows and dictate, for instance elevated growth levels or increase the likelihood of banking, currency, or twin crisis. The threshold studies often tend to focus on the various forms of contingencies that may influence growth, positively or negatively. For instance, Brecher and Alejandro (1977) find that financial integration without the presence of trade openness could lead to misallocation of resources in the case when foreign capital flows into the non-competitive industries of the domestic economy. Arteta, Eichengreen, and Wyplosz (2001) on the other hand, do not find trade openness to be a contingent factor for the growth effects of financial integration.

Chen and Quang (2014) look at the effect of international financial integration on economic growth using threshold effects with an annual panel dataset consisting of 80 countries over the time period 1984 to 2007. They use the panel threshold regression framework developed by Hansen (1999). Additionally, they use an extension made by Caner and Hansen (2004) that allows for the endogeneity of regressors. The dependent variable of interest is the growth rate of real GDP per capita. A host of control variables is used; they use the level of initial income in order to control for conditional convergence. They predominantly use the de facto measure of financial integration. They use the following threshold variables: income level, trade openness, institutional quality, financial development, and macroeconomic policy. They use a multiple threshold model i.e. accounting for three potential breaks. They find that financial integration could be a facilitator of growth given countries satisfying specific threshold conditions concerning their institutional quality, level of financial depth and inflation rate. The criticism associated with this paper would be the fact that they have not heavily discussed the possibility of heteroscedasticity affecting the results.

Ding and Jinjarak (2012) use a panel dataset comprising of 130 countries over the period 1980-2003. They use the Hansen (1999) threshold estimation. They take into consideration four measures of capital flows: total capital inflow, total capital

outflow, net capital outflow, and capital flight. They find that the magnitude of capital flows is positively correlated with the income level of the economy. Using Hansen's threshold estimation, they introduce a three-stage threshold effect: for low-income countries (GDP per capita below US$3000), capital flight tends to increase as income level rises, but only after the income level rises above US$ 5000, capital flight declines with income.

Karadam and Ocal (2014) deploy panel smooth transition models to examine the effect of financial integration on growth for a panel dataset comprising of 82 countries over the period 1970-2010. The specialty of the PSTR models is that it allows endogenously determining and revealing for instance, the degree of institutional quality and/or the level of financial development asymmetries in the IFI-growth nexus. The dependent variable is the growth rate of GDP per capita and the key independent variable of interest is the de facto measure of financial integration, the ratio of the sum of total stocks of external assets and liabilities as a share of the GDP. The data is acquired from the database of Lane and Milesi-Feretti. For the entire dataset (all countries), it is found that countries with better developed financial systems, qualified institutions and stable macroeconomic policies seem to benefit the most from financial integration. These findings are consistent with that for emerging market economies, however, for industrial economies, higher levels of trade openness (with increasing financial integration) tend to decrease growth. Furthermore, for industrial countries, a budget deficit has a significantly higher negative growth effect with increasing integration compared to emerging economies.

Due to the fact that this research paper deploys FDI as a proxy measure for financial integration, it is only appropriate to find an existing research paper that uses the threshold technique for the FDI-growth nexus. The causal relationship between foreign direct investment (robust positive relationship) is not definitive, especially in the case of emerging market economies, it is in fact ambiguous (Gorg and Greenaway, 2004). The underlying view is that there is a positive association that is almost universally accepted, however, the contingency effects have not been explored sufficiently to give a decisive inference. Azman-Saini, Law, and Ahmad (2010) look at the effect of FDI and growth using a threshold measure, where the threshold variable is financial development. They use data for 91 countries over the period

1975-2005. They surprisingly find that until the level of financial development reaches a certain threshold level, the effect of FDI on growth is nonexistent. The positive impact is realized only after the financial development threshold is reached.

2.4 Methodology

This research paper incorporates a dataset that includes 175 countries over the time-period 1970-2013. All the countries largely available are included in the dataset for cross-comparative purposes. In order to investigate the nonlinear effects of financial integration on growth, two distinctive statistical techniques are deployed. They are the (1) Panel Threshold Regression model (PTR) and the (2) Logistic Smooth Transition Regression (LSTR) method. The technical mechanisms of these two statistical techniques are explained in the empirical framework section of this report. This research paper averages data over five-year periods[23] to smooth business cycle fluctuations.

There are five proxy variables selected to measure international financial integration, starting from the de jure financial integration measure, (1) Chinn-Ito Index (de jure measure of capital account openness), and de facto financial integration measures such as (2) Foreign Direct Investment (% of GDP), (3) Equity Foreign Portfolio Inflow (% of GDP), (4) Non-Resident Bank Loans (% of GDP), and (5) Financial Account (% of GDP). These are the key independent variables of interest. The dependent variable of interest is real GDP per capita growth (Annual %), which is used to reflect macroeconomic performance. Furthermore, regression analysis is carried out for these specific country groups: (1) All Economies (this refers to the global economy i.e. all the economies in the dataset), (2) Developing Economies, (3) Transition Economies, and (4) Emerging Market Economies[24]. The classifications for developing economies are determined based on the categorization developed by the World Bank. The classifications for transition and emerging market economies are determined by the IMF. The reason for including all the economies in the dataset is to

[23] Five-year averages are deployed for this panel dataset to account for business cycle fluctuations. The panel dataset spans from 1970-2013, therefore, there are 10 periods of non-overlapping five-year averages.
[24] Refer to appendix 3 in section 2.11 for the detailed list of countries.

get an overview of the repercussions of financial integration on macroeconomic proceedings on an international level as well as for cross-comparative purposes.

The research paper focuses predominantly on developing, transition, and emerging market economies and therefore segregates the income group classification in this manner. The regression results assessing the relationship between IFI (proxy variables) are presented in tables 2.2, 2.3, 2.4, 2.5, and 2.6. Each table (segregated based on the IFI proxy variable) contains the OLS, PTR, and LSTR estimation results for all economies, developing economies, transition economies, and emerging market economies. Appendix 1[25] presents the explorative data analysis that looks at historical trends, scatter graphs (de facto and de jure proxies of financial integration and growth), and quadratic relationships. Appendix 2[26] illustrates the robustness checks carried out for all of the IFI proxy variables, de facto and de jure. These robustness checks include taking the 3-year non-overlapping averages, lagged financial integration proxy variables, post-1990 estimations and quadratic estimations (only for the de jure measure of financial integration).

The focal point of this research paper centers around the de jure measure of capital account openness due to the novel contribution it makes to the associated field of research. While, the threshold regression (PTR and LSTR) results for the other IFI proxy variables are illustrated, due to issues associated with endogeneity (especially for FDI and growth), it would be erroneous to make policy deductions. Therefore, the threshold findings for the financial flows are merely there to gain an understanding of the association before progressing to our key independent variable of interest, which is the parameterized Chinn-Ito Index (KAOPEN).

[25] Refer to section 2.9.
[26] Refer to section 2.10.

2.5 Empirical Framework

2.5.1 Panel Threshold Regression (PTR)

This section presents the theoretical intuition of the Panel Threshold Regression (PTR)[27] and Logistic Smooth Transition Regression (LSTR) methodology using the practical exposition of the financial integration theory. The initial component of the empirical framework section will discuss the technical intuition of the PTR model. Hansen (1999) introduced the technical model. The purpose of this model is to provide an endogenous estimation of the threshold parameter in two distinctive regimes that is unaccounted for in the regular simple regression methodology. The gist of the PTR model suggests that there is a threshold level after which, growth for instance, may have a distinctively different (growth enhancing or growth retarding) growth effect. The special and distinctive feature in comparison to the LSTR model with the PTR model is that the PTR model suggests that there is an instantaneous change from one 'regime' to another. The empirical model is based on the assumption that international financial integration affects growth in a nonlinear way. The empirical formulation of the Panel Threshold Regression (PTR) is as follows:

$$Real\ GDP\ Growth_{it} = \alpha_{it} + \phi_1' FI_{i,t} I(FI_{i,t} \leq T) + \phi_2' FI_{i,t} I(FI_{i,t} > T) + X_{it}'\theta + e_{it}$$

The subscript "*i*" refers to the individual countries and the subscript "*t*" refers to time period indexes. The dependent variable that accounts for macroeconomic performance is *Real GDP per capita Growth*. The constant term is denoted by a_{it}. The specific threshold level is denoted by *T*. The threshold variable is defined by q_{it}, but for purposes of simplicity it is denoted in this equation by $FI_{i,t}$. The indicator function is defined by $I(FI_{i,t} \leq T)$ and $I(FI_{i,t} > T)$; this indicator function equals 0 when $FI_{i,t}$ is less than or equal to the threshold parameter *T* and 1 otherwise. The error term, e_{it}, is assumed to be independent and identically distributed with a mean of 0 and variance of σ^2. It is important to understand that the observations are divided into two distinctive regimes depending on whether or not the threshold variable is greater than

[27] Chen and Quang (2014) in their paper measure the impact of financial integration on economic growth (using threshold effects) using the PTR methodology.

or less than the threshold, *T*. When the regime is below the threshold level, this is represented by the coefficient ϕ_1'; the regime after the threshold level is represented by the coefficient ϕ_2'. The financial integration variable is represented by $FI_{i,t}$; it is important to note that there are 5 proxy variables selected as a means to measure the impact of IFI on growth. The X_{it}' variable represents the set of control variables that may affect the output growth. The control variables have been selected based on those that are predominantly used in the growth and international financial integration literature.

2.5.2 Logistic Smooth Transition Regression (LSTR)

This research paper deploys the logistic smooth transition regression (LSTR)[28] model. The focal point of the empirical analysis is hinged on the LSTR model for the purposes of this particular paper. The growth and IFI literature tends to have and use the PTR model as a backdrop for threshold analysis; however, the LSTR model is significantly different, as the smooth transitional model does not have the instantaneous change (from one regime to another) as a feature of the model like the PTR model. The key explanatory variable of interest is the Financial Integration, which has five distinctive proxies: (1) net inflows of foreign direct investment (% of GDP), (2) equity foreign portfolio inflow (% of GDP), (3) cross-border lending e.g. loans from non-resident banks (% of GDP), (4) net financial account (% of GDP), and (5) de jure Chinn-Ito capital openness index.

This research paper averages data over five-year periods to smooth business cycle fluctuations. This allows for a more precise focus on the medium and the long-term effects of financial integration as it mitigates the business cycles and in some instances the problem of endogeneity, furthermore, it helps to avoid the problem of moving average dynamics.

The logistic smooth transition regression (LSTR) model is estimated in the following manner:

[28] The paper by Gonzalez, Terasvirta, and van Dijk (2005) is the benchmark paper for the empirical methodology used in this research paper. The tests of nonlinearity are also applied from this particular research paper.

$$\begin{cases} \Delta y_{it} = \alpha_{it} + \beta^{low} W^{low}(FI_{it} - c^*) + \beta^{high} W^{high}(FI_{it} - c^*) + \Theta X_{it} + \varepsilon_{it} \\ FI_{it} = \dfrac{IFI_{it}}{Y_{it}} \\ W^{low} = 1 - W^{high} \\ W^{high} = \dfrac{1}{1 + \exp[-\gamma^* \dfrac{(FI_{it} - c^*)}{\sigma}]} \end{cases}$$

The real per capita GDP growth rate is denoted by Δy_{it}; α_{it} is the constant term or the intercept of the regression model; X_{it} is a vector of control variables; FI_{it} is the share of financial integration as a % of GDP, where IFI_{it} are the proxy variables of international financial integration expressed in constant 2005 US$ (with the exception of the de jure measure of capital account openness). The standard deviation of FI_{it} is denoted by σ; c^* is the threshold parameter; *t* is the time series index; *i* refers to the countries; ε_{it} is the error term.

There are two regressors via which the key explanatory variable(s)[29] of interest, FI_{it}, enters the LSTR model, and they are the following: (1) $W^{low}(FI_{it} - c^*)$ and (2) $W^{high}(FI_{it} - c^*)$; in this case β^{low} and β^{high} are coefficients of lower and higher regimes respectively. Therefore, this implies that when FI_{it} is above the threshold parameter c^*, the impact of FI_{it} on real per capita GDP growth is closer to β^{high}. Similarly, when FI_{it} is below the threshold parameter c^*, the impact of FI_{it} on real per capita GDP growth is closer to β^{low}. The weights are represented by W^{low} and W^{high}, where $W^{low} = 1 - W^{high}$. For instance, when FI_{it} is equal to c^*, then $W^{high} = W^{low}$. The speed of transition from the low regime to the high regime is represented by γ^*. Therefore, the higher the value of γ^*, the faster the speed of transition, and the lower the value of γ^*, the lower the speed of transition. It is important to comprehend effectively that when γ^* is high[30], the PTR is the more appropriate statistical technique. In contrast, when the γ^* is low, the LSTR is the more applicable methodology due to the fact that the speed of transition is low from one

[29] There are five proxy variables chosen to measure international financial integration (IFI).

[30] The range for the γ^* (gamma value) is set between 1 and 15, where 1 indicates slow transition from one regime to another and therefore would suggest that the LSTR is the appropriate methodology for the regression model. Conversely, if the value of γ^* was to be 15, then this indicates fast transition from low to high regime and therefore this would indicate that the PTR methodology is more applicable for the purposes of this regression analysis.

regime to the other, this means that there is a rather 'smooth' transition, hence, the usage of the LSTR technique. The regression results provide the estimations of the ordinary least squares (OLS) method, the PTR, and the LSTR model for cross-comparative purposes.

The LSTR model assumes that there are precisely two regimes i.e. low and high regimes; if for instance, there are more than two regimes then the model is said to be misspecified and the relationship is assumed linear (linear model), resultantly the parameters defined in this model are not identified. The specification test used to determine the existence of nonlinearities and the number of regimes is presented by Gonzalez, Terasvirta, and van Dijk (2005). This specification test therefore, estimates two p-values, (a) for nonlinearities (otherwise it is a straightforward linear model) and (b) for remaining nonlinearities – if there were to be remaining nonlinearities then this would imply that there are more than two regimes, for instance. There is a fundamental flaw in the existing literature that calculates the threshold level but fails to account for the validity of the threshold or even test for the existence of nonlinearities, which is a fundamental prerequisite. In order to check the validity of the threshold measures, various robustness techniques are deployed to validate and confirm the efficiency of the results.

2.6 Variable Description

Table 2.1 presents the descriptions of the dependent variable, the key independent variables of interest and the control variables. For these variables, the name of the variable is appropriately defined, a brief description of the variable is provided, and the source from which the data for this indicator was collected is enlisted. Furthermore, it provides descriptive statistics of each of these aforementioned variables. The descriptive statistics include the mean value, the maximum value, the minimum value, the standard deviation, and the total number of observations for all the indicators; note that they are averaged over 5-years as this is the dataset used to acquire the final regression results. The key dependent variable, which takes into account macroeconomic performance, is real per capita GDP growth. The key independent variables of interest (proxy variables for IFI) are broadly divided into two categories, the de jure and the de facto measures of IFI. The focus of this

research paper is the threshold determination of the de jure measure of financial integration, i.e. KAOPEN. The de facto measures include FDI (% of GDP), EFPI (% of GDP), Non-Resident Bank Loans (% of GDP) and Net Financial Account (% of GDP).

The Chinn-Ito index (denoted as KAOPEN) or the de jure measure of capital account openness measures the degree of financial openness. The Chinn-Ito index ranges from +2.66 to -2.66, where +2.66 indicate a financial system that is fully liberalized and -2.66 indicates a fully regulated financial system. The index has a mean of zero. However, to simplify interpretation of the results this variable has been transformed in the following manner: *KAOPEN = (Chinn-Ito Index+2.66)*10*. This shows that the original version of the Chinn-Ito index is taken and every value is added by 2.66 (this is to take away all the negative values and it is multiplied by 10 to have an easier statistical reading. The transformed index (KAOPEN) has a minimum value of 7.71, a maximum value of 50.49, mean of 26.76, and a standard deviation of 16.18 for the observations in this particular dataset. However, it is important to note that the financial market is fully regulated when KAOPEN equals 0 and it is fully liberalized when KAOPEN equals 53.2. KAOPEN has a mean value that equals to 26.6. The original value or the original level of impact of a unit increase in the Chinn-Ito index can be found by dividing by 10 and then subtracting 2.66.

The standard control variables[31] for this research paper are the following: Initial GDP per Capita (constant 2005 US$), Investment (% of GDP), Inflation (%), Population Growth (%), Life Expectancy (Years), and School Enrolment (% Gross). The additional control variables included to avoid the problem of multicollinearity are the following: Savings (% of GDP) and Trade (% of GDP).

[31] The control variables were decided upon after looking at the most renowned papers in the growth literature, like the following authors: Islam (1995), Forbes (2000), Barro (2000), and Hausmann, Pritchett, and Rodrik (2004).

***Table 2.1:* Variable Description and Descriptive Statistics**								
Variable/Parameter	***Description of Variable***	***Data Source***	***Mean***	***Minimum***	***Maximum***	***Standard Deviation***	***Observations***	***Variable Type***
Real per Capita GDP Growth (Annual %)	*Real per capita GDP growth is based on constant 2005 US$. This is the dependent variable of interest and is the proxy measure for macroeconomic performance.*	*World Bank Data*	*3.941*	*-21.66297*	*56.84105*	*4.255258*	*1755*	*Dependent Variable: Measuring Macroeconomic Performance*
Foreign Direct Investment, Net Inflows (% of GDP)	*Foreign direct investment as a share of GDP is based on constant 2005 US$.*	*World Bank Data*	*2.790*	*-21.95122*	*466.5622*	*12.25781*	*1851*	*IFI Proxy Variable: Key Independent Variable of Interest*
Equity Foreign Portfolio Inflows (% of GDP)	*Portfolio equity includes net inflows from equity securities and direct purchases of shares in local stock markets represented as a share of GDP.*	*Global Financial Development Database*	*0.708*	*-4.775941*	*316.4705*	*12.06782*	*1852*	*IFI Proxy Variable: Key Independent Variable of Interest*
Non-Resident Bank Loans (% of GDP)	*Non-resident bank loans as a share of GDP is based on constant 2005 US$. This accounts for cross-border lending.*	*International Financial Statistics, IMF*	*66.97*	*0*	*4170.101*	*317.0486*	*905*	*IFI Proxy Variable: Key Independent Variable of Interest*
Financial Account (% of GDP)	*Current Account Balance (% of GDP) is used as a proxy for FA i.e. FA=-CA.*	*International Financial Statistics, IMF*	*2.437*	*-190.95*	*44.3769*	*16.17711*	*523*	*IFI Proxy Variable: Key Independent Variable of Interest*
Capital Account Openness: Chinn-Ito Index	*The index has a mean of 0 and ranges from -2.66 to +2.66, where -2.66 represents full capital control and +2.66 represents complete liberalization. However, for the purposes of technical simplicity, it has been parameterized by addition of 2.66 and multiplying with 10 e.g. KAOPEN=(chinnito+2.66)*10*	*International Financial Statistics, IMF*	*26.76*	*7.71105*	*50.49669*	*15.05006*	*1439*	*IFI Proxy Variable: Key Independent Variable of Interest*
Total Investment (% of GDP)	*Total Investment as a share of GDP is accumulated total gross investment in constant 2005 US$.*	*International Financial Statistics, IMF*	*24.02*	*-3.636*	*176.0546*	*10.43442*	*1190*	*Control Variable*
Gross Domestic Savings (% of GDP)	*Total domestic savings as a share of GDP is used as an alternative to total investments (due to multicollinearity problem).*	*International Financial Statistics, IMF*	*16.96*	*-120.65*	*83.13451*	*17.64589*	*1625*	*Control Variable*
Initial GDP per Capita (constant 2005 US$)	*Initial GDP per capita refers to the initial level of GDP per capita of every 5-year period (or 3-year period).*	*International Financial Statistics, IMF*	*9505.1*	*96.768*	*145456.3*	*15721.22*	*1762*	*Control Variable*
Inflation, consumer prices (Annual %)	*Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.*	*International Financial Statistics, IMF*	*27.81*	*-4.2534*	*6517.11*	*220.3279*	*1462*	*Control Variable*
Population growth (Annual %)	*Population growth (annual %) is the exponential rate of growth of midyear population.*	*United National Statistics Data*	*1.812*	*-4.104643*	*16.27661*	*1.595406*	*2325*	*Control Variable*
Life Expectancy, Total (Years)	*Total average life expectancy in years.*	*World Bank Data*	*63.84*	*22.95472*	*83.57805*	*11.40845*	*2176*	*Control Variable*
School Enrollment, Secondary (% Gross)	*Secondary over primary school enrolment is a significantly better reflection of educational attainment.*	*World Bank Data*	*61.45*	*0.24349*	*164.5681*	*34.15557*	*1477*	*Control Variable*
Trade (% of GDP)	*Trade is the sum of exports and imports of goods and services measured as a share of GDP.*	*IMF Data*	*79.28*	*0.5659665*	*447.8819*	*50.54554*	*1690*	*Control Variable*
Net Foreign Assets (% of GDP)	*Net foreign assets as a share of GDP is used as a control variable to take into account the de facto influence of IFI.*	*Lane-Milessi Ferretti (2006)*	*-0.301*	*-24.54762*	*14.51919*	*1.381884*	*1473*	*Control Variable*

2.7 Results

This section presents the regression results using the ordinary least squares (OLS) method, the instantaneous panel threshold regression (PTR), and the logistic smooth transition regression (LSTR) method. Regression analysis is carried out initially for all countries, and then specifically tailored for developing, transition and emerging market economies. In order to account for business cycle fluctuations, 5-year non-overlapping averages have been taken for all the variables of interest used in the regression analysis. The de facto measures of financial integration are presented as stylized facts. Therefore, while we look at the association of these financial flows with growth (only exploring at the level of endogeneity[32]), we do not conclude to policy-making references. The de jure measure of financial integration (capital account openness) is the lynchpin of this research paper as this is the only paper that uses the de jure measure of financial integration to determine the threshold (even though the same regression estimation methods are deployed for all the FI proxy variables, de facto and de jure).

Each table presents the results related to a specific measure of financial integration. Each table also contains regression findings for various country groups, which includes that of all economies in the dataset, then the developing economies, followed by the transition, and finally the emerging market economies. For each of these country groups, three types of estimation methods are deployed (aforementioned in this section) and they include the OLS, PTR, and LSTR methods. Table 2.2 reports our key set of the results, focusing on the relationship between the de jure measure of financial integration, proxied by Chinn-Ito index, and growth. Tables 2.3, 2.4, 2.5, and 2.6 present the results related to each de facto measure of financial integration.

Tables 2.2, 2.3, 2.4, 2.5, and 2.6 have the initial set of control variables followed by the proxy IFI variable denoted as KAOPEN, FDI, EFPI, CBL, and FA, where KAOPEN refers to the capital account openness index, CBL refers to cross-border lending (non-resident bank loans as a % of GDP), and FA refers to the financial account. Following the IFI proxy variable, the coefficients for the regime below the threshold and above the threshold are reported e.g. $KAOPEN-$

[32] The endogeneity problem exists for all forms of de facto measures of financial integration.

$T\ if\ KAOPEN < T$ and $KAOPEN - T\ if\ KAOPEN > T$ (example taken from table 2.2) respectively. Note that these are the coefficients for the PTR model. This is followed by the coefficients of the LSTR model for the 'low' regime and the 'high' regime[33], this is exemplified by the following denotation on the table: $W^{low}(KAOPEN - c^*)$ and $W^{high}(KAOPEN - c^*)$. *PTR (T)* or *LSTR (c*)* indicate the threshold level of the PTR model and LSTR model. The LSTR parameter, gamma, indicates the speed of transition from the 'low' regime to the 'high' regime (speed of transition from one regime to the other). This is followed by the tests of Gonzalez, Terasvirta, and van Djik (2005) that tests whether or not the regression model is linear or nonlinear[34] which is denoted by the following notations in the table '*LM Test (GTD 2005) H0: Linear Model*' and '*p-value nonlinearity*'. The second test of Gonzalez, Terasvirta, and van Djik (2005) tests for any remaining nonlinearities[35] (denoted by '*LM Test for remaining nonlinearities*' and '*p-value for remaining nonlinearity*' on each of the tables).

2.7.1 Threshold Regression Findings: Capital Account Openness (Chinn-Ito Index[36])

The de jure measure of financial integration (de jure measure of capital account openness) is the key independent variable of interest in this research paper. The contribution of this research papers stems from the threshold determination of capital account openness index. The OLS, PTR, and the LSTR estimation methods are deployed for all the countries in the dataset, for developing economies, transition economies, and emerging market economies separately. These findings are further validated by various robustness checks carried out in the appendix. The robustness checks (also illustrated for the de facto measures of financial integration) presented in appendix 2[37], include the (1) 3-Year Non-Overlapping Averages; (2) Lagged IFI

[33] Refer to the empirical framework section for conceptual clarification of the LSTR model and its mechanisms.
[34] The null hypothesis indicates that the model is linear and therefore this would mean the LSTR model is invalid for analytical purposes. The alternative hypothesis states that the model is nonlinear and therefore the LSTR model may be more appropriate.
[35] The null hypothesis for this test states is that there is a single threshold with two regimes. The alternative hypothesis for this test states that there are more than two regimes or there are multiple thresholds.
[36] This is the parameterized version of the Chinn-Ito index developed by Chinn and Ito (2006). Refer to the variable description to understand how the index has been parameterized.
[37] Refer to section 2.10.

Proxy Variables; (3) Post-1990 Estimations; these findings for KAOPEN are illustrated in tables 2.11, 2.16 and 2.21 respectively. Furthermore, the (4) Quadratic Estimations[38]; are carried out just for KAOPEN as robustness checks; they are not carried out for the other de facto measures of financial integration. The findings that are statistically insignificant in table 2.2, we will refer to the robustness checks to see if anything concrete can be found for policy deduction purposes.

Table 2.2 illustrates the relationship between capital account openness (KAOPEN) and growth. For all economies, the estimated OLS coefficient of KAOPEN is statistically insignificant for all significance levels. The threshold level of the PTR model is 21 (this is just below the mean and therefore indicates that the financial system is more regulated than it is liberalized). The coefficients for KAOPEN below and above this threshold level are 0.067 (statistically significant at 5%) and -0.037 (statistically significant at 1%). This indicates that it is growth enhancing when the financial market is partially liberalized, however, it is growth retarding after this threshold level as the financial market becomes more open. Note that this is the result of particular interest for all the countries in the dataset or the global economy on the whole. The high gamma value (equals 11) shown in the LSTR column indicates that the PTR model is better suited for analysis due to the high speed of transition from one regime to the other. Therefore, the inferences drawn from the LSTR column are not taken into consideration for analytical purposes. However, it must be noted that the coefficients of interest (coefficients below and above thresholds and coefficients for 'low' and 'high' regime) in the PTR and LSTR column are similar. The numbers of observations in the regression model are relatively high and the R-squared value has a respectably high value. Furthermore, the test for linearity suggests that the model is nonlinear and the test for measuring any remaining nonlinearities suggest that there is a single threshold (two regimes). These tests are found in the LSTR column.

For developing and transition economies, the coefficients of interest are mostly statistically insignificant. Therefore, this is not dissected further for analysis.

[38] This is presented in tables 2.22, 2.23, 2.24, and 2.25 for all the countries in the dataset, the developing, transition, and emerging economies respectively. Note that this is presented in "Appendix 2: Robustness Checks" under the sub-heading "Robustness Test 4: Quadratic Estimations" in section 2.10.

Only for transition economies, for the LSTR column, the low regime has a coefficient that equals 0.172 (statistically significant at 10%) where the threshold level is 21. Furthermore, it can be seen that the model is nonlinear and there are no more than two regimes. A reference should be made in the robustness checks illustrated in the appendix to test to see if there are any policymaking deductions that can be taken onboard. In table 2.16, the regression analysis carried out using lagged values for capital account openness shows a statistically significant (at 1%) finding for developing economies. Due to the fact that the gamma value is so high, the LSTR is not taken into consideration. The threshold level of the PTR is 47, this means that the financial markets are highly liberalized. The coefficient below this threshold is insignificant, but the threshold above this value is -0.278 (statistically significant at 1% significance levels). Furthermore, the linearity test suggests that the model is nonlinear and that there are no more than two regimes. For developing economies, the quadratic estimations in table 2.23[39] show that the threshold level is at 25.25. This result is consistent with the quadratic illustration[40] of KAOPEN, which illustrates a threshold level of approximately 32. For transition economies, the threshold levels for PTR and LSTR are 22 and 21 respectively. While, the coefficient for the 'low' regime in the LSTR column is 0.172 and statistically significant at 10%, the coefficients for the PTR column are both insignificant above and below the threshold. Furthermore, unfortunately other than one finding, none of the robustness checks provide any empirically or statistically significant findings. This finding from the robustness checks section shows the threshold level to be 10; below this threshold the coefficient (0.78 and statistically significant at 10|%) is growth enhancing but above this threshold the coefficient is statistically insignificant, therefore inconclusive. Reverting to the graphical illustrations also is not a solution, because, the threshold level seems to be very low, but, the maxima is not definitive.

For emerging market economies, the OLS estimated coefficient is 0.054. This suggests that for a unit increase in KAOPEN, growth increases by 0.054%. This is shown in regression model 10 of table 2.2. The LSTR column (regression model 12) shows that the coefficients for the 'low' and 'high' regimes are 0.236 (statistically

[39] Refer to appendix 2 under the sub-section "Robustness Test 4: Quadratic Estimations" in section 2.10.

[40] Refer to figure 2.50 in appendix 1 (refer to section 2.9.3) under the sub-section "Explorative Data Analysis 3: Quadratic Relationships".

significant at 1%) and 0.042 (statistically significant at 1%). The threshold level of the LSTR is 14. This suggests that when the financial markets of emerging market economies are more regulated the economy grows at 0.236%. While it is not growth retarding above this threshold, there is a significant fall in the average growth rate down to 0.042%. The LSTR column shows that the model is linear (null hypothesis rejected at the with 90% confidence) and that the regression model has a single threshold (fail to reject the null hypothesis). The gamma parameter equals 15, which suggests that the PTR is a significantly better measure than the LSTR due to the high transition speed from one regime to the other. The threshold level of the PTR is 15. The coefficients below and above this threshold are 0.244 (statistically significant at 1%) and 0.041 (statistically significant at 5%). The results of the coefficients are similar to that acquired by the LSTR. These coefficients reiterate the fact that for emerging market economies, the economy tends to grow faster when there is more regulation rather than when it is more liberalized.

Table 2.2:* De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth Time Period: 1970-2013 (5-year non-overlapping averages) Income Groups: Developing, Transition, and Emerging Market Economies Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.81e-05** *(1.41e-05)*	*-2.51e-05** *(1.42e-05)*	*-2.51e-05** *(1.42e-05)*	*-7.17e-05* *(7.62e-05)*	*-7.47e-05* *(7.64e-05)*	*-7.48e-05* *(7.65e-05)*	*-0.00038**** *(0.000102)*	*-0.0003**** *(0.000102)*	*-0.00032*** *(0.000101)*	*-0.00167*** *(8.22e-05)*	*-0.000148** *(8.04e-05)*	*-0.000149** *(8.05e-05)*
Invest to GDP	*0.0218* *(0.0135)*	*0.0214* *(0.0133)*	*0.0214* *(0.0133)*	*0.0254** *(0.0142)*	*0.0257** *(0.0140)*	*0.0257** *(0.0140)*	*0.0358* *(0.0272)*	*0.0381* *(0.0276)*	*0.0378* *(0.0274)*	*0.0444* *(0.0394)*	*0.0415* *(0.0393)*	*0.0417* *(0.0392)*
NFA to GDP	*0.572*** *(0.222)*	*0.585**** *(0.221)*	*0.585**** *(0.221)*	*0.607*** *(0.285)*	*0.616*** *(0.281)*	*0.616*** *(0.281)*	*1.058* *(0.884)*	*0.732* *(0.852)*	*0.752* *(0.856)*	*2.738*** *(1.116)*	*2.842*** *(1.092)*	*2.842*** *(1.093)*
FDI	*0.289**** *(0.112)*	*0.294**** *(0.112)*	*0.294**** *(0.112)*	*0.397**** *(0.130)*	*0.400**** *(0.130)*	*0.400**** *(0.130)*	*0.0611* *(0.0945)*	*0.0582* *(0.0914)*	*0.0575* *(0.0910)*	*0.135* *(0.101)*	*0.146* *(0.0982)*	*0.146* *(0.0985)*
Population Growth	*0.496**** *(0.145)*	*0.512**** *(0.146)*	*0.512**** *(0.146)*	*0.672**** *(0.189)*	*0.678**** *(0.190)*	*0.678**** *(0.190)*	*0.792*** *(0.391)*	*0.795*** *(0.387)*	*0.795*** *(0.386)*	*0.209* *(0.300)*	*0.196* *(0.292)*	*0.196* *(0.293)*
Inflation	*-0.0187*** *(0.000167)*	*-0.0183**** *(0.000142)*	*-0.0183**** *(0.000143)*	*-0.0177**** *(0.000140)*	*-0.00175**** *(0.000128)*	*-0.00175**** *(0.000128)*	*-0.0266**** *(0.00933)*	*-0.0245**** *(0.00867)*	*-0.0245**** *(0.00855)*	*-0.00252**** *(0.000555)*	*-0.00215*** *(0.000566)*	*-0.00216*** *(0.000566)*
Literacy Rate	*-0.0122** *(0.00741)*	*-0.0122** *(0.00739)*	*-0.0122** *(0.00739)*	*-0.0113* *(0.00920)*	*-0.0109* *(0.00919)*	*-0.0108* *(0.00919)*	*-0.0175* *(0.0158)*	*-0.0153* *(0.0157)*	*-0.0156* *(0.0155)*	*-0.0351**** *(0.0118)*	*-0.0379**** *(0.0117)*	*-0.0379**** *(0.0117)*
Trade to GDP	*0.00361* *(0.00663)*	*0.00240* *(0.00655)*	*0.00238* *(0.00655)*	*0.0129* *(0.00996)*	*0.0117* *(0.00988)*	*0.0117* *(0.00988)*	*0.0104* *(0.0195)*	*0.0142* *(0.0196)*	*0.0142* *(0.0196)*	*-0.00316* *(0.0114)*	*-0.00362* *(0.0114)*	*-0.00356* *(0.0113)*
$KAOP$	*-0.0117* *(0.00944)*			*-0.00187* *(0.0121)*			*0.0295* *(0.0260)*			*0.0542**** *(0.0143)*		
$KAOP - T \; if \; KAOP < T$		*0.0673*** *(0.0285)*			*0.0424* *(0.0320)*			*0.153* *(0.0942)*			*0.244**** *(0.0780)*	
$KAOP - T \; if \; KAOP > T$		*-0.0366**** *(0.0132)*			*-0.0219* *(0.0179)*			*-0.00601* *(0.0369)*			*0.0407*** *(0.0158)*	
$W^{low}(KAOP - c^*)$			*0.0653*** *(0.0280)*			*0.0408* *(0.0312)*			*0.172** *(0.103)*			*0.236**** *(0.0768)*
$W^{high}(KAOP - c^*)$			*-0.0357**** *(0.0130)*			*-0.0212* *(0.0175)*			*-0.00499* *(0.0354)*			*0.0418**** *(0.0156)*
Constant	*3.380**** *(0.542)*	*3.610**** *(0.570)*	*3.587**** *(0.569)*	*2.121**** *(0.649)*	*2.415**** *(0.759)*	*2.396**** *(0.757)*	*5.896**** *(1.447)*	*6.763**** *(1.346)*	*6.778**** *(1.340)*	*5.088**** *(1.290)*	*6.403**** *(1.353)*	*6.366**** *(1.353)*
Observations	*914*	*914*	*914*	*615*	*615*	*615*	*99*	*99*	*99*	*136*	*136*	*136*
R^2	*0.244*	*0.249*	*0.249*	*0.308*	*0.310*	*0.310*	*0.373*	*0.387*	*0.389*	*0.423*	*0.442*	*0.441*
PTR (T) or LSTR (c)*		*21*	*22*		*22*	*23*		*22*	*21*		*15*	*14*
LSTR parameter (γ)*			*11*			*9*			*14*			*15*
LM Test (GTD 2005) H0: Linear Model			*41.46*			*23.83*			*20.49*			*19.55*
p-value nonlinearity			*0.00131*			*0.04161*			*0.0889*			*0.09359*
LM Test for remaining nonlinearities			*13.22*			*5.446*			*13.88*			*11.21*
p-value remaining nonlinearity			*0.778*			*0.998*			*0.459*			*0.598*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

2.7.2 Stylized Factual Findings

This section will look at the stylized factual findings for the relationship between financial integration and growth using the de facto measures of financial integration. These findings do not formulate to be the center piece or the focal point of this research paper due to the problem of endogeneity and reverse causality. It is important to recognize that it is challenging to address the endogeneity problem in the context of the PTR and LSTR models. There have been recent developments that have attempted to address this issue (Kourtellos et al. 2015)[41], requiring the use of structural threshold modeling, but this paper has not explored this approach as of yet, leaving it as a subject for future research. Furthermore, there have been research papers that have already addressed these endogeneity issues. Nonetheless, the association between the de facto measures of financial integration on growth are investigated and presented in tables 2.3, 2.4, 2.5, and 2.6. Therefore, the results reported here should be interpreted only from the point of association of the de facto FI measures with growth but do not deduce policy making inferences due to possible endogeneity bias.

2.7.2.1 Stylized Factual Analysis 1: FDI (% of GDP)

Table 2.3 illustrates the econometric relationship between Foreign Direct Investment[42] (% of GDP) and growth. Before commencing with the analysis of the threshold regressions, it must be noted that there is an existing body of literature that has underlined the problem of endogeneity (reverse causality as well) in the FDI-growth literature. Furthermore, there have been research papers that have addressed these endogeneity issues. For all economies, regression model 1 looks at the linear OLS estimation results. This indicates that if FDI increases by 1% then growth increases by 0.121% and this is statistically significant at the 1%, 5%, and 10% significance levels. The PTR model indicates that the threshold level of FDI is at 38% of GDP. Below this threshold level, 1% increase in FDI increases growth by 0.0828% and above this threshold level, 1% increase in FDI increases growth by 1.583%. Both these coefficients are statistically significant at the 1% significance level. For the LSTR model, the threshold FDI level is at 55% of GDP. The 'low' regime has a

[41] Kourtellos, Stengos, and Tan (2015) Structural Threshold Regression, Econometric Theory, 1-34.
[42] Note that the data acquired for the FDI variable is for net inflows.

coefficient of 0.140, the 'high' regime has a coefficient of 16.16, and they are both statistically significant at the 1% significance level. The reason why the growth rate may increase so drastically after this threshold level is that there are only a handful of observations above this particular threshold, which are associated with excessively high growth rates. The parameter, gamma (gamma equals to one), indicates a very low transition speed from one regime to the other and therefore the LSTR model is more appropriate for analytical purposes than the PTR model given that the linear model test shows that we reject the null hypothesis. However, the test for remaining nonlinearities shows that we must reject the null hypothesis and this indicates there are more than two regimes and therefore this is a multiple threshold model, which is not taken into consideration by the LSTR[43] model. This particular report only accounts for single thresholds (no more than two regimes). Furthermore, there are 885 observations and the R-squared value is above 42% (for regression models 1, 2, and 3) that means the selection of the control variables is well suited for the model.

For developing economies, the OLS estimation indicates that a 1% increase in FDI results in a 0.242% increase in growth. This is statistically significant at the 1% significance level. This is also higher than the coefficient of FDI on growth for all countries. The FDI threshold level of the PTR model is 25% of GDP. The coefficients below the threshold and above the threshold are 0.165 and 0.979 respectively and they are both statistically significant at the 1% significance level. The threshold level for the LSTR model is at 24% of GDP. The coefficients in the 'low' and 'high' regimes are 0.195 and 0.942 respectively. The fact that the gamma value that equals to one indicates that the LSTR is more suitable than the PTR model. The null hypothesis of for the test of linearity is rejected, however, we also reject the null hypothesis for remaining nonlinearities (this suggests there are multiple thresholds). However, the LSTR model shows that FDI causes a higher increase in growth above the threshold than below it (even though in both cases it is growth enhancing for developing countries). For transition economies, the OLS estimation for the FDI coefficient is statistically insignificant. The PTR model indicates a threshold level for FDI that equals 16% of GDP. The coefficients below the threshold and above the threshold are 0.419 (statistically significant at 5% significance levels) and -2.603 (statistically

[43] The LSTR model is only applicable for regression models that have two regimes and therefore has a single threshold.

significant at 1% significance level). However, the gamma value (equals one) indicates that the LSTR is more appropriate than the PTR model for analytical purposes. The threshold level of the LSTR model is 19%. The null hypothesis for the test of nonlinearity is rejected and we fail to reject the test for remaining nonlinearities. The coefficients of the 'low' and 'high' regime for the LSTR model are 0.018 (statistically insignificant) and -5.729 (statistically significant at the 1% significance level). However, the only flaw with this particular regression model is the number of observations (101 observations) there are for transition economies (note that there are 5-year non-overlapping averages).

For emerging market economies, the OLS estimation of the FDI coefficient is statistically insignificant. The threshold level of the PTR model is 8% of GDP. The coefficients above the threshold and below the threshold are 0.462 (statistically significant at 1%) and -0.348 (statistically significant at 1%). However, the gamma value equaling one indicates the LSTR model is more appropriate. The threshold level of the LSTR model is 9% of GDP. The coefficients of the 'low' and 'high' regime are 0.461 and -0.347. This indicates that below the threshold value of 9% of GDP the economy grows at 0.461% and above this threshold, the economy shrinks at 0.347% (for 1% increase in FDI inflow). The results are further justified given that the null hypothesis for the test of nonlinearity is rejected and furthermore we fail to reject the null hypothesis of the test for remaining nonlinearities (indicating a single threshold). However, albeit the numbers of observations are larger than that for transition economies, the number of observations is still fairly small (only 126 observations). This is the only limitation of this particular regression model.

2.7.2.2 Stylized Factual Analysis 2: EFPI (% of GDP)

Table 2.4 depicts the econometric relationship between EFPI and growth for all countries in the dataset, for developing economies, transition economies, and emerging market economies. The OLS, PTR, and LSTR estimation methods are deployed for each country group. For all economies, referring to regression model 1 or the OLS estimation column, 1% increase in EFPI results in a reduction in growth by 0.015% (statistically significant at 1%). Quick reference to the speed of transition parameter, gamma (equates to 15), indicates that the LSTR model is not appropriate

for analysis. Furthermore, it confirms that the model is nonlinear (result significant at 5% significance level) and that there are no more than two regimes (single threshold). The threshold level for the PTR model is 0% of GDP. The coefficients above and below this threshold are 0.823 (statistically significant at 5%) and -0.016 (statistically significant at 1%). This means that if there is EFPI inflow then this reduces growth by 0.016% and if there is outflow of EFPI (domestic investment in foreign securities) then growth increases by 0.823%. Furthermore, the deductions are strengthened given the high number of observations for this sample group as well as the fact that these results are robust.

For developing economies, the coefficient of EFPI is statistically insignificant under the OLS estimation method. The gamma value (equates to one) indicates the PTR model is not appropriate for analysis. Therefore, attention is shifted to the LSTR estimation method (refer to regression model 6 in table 2.4). The threshold level is 0%. The coefficients of the 'low' and 'high' regime are 3.576 (statistically significant at 5%) and 0.0361 (statistically insignificant). Therefore, we can conclude that when domestic investors in developing countries invest in foreign securities, it is growth enhancing. The null hypothesis for the test of nonlinearity is rejected at the 10% significance level. We fail to reject the null hypothesis of any remaining nonlinearities at all significance levels. It can be inferred that we are 90% confident about the deductions induced from this regression model. For transition economies, the coefficient of EFPI under OLS estimation is statistically insignificant. The PTR model is not used for analysis, as the gamma value equals one. The threshold level of the LSTR model is at 2%. The coefficients of the 'low' and 'high' regime are 1.07 (statistically insignificant) and 44.77 (statistically significant at 10%). However, the even though the linearity test can be rejected at the 10% significance level, the test for remaining nonlinearities suggest that there are multiple thresholds for the case of transition economies.

For emerging market economies, under the OLS estimation, increase in EFPI by 1% increases growth by 0.978%. This is statistically significant at the 5% significance level. The threshold level of the PTR model is equal to zero. The coefficients below and above the threshold are 2.397 (statistically significant at 1%) and 0.791 (statistically significant at 10%). This indicates that it is beneficial to invest

in foreign equities rather than have foreigners investing in domestic securities. However, the LSTR technique is more applicable for policy oriented issues given that the value of gamma equals one. The coefficient of the high regime is statistically insignificant but the coefficient of the low regime is 3.125 and it is statistically significant at 1%. This complies with the results acquired for the previous country groups and reiterates the fact that it is beneficial for the home country if domestic investors invest in foreign securities. However, we cannot say if it is growth retarding if foreign investors invest in domestic securities as the result is statistically insignificant. The linearity test shows that the model is linear, however, the test for remaining nonlinearities shows that there are multiple thresholds i.e. more than two regimes (statistically significant at 5%).

2.7.2.3 Stylized Factual Analysis 3: Non-Resident Bank Loans (% of GDP)

Table 2.5 looks at the relationship between non-resident bank loans (cross-border lending denoted as CBL) and growth. For all economies, under the OLS estimator, the coefficient of CBL indicates that it is growth retarding and it is statistically significant at 5%. This means that if CBL increases by 1% growth reduces by 0.04%. The threshold level of CBL for the PTR model is 1% of GDP. The coefficients below and above the threshold are 3.664 (statistically insignificant) and -0.416 (statistically significant at 5%). The gamma value from the LSTR model indicates that the speed of transition from one regime to the other is relatively high and therefore the PTR model is more appropriate for analytical and/or policy-oriented purposes than the LSTR model. The tests of the LSTR model also confirm that the model is nonlinear and that there are no more than two regimes (single threshold).

For developing economies, under the OLS estimation method, the coefficient of the CBL is -0.012. This indicates that a unit increase in CBL causes a reduction in growth by 0.012%. The threshold level for PTR is 1%. The coefficient below is statistically insignificant but the coefficient above is -0.013 and statistically significant at 10%. The gamma parameter of LSTR is 15; therefore, it is certain that PTR is more appropriate than the LSTR. Furthermore, the tests of the LSTR model also confirm that the model is nonlinear and that there are no more than two regimes (single threshold). Hence, for developing economies, it cannot be said that the impact

of cross-border lending abroad as the coefficient is statistically insignificant; however, borrowing money from abroad is growth retarding.

For transition economies, the CBL coefficient is -0.039 under the OLS estimation, indicating a decline in growth with increased non-resident bank loans. The threshold level of the PTR is 1%. The coefficients below and above this threshold are 8.394 (statistically insignificant) and -0.475 (statistically significant at 5%). The gamma parameter in the LSTR column is 15, which indicates the PTR model is more applicable than the LSTR. Furthermore, tests of LSTR model also confirm that the model is nonlinear and there is a single threshold. For emerging market economies, the OLS estimated coefficient of CBL is statistically insignificant. The PTR column in this case should not be considered for analytical purposes because the value of gamma equals to two; therefore, the LSTR should be the focal point of analysis. The results are in direct contrast to the results obtained for developing, transition and all economies. For emerging markets, the LSTR threshold level is 52% (this is also drastically different from the threshold levels for other country groups). The coefficients of the 'low' and 'high' regimes are -0.045 (statistically significant at 10%) and 4.212 (statistically significant at 1%). This suggests that above this threshold it is in fact growth enhancing; this contradicts the results that is obtained for developing and transition economies. However, while it can be concluded that the model is nonlinear, it is also confirmed with 99% confidence that there are more than two regimes (multiple threshold). Furthermore, another limitation may be the lack of observations.

2.7.2.4 Stylized Factual Analysis 4: Financial Account (% of GDP)

Table 2.6 looks at the relationship between the financial account (FA) and growth. For this particular analysis, the theoretical assumption taken is that financial account is equal to the negative value of the current account i.e. $FA=-CA$. When FA increases by 1%, growth reduces by 0.053% (statistically significant at 1%) under the OLS estimation for the all countries group, in regression model 1. The PTR column indicates that the threshold level is at 30% of GDP. The coefficients below and above this threshold level are -0.056 (statistically significant at 1%) and 0.055 (statistically insignificant). The gamma parameter in the LSTR column shows that it is 6, which

suggests that while the speed of transition may be fast, we would still choose to use the LSTR as the appropriate technical model for analytical purposes. The coefficients of the 'low' and 'high' regime are -0.055 (statistically significant at 1%) and 0.036 (statistically insignificant).

For developing economies, the OLS estimation for the FA coefficient indicates that 1% increase in FA results in a reduction of growth by 0.061% (statistically significant at 1%). The LSTR column will not be taken into consideration because the gamma value is equal to 11. The PTR threshold value equals 29. The coefficients below and above the threshold are -0.067 (statistically significant at 1%) and 0.100 (statistically insignificant). For transition and emerging market economies, the number of observation do not exceed 60 and it may be open to interpretation if these results have any statistical importance. For emerging market economies, the OLS, and PTR estimated coefficients of interest are statistically insignificant. For the LSTR column (regression model 12), the coefficients of the 'low' and 'high' regime are -0.117 (statistically significant at 5%) and -5.01 (statistically significant at 10%). It can be concluded that the model is nonlinear, but the test of remaining nonlinearities shows that there are more than two regimes (multiple thresholds).

2.7.2.5 Stylized Facts: Summary of the Results

The stylized factual findings deduced from this research paper are the following (note that the deductions are noted for each of the de facto IFI proxy variables and then the subsequent findings for each country groups are also noted):

1. FDI (% of GDP)
    a. For all economies, the threshold level of FDI is at 55% of GDP. While both regimes indicate a positive increase in growth, above the threshold growth increases significantly higher than that below the threshold. However, tests of nonlinearity indicate the existence of multiple thresholds.
    b. For developing economies, the threshold level of FDI is at 24% of GDP. While coefficients below and above the threshold are both

growth enhancing, results indicate there is a larger increase in growth above the threshold than below. However, there are multiple thresholds.

c. For transition economies, the threshold level of FDI is at 19% of GDP. Interestingly, while it is growth enhancing below the threshold, it is, in fact, growth retarding above this threshold. However, observations are low.

d. For emerging market economies, the threshold level of FDI is at 9% of GDP. Quite surprisingly, despite the low threshold level, it is growth enhancing below the threshold but it is, in fact, growth retarding above this threshold. However, observations are low.

2. EFPI (% of GDP)

   a. For all economies, the threshold level is at 0-3%[44] of GDP, where it is growth enhancing (0.823%) below this threshold and growth retarding (-0.016%) above this threshold.

   b. For developing economies, the threshold level is at 0-2% of GDP, growth enhancing below and above the threshold. However, there is a larger increase in the growth rate below the threshold than above it.

   c. For transition economies, the threshold level is at 2% of GDP. Growth effects are both positive, below and above the threshold, but, interestingly, growth increases significantly higher above the threshold. However, tests indicate that there are multiple thresholds.

   d. For emerging market economies, the threshold level is at 0% of GDP. The growth effect above the threshold is statistically insignificant, but below the threshold, it is positive and significant.

3. Non-Resident Bank Loans (% of GDP)

   a. For all economies, developing, and transition economies, the threshold level of CBL is at 1% of GDP. The growth effects are negative above this threshold for all country groups. The growth effects are inconclusive below the threshold as they are not statistically significant.

[44] This incorporates the threshold findings for the 'robustness checks' section as well.

b. For emerging market economies, the results are inconclusive as the model is linear and the coefficient is statistically insignificant. However, the coefficients for the linear model in the robustness checks show that it is growth retarding overall.

4. Financial Account (% of GDP)
    a. For all economies and developing economies, the threshold level is at 30-31% of GDP. The growth effect below the threshold is growth retarding, but above the threshold, it is statistically insignificant. However, for all economies, the test results point to multiple thresholds.
    b. For transition economies, threshold level is at 1% of GDP. The growth effects are negative below the threshold, but above the threshold, the growth effect is inconclusive. However, the observations are very low.
    c. For emerging market economies, the threshold level is at 16% of GDP. The growth effects both below and above the threshold, are negative. However, the observations are very low and the robustness checks give differing results for the growth effects as well as for the threshold measures.

These findings show that for developing economies, taking FDI, for instance, is that regardless of the level of FDI as a percentage of GDP, it will not be growth retarding. This is applicable for transition economies as well. However, for emerging economies, there is need for caution, as FDI above a certain threshold tends to be growth retarding. However, once again, it is crucial to emphasize that these results may be subject to potential endogeneity bias, and therefore should be treated cautiously. For developing, transition, and emerging economies, EFPI below 1-4% is growth enhancing, and in many cases, above this threshold, it is, in fact, growth retarding. This suggests that domestic investors in these economies, especially in developing and transition economies, are better off purchasing foreign securities as opposed to foreign investors buying domestic securities. Cross-border lending does not seem to enhance growth levels for developing and transition economies; therefore, the deployment of foreign funds must be used with caution. In terms of the level of financial openness, there is no doubt that higher levels of capital account openness is often associated with negative growth effects, probably due to a range of factors that

destabilize the macroeconomic indicators of known relevance. The results show that governments should regulate the market to reap the highest growth levels in the case of the benefit of the global economy overall.

***Table 2.3:* FDI (% of GDP) on Growth** **Time Period: 1970-2013 (5-year non-overlapping averages)** **Income Groups: Developing, Transition, and Emerging Market Economies** **Estimation Methods: Ordinary Least Squares (OLS), PTR (Threshold Regression), and LSTR (Logistic Smooth Transition Regression)**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-1.72e-0.5* (9.66e-06)*	*-1.72e-0.5* (9.66e-06)*	*-1.72e-0.5* (9.66e-06)*	*-9.68e-05 (6.13e-05)*	*-0.000113 (7.15e-05)*	*-0.000115* (6.93e-05)*	*-0.000258*** (9.16e-05)*	*-0.000211** (8.65e-05)*	*-0.00026** (8.74e-05)*	*-0.000115 (8.94e-05)*	*-9.97e-05 (8.67e-05)*	*-1.00e-04 (8.67e-05)*
Investment to GDP	*0.164*** (0.0347)*	*0.120*** (0.0217)*	*0.121*** (0.0209)*	*0.140*** (0.0316)*	*0.0969*** (0.0266)*	*0.0940*** (0.0251)*	*0.0122 (0.104)*	*0.00664 (0.102)*	*0.00444 (0.105)*	*0.172*** (0.0292)*	*0.165*** (0.0278)*	*0.165*** (0.0278)*
Population Growth	*0.548*** (0.123)*	*0.549*** (0.129)*	*0.551*** (0.126)*	*0.714*** (0.164)*	*0.658*** (0.162)*	*0.657*** (0.162)*	*0.927* (0.536)*	*0.841 (0.506)*	*0.834* (0.500)*	*0.649* (0.341)*	*0.654** (0.323)*	*0.653** (0.323)*
Inflation	*-0.00656** (0.00166)*	*-0.00653*** (0.00162)*	*-0.00647*** (0.00161)*	*-0.0064*** (0.00164)*	*-0.00644*** (0.00161)*	*-0.0064*** (0.00161)*	*-0.00901*** (0.00172)*	*-0.00846*** (0.00176)*	*-0.0089*** (0.00169)*	*-0.0051** (0.00229)*	*-0.00480** (0.00221)*	*-0.00480** (0.00221)*
Literacy Rate	*-0.0173*** (0.00663)*	*-0.0177*** (0.00653)*	*-0.0194*** (0.00652)*	*-0.0163* (0.00872)*	*-0.0164* (0.00856)*	*-0.0163* (0.00856)*	*-0.0473* (0.0271)*	*0.0055848 (0.0271)*	*-0.0539** (0.0263)*	*-0.0321** (0.0132)*	*-0.0385*** (0.0129)*	*-0.0385*** (0.0129)*
Life Expectancy	*0.0242 (-0.0213)*	*0.0403** (-0.0194)*	*0.0384** (0.0190)*	*0.0462** (0.0230)*	*0.0643*** (0.0241)*	*0.0661*** (0.0236)*	*0.320 (0.222)*	*0.310 (0.215)*	*0.313 (0.221)*	*0.0768* (0.0414)*	*0.0285 (0.0372)*	*0.0286 (0.0372)*
FDI	*0.121*** (0.0390)*			*0.242*** (0.0645)*			*0.206 (0.156)*			*0.104 (0.108)*		
$FDI - T \; if \; FDI < T$		*0.0828*** (0.0276)*			*0.165*** (0.0552)*			*0.419** (0.199)*			*0.462*** (0.129)*	
$FDI - T \; if \; FDI > T$		*1.583*** (0.188)*			*0.979*** (0.165)*			*-2.603*** (0.952)*			*-0.348*** (0.0727)*	
$W^{low}(FDI - c^*)$			*0.140*** (0.0242)*			*0.195*** (0.0508)*			*0.0176 (0.0925)*			*0.461*** (0.128)*
$W^{high}(FDI - c^*)$			*16.16*** (1.906)*			*0.942*** (0.135)*			*-5.729** (2.834)*			*-0.347*** (0.0724)*
Constant	*-1.615 (1.032)*	*1.685 (1.540)*	*6.286*** (1.721)*	*-3.006*** (1.128)*	*1.357 (1.830)*	*1.977 (1.692)*	*-14.58 (13.28)*	*-7.606 (10.90)*	*-13.64 (12.16)*	*-3.641 (2.846)*	*3.155 (3.144)*	*3.132 (3.141)*
Observations	*885*	*885*	*885*	*587*	*587*	*587*	*101*	*101*	*101*	*126*	*126*	*126*
R^2	*0.423*	*0.470*	*0.473*	*0.465*	*0.504*	*0.505*	*0.517*	*0.544*	*0.532*	*0.556*	*0.594*	*0.594*
PTR (T) or LSTR (c)*		*38*	*55*		*25*	*24*		*16*	*19*		*8*	*9*
LSTR parameter (γ)*			*1*			*1*			*1*			*1*
LM Test (GTD 2005) H0: Linear Model			*25.64*			*21.47*			*25.73*			*26.95*
p-value nonlinearity			*0.0287*			*0.0902*			*0.0204*			*0.0259*
LM Test for remaining nonlinearities			*182.8*			*48.69*			*19.750*			*14.76*
p-value remaining nonlinearity			*0*			*1.01e-05*			*0.638*			*0.395*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.4: EFPI (% of GDP) on Growth ***Time Period: 1970-2013 (5-year non-overlapping averages)*** ***Income Groups: Developing, Transition, and Emerging Market Economies*** ***Estimation Methods: Ordinary Least Squares (OLS), PTR (Threshold Regression), and LSTR (Logistic Smooth Transition Regression)***												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.59e-05* *(1.02e-05)*	*-2.59e-05** *(1.02e-05)*	*-2.77e-05*** *(1.01e-05)*	*-1.42e-05* *(9.01e-05)*	*-3.04e-05* *(9.17e-05)*	*-2.15e-05* *(9.07e-05)*	*-0.000180** *(0.000102)*	*-0.000180** *(0.000102)*	*-0.000171** *(0.000102)*	*-0.00020** *(8.63e-05)*	*-0.00020** *(8.56e-05)*	*-0.00019** *(8.51e-05)*
Trade to GDP	*0.0195** *(0.00901)*	*0.0199** *(0.00906)*	*0.0202** *(0.00914)*	*0.0333** *(0.0152)*	*0.0340** *(0.0152)*	*0.0339** *(0.0152)*	*-0.00102* *(0.0107)*	*-0.00330* *(0.0109)*	*-0.00224* *(0.0108)*	*3.12e-05* *(0.00497)*	*0.00158* *(0.00517)*	*0.00216* *(0.00519)*
Population Growth	*0.728*** *(0.129)*	*0.724*** *(0.129)*	*0.724*** *(0.131)*	*0.973*** *(0.184)*	*0.978*** *(0.183)*	*0.981*** *(0.184)*	*1.090** *(0.584)*	*1.145** *(0.589)*	*1.122** *(0.588)*	*0.322* *(0.320)*	*0.329* *(0.320)*	*0.362* *(0.318)*
Inflation	*-0.0033*** *(0.00119)*	*-0.0033*** *(0.00119)*	*-0.00336*** *(0.00119)*	*-0.0032*** *(0.00115)*	*-0.00322*** *(0.00113)*	*-0.00324*** *(0.00114)*	*-0.0099*** *(0.00160)*	*-0.00986*** *(0.00161)*	*-0.00986*** *(0.00161)*	*-0.00542** *(0.00212)*	*-0.00546** *(0.00214)*	*-0.00541** *(0.00212)*
Literacy Rate	*-0.0159** *(0.00710)*	*-0.0160** *(0.00710)*	*-0.0167** *(0.00709)*	*-0.0191** *(0.00876)*	*-0.0204** *(0.00878)*	*-0.0196** *(0.00877)*	*-0.0385* *(0.0290)*	*-0.0375* *(0.0292)*	*-0.0377* *(0.0292)*	*-0.0561*** *(0.0148)*	*-0.0554*** *(0.0148)*	*-0.0549*** *(0.0147)*
Life Expectancy	*0.0413* *(0.0287)*	*0.0426* *(0.0285)*	*0.0423* *(0.0284)*	*0.0549** *(0.0298)*	*0.0560** *(0.0296)*	*0.0557** *(0.0296)*	*0.237** *(0.105)*	*0.255** *(0.107)*	*0.242** *(0.106)*	*0.172*** *(0.0494)*	*0.168*** *(0.0500)*	*0.160*** *(0.0499)*
$EFPI$	*-0.0151** *(0.00876)*			*0.100* *(0.0764)*			*0.572* *(1.133)*			*0.978** *(0.417)*		
$EFPI - T \; if \; EFPI < T$		*0.823** *(0.320)*			*1.819*** *(0.610)*			*-0.310* *(1.237)*			*2.397*** *(0.550)*	
$EFPI - T \; if \; EFPI > T$		*-0.0157** *(0.00886)*			*-0.103** *(0.0595)*			*112.0** *(48.73)*			*0.791** *(0.424)*	
$W^{low}(EFPI - c^*)$			*1.020*** *(0.392)*			*3.576** *(1.718)*			*1.066* *(1.022)*			*3.125*** *(0.562)*
$W^{high}(EFPI - c^*)$			*-0.0153** *(0.00879)*			*0.0361* *(0.0452)*			*44.77** *(25.65)*			*0.605* *(0.377)*
Constant	*-0.281* *(1.238)*	*-0.363* *(1.231)*	*-0.362* *(1.231)*	*-2.571** *(1.179)*	*-0.877* *(1.235)*	*-2.691** *(1.177)*	*-8.917* *(6.735)*	*-10.60* *(7.230)*	*-6.874* *(6.691)*	*-3.508* *(3.065)*	*-3.331* *(3.093)*	*-3.003* *(3.077)*
Observations	*1,066*	*1,066*	*1,066*	*714*	*714*	*714*	*118*	*118*	*118*	*145*	*145*	*145*
R^2	*0.181*	*0.183*	*0.184*	*0.212*	*0.219*	*0.217*	*0.419*	*0.424*	*0.423*	*0.465*	*0.470*	*0.476*
PTR (T) or LSTR (c)*		*0*	*0*		*1*	*0*		*2*	*2*		*0*	*0*
LSTR parameter (γ)*			*15*			*1*			*1*			*1*
LM Test (GTD 2005) H0: Linear Model			*27.76*			*23.63*			*22.824*			*21.23*
p-value nonlinearity			*0.0338*			*0.0626*			*0.0631*			*0.0795*
LM Test for remaining nonlinearities			*15.99*			*19.37*			*61.12*			*29.47*
p-value remaining nonlinearity			*0.341*			*0.250*			*1.41e-08*			*0.0209*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.5: ***Non-Resident Bank Loans (% of GDP) on Growth***
Time Period: 1970-2013 (5-year non-overlapping averages)
Income Groups: Developing, Transition, and Emerging Market Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*1.56e-06*	*1.47e-06*	*5.24e-06*	*3.42e-05*	*1.66e-05*	*3.90e-05*	*-0.000106*	*-0.000139*	*-0.000153*	*-0.000194**	*-0.000167*	*-0.000170*
	(2.35e-05)	*(2.35e-05)*	*(2.41e-05)*	*(0.000110)*	*(0.000112)*	*(0.000112)*	*(0.000103)*	*(0.000111)*	*(0.000115)*	*(0.000109)*	*(0.000105)*	*(0.000104)*
Trade to GDP	*0.0343***	*0.0349***	*0.0349***	*0.0427***	*0.0431***	*0.0437***	*-0.00170*	*0.00189*	*0.00210*	*-0.000904*	*0.00225*	*0.00159*
	(0.0163)	*(0.0162)*	*(0.0163)*	*(0.0205)*	*(0.0205)*	*(0.0205)*	*(0.0111)*	*(0.0117)*	*(0.0121)*	*(0.00621)*	*(0.00630)*	*(0.00596)*
Population Growth	*0.907****	*0.916****	*0.913****	*1.285****	*1.308****	*1.320****	*1.010**	*1.198**	*1.108**	*0.318*	*0.385*	*0.334*
	(0.163)	*(0.163)*	*(0.163)*	*(0.226)*	*(0.223)*	*(0.230)*	*(0.600)*	*(0.636)*	*(0.604)*	*(0.340)*	*(0.341)*	*(0.338)*
Inflation	*-0.00332***	*-0.00318***	*-0.00326***	*-0.0038***	*-0.00329***	*-0.00331***	*-0.011****	*-0.00877****	*-0.00940****	*-0.0099****	*-0.0100****	*-0.0099****
	(0.00147)	*(0.00138)*	*(0.00143)*	*(0.00137)*	*(0.00129)*	*(0.00132)*	*(0.00162)*	*(0.00177)*	*(0.00174)*	*(0.00148)*	*(0.00147)*	*(0.00149)*
Literacy Rate	*-0.0192**	*-0.0194***	*-0.0192**	*-0.0172*	*-0.0162*	*-0.0165*	*-0.0367*	*-0.0288*	*-0.0436*	*-0.0400***	*-0.0339**	*-0.0367***
	(0.00983)	*(0.00980)*	*(0.00981)*	*(0.0121)*	*(0.0119)*	*(0.0119)*	*(0.0294)*	*(0.0287)*	*(0.0293)*	*(0.0181)*	*(0.0183)*	*(0.0177)*
Life Expectancy	*0.0415*	*0.0413*	*0.0385*	*0.0554***	*0.0560***	*0.0523**	*0.220**	*0.202**	*0.198**	*0.139***	*0.133***	*0.131***
	(0.0261)	*(0.0261)*	*(0.0263)*	*(0.0279)*	*(0.0281)*	*(0.0283)*	*(0.120)*	*(0.110)*	*(0.114)*	*(0.0570)*	*(0.0546)*	*(0.0551)*
CBL	*-0.0369***			*-0.0114**			*-0.0387**			*-0.0354*		
	(0.0175)			*(0.00671)*			*(0.0229)*			*(0.0436)*		
$CBL - T\ if\ CBL < T$		*3.664*			*3.287*			*8.394*			*-0.0795***	
		(2.231)			*(2.181)*			*(5.632)*			*(0.0396)*	
$CBL - T\ if\ CBL > T$		*-0.0416***			*-0.0127**			*-0.0475***			*0.337****	
		(0.0177)			*(0.00684)*			*(0.0198)*			*(0.0887)*	
$W^{low}(CBL - c^*)$			*0.791*			*0.981*			*0.576*			*-0.0447**
			(0.572)			*(0.635)*			*(0.514)*			*(0.0270)*
$W^{high}(CBL - c^*)$			*-0.0360***			*-0.0112**			*-0.0528****			*4.212****
			(0.0173)			*(0.00662)*			*(0.0192)*			*(0.781)*
Constant	*-1.095*	*-1.010*	*-1.183*	*-3.752***	*-3.764***	*-3.918***	*-7.606*	*-6.933*	*-5.146*	*-1.486*	*-4.624*	*-3.684*
	(1.410)	*(1.410)*	*(1.411)*	*(1.799)*	*(1.804)*	*(1.843)*	*(7.659)*	*(7.225)*	*(7.227)*	*(3.985)*	*(4.130)*	*(4.032)*
Observations	*630*	*630*	*630*	*455*	*455*	*455*	*115*	*115*	*115*	*97*	*97*	*97*
R^2	*0.274*	*0.284*	*0.280*	*0.290*	*0.299*	*0.298*	*0.418*	*0.462*	*0.436*	*0.532*	*0.553*	*0.560*
PTR (T) or LSTR (c)*		*1*	*2*		*1*	*2*		*1*	*5*		*39*	*52*
LSTR parameter (γ)*			*7*			*15*			*15*			*2*
LM Test (GTD 2005) H0: Linear Model			*21.82*			*24.94*			*19.080*			*19.947*
p-value nonlinearity			*0.0258*			*0.0185*			*0.0615*			*0.0535*
LM Test for remaining nonlinearities			*12.82*			*8.442*			*8.985*			*25.88*
p-value remaining nonlinearity			*0.305*			*0.673*			*0.623*			*0.00677*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the results table. CBL refers to cross-border lending which is non-resident bank loans as a percentage of GDP.

***Table 2.6:* Financial Account (% of GDP) on Growth**
Time Period: 1970-2013 (5-year non-overlapping averages)
Income Groups: Developing, Transition, and Emerging Market Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-3.97e-05** (8.97e-06)*	*-4.04e-05*** (9.08e-06)*	*-4.01e-05*** (9.10e-06)*	*-1.37e-06** (2.35e-05)*	*-1.47e-06** (2.35e-05)*	*-1.47e-06 (2.35e-05)*	*-0.000167 (0.000151)*	*-0.000162 (0.000158)*	*-0.000167 (0.000156)*	*-0.00019* (0.000114)*	*-0.000210* (0.000118)*	*-0.000207* (0.000113)*
Trade to GDP	*-3.97e-05** (8.97e-06)*	*-4.04e-05*** (9.08e-06)*	*-4.01e-05*** (9.10e-06)*	*-0.00238*** (7.83e-05)*	*-0.00239*** (7.91e-05)*	*-0.00239*** (7.90e-05)*	*0.0888 (0.0711)*	*0.0938 (0.0699)5*	*0.101 (0.0715)*	*0.180*** (0.0390)*	*0.178*** (0.0392)*	*0.184*** (0.0400)*
Population Growth	*0.264** (0.122)*	*0.258** (0.122)*	*0.261** (0.122)*	*0.367* (0.207)*	*0.356* (0.208)*	*0.357* (0.208)*	*0.266 (0.380)*	*0.273 (0.379)*	*0.331 (0.397)*	*0.299 (0.444)*	*0.380 (0.464)*	*0.544 (0.495)*
Inflation	*0.0461** (0.0193)*	*0.0446** (0.0195)*	*0.0449** (0.0196)*	*0.0375* (0.0207)*	*0.0346 (0.0210)*	*-0.0195 (0.0348)*	*-0.0758 (0.0502)*	*-0.0763 (0.0481)*	*-0.0820* (0.0485)*	*-0.0195 (0.0348)*	*-0.0224 (0.0347)*	*-0.0252 (0.0343)*
Literacy Rate	*-0.0139* (0.00720)*	*-0.0139* (0.00718)*	*-0.0138* (0.00721)*	*-0.00247 (0.0103)*	*-0.00268 (0.0103)*	*-0.00261 (0.0103)*	*-0.0417** (0.0177)*	*-0.0456** (0.0185)*	*-0.0411** (0.0177)*	*-0.00899 (0.0147)*	*-0.00663 (0.0150)*	*-0.00359 (0.0147)*
Life Expectancy	*-0.0257 (0.0226)*	*-0.0255 (0.0225)*	*-0.0259 (0.0227)*	*0.00456 (0.0252)*	*0.00537 (0.0250)*	*0.00517 (0.0251)*	*-0.181 (0.181)*	*-0.188 (0.185)*	*-0.197 (0.187)*	*-0.00240 (0.0350)*	*0.000133 (0.0370)*	*-0.00177 (0.0366)*
FA	*-0.0532*** (0.0149)*			*-0.0607*** (0.0198)*			*-0.0819 (0.103)*			*-0.0402 (0.0517)*		
$FA - T \; if \; FA < T$		*-0.0555*** (0.0156)*			*-0.0661*** (0.0212)*			*-8.096* (4.702)*			*-0.0924 (0.0612)*	
$FA - T \; if \; FA > T$		*0.0547 (0.102)*			*0.100 (0.113)*			*-0.0411 (0.118)*			*0.0212 (0.113)*	
$W^{low}(FA - c^*)$			*-0.0545*** (0.0155)*			*-0.0657*** (0.0211)*			*-9.041 (5.944)*			*-0.117** (0.0550)*
$W^{high}(FA - c^*)$			*0.0360 (0.0938)*			*0.0948 (0.108)*			*-0.0700 (0.107)*			*-5.006* (2.591)*
Constant	*3.822*** (1.382)*	*2.223 (1.454)*	*2.191 (1.466)*	*1.938 (1.623)*	*0.0689 (1.838)*	*0.0822 (1.842)*	*21.09* (11.33)*	*21.37* (11.54)*	*21.73* (11.63)*	*1.668 (3.116)*	*1.137 (3.379)*	*-1.322 (3.230)*
Observations	*388*	*388*	*388*	*253*	*253*	*253*	*50*	*50*	*50*	*58*	*58*	*58*
R^2	*0.368*	*0.369*	*0.369*	*0.270*	*0.273*	*0.273*	*0.363*	*0.387*	*0.383*	*0.547*	*0.554*	*0.575*
PTR (T) or LSTR (c)*		*30*	*31*		*30*	*30*		*1*	*1*		*0*	*16*
LSTR parameter (γ)*			*6*			*11*			*13*			*2*
LM Test (GTD 2005) H0: Linear Model			*15.04*			*16.17*			*16.249*			*24.38*
p-value nonlinearity			*0.0900*			*0.0855*			*0.0715*			*0.0109*
LM Test for remaining nonlinearities			*15.62*			*9.388*			*8.223*			*39.89*
p-value remaining nonlinearity			*0.0752*			*0.402*			*0.512*			*7.96e-06*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note 1: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the results table.
Note 2: FA refers to the financial account. The results presented above are for those of the Current Account Balance (% of GDP), this is used as a proxy for the financial account (refer to the theoretical intuition of FA=-CA).

2.8 Conclusion

This research paper examines the effect of financial integration on growth for 175 countries over the period 1970-2013. The econometric methodologies deployed for this research paper are the panel threshold regression (PTR) model and the logistic smooth transition regression (LSTR) model. The OLS estimations are also presented. Various other robustness checks are conducted to validate the findings.

In order to gain a deeper understanding of the key findings of this research paper, it is important to understand that the transformed KAOPEN variable ranges from 0 to 53.2, where 0 indicates full regulation and 53.2 indicates a fully liberalized financial market. The mean of the KAOPEN variable is 26.2, indicating moderate levels of regulation (from the viewpoint of capital control) or a moderate level of financial openness (when viewing it from the perspective of capital account liberalization). For instance, for the country case of Bangladesh, the KAOPEN variable has a mean of 12.3, while the highest level of openness the countries financial market reaches according to the index is 25.3, which is still below the mean or the moderate level of financial openness. In the data available for the year 2013, Bangladesh has a KAOPEN level that shows a high level of regulation; KAOPEN equals 14.7, indicating a level of financial openness significantly below the mean. On the contrary, Brazil records high levels of financial openness, where KAOPEN rises up to 38.2 in the year 2006, however, after the global financial crisis, the financial markets are more regulated and the KAOPEN index falls to 25.2 indicating a moderate level of financial regulation. A similar trend can be observed for both Malaysia and Indonesia, where the financial markets are both lax on financial regulation, recording KAOPEN levels that both equate to 37.5 before the crisis but falls to 14.7 and 25.3 respectively after the crisis, implying higher levels of regulation in the form of enhanced capital controls. India for instance however, tends to consistently display a high level of financial regulation, which averages to 14.7 and does not increase after the global financial crisis. In the context of examining countries in the African continent, the example of Nigeria shows that the financial markets are liberalized towards the end of the late 1990s, increasing KAOPEN level from 7.7 to 22.5 but then falling to 20.7 by 2013. On average, the value of KAOPEN

over the stated time period for all the developing countries stands at 22.4, which shows fairly high level of regulation.

The inferences deduced for the de jure measure of financial integration are the following:

1. For all economies, threshold level of KAOPEN is at 21[45], this indicates a moderately high level of financial regulation or a low level of financial openness. It is growth enhancing below this threshold and growth retarding above this threshold. For instance, while Bangladesh and India have a level of financial openness below this threshold, Malaysia, Indonesia, Brazil and Nigeria all have openness levels that are higher than this threshold.
2. For developing economies, the threshold level of KAOPEN is at 47 (acquired from the robustness checks). This is indicative of a very high threshold level, indicating a very high level of financial openness, as the maximum value of KAOPEN is 53.2, which indicates full openness. The growth effect below this threshold is inconclusive, but it is negative above this threshold and the magnitude of the coefficient shows that it is severely damaging for growth. Amongst developing countries, the few countries that have had a level of financial openness above this threshold are the following: Argentina (in the year 1997 and 1998), Botswana, Chile (from 2004 to 2008), Costa Rica (2011 to 2013), Cyprus (2007 to 2011), Ecuador (2006 to 2009), Honduras (1970 to 1977), Kazakhstan (1991 to 1995), Lebanon (1970 to 1997), Egypt (2001 to 2009), Gambia (1994 to 2013), Malaysia (1982 to 1992), Indonesia (1982 to 1996), Jordan (2000 to 2013), Mexico (1970 to 1981), Nicaragua (1970 to 2013), Peru (1997 to 2013), Romania (2006 to 2013), Uganda (2000 to 2013), Yemen (2002 to 2013) and Zambia (2000 to 2013).
3. For transition economies, threshold level of KAOPEN is at 10 (acquired from the robustness checks in the appendix[46]), where the only deduction of relevance is that it is growth enhancing below this threshold. The threshold level is indicative of a high level of financial market regulation or low level of

[45] The transformed KAOPEN variable ranges from 0 to 53.2, where 0 indicates full regulation and 53.2 indicates a fully liberalized financial market. The mean of the KAOPEN variable is 26.2
[46] Refer to table 2.11.

financial openness. There are a few transition economies that have had a KAOPEN level below this threshold and this includes Belarus (1997 to 2001), China (1987 to 1992), Cambodia (1973 to 1974 and 1996 to 1999), Hungary (1986 to 1992), Poland (1986 to 1992), Romania (1976 to 1995), Russia (1999 to 2001), Turkmenistan (1996 to 2007), Ukraine (2009 to 2013), Uzbekistan (2010 to 2013) and Vietnam (1980 to 1992). Our regression results suggest that below this threshold, the aforementioned countries would have increasing growth levels, this is largely consistent across all the countries.

4. For emerging market economies, the threshold level of KAOPEN is at 15. The growth effects are positive below and above this threshold, but the growth rate increases after it crosses the threshold. While the threshold level for KAOPEN found for emerging market economies indicates a low level of financial openness or a high level of regulation, it is observed that more than 50% of emerging market economies in the dataset have a KAOPEN level that is higher than 15, averaging around 23.2, which is still lower than the average level of KAOPEN but it means, according to the regression results, that 50% of these emerging market economies record higher growth levels above this low threshold.

For the global economy on the whole, the policy recommendation is to partially liberalize, or moderately regulate, then the rewards of financial integration can be fully realized, with increasing growth levels below this particular threshold, but growth retarding above this threshold. For developing economies, the threshold level of openness may well be high, but, the coefficient below the threshold is statistically insignificant and above the threshold the coefficient is negative. Therefore, it would be wrong to assume that it is perhaps to the benefit of developing economies if the financial markets are more open due to the high threshold, but because shows that it is negative above the threshold, and given the magnitude of the coefficient, it shows how harmful a highly liberalized financial market can be for developing economies, particularly due to the fragilities it will cause to the macroeconomic conditions. Interestingly, considerable importance should be given to the openness of financial markets of transition economies (despite the fact that numerous findings show that it is statistically insignificant) as the threshold level of

optimality is very low, which indicates that a highly regulated market optimizes growth.

For emerging market economies however, the growth effects are higher with more financial openness (as it is growth enhancing both below and above the threshold). This is in stark contrast to the deductions made for the other country groups (as well as for the global economy – all the countries in the dataset), where the tendency is to increase up to a certain threshold, after which it is growth retarding. This goes to show the capacity of emerging markets and their financial institutions to absorb (net) capital inflows. However, it must also be noted that it is much better for emerging markets to moderately regulate rather than be fully open, because a drop in the growth rate is observed, even though it is not negative.

2.8.1 Contribution to Field of Research

The contributions that this research paper (chapter 2) makes to the existing literature in the associated field of research are the following:

1. The traditionally used Panel Threshold Regression (PTR) model or the Panel Threshold Regression (PTR) model introduced by Hansen (1999) and/or the extension by Caner and Hansen (2004) are commonly used in the existing literature. This methodology uses the endogenous interaction variables as the threshold variables. While each paper makes an additional contribution to the literature by focusing on differing institutional factors, most of these papers often do not address the threshold value of the key variable of interest in the first place. This by no means discredits the researching prowess of the indirect researching channels, which is in fact a motivation for the author of this report, but this issue must first be addressed before addressing the threshold levels of the interaction terms. This is the prime agenda of this particular research paper. Instead of focusing on a wide variety of institutional factors or multiple channels of influence, the direct channel (for various IFI proxy measures), threshold values are calculated. This is probably a prelude to focusing on interaction terms for further research purposes.

2. The repercussions of EFPI on the macroeconomic scale was investigated by Durham (2004), along with the effects of FDI. The motivation or perhaps, one of the fundamental driving factors behind investigating the threshold measures stems from Durham's paper on absorptive capacities. However, Durham (2004) used a cross-sectional OLS regression methodology, taking into account the absorptive capacities, without threshold measures. This paper addresses the issue of the direct threshold measure, but the interaction terms are not considered for this particular paper.
3. The index developed by Chinn and Ito (2006), is academically recognized as the Chinn-Ito index. This is formally recognized as the de jure measure of capital account openness. The research papers that use threshold techniques have not thus far used a de jure measure of financial openness to determine a threshold level. This research paper uses the Chinn-Ito index as a direct threshold proxy variable for financial integration. The results acquired from this particular variable are in fact thought provoking and interesting for further research purposes e.g. using interaction terms endogenously.
4. This research paper embodies a cross-comparative study effectively for developing, transition, and emerging market economies. The literature does not have sufficient focus on transition and emerging economies, in particular, and therefore, this is a focused and directed addition to the literature. Furthermore, it incorporates an analysis for all regression models for the global economy.
5. Research papers that deploy Hansen's (1999) and/or Caner and Hansen's (2004) threshold techniques fail to address the problem of heteroscedasticity. For instance, Chen and Quang (2014) use excellent interaction variables to underpin and underline various channels of influence on growth. However, they do not discuss the problem of heteroscedasticity. This research paper tests for heteroscedasticity in the threshold models and addresses this problem altogether.
6. Arguably, the most fundamental statistical or econometrical contribution that this research paper makes is that of using the logistic smooth transition regression (LSTR) methodology. This technique is identical to the one used by Raphael et al. (2012) where they investigate the threshold level of inflation. Hansen's (1999) threshold methodology is the most commonly used

technique; however, LSTR provides a stern advancement, by looking at the transition speed from one regime to another, which determines the more appropriate estimator the PTR or the LSTR.

7. Gonzalez, Terasvirta, and van Dijk (2005) test for nonlinearities firstly looks at whether the regression model is linear and secondly it tests whether or not there are any remaining thresholds i.e. whether or not the regression model has more than two regimes (note that the LSTR or the PTR only accounts for two regimes). This test is not used in the research papers that use threshold techniques in the IFI-growth literature. This is a fundamental flaw not to determine whether it is appropriate to examine the existence of a threshold in the first place. Furthermore, it is erroneous to come to a definitive conclusion that there is one particular threshold and deduce inferences that may in fact be misleading. For instance, the results are rather interesting for the FDI variable in this research paper. However, after close examination, when one notices that there are multiple thresholds in this regression model, one cannot take the coefficients of the two regimes seriously due to the existence of more than two regimes. This is a technical adjustment that must be made for the research papers that deploy the threshold technique.

2.8.2 Suggestions for Further Work

For further work, the definitive advancement that can be made from this particular research report is to use interaction terms in the threshold regressions. It would be interesting to explore to what extent the effect of financial integration is conditional on institutional capacity. For instance, the legal and political and other institutional factors (this is because relevant financial institutional factors are often interacted) of interest should be explored to definitively pinpoint the threshold levels to alert governments and policymakers alike. Furthermore, an interesting research trajectory would be to focus on the effects of financial integration on the tradable sector, thereby decomposing growth effects distinctively.

2.9 Appendix 1: Explorative Data Analysis

2.9.1 Explorative Data Analysis 1: Historical Trends

In this section, the historical background of financial integration with respect to proxy variables used to capture it in this research paper is illustrated for developing, transition, and emerging market economies. The time-period for these time series graphs will span from 1970-2013, however, it is important to note that not all the proxy variables have perfect data availability in the aforementioned period. The key points that can be taken from this section is that there is a tendency for the de facto measures of financial integration to be volatile, especially for EFPI and NRBL.

Panel 1 illustrates the historical trends in series for all economies in the dataset. FDI and EFPI (EFPI only increases up to 2% of GDP) show a gradual increase over time and there is a sudden fall due to the global financial crisis in 2008-09. For non-resident bank loans and the financial account, there is an unavailability of data – data starts after 1995 and 2000 respectively. The de jure measure of capital account openness shows a gradual increase from 1970, with a hiccup in the mid-80s and during the global financial crisis.

Panel 2 illustrates the historical background for developing economies in the dataset. For developing economies (a large proportion of countries in the dataset is comprised of developing countries), FDI and EFPI (note that the increase in EFPI is only by 1-3%) steadily increase over time. There is a rapid increase noticed for non-resident bank loans and net financial account over a short period. The de jure measure of capital account openness initially falls in the early 80s, but recovers in the 90s and there is a steady increase up until the hiccup of the global recession.

Panel 3 illustrates the historical background for transition economies in the dataset. Initially, the level of FDI is very low for transition economies, but there is a sharp increase up until 2009. EFPI behaves erratically, where two clear peaks can be observed. Non-resident bank loans increase sharply but reaches levels far below than the world average or the average of developing economies. The financial account increases but there is a sharp decline in recent years (improvement in the performance

of the current account of transition economies). Capital account openness index shows highly regulated financial markets in the 80s, but sharp increase since.

Panel 4 illustrates the historical background for emerging market economies. There is a gradual increase in the FDI over time. However, the EFPI levels are substantially low (lower than world average) for EMEs, even though there is a sharp increase followed by a sharp decrease in EFPI. Non-resident bank loans fluctuate erratically. Emerging markets regulate their financial markets up until 1990, and then there is a steady increase in the openness of the financial systems.

***Panel 2.1:* Historical Background for All Economies (1970-2013)**

***Figure 2.1:* FDI (% of |GDP)**

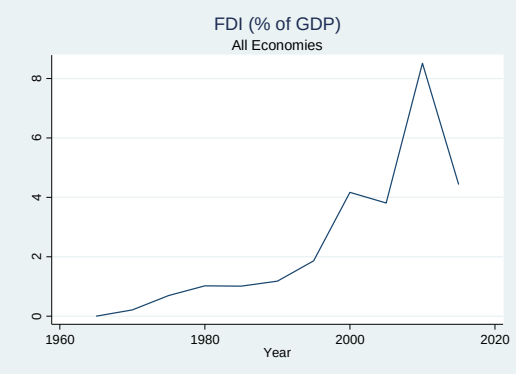


***Figure 2.2:* EFPI (% of GDP)**

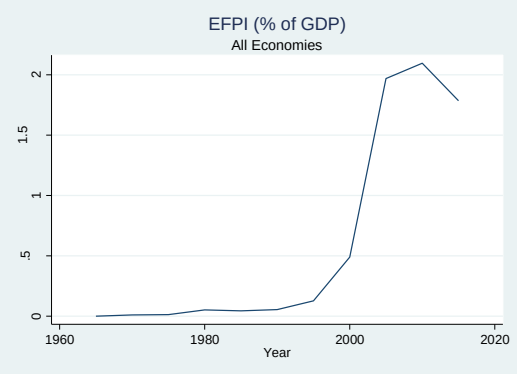


***Figure 2.3:* Non-Resident Bank Loan (% of GDP)**

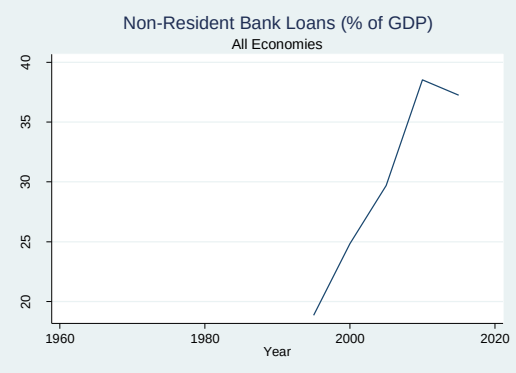


***Figure 2.4:* Net Financial Account (% of |GDP)**

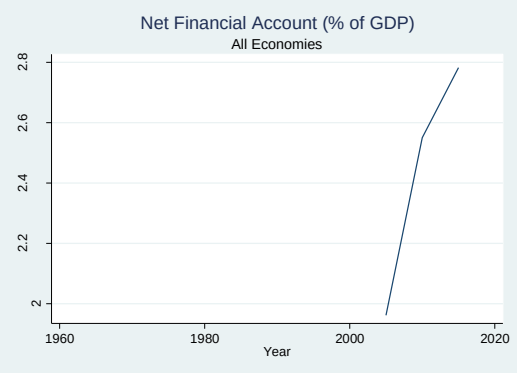
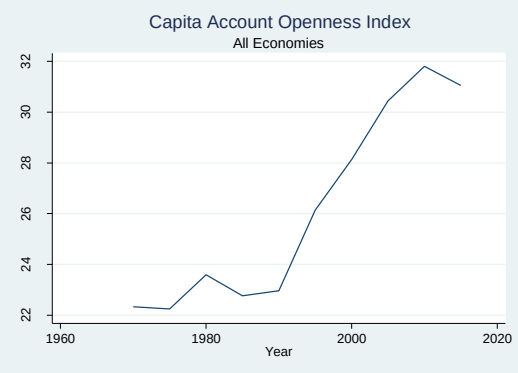


***Figure 2.5:* Chinn-Ito Index (De Jure Measure of Capital Account Openness)**



Panel 2.2: Historical Background for Developing Economies (1970-2013)

Figure 2.6: FDI (% of \|GDP)

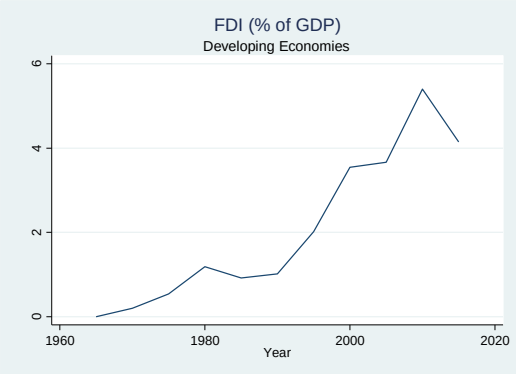


Figure 2.7: EFPI (% of GDP)

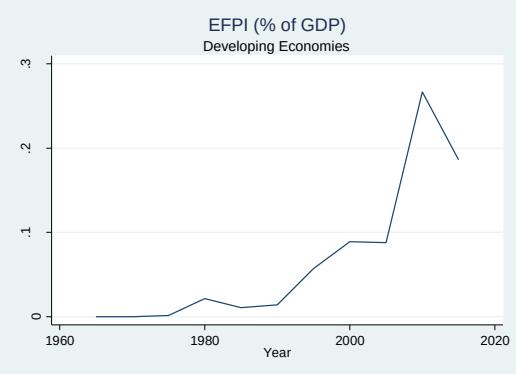


Figure 2.8: Non-Resident Bank Loan (% of GDP)

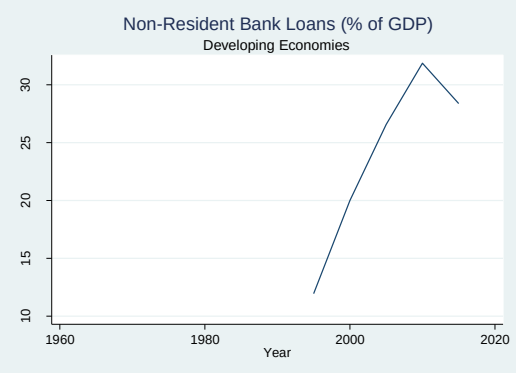


Figure 2.9: Net Financial Account (% of \|GDP)

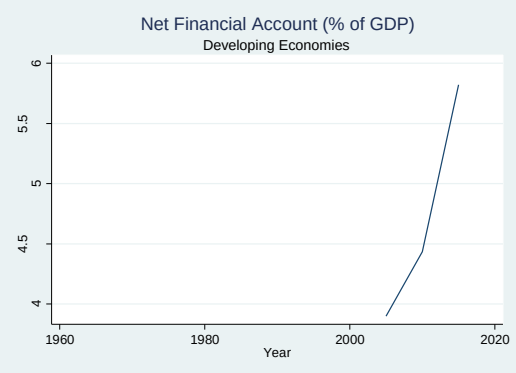
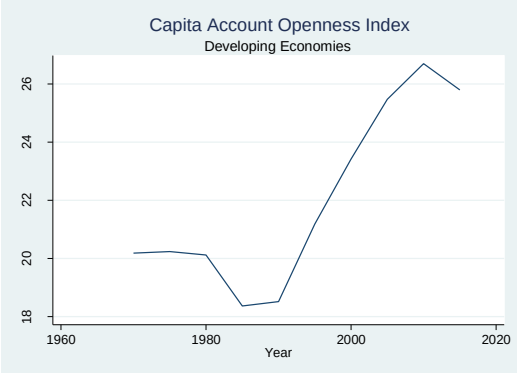


Figure 2.10: Chinn-Ito Index (De Jure Measure of Capital Account Openness)



Panel 2.3: *Historical Background for Transition Economies (1970-2013)*

Figure 2.11: *FDI (% of \|GDP)*

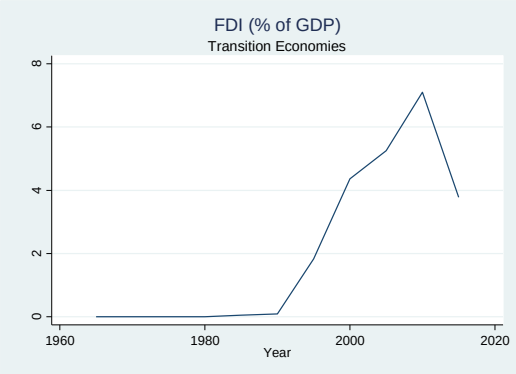


Figure 2.12: *EFPI (% of GDP)*

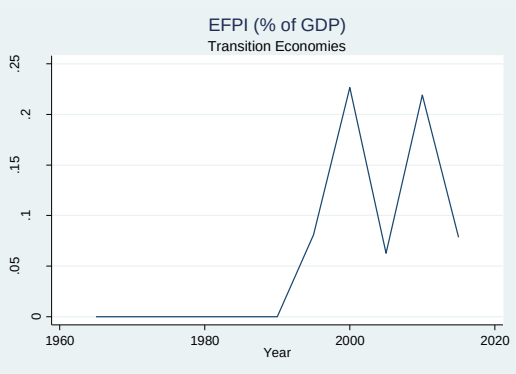


Figure 2.13: *Non-Resident Bank Loan (% of GDP)*

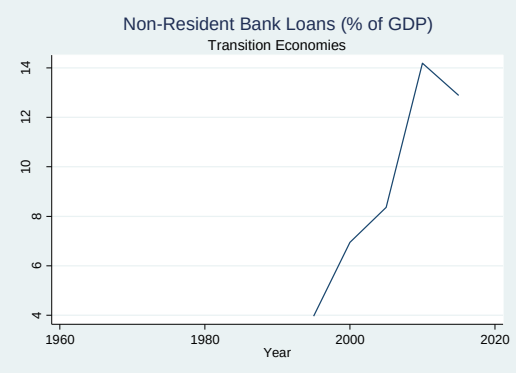


Figure 2.14: *Net Financial Account (% of \|GDP)*

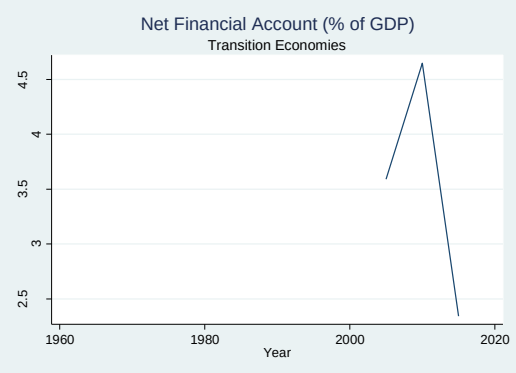
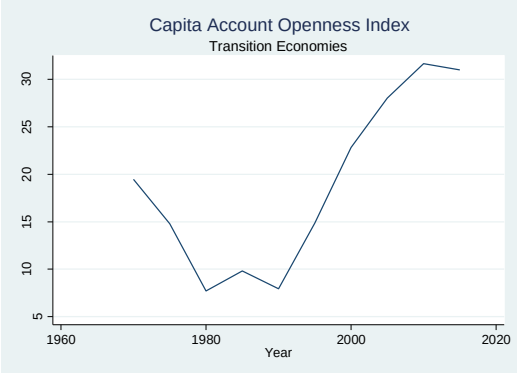


Figure 2.15: *Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.4:* Historical Background for Emerging Market Economies (1970-2013)**

***Figure 2.16:* FDI (% of |GDP)**

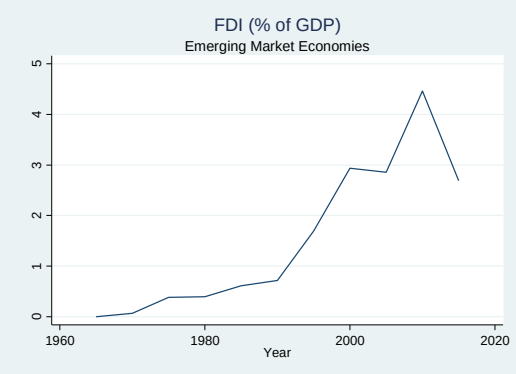


***Figure 2.17:* EFPI (% of GDP)**

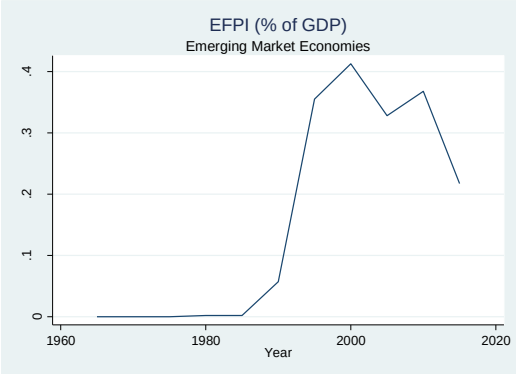


***Figure 2.18:* Non-Resident Bank Loan (% of GDP)**

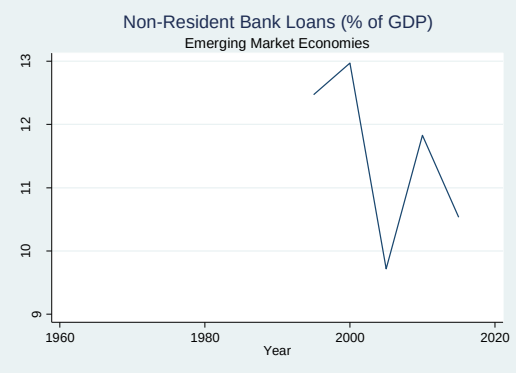


***Figure 2.19:* Net Financial Account (% of |GDP)**

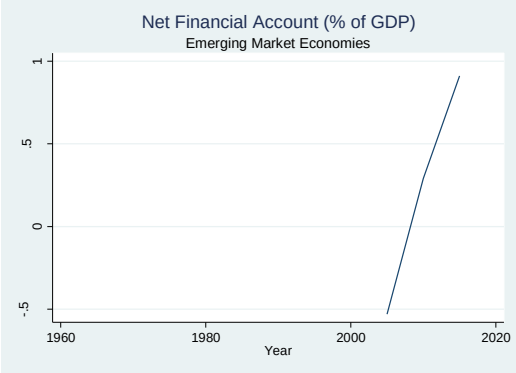
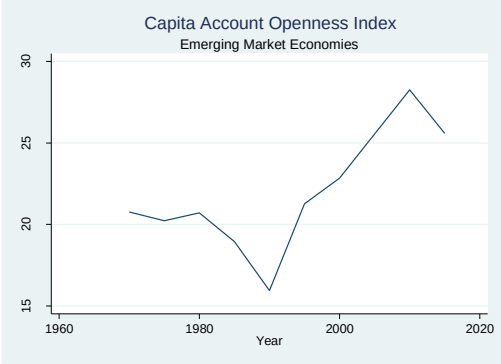


***Figure 2.20:* Chinn-Ito Index (De Jure Measure of Capital Account Openness)**



2.9.2 Explorative Data Analysis 2: Scatter Graphs

This section will look at the illustrative relationship (via the use of scatter graphs and regression i.e. the line of best fit) between the dependent variable of interest (Real GDP Growth) and the key independent variables of interest (the five proxy variables of international financial integration). Panel 5 illustrates the relationship between the dependent variable of interest used to measure macroeconomic performance and proxy variables for IFI for all economies in the dataset. Figures 2.21, 2.22, 2.23, 2.24, and 2.25 do not explicitly illustrate a precise and/or a definitive relationship for all the countries included in the dataset. Figure 2.21 indicates a weak positive relationship between FDI and growth. Figure 2.23 indicates a weak negative relationship between cross-border lending and growth.

Panel 6 illustrates the relationship between the dependent variable of interest used to measure macroeconomic performance and proxy variables for IFI for the developing economies in the dataset. Figure 2.26 indicates a positive relationship between FDI and growth. Figure 2.27 illustrates a weak positive relationship between EFPI and growth in developing economies. Figures 2.28 and 2.29 do not illustrate a definitive relationship. Figure 2.30 shows that for developing countries, both the highest and the lowest growth rates are seen when the financial markets are highly regulated. However, it is important to note that there is more consistency in the growth rate (less volatility) as the developing economies liberalize their financial markets more. The fitted line on the other hand, does not show any distinctive relationship between the two variables of interest.

Panel 7 illustrates the relationship between the dependent variable of interest used to measure macroeconomic performance and proxy variables for IFI for the transition economies in the dataset. Figure 2.31 illustrates a relatively strong positive relationship between FDI and growth for transition economies. Figure 2.32 illustrates a weak relationship between EFPI and growth. Figure 2.33 and 2.34 do not exhibit any noticeable relationships. Figure 2.35 exhibits a very weak negative relationship between capital account openness and growth. However, the highest growth rate for transition economies is observed when the financial markets are highly regulated.

Panel 8 illustrates the relationship between the dependent variable of interest used to measure macroeconomic performance and proxy variables for IFI for emerging market economies in the dataset. Figures 2.36 and 2.37 exhibit a positive relationship between FDI and growth and EFPI and growth respectively. There is a weak negative relationship between cross-border lending and growth and financial account measure and growth in figures 2.38 and 2.39 respectively.

***Panel 2.5:** Explorative Data Analysis of Real GDP per capita Growth (Annual %) and IFI (proxy variables) in All Economies (1970-2013)*

***Figure 2.21:** FDI (% of |GDP)*

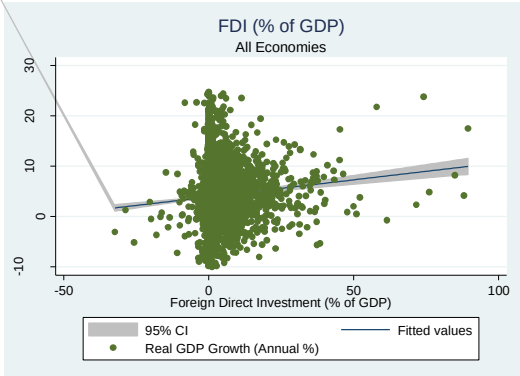


***Figure 2.22:** EFPI (% of GDP)*

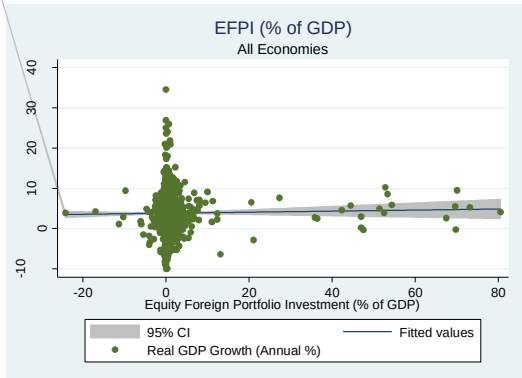


***Figure 2.23:** Non-Resident Bank Loan (% of GDP)*

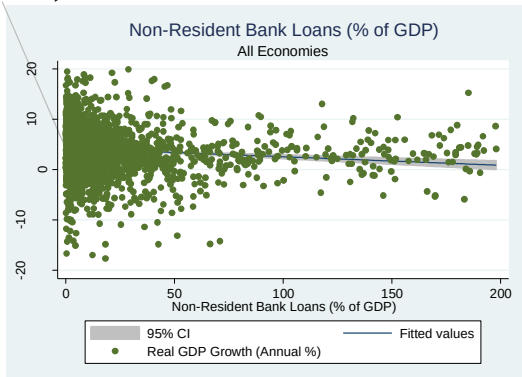


***Figure 2.24:** Net Financial Account (% of |GDP)*

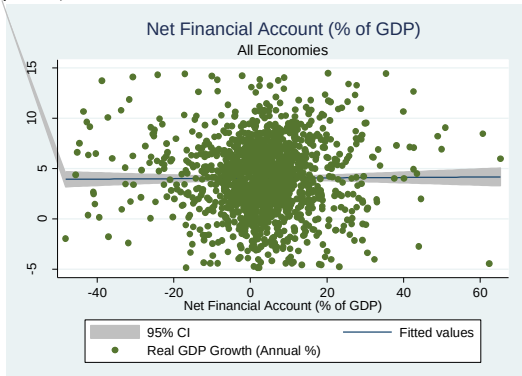
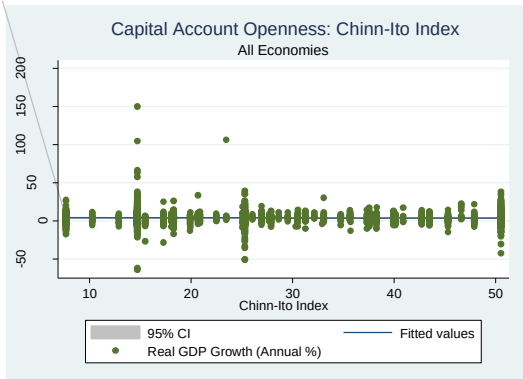


***Figure 2.25:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.6:** Explorative Data Analysis of Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Developing Economies (1970-2013)*

***Figure 2.26:** FDI (% of |GDP)*

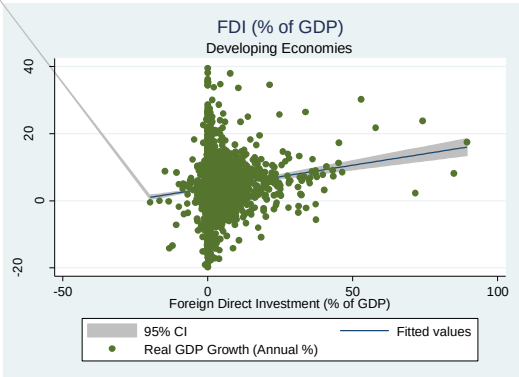


***Figure 2.27:** EFPI (% of GDP)*

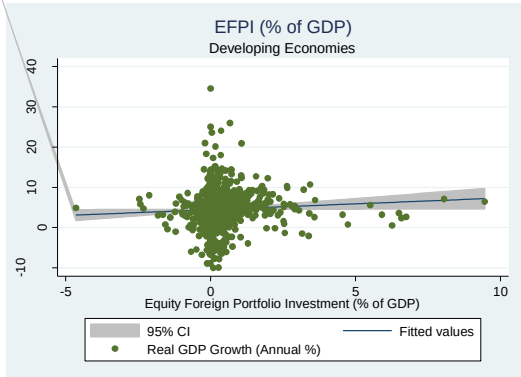


***Figure 2.28:** Non-Resident Bank Loans (% of GDP)*

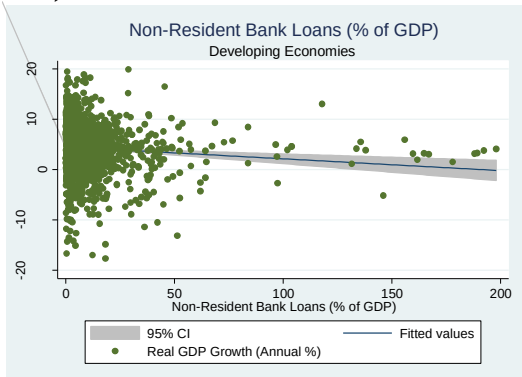


***Figure 2.29:** Net Financial Account (% of |GDP)*

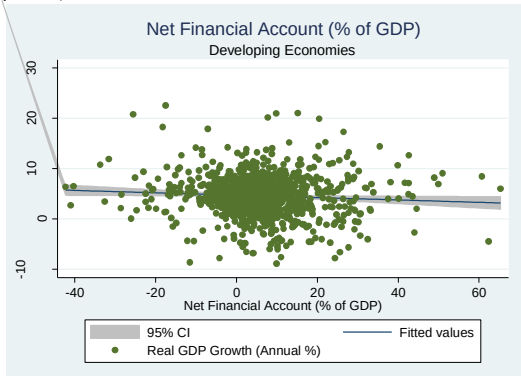
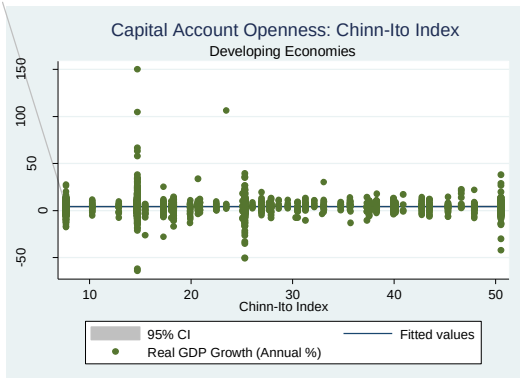


***Figure 2.30:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.7:** Explorative Data Analysis of Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Transition Economies (1970-2013)*

***Figure 2.31:** FDI (% of |GDP)*

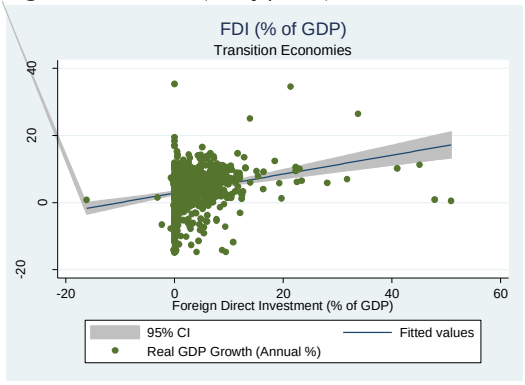


***Figure 2. 32:** EFPI (% of GDP)*

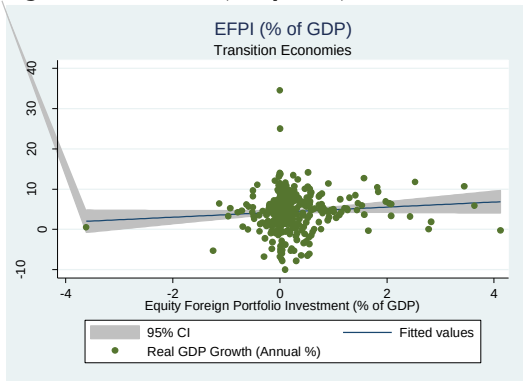


***Figure 2.33:** Non-Resident Bank Loan (% of GDP)*

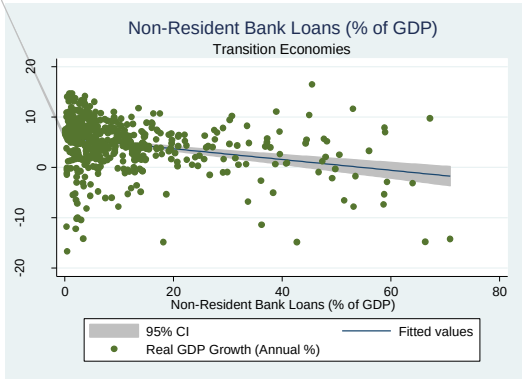


***Figure 2.34:** Net Financial Account (% of |GDP)*

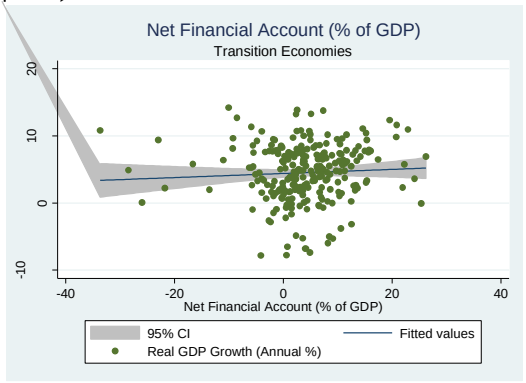
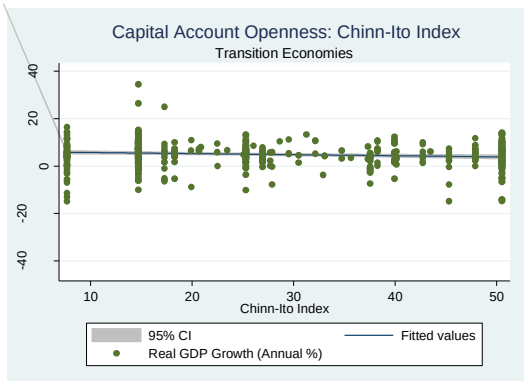


***Figure 2.35:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.8:** Explorative Data Analysis of Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Emerging Market Economies (1970-2013)*

***Figure 2.36:** FDI (% of |GDP)*

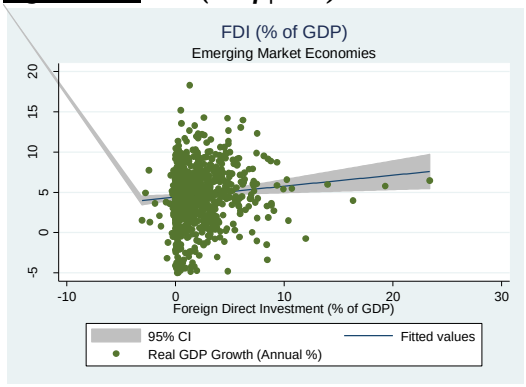


***Figure 2.37:** EFPI (% of GDP)*

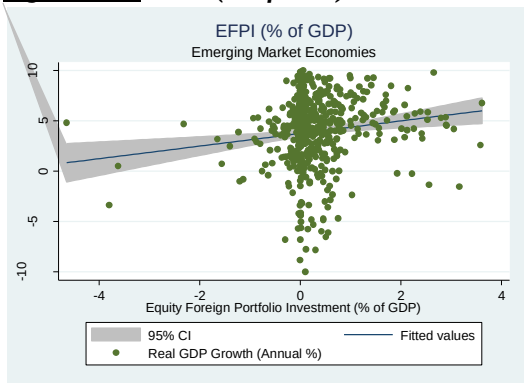


***Figure 2.38:** Non-Resident Bank Loan (% of GDP)*

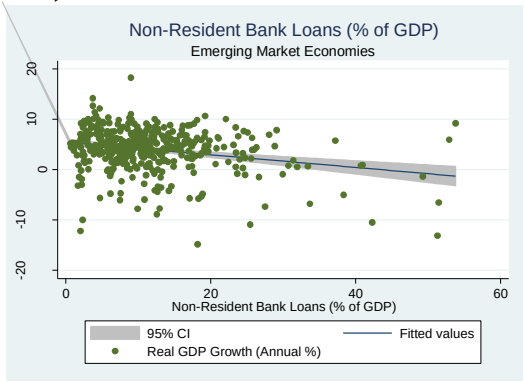


***Figure 2.39:** Net Financial Account (% of |GDP)*

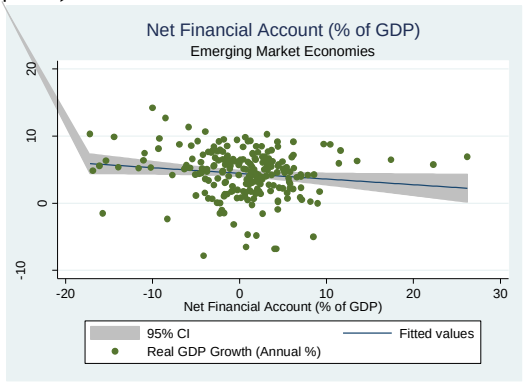
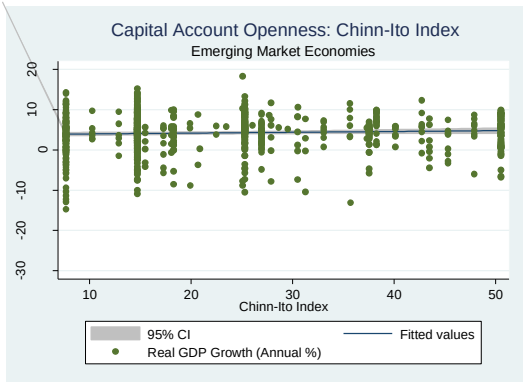


***Figure 2.40:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



2.9.3 Explorative Data Analysis 3: Quadratic Relationships

This section looks at the quadratic (non-linear relationship in a quadratic line plot) relationship between the dependent variable of interest reflecting macroeconomic performance and the independent variables of interest (proxy variables of international financial integration). This is a backdrop for the threshold regression analysis in the latter sections of this chapter. This would ideally provide a graphic projection of the nonlinear association between the two variables of interest. These graphs are also referenced in the robustness test 4 section that investigates the quadratic relationship between capital account openness and growth (refer to 'Robustness Test 4: Quadratic Estimations'). Furthermore, and perhaps more importantly, these illustrations provide a rough estimate to the threshold estimations that are carried out in the 'Results' section (these are the final results table for this particular chapter and the LSTR method only assumes single thresholds). One of the limitations of the LSTR model is that it only assumes that there are two regimes, or, there is a single threshold in the regression model. However, this may not be the case at all times. Therefore, the quadratic illustration is in fact a good illustrative measure to understand the single threshold relationship between the key variables of interest.

Panel 9 illustrates the nonlinear relationship between real GDP per capita growth and the proxy variables of IFI for all economies in the dataset. Figure 2.41 illustrates the relationship between FDI and growth. The curvature has a maximum value at the level where FDI equals 220% of GDP (this is an illogical finding, but, justifiable given the existence of multiple thresholds), where the growth rate equals almost 20%. In the results section one will find that particularly for the FDI variable, there may be multiple thresholds, and thereby nullifying the importance of drawing inferences from graphic quadratic illustrations. No definitive inference can be drawn from the relationship between EFPI and growth. Figure 2.43 illustrates the relationship between non-resident bank loans and growth and shows that it is growth retarding until non-resident bank loans (% of GDP) equals 90% approximately, after which, growth increases. No definitive inference can be drawn for figure 2.44, there is a naturally decreasing relationship between FA and growth. From figure 2.45, the relationship between capital account openness and growth is analyzed. This level at

which real GDP per capita growth rate peaks is when KAOPEN[47] (parameterized version of the Chinn-Ito index) equals approximately 27-28. If one looks at the econometric analysis in table 2.22, then the inflexion point is the same as the point found graphically. Furthermore, in table 2.2, the estimated threshold level of the PTR and the LSTR are close approximates to the one found graphically. This thereby, reiterates the importance of these graphical illustrations for the reader.

Panel 10 illustrates the quadratic plot between real per capita GDP growth and the proxy variables of IFI for developing economies in the dataset. For developing economies, there the minima is not definitive for the relationship between FDI and growth. There appears to be a gradual constant increase in growth rate with increasing FDI levels. However, EFPI has a maxima; it peaks at around 35% of GDP before falling. The relationship between non-resident bank loans and growth suggests that growth is at its lowest (and growth retarding) when cross-border lending equals 100% of GDP. No definitive deduction can be drawn from figure 2.49. Figure 2.50 shows the maxima of KAOPEN is approximately 32.

Panel 11 illustrates the nonlinear relationship between real per capita GDP growth and the proxy variables of IFI for transition economies in the dataset. The maxima for FDI in figure 51, is at 25% of GDP. From a quick reference to table 2.3 and the transition economies column, it can be seen that the threshold levels of the PTR and LSTR for FDI (in transition economies) are 16 and 19 respectively; therefore, there is not a large difference in the threshold and quadratic estimates. No definitive inference can be drawn from figures 2.52 and 2.53. There is a minima for the financial account, which equates to 3-5% of GDP. No definitive inference can be drawn from figure 2.55 as the maxima for capital account openness is not clear.

Panel 12 illustrates the nonlinear relationship between real per capita GDP growth and the proxy variables of IFI for emerging market economies in the dataset. The maxima for FDI and EFPI are at 20% and 3% of GDP, respectively. The maxima for figure 2.58 (non-resident bank loans and growth) is unclear, however, the

[47] Refer to table 2.1 in the 'Variable Description' to get a better understanding of the manner in which the original Chinn-Ito index has been parameterized. Furthermore, a detailed threshold regression and consequent analysis is carried out in the 'Results' section of 'Deduction 5: Capital Account Openness (Chinn-Ito Index).

relationship is definitely negative i.e. with increasing cross-border lending the growth rate reduces. The minima for figure 2.59 (financial account and growth) is 7-9% of GDP. The maxima for figure 2.60, shows that the relationship between capital account openness and growth approximates to 35. This deduction however, contradicts the threshold estimates found in table 2.2 for emerging market economies, as that is significantly lower.

***Panel 2.9:** Nonlinear Relationship between Real GDP per capita Growth (Annual %) and IFI (proxy variables) in All Economies (1970-2013)*

***Figure 2.41:** FDI (% of |GDP)*

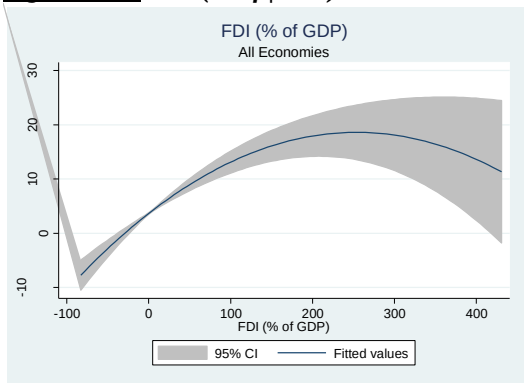


***Figure 2.42:** EFPI (% of GDP)*

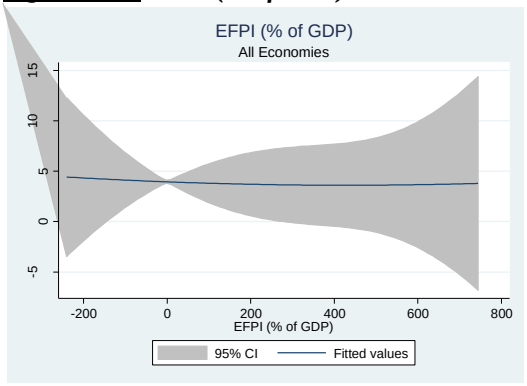


***Figure 2.43:** Non-Resident Bank Loan (% of GDP)*

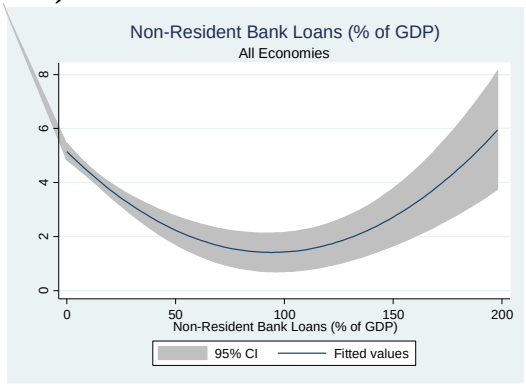


***Figure 2.44:** Net Financial Account (% of |GDP)*

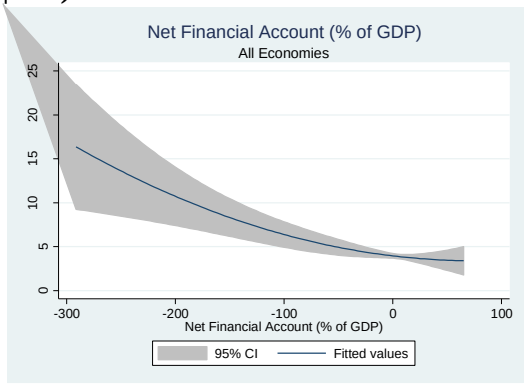
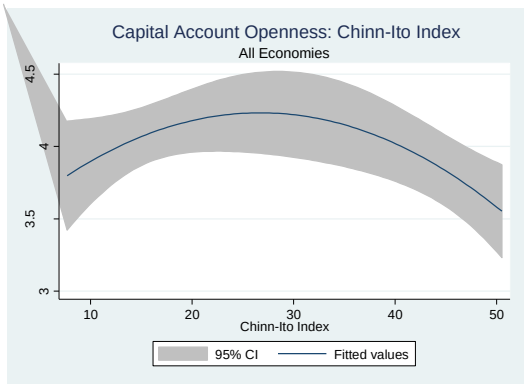


***Figure 2.45:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.10:** Nonlinear Relationship between Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Developing Economies (1970-2013)*

***Figure 2.46:** FDI (% of |GDP)*

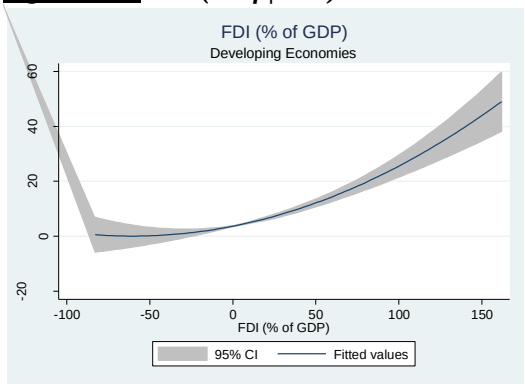


***Figure 2.47:** EFPI (% of GDP)*

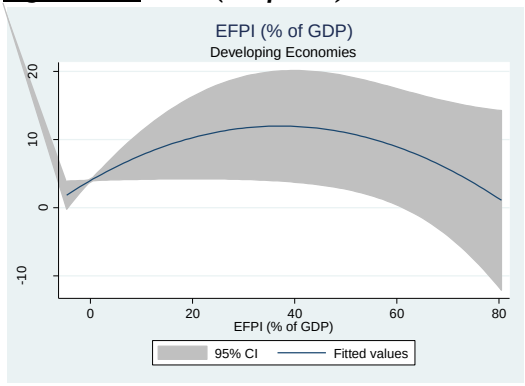


***Figure 2.48:** Non-Resident Bank Loan (% of GDP)*

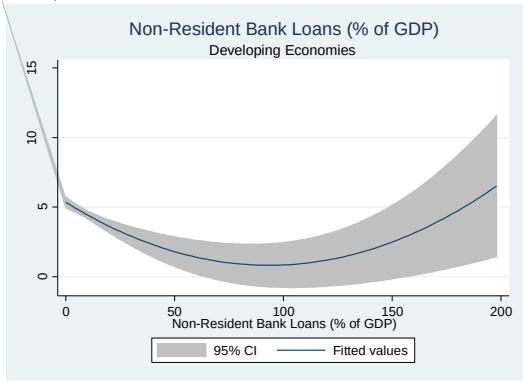


***Figure 2.49:** Net Financial Account (% of |GDP)*

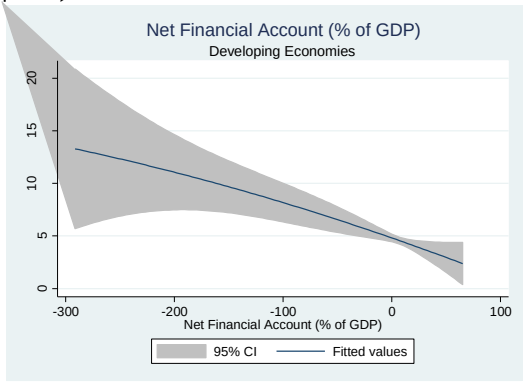
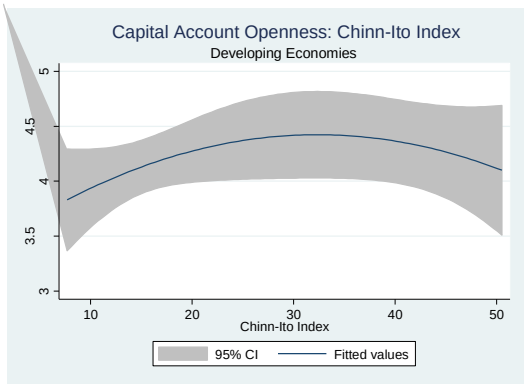


***Figure 2.50:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.11:** Nonlinear Relationship between Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Transition Economies (1970-2013)*

***Figure 2.51:** FDI (% of |GDP)*

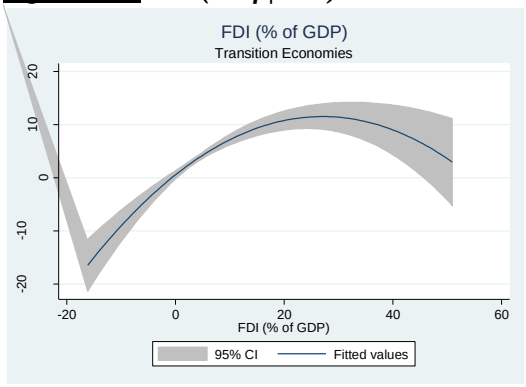


***Figure 2.52:** EFPI (% of GDP)*

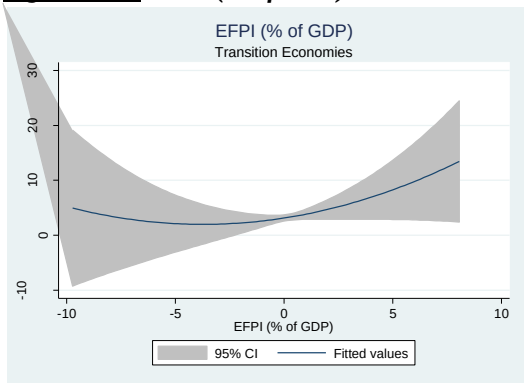


***Figure 2.53:** Non-Resident Bank Loan (% of GDP)*

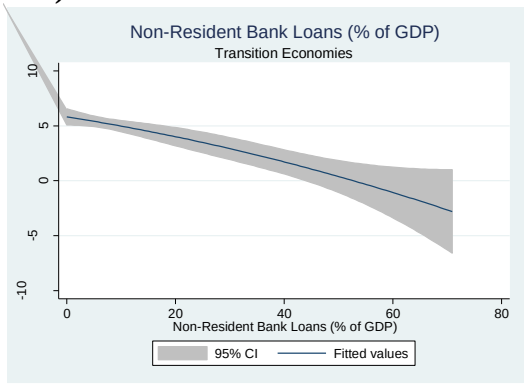


***Figure 2.54:** Net Financial Account (% of |GDP)*

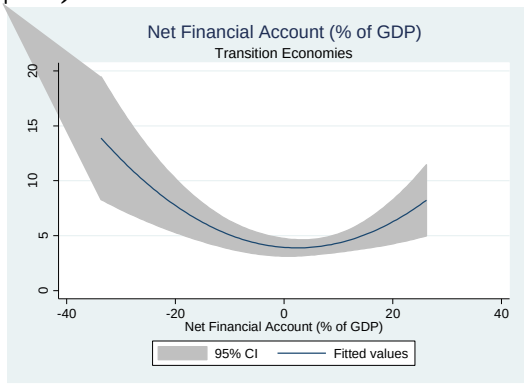
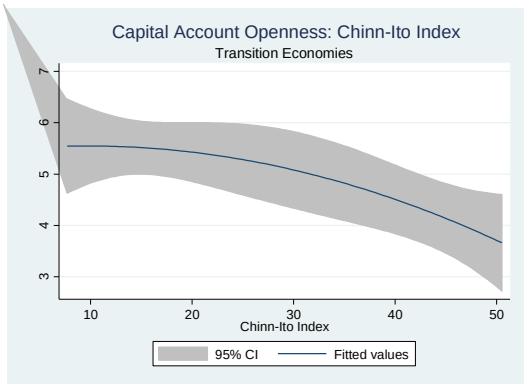


***Figure 2.55:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



***Panel 2.12:** Nonlinear Relationship between Real GDP per capita Growth (Annual %) and IFI (proxy variables) in Emerging Market Economies (1970-2013)*

***Figure 2.56:** FDI (% of |GDP)*

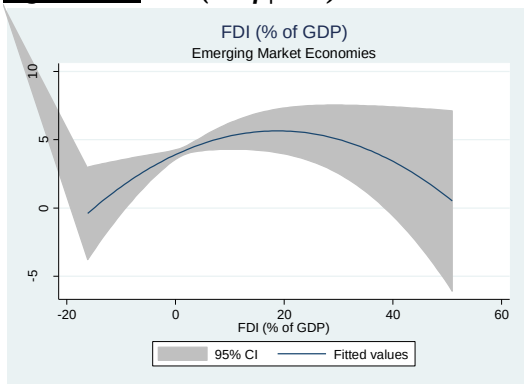


***Figure 2.57:** EFPI (% of GDP)*

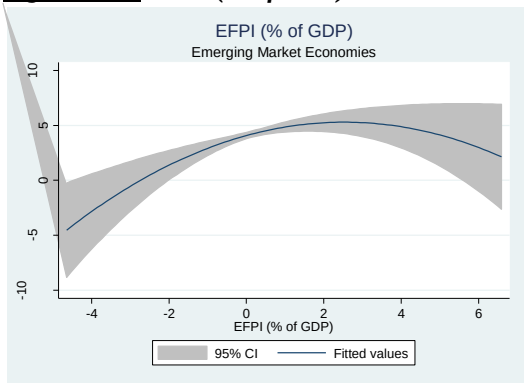


***Figure 2.58:** Non-Resident Bank Loan (% of GDP)*

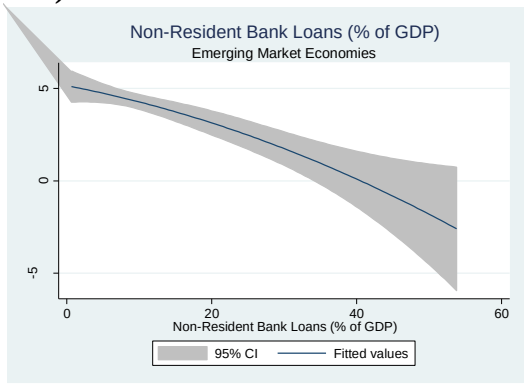


***Figure 2.59:** Net Financial Account (% of |GDP)*

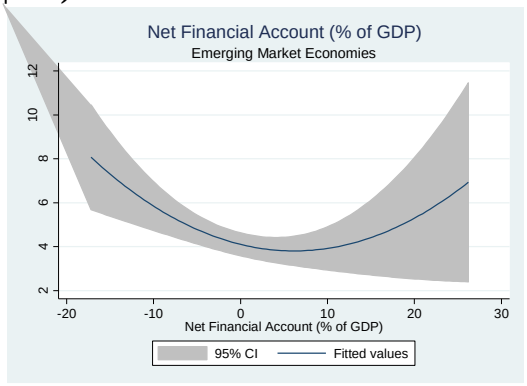
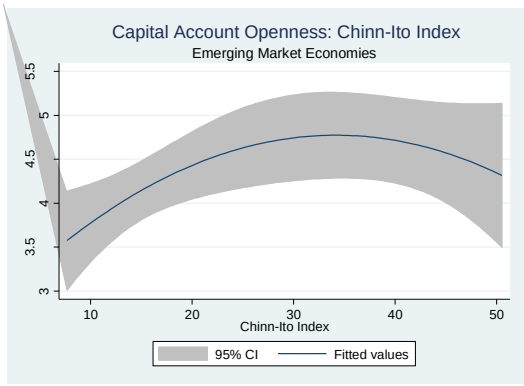


***Figure 2.60:** Chinn-Ito Index (De Jure Measure of Capital Account Openness)*



2.10 Appendix 2: Robustness Checks

The robustness checks are used to validate the findings. The robustness tests are recorded accordingly and include the following:

1. Robustness Test 1: 3-Year Non-Overlapping Averages
2. Robustness Test 2: Lagged IFI Proxy Variables
3. Robustness Test 3: Post-1990 Estimations
4. Robustness Test 4: Quadratic Estimations

Note that the robustness checks are done for all income groups (as well as for all relevant IFI proxy variables).

2.10.1 Robustness Test 1: 3-Year Non-Overlapping Averages

The first robustness check replicates the regression models illustrated in tables 2.2, 2.3, 2.4, 2.5, and 2.6 using 3-year non-overlapping averages instead of 5-year non-overlapping averages. Table 2.7 looks at the relationship between FDI and growth with 3-year non-overlapping averages. There are notably more observations compared to table 2.3. The distinctive difference is the level of threshold, which appears to be significantly lower than that found in table 2.3. For instance, the threshold level of LSTR for all economies in table 2.3 was 55%, however, in table 2.7 the threshold level is 6%. Table 2.7 also illustrates that the regression models are all linear and there is a single threshold apart from that of emerging market economies. Furthermore, the coefficients below the threshold and coefficients in the 'low' regime are not drastically different between the two tables. The gamma parameter is also low for almost all the regression models and therefore the LSTR is preferred over the PTR estimated coefficients for analysis. Table 2.8 looks at the relationship between EFPI and growth with 3-year non-overlapping averages. The threshold levels of the PTR and LSTR are roughly the same (except they are non-zero but vary by only 1-3%). The coefficients of interest are also similar i.e. coefficients for below and above the threshold and for the 'low' and 'high' regime. However, unfortunately, no definitive inference can be drawn for transition economies, as the coefficients are statistically insignificant in table 2.8 as it was erratic in table 2.3.

Table 2.9 looks at the relationship between non-resident bank loans and growth with 3-year non-overlapping averages. There is not a large increase in the number of observations, and the coefficients of interest do not differ significantly either, except for transition economies and especially the coefficient of the 'high' regime, which appears to be an anomaly. The threshold levels for PTR and LSTR are not dissimilar except for the case of transition economies, where the 3-year non-overlapping average sees high threshold levels. Table 2.10 looks at the relationship between the financial account and growth with 3-year non-overlapping averages. There is a minimal difference in the number of observations. The coefficients of interest are not dissimilar for all economies and the developing economies columns. For emerging market economies, there appears to be an increase in growth above the threshold. This appears to be stark contrast to the results acquired in table 2.5.

Table 2.11 looks at the relationship between capital account openness and growth with 3-year non-overlapping averages. The regression results are similar to that acquired in table 2.2 (5-year non-overlapping averages). Unfortunately, for developing economies, the coefficients of interest are all statistically insignificant (like table 2.2). The threshold levels are also similar along with the gamma parameters.

***Table 2.7:* FDI (% of GDP) on Growth using 3-year non-overlapping averages** **Robustness Check: 3-Year non-overlapping averages**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.78e-05*** (7.95e-06)*	*-1.50e-05* (8.54e-06)*	*-1.50e-05* (8.57e-06)*	*-0.000149** (5.87e-05)*	*-0.000123** (6.03e-05)*	*-0.000122** (6.03e-05)*	*-0.000217* (0.000111)*	*-0.000176 (0.000108)*	*-0.000193* (0.000106)*	*-0.000223** (9.90e-05)*	*-0.000216** (1.00e-04)*	*-0.000217** (9.99e-05)*
Investment to GDP	*0.131*** (0.0193)*	*0.136*** (0.0199)*	*0.136*** (0.0198)*	*0.113*** (0.0223)*	*0.123*** (0.0229)*	*0.123*** (0.0229)*	*0.0986 (0.0666)*	*0.0914 (0.0658)*	*0.0869 (0.0671)*	*0.134*** (0.0301)*	*0.127*** (0.0301)*	*0.127*** (0.0302)*
Population Growth	*0.560*** (0.0953)*	*0.554*** (0.0872)*	*0.554*** (0.0874)*	*0.456*** (0.165)*	*0.508*** (0.164)*	*0.511*** (0.164)*	*0.394 (0.562)*	*0.355 (0.550)*	*0.344 (0.545)*	*0.716* (0.375)*	*0.727** (0.366)*	*0.727** (0.366)*
Inflation	*-0.00540*** (0.00201)*	*-0.00518*** (0.00200)*	*-0.00517*** (0.00200)*	*-0.00545*** (0.00203)*	*-0.00523*** (0.00202)*	*-0.00523*** (0.00202)*	*-0.00903*** (0.00303)*	*-0.00869*** (0.00304)*	*-0.00901*** (0.00300)*	*-0.00513** (0.00238)*	*-0.00487** (0.00234)*	*-0.00487** (0.00234)*
Literacy Rate	*-0.0112* (0.00575)*	*-0.0161*** (0.00596)*	*-0.0161*** (0.00596)*	*-0.0160* (0.00834)*	*-0.0190** (0.00850)*	*-0.0190** (0.00850)*	*-0.0508* (0.0271)*	*-0.0559** (0.0263)*	*-0.0558** (0.0257)*	*-0.0292** (0.0127)*	*-0.0339*** (0.0129)*	*-0.0338*** (0.0129)*
Life Expectancy	*0.0370** (0.0181)*	*0.0312* (0.0178)*	*0.0313* (0.0178)*	*0.0664*** (0.0212)*	*0.0574*** (0.0208)*	*0.0573*** (0.0208)*	*0.171 (0.204)*	*0.155 (0.200)*	*0.169 (0.206)*	*0.0835* (0.0469)*	*0.0473 (0.0462)*	*0.0479 (0.0462)*
FDI	*0.0946*** (0.0265)*			*0.165*** (0.0479)*			*0.369** (0.170)*			*0.199** (0.0816)*		
$FDI - T \; if \; FDI < T$		*0.327*** (0.0516)*			*0.384*** (0.0729)*			*0.500** (0.196)*			*0.470*** (0.158)*	
$FDI - T \; if \; FDI > T$		*-0.0157 (0.0389)*			*0.0338 (0.0801)*			*-5.497** (2.356)*			*-0.0201 (0.0595)*	
$W^{low}(FDI - c^*)$			*0.316*** (0.0491)*			*0.376*** (0.0689)*			*0.334** (0.136)*			*0.464*** (0.155)*
$W^{high}(FDI - c^*)$			*-0.0106 (0.0380)*			*0.0388 (0.0775)*			*-11.29 (7.378)*			*-0.0178 (0.0587)*
Constant	*-2.004** (0.975)*	*-0.0262 (0.996)*	*-0.123 (0.991)*	*-2.899** (1.150)*	*-0.707 (1.183)*	*-0.824 (1.170)*	*-6.739 (12.94)*	*5.735 (11.79)*	*2.105 (12.18)*	*-3.318 (3.229)*	*2.337 (3.573)*	*2.255 (3.552)*
Observations	1,253	1,253	1,253	820	820	820	148	148	148	186	186	186
R^2	0.256	0.272	0.272	0.259	0.271	0.272	0.375	0.396	0.392	0.421	0.438	0.438
PTR (T) or LSTR (c)*		6	6		6	6		23	24		7	7
LSTR parameter (γ)*			4			*3*			2			7
LM Test (GTD 2005) H0: Linear Model			33.45			33.97			19.20			16.72
p-value nonlinearity			0.0147			0.0156			0.0581			0.0742
LM Test for remaining nonlinearities			23.92			22.15			12.95			13.67
p-value remaining nonlinearity			0.158			0.225			0.451			0.981

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

***Table 2.8:* EFPI (% of GDP) on Growth using 3-year non-overlapping averages** **Robustness Check: 3-Year non-overlapping averages**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-3.44e-05****	*-3.86e-05****	*-3.80e-05****	*-4.46e-05*	*-5.04e-05*	*-4.93e-05*	*-0.000243***	*-0.000246***	*-0.000249***	*-0.000266***	*-0.000250****	*-0.000249****
	(8.45e-06)	*(8.50e-06)*	*(8.47e-06)*	*(7.05e-05)*	*(6.90e-05)*	*(6.89e-05)*	*(0.000103)*	*(0.000102)*	*(0.000102)*	*(8.64e-05)*	*(8.79e-05)*	*(8.79e-05)*
Trade to GDP	*0.0120****	*0.0125****	*0.0125****	*0.0200****	*0.0209****	*0.0209****	*0.0112*	*0.0109*	*0.0106*	*0.00381*	*0.00510*	*0.00516*
	(0.00372)	*(0.00376)*	*(0.00376)*	*(0.00655)*	*(0.00653)*	*(0.00653)*	*(0.0114)*	*(0.0115)*	*(0.0115)*	*(0.00496)*	*(0.00506)*	*(0.00507)*
Population Growth	*0.648****	*0.645****	*0.643****	*0.631****	*0.637****	*0.638****	*0.591*	*0.599*	*0.616*	*0.259*	*0.321*	*0.324*
	(0.103)	*(0.107)*	*(0.106)*	*(0.169)*	*(0.168)*	*(0.168)*	*(0.650)*	*(0.652)*	*(0.654)*	*(0.330)*	*(0.330)*	*(0.330)*
Inflation	*-0.00243***	*-0.00242***	*-0.00242***	*-0.00235***	*-0.00232***	*-0.00232***	*-0.0101****	*-0.0101****	*-0.0101****	*-0.00567***	*-0.00562***	*-0.00561***
	(0.00104)	*(0.00103)*	*(0.00103)*	*(0.00102)*	*(0.000999)*	*(0.000999)*	*(0.00282)*	*(0.00283)*	*(0.00283)*	*(0.00234)*	*(0.00234)*	*(0.00233)*
Literacy Rate	*-0.0143***	*-0.0158****	*-0.0157****	*-0.0216****	*-0.0240****	*-0.0239****	*(0.0114)*	*(0.0115)*	*(0.0115)*	*-0.0576****	*-0.0546****	*-0.0545****
	(0.00596)	*(0.00604)*	*(0.00603)*	*(0.00831)*	*(0.00833)*	*(0.00832)*	*-0.0426*	*-0.0429*	*-0.0426*	*(0.0134)*	*(0.0131)*	*(0.0132)*
Life Expectancy	*0.0555****	*0.0565****	*0.0567****	*0.0680****	*0.0699****	*0.0695****	*0.181*	*0.187*	*0.190*	*0.169****	*0.149****	*0.147****
	(0.0194)	*(0.0194)*	*(0.0194)*	*(0.0220)*	*(0.0218)*	*(0.0218)*	*(0.116)*	*(0.117)*	*(0.117)*	*(0.0436)*	*(0.0423)*	*(0.0425)*
$EFPI$	*-0.00243*			*0.116*			*1.338*			*1.275****		
	(0.00408)			*(0.0772)*			*(0.966)*			*(0.341)*		
$EFPI - T\ if\ EFPI < T$		*0.769****			*2.333****			*1.055*			*2.043****	
		(0.200)			*(0.457)*			*(1.523)*			*(0.517)*	
$EFPI - T\ if\ EFPI > T$		*-0.00425*			*-0.0895***			*2.408*			*0.175*	
		(0.00463)			*(0.0354)*			*(2.270)*			*(0.536)*	
$W^{low}(EFPI - c^*)$			*0.830****			*2.300****			*0.774*			*2.009****
			(0.213)			*(0.449)*			*(1.527)*			*(0.491)*
$W^{high}(EFPI - c^*)$			*-0.00384*			*-0.0809***			*-132.1*			*0.189*
			(0.00451)			*(0.0339)*			*(178.2)*			*(0.518)*
Constant	*-0.457*	*0.264*	*0.0583*	*-1.481*	*0.681*	*0.510*	*-5.073*	*-4.347*	*-2.580*	*-3.131*	*-0.244*	*-0.255*
	(1.047)	*(1.051)*	*(1.048)*	*(1.187)*	*(1.202)*	*(1.195)*	*(7.233)*	*(7.498)*	*(9.725)*	*(2.862)*	*(2.720)*	*(2.727)*
Observations	1,590	1,590	1,590	1,048	1,048	1,048	172	172	172	223	223	223
R^2	0.113	0.118	0.118	0.108	0.123	0.123	0.289	0.289	0.291	0.384	0.393	0.394
PTR (T) or LSTR (c)*		1	1		1	1		1	4		1	1
LSTR parameter (γ)*			*15*			*3*			1			*2*
LM Test (GTD 2005) H0: Linear Model			28.42			15.88			12.74			19.59
p-value nonlinearity			0.1029			0.0776			0.0692			0.1547
LM Test for remaining nonlinearities			31.02			17.69			16.11			52265
p-value remaining nonlinearity			0.1733			0.669			0.446			0.341

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.9: ***Non-Resident Bank Loans (% of GDP) on Growth using 3-year non-overlapping averages*** ***Robustness Check: 3-Year non-overlapping averages***												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-1.99e-05* *(1.54e-05)*	*-2.00e-05* *(1.53e-05)*	*-1.89e-05* *(1.54e-05)*	*-5.08e-05* *(8.38e-05)*	*-4.32e-05* *(8.47e-05)*	*-3.66e-05* *(8.56e-05)*	*-0.000111* *(0.000107)*	*-0.000174* *(0.000107)*	*-0.000176* *(0.000107)*	*-0.000217*** *(9.76e-05)*	*-0.000192*** *(9.41e-05)*	*-0.000192*** *(9.41e-05)*
Trade to GDP	*0.0201**** *(0.00752)*	*0.0200**** *(0.00746)*	*0.0203**** *(0.00750)*	*0.0226*** *(0.00997)*	*0.0224*** *(0.00983)*	*0.0236*** *(0.0101)*	*0.000917* *(0.0114)*	*-0.000225* *(0.0115)*	*0.000476* *(0.0115)*	*0.00587* *(0.00586)*	*0.00904** *(0.00542)*	*0.00903** *(0.00542)*
Population Growth	*0.837**** *(0.119)*	*0.837**** *(0.119)*	*0.837**** *(0.119)*	*0.824**** *(0.221)*	*0.821**** *(0.221)*	*0.837**** *(0.223)*	*0.540* *(0.627)*	*0.509* *(0.625)*	*0.553* *(0.624)*	*-0.0735* *(0.295)*	*0.00748* *(0.294)*	*0.00769* *(0.294)*
Inflation	*-0.00201*** *(0.000960)*	*-0.00202*** *(0.000963)*	*-0.00200*** *(0.000954)*	*-0.00209*** *(0.000931)*	*-0.00209*** *(0.000944)*	*-0.00203*** *(0.000922)*	*-0.0104**** *(0.00275)*	*-0.0104**** *(0.00276)*	*-0.0103**** *(0.00277)*	*-0.0118**** *(0.00107)*	*-0.0119**** *(0.00104)*	*-0.0119**** *(0.00104)*
Literacy Rate	*-0.00252* *(0.00761)*	*-0.00250* *(0.00761)*	*-0.00250* *(0.00762)*	*-0.00961* *(0.0104)*	*-0.0101* *(0.0105)*	*-0.00988* *(0.0104)*	*-0.0175* *(0.0320)*	*-0.0178* *(0.0319)*	*-0.0165* *(0.0319)*	*-0.0346** *(0.0179)*	*-0.0264* *(0.0171)*	*-0.0264* *(0.0171)*
Life Expectancy	*0.0215* *(0.0220)*	*0.0227* *(0.0225)*	*0.0206* *(0.0221)*	*0.0410** *(0.0239)*	*0.0449** *(0.0244)*	*0.0410** *(0.0240)*	*0.0908* *(0.118)*	*0.0883* *(0.118)*	*0.0917* *(0.118)*	*0.0850** *(0.0471)*	*0.0813** *(0.0460)*	*0.0813** *(0.0460)*
CBL	*-0.0304**** *(0.0116)*			*-0.00752** *(0.00398)*			*-0.0772** *(0.0413)*			*-0.0977*** *(0.0460)*		
$CBL - T \; if \; CBL < T$		*-0.0612* *(0.119)*			*-0.109* *(0.126)*			*-0.0296* *(0.0437)*			*-0.144**** *(0.0296)*	
$CBL - T \; if \; CBL > T$		*-0.0294**** *(0.0112)*			*-0.00678** *(0.00380)*			*-0.823**** *(0.220)*			*1.409**** *(0.208)*	
$W^{low}(CBL - c^*)$			*0.105* *(0.330)*			*0.506* *(0.429)*			*-0.0282* *(0.0442)*			*-0.144**** *(0.0296)*
$W^{high}(CBL - c^*)$			*-0.0300*** *(0.0119)*			*-0.00561* *(0.00413)*			*74.51**** *(19.16)*			*-1.283e+09**** *(1.923e+08)*
Constant	*0.575* *(1.309)*	*0.315* *(1.377)*	*0.510* *(1.313)*	*-0.595* *(1.577)*	*-0.969* *(1.650)*	*-1.188* *(1.692)*	*0.981* *(7.716)*	*-0.363* *(8.325)*	*-1.074* *(8.495)*	*2.869* *(3.577)*	*-4.340* *(3.914)*	*-9.962*** *(4.527)*
Observations	829	829	829	592	592	592	160	160	160	132	132	132
R^2	0.179	0.180	0.180	0.139	0.140	0.141	0.331	0.350	0.352	0.481	0.518	0.518
PTR (T) or LSTR (c)*		5	2		5	0		52	65		48	87
LSTR parameter (γ)*			*5*			*8*			*8*			*6*
LM Test (GTD 2005) H0: Linear Model			32.28			24.56			22.67			19.33
p-value nonlinearity			0.00218			0.0336			0.0474			0.0901
LM Test for remaining nonlinearities			10.44			14.53			18.64			7.870
p-value remaining nonlinearity			0.847			0.338			0.135			0.852

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10.*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the results table. CBL refers to cross-border lending which is non-resident bank loans as a percentage of GDP.

***Table 2.10:* Financial Account (% of GDP) on Growth using 3-year non-overlapping averages** **Robustness Check: 3-Year non-overlapping averages**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-4.35e-05*** (1.19e-05)*	*-4.38e-05*** (1.20e-05)*	*-4.37e-05*** (1.19e-05)*	*-0.000239** (9.29e-05)*	*-0.000247** (9.56e-05)*	*-0.000247** (9.60e-05)*	*7.75e-05 (0.000202)*	*6.07e-05 (0.000198)*	*4.94e-05 (0.000207)*	*-0.000186 (0.000118)*	*-0.000173 (0.000118)*	*-0.000173 (0.000118)*
Trade to GDP	*0.170*** (0.0227)*	*0.169*** (0.0235)*	*0.168*** (0.0229)*	*0.137*** (0.0234)*	*0.128*** (0.0223)*	*0.131*** (0.0226)*	*0.404*** (0.122)*	*0.410*** (0.120)*	*0.394*** (0.122)*	*0.219*** (0.0419)*	*0.212*** (0.0398)*	*0.212*** (0.0398)*
Population Growth	*0.409** (0.158)*	*0.404** (0.160)*	*0.396** (0.159)*	*0.619** (0.252)*	*0.579** (0.247)*	*0.576** (0.250)*	*1.186 (0.737)*	*0.863 (0.686)*	*1.339* (0.792)*	*1.234** (0.537)*	*1.308** (0.534)*	*1.307** (0.533)*
Inflation	*-0.00220 (0.0382)*	*-0.00245 (0.0381)*	*-0.00202 (0.0383)*	*-0.0178 (0.0362)*	*-0.0179 (0.0357)*	*-0.0153 (0.0369)*	*-0.221** (0.0989)*	*-0.218** (0.0927)*	*-0.220** (0.101)*	*-0.151** (0.0676)*	*-0.151** (0.0665)*	*-0.151** (0.0665)*
Literacy Rate	*-0.0160 (0.0102)*	*-0.0162 (0.0101)*	*-0.0167* (0.0101)*	*0.00249 (0.0143)*	*-0.000293 (0.0132)*	*-0.000668 (0.0132)*	*-0.0580 (0.0413)*	*-0.0605 (0.0409)*	*-0.0524 (0.0427)*	*-0.00910 (0.0184)*	*-0.00687 (0.0179)*	*-0.00689 (0.0179)*
Life Expectancy	*-0.0314 (0.0290)*	*-0.0310 (0.0286)*	*-0.0300 (0.0283)*	*0.000538 (0.0308)*	*0.00600 (0.0291)*	*0.00651 (0.0284)*	*-0.610** (0.241)*	*-0.653*** (0.242)*	*-0.572** (0.250)*	*0.0144 (0.0566)*	*0.00427 (0.0576)*	*0.00435 (0.0576)*
FA	*-0.0644*** (0.0214)*			*-0.0751*** (0.0269)*			*0.0315 (0.148)*			*0.0238 (0.0590)*		
$FA - T \; if \; FA < T$		*-0.0666*** (0.0249)*			*-0.111** (0.0505)*			*12.64 (12.62)*			*-0.0190 (0.0596)*	
$FA - T \; if \; FA > T$		*-0.0545 (0.0587)*			*-0.0463 (0.0321)*			*-0.0278 (0.148)*			*0.242* (0.123)*	
$W^{low}(FA - c^*)$			*-0.0765** (0.0381)*			*-0.124** (0.0607)*			*0.0127 (0.148)*			*-0.0185 (0.0596)*
$W^{high}(FA - c^*)$			*-0.358 (0.760)*			*-1.140 (1.066)*			*-10.64* (5.626)*			*0.241* (0.124)*
Constant	*3.378** (1.609)*	*2.337 (1.653)*	*-0.820 (2.708)*	*1.303 (1.851)*	*0.828 (1.877)*	*-5.495 (4.040)*	*43.53** (19.27)*	*47.37** (19.11)*	*41.01* (21.29)*	*-0.707 (4.550)*	*-0.283 (4.478)*	*-0.282 (4.479)*
Observations	382	382	382	248	248	248	52	52	52	58	58	58
R^2	0.313	0.313	0.314	0.240	0.245	0.244	0.398	0.420	0.408	0.549	0.563	0.563
PTR (T) or LSTR (c)*		16	53		5	51		1	19		7	7
LSTR parameter (γ)*			*1*			1			*7*			15
LM Test (GTD 2005) H0: Linear Model			19.85			22.02			21.66			22.50
p-value nonlinearity			0.022			0.0112			0.0233			0.0187
LM Test for remaining nonlinearities			9.713			6.401			6.88			6.10
p-value remaining nonlinearity			0.374			0.476			0.146			0.649

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

***Table 2.11:* De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using 3-year non-overlapping averages** **Robustness Check: 3-Year non-overlapping averages**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-4.76e-05*** (9.24e-06)*	*-4.43e-05*** (9.28e-06)*	*-4.43e-05*** (9.29e-06)*	*-0.000118* (6.32e-05)*	*-0.000120* (6.34e-05)*	*-0.000120* (6.34e-05)*	*-0.000347* (0.000100)*	*-0.000363*** (0.000103)*	*-0.000335*** (9.93e-05)*	*-0.00020** (8.09e-05)*	*-0.000214** (7.88e-05)*	*-0.000213*** (7.89e-05)*
Invest to GDP	*0.0375*** (0.00942)*	*0.0367*** (0.00920)*	*0.0365*** (0.00921)*	*0.0384*** (0.0108)*	*0.0385*** (0.0107)*	*0.0386*** (0.0107)*	*0.0509 (0.0377)*	*0.0531 (0.0381)*	*0.0534 (0.0374)*	*0.0268 (0.0378)*	*0.0296 (0.0374)*	*0.0298 (0.0374)*
NFA to GDP	*0.498*** (0.162)*	*0.509*** (0.159)*	*0.509*** (0.159)*	*0.503** (0.213)*	*0.510** (0.209)*	*0.510** (0.209)*	*1.303 (0.887)*	*1.113 (0.888)*	*1.187 (0.873)*	*3.114** (1.208)*	*3.031** (1.211)*	*3.032** (1.211)*
FDI	*0.178*** (0.0408)*	*0.181*** (0.0407)*	*0.181*** (0.0407)*	*0.252*** (0.0553)*	*0.253*** (0.0552)*	*0.253*** (0.0552)*	*0.258* (0.136)*	*0.257* (0.135)*	*0.254* (0.134)*	*0.187*** (0.0613)*	*0.196*** (0.0598)*	*0.195*** (0.0599)*
Population Growth	*0.436*** (0.108)*	*0.455*** (0.107)*	*0.457*** (0.107)*	*0.311* (0.168)*	*0.314* (0.167)*	*0.314* (0.167)*	*0.568 (0.414)*	*0.568 (0.416)*	*0.593 (0.412)*	*0.126 (0.304)*	*0.109 (0.300)*	*0.109 (0.300)*
Inflation	*-0.00162*** (0.000509)*	*-0.00161*** (0.000504)*	*-0.00161*** (0.000504)*	*-0.00152*** (0.000466)*	*-0.00151*** (0.000466)*	*-0.00151*** (0.000466)*	*-0.0205** (0.0102)*	*-0.0194** (0.00980)*	*-0.0175* (0.00901)*	*-0.00275** (0.00122)*	*-0.00263** (0.00101)*	*-0.00262** (0.00102)*
Literacy Rate	*-0.00495 (0.00540)*	*-0.00459 (0.00536)*	*-0.00458 (0.00536)*	*-0.0109 (0.00777)*	*-0.0104 (0.00777)*	*-0.0104 (0.00777)*	*-0.0253 (0.0203)*	*-0.0234 (0.0201)*	*-0.0295 (0.0192)*	*-0.0362*** (0.0111)*	*-0.0398*** (0.0110)*	*-0.0398*** (0.0110)*
Trade to GDP	*0.00267 (0.00639)*	*0.00136 (0.00637)*	*0.00143 (0.00637)*	*0.0127 (0.00890)*	*0.0117 (0.00894)*	*0.0116 (0.00894)*	*0.0180 (0.0222)*	*0.0201 (0.0225)*	*0.0165 (0.0221)*	*0.00764 (0.0115)*	*0.00500 (0.0115)*	*0.00511 (0.0115)*
$KAOP$	*-0.00879 (0.00751)*			*0.00440 (0.00922)*			*0.0178 (0.0293)*			*0.0507*** (0.0152)*		
$KAOP - T \; if \; KAOP < T$		*0.0766*** (0.0267)*			*0.0381 (0.0263)*			*0.0603 (0.0502)*			*0.285*** (0.0785)*	
$KAOP - T \; if \; KAOP > T$		*-0.0369*** (0.0106)*			*-0.0140 (0.0152)*			*-0.0351 (0.0689)*			*0.0286* (0.0164)*	
$W^{low}(KAOP - c^*)$			*0.0656*** (0.0238)*			*0.0412 (0.0282)*			*0.787* (0.400)*			*0.281*** (0.0773)*
$W^{high}(KAOP - c^*)$			*-0.0371*** (0.0106)*			*-0.0130 (0.0146)*			*0.0412 (0.0306)*			*0.0296* (0.0163)*
Constant	*3.208*** (0.417)*	*3.549*** (0.441)*	*3.515*** (0.441)*	*2.997*** (0.611)*	*3.397*** (0.681)*	*3.387*** (0.675)*	*5.896*** (2.026)*	*6.794*** (2.253)*	*5.150** (2.021)*	*5.790*** (1.235)*	*7.088*** (1.290)*	*7.056*** (1.290)*
Observations	1,369	1,369	1,369	902	902	902	144	144	144	209	209	209
R^2	0.161	0.169	0.168	0.169	0.171	0.171	0.290	0.294	0.304	0.327	0.353	0.353
PTR (T) or LSTR (c)*		22	23		24	23		33	10		15	15
LSTR parameter (γ)*			13			*10*			2			15
LM Test (GTD 2005) H0: Linear Model			48.96			37.67			15.60			20.33
p-value nonlinearity			0.00126			0.0276			0.0552			0.0342
LM Test for remaining nonlinearities			20.52			11.80			14.35			17.12
p-value remaining nonlinearity			0.610			0.973			0.991			0.541

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

2.10.1 Robustness Test 2: Lagged IFI Proxy Variables

Robustness test 2 looks at the relationship between the lagged IFI proxy variables on growth in order to check for endogeneity[48] of IFI. The justification for selecting this as a robustness check is that there are some short-lived shocks in the de facto financial flows (refer to historical trends of EFPI and NRBL). However, despite the fact that FDI has been included, we cannot take the results for this seriously due to the problem of endogeneity. However, the selection of this robustness test is justifiable for EFPI and CBL. Table 2.12 looks at the relationship between lagged FDI and growth. The results in table 2.12 do not signify anything of notable importance. It reiterates the point that there are multiple thresholds that are unaccounted for by the LSTR. The coefficients for the 'low' and 'high' regime are different for all economies; in table 3, there is a large increment in the growth rate when the economy moves from low to high regime, but in table 2.12, it is in fact negative (statistically significant at 1%). The threshold level also appears to be low for emerging market economies in table 2.12 compared to table 2.3.

Table 2.13 looks at the relationship between lagged EFPI and growth. The threshold levels are similar; they are relatively low at around 0-2%. For all the country groups, the coefficients below the threshold tend to be positive (most are statistically significant) which implies that there is a definitive increase in the growth rate up until the threshold. However, one of the limitations of these regression models is that most of them, with the exception of the emerging market economies, are linear. Therefore, only the OLS estimations should be accounted for, but they are statistically insignificant except for the case of emerging market economies. Table 2.14 looks at the relationship between lagged values of non-resident bank loans and growth. The threshold values of the PTR and LSTR are drastically different between tables 2.14 and 2.4 for transition and emerging market economies. However, this is not to be taken into consideration because the models are linear and interpreting the coefficients of PTR and LSTR is redundant. The coefficients of interest for all economies columns are similar to table 2.14 for the OLS, PTR, and LSTR estimations.

[48] It is acceptable to use lagged values as robustness check for financial flows if they are not serially correlated.

Table 2.15 looks at the relationship between lagged financial account (% of GDP) values and growth. The regression models are all linear other than for emerging market economies; however, the coefficients of interest are all statistically insignificant for these country groups. For all economies and developing economies, increase in FA results in a decrease in growth levels. This inference is the same as that drawn in table 2.6. Table 2.16 looks at the relationship between lagged values of capital account openness and growth. The results are not drastically different from those obtained in table 6. The only additional component that can be taken from this table that was unavailable in the previous robustness tests or the final results table is the estimated PTR coefficients above the threshold for developing economies. The threshold level is 47 (this indicates a highly liberalized financial market). The coefficient above this threshold is -0.278 (statistically significant at 1%). This is an interesting result, signifying the impact of financially liberalized markets in developing economies and the risks associated to the macroeconomic conditions.

Table 2.12: FDI (% of GDP) on Growth using Lagged IFI Variable ***Robustness Check: Lagged IFI Proxy Variable***												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.78e-05*** (7.77e-06)*	*-2.06e-05** (8.62e-06)*	*-3.34e-05*** (7.71e-06)*	*-0.000158*** (5.61e-05)*	*-0.000193*** (5.64e-05)*	*-0.000192** (5.61e-05)*	*-0.000203* (0.000111)*	*-0.000211* (0.000113)*	*-0.000212* (0.000113)*	*-0.000181* (9.57e-05)*	*-0.000146 (9.65e-05)*	*-0.000147 (9.64e-05)*
Investment to GDP	*0.133*** (0.0178)*	*0.135*** (0.0188)*	*0.114*** (0.0123)*	*0.114*** (0.0192)*	*0.0936*** (0.0149)*	*0.0933*** (0.0150)*	*0.116* (0.0678)*	*0.121* (0.0698)*	*0.124* (0.0698)*	*0.146*** (0.0306)*	*0.140*** (0.0295)*	*0.141*** (0.0295)*
Population Growth	*0.561*** (0.0956)*	*0.556*** (0.0912)*	*0.561*** (0.0993)*	*0.461*** (0.166)*	*0.417** (0.166)*	*0.416** (0.166)*	*0.306 (0.559)*	*0.297 (0.558)*	*0.292 (0.557)*	*0.606 (0.382)*	*0.466 (0.359)*	*0.468 (0.360)*
Inflation	*-0.00536*** (0.00201)*	*-0.00515*** (0.00198)*	*-0.00540*** (0.00200)*	*-0.00534*** (0.00201)*	*-0.00549*** (0.00203)*	*-0.00548*** (0.00203)*	*-0.00932*** (0.00301)*	*-0.00959*** (0.00304)*	*-0.00960*** (0.00303)*	*-0.00529** (0.00244)*	*-0.00478* (0.00244)*	*-0.00479* (0.00245)*
Literacy Rate	*-0.0109* (0.00568)*	*-0.0143** (0.00603)*	*-0.0103* (0.00570)*	*-0.0166** (0.00832)*	*-0.0148* (0.00827)*	*-0.0151* (0.00823)*	*-0.0518* (0.0264)*	*-0.0518* (0.0264)*	*-0.0518* (0.0264)*	*-0.0284** (0.0127)*	*-0.0379*** (0.0130)*	*-0.0373*** (0.0129)*
Life Expectancy	*0.0363** (0.0177)*	*0.0330* (0.0176)*	*0.0450*** (0.0171)*	*0.0674*** (0.0204)*	*0.0808*** (0.0199)*	*0.0807*** (0.0199)*	*0.109 (0.202)*	*0.108 (0.204)*	*0.106 (0.204)*	*0.0963** (0.0482)*	*0.0394 (0.0428)*	*0.0419 (0.0428)*
FDI	*0.0921*** (0.0333)*			*0.184*** (0.0541)*			*0.271 (0.194)*			*0.0427 (0.0987)*		
$FDI - T \; if \; FDI < T$		*0.337*** (0.0765)*			*0.0984** (0.0394)*			*0.187 (0.144)*			*2.070*** (0.707)*	
$FDI - T \; if \; FDI > T$		*0.0276 (0.0498)*			*1.180*** (0.367)*			*0.582 (0.843)*			*-0.0252 (0.0751)*	
$W^{low}(FDI - c^*)$			*0.0702** (0.0326)*			*0.108*** (0.0392)*			*0.225 (0.145)*			*2.003*** (0.691)*
$W^{high}(FDI - c^*)$			*-5.57*** (9.924)*			*1.080*** (0.335)*			*1.685 (2.474)*			*-0.0190 (0.0769)*
Constant	*-2.012** (0.974)*	*-0.726 (0.991)*	*0.736 (1.662)*	*-2.992*** (1.154)*	*-0.598 (1.460)*	*-0.451 (1.435)*	*-2.238 (12.53)*	*1.832 (11.94)*	*4.568 (12.24)*	*-4.119 (3.325)*	*1.243 (3.329)*	*0.952 (3.306)*
Observations	1,253	1,253	1,253	820	820	820	148	148	148	186	186	186
R^2	0.256	0.265	0.271	0.268	0.294	0.295	0.354	0.359	0.362	0.402	0.438	0.437
PTR (T) or LSTR (c)*		4	40		25	24		20	28		1	1
LSTR parameter (γ)*			5			*2*			1			15
LM Test (GTD 2005) H0: Linear Model			34.49			28.85			18.19			14.50
p-value nonlinearity			0.0110			0.0502			0.313			0.696
LM Test for remaining nonlinearities			33.11			59.97			277.3			20.48
p-value remaining nonlinearity			0.0162			2.07e-06			0			0.306

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.13: EFPI (% of GDP) on Growth using Lagged IFI Variable Robustness Check: Lagged IFI Proxy Variable												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-3.39e-05*** (8.43e-06)*	*-3.29e-05*** (8.39e-06)*	*-3.39e-05*** (8.39e-06)*	*-4.21e-05 (7.05e-05)*	*-5.31e-05 (7.06e-05)*	*-5.31e-05 (7.06e-05)*	*-0.000244** (0.000103)*	*-0.000248** (0.000103)*	*-0.000248** (0.000103)*	*-0.000264** (8.45e-05)*	*-0.000248*** (8.41e-05)*	*-0.000247*** (8.41e-05)*
Trade to GDP	*0.0121*** (0.00373)*	*0.0123*** (0.00374)*	*0.0126*** (0.00375)*	*0.0202*** (0.00655)*	*0.0206*** (0.00655)*	*0.0206*** (0.00655)*	*0.0109 (0.0114)*	*0.0101 (0.0115)*	*0.0101 (0.0115)*	*0.00349 (0.00484)*	*0.00446 (0.00491)*	*0.00441 (0.00490)*
Population Growth	*0.648*** (0.103)*	*0.646*** (0.103)*	*0.648*** (0.104)*	*0.631*** (0.169)*	*0.641*** (0.169)*	*0.642*** (0.169)*	*0.592 (0.650)*	*0.623 (0.655)*	*0.623 (0.655)*	*0.281 (0.332)*	*0.351 (0.334)*	*0.353 (0.334)*
Inflation	*-0.00243** (0.00104)*	*-0.00243** (0.00104)*	*-0.00242** (0.00103)*	*-0.00236** (0.00102)*	*-0.00233** (0.00101)*	*-0.00233** (0.00101)*	*-0.0101*** (0.00282)*	*-0.0101*** (0.00283)*	*-0.0101*** (0.00283)*	*-0.00573** (0.00235)*	*-0.00568** (0.00234)*	*-0.00568** (0.00234)*
Literacy Rate	*-0.0145** (0.00596)*	*-0.0143** (0.00596)*	*-0.0149** (0.00596)*	*-0.0214** (0.00832)*	*-0.0227*** (0.00832)*	*-0.0227*** (0.00832)*	*-0.0421 (0.0341)*	*-0.0422 (0.0341)*	*-0.0422 (0.0341)*	*-0.0551*** (0.0135)*	*-0.0511*** (0.0134)*	*-0.0510*** (0.0134)*
Life Expectancy	*0.0557*** (0.0194)*	*0.0560*** (0.0194)*	*0.0557*** (0.0194)*	*0.0679*** (0.0220)*	*0.0688*** (0.0219)*	*0.0687*** (0.0219)*	*0.179 (0.117)*	*0.191 (0.118)*	*0.191 (0.118)*	*0.166*** (0.0460)*	*0.140*** (0.0455)*	*0.140*** (0.0455)*
$EFPI$	*-0.00410 (0.00530)*			*0.0370 (0.0459)*			*1.308 (1.102)*			*0.986*** (0.357)*		
$EFPI - T \; if \; EFPI < T$		*0.793*** (0.296)*			*1.739*** (0.477)*			*0.844 (1.398)*			*1.860*** (0.473)*	
$EFPI - T \; if \; EFPI > T$		*-0.00473 (0.00548)*			*-0.0453*** (0.0144)*			*4.166** (1.850)*			*-0.0131 (0.422)*	
$W^{low}(EFPI - c^*)$			*0.980*** (0.311)*			*1.716*** (0.466)*			*0.850 (1.393)*			*1.838*** (0.461)*
$W^{high}(EFPI - c^*)$			*-0.00458 (0.00546)*			*-0.0448*** (0.0143)*			*4.148** (1.833)*			*-0.0168 (0.421)*
Constant	*-0.469 (1.048)*	*-0.501 (1.047)*	*-0.499 (1.048)*	*-1.487 (1.190)*	*0.148 (1.217)*	*0.125 (1.214)*	*-4.940 (7.275)*	*-4.836 (7.512)*	*-4.830 (7.509)*	*-3.033 (2.968)*	*0.00101 (2.855)*	*-0.00799 (2.851)*
Observations	1,589	1,589	1,589	1,047	1,047	1,047	172	172	172	223	223	223
R^2	0.113	0.115	0.116	0.108	0.115	0.116	0.287	0.289	0.289	0.369	0.380	0.380
PTR (T) or LSTR (c)*		0	0		1	1		1	1		1	1
LSTR parameter (γ)*			*15*			*10*			15			*4*
LM Test (GTD 2005) H0: Linear Model			31.85			15.55			17.88			17.58
p-value nonlinearity			0.0606			0.795			0.331			0.675
LM Test for remaining nonlinearities			32.85			26.83			17.97			10178
p-value remaining nonlinearity			0.0479			0.177			0.326			0

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.14: ***Non-Resident Bank Loans (% of GDP) on Growth using Lagged IFI Variable***
Robustness Check: Lagged IFI Proxy Variable

	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-5.48e-06*	*-5.59e-06*	*-4.74e-06*	*-8.25e-05*	*-1.19e-05*	*-4.56e-05*	*-5.08e-05*	*-8.83e-05*	*-9.36e-05*	*-0.000184**	*-0.000187**	*-0.000185**
	(1.59e-05)	*(1.60e-05)*	*(1.61e-05)*	*(8.82e-05)*	*(8.80e-05)*	*(9.23e-05)*	*(9.71e-05)*	*(9.60e-05)*	*(9.63e-05)*	*(9.72e-05)*	*(9.80e-05)*	*(9.81e-05)*
Trade to GDP	*0.0225****	*0.0224****	*0.0226****	*0.0223***	*0.0246***	*0.0241***	*0.00252*	*0.00141*	*0.00139*	*0.00790*	*0.00783*	*0.00812**
	(0.00769)	*(0.00778)*	*(0.00772)*	*(0.0113)*	*(0.0111)*	*(0.0114)*	*(0.0101)*	*(0.0101)*	*(0.0101)*	*(0.00478)*	*(0.00487)*	*(0.00488)*
Population Growth	*0.719****	*0.718****	*0.720****	*0.581****	*0.569****	*0.618****	*0.592*	*0.555*	*0.578*	*-0.0182*	*-0.0659*	*-0.0423*
	(0.119)	*(0.119)*	*(0.119)*	*(0.199)*	*(0.194)*	*(0.203)*	*(0.482)*	*(0.483)*	*(0.481)*	*(0.291)*	*(0.306)*	*(0.300)*
Inflation	*0.00123*	*0.00127*	*0.00124*	*0.000458*	*0.00192**	*0.00107*	*-0.0138***	*-0.0144***	*-0.0144***	*-0.0124***	*-0.0127***	*-0.0125***
	(0.000991)	*(0.000996)*	*(0.000992)*	*(0.00130)*	*(0.00106)*	*(0.00117)*	*(0.00649)*	*(0.00655)*	*(0.00652)*	*(0.00563)*	*(0.00572)*	*(0.00571)*
Literacy Rate	*0.00256*	*0.00257*	*0.00262*	*-0.00248*	*-0.00473*	*-0.00286*	*0.00552*	*0.00509*	*0.00552*	*-0.0129*	*-0.0194*	*-0.0179*
	(0.00741)	*(0.00741)*	*(0.00744)*	*(0.0101)*	*(0.0100)*	*(0.0101)*	*(0.0284)*	*(0.0285)*	*(0.0284)*	*(0.0160)*	*(0.0183)*	*(0.0185)*
Life Expectancy	*-0.00123*	*-0.000144*	*-0.00189*	*0.0114*	*0.0240*	*0.0152*	*-0.0381*	*-0.0471*	*-0.0460*	*0.0673*	*0.0684*	*0.0681*
	(0.0225)	*(0.0232)*	*(0.0228)*	*(0.0236)*	*(0.0234)*	*(0.0232)*	*(0.111)*	*(0.112)*	*(0.112)*	*(0.0439)*	*(0.0436)*	*(0.0437)*
CBL	*-0.0521****			*-0.00835**			*-0.123****			*-0.145****		
	(0.0119)			*(0.00438)*			*(0.0276)*			*(0.0244)*		
$CBL - T\ if\ CBL < T$		*-0.152*			*-0.0953****			*-0.0925****			*0.112*	
		(0.244)			*(0.0226)*			*(0.0313)*			*(0.246)*	
$CBL - T\ if\ CBL > T$		*-0.0510****			*0.00453*			*-0.661****			*-0.157****	
		(0.0124)			*(0.00407)*			*(0.191)*			*(0.0250)*	
$W^{low}(CBL - c^*)$			*0.112*			*1.225***			*-0.0865****			*0.182*
			(0.355)			*(0.558)*			*(0.0329)*			*(0.352)*
$W^{high}(CBL - c^*)$			*-0.0515****			*-0.00454*			*25.08****			*-0.148****
			(0.0118)			*(0.00400)*			*(8.346)*			*(0.0248)*
Constant	*2.030*	*1.772*	*1.903*	*1.583*	*-2.250*	*0.102*	*8.579*	*4.108*	*3.269*	*2.529*	*2.489*	*2.298*
	(1.330)	*(1.369)*	*(1.329)*	*(1.594)*	*(1.973)*	*(1.813)*	*(7.571)*	*(8.284)*	*(8.456)*	*(3.434)*	*(3.637)*	*(3.524)*
Observations	728	728	728	519	519	519	142	142	142	115	115	115
R^2	0.185	0.185	0.185	0.092	0.125	0.105	0.248	0.263	0.266	0.295	0.301	0.300
PTR (T) or LSTR (c)*		3	2		37	0		56	68		5	4
LSTR parameter (γ)*			*6*			*10*			*7*			*4*
LM Test (GTD 2005) H0: Linear Model			22.08			11.27			8.978			15.33
p-value nonlinearity			0.0367			0.506			0.705			0.224
LM Test for remaining nonlinearities			17.58			6.844			7.575			7.865
p-value remaining nonlinearity			0.129			0.868			0.817			0.796

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the results table. CBL refers to cross-border lending which is non-resident bank loans as a percentage of GDP.

***Table 2.15:* Financial Account (% of GDP) on Growth using Lagged IFI Variable**
Robustness Check: Lagged IFI Proxy Variable

	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-4.30e-05*** (1.18e-05)*	*-4.25e-05*** (1.18e-05)*	*-4.26e-05*** (1.18e-05)*	*-0.000237*** (9.10e-05)*	*-0.000236** (9.26e-05)*	*-0.000236** (9.25e-05)*	*-3.45e-05 (0.000172)*	*-3.27e-05 (0.000168)*	*-4.70e-05 (0.000165)*	*-0.000176 (0.000117)*	*-0.000174 (0.000120)*	*-0.000166 (0.000117)*
Trade to GDP	*0.171*** (0.0220)*	*0.176*** (0.0224)*	*0.176*** (0.0226)*	*0.134*** (0.0222)*	*0.135*** (0.0222)*	*0.135*** (0.0227)*	*0.483*** (0.105)*	*0.493*** (0.0992)*	*0.455*** (0.0953)*	*0.215*** (0.0413)*	*0.216*** (0.0406)*	*0.209*** (0.0405)*
Population Growth	*0.394** (0.155)*	*0.425*** (0.161)*	*0.424*** (0.160)*	*0.655*** (0.251)*	*0.658*** (0.249)*	*0.660*** (0.251)*	*1.075 (0.757)*	*0.845 (0.764)*	*0.812 (0.759)*	*1.069* (0.561)*	*1.052* (0.600)*	*1.089* (0.575)*
Inflation	*-0.00261 (0.0377)*	*-0.00145 (0.0380)*	*-0.00329 (0.0377)*	*-0.0188 (0.0357)*	*-0.0188 (0.0358)*	*-0.0190 (0.0361)*	*-0.229** (0.0910)*	*-0.205** (0.0947)*	*-0.199** (0.0974)*	*-0.147** (0.0664)*	*-0.146** (0.0675)*	*-0.148** (0.0666)*
Literacy Rate	*-0.0180* (0.0104)*	*-0.0165 (0.0106)*	*-0.0161 (0.0105)*	*0.00174 (0.0146)*	*0.00194 (0.0140)*	*0.00215 (0.0142)*	*-0.0617 (0.0388)*	*-0.0654 (0.0391)*	*-0.0661* (0.0361)*	*-0.00923 (0.0181)*	*-0.00986 (0.0185)*	*-0.00926 (0.0185)*
Life Expectancy	*-0.0303 (0.0297)*	*-0.0337 (0.0300)*	*-0.0344 (0.0298)*	*0.00254 (0.0318)*	*0.00204 (0.0305)*	*0.00155 (0.0298)*	*-0.555** (0.258)*	*-0.607** (0.262)*	*-0.592** (0.262)*	*-0.000364 (0.0574)*	*0.000230 (0.0573)*	*-0.00629 (0.0578)*
FA	*-0.0735*** (0.0185)*			*-0.0783*** (0.0228)*			*-0.205 (0.124)*			*-0.0230 (0.0615)*		
$FA - T \; if \; FA < T$		*-0.0518** (0.0251)*			*-0.0756** (0.0355)*			*-0.450** (0.221)*			*-0.0170 (0.0575)*	
$FA - T \; if \; FA > T$		*-0.0905*** (0.0268)*			*-0.0806** (0.0331)*			*0.163 (0.289)*			*-0.0358 (0.160)*	
$W^{low}(FA - c^*)$			*-0.0417 (0.0308)*			*-0.0716 (0.0462)*			*10.75 (7.184)*			*-0.0439 (0.0642)*
$W^{high}(FA - c^*)$			*0.708 (0.754)*			*0.0784 (1.049)*			*0.0882 (0.196)*			*-108.7 (68.21)*
Constant	*3.428** (1.631)*	*3.542** (1.654)*	*1.719 (2.372)*	*1.205 (1.872)*	*0.828 (1.915)*	*-2.443 (3.231)*	*40.18** (19.76)*	*40.52* (20.25)*	*40.12** (19.86)*	*0.589 (4.714)*	*0.550 (4.735)*	*0.236 (4.466)*
Observations	382	382	382	247	247	247	53	53	53	58	58	58
R^2	0.331	0.333	0.334	0.251	0.251	0.251	0.461	0.485	0.492	0.549	0.549	0.558
PTR (T) or LSTR (c)*		0	52		5	52		10	0		3	19
LSTR parameter (γ)*			*1*			1			3			7
LM Test (GTD 2005) H0: Linear Model			14.51			8.440			5.327			15.69
p-value nonlinearity			0.105			0.490			0.805			0.0737
LM Test for remaining nonlinearities			64.25			247.2			10.83			13.19
p-value remaining nonlinearity			2.02e-10			0			0.288			0.154

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.16: *De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using Lagged IFI Variable* *Robustness Check: Lagged IFI Proxy Variable*												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-4.58e-05** (9.26e-06)*	*-4.33e-05*** (9.31e-06)*	*-4.34e-05*** (9.31e-06)*	*-0.000113* (6.31e-05)*	*-0.000109* (6.25e-05)*	*-0.000113* (6.31e-05)*	*-0.000354*** (0.000101)*	*-0.000366** (0.000103)*	*-0.000366** (0.000102)*	*-0.000248*** (8.16e-05)*	*-0.000202** (7.96e-05)*	*-0.000201** (7.98e-05)*
Invest to GDP	*0.0381*** (0.00941)*	*0.0372*** (0.00927)*	*0.0372*** (0.00927)*	*0.0390*** (0.0108)*	*0.0381*** (0.0108)*	*0.0386*** (0.0107)*	*0.0605 (0.0373)*	*0.0619 (0.0378)*	*0.0619 (0.0378)*	*0.0262 (0.0382)*	*0.0235 (0.0378)*	*0.0239 (0.0378)*
NFA to GDP	*0.500*** (0.161)*	*0.511*** (0.159)*	*0.511*** (0.159)*	*0.510** (0.213)*	*0.528** (0.206)*	*0.518** (0.208)*	*1.046 (0.875)*	*0.790 (0.881)*	*0.788 (0.881)*	*3.026** (1.201)*	*2.898** (1.182)*	*2.901** (1.182)*
FDI	*0.181*** (0.0408)*	*0.185*** (0.0408)*	*0.185*** (0.0408)*	*0.259*** (0.0553)*	*0.262*** (0.0550)*	*0.260*** (0.0552)*	*0.256* (0.130)*	*0.256* (0.131)*	*0.256* (0.131)*	*0.199*** (0.0620)*	*0.204*** (0.0588)*	*0.204*** (0.0589)*
Population Growth	*0.443*** (0.106)*	*0.463*** (0.106)*	*0.463*** (0.106)*	*0.326** (0.164)*	*0.330** (0.164)*	*0.331** (0.164)*	*0.639 (0.419)*	*0.658 (0.424)*	*0.658 (0.423)*	*0.115 (0.304)*	*0.0939 (0.284)*	*0.0939 (0.285)*
Inflation	*-0.00163*** (0.000514)*	*-0.00160*** (0.000497)*	*-0.00160*** (0.000498)*	*-0.00152*** (0.000467)*	*-0.00150*** (0.000461)*	*-0.00151*** (0.000461)*	*-0.0217** (0.0105)*	*-0.0190** (0.00895)*	*-0.0190** (0.00897)*	*-0.00264** (0.00128)*	*-0.00211* (0.00116)*	*-0.00212* (0.00116)*
Literacy Rate	*-0.00493 (0.00537)*	*-0.00457 (0.00535)*	*-0.00455 (0.00535)*	*-0.0111 (0.00769)*	*-0.0118 (0.00771)*	*-0.0111 (0.00770)*	*-0.0185 (0.0200)*	*-0.0171 (0.0201)*	*-0.0171 (0.0201)*	*-0.0367*** (0.0112)*	*-0.0418*** (0.0112)*	*-0.0418*** (0.0112)*
Trade to GDP	*0.00321 (0.00641)*	*0.00212 (0.00640)*	*0.00213 (0.00640)*	*0.0138 (0.00892)*	*0.0139 (0.00890)*	*0.0132 (0.00893)*	*0.0198 (0.0223)*	*0.0224 (0.0225)*	*0.0224 (0.0225)*	*0.00717 (0.0115)*	*0.00485 (0.0115)*	*0.00495 (0.0115)*
$KAOPEN$	*-0.0124 (0.00760)*			*4.35e-05 (0.00942)*			*0.0105 (0.0292)*			*0.0477*** (0.0155)*		
$KAOP - T\ if\ KAOP < T$		*0.0443** (0.0221)*			*0.0169 (0.0116)*			*0.142 (0.0971)*			*0.370*** (0.102)*	
$KAOP - T\ if\ KAOP > T$		*-0.0372*** (0.0108)*			*-0.278** (0.134)*			*-0.0261 (0.0410)*			*0.0195 (0.0175)*	
$W^{low}(KAOP - c^*)$			*0.0425* (0.0217)*			*0.0230 (0.0185)*			*0.139 (0.0955)*			*0.364*** (0.101)*
$W^{high}(KAOP - c^*)$			*-0.0363*** (0.0106)*			*-0.0332 (0.0236)*			*-0.0253 (0.0406)*			*0.0210 (0.0172)*
Constant	*3.236*** (0.412)*	*3.366*** (0.437)*	*3.345*** (0.435)*	*3.009*** (0.599)*	*3.541*** (0.748)*	*3.382*** (0.703)*	*5.180** (1.987)*	*5.807*** (2.108)*	*5.782*** (2.104)*	*5.889*** (1.240)*	*7.445*** (1.243)*	*7.399*** (1.245)*
Observations	1,366	1,366	1,366	898	898	898	143	143	143	209	209	209
R^2	0.166	0.171	0.171	0.176	0.179	0.178	0.300	0.309	0.309	0.322	0.368	0.368
PTR (T) or LSTR (c)*		24	24		47	32		22			15	15
LSTR parameter (γ)*			14			*14*			15			15
LM Test (GTD 2005) H0: Linear Model			47.77			34.32			22			20
p-value nonlinearity			0.00179			0.0606			0.00232			0.642
LM Test for remaining nonlinearities			13.35			7.817			18.234			23.57
p-value remaining nonlinearity			0.944			0.999			0.918			0.428

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

2.10.2 Robustness Test 3: Post-1990 Estimations

Robustness test 3 uses 5-year non-overlapping averages after 1990. Therefore, there are 5 observations per country (assuming there were no missing values). The justification for using this as a robustness test is firstly to take a closer look at the regression findings using more recent dataset to check to see if these threshold effects differ. Secondly, monetary policies, post-1990 have been quite different, especially for emerging market economies. Finally, it makes sense to include it because over the past two decades the world economy has become increasingly more financially integrated than ever before e.g. increase in financial flows post-1990s, refer to the historical trends for de facto figures. The final comment that the reader should take into account for this section is that, despite the inclusion of transition economies, the results would not be drastically different due to these countries being under the communist regime of old. However, it has been included due to a few overlaps in the countries that are labeled as developing and/or emerging.

Table 2.17 looks at the relationship between FDI and growth. The coefficients of interest are similar across all country groups in table 2.3 and table 2.17. The threshold levels are also close approximates of table 2.17. The results obtained in this table further signify the fact that for the FDI variable, there definitely must be multiple thresholds (that is unaccounted by LSTR). Table 2.18 looks at the relationship between EFPI and growth. The threshold levels of EFPI for PTR and LSTR are similar to those obtained in table 2.3; they vary between 0-2% of GDP. The coefficients of interest are also similar to those obtained in table 2.3. Even though the regression models in table 2.3 are nonlinear (referring to the tests of nonlinearity), the test that checks for remaining nonlinearities suggest that there may be multiple thresholds or more than two regimes. Table 2.19 looks at the relationship between non-resident bank loans and growth (we compare this to table 2.5). Due to the fact that the data for non-resident bank loans starts after 1995, the results obtained in table 2.19 and table 2.5 are exactly the same. Therefore, no additional inferences are drawn from this table. This is the same for table 2.6 and table 2.20, both of which look at the relationship between the financial account and growth. However, the data is unavailable until the year 2000.

Table 2.21 looks at the relationship between capital account openness and growth (note that this table is compared to table 2.2). The coefficients of interest for all economies, developing economies and transition economies are all statistically insignificant in table 2.21. However, the results obtained for emerging market economies in regression models 10, 11, and 12 are not distinctively different from those obtained in table 2.2. The threshold levels are also not dissimilar.

***Table 2.17:* FDI (% of GDP) on Growth using post-1990 estimations Robustness Check: Post-1990 Estimations**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.19e-05***	*-2.80e-05****	*-2.07e-05***	*-3.12e-05*	*-5.29e-05*	*-5.69e-05*	*-0.000242***	*-0.000185***	*-0.000208***	*-1.92e-05*	*-2.64e-06*	*1.52e-05*
	(1.09e-05)	*(1.04e-05)*	*(9.93e-06)*	*(7.18e-05)*	*(8.64e-05)*	*(8.37e-05)*	*(9.49e-05)*	*(9.13e-05)*	*(9.09e-05)*	*(0.000111)*	*(0.000108)*	*(0.000108)*
Investment to GDP	*0.165****	*0.115****	*0.117****	*0.138****	*0.0906****	*0.0874****	*-0.00611*	*-0.0140*	*-0.0144*	*0.186****	*0.170****	*0.170****
	(0.0390)	*(0.0264)*	*(0.0252)*	*(0.0359)*	*(0.0323)*	*(0.0305)*	*(0.104)*	*(0.101)*	*(0.105)*	*(0.0426)*	*(0.0432)*	*(0.0423)*
Population Growth	*0.759****	*0.761****	*0.760****	*1.164****	*1.103****	*1.102****	*1.144***	*1.022**	*1.049***	*1.313****	*1.239****	*1.225****
	(0.136)	*(0.138)*	*(0.136)*	*(0.198)*	*(0.192)*	*(0.192)*	*(0.555)*	*(0.516)*	*(0.526)*	*(0.494)*	*(0.440)*	*(0.426)*
Inflation	*-0.00237**	*-0.00241***	*-0.00236***	*-0.00227***	*-0.00234***	*-0.00234***	*-0.00858****	*-0.00793****	*-0.00844****	*-0.00156***	*-0.00143***	*-0.00139***
	(0.00123)	*(0.00120)*	*(0.00119)*	*(0.00114)*	*(0.00112)*	*(0.00112)*	*(0.00175)*	*(0.00177)*	*(0.00172)*	*(0.000634)*	*(0.000582)*	*(0.000569)*
Literacy Rate	*-0.0128*	*-0.0129*	*-0.0149**	*-0.00767*	*-0.00786*	*-0.00748*	*-0.0417*	*-0.0500**	*-0.0486**	*-0.0304**	*-0.0409***	*-0.0435***
	(0.00829)	*(0.00815)*	*(0.00813)*	*(0.0112)*	*(0.0110)*	*(0.0110)*	*(0.0284)*	*(0.0284)*	*(0.0278)*	*(0.0164)*	*(0.0166)*	*(0.0169)*
Life Expectancy	*0.0271*	*0.0439**	*0.0408**	*0.0506**	*0.0699***	*0.0719***	*0.339*	*0.328*	*0.332*	*0.0479*	*-0.0140*	*-0.0271*
	(0.0247)	*(0.0233)*	*(0.0227)*	*(0.0276)*	*(0.0291)*	*(0.0285)*	*(0.217)*	*(0.209)*	*(0.217)*	*(0.0468)*	*(0.0386)*	*(0.0375)*
FDI	*0.125****			*0.255****			*0.264*			*0.204*		
	(0.0410)			*(0.0680)*			*(0.169)*			*(0.164)*		
$FDI - T\ if\ FDI < T$		*0.0896****			*0.185****			*0.513***			*0.696****	
		(0.0313)			*(0.0603)*			*(0.208)*			*(0.237)*	
$FDI - T\ if\ FDI > T$		*56.10****			*0.980****			*-3.010****			*-0.300****	
		(8.297)			*(0.186)*			*(1.008)*			*(0.0835)*	
$W^{low}(FDI - c^*)$			*0.167****			*0.217****			*0.0714*			*0.758****
			(0.0296)			*(0.0569)*			*(0.113)*			*(0.244)*
$W^{high}(FDI - c^*)$			*15.42****			*0.939****			*-5.816**			*-0.308****
			(2.100)			*(0.153)*			*(2.994)*			*(0.0775)*
Constant	*-2.529***	*2.828*	*6.956****	*-4.843****	*0.0853*	*0.773*	*-16.45*	*-7.821*	*-14.47*	*-3.563*	*5.662*	*6.256*
	(1.219)	*(2.110)*	*(1.929)*	*(1.367)*	*(1.933)*	*(1.810)*	*(12.96)*	*(10.62)*	*(11.88)*	*(3.537)*	*(3.920)*	*(3.909)*
Observations	713	713	713	470	470	470	101	101	101	104	104	104
R^2	0.398	0.447	0.450	0.442	0.478	0.478	0.499	0.533	0.514	0.496	0.555	0.566
PTR (T) or LSTR (c)*		57	55		25	24		16	19		7	7
LSTR parameter (γ)*			1			*1*			1			1
LM Test (GTD 2005) H0: Linear Model			19.52			23.85			24.15			23.40
p-value nonlinearity			0.0614			0.0213			0.0191			0.0241
LM Test for remaining nonlinearities			95.80			60.60			10.53			59.22
p-value remaining nonlinearity			0			1.76e-08			0.570			3.13e-08

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

***Table 2.18:* EFPI (% of GDP) on Growth using post-1990 estimations** **Robustness Check: Post-1990 Estimations**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-2.97e-05***	*-2.93e-05***	*-3.18e-05****	*-8.46e-06*	*-4.12e-05*	*-1.36e-05*	*-0.000160*	*-0.000161*	*-0.000151*	*-0.000132*	*-0.000123*	*-0.000114*
	(1.18e-05)	*(1.18e-05)*	*(1.16e-05)*	*(0.000102)*	*(0.000104)*	*(0.000102)*	*(0.000104)*	*(0.000104)*	*(0.000104)*	*(0.000127)*	*(0.000128)*	*(0.000128)*
Trade to GDP	*0.0220***	*0.0224***	*0.0230***	*0.0382***	*0.0397***	*0.0389***	*0.00221*	*8.39e-05*	*0.00102*	*0.000633*	*0.00198*	*0.00304*
	(0.0111)	*(0.0111)*	*(0.0113)*	*(0.0184)*	*(0.0184)*	*(0.0184)*	*(0.0111)*	*(0.0113)*	*(0.0112)*	*(0.00558)*	*(0.00584)*	*(0.00593)*
Population Growth	*0.886****	*0.880****	*0.881****	*1.262****	*1.263****	*1.272****	*1.303***	*1.355***	*1.334***	*0.800**	*0.812**	*0.847**
	(0.145)	*(0.146)*	*(0.148)*	*(0.216)*	*(0.216)*	*(0.217)*	*(0.611)*	*(0.616)*	*(0.615)*	*(0.450)*	*(0.450)*	*(0.449)*
Inflation	*-0.00229****	*-0.00229****	*-0.00228****	*-0.00220****	*-0.00216****	*-0.00218****	*-0.00968****	*-0.00968****	*-0.00968****	*-0.00176****	*-0.00178****	*-0.00176****
	(0.000689)	*(0.000690)*	*(0.000689)*	*(0.000679)*	*(0.000675)*	*(0.000678)*	*(0.00164)*	*(0.00165)*	*(0.00165)*	*(0.000638)*	*(0.000644)*	*(0.000640)*
Literacy Rate	*-0.0122*	*-0.0124*	*-0.0131*	*-0.0116*	*-0.0129*	*-0.0116*	*-0.0346*	*-0.0336*	*-0.0338*	*-0.0572****	*-0.0575****	*-0.0564****
	(0.00854)	*(0.00855)*	*(0.00856)*	*(0.0114)*	*(0.0114)*	*(0.0114)*	*(0.0294)*	*(0.0296)*	*(0.0296)*	*(0.0195)*	*(0.0194)*	*(0.0192)*
Life Expectancy	*0.0367*	*0.0382*	*0.0380*	*0.0593**	*0.0617**	*0.0607**	*0.218**	*0.234***	*0.222***	*0.206****	*0.198***	*0.186***
	(0.0340)	*(0.0337)*	*(0.0335)*	*(0.0322)*	*(0.0318)*	*(0.0319)*	*(0.111)*	*(0.112)*	*(0.111)*	*(0.0767)*	*(0.0791)*	*(0.0775)*
$EFPI$	*-0.0162*			*0.0996*			*0.760*			*1.039***		
	(0.0105)			*(0.0796)*			*(1.144)*			*(0.505)*		
$EFPI - T\ if\ EFPI < T$		*0.702***			*2.112****			*-0.0601*			*2.210****	
		(0.340)			*(0.699)*			*(1.292)*			*(0.608)*	
$EFPI - T\ if\ EFPI > T$		*-0.0168*			*-0.128**			*104.4***			*0.856*	
		(0.0107)			*(0.0707)*			*(50.51)*			*(0.554)*	
$W^{low}(EFPI - c^*)$			*1.123***			*3.481**			*1.238*			*3.456****
			(0.465)			*(2.050)*			*(1.047)*			*(0.785)*
$W^{high}(EFPI - c^*)$			*-0.0165*			*0.0522*			*43.51**			*0.562*
			(0.0106)			*(0.0567)*			*(25.43)*			*(0.468)*
Constant	*-0.721*	*-0.814*	*-0.848*	*-4.199****	*-2.366*	*-4.398****	*-8.410*	*-9.535*	*-6.019*	*-6.833*	*-6.263*	*-5.723*
	(1.513)	*(1.503)*	*(1.501)*	*(1.495)*	*(1.499)*	*(1.505)*	*(7.074)*	*(7.527)*	*(6.967)*	*(5.181)*	*(5.362)*	*(5.205)*
Observations	789	789	789	525	525	525	118	118	118	109	109	109
R^2	0.203	0.204	0.206	0.241	0.251	0.246	0.409	0.413	0.412	0.374	0.377	0.386
PTR (T) or LSTR (c)*		0	0		1	0		2	2		0	0
LSTR parameter (γ)*			*12*			*2*			1			*1*
LM Test (GTD 2005) H0: Linear Model			21.47			22.80			17.561			21.80
p-value nonlinearity			0.0489			0.0384			0.0818			0.0461
LM Test for remaining nonlinearities			24.82			20.19			4.894			55.98
p-value remaining nonlinearity			0.0157			0.0637			0.961			1.21e-07

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 2.19: ***Non-Resident Bank Loans (% of GDP) on Growth using post-1990 estimations***
Robustness Check: Post 1990 Estimations

	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*1.56e-06*	*1.47e-06*	*5.24e-06*	*3.42e-05*	*1.66e-05*	*3.90e-05*	*-0.000106*	*-0.000139*	*-0.000153*	*-0.000194**	*-0.000167*	*-0.000170*
	(2.35e-05)	*(2.35e-05)*	*(2.41e-05)*	*(0.000110)*	*(0.000112)*	*(0.000112)*	*(0.000103)*	*(0.000111)*	*(0.000115)*	*(0.000109)*	*(0.000105)*	*(0.000104)*
Trade to GDP	*0.0343***	*0.0349***	*0.0349***	*0.0427***	*0.0431***	*0.0437***	*-0.00170*	*0.00189*	*0.00210*	*-0.000904*	*0.00225*	*0.00159*
	(0.0163)	*(0.0162)*	*(0.0163)*	*(0.0205)*	*(0.0205)*	*(0.0205)*	*(0.0111)*	*(0.0117)*	*(0.0121)*	*(0.00621)*	*(0.00630)*	*(0.00596)*
Population Growth	*0.907****	*0.916****	*0.913****	*1.285****	*1.308****	*1.320****	*1.010**	*1.198**	*1.108**	*0.318*	*0.385*	*0.334*
	(0.163)	*(0.163)*	*(0.163)*	*(0.226)*	*(0.223)*	*(0.230)*	*(0.600)*	*(0.636)*	*(0.604)*	*(0.340)*	*(0.341)*	*(0.338)*
Inflation	*-0.00332***	*-0.00318***	*-0.00326***	*-0.00338***	*-0.00329***	*-0.00331***	*-0.0101****	*-0.00877****	*-0.00940****	*-0.00990****	*-0.0100****	*-0.00996****
	(0.00147)	*(0.00138)*	*(0.00143)*	*(0.00137)*	*(0.00129)*	*(0.00132)*	*(0.00162)*	*(0.00177)*	*(0.00174)*	*(0.00148)*	*(0.00147)*	*(0.00149)*
Literacy Rate	*-0.0192**	*-0.0194***	*-0.0192**	*-0.0172*	*-0.0162*	*-0.0165*	*-0.0367*	*-0.0288*	*-0.0436*	*-0.0400***	*-0.0339**	*-0.0367***
	(0.00983)	*(0.00980)*	*(0.00981)*	*(0.0121)*	*(0.0119)*	*(0.0119)*	*(0.0294)*	*(0.0287)*	*(0.0293)*	*(0.0181)*	*(0.0183)*	*(0.0177)*
Life Expectancy	*0.0415*	*0.0413*	*0.0385*	*0.0554***	*0.0560***	*0.0523**	*0.220**	*0.202**	*0.198**	*0.139***	*0.133***	*0.131***
	(0.0261)	*(0.0261)*	*(0.0263)*	*(0.0279)*	*(0.0281)*	*(0.0283)*	*(0.120)*	*(0.110)*	*(0.114)*	*(0.0570)*	*(0.0546)*	*(0.0551)*
CBL	*-0.0369***			*-0.0114**			*-0.0387**			*-0.0354*		
	(0.0175)			*(0.00671)*			*(0.0229)*			*(0.0436)*		
$CBL - T\ if\ CBL < T$		*3.664*			*3.287*			*8.394*			*-0.0795***	
		(2.231)			*(2.181)*			*(5.632)*			*(0.0396)*	
$CBL - T\ if\ CBL > T$		*-0.0416***			*-0.0127**			*-0.0475***			*0.337****	
		(0.0177)			*(0.00684)*			*(0.0198)*			*(0.0887)*	
$W^{low}(CBL - c^*)$			*0.791*			*0.981*			*0.576*			*-0.0447*
			(0.572)			*(0.635)*			*(0.514)*			*(0.0270)*
$W^{high}(CBL - c^*)$			*-0.0360***			*-0.0112**			*-0.0528****			*4.212****
			(0.0173)			*(0.00662)*			*(0.0192)*			*(0.781)*
Constant	*-1.095*	*-1.010*	*-1.183*	*-3.752***	*-3.764***	*-3.918***	*-7.606*	*-6.933*	*-5.146*	*-1.486*	*-4.624*	*-3.684*
	(1.410)	*(1.410)*	*(1.411)*	*(1.799)*	*(1.804)*	*(1.843)*	*(7.659)*	*(7.225)*	*(7.227)*	*(3.985)*	*(4.130)*	*(4.032)*
Observations	630	630	630	455	455	455	115	115	115	97	97	97
R^2	0.274	0.284	0.280	0.290	0.299	0.298	0.418	0.462	0.436	0.532	0.553	0.560
PTR (T) or LSTR (c)*		1	2		1	2		1	5		39	52
LSTR parameter (γ)*			*7*			*15*			*15*			*2*
LM Test (GTD 2005) H0: Linear Model			21.82			24.94			29.080			22.947
p-value nonlinearity			0.0258			0.0185			0.00615			0.0535
LM Test for remaining nonlinearities			12.82			8.442			8.985			25.88
p-value remaining nonlinearity			0.305			0.673			0.623			0.00677

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the results table. CBL refers to cross-border lending which is non-resident bank loans as a percentage of GDP.

***Table 2.20:* Financial Account (% of GDP) on Growth using post-1990 estimations** **Robustness Check: Post-1990 Estimations**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-3.97e-05****	*-4.04e-05****	*-4.01e-05****	*-0.000238****	*-0.000239****	*-0.000239****	*-0.000167*	*-0.000162*	*-0.000167*	*-0.000193**	*-0.000210**	*-0.000207**
	(8.97e-06)	*(9.08e-06)*	*(9.10e-06)*	*(7.83e-05)*	*(7.91e-05)*	*(7.90e-05)*	*(0.000151)*	*(0.000158)*	*(0.000156)*	*(0.000114)*	*(0.000118)*	*(0.000113)*
Trade to GDP	*0.121****	*0.119****	*0.119****	*0.108****	*0.104****	*0.104****	*0.0888*	*0.0938*	*0.101*	*0.180****	*0.178****	*0.184****
	(0.0169)	*(0.0174)*	*(0.0173)*	*(0.0180)*	*(0.0185)*	*(0.0185)*	*(0.0711)*	*(0.0699)5*	*(0.0715)*	*(0.0390)*	*(0.0392)*	*(0.0400)*
Population Growth	*0.264***	*0.258***	*0.261***	*0.367**	*0.356**	*0.357**	*0.266*	*0.273*	*0.331*	*0.299*	*0.380*	*0.544*
	(0.122)	*(0.122)*	*(0.122)*	*(0.207)*	*(0.208)*	*(0.208)*	*(0.380)*	*(0.379)*	*(0.397)*	*(0.444)*	*(0.464)*	*(0.495)*
Inflation	*0.0461***	*0.0446***	*0.0449***	*0.0375**	*0.0346*	*0.0347*	*-0.0758*	*-0.0763*	*-0.0820**	*-0.0195*	*-0.0224*	*-0.0252*
	(0.0193)	*(0.0195)*	*(0.0196)*	*(0.0207)*	*(0.0210)*	*(0.0211)*	*(0.0502)*	*(0.0481)*	*(0.0485)*	*(0.0348)*	*(0.0347)*	*(0.0343)*
Literacy Rate	*-0.0139**	*-0.0139**	*-0.0138**	*-0.00247*	*-0.00268*	*-0.00261*	*-0.0417***	*-0.0456***	*-0.0411***	*-0.00899*	*-0.00663*	*-0.00359*
	(0.00720)	*(0.00718)*	*(0.00721)*	*(0.0103)*	*(0.0103)*	*(0.0103)*	*(0.0177)*	*(0.0185)*	*(0.0177)*	*(0.0147)*	*(0.0150)*	*(0.0147)*
Life Expectancy	*-0.0257*	*-0.0255*	*-0.0259*	*0.00456*	*0.00537*	*0.00517*	*-0.181*	*-0.188*	*-0.197*	*-0.00240*	*0.000133*	*-0.00177*
	(0.0226)	*(0.0225)*	*(0.0227)*	*(0.0252)*	*(0.0250)*	*(0.0251)*	*(0.181)*	*(0.185)*	*(0.187)*	*(0.0350)*	*(0.0370)*	*(0.0366)*
FA	*-0.0532****			*-0.0607****			*-0.0321*			*-0.0402*		
	(0.0149)			*(0.0198)*			*(0.0249)*			*(0.0517)*		
$FA - T\ if\ FA < T$		*-0.0555****			*-0.0661****			*-0.0451*			*-0.0924*	
		(0.0156)			*(0.0212)*			*(0.0156)*			*(0.0612)*	
$FA - T\ if\ FA > T$		*0.0547*			*0.100*			*0.0147*			*0.0212*	
		(0.102)			*(0.113)*			*(0.102)*			*(0.113)*	
$W^{low}(FA - c^*)$			*-0.0545****			*-0.0657****			*-0.145***			*-0.117***
			(0.0155)			*(0.0211)*			*(0.0155)*			*(0.0550)*
$W^{high}(FA - c^*)$			*0.0360*			*0.0948*			*0.0160**			*-5.006**
			(0.0938)			*(0.108)*			*(3.938)*			*(2.591)*
Constant	*3.822****	*2.223*	*2.191*	*1.938*	*0.0689*	*0.0822*	*2.221*	*3.413*	*1.132*	*1.668*	*1.137*	*-1.322*
	(1.382)	*(1.454)*	*(1.466)*	*(1.623)*	*(1.838)*	*(1.842)*	*(4.382)*	*(1.454)*	*(1.466)*	*(3.116)*	*(3.379)*	*(3.230)*
Observations	388	388	388	253	253	253	42	42	42	58	58	58
R^2	0.368	0.369	0.369	0.270	0.273	0.273	0.368	0.369	0.369	0.547	0.554	0.575
PTR (T) or LSTR (c)*		30	31		30	30		1	2		0	16
LSTR parameter (γ)*			*6*			11			*6*			2
LM Test (GTD 2005) H0: Linear Model			15.04			18.17			15.04			14.38
p-value nonlinearity			0.0900			0.0755			0.0900			0.109
LM Test for remaining nonlinearities			15.62			9.388			15.62			39.89
p-value remaining nonlinearity			0.0752			0.402			0.0752			7.96e-06

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

***Table 2.21:* De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using post-1990 estimations Robustness Check: Post-1990 Estimations**												
	All Economies			*Developing Economies*			*Transition Economies*			*Emerging Market Economies*		
	(1) Ordinary Least Squares	*(2) Panel Threshold Regression (PTR)*	*(3) Logistic Smooth Transition Regression (LSTR)*	*(4) Ordinary Least Squares*	*(5) Panel Threshold Regression (PTR)*	*(6) Logistic Smooth Transition Regression (LSTR)*	*(7) Ordinary Least Squares*	*(8) Panel Threshold Regression (PTR)*	*(9) Logistic Smooth Transition Regression (LSTR)*	*(10) Ordinary Least Squares*	*(11) Panel Threshold Regression (PTR)*	*(12) Logistic Smooth Transition Regression (LSTR)*
Variable												
Initial GDP per Capita	*-3.99e-05***	*-3.69e-05***	*-3.80e-05***	*-0.000108*	*-0.000106*	*-0.000106*	*-0.000305****	*-0.000325***	*-0.000324***	*-0.000126*	*-0.000129*	*-0.000127*
	(1.49e-05)	*(1.60e-05)*	*(1.59e-05)*	*(8.55e-05)*	*(8.56e-05)*	*(8.56e-05)*	*(0.000104)*	*(0.000106)*	*(0.000106)*	*(9.77e-05)*	*(9.23e-05)*	*(9.22e-05)*
Invest to GDP	*0.0281*	*0.0276*	*0.0279*	*0.0378***	*0.0373***	*0.0373***	*0.0368*	*0.0378*	*0.0373*	*0.111***	*0.0961***	*0.0971***
	(0.0181)	*(0.0182)*	*(0.0182)*	*(0.0177)*	*(0.0177)*	*(0.0177)*	*(0.0264)*	*(0.0266)*	*(0.0264)*	*(0.0449)*	*(0.0452)*	*(0.0452)*
NFA to GDP	*0.524***	*0.531***	*0.528***	*0.555***	*0.540***	*0.539***	*0.975*	*0.750*	*0.785*	*1.554*	*1.875*	*1.857*
	(0.226)	*(0.225)*	*(0.226)*	*(0.274)*	*(0.271)*	*(0.271)*	*(0.966)*	*(0.934)*	*(0.942)*	*(1.590)*	*(1.519)*	*(1.519)*
FDI	*0.310****	*0.313****	*0.313****	*0.431****	*0.431****	*0.431****	*0.0581*	*0.0590*	*0.0589*	*0.133*	*0.142*	*0.140*
	(0.115)	*(0.116)*	*(0.116)*	*(0.131)*	*(0.132)*	*(0.132)*	*(0.0957)*	*(0.0936)*	*(0.0932)*	*(0.108)*	*(0.0985)*	*(0.0992)*
Population Growth	*0.578****	*0.579****	*0.577****	*0.783****	*0.779****	*0.779****	*0.805***	*0.791***	*0.788***	*0.252*	*0.200*	*0.199*
	(0.160)	*(0.160)*	*(0.160)*	*(0.181)*	*(0.181)*	*(0.181)*	*(0.385)*	*(0.376)*	*(0.375)*	*(0.328)*	*(0.302)*	*(0.303)*
Inflation	*-0.00141***	*-0.00139****	*-0.00140****	*-0.00134****	*-0.00141****	*-0.00141****	*-0.0264****	*-0.0246****	*-0.0246****	*-0.00106****	*-0.000734****	*-0.000735****
	(0.000211)	*(0.000218)*	*(0.000216)*	*(0.000213)*	*(0.000175)*	*(0.000173)*	*(0.00937)*	*(0.00867)*	*(0.00854)*	*(0.000122)*	*(0.000172)*	*(0.000173)*
Literacy Rate	*-0.00729*	*-0.00805*	*-0.00779*	*0.000119*	*-0.000447*	*-0.000463*	*-0.0183*	*-0.0150*	*-0.0152*	*-0.0395****	*-0.0421****	*-0.0421****
	(0.00831)	*(0.00847)*	*(0.00845)*	*(0.00968)*	*(0.00970)*	*(0.00970)*	*(0.0162)*	*(0.0165)*	*(0.0164)*	*(0.0150)*	*(0.0151)*	*(0.0152)*
Trade to GDP	*0.00250*	*0.00254*	*0.00239*	*0.00871*	*0.00983*	*0.00988*	*0.00906*	*0.0146*	*0.0150*	*-0.0240***	*-0.0225**	*-0.0225**
	(0.00856)	*(0.00858)*	*(0.00852)*	*(0.0129)*	*(0.0129)*	*(0.0129)*	*(0.0202)*	*(0.0208)*	*(0.0207)*	*(0.0113)*	*(0.0114)*	*(0.0114)*
$KAOP$	*-0.0125*			*-0.00854*			*0.0291*			*0.0452***		
	(0.0106)			*(0.0140)*			*(0.0261)*			*(0.0221)*		
$KAOP - T\ if\ KAOP < T$		*0.00102*			*-0.356*			*0.155*			*0.401****	
		(0.0135)			*(0.248)*			*(0.104)*			*(0.133)*	
$KAOP - T\ if\ KAOP > T$		*-0.0603*			*-0.00293*			*-0.00647*			*0.0202*	
		(0.0462)			*(0.0142)*			*(0.0380)*			*(0.0223)*	
$W^{low}(KAOP - c^*)$			*-0.00322*			*-0.373*			*0.177*			*0.391****
			(0.0123)			*(0.250)*			*(0.115)*			*(0.131)*
$W^{high}(KAOP - c^*)$			*2.029*			*-0.00338*			*-0.00580*			*0.0228*
			(2.333)			*(0.0141)*			*(0.0366)*			*(0.0220)*
Constant	*2.782****	*2.606****	*2.470****	*1.270**	*1.043*	*1.056*	*5.981****	*6.744****	*6.748****	*4.413***	*6.355****	*6.249****
	(0.677)	*(0.764)*	*(0.815)*	*(0.734)*	*(0.772)*	*(0.770)*	*(1.499)*	*(1.387)*	*(1.379)*	*(1.711)*	*(1.906)*	*(1.906)*
Observations	678	678	678	451	451	451	98	98	98	100	100	100
R^2	0.289	0.290	0.290	0.366	0.369	0.370	0.374	0.387	0.389	0.468	0.514	0.513
PTR (T) or LSTR (c)*		41	51		11	11		22	21		16	16
LSTR parameter (γ)*			15			*15*			14			15
LM Test (GTD 2005) H0: Linear Model			35.32			23.71			23.49			25.49
p-value nonlinearity			0.00132			0.0497			0.0411			0.0488
LM Test for remaining nonlinearities			7.188			4.050			13.69			10.24
p-value remaining nonlinearity			0.927			0.995			0.396			0.745

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

2.10.3 Robustness Test 4: Quadratic Estimations

For this particular robustness check, the threshold measures are tested with standard quadratic estimations. However, the quadratic estimations are only tested for the key independent variables (IFI proxy variables) of interest that have the high transition speed (from one regime to the other; denoted by gamma, γ*) i.e. indicating that the PTR model is more appropriate for interpretation rather than the LSTR. The second choice of selection is whether there are two regimes (single threshold) or more than two regimes (multiple thresholds). These were the two criteria of selection. The justification for the second criteria of selection is simply because the quadratic estimation would only check for a single threshold and therefore it would be redundant to include the other variables as some of them have multiple thresholds according to the Gonzalez, Terasvirta, and van Djik (2005) test of nonlinearity and detection of multiple regimes. Therefore, only the Chinn-Ito index met both of these conditions and was selected for robustness checks via the quadratic estimations.

The quadratic (nonlinear) relationship is investigated in tables 2.22, 2.23, 2.24, and 2.25 for all economies, developing economies, transition economies, and emerging market economies, respectively. For each of these country groups, the inflexion point[49] was calculated and consequently the maxima or the minima were determined. For all economies (table 2.22), the inflexion point equals 28.25 and this is a maxima. On table 2.2, the PTR and LSTR threshold estimates are 21 and 22 respectively. Furthermore, below and above the threshold, they have negative and positive values respectively. This reiterates and validates our threshold findings. For developing economies (tables 2.23), the inflexion point equals 25.25 and this has a maxima. The threshold estimates of PTR and LSTR on table 2.2 are 22 and 23 respectively. The inflexion point and the threshold estimates are again close approximates. However, in table 2.2, we do not know the coefficients below and above the threshold, but, the quadratic regression analysis suggests increasing growth

[49] The inflexion point or the stationary point for the variable KAOPEN was calculated in the following manner: (1) the regression equation was first written out which took into account the coefficients that were statistically significant and if there were several then the coefficients were averaged in the following way e.g. $Growth_{it} = \alpha_0 + \beta_1 KAOP_{it} + \beta_2 KAOP_{it}^2$. Then the (2) inflexion point was found in the following manner: $\frac{\partial Growth}{\partial KAOP} = 0$, and thereby the value of KAOPEN was found. Then in order to determine (3) the minima or the maxima we look at the following: $\frac{\partial^2 Growth}{\partial KAOP^2} < 0$ is a maxima and if this is greater than zero then it is a minima.

levels followed by fall in growth rate after crossing the inflexion point. For transition economies (table 2.24), the inflexion point is equal to 3.5 and it is a maxima; the threshold estimates of PTR and LSTR are distinctively different, however, the coefficients for the PTR and LSTR are not statistically significant (except for the 'low' regime of LSTR which is increasing). For emerging market economies (table 2.25), the inflexion point equals 39.5 and it is a maxima; the threshold estimates of the PTR and LSTR are 15 and 14 respectively. This is in fact drastically different from the inflexion point estimated. These coefficients below and above the thresholds for both the PTR and LSTR are positive, but, after the threshold, the growth levels fall comparatively.

Table 2.22: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using Quadratic Estimations in All Economies*** ***Robustness Check: Quadratic Estimations*** ***Country Group: All Economies*** ***Time Period: 1970-2013***								
	Real GDP per capita Growth Rate (1)	*Real GDP per capita Growth Rate (2)*	*Real GDP per capita Growth Rate (3)*	*Real GDP per capita Growth Rate (4)*	*Real GDP per capita Growth Rate (5)*	*Real GDP per capita Growth Rate (6)*	*Real GDP per capita Growth Rate (7)*	*Real GDP per capita Growth Rate (8)*
KAOP	*-0.025* (0.007)*	*0.065 (0.041)*	*0.099* (0.040)*	*0.093* (0.040)*	*0.093* (0.040)*	*0.114** (0.040)*	*0.107** (0.040)*	*0.113** (0.040)*
$KAOP^2$		*-0.001* (0.001)*	*-0.002* (0.001)*	*-0.001* (0.001)*	*-0.001* (0.001)*	*-0.002** (0.001)*	*-0.002** (0.001)*	*-0.002** (0.001)*
Initial GDP per Capita			*-0.000*** (0.000)*	*-0.000** (0.000)*	*-0.000** (0.000)*	*-0.000** (0.000)*	*-0.000** (0.000)*	*-0.000 (0.000)*
Population Growth			*0.605*** (0.128)*	*0.588*** (0.138)*	*0.583*** (0.138)*	*0.632*** (0.126)*	*0.645*** (0.126)*	*0.515*** (0.146)*
Invest to GDP				*0.011 (0.020)*	*0.009 (0.019)*	*0.018 (0.013)*	*0.018 (0.014)*	*0.021 (0.013)*
NFA to GDP					*0.240 (0.156)*	*0.599*** (0.225)*	*0.575** (0.217)*	*0.589** (0.220)*
FDI						*0.294** (0.112)*	*0.289** (0.111)*	*0.295** (0.112)*
Inflation							*-0.002*** (0.000)*	*-0.002*** (0.000)*
Literacy Rate								*-0.013 (0.007)*
Trade to GDP							*0.000 (0.006)*	*0.003 (0.007)*
Constant	*4.637*** (0.271)*	*3.577*** (0.556)*	*2.019*** (0.605)*	*1.990** (0.614)*	*2.159*** (0.615)*	*1.174 (0.694)*	*1.289 (0.709)*	*1.917* (0.757)*
Observations	*914*	*914*	*914*	*914*	*914*	*914*	*914*	*914*
R^2	*0.011*	*0.014*	*0.082*	*0.084*	*0.087*	*0.230*	*0.245*	*0.250*
F	*11.277*	*8.349*	*22.669*	*20.950*	*23.661*	*15.378*	*33.769*	*35.708*
Level of Significance ****1%* ***5%* **10%*								

Table 2.23: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using Quadratic Estimations in Developing Economies***
Robustness Check: Quadratic Estimations
Country Group: Developing Economies
Time Period: 1970-2013

	Real GDP per capita Growth Rate (1)	*Real GDP per capita Growth Rate (2)*	*Real GDP per capita Growth Rate (3)*	*Real GDP per capita Growth Rate (4)*	*Real GDP per capita Growth Rate (5)*	*Real GDP per capita Growth Rate (6)*	*Real GDP per capita Growth Rate (7)*	*Real GDP per capita Growth Rate (8)*
KAOP	*0.010*	*0.071*	*0.091*	*0.089*	*0.090*	*0.101**	*0.086*	*0.086*
	(0.010)	*(0.051)*	*(0.051)*	*(0.051)*	*(0.051)*	*(0.051)*	*(0.050)*	*(0.050)*
$KAOP^2$		*-0.001*	*-0.001*	*-0.001*	*-0.001*	*-0.002**	*-0.002*	*-0.001*
		(0.001)	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*
Initial GDP per Capita			*-0.000*	*-0.000*	*-0.000*	*-0.000*	*-0.000*	*-0.000*
			(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Population Growth			*0.630***	*0.615***	*0.620***	*0.793****	*0.829****	*0.679****
			(0.195)	*(0.220)*	*(0.215)*	*(0.198)*	*(0.205)*	*(0.190)*
Invest to GDP				*0.008*	*0.008*	*0.029**	*0.024*	*0.025*
				(0.025)	*(0.024)*	*(0.013)*	*(0.014)*	*(0.014)*
NFA to GDP					*0.098*	*0.647**	*0.616**	*0.622**
					(0.158)	*(0.287)*	*(0.278)*	*(0.281)*
FDI						*0.416***	*0.396***	*0.400***
						(0.135)	*(0.129)*	*(0.130)*
Inflation							*-0.002****	*-0.002****
							(0.000)	*(0.000)*
Literacy Rate								*-0.011*
								(0.009)
Trade to GDP							*0.010*	*0.012*
							(0.009)	*(0.010)*
Constant	*4.085****	*3.388****	*1.868**	*1.850**	*1.888**	*0.517*	*0.469*	*1.141*
	(0.317)	*(0.645)*	*(0.742)*	*(0.740)*	*(0.745)*	*(0.891)*	*(0.952)*	*(0.902)*
Observations	*615*	*615*	*615*	*615*	*615*	*615*	*615*	*615*
R^2	*0.001*	*0.002*	*0.040*	*0.041*	*0.041*	*0.289*	*0.308*	*0.311*
F	*1.005*	*1.218*	*8.038*	*7.574*	*6.398*	*9.036*	*47.094*	*51.073*

Level of Significance
****1%*
***5%*
**10%*

Table 2.24: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using Quadratic Estimations in Transition Economies***
Robustness Check: Quadratic Estimations
Country Group: Transition Economies
Time Period: 1970-2013

	Real GDP per capita Growth Rate (1)	*Real GDP per capita Growth Rate (2)*	*Real GDP per capita Growth Rate (3)*	*Real GDP per capita Growth Rate (4)*	*Real GDP per capita Growth Rate (5)*	*Real GDP per capita Growth Rate (6)*	*Real GDP per capita Growth Rate (7)*	*Real GDP per capita Growth Rate (8)*
KAOP	*0.014**	*0.104*	*0.218*	*0.251*	*0.234*	*0.229*	*0.151*	*0.141*
	(0.023)	*(0.140)*	*(0.118)*	*(0.126)*	*(0.122)*	*(0.120)*	*(0.126)*	*(0.127)*
$KAOP^2$		*-0.002*	*-0.003*	*-0.003*	*-0.003*	*-0.003*	*-0.002**	*-0.002*
		(0.002)	*(0.002)*	*(0.002)*	*(0.002)*	*(0.002)*	*(0.002)*	*(0.002)*
Initial GDP per Capita			*-0.000****	*-0.000****	*-0.000****	*-0.000****	*-0.000****	*-0.000****
			(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Population Growth			*1.089****	*1.121****	*1.158****	*1.147****	*0.946***	*0.796**
			(0.290)	*(0.290)*	*(0.315)*	*(0.304)*	*(0.301)*	*(0.394)*
Invest to GDP				*0.048*	*0.043*	*0.037*	*0.037*	*0.038*
				(0.035)	*(0.032)*	*(0.030)*	*(0.028)*	*(0.028)*
NFA to GDP					*0.542*	*0.664*	*0.743*	*0.870*
					(0.917)	*(0.933)*	*(0.933)*	*(0.865)*
FDI						*0.107*	*0.056*	*0.063*
						(0.098)	*(0.092)*	*(0.093)*
Inflation							*-0.025***	*-0.025***
							(0.009)	*(0.009)*
Literacy Rate								*-0.016*
								(0.016)
Trade to GDP							*0.010*	*0.012*
							(0.020)	*(0.020)*
Constant	*4.483****	*3.061*	*1.722*	*0.920*	*1.393*	*1.087*	*2.904*	*4.200*
	(0.797)	*(1.894)*	*(1.594)*	*(1.807)*	*(1.781)*	*(1.839)*	*(2.007)*	*(2.482)*
Observations	*99*	*99*	*99*	*99*	*99*	*99*	*99*	*99*
R^2	*0.004*	*0.011*	*0.262*	*0.297*	*0.300*	*0.311*	*0.375*	*0.379*
F	*0.389*	*0.583*	*10.890*	*9.569*	*8.448*	*7.396*	*7.142*	*9.052*

Level of Significance
****1%*
***5%*
**10%*

Table 2.25: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Growth using Quadratic Estimations in Emerging Market Economies*** ***Robustness Check: Quadratic Estimations*** ***Country Group: Emerging Market Economies*** ***Time Period: 1970-2013***								
	Real GDP per capita Growth Rate (1)	*Real GDP per capita Growth Rate (2)*	*Real GDP per capita Growth Rate (3)*	*Real GDP per capita Growth Rate (4)*	*Real GDP per capita Growth Rate (5)*	*Real GDP per capita Growth Rate (6)*	*Real GDP per capita Growth Rate (7)*	*Real GDP per capita Growth Rate (8)*
KAOP	*0.031* *(0.016)*	*0.204** *(0.083)*	*0.237**** *(0.068)*	*0.216*** *(0.070)*	*0.234**** *(0.068)*	*0.237**** *(0.068)*	*0.207*** *(0.061)*	*0.210**** *(0.058)*
$KAOP^2$		*-0.003** *(0.001)*	*-0.003*** *(0.001)*	*-0.003*** *(0.001)*	*-0.003*** *(0.001)*	*-0.003*** *(0.001)*	*-0.003*** *(0.001)*	*-0.003*** *(0.001)*
Initial GDP per Capita			*-0.000**** *(0.000)*	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*
Population Growth			*0.664*** *(0.231)*	*0.656*** *(0.231)*	*0.573** *(0.231)*	*0.705*** *(0.240)*	*0.679*** *(0.233)*	*0.201* *(0.289)*
Invest to GDP				*0.031* *(0.031)*	*0.013* *(0.031)*	*0.012* *(0.030)*	*0.039* *(0.043)*	*0.039* *(0.040)*
NFA to GDP					*2.846*** *(1.038)*	*3.188*** *(1.080)*	*2.588** *(1.148)*	*2.735** *(1.107)*
FDI						*0.146* *(0.080)*	*0.154* *(0.085)*	*0.159* *(0.092)*
Inflation							*-0.003**** *(0.001)*	*-0.002**** *(0.001)*
Literacy Rate								*-0.036*** *(0.011)*
Trade to GDP							*-0.011* *(0.012)*	*-0.006* *(0.012)*
Constant	*3.391**** *(0.451)*	*1.440* *(1.034)*	*0.633* *(1.021)*	*0.273* *(1.090)*	*1.205* *(1.208)*	*0.989* *(1.185)*	*1.072* *(1.250)*	*3.525** *(1.446)*
Observations	*136*	*136*	*136*	*136*	*136*	*136*	*136*	*136*
R^2	*0.029*	*0.061*	*0.288*	*0.297*	*0.348*	*0.362*	*0.404*	*0.447*
F	*3.635*	*4.176*	*14.089*	*11.519*	*15.232*	*11.386*	*13.497*	*12.302*
Level of Significance ****1%* ***5%* **10%*								

2.11 Appendix 3: Country Group Classification

For this research paper developing countries exclude high income countries (high income countries as per the classification of the World Bank).

2.11.1 Developing Economies

Afghanistan
Albania
Algeria
Angola
Armenia
Azerbaijan
Belarus
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Cabo Verde
Cambodia
Cameroon
Central African Republic
Chad
China
Colombia
Comoros
Congo, Dem. Rep.
Congo, Rep.
Costa Rica
Cote d'Ivoire
Cuba
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt, Arab Rep.
El Salvador
Equatorial Guinea
Eritrea
Ethiopia
Fiji
Gabon

Gambia, The
Georgia
Ghana
Greece
Greenland
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
India
Indonesia
Iran, Islamic Rep.
Iraq
Jamaica
Jordan
Kazakhstan
Kenya
Kiribati
Korea, Dem. Rep.
Kosovo
Kyrgyz Republic
Lao PDR
Lebanon
Lesotho
Liberia
Libya
Macedonia, FYR
Madagascar
Malawi
Malaysia
Maldives
Mali
Mauritania
Mauritius
Mexico
Moldova
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nepal
Nicaragua
Niger
Nigeria
Pakistan

Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Romania
Russian Federation
Rwanda
Samoa
Senegal
Serbia
Sierra Leone
Somalia
South Africa
South Sudan
Sri Lanka
Sudan
Suriname
Swaziland
Syrian Arab Republic
Tajikistan
Tanzania
Thailand
Timor-Leste
Togo
Tonga
Tunisia
Turkey
Turkmenistan
Tuvalu
Uganda
Ukraine
Uzbekistan
Vanuatu
Venezuela, RB
Vietnam
West Bank and Gaza
Yemen, Rep.
Zambia
Zimbabwe

2.11.2 Transition Economies

Albania
Armenia
Azerbaijan
Belarus
Bulgaria
Cambodia

China
Croatia
Czech Republic
Estonia
Georgia
Hungary
Latvia
Lithuania
Kazakhstan
Kyrgyz Republic
Laos
Republic of Macedonia
Moldova
Poland
Romania
Russia
Slovak Republic
Slovenia
Tajikistan
Turkmenistan
Ukraine
Uzbekistan
Vietnam

2.11.3 Emerging Market Economies

Argentina
Bangladesh
Brazil
Bulgaria
Chile
China
Colombia
Hungary
India
Indonesia
Malaysia
Mexico
Pakistan
Peru
Philippines
Poland
Romania
Russia
South Africa
Thailand
Turkey
Ukraine
Venezuela

Chapter 3: Impact of Financial Integration on Poverty and Inequality: Is there a trade-off between poverty and inequality with increasing liberalization?

Abstract

This research paper investigates the impact of financial integration on poverty and inequality in 79 developing countries over the time period 1980-2013. The econometric techniques deployed in this research paper include the Panel Threshold Regression (PTR) method, the Logistic Smooth Transition Regression (LSTR) method and the Ordinary Least Square (OLS) estimation method. In assessing the impact of capital account openness on poverty, a low threshold level is observed, no obvious deductions can be made below the threshold, however, above this threshold level, poverty decreases. When measuring the impact of capital account openness on various income bands (this includes the poorest 10% and 20% and the richest 20% and 10%), it is observed that the threshold level approximates to 18. Below this threshold, it is observed that income share increases for the richest as well as the poorest, but a marginal increase is observed for the poorest 10% and 20% and an increase in income share is observed for the richest 10% and 20% with increasing openness. However, once it is above this threshold, it is observed that increasing openness results in a decline in the income share of the poorest 10% and 20%; on the contrary, an increase in income share is observed for the richest 10% and 20%. When assessing the regression results measuring the impact of capital account openness on income inequality, it is observed that the threshold levels of KAOPEN vary between 16 and 19. Increased openness results in increased inequality above and below the threshold level. However, inequality increases faster below the threshold as opposed to when it is above the threshold. In order to validate the findings in this research paper, a series of robustness checks are carried out.

3.1 Introduction

In an era of ever increasing financial integration and interdependency amongst nations, government officials and policymakers face the ominous task of deciding on the appropriate policymaking decision to fulfill economic and political objectives. The neoliberal camp and the leftists are strongly opposed to the rewards of financial integration concerning the reduction of poverty and minimization of inequality. The neoliberal argument states that increased financial integration has reduced global poverty and reduced inequality. However, critics of financial integration argue that the wealthy and powerful nations propel the notion of financial integration in order to ensure the aura of dominance, both on the economic frontier, as well as on the political frontier, in the world. They argue that inequality is far worse than it ever was, and that poverty and the livelihood of those at the bottom, have not increased to the levels that were expected. Determination of the optimal level of openness is a policy dilemma faced by policymakers all over the developing world. The existing literature examines these theories and many others through empirical studies, however, they fail to examine and give sound policymaking recommendations. For instance, it is conceivable statistically, that poverty has increased over time, however, how can we ensure that poverty declines but the rise in inequality does not worsen the socio-economic disparity? Is there such a level of openness at which both these conditions can be satisfied?

In order to investigate the aforementioned research questions, this research paper investigates the impact of financial integration on poverty, income distribution and income inequality in 79 developing countries over the time period 1980-2013. The econometric techniques deployed in this research paper include the Panel Threshold Regression (PTR) method, the Logistic Smooth Transition Regression (LSTR) method and the Ordinary Least Square (OLS) estimation method. The predominant focus of this research paper is to determine the threshold level of the capital account openness index (Chinn-Ito Index, denoted as the KAOPEN) when used to measure the impact of openness on poverty, income quintiles and income inequality distinctively. The KAOPEN is the proxy variable used to account for financial integration. In order to measure poverty, the poverty headcount ratio and the poverty gap variables are used in order to account for absolute and relative poverty

respectively. In order to find a true measure for the impact of openness on the income quintiles, the KAOPEN is regressed on the income share of the lowest 10% and 20% and the highest 20% and 10%. Finally, in order to account for income inequality directly, the proxy variables used are the GINI coefficient, the IQSR (Income Quintile Share Ratio) and the IDIR (Inter-Decile Income Ratio). In order to validate the findings in this research paper, a series of robustness checks are carried out.

The key research questions that this research paper seeks to address and examine are the following:

1. What is the effect of openness on poverty in developing economies?
    a. *What is the optimal level of capital account openness that results in the lowest poverty levels?*
    b. *How does it affect absolute poverty and relative poverty? Is there a difference?*
    c. *What is the threshold level of capital account openness at which poverty can be minimized and what are the policy implications?*
2. What is the effect of capital account liberalization on inequality?
    a. *What is the threshold level? How does the impact of openness fare on inequality below and above the threshold?*
    b. *What are the policy implications?*
3. What is the effect of financial openness on various income groups and how does it affect the income distribution?
    a. *Which income band is best benefitted due to financial openness and which income group is negatively affected?*
    b. *How does capital account liberalization affect the poorest 20% compared to the highest 20%?*
    c. *What is the level of financial openness that is equitable for people of all income levels and what are the policy implications?*

The contribution of this research paper is the deployment of the Panel Threshold Regression (PTR) and the Logistic Smooth Transition Regression (LSTR) method in measuring the impact of openness on poverty and inequality. There are no existing research papers that execute the threshold exercises measuring the impact of

financial integration on poverty and inequality. Furthermore, this research paper also uses the tests for nonlinearity developed by Gonzalez, Terasvirta, and van Dijk (2005). These tests, even in the FI-growth literature, are overlooked. These tests determine the appropriateness of the tests, whether or not the model is nonlinear at all, and whether or not there are more than a single threshold, in which case the deductions of the PTR and the LSTR model are deemed invalid.

The research paper is structured as follows; the first section illustrates the theoretical linkages tying financial integration with poverty and inequality. The second, third, and fourth sections include the methodology, the empirical framework, and the variable description respectively. Section 5 illustrates the results and section 6 is the conclusion. The appendix[50] includes the explorative data analysis (this looks at historical trends, scatter graphs, and quadratic relationships between the key variables of interest), and the robustness checks.

[50] Refer to sections 3.9, 3.10 and 3.11.

3.2 Theoretical Framework

The neoclassical view, linking financial integration or external financial liberalization to poverty is that financial integration helps mobilize savings, induces investments and allocates capital to productive investments, which thereby increases efficiency of physical capital and hence productivity. As a result, this means that financial liberalization stimulates growth, which results in higher income levels and therefore reduces poverty. Laeven (2003) states that financial repression and the resulting credit rationing worsens income distribution. In other words, this implies that financial liberalization and freeing of credit markets will improve income distributions and therefore reduce poverty. However, it would be naïve to presume that financial liberalization reduces poverty merely through this growth channel. There are two distinctive channels via which the effect of financial integration can be felt for the impoverished and on poverty and they are the growth channel, crises channel and the financial services channel (Arestis and Caner, 2004).

The important factor that needs to be investigated here is the relationship between growth and poverty; this is the growth channel. The empirical evidence tends to depict the message that when growth increases, and as countries get richer, incidence of income poverty falls. Dollar and Kray (2002) uses 80 countries to empirically assess this relationship and they find that income of the poor (bottom 20% of the population) rises almost equal to one-for-one with overall growth in GDP per capita. Kray (2004) finds that most of the variations in poverty are accounted for mostly by growth. However, Ravallion (2001) states that there is always the need to go and look beyond averages, because, benefits are often not realized by the poor as it is realized by the rich and the growing inequality today is testament to this fact.

The crises channel focuses on the effect of financial liberalization on financial fragilities and how this affects the poor, resultantly, in the context of this paper, poverty and inequality. There are various channels through which crises[51] can affect poverty. Crises typically leads to fall in income levels of workers in both the formal and informal sectors firstly due to job losses in the formal sector and a decline in the

[51] This is referring to an unforecasted crisis preceding financial liberalization and/or due to extensive financial liberalization.

demand of services from workers in the informal sector (e.g. household cleaning services). Changes in relative prices due to crises can have effects on the distribution of income. Agenor (2002) refers to the concept of "labor hoarding" which suggests that in times of economic downturns, the poor are the first to lose their jobs as firms tend to not hire due to existence of high costs. Furthermore, the poor tend to have their wealth in liquid form and during inflationary periods suffer more than the rich (Easterly and Fischer, 2001).

It may well be undeniable that financial liberalization has profound effects on the availability of credit, and often it is argued that this credit is also more available for the poor when liberalized, as opposed to when it is highly regulated. Therefore, an important and rather interesting research question is to see the whether or not financial integration improves availability of financial services and credit[52] for the bottom fifth of the population, and thereby ensuring a reduction in poverty. This consequently leads us to the theoretical argument assessing the impact of financial integration on income inequality.

When assessing the theoretical linkage between financial integration and income inequality[53], the arguments, as per usual, is polarized, contributing differing arguments and theories to the literature. The neoliberal argument states that income inequality, over the past two decades, has levelled off and that extreme poverty has drastically fallen. This, they state, is a testament to the rising density of increased financial integration, allowing for efficient use of resources internationally and specializing (region specific) based on comparative advantage. On the other hand, the leftists' assumption is that the wealthy and powerful economies have little or no interest in promoting equality but only ensuring the improved welfare of their own nations. They argue that poverty and especially inequality has in fact been on the rise worldwide. The leftists also theorize that there is a political agenda of financial

[52] This is not the what this research paper seeks to address. However, it is important to mention, albeit briefly, one of the fundamental channels via which financial integration is said to alleviate poverty – through improved availability of financial services and greater access to credit.

[53] There are variations in the determinants of the composition of inequality. Resultantly, the theoretical and empirical evidence differs based on this composition. Especially for theoretical studies that are tested empirically, selection of inequality determinants are not constrained to a select number of variables, rather, there is an increasing number of various empirical studies with differing measures accounting for inequality, thereby also producing contrasting results.

integration, as a means to enforce international dominance, branding it as neo-imperialism. Those that oppose financial integration argue that not only does integration accentuate inequality within countries, but it also causes income disparity between countries (Firebaugh, 2003).

To get into specifics, for LDCs, the theoretical expectation is that inequality will fall upon increased financial integration. The argument states that in the period of increased financial integration, developing countries will increase their exports of unskilled labor-intensive products (in reference to the comparative advantage in particular sectors) due to increased international demand. This will result in increased production with unskilled labor and hence increase the labor demand for unskilled labor thereby increasing wages and reducing inequality. In Latin America, the empirics do not support the theory. When the Latin American economies opened their economies in the 1980s, it was observed that there was an increase in the wage gap and in inequality rather than the expected decrease (Ahsan, 2002). On the contrary, the East Asian Tiger economies fare better in accordance with the theory. In the 1970s when these economies were more open, wage gaps for instance, declined. The theoretical explanation for this is that there was more unskilled labor in the Asian economies as opposed to the Latin American economies, furthermore, the wages in Latin America in that period was already high (Baten and Fraunholz, 2004).

3.3 Literature Review

3.3.1 Financial Integration and Poverty

The theoretical section discussed the fundamental elements of particular significance when looking at the relationship between financial integration and poverty. This section will look at the empirical studies that have looked into the nature of this relationship. The arguments are again polarized, there is a suggestion that the rewards of financial integration are only for the rich and that the trickle-down theory is only a reality in theory alone. However, there are papers that have found that financial integration does in fact promote growth which in turn alleviates poverty in the medium to long-run. Jeanneney and Kpodar (2008) finds that the standard effect of financial liberalization on poverty is directly effective in reducing poverty, as is the indirect effect through growth, but what is interesting is that the former is found to be empirically stronger than the latter. In terms of empirical studies, it must be noted that there are very few research papers that focus on the direct linkage between financial integration (using the predominantly used financial integration proxy variables rather than those used for globalization) and financial liberalization on poverty.

Arestis and Caner (2010) look at the direct relationship between capital account liberalization and poverty[54] by deploying the GMM technique using only developing economies for their sample over the period 1985-2005. They use five year non-overlapping averages. In their research, they attempt to find answers to two different questions the first investigating whether the countries with higher levels of capital account openness have lower poverty rates and the second examining whether the effect of capital account openness on poverty depends on the level of institutional

[54] Arestis and Caner (2010) use headcount index, calculated based on a poverty line that is twice the extreme poverty line as the poverty measure e.g. poverty line is set at $2.15 per day. For the variable of capital account openness, they use Chinn and Ito's (2002) KAOPEN index. This index is the first principle component of four binary variables in IMF's AREAER. This is a de jure measure of financial openness and is different from de facto priced-based measure of financial integration. The control variables are the following: (1) per capita growth rate, (2) fertility rate, (3) inflation rate, (4) Gini coefficient, (5) general government final consumption expenditure as a share of GDP, and (6) primary rate of schooling. Lagged poverty is used as a repressor. To overcome the bias problem, the country-specific fixed effect is eliminated by taking the first difference of the all the variables in the RHS and the LHS. For robustness checks, they use income share of the poorest 20% of the population as a proxy for poverty. The number of observations are less than or equal to 170. In order to treat for endogeneity, they use instruments two sets of instruments, the first set includes time dummies, and the second set includes GMM-style instruments, where each lag of the instrumented variable acts as an instrument.

quality in the country. In the regression, the de jure measure of financial integration was interacted with the KAOPEN index to measure the 'existence of a threshold effect'. They conclude from their regression results that increase in capital account openness does not result in a significant decrease in the poverty rate or an increase in the income share of the poor. In fact, they find that liberalization of the capital account actually increases poverty according to their regression estimates. They do find that good institutions are associated with a decline in poverty however.

A rather broader approach than Arestis and Caner (2010) would be to look at financial globalization or globalization and the effect it has on poverty. This is largely the case for the existing research papers in the associated field of research. Santarelli and Figini (2002)[55] look at the effects of globalization on various measures of poverty (absolute and relative poverty) in developing countries over the period 1970-98. The only interesting inference drawn from this paper is that financial openness is associated with higher levels of relative poverty.

3.3.2 Financial Integration and Inequality

The literature, on the basis of theoretical expectations, is aligned with the theoretical notions, but also opposed to it based on empirical studies. In the theoretical section of this paper, the neoliberal and the 'anti-neoliberal' arguments have been outlined. This section will look at existing empirical studies that examine the theoretical expectations. Wade (2004) does not support the argument proposed by the neoliberal camp in which inequality is measured with population weighted countries' per capita PPP-adjusted incomes, plus a measure of average of inequality. Baten and Fraunholz (2004) look at the impact of openness on inequality in developing countries and they use the coefficient of height variation as a measure of inequality, covering not only wage recipients but also those unemployed and out of the labor market altogether. They find that within-country inequality was higher in periods of greater financial openness. Furthermore, they also deduce that the economies that were closed had lower income inequality. However, they quite interestingly find that under full openness, inequality tends to fall. Lindert and Williamson (2001) do not oppose the

[55] They use exports plus imports as a share of GDP as a proxy for openness of an economy. The other measure of globalization is an index of privatization over GDP. The final measure of globalization was FDI as a share of GDP. The observations are as low as 32, but it is not higher than 150.

notion that there is an evident correlation between increasing openness and increasing inequality. Even though countries that liberalize, this often immediately results in an increase in inequality, the causal inferences, they presume, are not definitive, especially for countries where liberalization has only been partial. Therefore, this makes for an unfair attack on the benefits of liberalization when it has not even been fully liberalized as is the case with China, India, Russia and Indonesia in their research.

In terms of the growth channel[56], contrary to popular belief, a panel of researchers have found a strong negative correlation when measuring the impact of inequality on growth (Alesina and Perott, 1994; Persson and Tabellini, 1994; Deininger and Squire, 1998). However, Barro (2000) for instance, deduces that increasing inequality only hinders growth in the poorest countries, whereas medium income countries in fact grow faster with increased inequality. Robinson (2001) examines the impact of increased integration on inequality in Latin America, and infers that the blame should be directed to the hostile elites. When looking at distinctive income quintiles (income distribution), as is the focus of this research paper in one of the sections of inequality, according to the research carried out (using panel data for both developing and developed countries) by Lundberg and Squire (2003)[57], they find that with increased openness, income share of the lowest two quintiles decreases. On the contrary, with increased openness, income share of the upper quintiles increase.

[56] The growth channel is observed here again in order to draw the linkage between growth, inequality and poverty altogether based on the impact of financial integration. This was unavoidable and needed to be addressed in order to comprehend the linkages and have a better statistical intuition from the findings of this research paper.

[57] The inferences drawn from this research paper on the impact of inequality on the income share of the lowest quintiles and the highest quintiles are consistent with the findings in this research paper.

3.4 Methodology

This research paper incorporates a dataset that includes 79 developing countries[58] over the time-period 1980-2013. The econometric models deployed in this research paper are the (1) *Panel Threshold Regression* model (PTR) and the (2) *Logistic Smooth Transition Regression* (LSTR) method. The technical descriptions of these two statistical models are explained in the empirical framework section of this paper. In conducting the regression analysis, the research paper averages data over five-year[59] periods to smooth business cycle fluctuations.

The key independent variable of interest is the Chinn-Ito Index[60]. This is denoted as *KAOPEN*[61] and is selected as the proxy variable of financial integration. For this research paper, the impact of financial integration on (a) poverty, (b) income distribution and (c) inequality is assessed; poverty, income distribution and income inequality each have various proxy variables to account effectively for the impact of financial integration. The key dependent variables of interest used as proxies for poverty are the following: (1) Poverty Headcount Ratio at $1.90 a Day, (2) Poverty Headcount Ratio at $3.10 a Day, (3) Poverty Gap at $1.90 a Day, and (4) Poverty Gap at $3.10 a Day. The key dependent variables of interest used as proxies for income distribution are the following: (1) Income Share of Lowest 10%, (2) Income Share of Lowest 20%, (3) Income Share of Highest 20%, and (4) Income Share of Highest 10%. The key dependent variables of interest used as proxies for income inequality are the following: (1) GINI Index, (2) Inter-Decile Income Ratio, and (3) Income Quintile Share Ratio[62].

Therefore, in total, there are 11 dependent variables of interest used as proxies for the impact on poverty, income distribution, and income inequality. The rationale for including more than one proxy variable is to provide unbiased inferences

[58] Refer to appendix 3 in section 3.11 for the total country list in the dataset.
[59] Five-year averages are deployed for this panel dataset to account for business cycle fluctuations. The panel dataset spans from 1980-2013. There are 6 periods of non-overlapping five-year averages.
[60] Chinn and Ito (2006) developed the Chinn-Ito index which measures the de jure measure of capital account openness i.e. financial openness. This is the only independent variable of interest for this research paper and is used as a proxy for financial integration, depicting a measure of the extent of financial market openness.
[61] The description and descriptive statistics of *KAOPEN* is illustrated in table 3.1.
[62] Refer to the descriptions of the Inter-Decile Income Ratio (IDIR) and Income Quartile Share Ratio (IQSR) in table 3.1 for greater clarity.

concerning the impact of financial integration on poverty, income distribution and income inequality. The control variables used in the regressions to measure the impact of financial integration on poverty, income distribution and income inequality are not drastically indifferent; the selection of the control variables are coherent with the nature of past empirical practices.

The regression results assessing the impact of financial integration on poverty, income distribution, and income inequality are presented in tables 3.2, 3.3, and 3.4 respectively. For each of the proxies for poverty, income distribution bands, and income inequality, the OLS, PTR, and the LSTR[63] estimation methods are deployed and the results are recorded accordingly. Appendix 1 (refer to section 3.9) presents the explorative data analysis that looks at historical trends, scatter graphs, and quadratic relationships for the key variables of interest. Appendix 2 (refer to section 3.10) presents four robustness checks to validate the final results recorded in the body of the paper. These robustness checks are 3-year non-overlapping averages, lagged IFI proxy variable, first differences, and GMM estimations.

[63] The technical mechanism of the PTR and the LSTR is explained in the "Empirical Framework" section.

3.5 Empirical Framework

The empirical framework section presents the technical and theoretical mechanisms of the Panel Threshold Regression (PTR) and the Logistic Smooth Transition Regression (LSTR) methodology.

3.5.1 Panel Threshold Regression (PTR)

This section illustrates the underlying theoretical mechanisms of the Panel Threshold Regression (PTR)[64] methodology. The technical model was introduced by Hansen (1999). The model's main purpose is to provide an endogenous estimation of the threshold parameter in two distinctive regimes. The simple OLS regression for instance, does not account for the regression coefficient estimations of different regimes. The PTR model's purpose for this case specific research paper would be to find the impact financial integration has on poverty or inequality, after a specified threshold. For instance, there may be the case that increased financial openness reduces poverty, until, it is in fact growth retarding. The PTR model will specify the exact threshold, thereby implying the appropriate level of openness for policymakers to ensure reduction of poverty and control of inequality. The PTR model assumes that there is an instantaneous change from one distinctive 'regime' to another; this is in stark contrast to the LSTR model (this will be discussed further in the subsequent subsection). The caveat or the assumption of the PTR model is that it assumes that financial integration has a nonlinear impact on poverty and inequality.

The empirical formulation of the PTR model65 that will be used to determine the regression findings will be as follows:

$$Poverty_{it} = \alpha_{it} + \phi_1' KAOP_{i,t} I(KAOP_{it} \leq T) + \phi_2' KAOP_{i,t} I(KAOP_{it} > T) + X_{it}'\theta + e_{it}$$

[64] Hansen (1999) introduced this technical model for the calculation of the threshold. There have been more recent developments that have been incorporated for the statistical component of the researching study.

[65] The dependent variable will vary as mentioned in the previous sections. For instance, the same equation will be applied for, with different dependent variables, for income distribution and income inequality (this is illustrated in the results section). However, for the purposes of simplicity, these examples were not presented.

The subscript "i" refers to the individual countries and the subscript "t" refers to time period indexes. The dependent variable that accounts for poverty could also be replaced by income distribution and income inequality. Furthermore, it is important to note that poverty, income distribution, and income inequality, all have distinctive proxy variables for each in order to validate the results better. The constant term is denoted by a_{it}. The specific threshold level is denoted by T. The threshold variable is defined by $KAOP_{it}$, but note that this is within the indicator function. The indicator function is defined by the following: $I(KAOP_{it} \leq T)$ and $I(KAOP_{it} > T)$; this indicator function equals 0 when $KAOP_{it}$ is less than or equal to the threshold parameter T and 1 otherwise. The error term, e_{it}, is assumed to be independent and identically distributed with a mean of 0 and variance of σ^2. The observations in the regression are divided into two separate regimes. This is contingent on whether or not the threshold variable is greater than or less than the threshold level, denoted by T.

When the regime is below the threshold level, this is represented by the coefficient ϕ_1'; the regime after the threshold level is represented by the coefficient ϕ_2'. The financial integration variable is represented by $KAOP_{i,t}$; The X_{it}' variable represents the set of control variables, note that these control variables varies when measuring the impact of FI on poverty, income distribution and income inequality.

3.5.2 Logistic Smooth Transition Regression (LSTR)

This research paper deploys the logistic smooth transition regression (LSTR)[66] model. The logistic smooth transition regression (LSTR) model is estimated accordingly:

$$\begin{cases} POV_{it} = \alpha_{it} + \beta^{low} W^{low}(KAOP_{it} - c^*) + \beta^{high} W^{high}(KAOP_{it} - c^*) + \Theta X_{it} + \varepsilon_{it} \\ W^{low} = 1 - W^{high} \\ W^{high} = \dfrac{1}{1 + \exp[-\gamma^* \dfrac{(KAOP_{it} - c^*)}{\sigma}]} \end{cases}$$

[66] The paper by Gonzalez, Terasvirta, and van Dijk (2005) is the benchmark paper for the empirical methodology used in this research paper. The tests of nonlinearity are also applied from this particular research paper.

The poverty variable (could be replaced by income inequality) is denoted by POV_{it}; α_{it} is the constant term or the intercept of the regression model; X_{it} is a vector of control variables. The standard deviation of POV_{it} is denoted by σ; c^* is the threshold parameter; t is the time series index; i refers to the countries; ε_{it} is the error term.

There are two regressors via which the key explanatory variable[67] of interest, $KAOP_{it}$, enters the LSTR model, and they are the following: (1) $W^{low}(KAOP_{it} - c^*)$ and (2) $W^{high}(KAOP_{it} - c^*)$; in this case β^{low} and β^{high} are coefficients of lower and higher regimes respectively. Therefore, this implies that when FI_{it} is above the threshold parameter, c^*, the impact of $KAOP_{it}$ on poverty is closer to β^{high}. Similarly, when $KAOP_{it}$ is below the threshold parameter, c^*, the impact of $KAOP_{it}$ on poverty is closer to β^{low}. The weights are represented by $W^{low}$and W^{high}, where $W^{low} = 1 - W^{high}$. For instance, when $KAOP_{it}$ is equal to, c^*, then $W^{high} = W^{low}$. The speed of transition from the low regime to the high regime is represented by γ^*. Therefore, the higher the value of γ^*, the faster the speed of transition, and the lower the value of γ^*, the lower the speed of transition. It is important to comprehend effectively that when γ^* is high[68], the PTR is the more appropriate statistical technique. Whereas, when the γ^* is low, the LSTR is the more applicable methodology due to the fact that the speed of transition is low from one regime to the other, this means that there is a rather 'smooth' transition, hence, the usage of the LSTR technique. The regression results provide the estimations of the ordinary least squares (OLS) method, the PTR model, and the LSTR model to validate these acquired results.

The LSTR model assumes that there are precisely two regimes i.e. low and high regimes; if for instance, there are more than two regimes then the model is said to be misspecified and the relationship is assumed linear (linear model), resultantly the parameters defined in this model are not identified. The specification test used to

[67] Note that the only explanatory variable used in this research paper is the KAOPEN index; this is the key proxy variable used for financial integration.

[68] The range for the γ^* (gamma value) is set between 1 and 15, where 1 indicates slow transition from one regime to another and therefore would suggest that the LSTR is the appropriate methodology for the regression model. Conversely, if the value of γ^* was to be 15, then this indicates fast transition from low to high regime and therefore this would indicate that the PTR methodology is more applicable for the purposes of this regression analysis.

determine the existence of nonlinearities and the number of regimes is presented by Gonzalez, Terasvirta, and van Dijk (2005). This specification test therefore, estimates two p-values, (a) for nonlinearities (otherwise it is a straightforward linear model) and (b) for remaining nonlinearities – if there were to be remaining nonlinearities then this would imply that there are more than two regimes for instance.

3.6 Variable Description

Table 3.1 presents the descriptions of the dependent variable, the key independent variables of interest and the control variables. For these variables, the name of the variable is appropriately defined, a brief description of the variable is provided, and the source from which the data for this indicator was collected from is also enlisted. Furthermore, it provides descriptive statistics of each of these aforementioned variables. The descriptive statistics includes the mean value, the maximum value, the minimum value, the standard deviation, and the total number of observations[69] for all the indicators.

The Chinn-Ito index (denoted as KAOPEN) or the de jure measure of capital account openness measures the degree of financial openness. The Chinn-Ito index ranges from +2.66 to -2.66, where +2.66 indicate a financial system that is fully liberalized and -2.66 indicates a fully regulated financial system. The index has a mean of zero. However, to simplify interpretation of the results this variable has been transformed in the following manner: KAOPEN = (Chinn-Ito Index+2.66)*10. This shows that the original version of the Chinn-Ito index is taken and every value is added by 2.66 (this is to take away all the negative values and it is multiplied with 10 to have an easier statistical reading. The transformed index (KAOPEN) has a minimum value of 7.71, a maximum value of 50.49, mean of 26.76, and a standard deviation of 13.21 for the observations in this particular dataset. However, it is important to note that the financial market is fully regulated when KAOPEN equals 0 and it is fully liberalized when KAOPEN equals 53.2. KAOPEN has a mean value that equals to 22.84. The original value or the original level of impact of a unit

[69] Note that the descriptive statistics that have been recorded, they are averaged over 5-years as this is the dataset used to acquire the final regression results.

increase in the Chinn-Ito index can be found by dividing by 10 and then subtracting 2.66.

The proxy variables to account for poverty are the poverty head count ratios at $1.90 and $3.10 and the poverty gap levels at $1.90 and $3.10. The proxy variables to account for income distribution are share of income of the lowest 20% and 10% and the highest 20% and 10%. The proxy variables to account for income inequality are the GINI index, the IDIR, and the IQSR. IDIR (Inter-Decile Income Ratio) and IQSR (Income Quintile Share Ratio) are developed by the author. The IDIR is the share of income received by the top 10% divided by the share of the income received by the bottom 10%. The IQSR is a measure of the inequality of income distribution, measured by dividing the share of income received by the top 20% divided by the bottom 80%.

The standard control variables when the key independent variables are poverty and income distribution (in reference to the proxy variables selected for poverty and income distribution) for this research paper are the following: GDP per Capita Growth (%), GINI index, fertility rate, government expenditure (% of GDP), Inflation (%), secondary school enrollment (% gross), and gross savings (% of GDP). The control variables[70] used when assessing the impact of financial integration on income inequality (there are 3 proxy variables used to measure income inequality) are the following: GDP per capita growth (%), GINI index, fertility rate, government expenditure (% of GDP), Inflation (%), secondary school enrollment (% gross), and population growth (%).

[70] The control variables used for assessing the relationship between the financial integration and poverty (the control variables are identical for when measuring the impact of financial integration on income distribution) and income inequality have differing control variables. For the effect on the former, the control variables are selected on the basis of the paper developed by Arestis and Caner (2010). The only difference being that the lagged value of poverty was not used as the estimation method deployed here is not the system GMM.

***Table 3.1:* Variable Description and Descriptive Statistics**								
Variable/Parameter	***Description of Variable***	***Data Source***	***Mean***	***Minimum***	***Maximum***	***Standard Deviation***	***Observations***	***Variable Type***
Capital Account Openness: Chinn-Ito Index	*The index has a mean of 0 and ranges from -2.66 to +2.66, where -2.66 represents full capital control and +2.66 represents complete liberalization. However, for the purposes of technical simplicity, it has been parameterized by addition of 2.66 and multiplying with 10 e.g. KAOPEN=(chinnito+2.66)*10*	*International Financial Statistics, IMF*	*22.84317*	7.71105	*50.49669*	*13.20982*	*1052*	*IFI Proxy Variable: Key Independent Variable of Interest*
Poverty Headcount Ratio at $1.90 a Day	*Poverty headcount ratio at $1.90 a day (2011 PPP) is calculated as a % of the total population.*	*World Bank Data*	*23.63655*	*0*	*99.9*	*25.0198*	*491*	*Independent Variable*
Poverty Headcount Ratio at $3.10 a Day	*Poverty headcount ratio at $3.10 a day (2011 PPP) is calculated as a % of the total population.*	*World Bank Data*	*38.82716*	*0*	*99.9*	*31.06298*	*492*	*Independent Variable*
Poverty Gap at $1.90 a Day	*Poverty gap at $1.90 a day (2011 PPP) is the mean shortfall in income from the poverty line $1.90 a day, expressed as a percentage of the poverty line.*	*World Bank Data*	*9.55686*	*0*	*99.9*	*12.54377*	*491*	*Independent Variable*
Poverty Gap at $3.10 a Day	*Poverty gap at $3.10 a day (2011 PPP) is the mean shortfall in income from the poverty line $3.10 a day, expressed as a percentage of the poverty line.*	*World Bank Data*	*18.09377*	*0*	*99.9*	*18.21815*	*492*	*Independent Variable*
Income Share of Lowest 10%	*Percentage share of income or consumption that is the share that accrues to the lowest 10% of population, indicated by quintiles.*	*World Bank Data*	*2.413936*	*0.02*	*5.282*	*1.055769*	*493*	*Independent Variable*
Income Share of Lowest 20%	*Percentage share of income or consumption that is the share that accrues to the lowest 20% of population, indicated by quintiles.*	*World Bank Data*	*6.097457*	*0.26*	*11.836*	*2.208546*	*493*	*Independent Variable*
Income Share of Highest 20%	*Percentage share of income or consumption that is the share that accrues to the highest 20% of population, indicated by quintiles.*	*World Bank Data*	*47.8768*	*32.65*	*72.34*	*7.965467*	*493*	*Independent Variable*
Income Share of Highest 10%	*Percentage share of income or consumption that is the share that accrues to the highest 10% of population, indicated by quintiles.*	*World Bank Data*	*32.4114*	*18.41*	*61.49*	*7.548577*	*493*	*Independent Variable*
GINI Index	*GINI index number ranges from 0 to 100 (based on resident's net income) where 0 represents perfect equality, 100 representing perfect inequality.*	*World Bank Data*	*41.29198*	*21.098*	*99.91*	*10.02236*	*494*	*Independent Variable and Control Variable*
Inter-Decile Income Ratio	*The IDIR is the share of income received by the top 10% divided by the share of the income received by the bottom 10%.*	*Author*	*29.65292*	*4.196903*	*2143*	*129.1843*	*493*	*Independent Variable*
Income Quintile Share Ratio	*The IQSR is measured by dividing the share of income received by the top 20% divided by the bottom 80%.*	*Author*	*10.72933*	*3.075771*	*278.2308*	*14.34473*	*493*	*Independent Variable*
GDP Per Capita Growth (%)	*Real GDP per capita growth is based on constant 2005 US$.*	*World Bank Data*	*1.985423*	*-21.62749*	*51.62336*	*4.249887*	*1226*	*Control Variable*
Fertility Rate	*Fertility rate is the average number of children that would be born to a woman in her lifetime if she were to survive from birth to the end of her reproductive life.*	*World Bank Data*	*4.613816*	1.154	*9.185*	*1.936875*	*1570*	*Control Variable*
Government Expenditure (% of GDP)	*The overall public spending i.e. government consumption, government investment, and transfer payments as % of GDP.*	*World Bank Data*	*28.93412*	0	*106.1834*	*13.1231*	*674*	*Control Variable*
Inflation, consumer prices (Annual %)	*Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.*	*International Financial Statistics, IMF*	*37.03518*	*-4.253442*	*6517.11*	*261.7474*	*1031*	*Control Variable*
Population growth (Annual %)	*Population growth (annual %) is the exponential rate of growth of midyear population.*	*United National Statistics Data*	*1.913292*	*-4.104643*	*9.415055*	*1.274532*	*1617*	*Control Variable*
School Enrollment, Secondary (% Gross)	*Secondary over primary school enrolment is a significantly better reflection of educational attainment.*	*World Bank Data*	*50.79081*	*1.374602*	*164.5681*	*31.59239*	*1078*	*Control Variable*
Gross Savings (% of GDP)	*Gross savings is gross disposable income minus final income expenditure expressed as a share of the GDP.*	*World Bank Data*	*13.07183*	*-120.6522*	*83.13451*	*17.80311*	*1171*	*Control Variable*

3.7 Results

In assessing the impact of financial integration on poverty, income distribution, and income inequality[71] (presented in tables 3.2, 3.3, and 3.4 respectively), this section analyses the regression results estimated using the OLS method, PTR (Panel Threshold Regression) method, and the LSTR (Logistic Smooth Transition Regression) method. For the PTR model, $KAOPEN - T\ if\ KAOPEN < T$ indicates the coefficient below the threshold and $KAOPEN - T\ if\ KAOPEN > T$ indicates the coefficient above the threshold. For the LSTR model, $W^{low}(KAOPEN - c^*)$ indicates the coefficient above the threshold and $W^{high}(KAOPEN - c^*)$ indicates the coefficient above the threshold. *PTR (T)* or *LSTR (c*)* indicate the threshold level of the PTR model and the LSTR model. The LSTR parameter, gamma, indicates the speed of transition from the 'low' regime to the 'high' regime (speed of transition from one regime to the other). This is followed by the tests of Gonzalez, Terasvirta, and van Djik (2005) that tests whether or not the regression model is linear or nonlinear[72] which is denoted by the following notations in the table '*LM Test (GTD 2005) H0: Linear Model*' and '*p-value nonlinearity*'. The second test of Gonzalez, Terasvirta, and van Djik (2005) tests for any remaining nonlinearities[73] (denoted by '*LM Test for remaining nonlinearities*' and '*p-value for remaining nonlinearity*' on each of the tables). The results acquired in tables 3.2, 3.3, and 3.4 are validated by robustness checks executed in appendix 2[74] in section 3.10.

3.7.1 Financial Integration on Poverty

Table 3.2 illustrates the relationship between capital account openness[75] and poverty, where poverty headcount ratio and poverty gap (at $1.90 and $3.10), are used

[71] There are 8 proxy variables used to measure poverty and income distribution (each with 4). There are 3 proxy variables used to account for income inequality. Note that for each proxy variable, the OLS, PTR, and LSTR estimation methods are deployed.
[72] The null hypothesis indicates that the model is linear and therefore this would mean the LSTR model is invalid for analytical purposes. The alternative hypothesis states that the model is nonlinear and therefore the LSTR model may be more appropriate.
[73] The null hypothesis for this test states is that there is a single threshold with two regimes. The alternative hypothesis for this test states that there are more than two regimes or there are multiple thresholds.
[74] The robustness checks include (1) 3-year non-overlapping averages, (2) lagged KAOPEN proxy variable, (3) first differences, and (4) GMM estimations. This is presented in section 3.10.
[75] Note that this is the key independent variable of interest, the (exogenous) proxy variable used for financial integration.

as proxy variables for poverty. Regression equations 1, 2, and 3 in table 3.2 present the estimated regression results for the OLS, PTR and the LSTR model respectively, quantifying the impact of capital account openness on poverty headcount ratio at $1.90. The estimated coefficient using the OLS method shows that increase in financial openness, measured by KAOPEN, reduces poverty. This is statistically significant at the 5% significance level. For the PTR and the LSTR model, the threshold level of KAOPEN stands at 16 and 17[76] respectively. The estimated coefficient for KAOPEN for the PTR model below the threshold is statistically insignificant, but above the threshold, it can be seen that increased financial openness reduces poverty; the coefficient above the threshold is statistically significant at the 10% significance level. For the LSTR model[77], it can be seen that the coefficient for KAOPEN is statistically insignificant below the threshold but negative and statistically significant at the 5% significance level above the threshold. The test for nonlinearity illustrates that the model is nonlinear at the 5% significance level. Furthermore, the test for remaining nonlinearities confirms that there are no more than two regimes i.e. no more than one threshold. The gamma parameter is 15, therefore, the PTR method, indicating instantaneous change from one regime to another, is more appropriate to use for interpretation. Regression equations 4, 5, and 6 are carried out to measure the impact of KAOPEN on the headcount ratio at $3.10. The key results are almost identical, except, the coefficients for KAOPEN above the threshold, for both the PTR and LSTR estimation methods, are statistically significant at the 1% significance level. The other significant difference is that in this case the LSTR model may be preferable, because the gamma parameter equals 7. The OLS estimated coefficient is not considered for analysis as the model is nonlinear (refer to the test of nonlinearity).

When the proxy variable for poverty is the poverty gap at $1.90, the tests of nonlinearity indicate that the model is nonlinear, therefore rules out the need for analysis of the OLS estimation, although there is a negative and statistically significant effect on the poverty gap with increasing capital account openness.

[76] Note that the KAOPEN variable has been transformed for the purposes of simplicity in reading the statistical coefficients and making easier sense of the threshold measures. For instance, the real reading of the threshold level of 17 for the LSTR model in regression equation 3 of table 3.2 would be -0.96. This indicates a financial market that is tightly regulated.
[77] This is referring to regression equation 3 on table 3.2.

Furthermore, the low gamma parameter indicates the LSTR model is more appropriate for analysis than the PTR model. However, the coefficients for KAOPEN are statistically insignificant both above and below the threshold. However, the results for poverty gap at $3.10 have greater clarity. The LSTR model is the model that is considered for analytical purposes, the OLS estimated coefficient is discarded because the test of the model shows that it is nonlinear, furthermore, the gamma parameter is low indicating the LSTR being a better fit than the PTR method. The threshold level (refer to regression equation 12) is 15, indicating a highly regulated market. The KAOPEN coefficient is statistically insignificant above the threshold but negative statistically significant at the 5% significance level above the threshold. This indicates that, after this threshold, increasing financial openness will result in reduced poverty.

The other variables, for instance, per capita growth and poverty, do not have statistically significant results across all proxies for poverty. However, in regression equations 4, 5, and 6, it can be seen that increase in the GINI coefficient leads to decreased poverty; all of these coefficients are statistically significant at the 1% significance level. This is indicative of the fact that increased inequality results in reduced poverty, although, this is not consistent across all other proxies for poverty. The fertility rate has an expected effect on poverty, increased fertility rates always increases poverty. Similarly, following the conventional hypothesis, increased literacy rate expectedly reduces poverty.

3.7.2 Financial Integration and Income Distribution

Table 3.3 presents the regression results measuring the impact of capital account openness on different income groups. KAOPEN has a negative and statistically effect on the lowest 10%. The test of nonlinearity shows that that the model is nonlinear. Furthermore, the high gamma parameter indicates that the transition from one regime to another is almost instantaneous. Therefore, the PTR column is taken into consideration for analysis. The KAOPEN coefficient is statistically insignificant below the threshold, however, it is negative and statistically significant at the 1% significance level above the threshold. This indicates for the lowest income band, increasing financial openness results in lower income share for the poorest. Furthermore, because the threshold level deduced from the threshold regression results is at 14, this indicates that as soon as the financial markets loosen

their regulations from being heavily regulated to being moderately regulated, the existing income share of the poorest declines, worsening inequality. For the effect on the income share of the lowest 20%, it can be seen that due to the gamma parameter being high and because the model tests to be nonlinear, the PTR column (regression equation 5) is taken into consideration for analysis. The threshold level here is 14. The result is almost identical to the effect greater financial openness has on the bottom 10%. In this case, increasing openness reduces the income share of the bottom 20% (statistically significant at 1%) above the threshold, but the coefficient is statistically insignificant below the it.

Contrasting inferences are drawn when measuring the effect of increased openness on the income share of the highest 20%. In this case, the LSTR column is considered for analytical purposes because primarily the gamma parameter is low and secondly because the model is nonlinear at the 10% significance level[78]. The threshold level is 22. The KAOPEN coefficient is statistically insignificant below the threshold, however, it is positive and statistically significant above this threshold. This shows that when the financial markets are liberalized, even at the early stages of liberalization, there is an obvious trend for the income share of top 20% to increase and for the bottom 20% and 10% to decrease. The model is linear when measuring the effect of openness on the top 10%. The OLS estimation in this case shows that increased openness increases the share of the income of the top 10%, this is statistically significant at the 5% significance level. Therefore, it can quite clearly be observed that increased openness does in fact decrease the income share of the poor and increase the income share of the rich, even if openness decreases poverty. The only other deduction that can be drawn from the coefficients of other variables is that increasing fertility rate increases the income share of the highest 20% and 10%, and these coefficients are statistically significant at the 10% significance level.

The one notable observatory deduction that can be drawn from appendix 2 and both robustness checks 1 and 2[79] is that below the threshold, the estimated coefficients for KAOPEN have shown to be statistically insignificant. However, for

[78] Refer to the p-value of "p-value nonlinearity," which in this case is 0.0833 and therefore the null hypothesis can be rejected (null hypothesis being that the model is linear) at the 10% significance level.
[79] Robustness checks 1 and 2 are the tests for 3-year non-overlapping averages and the repeated test using lagged KAOPEN variable respectively. Refer to section 3.10.

both these robustness checks it can be seen that the estimated KAOPEN coefficient is positive and statistically significant below the threshold. Therefore, this indicates that below a certain level of financial openness, for all income bands, the richest and the poorest are both benefitted as their income shares increase (although the 40% or the middle class is not analyzed in this report). However, after passing this specific threshold level it becomes quite apparent that the income share of the poor decreases whereas the income share of the rich increases.

3.7.3 Financial Integration and Income Inequality

Table 3.4 looks presents the impact of capital account openness on income inequality. The proxy variables used to account for income inequality are the GINI index (regression equations 1-3), inter-decile income ratio (regression equations 4-6), and income quintile share ratio (regression equations 7-9). When measuring the effect on the GINI index, the OLS estimation shows that increase in KAOPEN results in rise in inequality. This is also statistically significant at the 1% significance level. The PTR methodology shows that the threshold level is 16. Below this threshold the KAOPEN coefficient is 0.675 and this is statistically significant at the 5% significance level. Above the threshold, the coefficient is still positive and statistically significant, however, the magnitude of the coefficient decreases to 0.0859, thereby indicating that after the initial burst of liberalization of the financial markets, while income inequality does increase, it will do so less than when it is only marginally liberalized. The LSTR method is not considered for analysis because the gamma parameter is high. Furthermore, the OLS is not considered as the model tests to be nonlinear and there are no remaining nonlinearities, thereby indicating the appropriateness of the PTR method.

When looking at the effect on inter-decile income ratio, it can be seen that the PTR method is more appropriate for analysis due to the high gamma parameter and the model testing to be nonlinear and being without nonlinearities. The threshold level is 19. However, no added deductions are drawn as we only get a reading of the coefficient above the threshold which is positive and of a similar magnitude to the effect on the GINI coefficient, but this is statistically significant at the 1% significance level. For the effect on the income quintile share ratio, the results are

almost identical to the effect it had on the GINI index. The PTR method and the subsequent results are considered for analysis, because the gamma parameter is high, the model is nonlinear and there are no remaining nonlinearities. The threshold level in this case is also 16 (identical to the PTR column of the GINI index), below the threshold, inequality increases at a higher rate than when it is above the threshold, but income inequality does increase with rising openness nonetheless. These results are consistent across all three proxy variables.

The other interesting deductions to draw from this analysis is the fact that it can be seen that per capita growth, quite interestingly and contrary to popular belief, tends to reduce income inequality. There is sufficient evidence to make this deduction as it is consistent for all the coefficients, and these are all statistically significant at the 1% significance level. Fertility rate and population growth expectedly increases income inequality.

***Table 3.2:** De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Absolute and Relative Poverty*
Time Period: 1980-2013 (5-year non-overlapping averages)
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Poverty Headcount Ratio at $1.90			Poverty Headcount Ratio at $3.10			Poverty Gap at $1.90			Poverty Gap at $3.10		
	(1) OLS	(2) PTR	(3) LSTR	(4) OLS	(5) PTR	(6) LSTR	(7) OLS	(8) PTR	(9) LSTR	(10) OLS	(11) PTR	(12) LSTR
Variable												
Per Capita Growth	-0.521 (0.302)	-0.521 (0.298)	-0.521 (0.298)	0.854 (0.359)	0.858 (0.358)	0.853 (0.360)	-0.235 (0.154)	-0.235 (0.153)	-0.244 (0.154)	-0.419 (0.208)	-0.419 (0.207)	-0.423 (0.209)
GINI	-0.0259 (0.0962)	-0.0131 (0.0968)	-0.0142 (0.0968)	-0.200*** (0.0123)	-0.195*** (0.0124)	-0.200*** (0.0124)	0.144 (0.490)	0.150 (0.492)	0.143 (0.487)	0.0383 (0.0681)	0.0452 (0.0686)	0.0386 (0.0683)
Fertility Rate	3.920*** (1.049)	3.855*** (1.038)	3.861*** (1.038)	3.926*** (1.175)	3.884*** (1.166)	3.931*** (1.174)	1.551*** (0.520)	1.520*** (0.517)	1.562*** (0.522)	2.516*** (0.720)	2.481*** (0.715)	2.514*** (0.720)
Inflation	-0.00904 (0.0210)	-0.0158 (0.0220)	-0.0159 (0.0219)	-0.0206 (0.0295)	-0.0205 (0.0295)	-0.0204 (0.0293)	0.00884 (0.0115)	0.00560 (0.0109)	0.00843 (0.0113)	-0.00142 (0.0143)	-0.00507 (0.0142)	-0.00210 (0.0140)
Government Expenditure	0.0273 (0.0970)	0.0366 (0.0962)	0.0366 (0.0963)	-0.285** (0.119)	-0.285** (0.119)	-0.285** (0.119)	0.140*** (0.0474)	0.145*** (0.0469)	0.143*** (0.0473)	0.0306 (0.0671)	0.0356 (0.0668)	0.0323 (0.0672)
Savings	-0.236*** (0.0574)	-0.238*** (0.0573)	-0.238*** (0.0573)	-0.291*** (0.0711)	-0.291*** (0.0713)	-0.291*** (0.0713)	-0.148*** (0.0300)	-0.149*** (0.0300)	-0.149*** (0.0302)	-0.193*** (0.0411)	-0.194*** (0.0410)	-0.193*** (0.0413)
Literacy Rate	-0.456*** (0.0689)	-0.460*** (0.0683)	-0.460*** (0.0683)	-0.601*** (0.0759)	-0.602*** (0.0758)	-0.600*** (0.0762)	-0.207*** (0.0343)	-0.209*** (0.0341)	-0.209*** (0.0344)	-0.339*** (0.0472)	-0.340*** (0.0470)	-0.340*** (0.0474)
$KAOP$	-0.151** (0.0612)			-0.239*** (0.0784)			-0.0517* (0.0284)			-0.111*** (0.0425)		
$KAOP - T \; if \; KAOP < T$		-1.174 (0.716)			-2.035 (3.672)			-0.540* (0.323)			-0.662 (0.474)	
$KAOP - T \; if \; KAOP > T$		-0.124* (0.0632)			-0.232*** (0.0804)			-0.0389 (0.0294)			-0.0967** (0.0437)	
$W^{low}(KAOP - c^*)$			-1.115 (0.696)			0.100 (3.883)			-1.67 (-3.893)			-1.131 (2.153)
$W^{high}(KAOP - c^*)$			-0.131** (0.0626)			-0.237*** (0.0790)			-0.103 (0.0633)			-0.133** (0.0595)
Constant	44.38*** (10.44)	41.37*** (10.40)	41.61*** (10.40)	86.85*** (12.24)	84.53*** (12.33)	84.61*** (12.25)	9.536** (4.842)	8.382* (4.834)	11.29** (5.146)	32.18*** (7.080)	30.14*** (7.091)	32.13*** (7.166)
Observations	292	292	292	292	292	292	292	292	292	292	292	292
R^2	0.704	0.707	0.707	0.737	0.738	0.737	0.641	0.644	0.642	0.717	0.719	0.717
PTR (T) or LSTR (c)*		16	17		18	19		14	16		14	15
LSTR parameter (γ)*			15			7			3			4
LM Test (GTD 2005) H0: Linear Model			24.73			28.93			23.25			25.67
p-value nonlinearity			0.0397			0.0168			0.0507			0.0334
LM Test for remaining nonlinearities			8.461			6.880			6.808			4.427
p-value remaining nonlinearity			0.864			0.939			0.942			0.992

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

***Table 3.3:** De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Distribution*
Time Period: 1980-2013 (5-year non-overlapping averages)
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Income Share of Lowest 10%			*Income Share of Lowest 20%*			*Income Share of Highest 20%*			*Income Share of Highest 10%*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	*0.00625 (0.00863)*	*0.00625 (0.00866)*	*0.00603 (0.00864)*	*0.00928 (0.0133)*	*0.00928 (0.0134)*	*0.00929 (0.0134)*	*0.00734 (0.0175)*	*0.00722 (0.0177)*	*0.00714 (0.0176)*	*0.0137 (0.0338)*	*0.0148 (0.0339)*	*0.0142 (0.0339)*
GINI	*-0.101*** (0.00302)*	*-0.101*** (0.00300)*	*-0.101*** (0.00300)*	*-0.219*** (0.00483)*	*-0.220*** (0.00481)*	*-0.220*** (0.00480)*	*0.827*** (0.00738)*	*0.827*** (0.00734)*	*0.827*** (0.00741)*	*0.774*** (0.0117)*	*0.773*** (0.0118)*	*0.774*** (0.0117)*
Fertility Rate	*0.0446 (0.0240)*	*0.0455 (0.0240)*	*0.0448 (0.0240)*	*0.0810 (0.0372)*	*0.0830 (0.0372)*	*0.0829 (0.0372)*	*0.0864* (0.0498)*	*0.0891* (0.0499)*	*0.0883* (0.0500)*	*0.177* (0.0915)*	*0.181* (0.0921)*	*0.178* (0.0917)*
Inflation	*3.33e-05 (0.00171)*	*0.000130 (0.00166)*	*6.59e-05 (0.00168)*	*-0.000251 (0.00244)*	*-4.58e-05 (0.00233)*	*-3.27e-05 (0.00232)*	*-0.000465 (0.00320)*	*-0.000196 (0.00303)*	*-0.000363 (0.00309)*	*0.00160 (0.00459)*	*0.00168 (0.00457)*	*0.00160 (0.00462)*
Government Expenditure	*-0.00396 (0.00288)*	*-0.00408 (0.00292)*	*-0.00409 (0.00291)*	*-0.00613 (0.00435)*	*-0.00639 (0.00441)*	*-0.00641 (0.00442)*	*-0.00813 (0.00568)*	*-0.00851 (0.00575)*	*-0.00835 (0.00574)*	*-0.00850 (0.0105)*	*-0.00821 (0.0105)*	*-0.00843 (0.0105)*
Savings	*0.00134 (0.00156)*	*0.00137 (0.00157)*	*0.00139 (0.00158)*	*0.000635 (0.00246)*	*0.000695 (0.00247)*	*0.000690 (0.00247)*	*4.44e-05 (0.00328)*	*0.000155 (0.00330)*	*0.000137 (0.00329)*	*0.000479 (0.00640)*	*0.000381 (0.00642)*	*0.000416 (0.00642)*
Literacy Rate	*-0.000302 (0.00151)*	*-0.000250 (0.00151)*	*-0.000256 (0.00152)*	*0.000454 (0.00235)*	*0.000563 (0.00233)*	*0.000576 (0.00233)*	*0.00123 (0.00346)*	*0.00136 (0.00345)*	*0.00128 (0.00346)*	*-0.000221 (0.00564)*	*-0.000275 (0.00563)*	*-0.000210 (0.00564)*
$KAOP$	*-0.00730*** (0.00175)*			*-0.0101*** (0.00271)*			*0.0128*** (0.00401)*			*0.0143** (0.00608)*		
$KAOP - T\ if\ KAOP < T$		*0.00771 (0.0155)*			*0.0216 (0.0238)*			*0.025 (0.0268)*			*-0.0103 (0.00943)*	
$KAOP - T\ if\ KAOP > T$		*-0.00768*** (0.00181)*			*-0.0109*** (0.00281)*			*0.0142*** (0.00421)*			*-0.0292 (0.0254)*	
$W^{low}(KAOP - c^*)$			*0.0366 (0.0637)*			*0.0215 (0.0232)*			*0.0425 (0.0589)*			*-0.0187 (0.0134)*
$W^{high}(KAOP - c^*)$			*-0.00519 (0.00342)*			*-0.0107*** (0.00277)*			*0.0111** (0.00437)*			*-0.127 (0.316)*
Constant	*6.687*** (0.258)*	*6.598*** (0.263)*	*6.553*** (0.303)*	*15.23*** (0.404)*	*15.12*** (0.410)*	*15.11*** (0.410)*	*14.07*** (0.563)*	*13.93*** (0.582)*	*13.87*** (0.584)*	*0.619 (0.912)*	*0.120 (1.002)*	*-0.357 (1.112)*
Observations	*297*	*297*	*297*	*297*	*297*	*297*	*297*	*297*	*297*	*297*	*297*	*297*
R^2	*0.880*	*0.881*	*0.880*	*0.935*	*0.935*	*0.935*	*0.901*	*0.901*	*0.901*	*0.91*	*0.91*	*0.91*
PTR (T) or LSTR (c)*		*14*	*12*		*14*	*17*		*15*	*22*		*41*	*44*
LSTR parameter (γ)*			*12*			*15*			*2*			*2*
LM Test (GTD 2005) H0: Linear Model			*27.47*			*21.75*			*18.974*			*10.79*
p-value nonlinearity			*0.0232*			*0.0627*			*0.0833*			*0.703*
LM Test for remaining nonlinearities			*8.220*			*3.819*			*9.329*			*9.757*
p-value remaining nonlinearity			*0.878*			*0.996*			*0.809*			*0.780*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.4: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Inequality***
Time Period: 1980-2013 (5-year non-overlapping averages)
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	GINI Index			*Inter-Decile Income Ratio*			*Income Quantile Share Ratio*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*
Variable									
Per Capita Growth	*-0.423*** (0.148)*	*-0.418*** (0.147)*	*-0.414*** (0.148)*	*-0.581*** (0.209)*	*-0.561*** (0.209)*	*-0.565*** (0.209)*	*-0.344*** (0.106)*	*-0.340*** (0.106)*	*-0.347*** (0.106)*
Fertility Rate	*1.921*** (0.698)*	*1.859*** (0.704)*	*1.900*** (0.702)*	*-2.145 (0.826)*	*-1.958 (0.846)*	*-2.087 (0.838)*	*-1.506 (0.491)*	*-1.469 (0.497)*	*-1.486 (0.492)*
Inflation	*-0.0387*** (0.0148)*	*-0.0356** (0.0155)*	*-0.0348** (0.0160)*	*-0.0208 (0.0225)*	*-0.0176 (0.0242)*	*-0.0165 (0.0245)*	*-0.0112 (0.00969)*	*-0.00958 (0.0107)*	*-0.0124 (0.00958)*
Government Expenditure	*-0.0261 (0.0760)*	*-0.0323 (0.0751)*	*-0.0328 (0.0756)*	*-0.0601 (0.115)*	*-0.0627 (0.114)*	*-0.0673 (0.115)*	*0.0342 (0.0581)*	*0.0309 (0.0571)*	*0.0373 (0.0580)*
Population Growth	*4.793*** (0.755)*	*4.733*** (0.766)*	*4.735*** (0.766)*	*4.200*** (1.067)*	*4.049*** (1.088)*	*4.102*** (1.085)*	*2.493*** (0.552)*	*2.463*** (0.561)*	*2.505*** (0.556)*
Literacy Rate	*-0.0265 (0.0419)*	*-0.0253 (0.0419)*	*-0.0273 (0.0418)*	*0.00311 (0.0589)*	*0.00342 (0.0592)*	*0.00144 (0.0592)*	*-0.0275 (0.0326)*	*-0.0267 (0.0325)*	*-0.0264 (0.0328)*
$KAOP$	*0.123*** (0.0366)*			*0.144*** (0.0544)*			*0.0953*** (0.0314)*		
$KAOP - T \; if \; KAOP < T$		*0.675** (0.285)*			*0.793** (0.316)*			*0.375** (0.164)*	
$KAOP - T \; if \; KAOP > T$		*0.0859** (0.0419)*			*0.0310 (0.0824)*			*0.0762** (0.0364)*	
$W^{low}(KAOP - c^*)$			*-9.259 (7.708)*			*-11.01 (10.36)*			*4.034 (3.858)*
$W^{high}(KAOP - c^*)$			*0.0858* (0.0467)*			*0.0790 (0.0822)*			*0.101*** (0.0316)*
Constant	*42.38*** (4.298)*	*45.21*** (4.291)*	*44.73*** (4.370)*	*17.74*** (5.493)*	*22.66*** (5.772)*	*21.23*** (6.060)*	*10.69*** (3.048)*	*12.63*** (3.116)*	*11.02*** (3.133)*
Observations	*301*	*301*	*301*	*287*	*287*	*287*	*299*	*299*	*299*
R^2	*0.202*	*0.210*	*0.206*	*0.212*	*0.214*	*0.205*	*0.222*	*0.224*	*0.221*
PTR (T) or LSTR (c)*		*16*	*7*		*19*	*7*		*16*	*8*
LSTR parameter (γ)*			*9*			*9*			*11*
LM Test (GTD 2005) H0: Linear Model			*20.45*			*21.19*			*25.25*
p-value nonlinearity			*0.0657*			*0.0595*			*0.0292*
LM Test for remaining nonlinearities			*3.308*			*4.116*			*5.008*
p-value remaining nonlinearity			*0.997*			*0.990*			*0.975*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

3.8 Conclusion

This research paper investigates the impact of financial integration on poverty and inequality in 79 developing countries over the time period 1980-2013. The econometric techniques deployed in this research paper include the Panel Threshold Regression (PTR) method, the Logistic Smooth Transition Regression (LSTR) method and the Ordinary Least Square (OLS) estimation method. In order to validate the findings in this research paper, a series of robustness checks are carried out in the appendix in section 3.10. In order to gain a deeper understanding of the key findings of this research paper, it is important to understand that the transformed KAOPEN variable ranges from 0 to 53.2, where 0 indicates full regulation and 53.2 indicates a fully liberalized financial market. The mean of the KAOPEN variable is 26.2, indicating moderate levels of regulation (from the viewpoint of capital control) or a moderate level of financial openness (when viewing it from the perspective of capital account liberalization).[80] The key inferences deduced in this research paper are the following:

1. When assessing the regression results measuring impact of capital account openness on poverty, it can be seen that the threshold level of KAOPEN approximates to 16, and above this threshold level, poverty decreases. The KAOPEN level of 16 indicates a highly regulated financial market; the regression results suggest that when the financial markets are less regulated or with increasing level of financial openness, poverty declines. For instance, more than half of the developing countries in the dataset have a higher KAOPEN level than the threshold determined in the regression findings (equates to KAOPEN level of 16), which is reflected in the subsequent reduction in poverty. For instance, Argentina, Brazil, Malaysia and Indonesia have all had a level of financial openness that is greater than the threshold level denoted here. On the contrary, India and Bangladesh for instance, have had a level of financial openness that is lower than the threshold denoted here. Furthermore, it is observed that increasing inequality is associated with

[80] In order to get country case examples for the KAOPEN variable, refer to the conclusion section of chapter 2. In the dataset, the mean of the KAOPEN variable is 22.8, where the minimum value is 7.7 and the maximum value is 50.5.

reduced poverty; this thereby indicates that despite financial integration playing an active role in reducing poverty by enhancing growth as evident in the last chapter, it, on the other hand, also increases income inequality in the process.

2. When assessing the regression results measuring the impact of capital account openness on various income bands (this includes the poorest 10% and 20% and the richest 20% and 10%), it is observed that the threshold level varies between 14 and 22 (averages to 18); this KAOPEN level is indicative of high regulation or low levels of financial openness. Below this threshold (in reference to appendix 2), it is observed that income share increases for the richest as well as the poorest, however, once it is above this threshold, it is observed that increasing openness results in a decline in the income share of the poorest 10% and 20%, on the contrary, an increase in income share is observed for the richest 10% and 20%. For instance, Brazil, Malaysia, Indonesia, Egypt, Botswana along with a host of other countries all have a level of KAOPEN that exceeds the threshold denoted here. Resultantly, it is observed that with increasing levels of financial openness, income share of the poorest declines while the income share of the richest increases for these countries.
3. When assessing the regression results measuring the impact of capital account openness on income inequality, it is observed that the threshold levels of KAOPEN vary between 16 and 19; this is indicative of a high level of regulation or low level of financial openness. Increased openness results in increased inequality above and below the threshold level. However, inequality increases faster below the threshold as opposed to when it is above the threshold. The countries in the dataset that have a greater level of financial openness, exceeding the stated threshold, tends to show with increasing openness income inequality does in fact increase. This is consistent for the likes of Brazil, Bolivia, Honduras, Mexico, and Paraguay for which higher levels of financial openness is observed, this is subsequently reflected with higher levels of inequality.

On the basis of the inferences deduced in this research paper, for developing economies, it is quite apparent that increased financial integration results in reduced

poverty. However, it is important to note that this is not uniform across all indicators of poverty[81]. It is also evident that increasing financial integration increases inequality. The policy dilemma for governments, economists, and policymakers alike, would be to acknowledge increasing liberalization results in a tradeoff, reduction in absolute and relative poverty, but an increase in inequality, and therefore, they must fixate on a working policy model for the developing world. On the evidence of the effect of increasing openness on different income bands, it is evident that in the early stages of financial liberalization, poverty decreases and income share for all income groups increase[82]. However, the conundrum is this, why does the income share fall for the poorest and increase for the richest after crossing this particular threshold level? If the institutional infrastructure was structured in a way so that it would facilitate the gains of financial integration not only for the rich but also for the poor, then, without question financial liberalization should be endorsed. However, in developing countries, an unequal society has the potential of causing severe economic damage due to the presence of class struggle, followed by constant political instability. The balancing act is not only a policymaking dilemma but a moral dilemma too. However, it must be clarified that this research paper does not promote inward looking policies as there is convincing evidence that they are detrimental to average income growth (Taylor, 1998). Developing countries are not easy to govern, however, governments must find a way to ensure a booming financial sector with motivated entrepreneurs and technepreneurs, without compromising the benefits to the poor.

3.8.1 Contribution to the Literature

The contributions that this research paper makes to the existing literature in the associated field of research are the following:

1. The Panel Threshold Regression (PTR) model introduced by Hansen (1999) and/or the extension by Caner and Hansen (2004) does not feature at all in the literature assessing the impact of financial integration on poverty. This

[81] For instance, increased openness results in decreased income share for the poorest 10% and 20% above a specific threshold. However, while income share is also an indicator used to account for poverty, especially the share of income of the poorest, a reduction in income share could still mean income has risen on the whole and poverty has decreased.

[82] While increase in openness results in increased income levels for all income bands, income share of the richest 10% and 20% are the highest beneficiaries as they have the highest amount of increase.

research paper uses the paper developed Arestis and Caner (2010) as a benchmark. However, this research paper assesses the impact of capital account liberalization on poverty using the threshold approach. This would allow policymakers to underpin the intensity of financial openness that is beneficial for poverty reduction and inequality minimization. The fundamental contribution that this research paper makes is the use of the Logistic Smooth Transition Regression (LSTR) methodology. Hansen's (1999) PTR methodology only looks at the instantaneous change between one regime to the other. However, this research paper accounts for the 'smooth' transition from one regime to another and therefore this makes it economically and statistically more reasonable and advantageous for analytical purposes and to enforce validity in the findings. Furthermore, this research paper also looks at the impact of openness on various income bands and finds their respective threshold levels and the effects below and above the threshold. This provides a microscopic picture of the relationship between inequality and KAOPEN.

2. The index developed by Chinn and Ito (2006), the capital account openness index, denoted as the KAOPEN variable has previously been used in the literature to account for financial integration. This research paper uses the Chinn-Ito index as a threshold variable to pinpoint threshold levels and the subsequent effects below and above the threshold on poverty and inequality.
3. Hansen's (1999) and/or Caner and Hansen's (2004) threshold techniques are commonly used in the FI-growth literature; even though this is not directly related to this particular research paper, it must be noted that these research papers fail to address the problem of heteroscedasticity. This research paper on the other hand tests for heteroscedasticity in the threshold models and addresses this problem altogether.
4. Gonzalez, Terasvirta, and van Dijk's (2005) test for nonlinearities assesses whether or not the model is linear or nonlinear, this helps in analyzing the appropriateness of the model i.e. whether the OLS is more appropriate than the PTR or the LSTR. However, in the existing threshold literature, this is unaccounted for and normally research papers do not carry out a test to examine whether the model is truly nonlinear before executing the PTR methodology and drawing inferences from the results. Furthermore, the appropriateness of the PTR and the LSTR is also tested (this is not tested in

other papers). Furthermore, this test examines the existence of remaining nonlinearities i.e. if there are more than two regimes or more than a single threshold than the OLS, PTR, and the LSTR should not be considered for analysis. This test is a significant addition to the literature on the whole and is a benchmark for threshold tests in the associated field of research.

3.8.2 Suggestions for Further Work

For further work, it would be extremely interesting and applicable for policymaking purposes if interactions terms were used endogenously. For example, this could include institutional and political factors. Institutional factors could certainly provide an added impetus to this existing research paper, and it would go beyond simply noting the problem and finding solutions on the basis of analysis from looking at the larger picture, but this would in fact provide a microscopic view to particular issues that may need be addressed in developing countries. The researching potential, stemming from this research paper, for this particular area of research is endless. This would further help establish the key areas or institutions that the government can focus on in order to reduce poverty and control inequality simultaneously.

3.9 Appendix 1: Explorative Data Analysis

3.9.1 Explorative Data Analysis 1: Historical Trends

This section looks at the historical trends of all the proxy variables used for poverty, income distribution and income inequality. Furthermore, this section also graphically presents the historical trend for the key independent variable of interest, the capital account openness index developed by Chinn and Ito (2006), denoted as KAOPEN.

Panel 3.1: Poverty Trends

Figure 3.1: Poverty Headcount Ratio at $1.90

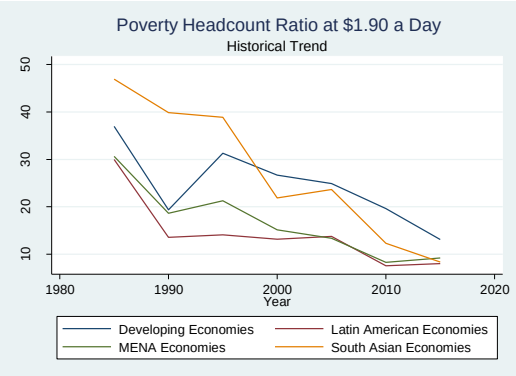


Figure 3.2: Poverty Headcount Ratio at $3.10

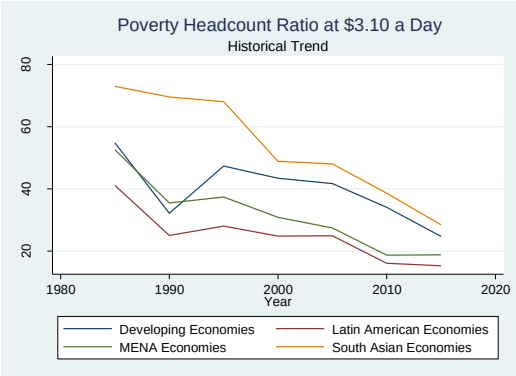


Figure 3.3: Poverty Gap at $1.90 a Day

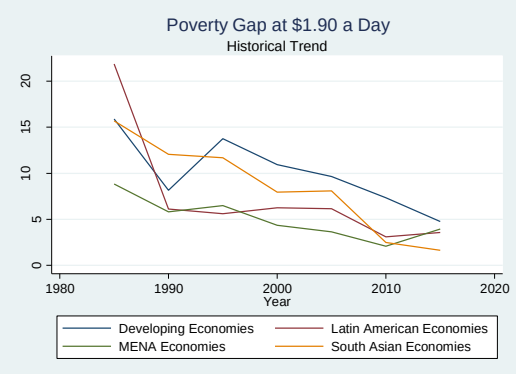
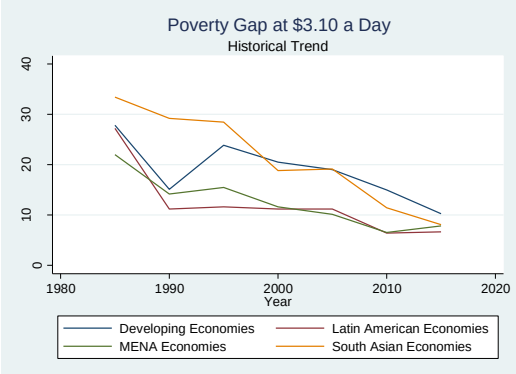


Figure 3.4: Poverty Gap at $3.10 a Day



Figures 3.1, 3.2, 3.3, and 3.4 look at the historical trends of the poverty headcount ratio at $1.90 and $3.10 and the poverty gap at $1.90 a day and $3.10 a day. This research paper specifically focuses on developing countries on the whole, however, graphically, there are additional region specific historical trends shown for the Latin American, MENA, and South Asian Economies. It can be observed that in the 1980s, poverty in the developing economies was higher than any time after that. It is also observed that South Asian Economies also had the highest level of poverty,

however, they have shown a gradual and consistent decrease in poverty levels over time. However, interestingly, it can be observed that in the late 1990s, there has a hike in poverty in developing countries on average and this was followed by an inevitable decline in poverty. The reason being could be that the ‘crisis channel.’ Due to all the developing countries liberalizing their financial markets there was an obvious increase in financial flows and resultantly this transcended to higher growth levels. However, there were a series of major crises in the late 90s, this was particularly calamitous for the Asian Economies (refer to the Asian Financial Crisis of 1997).

Panel 3.2: Income Distribution Historical Trends

Figure 3.5: Income Share of Lowest 10%

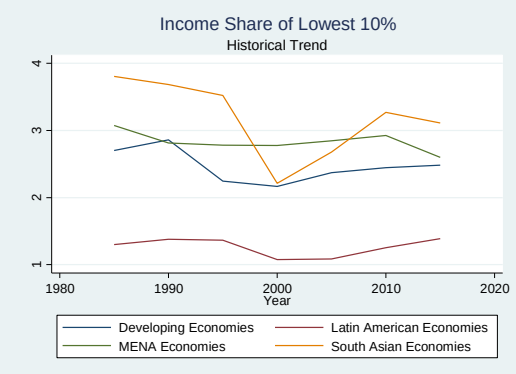


Figure 3.6: Income Share of Lowest 20%

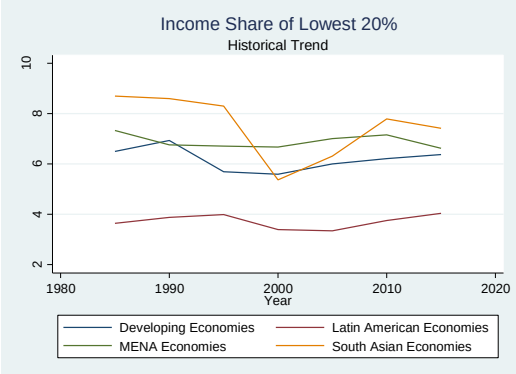


Figure 3.7: Income Share of Highest 20%

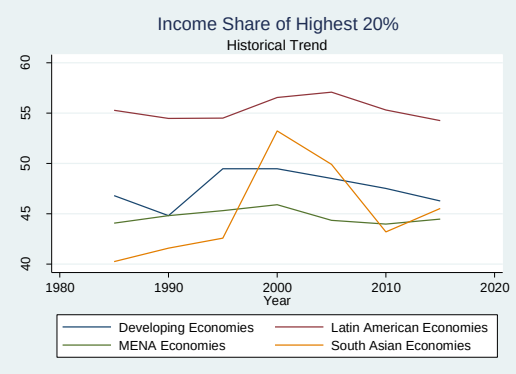
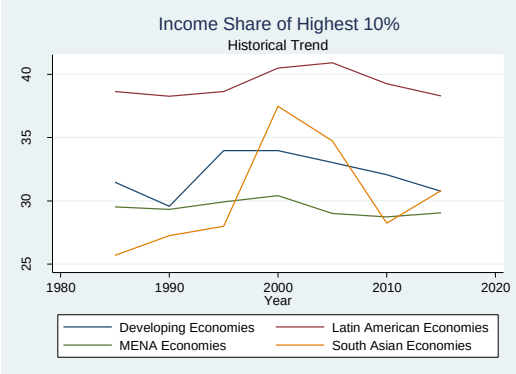


Figure 3.8: Income Share of Highest 10%



Figures 3.5, 3.6, 3.7, and 3.8 look at the historical trends for the income share of the lowest 10% and 20% and the highest 20% and 10% respectively, in developing economies. Furthermore, for cross-comparative purposes this is compared to Latin American, MENA, and South Asian Economies. For the lowest 10% and 20%, it can be observed that quite interestingly, despite having higher poverty levels, income share of the poorest in South Asian economies is higher than the rest. The conditions for the poor in Latin America is dire as the poor only have less 2% of total income. Even in recent times, this scenario has not changed. For South Asian economies, there is a large drop in the income share of the poor in the late 90s and the early 2000s. This could certainly be attributed, at the very least marginally, to the Asian Financial Crisis of 1997. Furthermore, this reiterates the fact that in the time of a crisis, the poor do in fact suffer more. For instance, in figures 3.7 and 3.8, it can be seen that at the time when the income of the poorest was eroded, the income of the rich in fact increased, coincidentally or not, this happened at exactly the same time. This also goes to the show the lack of presence of the middle class, especially in South Asian Economies at the time. Income share of the highest 20% and 10% shows that the richest, in

developing countries, almost have 50% of the total share of income. This scenario is worse for Latin American countries where the richest 20% have more than 50% of the total income.

Panel 3.3: *KAOPEN and Income Inequality Trends*

Figure 3.9: ***KAOPEN***

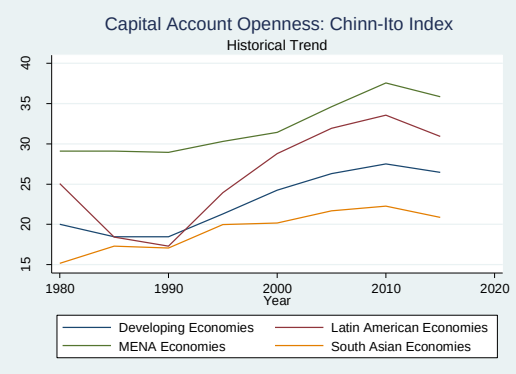


Figure 3.10: ***GINI Index***

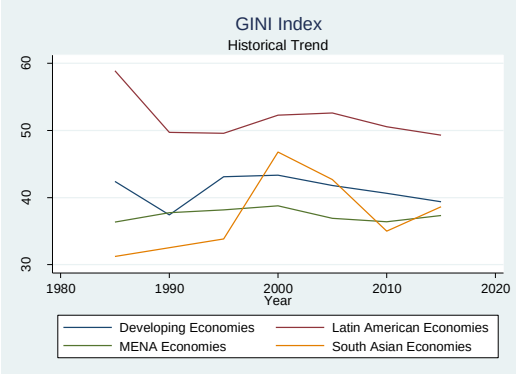


Figure 3.11: ***IQSR***

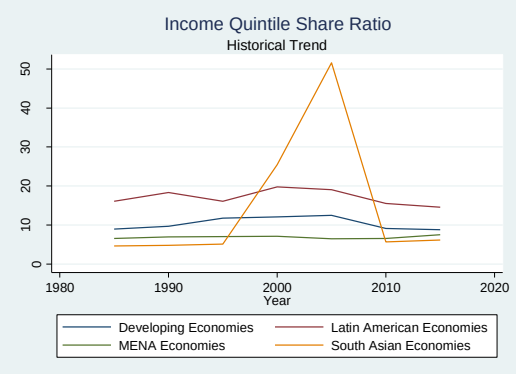


Figure 3.12: ***IDIR***

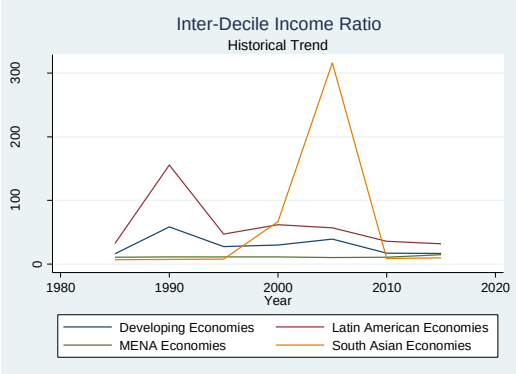


Figure 3.9 looks at the historical trends of the Chinn-Ito index. On average, it can certainly be noted that barring blip observed during the global financial crisis in 2008/09, the financial markets are increasingly more liberalized over time. On average, the developing economies are partially open in recent times, however, it is quite evident that the MENA economies have been more financially liberalized than the other geographical regions presented on this graph. Furthermore, it is observed that the financial markets of the South Asian Economies are highly regulated. Figures 3.10, 3.11, and 3.12 look at how inequality fares over time. For developing economies, as well as for all other geographical locations, there is not a definitive deduction to be made. There is not a gradual rise or a gradual decline in inequality. The only notable observation that be drawn from the GINI index is that for South Asian economies, there was a steep rise in inequality in the late 90s and in the early 2000s. This is almost identical for the measure of IQSR and IDIR. The general comments to make here is that the Latin American Economies have the highest level of inequality on average and across all the measures of inequality used here.

Furthermore, the developing economies only observed a steep rise in inequality in the early 1990s.

3.9.2 Explorative Data Analysis 2: Scatter Graphs

This section presents the relationship between the key independent variable of interest (capital account openness or the KAOPEN) and all other proxy measures used for poverty, income distribution and income inequality. The relationships are graphically presented by the use of scatter graphs and this is reestablished via the use of the line of best fit. The purpose of these graphs is to replicate illustratively the regression analysis carried out in the main results section, and if possible and where possible, supplement and support the analytical findings.

***Panel 3.4:* Illustrating the Relationship Between KAOPEN and Poverty**

***Figure 3.13:* Poverty Headcount Ratio at $1.90**

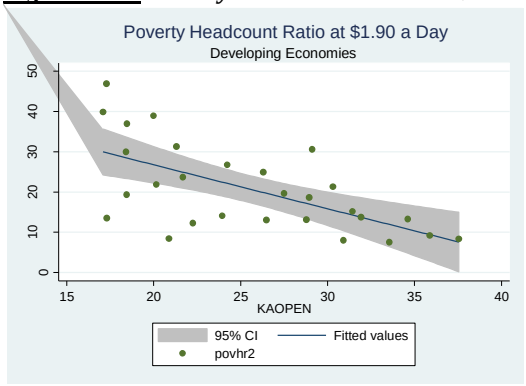


***Figure 3.14:* Poverty Headcount Ratio at $3.10**

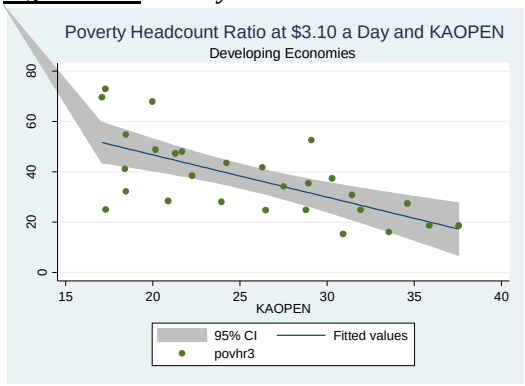


***Figure 3.15:* Poverty Gap at $1.90**

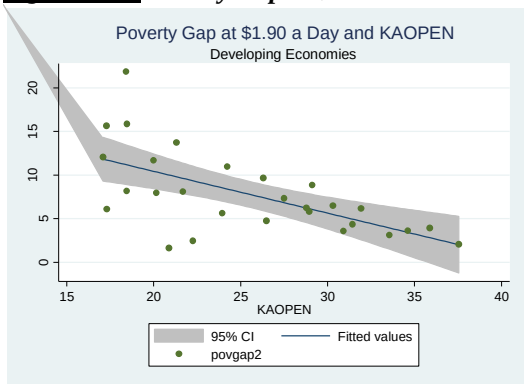
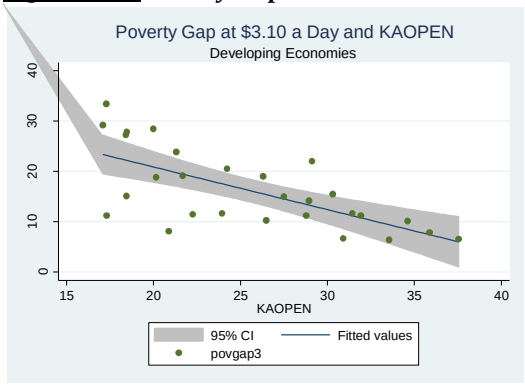


***Figure 3.16:* Poverty Gap at $3.10**



Figures 3.13, 3.14, 3.15, and 3.16 look at the relationship between KAOPEN and poverty (there are four proxy measures used to account for poverty) for developing economies, using scatter graphs. For all of these graphs, it is quite evident,

that increasing KAOPEN, results in decreased poverty. This is consistent across all measures. Therefore, it can be deduced, on the basis of the graphical evidence observed here, that there is a strong negative correlation between KAOPEN and poverty.

***Panel 3.5:* Illustrating the Relationship Between KAOPEN and Income Distribution**

***Figure 3.17:* Income Share of Lowest 10%**

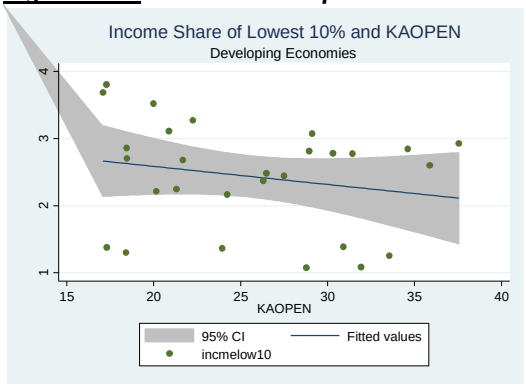


***Figure 3.18:* Income Share of Lowest 20%**

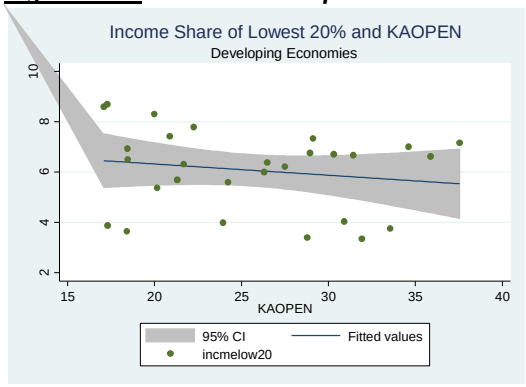


***Figure 3.19:* Income Share of Highest 20%**

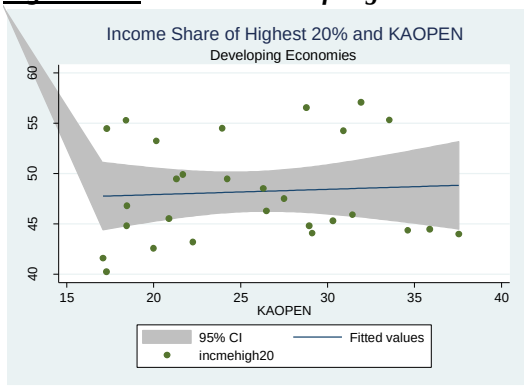
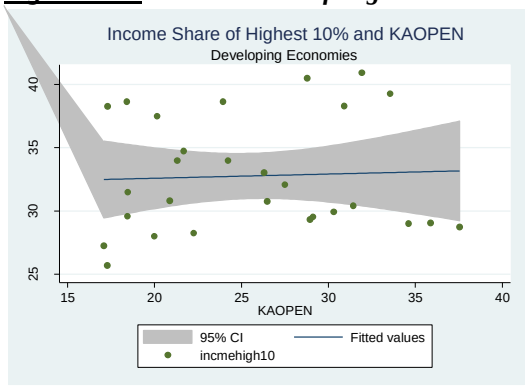


***Figure 3.20:* Income Share of Highest 10%**



Figures 3.17 and 3.18 look at the relationship between the income share of the lowest 10% and 20% on KAOPEN respectively for developing economies. It is evident that the relationship observed is not strong. Therefore, it can be said that there is a weak negative correlation between income share of the poor and financial openness. However, despite the lack of strength of the correlation, it reiterates the findings (this is consistent with the findings in the results section) that increased openness results in reduced income share for the poorest. On the contrary, the results are identical for the relationship between the income share of the rich and KAOPEN, except the sign is opposite. From figures 3.19 and 3.20, it can be observed that there is a weak positive relationship between income share of the highest 20% and 10%

with KAOPEN, thereby implying that increased openness results in increased income share for the richest 20% and 10%.

***Panel 3.6:** Illustrating the Relationship Between KAOPEN and Income Inequality and Povery and Inequality*

***Figure 3.21:** GINI Index*

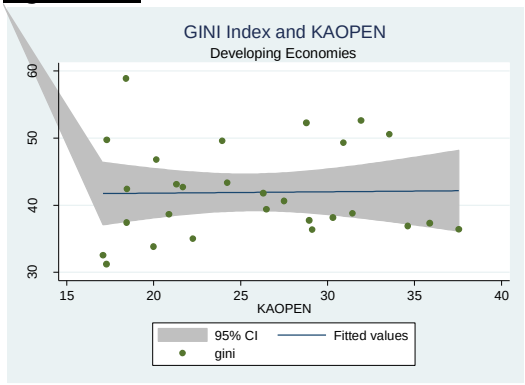


***Figure 3.22:** IQSR*

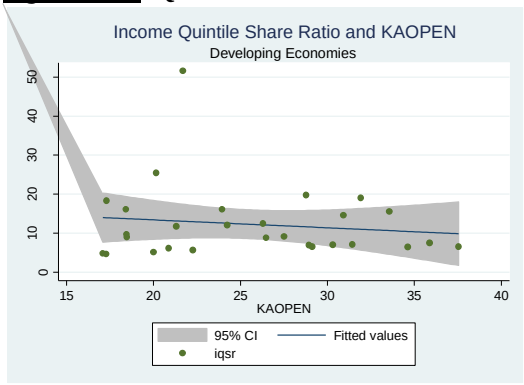


***Figure 3.23:** IDIR*

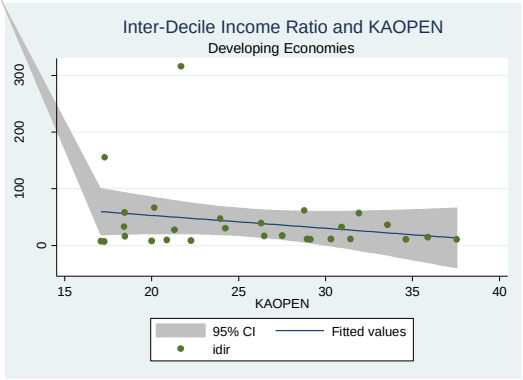
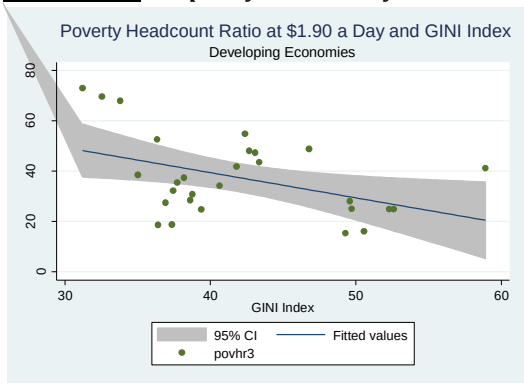


***Figure 3.24:** Inequality and Poverty*



The relationship between inequality and KAOPEN is illustrated in figures 3.21, 3.22, and 3.23. There is no evidence of a correlation between any of the proxies of inequality and KAOPEN. Figure 3.24, looks at the effect of inequality and poverty. While this is not the main focus of this research paper, not illustrating and analyzing an important issue as such (albeit only on the surface) would not complete reasoning and justification for all other deductions for all other measures. There is an evident strong negative correlation between inequality[83] and poverty. The literature is polarized in terms of arguments for and against the gains of financial liberalization. The conventional argument hypothesizes that while increased financial integration is likely to fuel increased growth, even though there is a cost of increased inequality, this does not mean that poverty decreases. In fact, the literature consists of various theoretical arguments and empirical evidence suggesting that poverty does in fact decrease in certain cases. However, this contradicts the results acquired in the results section as well as the regression findings in the robustness checks sections. This could

[83] The inequality parameter, or the proxy variable used to account for inequality is the GINI coefficient.

however be that the relationship is in fact nonlinear, or, the impact of inequality on poverty is inconclusive (contradicts the regression findings).

3.9.3 Explorative Data Analysis 3: Quadratic Relationships

This section looks at the quadratic (non-linear relationship in a quadratic line plot) relationship between capital account openness and all other proxy variables used to account for poverty, income distribution, and income inequality. The purpose of these graphical illustrations is to illustratively present the threshold levels that has been calculated by the PTR and the LSTR regression methods. However, it is important to note that while they are both nonlinear, the estimation methods are entirely different. The graphical representations are only meant to be a supplement to the inferences drawn via the threshold regressions.

***Panel 3.7:* Quadratic Relationship between KAOPEN and Poverty**

***Figure 3.25:* Poverty Headcount Ratio at $1.90**

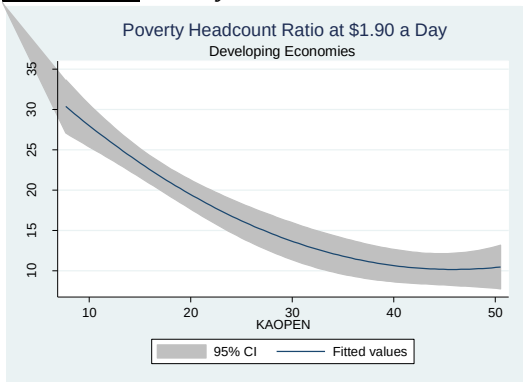


***Figure 3.26:* Poverty Headcount Ratio at $3.10**

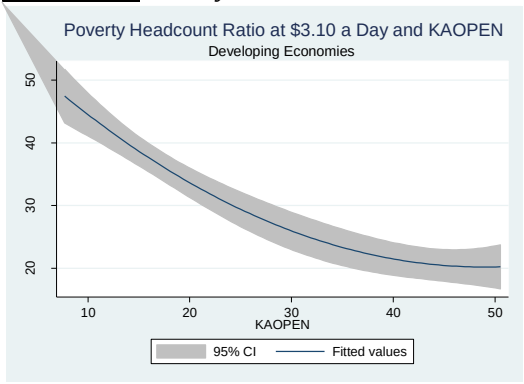


***Figure 3.27:* Poverty Gap at $1.90 a Day**

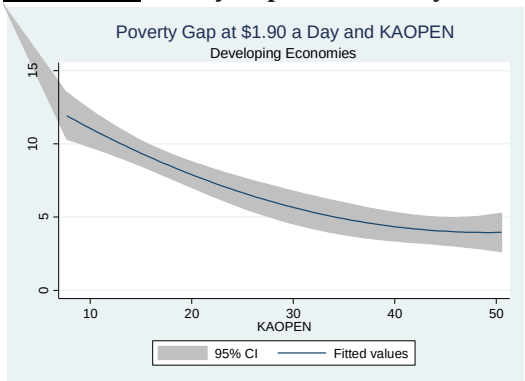
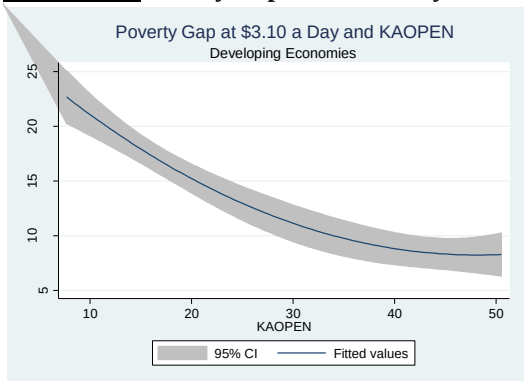


***Figure 3.28:* Poverty Gap at $3.10 a Day**



Figures 3.25, 3.26, 3.27, and 3.28 look at the quadratic relationship between KAOPEN and poverty. The threshold levels in table 3.2 (this is the table where the OLS, PTR, and the LSTR methods are applied and the subsequent regression findings are presented), fluctuate between 14 and 22. This is predominantly the case even for

the findings deduced in the robustness checks sections. However, these figures do not allow us to draw any inferences.

***Panel 3.8:** Quadratic Relationship between KAOPEN and Income Distribution*

***Figure 3.29:** Income Share of Lowest 10%*

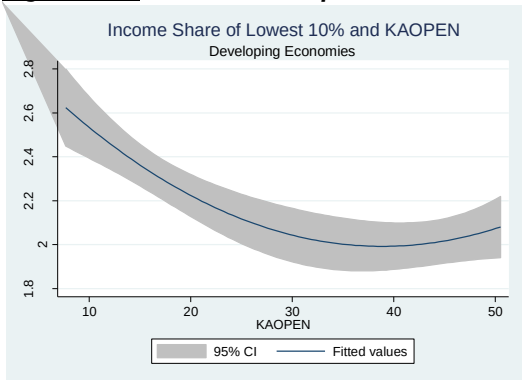


***Figure 3.30:** Income Share of Lowest 20%*

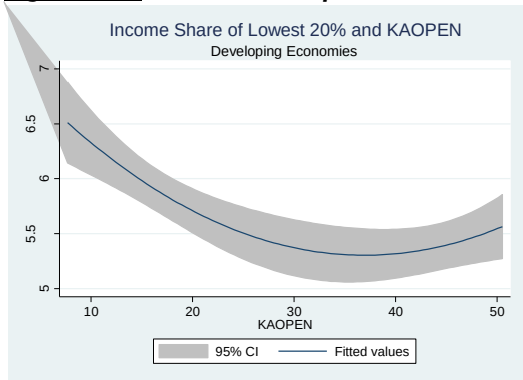


***Figure 3.31:** Income Share of Highest 20%*

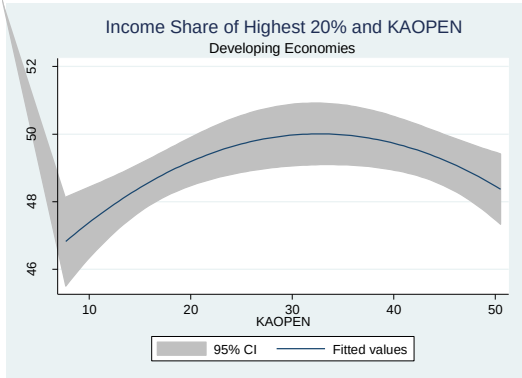
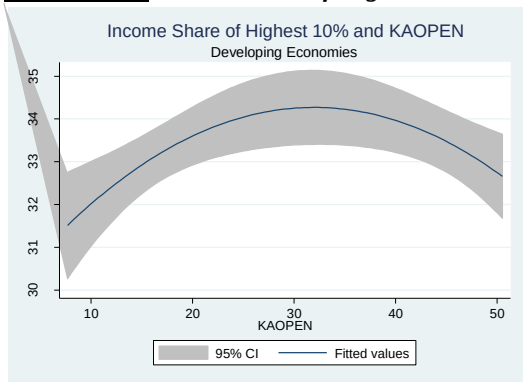


***Figure 3.32:** Income Share of Highest 10%*



The threshold levels in table 3.3 (threshold regression findings for the impact of capital account openness on income share) vary between 14 and 22 (this includes the poorest 10% and 20% and the richest 20% and 10%). However, the threshold regression findings and the graphs illustrated in panel 8 stand in stark contrast. For the poorest as well as the richest 10% and 20%, the threshold regression findings imply that below the certain threshold increase in KAOPEN results in increase in income share. This is consistent for the richest 10% and 20%, but, the effect is opposite when seen graphically, for the poorest 10% and 20%. In figures 3.29 and 3.30, it can be seen that increasing openness below the threshold results in decreased income share of the poor. This contradicts the threshold regression findings. Above the threshold, the threshold regression findings and the graph are in stark contrast for all income bands. The threshold regression findings state that for the rich while the magnitude of the rise in income share diminishes above the threshold, it still increases nonetheless.

However, in figures 3.31 and 3.32, above the threshold income share actually declines. Furthermore, for the poorest, income share in fact increases. This completely contradicts the findings via the threshold regressions for both PTR and LSTR as well as the OLS. However, it is important to note that the threshold levels for the graphs are significantly larger than those observed in the regression findings and therefore could hold weight in terms of causing such a massive disparity in the findings.

***Panel 3.9:** Quadratic Relationship between KAOPEN and Income Distribution and Poverty and Income Inequality*

***Figure 3.33:** GINI Index*

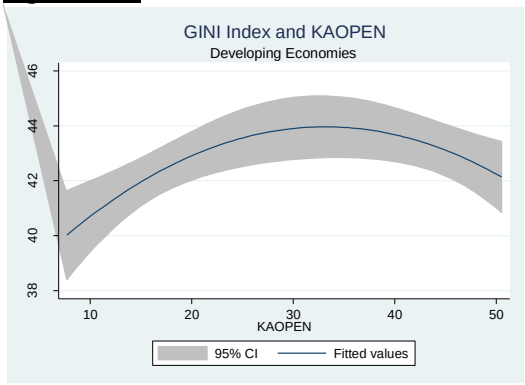


***Figure 3.34:** IQSR*

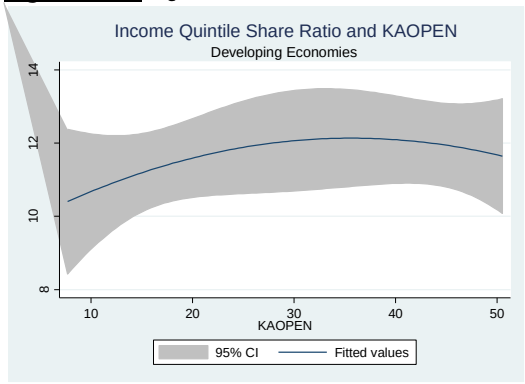


***Figure 3.35:** IDIR*

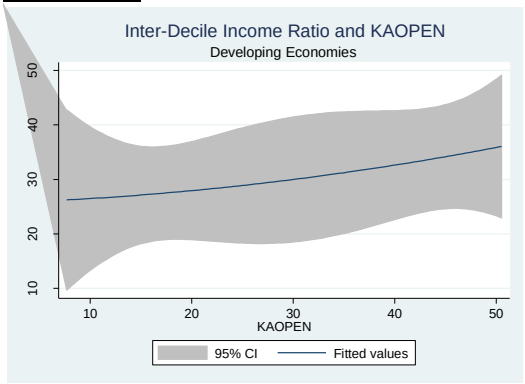
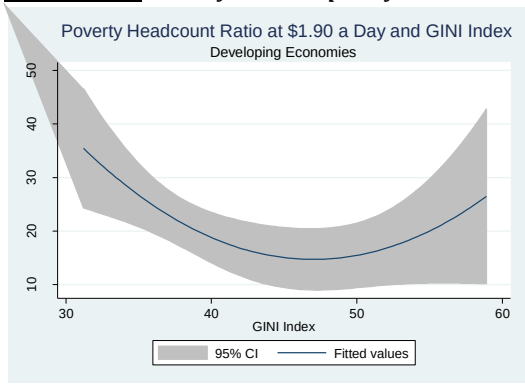


***Figure 3.36:** Poverty and Inequality*



The results observed between KAOPEN and inequality in figures 3.33, 3.34 and 3.35 are in stark contrast to the regression findings in table 3.4 as well as the robustness checks associated to this in appendix 2. When looking at the regression results measuring the impact of capital account openness on income inequality, it is seen that the threshold levels of KAOPEN vary between 16 and 19. Increased openness results in increased inequality above and below the threshold level. However, inequality increases faster below the threshold as opposed to when it is above the threshold, but inequality increases with increased liberalization regardless. In figure 3.33, while increased KAOPEN results in increased inequality below the threshold, above the threshold, the result is in complete contrast to that of the threshold findings. No obvious thresholds are observed in figures 3.34 and 3.35. Figure 36[84] is supplementary; this is to provide a graphical illustration looking at the quadratic relationship between inequality and poverty. It is observed that increasing

[84] There are no threshold regressions carried out to specifically look at the relationship between inequality (GINI index) and poverty. This graph is added for the comfortability of the reader and for added intuition.

inequality (not arguing if this is caused by growth and/or financial integration) decreases poverty up until a certain threshold, after which, poverty in fact increases. On the basis of economic intuition, this is consistent with the theoretical ramifications. However, this is merely a minor additional outlook on this relationship between two variables heavily examined in this research paper.

3.10 Appendix 2: Robustness Checks

The robustness tests are recorded accordingly and include the following:

1. Robustness Test 1: 3-Year Non-Overlapping Averages
2. Robustness Test 2: Lagged IFI Proxy Variable
3. Robustness Test 3: First Differences
4. Robustness Test 4: GMM Estimations

3.10.1 Robustness Test 1: 3-Year Non-Overlapping Averages

This section replicates the threshold regression estimation methods carried out in the main results section with 3-year non-overlapping averages instead of 5-year non-overlapping averages. Deploying the 3-year averages is a common test carried out to validate inferences drawn from the main regression results. Table 3.5 looks at the impact of financial integration on poverty using 3-year non-overlapping averages. The KAOPEN coefficients are negative and statistically significant (at the 1% or the 5% significance level above the threshold for 3 out of the 4 proxy variables selected to account for poverty. This is consistent with the results acquired for the main regression findings in the results section in table 3.2. Furthermore, the coefficient for savings rate and literacy rate are both statistically significant and negative and thereby consistent with the results obtained in table 3.2. The tests of nonlinearity show that the models are nonlinear and that there are no more than two regimes and therefore the PTR or the LSTR model are more appropriate for analysis. The obvious notable difference is the increase in the number of observations. No deterministic relationship can be drawn with the GINI index and the effect on poverty as it is statistically insignificant.

Table 3.6 looks at the impact of financial openness on differing income groups. The results are considerably similar to that of table 3.3 (5-year non-overlapping averages). It can be seen that above the threshold, income share reduces for the poor and income share increases for the rich. However, the additional inference that can be drawn from this regression finding is that below the threshold, for the poorest 10% and 20%, income share actually tends to increase. This is statistically significant at the 5% significance level. The other additional observatory

note that can be made is that for the highest 10% and 20%, below the threshold, the coefficient is positive and statistically significant and has a higher magnitude than the coefficient above the threshold. There is a clear suggestion that in the early days of financial liberalization, the income share of both the poor and the rich increases, before it starts to decrease for the poor and increase for the rich after a certain threshold. One additional finding that is evident is that increasing inflation reduces income share for all income groups. The threshold levels and estimates for the other control variables are not dissimilar to table 3.3. Table 3.7 looks at the impact of openness on inequality. The coefficient estimates for KAOPEN and all other control variables are not dissimilar to the findings in table 3.4, except for the IDIR, it can be seen that even above the threshold inequality increases and the magnitude is large. This result above the threshold was statistically insignificant in table 3.4.

Table 3.5: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Absolute and Relative Poverty using 3-year non-overlapping averages*** ***Robustness Check 1: 3-Year Non-Overlapping Averages*** ***Time Period: 1980-2013 Income Group: Developing Economies*** ***Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)***												
	Poverty Headcount Ratio at $1.90			*Poverty Headcount Ratio at $3.10*			*Poverty Gap at $1.90*			*Poverty Gap at $3.10*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	*0.519* *(0.224)*	*0.528* *(0.224)*	*0.528* *(0.225)*	*0.589* *(0.306)*	*0.588* *(0.308)*	*0.576* *(0.312)*	*0.277* *(0.100)*	*0.282* *(0.102)*	*0.287* *(0.103)*	*0.387* *(0.153)*	*0.391* *(0.154)*	*0.392* *(0.156)*
GINI	*-0.0495* *(0.0937)*	*-0.0411* *(0.0942)*	*-0.0422* *(0.0941)*	*-0.234** *(0.123)*	*-0.236** *(0.124)*	*-0.237** *(0.123)*	*0.121* *(0.0452)*	*0.126* *(0.0452)*	*0.121* *(0.0451)*	*0.0139* *(0.0662)*	*0.0179* *(0.0667)*	*0.0148* *(0.0665)*
Fertility Rate	*3.784**** *(1.014)*	*3.721**** *(1.012)*	*3.727**** *(1.013)*	*3.818**** *(1.130)*	*3.830**** *(1.134)*	*3.861**** *(1.133)*	*1.549**** *(0.490)*	*1.511**** *(0.491)*	*1.536**** *(0.490)*	*2.478**** *(0.693)*	*2.448**** *(0.694)*	*2.462**** *(0.694)*
Inflation	*0.0241* *(0.0636)*	*0.00747* *(0.0643)*	*0.00852* *(0.0644)*	*0.0595* *(0.0822)*	*0.0624* *(0.0857)*	*0.0716* *(0.0875)*	*0.0374* *(0.0327)*	*0.0275* *(0.0311)*	*0.0327* *(0.0314)*	*0.0380* *(0.0470)*	*0.0300* *(0.0475)*	*0.0336* *(0.0476)*
Government Expenditure	*0.00515* *(0.100)*	*0.0148* *(0.100)*	*0.0143* *(0.101)*	*-0.304** *(0.128)*	*-0.306** *(0.129)*	*-0.312** *(0.129)*	*0.117** *(0.0472)*	*0.123**** *(0.0469)*	*0.121** *(0.0473)*	*0.00794* *(0.0699)*	*0.0126* *(0.0702)*	*0.0108* *(0.0705)*
Savings	*-0.184**** *(0.0559)*	*-0.187**** *(0.0557)*	*-0.187**** *(0.0557)*	*-0.247**** *(0.0715)*	*-0.247**** *(0.0712)*	*-0.244**** *(0.0710)*	*-0.123**** *(0.0295)*	*-0.124**** *(0.0295)*	*-0.124**** *(0.0295)*	*-0.158**** *(0.0404)*	*-0.159**** *(0.0403)*	*-0.159**** *(0.0402)*
Literacy Rate	*-0.431**** *(0.0658)*	*-0.433**** *(0.0654)*	*-0.433**** *(0.0655)*	*-0.584**** *(0.0740)*	*-0.584**** *(0.0743)*	*-0.582**** *(0.0746)*	*-0.184**** *(0.0306)*	*-0.185**** *(0.0304)*	*-0.186**** *(0.0308)*	*-0.316**** *(0.0447)*	*-0.317**** *(0.0446)*	*-0.317**** *(0.0449)*
$KAOP$	*-0.137** *(0.0554)*			*-0.225**** *(0.0748)*			*-0.0441** *(0.0239)*			*-0.101**** *(0.0384)*		
$KAOP - T \; if \; KAOP < T$		*-0.815* *(0.772)*			*-0.0315* *(1.323)*			*-0.446* *(0.338)*			*-0.427* *(0.524)*	
$KAOP - T \; if \; KAOP > T$		*-0.118*** *(0.0564)*			*-0.228**** *(0.0763)*			*-0.0323* *(0.0243)*			*-0.0916*** *(0.0389)*	
$W^{low}(KAOP - c^*)$			*-0.748* *(0.751)*			*1.074* *(2.200)*			*-1.183* *(1.450)*			*-0.579* *(1.307)*
$W^{high}(KAOP - c^*)$			*-0.123*** *(0.0557)*			*-0.202*** *(0.0853)*			*-0.0801* *(0.0528)*			*-0.110*** *(0.0472)*
Constant	*43.06**** *(9.777)*	*40.48**** *(9.661)*	*40.66**** *(9.660)*	*86.94**** *(11.47)*	*84.34**** *(11.58)*	*83.71**** *(11.63)*	*8.446** *(4.201)*	*7.439** *(4.109)*	*9.679** *(4.476)*	*31.19**** *(6.536)*	*29.45**** *(6.501)*	*30.54**** *(6.556)*
Observations	*332*	*332*	*332*	*332*	*332*	*332*	*332*	*332*	*332*	*332*	*332*	*332*
R^2	*0.646*	*0.648*	*0.648*	*0.676*	*0.676*	*0.676*	*0.598*	*0.601*	*0.599*	*0.662*	*0.662*	*0.662*
PTR (T) or LSTR (c)*		*14*	*14*		*14*	*16*		*14*	*17*		*14*	*10*
LSTR parameter (γ)*			*14*			*4*			*3*			*4*
LM Test (GTD 2005) H0: Linear Model			*25.39*			*24.39*			*14.80*			*24.71*
p-value nonlinearity			*0.0567*			*0.0639*			*0.610*			*0.0616*
LM Test for remaining nonlinearities			*5.711*			*8.705*			*6.365*			*4.361*
p-value remaining nonlinearity			*0.995*			*0.949*			*0.990*			*0.999*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.6: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Distribution using 3-year non-overlapping averages***
Robustness Check 1: 3-Year Non-Overlapping Averages
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Income Share of Lowest 10%			*Income Share of Lowest 20%*			*Income Share of Highest 20%*			*Income Share of Highest 10%*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	0.00339 (0.00890)	0.00317 (0.00879)	0.00321 (0.00885)	0.00373 (0.0138)	0.00334 (0.0136)	0.00332 (0.0137)	0.00365 (0.0186)	0.00312 (0.0183)	0.00297 (0.0183)	0.00332 (0.0314)	0.00260 (0.0311)	0.00257 (0.0311)
GINI	-0.103*** (0.00293)	-0.104*** (0.00292)	-0.104*** (0.00292)	-0.224*** (0.00468)	-0.224*** (0.00466)	-0.224*** (0.00464)	0.821*** (0.00724)	0.820*** (0.00719)	0.821*** (0.00715)	0.764*** (0.0110)	0.762*** (0.0109)	0.762*** (0.0109)
Fertility Rate	0.0515 (0.0214)	0.0543 (0.0214)	0.0526 (0.0214)	0.0883 (0.0330)	0.0934 (0.0329)	0.0908 (0.0328)	0.110 (0.0442)	0.117*** (0.0441)	0.117*** (0.0441)	0.183** (0.0784)	0.192** (0.0787)	0.191** (0.0785)
Inflation	-0.00333** (0.00133)	-0.00294** (0.00129)	-0.00312** (0.00131)	-0.00490** (0.00203)	-0.00417** (0.00208)	-0.00440** (0.00208)	-0.00638*** (0.00246)	-0.00540** (0.00249)	-0.00534** (0.00251)	-0.00482 (0.00626)	-0.00350 (0.00666)	-0.00349 (0.00668)
Government Expenditure	-0.00543** (0.00269)	-0.00570** (0.00273)	-0.00561** (0.00271)	-0.00737* (0.00409)	-0.00787* (0.00415)	-0.00778* (0.00414)	-0.0103* (0.00528)	-0.0109** (0.00537)	-0.0111** (0.00538)	-0.00957 (0.00966)	-0.0105 (0.00977)	-0.0105 (0.00978)
Savings	0.00244 (0.00155)	0.00262* (0.00155)	0.00255 (0.00157)	0.00233 (0.00226)	0.00265 (0.00227)	0.00257 (0.00229)	0.00212 (0.00292)	0.00255 (0.00292)	0.00254 (0.00293)	0.00330 (0.00532)	0.00388 (0.00533)	0.00387 (0.00532)
Literacy Rate	-0.000149 (0.00137)	-7.67e-05 (0.00136)	-6.16e-05 (0.00138)	0.000717 (0.00212)	0.000849 (0.00208)	0.000916 (0.00210)	0.00264 (0.00323)	0.00281 (0.00320)	0.00287 (0.00320)	0.000958 (0.00495)	0.00120 (0.00490)	0.00124 (0.00490)
$KAOP$	-0.0071*** (0.00162)			-0.00976*** (0.00249)			0.0123*** (0.00383)			0.0136** (0.00549)		
$KAOP - T \; if \; KAOP < T$		0.0505** (0.0244)			0.0962** (0.0387)			0.130*** (0.0488)			0.180** (0.0896)	
$KAOP - T \; if \; KAOP > T$		-0.00787*** (0.00167)			-0.0111*** (0.00258)			0.0140*** (0.00394)			0.0160*** (0.00569)	
$W^{low}(KAOP - c^*)$			0.0912 (0.0649)			0.215** (0.103)			0.139*** (0.0504)			0.186** (0.0916)
$W^{high}(KAOP - c^*)$			-0.00664*** (0.00158)			-0.00855*** (0.00243)			0.0130*** (0.00387)			0.0151*** (0.00560)
Constant	6.830*** (0.231)	6.776*** (0.233)	6.740*** (0.235)	15.43*** (0.365)	15.37*** (0.368)	15.29*** (0.370)	14.22*** (0.527)	14.14*** (0.538)	14.11*** (0.538)	0.975 (0.817)	0.910 (0.824)	0.876 (0.825)
Observations	337	337	337	337	337	337	337	337	337	337	337	337
R^2	0.889	0.890	0.889	0.941	0.942	0.941	0.902	0.902	0.902	0.902	0.902	0.902
PTR (T) or LSTR (c)*		16	19		14	16		14	13		16	14
LSTR parameter (γ)*			7			7			10			12
LM Test (GTD 2005) H0: Linear Model			23.72			26.5			22.3			14.04
p-value nonlinearity			0.0687			0.0269			0.0782			0.664
LM Test for remaining nonlinearities			6.795			4.813			5.873			5.307
p-value remaining nonlinearity			0.986			0.998			0.994			0.997

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.7: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Inequality using 3-year non-overlapping averages***
Robustness Check 1: 3-Year Non-Overlapping Averages
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	GINI Index			*Inter-Decile Income Ratio*			*Income Quantile Share Ratio*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*
Variable									
Per Capita Growth	*-0.512*** (0.138)*	*-0.496*** (0.139)*	*-0.516*** (0.138)*	*-0.997* (0.543)*	*-0.994* (0.542)*	*-1.006* (0.544)*	*-0.314*** (0.0803)*	*-0.304*** (0.0819)*	*-0.313*** (0.0806)*
Fertility Rate	*1.392** (0.584)*	*1.308** (0.594)*	*1.372** (0.587)*	*-5.772 (2.993)*	*-5.748 (3.013)*	*-5.826 (3.036)*	*-1.162 (0.450)*	*-1.093 (0.471)*	*-1.166 (0.451)*
Inflation	*-0.0201 (0.0437)*	*-0.0196 (0.0440)*	*-0.0210 (0.0425)*	*-0.108 (0.0962)*	*-0.104 (0.0973)*	*-0.101 (0.0939)*	*-0.0110 (0.0246)*	*-0.00966 (0.0243)*	*-0.0111 (0.0247)*
Government Expenditure	*-0.0954 (0.0712)*	*-0.0917 (0.0715)*	*-0.0965 (0.0712)*	*0.0195 (0.202)*	*0.0166 (0.202)*	*0.0127 (0.203)*	*-0.00364 (0.0543)*	*-0.00248 (0.0542)*	*-0.00344 (0.0544)*
Population Growth	*3.987*** (0.724)*	*3.913*** (0.725)*	*3.952*** (0.724)*	*9.968*** (3.312)*	*9.959*** (3.325)*	*10.05*** (3.383)*	*2.441*** (0.572)*	*2.366*** (0.583)*	*2.448*** (0.574)*
Literacy Rate	*0.00519 (0.0379)*	*0.00440 (0.0379)*	*0.00467 (0.0379)*	*-0.0805 (0.131)*	*-0.0798 (0.132)*	*-0.0769 (0.130)*	*-0.00576 (0.0295)*	*-0.00719 (0.0297)*	*-0.00565 (0.0295)*
$KAOP$	*0.115*** (0.0349)*			*0.486** (0.196)*			*0.0858*** (0.0280)*		
$KAOP - T \; if \; KAOP < T$		*0.162*** (0.0600)*			*1.584 (1.467)*			*0.214** (0.0998)*	
$KAOP - T \; if \; KAOP > T$		*-0.126 (0.218)*			*0.477** (0.204)*			*0.0419 (0.0462)*	
$W^{low}(KAOP - c^*)$			*-5.405 (9.700)*			*6.163 (7.621)*			*1.480 (5.902)*
$W^{high}(KAOP - c^*)$			*0.114*** (0.0350)*			*0.538** (0.223)*			*0.0858*** (0.0280)*
Constant	*41.29*** (3.766)*	*47.11*** (4.008)*	*42.31*** (3.755)*	*23.10* (12.83)*	*28.13** (13.22)*	*25.04** (12.19)*	*9.575*** (2.700)*	*12.34*** (2.758)*	*10.25*** (2.707)*
Observations	*343*	*343*	*343*	*343*	*343*	*343*	*341*	*341*	*341*
R^2	*0.206*	*0.209*	*0.207*	*0.185*	*0.186*	*0.186*	*0.125*	*0.129*	*0.125*
PTR (T) or LSTR (c)*		*43*	*8*		*12*	*8*		*23*	*8*
LSTR parameter (γ)*			*14*			*6*			*15*
LM Test (GTD 2005) H0: Linear Model			*23.29*			*25.86*			*26.73*
p-value nonlinearity			*0.0652*			*0.0462*			*0.0152*
LM Test for remaining nonlinearities			*5.395*			*3.327*			*2.980*
p-value remaining nonlinearity			*0.993*			*0.999*			*1*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

3.10.2 Robustness Test 2: Lagged IFI Proxy Variable

This robustness test takes the lagged value of the KAOPEN variable, the key independent variable of interest. The purpose of this robustness check was to see if past values of KAOPEN affect current poverty and inequality levels. In other words, what bearing does the level of financial integration in the past have on current levels of both poverty and inequality. This is to examine a time inherent effect that financial integration may have on the key dependent variables of interests. This would also help us examine and probably better understand the importance of the continuity of financial integration. This in turn could allow us to understand how to best realize the gains of financial integration in reducing poverty and inequality. This robustness check is also frequently used to account for the issue of endogeneity. Table 3.8 looks at the impact of the lagged KAOPEN variable on poverty. The coefficient estimates for KAOPEN do not make any contribution due to the fact that barring two estimated coefficients, the rest are statistically insignificant. The KAOPEN coefficients that are statistically significant, are negative and of similar magnitude to that found in table 3.2. However, there is consistency found for all the other control variables that are statistically significant. The most notable finding is that of the savings level; this tends to show that increased savings in fact increases poverty. This goes to show the importance of savings in developing countries in reducing poverty, reiterating the fact that the spending should be smoothed out over time and thereby making savings an integral component of poverty reduction. However, this could also mean that reduction in poverty leads to increase in savings; the bidirectional relationship must be attested for as this research paper does not control for the effect of savings on poverty.

Table 3.9 looks at the impact of lagged KAOPEN on different income bands. The results are interesting. In this case, attention must be drawn to the deduction made in table 3.6 where 3-year non-overlapping averages were used. It can be seen that the coefficients for KAOPEN above the threshold, in both sign, significance level and magnitude are similar to that acquired in table 3.3. However, like table 3.6, it can be seen that below the threshold, the KAOPEN coefficient is positive for all income bands. Therefore, this again reiterates the fact that up until a certain threshold, income share for the rich and the poor both increases, however after crossing this threshold, the income share of the poor declines and the income share of the rich increases (albeit the

magnitude of the increase declines compared to when it was below the threshold). The threshold levels are not high though, and thereby this gives us food for thought when thinking about policy measures. The other coefficient estimates and deductions are consistent with the results acquired in table 3.3 i.e. increased fertility rate results in increased income share of the richest 10%. Table 3.10 looks at the impact of lagged KAOPEN on income inequality. It can be seen that the KAOPEN coefficients along with the other control variables, all coefficients are similar in terms of statistical significance, magnitude and sign. However, the KAOPEN coefficients, for all three proxies of income inequality, above the threshold, are statistically insignificant in table 3.10. The other notable difference is that the threshold levels are significantly higher than they were in table 3.4. But, overall the results are consistent with those found in the results section.

Table 3.8: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Absolute and Relative Poverty using Lagged IFI proxy variable***
Robustness Check 2: Lagged IFI Proxy Variable
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Poverty Headcount Ratio at $1.90			*Poverty Headcount Ratio at $3.10*			*Poverty Gap at $1.90*			*Poverty Gap at $3.10*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	*0.595 (0.319)*	*0.606 (0.320)*	*0.577 (0.321)*	*1.091 (0.359)*	*1.094 (0.360)*	*1.099 (0.360)*	*0.238 (0.165)*	*0.253 (0.164)*	*0.252 (0.165)*	*0.483 (0.220)*	*0.495 (0.221)*	*0.474 (0.221)*
GINI	*-0.0339 (0.0994)*	*-0.0432 (0.101)*	*-0.0238 (0.101)*	*-0.204* (0.128)*	*-0.207* (0.130)*	*-0.217* (0.132)*	*0.139 (0.0495)*	*0.126 (0.0495)*	*0.130 (0.0494)*	*0.0330 (0.0702)*	*0.0230 (0.0710)*	*0.0381 (0.0706)*
Fertility Rate	*4.205*** (1.067)*	*4.202*** (1.073)*	*4.174*** (1.068)*	*4.427*** (1.172)*	*4.426*** (1.176)*	*4.410*** (1.177)*	*1.640*** (0.537)*	*1.634*** (0.539)*	*1.656*** (0.542)*	*2.731*** (0.734)*	*2.727*** (0.739)*	*2.715*** (0.737)*
Inflation	*-0.00664 (0.0243)*	*-0.00446 (0.0246)*	*-0.00670 (0.0239)*	*-0.0239 (0.0253)*	*-0.0230 (0.0255)*	*-0.0226 (0.0255)*	*0.00932 (0.0125)*	*0.0122 (0.0128)*	*0.0103 (0.0128)*	*-0.000838 (0.0163)*	*0.00150 (0.0166)*	*-0.000871 (0.0162)*
Government Expenditure	*0.0384 (0.104)*	*0.0371 (0.103)*	*0.0349 (0.104)*	*-0.280** (0.124)*	*-0.281** (0.124)*	*-0.275** (0.124)*	*0.150*** (0.0507)*	*0.149*** (0.0507)*	*0.152*** (0.0508)*	*0.0394 (0.0719)*	*0.0379 (0.0718)*	*0.0376 (0.0723)*
Savings	*-0.220*** (0.0584)*	*-0.221*** (0.0586)*	*-0.218*** (0.0590)*	*-0.266*** (0.0708)*	*-0.266*** (0.0708)*	*-0.268*** (0.0709)*	*-0.143*** (0.0309)*	*-0.144*** (0.0306)*	*-0.143*** (0.0306)*	*-0.181*** (0.0420)*	*-0.182*** (0.0420)*	*-0.181*** (0.0424)*
Literacy Rate	*-0.469*** (0.0709)*	*-0.471*** (0.0714)*	*-0.468*** (0.0709)*	*-0.609*** (0.0781)*	*-0.610*** (0.0785)*	*-0.613*** (0.0788)*	*-0.216*** (0.0354)*	*-0.219*** (0.0356)*	*-0.218*** (0.0356)*	*-0.348*** (0.0488)*	*-0.351*** (0.0492)*	*-0.347*** (0.0489)*
$KAOP$	*-0.0876 (0.0684)*			*-0.179** (0.0855)*			*-0.0158 (0.0324)*			*-0.0651 (0.0478)*		
$KAOP - T \; if \; KAOP < T$		*-0.00192 (0.189)*			*-0.124 (0.354)*			*0.0959 (0.0948)*			*0.0272 (0.134)*	
$KAOP - T \; if \; KAOP > T$		*-0.151 (0.130)*			*-0.195* (0.116)*			*-0.109 (0.0729)*			*-0.133 (0.0929)*	
$W^{low}(KAOP - c^*)$			*2.269 (3.998)*			*-0.121 (0.129)*			*-2.151 (2.389)*			*1.128 (2.801)*
$W^{high}(KAOP - c^*)$			*-0.0181 (0.133)*			*10.90 (14.38)*			*-0.0769 (0.0722)*			*-0.0299 (0.0935)*
Constant	*41.70*** (10.59)*	*40.76*** (11.44)*	*38.22*** (11.67)*	*82.38*** (12.22)*	*79.10*** (13.27)*	*75.88*** (14.71)*	*8.560* (4.963)*	*10.22* (5.307)*	*11.22** (5.664)*	*30.14*** (7.184)*	*29.94*** (7.809)*	*28.25*** (7.905)*
Observations	283	283	283	283	283	283	283	283	283	283	283	283
R^2	0.703	0.703	0.704	0.743	0.744	0.744	0.638	0.641	0.639	0.716	0.717	0.717
PTR (T) or LSTR (c)*		*28*	*6*		*21*	*51*		*29*	*5*		*28*	*6*
LSTR parameter (γ)*			*3*			*10*			*13*			*13*
LM Test (GTD 2005) H0: Linear Model			*18.03*			*19.28*			*19.09*			*18.52*
p-value nonlinearity			*0.206*			*0.155*			*0.162*			*0.184*
LM Test for remaining nonlinearities			*4.285*			*4.885*			*10.69*			*5.167*
p-value remaining nonlinearity			*0.993*			*0.987*			*0.710*			*0.983*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.9: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Distribution using Lagged IFI proxy variable***
Robustness Check 2: Lagged IFI Proxy Variable
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Income Share of Lowest 10%			*Income Share of Lowest 20%*			*Income Share of Highest 20%*			*Income Share of Highest 10%*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	*0.00907 (0.00897)*	*0.00889 (0.00902)*	*0.00914 (0.00897)*	*0.0133 (0.0138)*	*0.0118 (0.0138)*	*0.0133 (0.0138)*	*0.0127 (0.0180)*	*0.0118 (0.0180)*	*0.0116 (0.0180)*	*0.0191 (0.0353)*	*0.0176 (0.0355)*	*0.0191 (0.0353)*
GINI	*-0.101*** (0.00308)*	*-0.101*** (0.00306)*	*-0.101*** (0.00316)*	*-0.220*** (0.00492)*	*-0.221*** (0.00484)*	*-0.220*** (0.00503)*	*0.826*** (0.00747)*	*0.825*** (0.00742)*	*0.825*** (0.00740)*	*0.772*** (0.0118)*	*0.772*** (0.0117)*	*0.772*** (0.0121)*
Fertility Rate	*0.0425 (0.0243)*	*0.0408 (0.0243)*	*0.0425 (0.0244)*	*0.0763 (0.0373)*	*0.0695 (0.0372)*	*0.0763 (0.0374)*	*0.0782 (0.0496)*	*0.0716 (0.0496)*	*0.0709 (0.0495)*	*0.169* (0.0925)*	*0.164* (0.0927)*	*0.168* (0.0928)*
Inflation	*0.000832 (0.00168)*	*0.000976 (0.00156)*	*0.000841 (0.00168)*	*0.00101 (0.00226)*	*0.00150 (0.00185)*	*0.00102 (0.00226)*	*0.00110 (0.00298)*	*0.00166 (0.00257)*	*0.00169 (0.00254)*	*0.00425 (0.00385)*	*0.00463 (0.00348)*	*0.00429 (0.00385)*
Government Expenditure	*-0.00365 (0.00290)*	*-0.00403 (0.00291)*	*-0.00359 (0.00295)*	*-0.00537 (0.00437)*	*-0.00617 (0.00436)*	*-0.00530 (0.00445)*	*-0.00708 (0.00563)*	*-0.00770 (0.00559)*	*-0.00775 (0.00559)*	*-0.00732 (0.0108)*	*-0.00855 (0.0108)*	*-0.00716 (0.0109)*
Savings	*0.000999 (0.00154)*	*0.00102 (0.00155)*	*0.000982 (0.00153)*	*0.000117 (0.00243)*	*0.000279 (0.00245)*	*0.000101 (0.00242)*	*-0.000747 (0.00324)*	*-0.000468 (0.00326)*	*-0.000446 (0.00326)*	*-0.000567 (0.00647)*	*-0.000492 (0.00649)*	*-0.000635 (0.00647)*
Literacy Rate	*-0.000746 (0.00152)*	*-0.000802 (0.00151)*	*-0.000767 (0.00153)*	*-0.000292 (0.00234)*	*-0.000543 (0.00232)*	*-0.000312 (0.00237)*	*0.000314 (0.00342)*	*-4.26e-05 (0.00342)*	*-6.31e-05 (0.00341)*	*-0.00115 (0.00572)*	*-0.00126 (0.00572)*	*-0.00126 (0.00580)*
$KAOP$	*-0.0059*** (0.00183)*			*-0.00795*** (0.00277)*			*0.0105** (0.00404)*			*0.0118* (0.00625)*		
$KAOP - T \; if \; KAOP < T$		*0.0718** (0.0355)*			*0.0457*** (0.0164)*			*0.0363** (0.0182)*			*0.529*** (0.177)*	
$KAOP - T \; if \; KAOP > T$		*-0.00666*** (0.00189)*			*-0.00992*** (0.00294)*			*0.0142*** (0.00441)*			*0.0144** (0.00646)*	
$W^{low}(KAOP - c^*)$			*-0.00550* (0.00281)*			*-0.00753* (0.00420)*			*0.0369** (0.0177)*			*-0.0102 (0.00964)*
$W^{high}(KAOP - c^*)$			*0.0604 (0.284)*			*0.0564 (0.392)*			*0.0139*** (0.00439)*			*0.293 (1.083)*
Constant	*6.689*** (0.261)*	*6.672*** (0.266)*	*6.405*** (0.313)*	*15.24*** (0.407)*	*15.25*** (0.415)*	*14.86*** (0.485)*	*14.11*** (0.567)*	*14.11*** (0.594)*	*14.11*** (0.592)*	*0.651 (0.923)*	*0.691 (0.938)*	*0.122 (1.108)*
Observations	*288*	*288*	*288*	*288*	*288*	*288*	*288*	*288*	*288*	*288*	*288*	*288*
R^2	*0.884*	*0.885*	*0.884*	*0.918*	*0.919*	*0.918*	*0.902*	*0.902*	*0.902*	*0.9*	*0.9*	*0.9*
PTR (T) or LSTR (c)*		*11*	*51*		*14*	*51*		*16*	*16*		*15*	*51*
LSTR parameter (γ)*			*8*			*8*			*15*			*10*
LM Test (GTD 2005) H0: Linear Model			*27.51*			*26.07*			*27.53*			*23.36*
p-value nonlinearity			*0.023*			*0.0309*			*0.0229*			*0.0499*
LM Test for remaining nonlinearities			*6.024*			*3.681*			*4.483*			*4.968*
p-value remaining nonlinearity			*0.966*			*0.997*			*0.992*			*0.986*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.10: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Inequality using Lagged IFI proxy variable***
Robustness Check 2: Lagged IFI Proxy Variable
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	GINI Index			*Inter-Decile Income Ratio*			*Income Quantile Share Ratio*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*
Variable									
Per Capita Growth	*-0.475*** (0.160)*	*-0.431*** (0.158)*	*-0.431*** (0.158)*	*-0.636*** (0.224)*	*-0.579*** (0.214)*	*-0.596*** (0.217)*	*-0.379*** (0.113)*	*-0.361*** (0.111)*	*-0.360*** (0.111)*
Fertility Rate	*1.991*** (0.701)*	*1.889*** (0.709)*	*1.887*** (0.709)*	*2.209 (0.844)*	*2.008 (0.842)*	*2.116 (0.843)*	*-1.549 (0.496)*	*-1.496 (0.508)*	*-1.494 (0.508)*
Inflation	*-0.0375** (0.0176)*	*-0.0297* (0.0172)*	*-0.0298* (0.0172)*	*-0.00926 (0.0306)*	*0.00147 (0.0330)*	*0.00450 (0.0350)*	*-0.00974 (0.0112)*	*-0.00601 (0.0118)*	*-0.00595 (0.0119)*
Government Expenditure	*-0.0276 (0.0798)*	*-0.0291 (0.0784)*	*-0.0291 (0.0784)*	*-0.0645 (0.122)*	*-0.0653 (0.121)*	*-0.0600 (0.121)*	*0.0327 (0.0611)*	*0.0295 (0.0594)*	*0.0295 (0.0594)*
Population Growth	*4.341*** (0.789)*	*4.185*** (0.803)*	*4.183*** (0.802)*	*4.166*** (1.115)*	*3.889*** (1.086)*	*3.885*** (1.116)*	*2.452*** (0.569)*	*2.371*** (0.585)*	*2.371*** (0.585)*
Literacy Rate	*-0.0226 (0.0422)*	*-0.0267 (0.0417)*	*-0.0268 (0.0417)*	*0.00854 (0.0598)*	*0.00473 (0.0599)*	*-0.000423 (0.0600)*	*-0.0257 (0.0330)*	*-0.0266 (0.0328)*	*-0.0264 (0.0328)*
$KAOP$	*0.110*** (0.0399)*			*0.129** (0.0582)*			*0.0873** (0.0352)*		
$KAOP - T \; if \; KAOP < T$		*0.418*** (0.117)*			*0.574*** (0.213)*			*0.276** (0.116)*	
$KAOP - T \; if \; KAOP > T$		*-0.0478 (0.0660)*			*-0.0743 (0.101)*			*0.0241 (0.0568)*	
$W^{low}(KAOP - c^*)$			*0.412*** (0.115)*			*20.23*** (6.967)*			*0.271** (0.112)*
$W^{high}(KAOP - c^*)$			*-0.0447 (0.0650)*			*-0.0391 (0.0814)*			*0.0269 (0.0551)*
Constant	*43.15*** (4.377)*	*48.56*** (4.339)*	*48.49*** (4.339)*	*18.52*** (5.685)*	*24.90*** (5.946)*	*25.51*** (6.146)*	*11.31*** (3.097)*	*14.45*** (3.206)*	*14.35*** (3.209)*
Observations	*292*	*292*	*292*	*278*	*278*	*278*	*290*	*290*	*290*
R^2	*0.183*	*0.205*	*0.206*	*0.091*	*0.112*	*0.115*	*0.108*	*0.117*	*0.117*
PTR (T) or LSTR (c)*		*25*	*27*		*24*	*7*		*22*	*23*
LSTR parameter (γ)*			*10*			*16*			*8*
LM Test (GTD 2005) H0: Linear Model			*26.99*			*25.06*			*26.63*
p-value nonlinearity			*0.02*			*0.0303*			*0.0105*
LM Test for remaining nonlinearities			*2.677*			*5.176*			*5.688*
p-value remaining nonlinearity			*0.999*			*0.999*			*0.957*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

3.10.3 Robustness Test 3: First Difference

Tables 3.11, 3.12, and 3.13 look at the impact of capital account openness on poverty, income distribution, and income inequality where the first difference transformation is exercised for all independent and dependent variables. This is a robustness test that is frequently used in the literature to validate results. The purpose of this test was to firstly address the potentiality of the omitted variable bias and remove unobserved effects. More importantly, this overcomes the problem of the variable being nonstationary and thereby removing the deterministic time trend would give us a different perception and solidify these results. In table 3.11, it can be seen that for poverty head count ratio at $1.90 and for poverty gap at $3.10, the KAOPEN coefficient above the threshold is negative, statistically significant at the 5% and 10% significance levels respectively. However, the disparity with table 3.2 is that the magnitude is significantly higher for that observed in table 3.11. Regardless, these results cannot be taken for analysis or serious consideration as the test of nonlinearity suggests that the model is linear and therefore the OLS estimation is appropriate for analysis in this case and thereby nullifying the need to observe and deduce from the threshold regression findings. In this case only for poverty headcount ratio at $1.90, the OLS estimated coefficient is statistically significant at the 10% significance level. However, it seemingly increases poverty. This contradicts the findings in the main regression results section as well as robustness test 1 and 2. The other coefficient estimates for the control variables are either consistent or statistically insignificant barring the impact of government expenditure. Increased government expenditure is seen to reduce poverty, when the coefficient estimates are taken for the threshold regressions, however we cannot take them seriously due to the test of nonlinearity.

For table 3.12, it can be seen that no deductions can be made when looking at the impact of financial openness on income distribution using first differences for all income bands other than that for the income share of the highest 10%. Due to the test of nonlinearity and the test of remaining nonlinearities, for all other income groups, the model is either nonlinear and the KAOPEN estimated coefficients are statistically insignificant or the coefficient is statistically significant (for the income share of highest 20% where above the threshold the KAOPEN coefficient is statistically significant at the 1% significance level) but there are remaining nonlinearities. This

means there are more than 2 regimes and more than a single threshold. However, for the income share of the highest 10%, it can be seen that the coefficient estimate (similar to other robustness checks in 1 and 2, but not table 3) for KAOPEN, above the threshold is positive and statistically significant at the 1% significance level. There are no other notable inferences that can be drawn from this table with regards to the other control variables as the GINI coefficient is consistent with the findings in table 3.3, but for the others the readings cannot be taken seriously due to the faults of the regression models in terms of the tests of nonlinearities. For table 3.13, no KAOPEN coefficients are statistically significant or readable due to failure to the fulfill the tests of nonlinearities. Only the coefficient estimates for inflation are negative and statistically significant at the 5% and 10% significance levels when regressed on the GINI index.

Table 3.11: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Absolute and Relative Poverty using First Difference***
Robustness Check 3: First Difference
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Poverty Headcount Ratio at $1.90			Poverty Headcount Ratio at $3.10			Poverty Gap at $1.90			Poverty Gap at $3.10		
	(1) OLS	(2) PTR	(3) LSTR	(4) OLS	(5) PTR	(6) LSTR	(7) OLS	(8) PTR	(9) LSTR	(10) OLS	(11) PTR	(12) LSTR
Variable												
Per Capita Growth	-0.113 (0.177)	-0.0918 (0.178)	-0.101 (0.178)	-0.0926 (0.257)	-0.0957 (0.259)	-0.0976 (0.259)	-0.0491 (0.101)	-0.0396 (0.0985)	-0.0433 (0.101)	-0.0690 (0.127)	-0.0591 (0.126)	-0.0707 (0.127)
GINI	0.507*** (0.136)	0.515*** (0.136)	0.524*** (0.139)	0.0715 (0.152)	0.0712 (0.153)	0.0711 (0.153)	0.502*** (0.0806)	0.505*** (0.0792)	0.510*** (0.0791)	0.409*** (0.0949)	0.413*** (0.0944)	0.419*** (0.0958)
Fertility Rate	2.501 (2.515)	2.611 (2.487)	2.923 (2.462)	-2.754 (2.624)	-2.765 (2.616)	-2.774 (2.616)	2.174 (1.856)	2.222 (1.830)	2.377 (1.789)	1.266 (1.978)	1.316 (1.957)	1.511 (1.939)
Inflation	-0.0245 (0.0216)	-0.0212 (0.0189)	-0.0168 (0.0160)	-0.0365 (0.0249)	-0.0368 (0.0243)	-0.0369 (0.0244)	-0.00581 (0.0121)	-0.00437 (0.0107)	-0.00212 (0.00911)	-0.0167 (0.0160)	-0.0152 (0.0145)	-0.0125 (0.0130)
Government Expenditure	-0.200 (0.129)	-0.216* (0.129)	-0.233* (0.130)	-0.167 (0.159)	-0.166 (0.160)	-0.165 (0.159)	-0.111 (0.0739)	-0.118 (0.0721)	-0.127* (0.0724)	-0.137 (0.0923)	-0.144 (0.0916)	-0.154* (0.0920)
Savings	0.0938 (0.110)	0.0882 (0.108)	0.0946 (0.108)	0.144 (0.144)	0.145 (0.144)	0.145 (0.144)	0.0310 (0.0516)	0.0286 (0.0513)	0.0314 (0.0506)	0.0717 (0.0740)	0.0691 (0.0733)	0.0745 (0.0734)
Literacy Rate	-0.0595 (0.107)	-0.0552 (0.105)	-0.0690 (0.106)	-0.174 (0.127)	-0.176 (0.126)	-0.177 (0.126)	0.00118 (0.0748)	0.00305 (0.0736)	-0.00342 (0.0758)	-0.0480 (0.0860)	-0.0461 (0.0850)	-0.0579 (0.0869)
$KAOP$	0.105* (0.0630)			0.0902 (0.0733)			0.0626 (0.0470)			0.0738 (0.0514)		
$KAOP - T\ if\ KAOP < T$		-0.0396 (0.123)			0.101 (0.0972)			-0.00130 (0.104)			0.00776 (0.104)	
$KAOP - T\ if\ KAOP > T$		0.255** (0.110)			0.0558 (0.235)			0.128* (0.0700)			0.142* (0.0858)	
$W^{low}(KAOP - c^*)$			-0.195 (0.143)			0.106 (0.0921)			-0.0818 (0.119)			-0.0707 (0.0873)
$W^{high}(KAOP - c^*)$			-6.675** (2.938)			0.0368 (0.230)			-3.198 (2.149)			-3.097* (1.613)
Constant	-2.970*** (0.776)	-3.362*** (1.029)	-11.77** (5.818)	-4.895*** (0.951)	-3.663** (1.587)	-3.606** (1.501)	-1.100** (0.435)	-1.192* (0.645)	-4.918 (4.658)	-2.253*** (0.553)	-2.302*** (0.769)	-5.677* (3.329)
Observations	180	180	180	180	180	180	180	180	180	180	180	180
R^2	0.157	0.166	0.175	0.073	0.073	0.073	0.268	0.272	0.278	0.174	0.178	0.185
PTR (T) or LSTR (c)*		5	35		12	12		5	35		5	33
LSTR parameter (γ)*			1			3			1			1
LM Test (GTD 2005) H0: Linear Model			13.78			15.58			15.49			16.22
p-value nonlinearity			0.315			0.211			0.216			0.182
LM Test for remaining nonlinearities			327.1			19.79			274.6			129.8
p-value remaining nonlinearity			0.999			0.0712			0.999			0.999

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.12: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Distribution using First Difference***
Robustness Check 3: First Difference
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	Income Share of Lowest 10%			*Income Share of Lowest 20%*			*Income Share of Highest 20%*			*Income Share of Highest 10%*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*	*(10) OLS*	*(11) PTR*	*(12) LSTR*
Variable												
Per Capita Growth	*0.00893 (0.00662)*	*0.00874 (0.00659)*	*0.00872 (0.00658)*	*0.0133 (0.0107)*	*0.0130 (0.0106)*	*0.0130 (0.0106)*	*0.0145 (0.0155)*	*0.0132 (0.0154)*	*0.0145 (0.0153)*	*0.0233 (0.0231)*	*0.0214 (0.0232)*	*0.0215 (0.0231)*
GINI	*-0.0885*** (0.00344)*	*-0.0885*** (0.00347)*	*-0.0886*** (0.00347)*	*-0.199*** (0.00534)*	*-0.199*** (0.00537)*	*-0.199*** (0.00537)*	*0.854*** (0.00897)*	*0.854*** (0.00889)*	*0.854*** (0.00894)*	*0.845*** (0.0162)*	*0.846*** (0.0162)*	*0.846*** (0.0162)*
Fertility Rate	*0.0360 (0.0749)*	*0.0346 (0.0748)*	*0.0344 (0.0748)*	*0.0859 (0.123)*	*0.0837 (0.123)*	*0.0833 (0.123)*	*0.125 (0.197)*	*0.147 (0.200)*	*0.125 (0.194)*	*0.259 (0.269)*	*0.293 (0.269)*	*0.296 (0.269)*
Inflation	*0.00362*** (0.00107)*	*0.00359*** (0.00110)*	*0.00359*** (0.00111)*	*0.00435*** (0.00144)*	*0.00430*** (0.00149)*	*0.00430*** (0.00149)*	*0.00478** (0.00189)*	*0.00503*** (0.00176)*	*0.00479** (0.00189)*	*0.00693** (0.00325)*	*0.00730** (0.00305)*	*0.00733** (0.00303)*
Government Expenditure	*-0.00297 (0.00456)*	*-0.00282 (0.00454)*	*-0.00281 (0.00453)*	*-0.00682 (0.00709)*	*-0.00659 (0.00698)*	*-0.00657 (0.00697)*	*-0.0108 (0.00956)*	*-0.0116 (0.00951)*	*-0.0109 (0.00942)*	*-0.00757 (0.0184)*	*-0.00874 (0.0184)*	*-0.00888 (0.0183)*
Savings	*-0.00245** (0.00106)*	*-0.00245** (0.00107)*	*-0.00245** (0.00107)*	*-0.00413*** (0.00158)*	*-0.00413** (0.00159)*	*-0.00413** (0.00159)*	*-0.00649*** (0.00219)*	*-0.00659*** (0.00221)*	*-0.00649*** (0.00219)*	*-0.00679 (0.00529)*	*-0.00694 (0.00532)*	*-0.00693 (0.00532)*
Literacy Rate	*0.00339 (0.00346)*	*0.00335 (0.00344)*	*0.00334 (0.00344)*	*0.00585 (0.00585)*	*0.00578 (0.00584)*	*0.00577 (0.00584)*	*0.00344 (0.00885)*	*0.00260 (0.00869)*	*0.00345 (0.00881)*	*0.00171 (0.0142)*	*0.000451 (0.0140)*	*0.000306 (0.0140)*
$KAOP$	*-0.000999 (0.00207)*			*-0.00200 (0.00325)*			*0.00297 (0.00478)*			*0.00846 (0.00881)*		
$KAOP - T\ if\ KAOP < T$		*0.000476 (0.00289)*			*0.000351 (0.00476)*			*0.000362 (0.00489)*			*-0.00346 (0.00939)*	
$KAOP - T\ if\ KAOP > T$		*-0.00252 (0.00441)*			*-0.00444 (0.00671)*			*0.0865*** (0.0187)*			*0.134*** (0.0369)*	
$W^{low}(KAOP - c^*)$			*0.000590 (0.00285)*			*0.000581 (0.00469)*			*0.00331 (0.00795)*			*-0.00360 (0.00925)*
$W^{high}(KAOP - c^*)$			*-0.00265 (0.00434)*			*-0.00469 (0.00661)*			*0.00262 (0.00952)*			*0.141*** (0.0390)*
Constant	*0.0260 (0.0325)*	*0.0303 (0.0395)*	*0.0307 (0.0392)*	*0.0680 (0.0500)*	*0.0728 (0.0616)*	*0.0739 (0.0610)*	*0.142* (0.0731)*	*0.165 (0.126)*	*0.125 (0.0875)*	*0.191 (0.147)*	*0.133 (0.250)*	*0.131 (0.247)*
Observations	*183*	*183*	*183*	*183*	*183*	*183*	*183*	*183*	*183*	*183*	*183*	*183*
R^2	*0.781*	*0.781*	*0.781*	*0.876*	*0.876*	*0.876*	*0.984*	*0.984*	*0.984*	*0.948*	*0.948*	*0.948*
PTR (T) or LSTR (c)*		*5*	*5*		*15*	*17*		*23*	*5*		*23*	*25*
LSTR parameter (γ)*			*6*			*6*			*6*			*6*
LM Test (GTD 2005) H0: Linear Model			*4.845*			*8.585*			*28.582*			*25.28*
p-value nonlinearity			*0.963*			*0.738*			*0.0238*			*0.0227*
LM Test for remaining nonlinearities			*19.42*			*22.21*			*22.93*			*13.35*
p-value remaining nonlinearity			*0.0789*			*0.0353*			*0.0983*			*0.344*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

Table 3.13: ***De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Income Inequality using First Difference***
Robustness Check 3: First Difference
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Ordinary Least Squares (OLS), PTR (Panel Threshold Regression), and LSTR (Logistic Smooth Transition Regression)

	GINI Index			*Inter-Decile Income Ratio*			*Income Quantile Share Ratio*		
	(1) OLS	*(2) PTR*	*(3) LSTR*	*(4) OLS*	*(5) PTR*	*(6) LSTR*	*(7) OLS*	*(8) PTR*	*(9) LSTR*
Variable									
Per Capita Growth	*-0.0404* *(0.128)*	*-0.0459* *(0.127)*	*-0.0448* *(0.128)*	*-0.0559* *(0.126)*	*-0.0555* *(0.128)*	*-0.0558* *(0.126)*	*-0.664* *(0.512)*	*-0.658* *(0.505)*	*-0.659* *(0.507)*
Fertility Rate	*-0.107* *(1.198)*	*-0.128* *(1.184)*	*-0.206* *(1.169)*	*2.247* *(2.630)*	*2.238* *(2.608)*	*2.196* *(2.563)*	*0.268* *(2.470)*	*0.290* *(2.483)*	*0.506* *(2.612)*
Inflation	*-0.0235*** *(0.0104)*	*-0.0242*** *(0.00989)*	*-0.0257**** *(0.00926)*	*-0.0516* *(0.0402)*	*-0.0513* *(0.0410)*	*-0.0518* *(0.0403)*	*-0.0579* *(0.0491)*	*-0.0571* *(0.0481)*	*-0.0528* *(0.0425)*
Government Expenditure	*0.0258* *(0.0936)*	*0.0291* *(0.0938)*	*0.0359* *(0.0933)*	*-0.0545* *(0.110)*	*-0.0504* *(0.109)*	*-0.0443* *(0.111)*	*0.510* *(0.426)*	*0.507* *(0.423)*	*0.487* *(0.401)*
Population Growth	*0.971* *(1.021)*	*0.945* *(1.015)*	*0.892* *(1.007)*	*-0.0799* *(1.334)*	*-0.0647* *(1.338)*	*-0.0568* *(1.339)*	*3.562* *(3.782)*	*3.588* *(3.833)*	*3.730* *(4.012)*
Literacy Rate	*0.0129* *(0.0823)*	*0.0116* *(0.0818)*	*0.0154* *(0.0824)*	*0.113* *(0.110)*	*0.113* *(0.109)*	*0.114* *(0.110)*	*-0.546* *(0.579)*	*-0.544* *(0.579)*	*-0.554* *(0.591)*
$KAOP$	*0.0544* *(0.0380)*			*0.0959* *(0.0604)*			*0.136* *(0.106)*		
$KAOP - T \; if \; KAOP < T$		*0.0917* *(0.0677)*			*0.115* *(0.159)*			*0.0977* *(0.117)*	
$KAOP - T \; if \; KAOP > T$		*0.0152* *(0.0662)*			*0.0756* *(0.0702)*			*0.177* *(0.191)*	
$W^{low}(KAOP - c^*)$			*0.149** *(0.0836)*			*0.157* *(0.201)*			*-0.0628* *(0.206)*
$W^{high}(KAOP - c^*)$			*2.233* *(1.886)*			*1.658* *(3.870)*			*-4.349* *(6.090)*
Constant	*-0.872*** *(0.428)*	*-0.359* *(0.621)*	*4.995* *(3.443)*	*-1.781**** *(0.600)*	*-1.172* *(0.841)*	*4.583* *(8.338)*	*0.733* *(1.991)*	*1.167* *(2.160)*	*-2.803* *(7.384)*
Observations	*184*	*184*	*184*	*131*	*131*	*131*	*185*	*185*	*185*
R^2	*0.132*	*0.133*	*0.136*	*0.116*	*0.116*	*0.118*	*0.053*	*0.053*	*0.054*
PTR (T) or LSTR (c)*		*5*	*35*		*5*	*38*		*5*	*34*
LSTR parameter (γ)*			*1*			*1*			*1*
LM Test (GTD 2005) H0: Linear Model			*11.79*			*15.69*			*3.233*
p-value nonlinearity			*0.380*			*0.153*			*0.987*
LM Test for remaining nonlinearities			*78.68*			*19.44*			*21.03*
p-value remaining nonlinearity			*0.00346*			*0.0537*			*0.0331*

****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors and the coefficients for time and country dummy variables are not displayed on the final results table.

3.10.4 Robustness Test 4: GMM Estimations

***Table 3.14:* De Jure Measure of Capital Account Openness (Chinn-Ito Index) on Poverty, Income Distribution using GMM estimations Robustness Check 3: GMM Estimations Time Period: 1980-2013 (5-Year Non-Overlapping Averages) Income Group: Developing Economies**				
	Poverty	*Income Distribution*		*Inequality*
	(1) *Poverty Headcount Ratio at $1.90*	*(2)* *Income Share of Lowest 20%*	*(3)* *Income Share of Highest 20%*	*(4)* *GINI Index*
Lagged DV[85]	*0.686**** *(6.971]*	*-0.00205* *[-0.0620]*	*0.00502* *[0.387]*	*-0.0994* *[-1.097]*
KAOP	*-0.106*** *[-1.980]*	*-0.00511* *[-0.830]*	*-0.00838* *[-1.030]*	*0.193**** *[2.754]*
Per Capita Growth	*0.102* *[0.465]*	*-0.0262* *[-1.369]*	*-0.0368* *[-1.329]*	*-0.142* *[-0.644]*
GINI	*0.138* *[0.656]*	*-0.233**** *[13.83]*	*0.813**** *[30.16]*	
Fertility Rate	*4.300* *[1.526]*	*0.0808* *[0.519]*	*-0.00743* *[-0.0354]*	*-2.923* *[-1.371]*
Inflation	*0.0125* *[0.312]*	*0.00136* *[0.425]*	*0.00180* *[0.391]*	*-0.0419**** *[-3.011]*
Government Expenditure	*0.000217* *[0.00137]*	*0.000919* *[0.0867]*	*-0.00698* *[-0.605]*	*-0.189* *[-1.203]*
Savings	*-0.270* *[-1.612]*	*0.00482* *[0.639]*	*-0.00107* *[-0.0872]*	
Population Growth				*3.644*** *[2.382]*
Literacy Rate	*0.182* *[1.406]*	*-0.00773* *[-0.751]*	*-0.00788* *[-0.599]*	*-0.0794* *[-0.576]*
Time Dummies	*Yes*	*Yes*	*Yes*	*Yes*
Observations	*222*	*225*	*225*	*223*
Number of Countries	*78*	*79*	*79*	*79*
Number of Instruments	*43*	*43*	*43*	*41*
AR(1) Test P-Value	*0.0282*	*0.880*	*0.391*	*0.0192*
AR(2) Test P-Value	*0.462*	*0.881*	*0.375*	*0.252*
Hansen Test of Over-Ridden Restrictions P-Value	*0.357*	*0.265*	*0.117*	*0.192*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are the values of the t-statistics and the coefficients for time variables are not displayed on the final results table.*				

Table 3.14 illustrates the GMM estimations[86] that measure the impact of financial integration on poverty, income distribution and inequality. However, not all proxy variables are used for regression analysis. To account purely for poverty, the poverty headcount ratio at $1.90 is included, to account for income distribution,

[85] 'Lagged DV' represents the lagged dependent variables. Therefore, for each column, it would individually signify different lagged variables for each regression equation. For instance, column 4 would take the lagged value of the GINI coefficient.

[86] The GMM estimations are carried out using the 'xtabond2' command on Stata. The paper developed by Roodman (2006) is used as a benchmark for executing the technical commands on the software.

income share of the lowest and highest 20% are included and to account for income inequality the GINI coefficient is selected as the proxy variable for regression analysis. In this table, the p-values of the Arellano-Bond second-order autocorrelation tests are applied to the residuals in differences i.e. this test examines the existence of first-order autocorrelation. If for instance, there is first-order serial correlation then the supposition that one needs to use is that there is a need to use deeper lags for the dependent variable of interest as instrumental variables. This is represented in AR (2) test p-value in the results columns in table 3.14. On table 3.14, it is evident that the p-values are high, therefore, we cannot reject the null hypothesis which indicates the existence of serial correlation. Thus, no deeper lags are required. The Hansen test of over-ridden restrictions are also included in this table. All of these p-values are also high and therefore the null hypothesis is rejected, and this indicates that the instruments selected are valid. Furthermore, in terms of the selection of the number of instruments, Roodman (2006) states that the number of instruments must be below the number of countries. This is the case across all four regression equations.

From regression equation 1, it is observed that increasing financial openness results in decreased poverty and this is statistically significant at the 5% significance level. This finding is consistent with that deduced in the final results section. Furthermore, it can be seen that initial level of poverty is positive and statistically significant at the 1% significance level, thereby indicating the existence of a 'poverty trap.' However, for the remainder of the coefficients, for all the other control variables, it can be seen that the coefficients are statistically insignificant at all significance levels. All the coefficients, including the lagged dependent variables, the coefficient for the KAOPEN variable as well as all the control variables are all statistically insignificant for regression equations 2 and 3. For regression equation 4, the lagged dependent variable has a statistically insignificant coefficient. However, in accordance with the results acquired in the main results section, the key independent variable of interest has a positive coefficient and is statistically significant at the 1% significance level. This indicates increasing inequality with increased openness. The lagged dependent variable is statistically insignificant. Rise in inflation is associated with reduction in inequality in developing countries. This result is statistically significant at the 1% significance level. Furthermore, consistent with the findings in

the results section, population growth increases inequality and this is statistically significant at the 5% significance level.

Regression equation 1 and regression equation 4 can be considered for analysis due to the simple nature of the fact that the key variables of interest are statistically significant. However, we are forced to completely discard the results deduced from regression equations 2 and 3, as well as the coefficients for the control variables in regression equation 1. The proposition as to why lagged dependent variables should not be used for the purposes of this regression analysis are the following: (1) The regression results are distorted when the lagged dependent variable is included as it loses the statistical significance of the coefficients of interest; (2) Lagged dependent variables do not have any causal interpretation, therefore it can be omitted; (3) If a lagged dependent variable is used as a control variable then the coefficient of this lagged dependent variable is always of high magnitude and statistically significant – however this distorts the true magnitude and statistical significance of the coefficients of the other independent variables of interest, especially the key independent variable of interest which is the KAOPEN. Moreover, researchers state that autoregressive terms "dominate the regression" (Rao and Miller, 1971) or "swamp the other variables", thereby "distorting the findings." We must ask why lagged dependent variables are included. The answer is to avoid bias. However, this is causing bias. The LDV can dominate the regression though it has little, none or high explanatory power. If there is heavy trending of exogenous variable (with KAOPEN there is evidence of trending), then the addition of the lagged dependent variable (strong or weak LDV) will dominate the regression and furthermore, destroy the effect of other variables. If the exogenous variables are stationary, then there may be a better case, but that is not the case for my research paper and my variables. The lagged dependent variable does therefore bias the substantive coefficients toward negligible values and artificially inflates the effect of the lagged dependent variable; (4) for panel datasets, especially when the number of time periods (5-year averages) are small, lagged dependent variables can especially be distortive, as it again suppresses the legitimate effects of other variables.

3.11 Appendix 3: Country Group Classification

3.11.1 Developing Economies

These are the 79 developing countries (excludes high income countries as determined by the World Bank) used for regression analysis:

Albania
Angola
Armenia
Bangladesh
Belarus
Bhutan
Bolivia
Botswana
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
China
Colombia
Costa Rica
Croatia
Dominican Republic
Ecuador
El Salvador
Estonia
Ethiopia
Fiji
Georgia
Guatemala
Guinea
Guinea-Bissau
Honduras
India
Indonesia
Iran, Islamic Rep.
Jordan
Kazakhstan
Kyrgyz Republic
Lao PDR
Latvia
Lesotho
Lithuania
Madagascar
Malawi
Malaysia
Mali

Mauritania
Mauritius
Mexico
Moldova
Mongolia
Morocco
Mozambique
Namibia
Nepal
Nicaragua
Niger
Nigeria
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Romania
Rwanda
Samoa
Slovenia
South Africa
Sri Lanka
Sudan
Swaziland
Tajikistan
Tanzania
Thailand
Togo
Tonga
Tunisia
Turkey
Uganda
Ukraine
Uruguay
Venezuela, RB

Chapter 4: The Impact of Financial Integration on Crises: How does the intensity of financial liberalization affect the likelihood of inducing a banking, currency, and twin crisis?

Abstract

This research paper investigates the impact of the intensity of financial liberalization on the likelihood of a banking, currency and twin crisis using a dataset that includes 93 developing economies over the time period 1980-2013. It also explores the impact of political institutions and political polarization both independently and jointly with financial liberalization and estimates the resulting impact on the likelihood of a banking, currency and twin crisis. The econometric technique deployed in this research paper includes the multivariate probit regression model. The conditional fixed effects logit model and the random effects probit model are used to validate the findings of the probit regression. For developing countries, it is observed that increasing the intensity of financial liberalization reduces macroeconomic vulnerabilities as the likelihood of a banking, currency and twin crisis decreases. Improved conditions of political institutions lower the risk of financial fragilities, but, increased political polarization increases the likelihood of a banking, currency and twin crisis.

4.1 Introduction

Economists, policymakers and government officials have systematically disputed the benefits and drawbacks of financial integration[87]. A fundamental criticism attributed to financial integration is the subsequent macroeconomic vulnerabilities or fragilities in the financial markets that follow financial liberalization. The tendency for developing countries is to attempt to replicate the economic success of the advanced or high-income economies. The debate is fueled not in the end goal, but in the pathway to the end goal. In the context of developing and emerging countries, the most prominent example would be the Asian Financial Crisis of 1997 that was preceded by the Asian growth "miracle." The neoliberal camp or the pro-reformists that argue in support of financial liberalization state that financial liberalization reduces financing constraints, facilitates risk sharing, facilitates the inflow of technology and technological assistance particularly in the case of FDI, and this in turn would induce investment, which would promote innovation and thereby boost total factor productivity (Dooley, 1995). Their argument heavily emphasizes that in order to achieve or realize the financial capacity or the economic potential of an economy, the financial markets must be liberalized.

On the contrary, the school of thought that opposes financial liberalization state that financial liberalization, in the form of financial inflow, or rather 'financial overflow' from foreign countries results in dependency on foreign capital, this encourages domestic firms to undertake credit risks, this induces domestic and foreign investors to invest in the non-tradable sector88 as opposed to the tradable sector. The misallocation and misuse of domestic and foreign funds and investments often cause fragilities in the banking sector, which thereby propagates distress in the entirety of the financial market. In some cases, this gives speculators the ideal opportunity to attack the currency, resulting in a dual banking and currency crisis, otherwise labelled as the twin crisis. The punchline motivation for this thesis altogether was centered around developing and emerging nations 'bite more than they can chew'. The preceding chapters examined the impact of financial integration on (1) growth and on

[87] For this research paper, the financial integration has been proxied by financial liberalization. The variable used to proxy financial liberalization is the Chinn-Ito Index developed by Chinn and Ito (2006).
[88] In the context of developing and/or emerging nations, this would be indicative of real estate.

(2) poverty and inequality. The analysis would be incomplete without addressing the impact of financial integration on financial fragilities or macroeconomic vulnerabilities. Furthermore, an under addressed researching avenue that is evident in the financial integration and crisis literature is the focus on key political factors or drivers and their subsequent impact on crises.[89] There is a tendency for economists particularly in academic studies to downplay the macroeconomic repercussions of political factors. They are often included to serve as controls to run regressions. However, these political factors are particularly significant in the context of developing nations. Therefore, a motivating element of this research paper stems from the lack of existing empirical studies that look at the impact of key political factors and their subsequent impact on the likelihood of crises, both independently and conjoined with financial integration.

This research paper investigates the impact of the intensity of financial liberalization on the likelihood of a banking, currency and twin crisis using a dataset that includes 93 developing economies over the time period 1980-2013. An integral component of the researching study examines the impact of political institutions and political polarization both independently and jointly with financial liberalization and estimates the resulting impact on the likelihood of a banking, currency and twin crisis. The econometric technique deployed in this research paper includes the multivariate probit regression model. The conditional fixed effects logit model and the random effects probit model are used to validate the findings of the probit regression.

The key research questions that this research paper seeks to address and investigate are the following:

1. What is the impact of the intensity of financial liberalization on the likelihood of a banking, currency and twin crisis?

[89] The latter section of the research paper discusses the negligence of or the lack of consideration of key political factors in the context of macroeconomic vulnerabilities or financial fragilities. This is predominantly criticized in literature review section, specifically outlining the lack of empirical studies focusing on key political factors and their effect on the likelihood of a crisis both jointly (with financial liberalization and independently.

2. What is the impact of political institutions and political polarization independently and in association with financial liberalization on the likelihood of a banking, currency and twin crisis?

The key contribution of this research paper stems from the inferences deduced using the KAOPEN variable, which measures the intensity of financial liberalization rather than the conventionally used dummy variable for financial market liberalization usually proxied by equity market liberalization or other binary variables. Furthermore, this research paper examines the impact of political polarization and its resulting effect both jointly (with financial liberalization) and independently on the likelihood of crises.

The research paper is structured as follows; the first section introduces theoretical framework and the linkages between financial liberalization and banking, currency and twin crises. Within the first section, a sub-section is designated to the analysis of the existing theoretical linkages between the key political factors and its resulting impact on crises. The second section examines the existing empirical literature and the associated researching papers associated to the research arena. The third, fourth and fifth section includes the methodology, variable description and the empirical framework respectively. Section 6 illustrates the key results of the paper. Section 7 concludes. Appendix 1 (refer to section 4.9) explores the historical trends, uses scatter and quadratic graphs to graphically examine the relationships between the key independent and dependent variables of interest. Appendix 2 (refer to section 4.10) illustrates the predictive margins. Appendix 3 (refer to section 4.11) presents the robustness checks.

4.2 Theoretical Framework

4.2.1 Banking Crises: Theoretical Linkages with Financial Liberalization

If loan losses exceed a bank's compulsory and voluntary reserves as well as its equity buffer, the bank is then said to be insolvent. When a significant portion of the banking system experiences loan losses in excess of its capital, a systemic banking crisis occurs (Demirguc-Kunt and Detragiache, 1998). Theory hypothesizes that external shocks, particularly shocks that adversely affect the performance of borrowers, must have a positive association with systemic banking crises as the impact of this cannot be reduced by risk diversification. There is a tendency to attribute banking sector vulnerabilities directly to the increase in NPLs (non-performing loans), but it must be noted that the balance sheets can deteriorate if the rate of return of bank assets is lower than the rate that must be paid for that of bank liabilities. A prominent case of a mismatch or an imbalance of the balance sheet could be when countries borrow in foreign currencies and lend in domestic currency. In the case of an unexpected depreciation of the local currency, it could severely threaten the condition of the bank, as the profits would erode. Hence, it is observed that many countries enforce strict regulations on open foreign currency inflow into the economy (Garber, 1996). Loans in foreign currencies caused banking distress in Chile in 1982, Mexico in 1995 (Mishkin, 1996), the Nordic economies in 1990s, and in Turkey in 1994.

Diamond and Dybvig (1983) have shown that banking crisis could be self-fulfilling as it theorizes that depositors may be subject to speculation, fearing that other depositors are withdrawing their funds they withdraw their own funds, causing a contagion effect, even when the balance sheet of the bank was initially stable. This unfortunate possibility can spread from one bank to a banking sector panic, causing all banks to come to the risk of insolvency. Deposit insurance, in this case, if banks were to purchase full or partial insurance on behalf of depositors from government agencies or private insurers, may reduce this risk, as the government may provide bailout packages, however, there is also the chance that there may be excessive risk-taking (Kane, 1989). Therefore, for economies that are financially liberalized with

deposit insurance, and if there is prudential regulation or strict supervision, then there is always the risk of a moral hazard problem, that may eventually lead to a crisis.

The dynamic theoretical model developed by Daniel and Jones (2006)[90] looks at how financial liberalization can, by itself, contribute to the possibility of a banking crisis. The dynamic model shows that there is an initial period of rapid growth for emerging markets, where there will be a transitional period with an increased risk of a banking crisis i.e. a banking crisis is not expected immediately after liberalization but after a short period of time. The reason why this transition period (the transition from repression to liberalization) is likely to be risky for the banking sector is because immediately after liberalization, the stock of capital is low and therefore marginal product of capital is high even if productivity is low. Domestic banks' foreign competitors do not have the experience or expertise to function in emerging markets and will only offer loans at high interest rates. Newly liberalized domestic banks derive high profits and bank stature grows rapidly. This results in an increased capital for domestic banks. However, if the domestic banks fail to effectively utilize this capital through dispersion of good loans, which includes an effective management system, then this stock of capital will become less and less productive with time. Finally, as foreign lenders have more experience, foreign debt becomes increasingly cheaper which causes loan interest rates to fall and this is when the competitive advantage of domestic banks tend to fall and this promotes risky tendencies of domestic banks and this is when the banking sector is susceptible to a crisis. The model adds further value, as following, for example, because Gaytan and Ranciere's (2004) paper, "middle-income" economies are found to be most vulnerable to banking crises that is in line with Daniel and Jones' model assumption, showing that, this is the case even for countries that have well-designed banking systems.

In the case of economic downturns, expansion of cross-border lending should ideally stabilize this volatility. This is particularly beneficial for developing nations that are comparatively smaller in size. Foreign entrance into the local economy can also mobilize and improve the institutional framework for banking activities. For

[90] Daniel and Jones' (2006) model is comprehensive and detailed. However, for the purposes of this research paper, a brief description has been provided that explains the gist of the model. Although, there are components of the model that are both interesting and noteworthy, that were not included in this discussion.

countries that have a fixed exchange rate, especially for the case of developing countries, problems in the banking sector may be fueled by a speculative attack on the domestic currency. If depositors expect devaluation then both foreign and local depositors will rush to withdraw their funds in order to convert them in foreign currency abroad causing banking insolvency. Post-liberalization, the portfolios that were performing poorly in the pre-liberalization era, are usually exposed after liberalization as these domestic banks are not accustomed to the new banking environment, especially when having to cohabit and compete with foreign banks and foreign financial institutions.

Governments implement capital controls in order to stabilize boom-bust cycles in cases when there are excessive capital inflows and to also increase the effectiveness of their monetary policies. From the perspective of 'behavioral liberalization[91],' which refers to removal of interest rate and credit controls, it is theorized that speculative behavior would cause crises, and this can only be restricted and reduced if there are restrictions on financial investment opportunities and bank lending. On the part of competitive liberalization, which refers to expansion of cross-border financial lending, is said to have a profound effect on the probability of a banking crisis (Angkinand, Sawangngoenyuang and Wihlborg, 2010). Barth, Caprio, and Levine (2004) find that entrance of foreign banks and restrictions on banking activity results in increased likelihood of a banking crisis. McKinnon and Pill (1998) underline the risk of capital flow reversal when there is a surge of capital inflows which creates an asset price bubble.

Banks fail when they are unable to deliver funds that depositors demand. When the growth rate of bank deposits is lower than the deposit interest rate then banks are forced to make a net transfer of funds to the depositors and in this case, they would have to run down their stock of liquidity. However, when domestic interest rates are high or rate of growth of deposits is low or negative then banks cannot extract these funds to give to the depositors (Gavin and Hausmann, 1999). Gavin and Hausmann (1996) define two components of a banking crisis. The first they define to

[91] Angikand, Sawangngoenyuang and Wihlborg (1998) categorize different types of financial liberalization, where 'behavioural liberalization' refers to the removal of interest rates and credit controls.

be the magnitude of the net resource transfers that the banking system is required to fulfill the demands of the depositors. The second they enlist as the threshold of resource transfers above which the banking system will crumble. The first component is associated to the potential of shocks and the second component defines the vulnerability of the banking system, both shocks and vulnerabilities cause a banking crisis.

There is a common presumption in the literature that opposes the notion of financial liberalization and labels it as the 'rope for their own hanging' as it argues that bankers will engage in businesses that they are unaccustomed with and unprepared for post-liberalization and they could make errors that are detrimental to the banking sector on the whole. Sudden relaxation of the regulatory authorities can cause banks to give these excessively risky loans and incur enormous losses. An important aspect of financial liberalization is the deregulation of deposit interest rates which causes banking interdependency for the determination of the banks deposit interest rate. These aggressive strategies for the aggressive bidding for deposits are often destructive in nature and therefore liberalization is said to destabilize the natural functionality of the banking sector adding to its fragility. Gavin and Hausmann (1996) stress the importance of prudential banking regulations. They stress that depositors are exposed to the abusive behavior and are exposed to the consequences of banking mismanagement and they underline the fact that resorting to deposit insurance does not solve this problem but exacerbates it as it eliminates the efficacy of corporate governance by taking away the incentive of depositors to monitor the functionality of their banks. Englund (1999) states that the majority of banking crises are initiated by deregulatory measures which lead to overly rapid credit expansions – which is defined as a 'bubble' according to the author. When the bubble bursts, there is a dramatic fall in real prices and the asset market along with widespread bankruptcies. This occurs alongside increase in non-performing loans, credit losses and severe liquidity crisis in the banking system.

In Giannetti's (2006) model, it is suggested that liberalization of capital flows will generate boom-bust cycles in emerging market economies. Due to asymmetric information, after liberalization, investors will provide large amounts of funds at a very low cost. This will cause banks to accumulate bad loans and when the amount of

bad loans is substantially high, the solvent banks will no longer sanction loans that would put investors at risk. Investors will anticipate this and will not hold bank debts and when the market for bank liabilities break down, then the insolvent banks will default.

4.2.2 Currency Crises: Theoretical Linkages with Financial Liberalization

A currency crisis is defined as the situation in which an attack on the currency leads to a sharp depreciation of the currency and/or a large decline in international reserves (Kaminsky, Lizondo and Reinhart, 1998). This definition is broad enough to incorporate not only currency crisis in exchange rates with the fixed effect regime but also for other exchange rate regimes. The literature initially attributed the cause of currency crises to weak "economic fundamentals." Krugman's (1979) [92]model illustrates that when economies have a fixed exchange rate, if there is domestic credit expansion that exceeds that of the demand for money growth then this leads to a gradual loss of international reserves, which leaves the currency susceptible to a speculative attack because agents anticipate that the currency will collapse and if they are not to attack then they incur capital loss on their holdings of the local currency. Along the same lines, the balance of payments crisis therefore results from a scenario in which there is uncertainty regarding the ability of the central bank to use, if there is enough of, the foreign exchange reserves to ensure the fixed exchange rate of the country is maintained. Currency crises, often stems from a severe balance of payments deficit, resulting in the devaluation of the currency.

Obstfeld (1994) states that expectation of a currency collapse leads to higher wages and higher unemployment, ultimately resulting in governments abandoning the parity. In another of Obstfeld's (1994) models, expectation of a collapse results in higher interest rates which causes government to abandon the parity because public debt servicing increases. Recent models have shown that crisis may erupt if there is evolution of other key economic variable and even if there are no variations in the 'fundamentals.' For example, Gerlach and Smets (1994), in their model, illustrate that devaluation of one country's currency can cause its trading partners to devalue as well

[92] A detailed discussion of Krugman's (1979) model is not provided here due to the fact that it is widely discussed and the reader is expected to read the paper for a comprehensive understanding of the model.

in order to avoid losing competitive advantage. The assumption of contagion suggests that if there is a crisis in a neighboring country or a trading country, then this may signal a future domestic crisis.

Montiel and Reinhart (1997) summarize that capital inflows and the retrospective problems associated with capital inflow are major factors why these crises in Latin America in 1982, the Mexican crisis and the Asian crisis in 1997 took place. They state that if and/or capital inflow comes to a halt, then capital inflow can turn to capital outflow which typically happens due to changes in the interest rates of industrialized and developed economies. They also state that it is not long-term investments i.e. foreign direct investments that are causes for concern but short-term capital flows and the liberalization of the capital account allows these short-term capital flows which in turn destabilizes the reserves and the hinders the ability of an economy to peg the domestic currency. Gross capital outflow was at the epicenter of the Mexican crisis of 1982 as government deficit was financed by foreign lenders.

4.2.3 Twin Crises: Theoretical Linkages with Financial Liberalization

The twin crisis that stemmed from 1997-1998 in the Asian Financial Crisis dubbed an extensive researching study that examined the interlinkages between these crises. The financial crises that erupted in the Nordic economies in 1992 and the Tequila Crisis in Mexico in 1994 raised an array of questions regarding the impact of banking sector fragilities on the currency crisis. Velasco (1997) in his model showed that banking sector difficulties can result in a rise in a currency crisis. The argument states that if central banks bailout the institutions that are vulnerable to bankruptcy by printing money then there would be the classical case of a currency crisis occurring due to excessive money injection. Calvo (2012) also argues that a bank run can cause an attack on the currency if increased liquidity is associated with a government bailout of the banking system.

McKinnon and Phil (1994) study the impact of capital flows in an economy that has an unregulated banking sector. They infer that in cases like these, capital inflows can cause a boom in lending, which usually causes excessive borrowing, which in turn causes consumption booms and as a result of that this worsens current

account deficit. This excessive lending cycle also leads to an appreciation of the real exchange rate, resulting in a loss of competitiveness and this slows down growth. Finally, when the economy is faced with a recession, banks are more vulnerable to a crisis. The case for banks is significantly worse when real estate and asset price bubbles burst. Furthermore, when the banking system is fragile, the prospect of defending the domestic currency is all the more difficult and this may cause an unprecedented devaluation of the domestic currency. This in effect, is a currency crisis, preceded by banking sector difficulties. Kaminsky and Reinhart (1999) state that the reason why banking and currency crises can both occur at the same time is because the "seeds of the problem are sown at the same time and which event occurs first is a matter of circumstance." They also attribute financial liberalization to be a decisive factor in the buildup to a twin crisis.

Similarly, in the context of the discussion of the linkages between currency and banking crisis, in the twin crisis literature, there is also the theoretical argument that a currency crisis may trigger a banking crisis. Rojas-Suarez and Weisbrod (1995) argue that a currency crisis may cause vulnerabilities in the banking sector if the central bank responds to the pressure on the exchange rate by increasing the interest rates sharply. The argument also states that often or the common feature is that banks are already vulnerable because there is a large amount of unhedged liabilities that are foreign and if there is a shock on the currency then it propagates a collapse of the banking system (Glick and Hutchinson, 1999).

4.2.4 Political Instability and Political Institutions: Theoretical Linkages with Macroeconomic Vulnerabilities

A component of this research paper focuses on the impact of political instability and political institutions on the likelihood of a crisis independently and in conjunction with the financial liberalization. In the existing literature, economists use political variables only to serve as controls and therefore there is a scarcity of papers that investigates these linkages empirically. The impact of political conditions and the economic repercussions is like an 'elephant in the room' that is acknowledged but the severity and the magnitude of the influence is perhaps damagingly underemphasized. Berg and Pattillo (1998) find that the research of Kaminsky, Lizondo and Reinhart

(1998), Frankel and Rose (1996) and Sachs, Tornell and Velasco (1996) do not forecast crises accurately when they are tested out of sample. Thus, it is essential to critically examine other potential sources of influence and thereby incorporating political variables in empirical research papers is significant, particularly in the case of developing countries where political stability or lack of political stability are drivers for smooth economic functionality.

When economies illustrate signs of financial fragility, often, the reaction of the financial markets is contingent on the expectation of how the government will react. When the economy is in a crisis situation, then external actors, such as international lending agencies or financial institutions and banks are heavily involved in the in the macroeconomic adjustment process. However, even their decisions are also heavily influenced by political expectations (Haggard, 2000). The Asian financial crisis of 1997 is a reference point in analyzing the impact of political factors on the economic horizon. Haggard's (2000) analysis suggests that prior to the Asian financial crisis, Thailand's democratically elected coalition governments were 'shaky' and 'weak'. Prime Ministers along with the entire cabinet ministers, were vulnerable to policy level blackmails by other coalition party leaders, as they would systematically threaten to defect and join other coalition forces. These 'shaky' parties in the coalition, relied on businessmen with strong foothold in the financial markets, thereby effectively taking advantage of government's policy changes to serve their personal interests. These are textbook examples of corruption intertwined with crony capitalism[93]. The presidential system in South Korea, came under scrutiny in the onset of the crisis. There was a no-reelection rule implemented, which increased economic concerns further. Subsequently, one faction of the ruling party separated and ran in the elections against the incumbent government, and ultimately the ruling party was defeated. The political disharmony was detrimental to the South Korean economy, particularly for crisis management and thereby raises the question of political changes at a time of economic uncertainty. However, Haggard (2000) for instance, argues that democratic systems have a decisive advantage over autocracies, in the sense that the incumbent governments were in fact voted out of office in both Thailand and South

[93] In the Western account of the reason why the Asian crisis took place, corruption and cronyism were at the centre piece of earlier discussions. For example, the Hanbo case, which involved direct bribery of the government along with the bank officials in Korea is one heavily discussed example amongst many.

Korea. Thailand's laissez-faire approach and the economic repercussions that followed, contradicts the policymaking benefits of that of a democratic regime.

In the age of economic sanctions, incentivized by political motives, economic theory must incorporate these key political factors, capturing both internal and external domestic political affairs. Dr. Mahathir Mohammad, the longest serving Prime Minister of Malaysia, in the aftermath of the Asian financial crisis of 1997, stated that they would oppose IMF's policy that suggested that the crisis hit economies should raise their interest rates. He said that these policies were tailored to favor Western investors and ensuring their interests and it would also compromise the sovereignty of the nation; he even went against the policies set by the Governor of the Central Bank of Malaysia. On the contrary, it could also be very well argued that he galvanized his support base domestically from the political viewpoint by upholding the notion of sovereignty; after all he did serve 5 terms in office and oversaw the recovery of the Malaysian economy. In Indonesia, President Suharto, in the onset of the crisis launched several investment projects that were severely costly while it also increased liquidity support to a number of banks that supported his regime which resulted in the closure of these banks in November of 1997. Haggard (2000) states that the reason for the region's vulnerability stems from not only policy failures, but deep rooted political problems.

An examination of the Tequila Crisis or the Mexican Peso Crisis of 1994 is of fundamental importance due to the impact of the political precursors of the crisis. It is important to remember that at the time, President Carlos Salinas de Gortari and the administration was in its final year, serving the sixth year. In that year, the administration went on an unprecedented spending spree due to the fact that it was election year; the current account deficit rose to 7% of GDP (Hufbauer and Jeffrey, 2005). The North American Free Trade Agreement (NAFTA) was signed and came into effect on January 1, 1994, resulting in increased investor confidence. However, that same year, the Zapatista Army of National Liberation declared war on the Mexican government and caused violent riots in Chiapas. This caused a total shift in confidence of the international community towards Mexico, due to the political uncertainties that were associated to the economy. Investors were further thrown into doubt when the Institutional Revolutionary Party's (the ruling party) presidential

candidate Luis Donaldo Colonsio was assassinated while campaigning in Tijuana in March of 1994. As a result, investors, in accordance with the political uncertainty that persisted in Mexico, began to set higher risk premia on Mexican financial assets. Initially, this had no effect on the value of the peso as it was functioning under a fixed exchange rate regime as it was pegged to the U.S. dollar[94]. In order to ensure this peg remained in place, the Central Bank of Mexico ensured the Peso appreciated and depreciated against the dollar. The Banco de Mexico would also frequently intervene to buy or sell pesos in open markets to maintain the fixed exchange rate regime. However, when the peso appreciated[95], domestic consumers and businesses began importing, as imports were cheaper due to the appreciation of the currency, resulting in a serious current account deficit. In this case, speculators observed that the peso had been artificially overvalued and therefore this caused speculative capital flight. The Mexican Central Bank did not deviate from breaching the fixed exchange rate, and instead of raising interest rates and contracting the monetary base, they prevented interest rates from rising, which resulted in depletion of reserves. Furthermore, servicing the tesobonos with U.S. dollar repayments caused the foreign exchange reserves to wear down. Finally, in December 1994, the Central Bank's foreign exchange reserve completely ran out of U.S. dollars. In January 1995, President Bill Clinton sanctioned the bailout but the Mexican economy suffered tremendously in that period. Therefore, it is quite evident that political factors can be instrumental, in ensuring smooth economic progress but also triggering a series of events that lead to a crisis. In this case, the fallacies in the conditions of the political institutions along with political polarization in the form of the riots in Chiapas both contributed heavily in the buildup to and of the crisis.

Democracies have the advantage of lower borrowing costs and this is due to the fact that democratically elected leaders have greater constraints than an autocratic leader and resultantly they are better equipped to commit to repayment. Hence, democratic nations receive favorable borrowing rates from international lenders (Shultz and Weingast, 2003). It is often argued that democracies or democratic regimes are more prone to self-fulfilling panics in the context of crises, due to

[94] The Mexican peso was pegged to the U.S. dollar in 1988.
[95] The peso appreciated at the time because the Banco de Mexico had an intervention strategy that involved issuing short-term public debt instruments denominated in U.S. dollars. Then this borrowed capital would be used to purchase pesos in the forex market, which caused the currency to appreciate.

information transparency and freedom (Lipscy, 2017). From the viewpoint of liberalization, democracies are often associated with citizens' freedom to invest freely without restrictions and thereby inducing and enhancing the degree of financial liberalization. On the contrary, in autocratic or authoritarian regimes, financial markets are regulated extensively. The empirical literature finds that there is a strong correlation between democracies or democratic scores and capital account liberalization (Quinn, 2000). Democratic regimes are also susceptible to contagion effects due to their tendency to lean towards greater levels of financial openness and this is not only due to financial liberalization with induces greater interaction with foreign financial institution but democracies are also prone to greater levels of international trade (Lipscy, 2017).

Higgot (1998) states that market turmoil and their impacts are every bit political as it is economic. For instance, governments are expected to take the right measures in the presence of economic vulnerabilities. However, governments are unable to implement their intended policies or economic reforms due to political constraints (Bussiere and Mulder, 1999). For instance, in the political economy literature, the parliamentary system is often criticized primarily for the 'curse of the two-thirds' which indicates a two-thirds majority in parliament. This would allow the ruling party to pass any bills in parliament as is the case in Bangladesh after 2014[96]. Moreira (1984) states that there is an argument, that focuses on the direction of causality, economic crisis due to political liberalization or political liberalization due to economic crisis. The author infers that that there is mutual influence, referring to bi-directional causality, but also insisting that both arguments are up for scrutiny as there is variation from country to country. Therefore, this is an avenue that needed to be explored in this research paper, because not only is the examination of this researching question scarce, but it is also significant.

[96] In the January 5, 2014, polls, in the national parliamentary elections, the ruling party gained 2/3 majority of the parliament as 153 seats were uncontested out of 300 seats. The former opposition party did not participate in the elections as they deemed the elections were not impartial or independent or fair. Resultantly, it was observed that the parliament was capable of passing any bills due to having the overwhelming majority of seats in parliament. There were bills that seemed controversial by the former opposition party along with other political parties and the general public, but they were passed nonetheless raising questions of democratic practices in a parliamentary system, particularly when the ruling party has a two-thirds majority in parliament.

4.3 Literature Review: Empirical Evidence

The literature review section examines critically the causes of a banking, currency and twin crisis and extensively analyses and evaluates the role of financial liberalization in the cause of these crises. The first sub-section looks at the empirical studies that have examined the fundamental causes of a banking crisis and it also looks at how financial liberalization can affect the likelihood of a crisis. The second sub-section examines the empirical research papers that look at the determinants of a currency crisis along with the effect of liberalization on the likelihood of a currency crisis. The third sub-section looks at interlinkages between a currency crisis and a banking crisis and then focuses on the impact of liberalization on both the banking and currency crisis and how one can stipulate the other. Finally, in the fourth sub-section, the literature review section also reports existing research papers that have studied the impact of the key political variables on the likelihood of crises.

The vast array of literature criticizing the merits of financial integration stems from financial fragilities and macroeconomic vulnerabilities experienced by emerging economies. There is a pressing need to analyze the literature that focuses on financial fragilities, a fundamental channel being the crisis channel and the other being the channel of macroeconomic volatility. The crises experienced for instance, in Mexico and South East Asia demands our attention to examine this closely. In the theoretical arguments section, there is mention of the one crucial criticism of financial integration being the incentive for investors, foreign and domestic, to form herding that may be of detriment to the domestic economy. Choe, Kho, and Stulz (1999) examine the impact of foreign investors on stock returns in Korea. They find strong evidence suggesting trading and herding behavior of foreign investors prior to the Asian financial crisis of 1997.

4.3.1 Financial Liberalization and the Likelihood of a Banking Crisis

The banking sector is of fundamental importance for macroeconomic stability in developing economies. It is of fundamental importance to explore and understand the causes of banking crisis and how much of an influence financial integration potentially has on it. Demirguc-Kunt and Detragiache (1998) examine the

determinants of banking crises in both developing and developed countries over the time period 1980-1994 using a multivariate logit model. It is observed that growth has a negative effect on the likelihood of a banking crisis, increase in the (change in) terms of trade reduces the likelihood of a crisis; increases in the real interest rate, inflation, budget surplus, M2/reserves, domestic credit, and credit growth increase the likelihood of a crisis. Increase in the GDP per capita and law and order i.e. prudential supervision, reduces the likelihood of a crisis. Generally, it is therefore observed that a banking crisis erupts especially when there are vulnerabilities in the macroeconomic conditions, particularly when growth is low and the inflation rate along with the real interest rate, are both high. The research paper explores the impact of financial liberalization on the likelihood of a crisis but while they find their result to be positive and statistically significant, they specify that this is an area that they would like to examine in their future works. They use countries in the dataset, in the given time period, in which there aren't any episodes of crises, therefore, this serves as controls. Evidence also suggests that moral hazard plays a deterministic role in causing systemic banking sector problems in the presence of deposit insurance schemes. They also find that there is a negative association between the efficacy of legal systems and the emergence of banking sector problems, this is in line with theory as it is without our expectation as a prudent legal body is likely to reduce banking sector vulnerabilities.

Angkinand, Sawangngoenyuang, and Wihlborg (2008) uses a dataset using 48 countries, 21 developed and 27 emerging markets, for the time period 1973-2005 to examine the effect of financial liberalization on the likelihood of a banking crisis. They classify liberalization into three categories, 'behavioral liberalization,' 'competitive liberalization' and privatization. They find that the prevalent view that financial liberalization leads to an increase in the likelihood of a banking crisis is not robust. Note that they use the lagged financial liberalization to look at the effect on the likelihood of a banking crisis. They use the squared term of the lagged financial liberalization variable as well as interaction terms to look at the effect of nonlinearities. They deduce that there is an inverted U-shaped feature that can be used to best describe the relationship between liberalization and probability of banking crisis using these nonlinearities in the regression. They find that liberalization increases likelihood of a crises until a certain point, after which it reduces the

likelihood of a crisis. They use the database of Abiad, Detragiache and Tressel (2008). In their empirical methods, they discuss that they opt to not include the conditional fixed-effects logit model as this can eliminate countries without a banking crisis episode, out of the sample. Furthermore, the possibility of using an instrumental logit regression, which would be to account for endogeneity bias, is also ruled out because there is no ideal instrument for financial liberalization. In order to account for endogeneity bias, they run regressions with banking crisis dummy variable as an independent variable along with all other macroeconomic control variables on the financial liberalization index. They find the reverse effect of the banking crisis dummy to be statistically insignificant and they make the inference that the logit model is not driven by endogeneity.

Eichengreen and Arteta (2002) build on the analysis carried out by Demirguc-Kunt and Detragiache (1998) by distinguishing between the effects of internal and external financial liberalization on a banking crisis. They deduce that capital account liberalization does not contribute to a banking crisis but they find that internal financial liberalization does. They also find that when countries are liberalized internally, capital account liberalization increases the likelihood of a banking crisis. Berger, Klapper, and Turk-Ariss (2008) use data for 8,235 banks in 23 developed countries. The traditional and conservative approach to financial liberalization theorizes that bank competition erodes market power, reduces profit margins and bank risk taking and this is classified as "competition-fragility." In their research, they deduce that this "competition-fragility" theory does in fact hold, which would undermine the benefits of financial liberalization as it induces a greater level of competition, especially from abroad, however, it results in increased competition results in banks holding more equity capital and deploy risk-mitigating policies.

Boyd, Nicolo and Loukoianova (2010) use the random effect Logit regressions using both country-level and firm-level datasets to disentangle the determinants of a systemic banking shocks (SBS). They find that banking crisis indicators represent lagged government responses to adverse banking shocks. They do not find any indication that the presence of explicit deposit insurance has any effect on the likelihood of a banking crisis which is in stark contrast to the findings available in the literature. They reiterate that the moral hazard problem associated to the availability

of the deposit insurance is negligible in the context of causing banking distress. Furthermore, this research paper makes a strong case for the side that supports the notion of liberalization as they find that greater competition in fact reduces the likelihood of a banking crisis rather than increases it. This finding generally contradicts the literature. Finally, they find evidence that the impact of financial openness does not necessarily adversely affect the solvency of banking systems. In some cases, they find that this reduces the likelihood of a crisis. This research is however based on disaggregated data using firm-level datasets.

Klomp (2009) uses a random coefficient Logit model in order to examine the extent to which heterogeneity exists in causing a banking crisis. The dataset includes 110 countries over the time period 1970-2007. Klomp classifies the causes of banking crises in two distinctive categories, microeconomic causes of a banking crisis, concerning internal problems within the banking system and macroeconomic causes of a banking crisis, which refers to the external developments of the banking system. They find that banking crises are not homogenous and in the 130 banking crises episodes they study, there is a substantial amount of heterogeneity. However, in general they find that high credit growth, negative growth and high real interest rate increase the likelihood of a banking crisis. They also find that determinants of banking crisis differ at different levels of economic development. Shehzad and De Haan (2009) use the multivariate probit model to examine the impact of financial liberalization on the likelihood of a systemic and non-systemic banking crisis over the time period 1981 to 2002 for 33 countries. They find that liberalization in fact reduces the likelihood of systemic crises, which contradicts the commonly held view. Mehrez and Kaufmann (2000) examine how transparency or the absence of corruption affects the likelihood of a crisis using a multivariate probit model for the time period 1977-1997 for 56 countries. They find that there is an increase in the likelihood of a crisis post-liberalization and they also find that probability of crisis increases when there is poor transparency as opposed to when there is transparency in countries.

Noy (2004) uses the probit model to examine the linkage between financial liberalization and systemic banking crisis for the 61 non-OECD countries over the time period 1975-1997. They also examine the role of prudential supervision and the subsequent effect on the likelihood of a crisis. For the financial liberalization

indicator, they use binary variables to account for liberalization of the capital account, current account and removal of export proceeds requirements. The macroeconomic and financial control variables that they use are all lagged in order to see what effect it has on the future likelihood of a crisis, although domestic financial liberalization is not lagged. They report in their findings that insufficient prudential supervision aligned with financial liberalization does carry a threat, but this is only a medium run threat to the banking system. They find that liberalization affects the banking system by making the few domestic banks lose monopoly power.

In order to shed light on other macroeconomic and financial factors causing a banking crisis as well as causing banking sector fragility and banking system distress, Hardy and Pazabasioglu (1999)[97] extend the empirical framework set up by Demirguc-Kunt and Detragiache (1998). They use a multinomial logit model estimated by the maximum likelihood estimator. The dependent dummy variable takes the value of 2 in the period when the banking sector faces difficulties, takes the value of 1 in the preceding period and zero otherwise. Their full sample of the dataset includes 50 countries of which 38 countries suffered a total of 43 episodes of banking system crises or severe functional problems. The empirical findings suggest that banking distress is associated with fall in the real GDP growth rates, boom-bust cycles in inflation, rapid credit expansions, heavy capital inflows, high levels of real interest rates, decreasing capital to output ratio, decline in the real exchange rate, and adverse trade shocks. However, they also underline that banking sector conditions can be poor without reaching the level of a full-fledged crisis and they specify the extensive reliance on external funding to be one of the major culprits of the malfunctions within the financial system, which transcends to the banking system. Furthermore, banking sector distress is often preceded by rapid credit expansion and fast growth in consumption.

4.3.2 Financial Liberalization and the Likelihood of a Currency Crisis

The collapse of the Asian currencies in 1997 is one of the motivating factors in exploring the causes of crises and the affiliations and linkages it has with financial integration. This also caused a wide array of research publications, assessing the

[97] Hardy and Pazabasioglu (1999) include both crisis and non-crisis affected countries in their dataset.

causes of the currency crises. From the policy viewpoint, it was to understand the signals and develop remedies to neutralize the prospect of a currency crisis early on i.e. to understand if these symptoms can be effectively detected so that the governments of crises inflicted countries are able to take preemptive measures. According to the empirical literature, the variables that are best signal indicators are output, exports, deviations in the real exchange rate from the generic trend, equity prices, and the ratio of broad money to gross international reserves (Kaminsky, Lizondo, and Reinhart, 1998[98]). The empirical evidence is incoherent with the theoretical predictions and results are inconclusive for the other signal indicators e.g. imports, the differential between foreign and domestic real deposit interest rates, the ratio of lending to deposit rates, and bank deposits. Furthermore, there are suggestions in the empirical literature that show that banking sector problems are indicative and rather helpful in predicting a currency crisis, as was the case for the Asian currency crisis for instance (the weak domestic financial sector).

There numerous papers that investigate empirically the cause of the Asian crisis. The renowned or the benchmark papers look at the causes of these crises from a broader perspective and not individual examination of the effect of financial liberalization on the effect of a currency crisis. It must also be said that there are not many researching studies that look at the direct effect of financial liberalization on the likelihood of a currency crisis, while there is a lot of literature on the impact of financial liberalization on the likelihood of a banking crisis. Miyakoshi (2000) states that one of the five causes of the Asian currency crisis was due to the extensive financial liberalization. Kawai (1998) deduces that financial deregulation and capital account liberalization preceded the speculative currency attacks in Thailand. The rapid outflow of capital resulted in the consequent depreciation of the exchange rate. Corsetti, Pesenti and Roubini (1999) deduce that financial 'over-lending' was one of the main reasons for the cause of the currency crisis. However, However, Mishkin

[98] Kaminsky, Lizondo, and Reinhart (1998) examine the leading indicators of currency crises empirically in order to develop an early warning system (monitoring evolution of key macroeconomic indicators of interest). From their research they find that the macroeconomic indicators that seem to signal crises are the following: international reserves, real exchange rate fluctuations, domestic credit, credit for the public sector and inflation. The other variables that are supposed to be signals do not indicate or have substantive evidence for inference purposes. An extension of this particular research paper would be to for instance use this 'signals' approach but also estimate the probability of a currency crisis contingent on various signals.

(1999) stresses that even though capital flows did contribute to the crisis, it was only a symptom rather than an underlying cause of the Asian crisis. Athukorala and Warr (2002) give support to Mishkin's (1999) analysis and ask the question whether accumulation of mobile capital made these countries vulnerable to a currency crisis and whether this implies that the fundamental culprit was opening the capital account? They state that there is no doubt that openness of the capital account facilitated foreign borrowing and it did contribute to financial vulnerabilities but they disagree that liberalization of the capital account was the cause of the central problem.

In terms of international capital flows, the crises that occurred in Asia was attributed to the 'sudden stops'[99] and the foreign capital reversal. Calvo, Leiderman, and Reinhart (1994) claim that capital inflow (flowing from industrial countries to developing countries) is associated with inflationary pressure, a real exchange rate appreciation, a deterioration of the current account and a boom in bank lending. Subsequent to the Asian currency and financial crisis in 1997, economists and policymakers sided with the argument that excessive capital mobility may be disruptive for the economy. Furthermore, there were even claims that the degree of capital mobility is dependent on the level of financial openness of the economy e.g. reducing financial openness is likely to reduce the probability that a country faces an external crisis in the form of a sudden stop or a current account reversal (Stiglitz, 2002). Edwards (2004) investigates the mechanics of sudden stops of capital inflows and current account reversals[100] using a panel data of 157 countries over the period 1970-2001. The author finds that restricting the financial openness or capital mobility does not reduce the probability of experiencing a current account reversal. This contradicts the claim that financial openness tends to reduce the likelihood of crises in the form of current account reversal. However, this research paper could perhaps use different unobserved latent variables to take into account institutional qualities. The following sub-sections will investigate and examine the existing literature for the causes of banking, currency, and twin crises in affiliation with financial integration.

[99] A 'sudden stop' refers to an abrupt and major reduction in capital inflows to a recipient country receiving large amounts of foreign capital, this occurs when net capital inflows have declined by at least 5% of GDP (Edwards, 2004).

[100] Edwards (2004) defines current account reversal as a reduction in the current account deficit of at least 4% of GDP in one year. The variable used to take into account financial openness is Quinn's (2003) index of capital mobility. This index goes from 1 to 100, where higher values denote a higher degree of financial integration.

Jomo (1998) investigates the repercussions of financial liberalization in Malaysia in the build up to the financial crises of 1997. Jomo infers that the financial crises that befell Malaysia, was due to financial liberalization rather than financial regulation. The fact that the Malaysian ringgit was pegged to the US dollar and the stock/equity markets had been liberalized prior to the crises caused an influx of foreign savings. This caused a rise in inflation and massive increase in property prices. Moreover, short termed unhedged borrowing from abroad gave speculators the incentive to attack the currency due to the fact that currency appreciated. The eventual collapse of the Ringgit was inevitable but this was preceded by excessive liberalization as opposed to regulation.

4.3.3 Financial Liberalization and the Likelihood of a Twin Crisis

For the literature examination of twin crises, it is essential to study the linkages between a banking crisis and a currency crisis first, before looking at the standalone impact of financial liberalization on the probability of a twin crisis. There are only a few selective number of research papers that study the impact of financial liberalization on a twin crisis as a standalone avenue. In terms of the literature available on twin crisis, the Asian crisis must be mentioned because it was heavily linked with financial openness and there not a large number of papers that focus on both without crisis of 1997. Glick and Hutchinson (1999) use 90 industrial and developing countries for the time period 1975 to 1997. They measure the causes of the individual crisis i.e. currency and banking crisis separately as well as the twin crisis using a multivariate probit model. They find that the phenomenon of the joint occurrence of the banking and currency crisis (twin crisis) is predominantly seen in liberalized emerging markets. They find that policies taken to reduce the probability of a banking crisis lowers the likelihood of a currency crisis occurring, and vice versa. While they do look at the impact of financial liberalization on the probability of a banking crisis they do not see the direct impact on the currency crisis.

The fundamentals of the linkages between a banking sector crisis and a currency collapse is investigated by Kamnisky and Reinhart (1999). They explore

16[101] macroeconomic and financial variables around the time of crises, using monthly data. For each of these variables, they develop a threshold, above or below which the likelihood of a crisis is calculated. The generic results that they find are that banking and currency crises are often preceded by financial liberalization. More often than not, a banking crisis precedes a currency crisis. However, they do find evidence that a currency crisis worsens the banking crisis. Furthermore, the causes of twin crises do in fact stem from weak and decaying macroeconomic fundamentals, as is the case of other papers that looked at banking crisis and currency crisis separately. Glick and Hutchinson (2000) investigate the causes of banking and currency crises using 90 industrial and developing economies over the period 1975-97. Their deductions are consistent with the findings of Kaminsky and Reinhart (1999), as they reiterate that banking crisis precede currency crisis but not the other way around. Moreover, they find that the twin crisis phenomenon is mainly concentrated in around a set of countries that are financially liberalized and are emerging market economies. They find that in emerging economies, banking crises has been associated with currency crises almost 30% of the time. They reiterate the causal link of this particular deduction. They do not find a strong causal link between currency crisis triggering a banking crisis.

There is also the pressing need to examine the joint causality of twin crises. The role of international illiquidity is one of these factors that can add to the banking sector woes and currency collapse simultaneously (Chang and Velasco, 1999). The other common fundamental factor is financial liberalization that is intertwined with moral hazard problem which induces domestic banks (as well as foreign affiliated banks in some country specific cases) to take onboard risky portfolios, which could include foreign currency liabilities that are not hedged. For example, McKinnon and Pill (1998) emphasize the role of financial liberalization in instigating the dynamics of a twin crisis. They suggest that financial liberalization and deposit insurance may result in a superficial lending boom, which involves both domestic and international

[101] The macroeconomic and financial variables used by Kaminsky and Reinhart (1999) and associated to financial liberalization include M2 multiplier, ratio of domestic credit to the share of GDP, real interest rate on deposits, and ratio of lending to deposit interest rates. Furthermore, the other financial indicators are excess M1, real commercial bank deposits, ratio of M2 divided by foreign exchange reserves (this is in US$), percentage deviation of real exchange rate from the average trend, value of exports and imports, terms of trade, foreign reserves, domestic-foreign interest rate differential, and budget deficit as a share of GDP.

credit expansion, which leads to a banking and currency crisis. Kaminsky and Reinhart (1999) famously state that "the seeds of the problems are sown at the same time, which event occurs first is a matter of circumstance."

4.3.4 Political Instability and Political Institutions on Financial Fragilities

An avenue that is not extensively explored from the empirical or even from the theoretical perspective, and that is the critical examination of the impact of key political factors (this would ideally include for instance, political instability and political institutions) on the likelihood of crises. Economists tend to state that political factors may be causes and in most cases, these political variables are only taken for measures of controls in regression analysis. It is quite evident from the examination of the existing literature that the direct linkages are not effectively examined. On the other hand, political theorists tend to comment on these issues without testing or validating these theories via an empirical investigation. In this sub-section, the relevant researching papers in the associated field of research will be analyzed. However, it must be noted that to the best of my knowledge there are no existing scholarly papers that look at the interlinkages between the intensity of financial liberalization, political instability and political institutions, jointly, on the likelihood of crises.

This research paper examines the impact of political institutions and political polarization on the likelihood of crises; the polity score is used to measure the efficacy of democratic values. Lipscy (2017) examines the impact of democracy[102] on the likelihood of banking crises. The author finds that democracies are more capable of credible repayment, they are more transparent, have fewer restrictions citizens' willingness to invest freely and they are more liberalized. The author finds that increased democratic scores results in increase likelihood of banking crises. Remmer (1993) examines the impact of democracy on crises in the Latin American economies. The author does not find a causal relation but states that it is laudable the manner in which the democratic regimes in Latin America, oversaw crises in the 1980s. A

[102] According to Lipscy (2017), democracy is a multifaceted variable that embodies attributes such as the rule of law, free and fair elections, freedom of expression and freedom of speech. In order to measure democracy, the author uses the polity IV score.

criticism of this paper is that the author does not examine these hypotheses through empirical analysis.

Bussiere and Mulder (1999) examine the impact of political instability on the effect on economic vulnerability by using 4 proxies for political instability and using currency crisis as a proxy for vulnerability. Their paper centers around the Tequila Crisis in Mexico in 1994 and the Asian Financial Crisis in 1997. They use a total of 23 countries. They use four variables to measure political instability. They proxy political polarization using the effective number of political parties, they use a coalition index that measures the strength of a coalition in parliament to account for political cohesion, they use the volatility index to account for electoral indecision and finally they use election dates to see if this has any effect on the likelihood of crises. The crisis indicator is a weighted average of the drop-in reserves and the increase of the real exchange rate, this synonymous to the model developed by Tornell (1998). The conclusion of significance that they draw from this research paper is that more than pre-electoral periods it is the post-electoral periods that leave economies more vulnerable to a crisis. Moreover, higher reserves reduce uncertainties created by elections. A fundamental criticism of this research paper would be that the macroeconomic determinants of a currency or banking crises were almost completely ignored and therefore the true measure of the coefficients of the political variables cannot be taken with explicit certainty.

4.4 Methodology

This research paper uses a dataset that comprises 93 developing economies over the time period of 1980-2013. The econometric model deployed in the body of this research paper is the Probit Regression Model. The key independent variable in this research paper is the KAOPEN or the de jure measure of capital openness index. The key dependent variables are binary, each depending the on the occurrence of the respective crisis, i.e. banking, currency and twin crises. For further robustness checks[103], the Conditional Fixed Effects Logit Regression model is deployed as well as the Probit Random Effects Regression model. Furthermore, in the robustness checks, lagged variables for the controls as well as the key independent variable, the KAOPEN, is also lagged to see what this effect may have on the likelihood of crises.

[103] Refer to Appendix 3 in section 4.11 for robustness checks.

Moreover, the robustness checks conclude with robustness test 4 in section 4.11.4; this includes the usage of the HP filter for domestic credit in order to account for 'credit booms' and this is modelled similar to way in which Caballero (2014) calculates booms and bonanzas. This robustness check also includes the approach introduced by Mundlak (1978) in which the time variant variables are detrended by incorporating the average of the time variant control variables and using them as regressors in the regression analysis. In order to account for the dynamic nature of the crises, the lagged variables of the dependent variable is also incorporated.

Following the probit regression, in the body of the research paper, there is also a focus on the average marginal effects on the likelihood of crises. This is only concentrated on the KAOPEN and the other macroeconomic control variables. Political institutions and political polarization are integral researching questions that this paper seeks to answer and therefore they are independently and jointly (with KAOPEN) regressed on banking, currency and twin crises. In Appendix 2 (refer to section 4.10), the predictive margins for the key independent variable of interest, KAOPEN, along with all the other political variables are illustrated for all the crises models.

4.5 Variable Description

The detailed descriptions of the variables used in this research paper are provided in table 4.1. The key independent variable of interest is the intensity of financial liberalization (proxies for financial integration in previous chapters) is the de jure measure of capital openness index which is the Chinn-Ito Index[104]. Contrary to previous chapters, the index has not been transformed for the purposes of simplicity in reading the coefficients. The key dependent variables of interest are banking crisis, currency crisis and twin crisis, all of which are binary variables, taking the value of 1 in the onset of a crisis and the value 0 when there is no crisis. The data for the banking crisis, currency crisis and twin crisis dummy variables were constructed using the database provided by Carmen Reinhart[105] and Kenneth Rogoff.

[104] The Chinn-Ito Index, referred to as the *KAOPEN* index in this research paper, was developed by Chinn and Ito (2006).
[105] Refer to the following website: www.carmenreinhart.com

Furthermore, for both the banking and the currency crisis, this was cross-checked with the database developed by Laeven and Valencia which incorporates both systemic banking crises as well as currency crises from which the twin crises were constructed by the author. There are three classified empirical models in this research paper that is specified in the empirical framework section and they are the banking crisis model, the currency crisis model and the twin crisis model, all of which are used to represent or (extreme) financial fragility or macroeconomic vulnerabilities.

The key determinants of a banking crisis and the subsequent variables that are used are fairly consistent amongst the renowned papers. For this research paper, Demirguc-Kunt and Detragiache's (1998) control variables have been used as the primary benchmark. The control variables that have been selected in this research paper incorporate the control variables that are predominantly used in the crises literature. The control variables that are used for the banking crises model are the following: (1) Explicit Deposit Insurance[106], (2) Real GDP Growth, (3) Real Interest Rate, (4) Exchange Rate Depreciation, (5) Change in Terms of Trade, (6) Inflation, (7) Budget Surplus (% of GDP), (8) M2/Reserves, (9) Domestic Credit to Private Sector (% of GDP), (10) Broad Money Growth, (11) Real GDP per Capita, and (12) External Debt (% of GDP)[107]. Demirguc-Kunt and Detragiache (1998) and Boyd, Nicolo and Loukoianova (2010) find that in the presence of an explicit deposit insurance scheme, there is a greater likelihood of banking crises. Real GDP growth reduces the likelihood of banking crises. This finding is consistent in the crisis literature. Real interest rates and inflation tend to increase the likelihood of banking crises (Demirguc-Kunt and Detragiache, 1998). Depreciation tends to increase the likelihood of crises, however, the results are often statistically insignificant as observed in the research studies carried out by Glick and Hutchinson (2000), Demirguc-Kunt and Detragiache (1998) and Tanveer and De Haan (2008). The impact of changes in terms of trade on the likelihood of banking crises is statistically insignificant in the literature. This result is evident in the empirical studies carried out

[106] Explicit Deposit Insurance is a control variable that Demirguc-Kunt (1998) uses in his research paper in determining the macroeconomic fundamentals of banking crises. Furthermore, the dataset is constructed using the database developed by Demirguc-Kunt, Kane and Laeven (2014),

[107] External Debt (% of GDP) was included as a control variable because of the fact that since this paper covers developing economies, which includes the Latin American economies, and they faced severe problems in their banking sector due to debt, it systematically distorted the results without including this control variable.

by Demirguc-Kunt and Detragiache (1998), Garcia Herrerro and Del Rio (2003) and Domac and Peria (2003). Impact of budget surplus, m2/reserves and domestic credit[108] on the likelihood of banking crises is generally statistically insignificant in the literature (Klomp, 2009). Money growth tends to increase the likelihood of banking crises; however, it is seldom statistically significant and real GDP per capita increases the likelihood of banking crises, results for which are statistically significant across various empirical studies.

The control variables used for the currency crisis include all the control variables included for the banking crisis model with the exception of (1) Explicit Deposit Insurance and (12) External Debt. However, (13) Banking Crisis dummy variable is included as a control variable for the currency crisis model. Kaminsky and Reinhart (1999) infer in their research that currency crises are usually preceded by banking crises. For the twin crisis model, all the control variables for the banking crisis model are included, with the exception of (1) Explicit Deposit Insurance and (12) External Debt. The leading determinants of a currency crisis were critically examined in the crisis literature before the selection of the control variables. For instance, Kaminsky, Lizondo and Reinhart (1998) examine the leading indicators of a currency crisis by monitoring these indicators before a crisis in order to formulate an effective warning system. They find that the leading variables that are useful in anticipating a crisis, which for the purposes of this research paper can assist in the selection of controls, are, change in international reserves, change in the exchange rate, domestic credit, inflation, current account balance, export performance, money growth, real GDP growth and fiscal deficit. Bilson (1979) find that international reserves are important in the buildup to a currency crisis and infer that countries with higher international reserves are less likely to increase the likelihood of devaluation. Collins (1995) finds that international reserves, real GDP growth and inflation are key indicators of currency crisis. Eichengreen, Rose, and Wyplosz (1995) find that inflation, employment growth, current account balance, capital controls, and government deficit. Sachs, Tornell and Velasco (1995) find that change in real exchange rate, domestic credit as a proportion of the GDP, international reserves, short-term capital flows and government consumption are all statistically significant

[108] This refers to private credit as a percentage of GDP.

indicators of a currency crisis. Kaminsky and Reinhart (1996) find that banking crises help predict the probability of a currency crisis and also underline the bearing banking crises may have on a currency crisis. For the papers that look at the determinants of a currency crisis, they use the banking crises variable as a control variable.

An integral component of this research paper is to examine the impact of political institutions and political polarization, both independently and jointly (with the intensity of financial liberalization) on the likelihood of a banking, currency and twin crisis. In the literature review section as well as in the theoretical framework section, it was duly noted that there are not enough empirical studies that examine the political factors and the role they play in the likelihood of a crises or for macroeconomic vulnerability per se. According to the extensive examination of the existing empirical research papers that investigate the impact of political factors on the likelihood of crises[109], the paper by Bussiere and Mulder (1999), albeit partially[110], addresses a researching element that this research paper seeks to shed further light on. The paper by Bussiere and Mulder (1999) paper looks at the impact of political instability on the likelihood of macroeconomic vulnerabilities – this is proxied by currency crisis. They use four variables to proxy for political instability, however, their regressions do not incorporate the key macroeconomic determinants that may influence crises. For this particular research paper, while there is motivation from the aforementioned paper, the impact is considered from the angle of political institutions and political polarization, where the inclusion of political polarization is meant to also represent political instability as they argue in their paper.

The data for the political variables used in this research paper is collected from the Quality of Government Institute Database, Database of Political Institutions 2015[111] and the World Governance Indicators. The condition and format of political institutions are proxied by the following: (1) Political System, (2) Control of Corruption, (3) Rule of Law, and (4) Political Globalization. Political polarization is

[109] Refer to the criticism addressed in the literature review section that outlines the lack of empirical studies that specifically focus on political issues and the repercussions of variations in key political variables and their likely effect on the likelihood of crises.
[110] They do not take into account the joint effect of the key political variables and financial liberalization on the likelihood of crises.
[111] This dataset was originally developed by Beck, Clarke, Groff, Keefer and Walsh (2001). However, it was later revamped and updated (and is readily available in the World Bank Database)

proxied by the following: (1) Winning Coalition Size, (2) Number of Seats of Largest Opposition Party, (3) Vote Share of Largest Government Party, and (4) Polity Score[112]. There is a total of eight political variables that are regressed on banking, currency and twin crisis both independently and jointly with KAOPEN. It must be noted and reiterated again that empirical studies have not incorporated these variables because they have not investigated this channel specifically. They have only used a set of control variables that predominantly encircle that of law and order. This is a novel addition to the literature in the sense that, particularly for that of political polarization, these variables have not been used in the crisis literature in the past. Therefore, it cannot be justified which variable is more effective than the other as it has been done for macroeconomic control variables or the other key independent variable of interest. The descriptions along with the descriptive statistics for each of these variables are provided in table 4.1(b).

Table 4.2 illustrates the correlation coefficient of the key macroeconomic control variables in order to avoid the multicollinearity problem. The two variables that are highly correlated are that of the association between inflation and depreciation and money growth and inflation. The multicollinearity problem has been addressed by carrying out the regression analysis without these two variables that have the problem being highly collinear. However, in this particular case the results were rather indifferent with and without inclusion of the variables. Due to the fact that they were only marginally different these results were not reported.

[112] This is the combined polity score that ranges from -10 to 10 (refer to table 4.1).

Table 4.1: Variable Description and Descriptive Statistics								
Variable/Parameter	***Description of Variable***	***Data Source***	***Mean***	***Minimum***	***Maximum***	***Standard Deviation***	***Observations***	***Variable Type***
Banking Crisis Dummy	*The banking crisis dummy variable takes a value of 1 or 0, 1 indicating a systemic banking crisis and 0 otherwise. Refer to the definition of a banking crisis in the theoretical section of the research paper.*	*Reinhart and Rogoff Crisis Database and Laeven and Valencia Systemic Banking Crisis Database*	*0.061*	*0*	*1*	*0.2399827*	*1582*	*Dependent Variable*
Currency Crisis Dummy	*The currency crisis dummy variable takes a value of 1 or 0, 1 indicates a crisis episode and 0 indicates no crisis. Refer to the definition of a currency crisis in the theoretical section of the research paper.*	*Reinhart and Rogoff Crisis Database*	*0.072*	*0*	*1*	*0.2599284*	*1538*	*Dependent Variable*
Twin Crisis Dummy	*A twin crisis refers to the situation in which a banking crisis and currency crisis occur at the same time. The twin crisis dummy variable takes the value of 1 or 0, where 1 indicates a crisis episode and 0 indicates no crisis.*	*Reinhart and Rogoff Crisis Database*	*0.020*	*0*	*1*	*0.1429182*	*1535*	*Dependent Variable*
Capital Account Openness: Chinn-Ito Index	*The index has a mean of 0 and ranges from -2.66 to +2.66, where -2.66 represents full capital control and +2.66 represents complete liberalization.*	*International Financial Statistics, IMF*	*0.027*	*-1.888895*	*2.389668*	*1.460879*	*1590*	*Independent Variable*
Table 4.1(a): Macroeconomic Control Variables								
Explicit Deposit Insurance	*The explicit deposit insurance database developed by Demirguc-King, Kane and Laeven (2014) is a binary variable. The deposit insurance scheme works as a buffer against domestic banks in the case that they are insolvent the government is obligated to bail them out. Numerous papers have used this and Demirguc-Kunt particularly argues that this variable must be included to capture the moral hazard problem.*	*Demirguc-Kunt, Kane and Laeven (2014)*	*0.403*	*0*	*1*	*0.4908075*	*1590*	*Control Variable*

Real GDP Growth (Annual %)	*Real GDP growth is based on constant 2005 US$. This is the dependent variable of interest and is the proxy measure for macroeconomic performance.*	*World Bank Data*	*4.882*	*-30.14523*	*149.973*	*6.475219*	*1590*	*Control Variable*
Real Interest Rate (%)	*Real interest rate is the interest rate minus the inflation rate.*	*World Bank Data*	*7.680*	*-97.81207*	*93.91508*	*12.54129*	*1590*	*Control Variable*
Exchange Rate Depreciation	*This variable was constructed by depreciating the official exchange rate. An exchange rate depreciation is when a country's exchange rate falls in value in comparison to another currency.*	*Author's Calculation*	*0.242*	*-.2823327*	*139.3194*	*4.684498*	*1590*	*Control Variable*
Change in Terms of Trade	*The terms of trade is the price relationship between a country's export and imports. The calculation was done using the prominently used change in terms of trade formula.*	*Author's Calculation*	*1.359*	*-88.30111*	*110.053*	*14.09896*	*1590*	*Control Variable*
Inflation, consumer prices (Annual %)	*Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.*	*International Financial Statistics, IMF*	*19.42*	*-31.56591*	*12338.66*	*311.9908*	*1590*	*Control Variable*
Budget Surplus	*Budget surplus refers to the government budget surplus in which case government spending is less than government revenue.*	*International Financial Statistics, IMF*	*-2.501*	*-42.373*	*32.832*	*6.033267*	*1590*	*Control Variable*
M2/Reserves	*Money and quasi money (M2) to total reserves ratio.*	*World Bank Data*	*4.457*	*.1908626*	*567.4617*	*16.43091*	*1590*	*Control Variable*
Domestic Credit to Private Sector (% of GDP)	*This variable captures the credit that is available, the domestic credit, to the private sector and is represented as a proportion of the GDP.*	*World Bank Data*	*32.61*	*1.542268*	*165.7191*	*28.97898*	*1590*	*Control Variable*
Broad Money Growth (Annual %)	*The growth rate of money is frequently used as a control variable in the crisis literature.*	*World Bank Data*	*24.45*	*-51.98528*	*6987.877*	*179.4824*	*1590*	*Control Variable*
Real GDP per Capita	*The real GDP per capita is based on constant 2005 US$.*	*World Bank Data*	*2502*	*113.7064*	*13289.89*	*2379.278*	*1590*	*Control Variable*
External Debt (% of GDP)	*External debt as a percentage of GDP is the ratio between the debt a country owes to non-resident creditors and the GDP.*	*World Bank Data*	*57.83*	*2.888377*	*750.2755*	*57.28593*	*1458*	*Control Variable*

Table 4.1(b): Political Polarization and Political Institutional Variables								
Winning Coalition Size	*The winning coalition size varies between 0 and 1 where 0 indicates the smallest winning coalition and 1 indicates the largest winning coalition. This index is applicable whether it is civil or military.*	*Quality of Government Institute Database*	*0.539*	*0*	*1*	*0.2848644*	*490*	*Independent Variable*
Number of Seats of Largest Opposition Party	*This is the total number of seats held by the largest opposition party and this includes both in parliamentary and presidential systems.*	*Database for Political Institution*	*33.16*	*0*	*237*	*40.70376*	*1481*	*Independent Variable*
Vote Share of Largest Government Party	*This is the total vote share that the largest government party has received in the election. This is applicable both in parliamentary and presidential systems.*	*Database for Political Institution*	*40.30*	*0*	*100*	*27.37522*	*1025*	*Independent Variable*
Polity Score	*This combined polity score is computed by substracting the autocracy score from the democracy score. This is more applicable for developing countries due to the association with autocratic governments. The values range from -10 to 10, where 10 indicates strongly democratic.*	*(Marhsall, Jaggers, 2016)*	*3.018*	*-10*	*10*	*6.03127*	*1427*	*Independent Variable*
Political Globalization	*Political globalization has been used to measure the condition of foreign relations along with economic relations in the form of de jure or de facto economic policies. This variable measure political globalization by the number of embassies, number of high commissions, number of domestically present international organizations, UN peace mission's participation and number of international treaties signed since 1945. As this is not a weighted index, it varies from country to country.*	*Quality of Government Institute Database*	*57.54*	*15.55509*	*94.72778*	*20.72022*	*1366*	*Independent Variable*
Political System	*The political system variable is a binary variable. The value 1 indicates that there is a parliamentary system and that the Prime*	*Database for Political Institution*	*0.260*	*0*	*1*	*.438851*	*1265*	*Independent Variable*

	Minister has higher executive power than the President. On the contrary, the value 0 indicates that this is a presidential system.							
Control of Corruption	*Control of corruption refers to the measurement of the perceptions of corruption in the form where public power is exercised for private gain. The values range from -2.5 where it is weak and 2.5 where it is strong.*	*World Bank Governance Indicators, Kaufmann et al. (2016)*	*-0.443*	*-1.82*	*1.36*	*.5679444*	*1123*	*Independent Variable*
Rule of Law	*Rule of law includes several indicators which measure the extent to which people have confidence in and abide by the rules of the society. The values range from -2.5 where governance is weakest to 2.5 where it is strong.*	*World Bank Governance Indicators, Kaufmann et al. (2016)*	*-0.468*	*-2.11*	*1.16*	*.5899197*	*1124*	*Independent Variable*

***Table 4.2:* Correlation Coefficient**													
	KAOPEN	***Explicit Deposit Insurance***	***Real Growth Rate***	***Real Interest Rate***	***Depreciation***	***Terms of Trade***	***Inflation***	***Budget Surplus***	***M2/Reserves***	***Domestic Credit***	***Money Growth***	***GDP per Capita***	***Debt***
KAOPEN	*1.0000*												
Explicit Deposit Insurance	*0.0347*	*1.0000*											
Real Growth Rate	*-0.1443*	*0.2120*	*1.0000*										
Real Interest Rate	*0.0970*	*0.0579*	*-0.0366*	*1.0000*									
Depreciation	*-0.4047*	*0.2293*	*-0.0523*	*-0.3426*	*1.0000*								
Change in Terms of Trade	*-0.0217*	*-0.0969*	*-0.1757*	*-0.1873*	*0.2234*	*1.0000*							
Inflation	*-0.2838*	*0.1244*	*0.0877*	*-0.4808*	*0.7017*	*0.2056*	*1.0000*						
Budget Surplus	*0.0525*	*-0.0246*	*0.1334*	*0.1640*	*-0.0667*	*0.0105*	*0.0223*	*1.0000*					
M2/Reserves	*0.0614*	*0.3823*	*0.0035*	*0.0906*	*0.1439*	*0.2150*	*0.1184*	*0.0359*	*1.0000*				
Domestic Credit	*0.4532*	*0.0267*	*-0.1420*	*0.0686*	*-0.2393*	*0.0370*	*-0.2245*	*-0.0121*	*0.3587*	*1.0000*			
Money Growth	*-0.2375*	*0.2370*	*0.3360*	*-0.3817*	*0.6181*	*0.0081*	*0.8445*	*0.0117*	*0.1854*	*-0.1562*	*1.0000*		
GDP per Capita	*0.2295*	*0.5349*	*0.1686*	*0.0076*	*-0.0048*	*0.0592*	*-0.0023*	*-0.4368*	*0.2495*	*-0.1356*	*0.0225*	*1.0000*	
Debt	*0.0662*	*-0.0127*	*0.0717*	*0.0684*	*-0.2014*	*0.1232*	*-0.2537*	*0.1912*	*-0.0414*	*0.4065*	*-0.2161*	*-0.3296*	*1.0000*

4.6 Empirical Framework

The empirical framework section presents the empirical models that will be used in the probit regression analysis[113]. There are three empirical models, the banking crisis model, the currency crisis model and the twin crisis model, all of which are meant to account for macroeconomic crises. Furthermore, the sub-empirical models, which include 1(b), 2(b) and 2(c), are designated to examine the impact of political institution and political polarization[114] independently and jointly, with the intensity of financial liberalization on the likelihood of crises.

Empirical Model 1(a): Banking Crisis Model

$$\begin{aligned} Pr\,(Banking\ Crisis = 1) = {} & \phi\,(z) \\ = {} & \phi\,(\alpha_0 + \beta_1 KAOPEN_{it} + \delta_1 Deposit\ Insurance_{it} + \beta_2 Growth_{it} \\ & + \beta_3 Interest\ Rate_{it} + \beta_4 Change\ in\ Terms\ of\ Trade_{it} \\ & + \beta_5 Inflation_{it} + \beta_6 Budget\ Surplus_{it} + \beta_7 M2/Reserves_{it} \\ & + \beta_8 Domestic\ Credit_{it} + \beta_9 Money\ Growth_{it} \\ & + \beta_{10} GDP\ per\ Capita_{it} + \beta_{11} Debt/GDP_{it}) \end{aligned}$$

Empirical Model 1(b): Banking Crisis Model with Political Variables

$$\begin{aligned} Pr\,(Banking\ Crisis = 1) = {} & \phi\,(z) \\ = {} & \phi\,(\alpha_0 + \beta_1 KAOPEN_{it} + \delta_1 Deposit\ Insurance_{it} + \beta_2 Growth_{it} \\ & + \beta_3 Interest\ Rate_{it} + \beta_4 Change\ in\ Terms\ of\ Trade_{it} \\ & + \beta_5 Inflation_{it} + \beta_6 Budget\ Surplus_{it} + \beta_7 M2/Reserves_{it} \\ & + \beta_8 Domestic\ Credit_{it} + \beta_9 Money\ Growth_{it} \\ & + \beta_{10} GDP\ per\ Capita_{it} + \beta_{11} Debt/GDP_{it} + \beta_{12} PV_{it} \\ & + \beta_{13} PV * KAOPEN_{it}) \end{aligned}$$

Empirical Model 2(a): Currency Crisis Model

$$\begin{aligned} Pr\,(Currency\ Crisis = 1) = {} & \phi\,(z) \\ = {} & \phi\,(\alpha_0 + \beta_1 KAOPEN_{it} + \beta_2 Growth_{it} + \beta_3 Interest\ Rate_{it} \\ & + \beta_4 Change\ in\ Terms\ of\ Trade_{it} + \beta_5 Inflation_{it} \\ & + \beta_6 Budget\ Surplus_{it} + \beta_7 M2/Reserves_{it} \\ & + \beta_8 Domestic\ Credit_{it} + \beta_9 Money\ Growth_{it} \\ & + \beta_{10} GDP\ per\ Capita_{it} + \delta_1 Banking\ Crisis_{it} + \beta_{11} PV_{it} \\ & + \beta_{12} PV * KAOPEN_{it}) \end{aligned}$$

[113] It is important to note that the regression models here are validated via robustness checks, results for which are presented in appendix 3 in section 4.11. The robustness checks include the usage of the conditional fixed effects logit model and the random effects probit model. Furthermore, lagged variables are used.

[114] Note that there are several proxy variables that are used in this dataset and subsequently in the regressions in order to account for political institutions and political polarization.

Empirical Model 2(b): Currency Crisis Model with Political Variables

$$Pr\ (Currency\ Crisis = 1) = \ \phi\ (z)$$
$$= \phi\ (\alpha_0 + \beta_1 KAOPEN_{it} + \beta_2 Growth_{it} + \beta_3 Interest\ Rate_{it}$$
$$+ \beta_4 Change\ in\ Terms\ of\ Trade_{it} + \beta_5 Inflation_{it}$$
$$+\ \beta_6 Budget\ Surplus_{it} + \ \beta_7 M2/Reserves_{it}$$
$$+ \beta_8 Domestic\ Credit_{it} + \beta_9 Money\ Growth_{it}$$
$$+ \beta_{10} GDP\ per\ Capita_{it} + \delta_1 Banking\ Crisis_{it} + \beta_{11} PV_{it}$$
$$+ \beta_{12} PV * KAOPEN_{it})$$

Empirical Model 3(a): Twin Crisis Model

$$Pr\ (Twin\ Crisis = 1) = \ \phi\ (z)$$
$$= \phi\ (\alpha_0 + \beta_1 KAOPEN_{it} + \beta_2 Growth_{it} + \beta_3 Interest\ Rate_{it}$$
$$+ \beta_4 Change\ in\ Terms\ of\ Trade_{it} + \beta_5 Inflation_{it}$$
$$+\ \beta_6 Budget\ Surplus_{it} + \ \beta_7 M2/Reserves_{it}$$
$$+ \beta_8 Domestic\ Credit_{it} + \beta_9 Money\ Growth_{it}$$
$$+ \beta_{10} GDP\ per\ Capita_{it} + \beta_{12} PV_{it} + \beta_{13} PV * KAOPEN_{it})$$

Empirical Model 3(b): Twin Crisis Model with Political Variables

$$Pr\ (Twin\ Crisis = 1) = \ \phi\ (z) = \phi\ (\alpha_0 + \beta_1 KAOPEN_{it} + \beta_2 Growth_{it} +$$
$$\beta_3 Interest\ Rate_{it} + \beta_4 Change\ in\ Terms\ of\ Trade_{it} + \beta_5 Inflation_{it} +$$
$$\beta_6 Budget\ Surplus_{it} + \ \beta_7 M2/Reserves_{it} + \beta_8 Domestic\ Credit_{it} +$$
$$\beta_9 Money\ Growth_{it} + \beta_{10} GDP\ per\ Capita_{it} + \beta_{12} PV_{it} + \beta_{13} PV * KAOPEN_{it})$$

4.7 Results

The results section[115] predominantly reports the results found in tables 4.3, 4.4, 4.5, 4.6 and 4.7. Tables 4.3 and 4.4 examine the impact of the impact of financial liberalization on the likelihood of a banking, currency and twin crises. Furthermore, table 4 looks at the average marginal effects of the intensity of financial liberalization on the likelihood of crises. Tables 4.5, 4.6, and 4.7 looks at the impact of financial liberalization, political institutions and political polarization both jointly and independently on the likelihood of a banking, currency and twin crisis respectively.

4.7.1 Impact of the Intensity of Financial Liberalization on the Likelihood of Crises

Table 4.3[116] looks at the impact of the intensity of financial liberalization on the likelihood of crises using a pooled multivariate probit model. Regression model 1 shows that KAOPEN decreases the likelihood of a banking crisis and this result is statistically significant at the 10% significance level. This finding is in stark contrast to the results reported in earlier research with the use of the financial liberalization dummy variable as inferred by Noy (2004) and Shehzad and De Haan (2008). However, it must also be noted that while the research papers in the past dealt with a binary or a dummy variable for financial liberalization[117], the KAOPEN, is a continuous variable measuring the intensity of financial liberalization. The explicit deposit insurance variable shows that when there is a deposit insurance scheme in place, the likelihood of a banking crisis increases. This result is statistically significant at the 5% significance level and is also consistent with the findings in the literature along with the theoretical notion that explicit deposit insurance induces a moral hazard problem, encouraging banks to undertake greater risks, leaving it susceptible to a crisis. Increase in growth results in a decreased likelihood of a banking crisis and this result is statistically significant at the 1% significance level.

[115] The results section only discusses the results of the findings presented in tables 4.3-4.7, however, appendix 2 (in section 4.10), re-examines these results and therefore these results will also be considered before giving definitive and final conclusive deductions.

[116] The control variables for which the coefficients are statistically insignificant are not discussed in the results section.

[117] While this is not included in the body of the paper, the author has tested the regression results with the financial liberalization dummy variable using this dataset. The result is consistent with the findings found in the literature that the economy is more susceptible to a banking, currency and twin crisis post-liberalization than pre-liberalization.

This finding is also consistent with the findings in the literature. The coefficient for the real interest rate is statistically insignificant and therefore the coefficient is not discussed in this section. It is observed that if there is depreciation in the exchange rate or deviation of the exchange rate then this causes an increase in the likelihood of a banking crisis. This finding is statistically significant at the 1% significance level.

Regression model 2 in table 4.3 looks at the impact of KAOPEN on the likelihood of a currency crisis. Similar to the association with banking crisis, increase in KAOPEN is associated with a decrease in the likelihood of a currency crisis. While, traditionally, the liberalization dummy variable would prove otherwise, which is also the case for this researching study (although the liberalization dummy variable and the regression results associated with it have not been presented in this research paper but has been examined behind the scenes), this proves to show that the intensity of financial liberalization paints a different picture. This result is also statistically significant at the 5% significance level. There are arguably two key reasons why the sign of the coefficient for the liberalization dummy variable is different to that for the intensity of financial liberalization. The first reason could broadly be due to the fact that the dummy variable of financial liberalization is a de jure measure that only takes into account the date upon which liberalization takes place. For example, there are numerous studies that use equity market liberalization as a proxy for financial liberalization. However, this does not take into account the influx of foreign portfolio investments in domestic financial markets. In some cases, countries that declare the equity market to be liberalized are in fact highly regulated. The intensity of financial liberalization deepens the scope for analytical deductions. The second possible reason could be that on average, intensity of financial liberalization reduces the likelihood of a banking, currency and twin crisis. However, there is the possibility that there are thresholds at various levels of financial openness which is unaddressed in this research paper[118], however, for further research this is a trajectory that certainly needs to be explored for comprehensive policymaking purposes.

[118] The empirical chapters that focus on the impact of financial integration on growth and the other that focuses on the impact of financial integration on poverty and inequality deploy the use of the threshold regression methodology. However, for this empirical chapter, it would not only be extensive to incorporate regression methodologies but it would also distort addressing a key research question that needs urgent attention which is to look at the possible of the intensity of financial liberalization on the likelihood of crises rather than using a dummy variable for financial liberalization. Furthermore, this

Growth is associated with a reduction in the likelihood of a currency crisis, the coefficient for which is statistically significant at the 1% significance level. Real interest rate is associated with an increase in the likelihood of a crisis the coefficient for which is statistically significant at the 1% significance level as is the case for depreciation, for which, there is an associated increase in likelihood of a currency crisis, this is also significant at the 1% significance level. Increases in inflation also causes an increase in the likelihood of a currency crisis, the coefficient being statistically significant at the 1% significance level. Interestingly, increase in GDP per capita is associated with an increase in the likelihood of a currency crisis, although the magnitude of the coefficient is not high, the coefficient is still statistically significant at the 1% significance level. The banking crisis dummy variable, that is used as a control variable for currency crisis, shows that when there is a banking crisis, the likelihood of a currency crisis occurring is positive and statistically significant at the 1% significance level. This reiterates the theoretical notion that a banking crisis precedes a currency crisis or that banking sector fragilities can cause currency crashes. [119]Regression model 3 in table 4.3 looks at the impact of the intensity of financial liberalization on the likelihood of a twin crisis. Increase in KAOPEN is associated with a decrease in the likelihood of a twin crisis and this finding is statistically significant at the 1% significance level. The other notable mentions are that an increase in the growth rate results in a decreased likelihood of a twin crisis, this is statistically significant at the 1% significance level. Furthermore, increases in the M2/Reserves and domestic credit results in an increase in the likelihood of a twin crisis, coefficients for both are statistically significant at the 10% significance level.

Table 4.4[120] looks at the average marginal effects for KAOPEN along with the other macroeconomic control variables for the banking crisis model, currency crisis model and the twin crisis model. These values present the probability of a banking, currency and twin crisis occurring when the control variables are at their average

research paper also uses key political variables and interacts it with financial liberalization to see the joint and independent effects on the likelihood of crises.

[119] The crises literature, both from the theoretical perspective and from empirical studies infer and deduce that banking crises precede currency crises. Refer to the theoretical framework and literature review sections.

[120] Note that table 4.4 is constructed using the regressions from table 4.3 and only reports the average marginal effects or the *dy/dx* values at the averages for each of the variables. Therefore, the number of observations, the pseudo R^2 are all equivalent to that of table 4.3.

levels. The values represented when multiplied with 100, give the probability in percentage terms. For instance, observing the banking crisis model, it can be seen that a unit increase in KAOPEN results in a reduction in the likelihood of a banking crisis by 0.7%. If there is a deposit insurance in place, then the economy is 2.4% more susceptible to a banking crisis in developing crisis as opposed to when there is no explicit deposit insurance scheme. Interestingly, in developing countries, depreciation results in an increase in the likelihood of a banking crisis by 7.8%. Growth increase results in a 0.6% decrease in the likelihood of a banking crisis. For the currency crisis model, a unit increase in KAOPEN results in a 1.4% decrease in the likelihood of a currency crisis. A unit increase in growth reduces currency crises by 0.4%. On the contrary, a unit increase in the real interest rate, depreciation and inflation result in an increase in the likelihood of a currency crisis by 0.33%, 0.76% and 0.29% respectively. Furthermore, and rather interestingly, if there is a banking crisis, the probability of having a currency crisis 20.6% more than without a banking crisis. For the twin crisis model, increase in KAOPEN reduces the likelihood of a twin crisis by 0.37% and the other control variables have significantly low probabilities and hence not mentioned in the analysis.

4.7.2 Impact of Political Institutions and Political Polarization on the Likelihood of Crises

Table 4.5 looks at the impact of the intensity of financial liberalization, political institutions and political polarization on the likelihood of a banking, currency and twin crisis. In this section of the analysis, the key independent variable, the KAOPEN or the intensity of financial liberalization tends to be consistent with the findings in table 4.3. There is also a clear trend that shows that deposit insurance, depreciation, domestic credit, M2/Reserves increases the likelihood of a banking crisis. On the contrary, it can be seen that money growth in fact reduces the likelihood of a banking crisis in regression models 7 and 8. However, the focus of this subsection will be on the proxies for political institution and political polarization and accordingly to its interaction with KAOPEN. Winning coalition size tends to decrease the likelihood of a banking crisis. The subsequent interaction term with KAOPEN is however statistically insignificant. Interestingly, for developing economies, increasing opposition seats of the largest party results in an increase in the likelihood of a crisis.

This is statistically significant at the 1% significance level. This is a striking result in the context of the interlinkage between politics and economic performance or macroeconomic vulnerability as is the case here. This brings up an interesting question, particularly for countries in parliamentary systems, whether or not a two thirds majority may actually be beneficial to mitigate financial risks as it would allow the ruling party to pass bills without the opposition party opposing it. This could open up a series of serious political questions regarding the viability and effectiveness of democracies in mitigating financial risks. This is reiterated by the fact that the next variable which is government vote share, illustrating that increasing vote share of the ruling government party results in a decrease in the likelihood of a crisis. As we tend towards a two thirds majority in parliamentary systems, is that a democracy at all when ruling parties can pass bills without any effective veto power in parliament? Furthermore, it also brings into focus, the political system that must be used to govern a developing nation for the economic benefits of the nation.

A finding that is interesting also, is the fact that political globalization increases the likelihood of crises. One would expect enhanced political relations to facilitate and help mitigate financial risks. The political systems variable shows that a parliamentary system has less chance of inducing a banking crisis than a presidential system would. This could be attributed to the fact that developing countries that have presidential systems, tend to take the precedence of autocratic rulers and thereby failing to circumvent and tailor to the needs of the financial market rather focusing on short-term goals in order to satisfy the masses. Control of corruption, rather expectedly, reduces the likelihood of a banking crisis. Finally, rule of law, again, rather expectedly, reduces the likelihood of a banking crisis, however, rule of law, interacted with KAOPEN shows that increasing KAOPEN with enforced rule of law in fact increases the likelihood of a banking crisis. This is statistically significant at the 5% significance level. This result could also be a juncture between institutional functionality and political polarization, that greater presence of rule of law in a developing nation means there is great freedom and higher polarization, in which case, increasing liberalization may mean that the governing body is not able to

effectively exercise their power through their autonomous decision making, resulting in a higher chance of a banking crisis[121].

Table 4.6 looks at the impact of KAOPEN, political institutions and political polarization on the likelihood of a currency crisis. On the whole, it is observed that the results found here are consistent with that found in table 4.4, KAOPEN decreases the likelihood of a currency crisis and this is statistically significant in regression models 1, 2, 3 and 6. Furthermore, it is observed that growth reduces the likelihood of a currency crisis. This is statistically significant in regression models 2, 4, 5, and 6. Real interest rate and depreciation both increase the likelihood of a currency crisis and for both these variables this is statistically significant in regression models 1 through to 8. Inflation also increases the likelihood of a currency crisis along with and rather interestingly, GDP per capita, although for the latter the magnitude of the impact is rather miniscule. As observed in table 4.4, banking crisis increases the likelihood of a currency crisis occurring. The key independent variable of interest along with the base control variables and their retrospective results are not indifferent from those found in table 4.4 despite including a wide range of institutional variables. In regression model 1, we observe that the winning coalition size in fact increases the likelihood of a currency crisis, which is in stark contrast to the impact it has on the likelihood of a banking crisis. In regression model 2, the result found here is consistent with the effect it has on the likelihood of a banking crisis, it is observed that increasing opposition party seats causes an increase in the likelihood of a currency crisis. In regression model 4, while the combined polity score variable is statistically insignificant, when it is interacted with KAOPEN, we find that increasing KAOPEN with an increasing democratic score reduces the likelihood of a currency crisis. This is statistically significant at the 10% significance level.

In regression model 5, it can be seen that political globalization increases the likelihood of a currency crisis, however, when it is interacted with KAOPEN, it reduces the likelihood of a currency crisis. Intuitively, this could indicate that political bridges do not mitigate the risk of financial crashes, they must also transcend to the

[121] This analytical deduction by the author would be supported by existing research papers; however, there are no research papers that have interacted these variables in the context of the crises literature. Thus, an opinionated justification has been proposed as to why the direction of impact suggests increased liberalization with greater rule of law increases the likelihood of crises.

economic hemisphere in order to preserve and protect the macroeconomic stability. In regression model 7, it can be seen rather expectedly that increase in control of corruption results in reduced chances of a currency crisis occurring and this is also the case for when it is interacted with KAOPEN. They are statistically significant at the 5% and 1% significance level respectively. In regression model 8, enforcement of rule of law along with increasing KAOPEN results in decreased likelihood of a currency crisis. This is in line with theoretical and logical expectation contrary to what has been found in table 4.5 when looking at the impact of rule of law and KAOPEN on the likelihood of a banking crisis.

Table 4.7 looks at the impact of KAOPEN, political institutions and political polarization on the likelihood of a twin crisis. KAOPEN follows the trend in terms of the sign as per tables 4.3, 4.5, and 4.6 by indicating that it reduces the likelihood of inducing a twin crisis in regression models 2, and 6. The rest of the control variables have similar influences on the likelihood of a twin crisis as they did for a banking and currency crisis. In regression model 2, it is again observed that increase in opposition party seats results in increased likelihood of a twin crisis. Another sign that is coherent with the other regression results is that of political globalization which tends to increase the likelihood of a twin crisis, however, the interacted term is statistically insignificant. Furthermore, parliamentary system is less likely to induce a twin crisis than a presidential system as illustrated in regression model 6. An argument could be proposed that particularly in the case of developing nations, in a presidential-congressional system, there are lower democratic scores as indicated by the polity scores, compared to that of parliamentary systems where polity scores are higher for developing nations[122].

Regression model 7 and 8 both provide striking results that defy conventional theory. Regression model 7 shows that increase in control of corruption, as expected, decreases the likelihood of a twin crisis. However, when interacted with KAOPEN, it increases the likelihood of a twin crisis. Similarly, regression model 8 shows that

[122] If the descriptive statistics are explored, based on the dataset that is used for this research paper, for developing countries in particular, the polity score with parliamentary systems averages to 6.53 (note: the values range from -10 to 10 where -10 represents perfect autocracy and 10 represents perfect democracy) and for presidential systems the score is significantly lower at 2.24. Therefore, this argument is an interesting argument that should be taken seriously.

greater enforcement of the rule of law reduces the likelihood of a twin crisis, however, when this is interacted with KAOPEN, similar to tables 4.5 and 4.6 (when examining the impact on the likelihood of a banking and currency crisis), it increases the likelihood of a twin crisis. There are some noteworthy aspects to consider given that this research paper observes developing countries only. It could potentially be that both control of corruption and greater enforcement of rule of law mean that the developing economies in question could be both liberal and democratic, akin to liberal Western democracies. However, for a democratic country this means that the governing body, as mentioned in the previous analysis for tables 4.5 and 4.6, could be restricted in terms of enforcing their economic policies due to greater veto power both in parliament and at the administrative level and this could in turn destabilize the efficacy of their policies. Often, opposition parties, particularly in democratic societies of developing countries, forsake the economic welfare of the state in order to garner a greater foothold on power and this could shake up the financial system, leading to vulnerabilities.

***Table 4.3:* Intensity of Financial Liberalization on Likelihood of Crises Time Period: 1980-2013 Income Group: Developing Economies Estimation Methods: Multivariate Probit Method**			
	***(1)* Banking Crisis**	***(2)* Currency Crisis**	***(3)* Twin Crisis**
KAOPEN	*-0.069** *(0.037)*	*-0.102*** *(0.041)*	*-0.133*** *(0.058)*
Deposit Insurance	*0.224*** *(0.105)*		
Growth	*-0.060**** *(0.014)*	*-0.033**** *(0.011)*	*-0.094**** *(0.016)*
Real Interest Rate	*-0.003* *(0.006)*	*0.024**** *(0.006)*	*0.002* *(0.007)*
Depreciation	*0.755**** *(0.276)*	*0.056**** *(0.019)*	*0.007* *(0.008)*
Change in Terms of Trade	*0.001* *(0.005)*	*0.001* *(0.004)*	*-0.006* *(0.006)*
Inflation	*-0.005* *(0.004)*	*0.021**** *(0.006)*	*-0.001* *(0.002)*
Budget Surplus	*-0.001* *(0.007)*	*-0.003* *(0.008)*	*0.009* (0.012)
M2/Reserves	*0.003* *(0.007)*	*0.002* *(0.001)*	*0.003** *(0.002)*
Domestic Credit	*0.003* *(0.002)*	*0.000* *(0.002)*	*0.005** *(0.003)*
Money Growth	*-0.006* *(0.005)*	*0.002* *(0.003)*	*0.001* *(0.003)*
GDP per Capita	*-0.000* *(0.000)*	*0.000*** *(0.000)*	*0.000* *(0.000)*
Debt/GDP	*-0.000* *(0.001)*		
Banking Crisis Dummy		*0.903**** *(0.161)*	
Constant	*-1.317**** *(0.161)*		
Observations	*1450*	*1536*	*1535*
Pseudo R^2	*0.188*	*0.205*	*0.146*
χ^2	*46.527*	*90.620*	*49.018*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

***Table 4.4:* Average Marginal Effects using Probit Regression Time Period: 1980-2013 Income Group: Developing Economies Estimation Methods: Average Marginal Effects using Multivariate Probit Method**			
	***(1)* Banking Crisis**	***(2)* Currency Crisis**	***(3)* Twin Crisis**
KAOPEN	*-0.0071994**	*-0.014109***	*-0.0037455***
Deposit Insurance	*0.0243534***		
Growth	*-0.006252****	*-0.0045212****	*-0.0026416*
Real Interest Rate	*-0.0002877*	*0.0033514****	*0.0000617*
Depreciation	*0.0788111****	*0.0076863****	*0.0001945*
Change in Terms of Trade	*0.0000565*	*0.0001809*	*-0.0001688*
Inflation	*-0.0005717*	*0.0029242****	*-0.000015*
Budget Surplus	*-0.0000719*	*-0.000389*	*0.0002506*
M2/Reserves	*0.000336*	*0.0002235*	*0.0000938**
Domestic Credit	*0.000307*	*0.0000621*	*0.0001394*
Money Growth	*-0.0005747*	*0.0002902*	*0.000022*
GDP per Capita	*-0.000000365*	*0.00000616***	*0.0000024*
Debt/GDP	*-.0000522*		
Banking Crisis Dummy		*0.2060868***	
Constant	*-1.317****		
Observations	*1450*	*1536*	*1535*
Pseudo R^2	*0.188*	*0.205*	*0.146*
χ^2	*46.527*	*90.620*	*49.018*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

Table 4.5: ***Financial Liberalization, Political Polarization and Political Institutions on the Likelihood of Banking Crises Time Period: 1980-2013 Income Group: Developing Economies Estimation Methods: Multivariate Probit Method***								
	(1) Banking Crisis	***(2) Banking Crisis***	***(3) Banking Crisis***	***(4) Banking Crisis***	***(5) Banking Crisis***	***(6) Banking Crisis***	***(7) Banking Crisis***	***(8) Banking Crisis***
KAOPEN	*-0.014*	*-0.083***	*-0.166***	*-0.14***	*-0.000*	*-0.155****	*-0.053*	*0.021*
	(0.138)	*(0.045)*	*(0.083)*	*(0.056)*	*(0.127)*	*(0.047)*	*(0.066)*	*(0.048)*
Deposit Insurance	*0.679****	*0.118*	*0.161*	*0.169*	*0.062*	*0.196*	*0.100*	*0.144*
	(0.181)	*(0.115)*	*(0.136)*	*(0.105)*	*(0.138)*	*(0.121)*	*(0.158)*	*(0.159)*
Growth	*-0.094***	*-0.056****	*-0.068***	*-0.060***	*-0.073***	*-0.060****	*-0.010*	*-0.011*
	(0.019)	*(0.014)*	*(0.016)*	*(0.014)*	*(0.013)*	*(0.016)*	*(0.020)*	*(0.020)*
Real Interest Rate	*0.006*	*-0.003*	*0.005*	*-0.002*	*-0.003*	*-0.003*	*0.015*	*0.016**
	(0.006)	*(0.006)*	*(0.006)*	*(0.006)*	*(0.006)*	*(0.005)*	*(0.009)*	*(0.008)*
Depreciation	*0.615***	*0.823****	*0.739***	*0.744****	*0.771****	*0.604***	*1.817***	*1.766***
	(0.304)	*(0.279)*	*(0.290)*	*(0.276)*	*(0.290)*	*(0.275)*	*(0.609)*	*(0.630)*
Terms of Trade	*0.001*	*0.001*	*0.001*	*0.000*	*-0.002*	*-0.000*	*-0.007*	*-0.007*
	(0.006)	*(0.005)*	*(0.005)*	*(0.005)*	*(0.005)*	*(0.005)*	*(0.008)*	*(0.008)*
Inflation	*-0.007*	*-0.005*	*-0.005*	*-0.005*	*-0.005*	*-0.004*	*0.026***	*0.026***
	(0.004)	*(0.005)*	*(0.004)*	*(0.004)*	*(0.004)*	*(0.004)*	*(0.009)*	*(0.010)*
Budget Surplus	*-0.001*	*0.003*	*0.000*	*-0.003*	*0.001*	*-0.014*	*-0.004*	*-0.005*
	(0.009)	*(0.008)*	*(0.008)*	*(0.007)*	*(0.009)*	*(0.010)*	*(0.013)*	*(0.014)*
M2/Reserves	*-0.032*	*0.003*	*0.012***	*0.003*	*0.001*	*0.002*	*0.003*	*0.005*
	(0.023)	*(0.007)*	*(0.006)*	*(0.007)*	*(0.009)*	*(0.007)*	*(0.008)*	*(0.007)*
Domestic Credit	*0.011****	*0.003*	*-0.001*	*0.004**	*0.002*	*0.012****	*0.008***	*0.009***
	(0.003)	*(0.002)*	*(0.003)*	*(0.002)*	*(0.002)*	*(0.003)*	*(0.003)*	*(0.003)*
Money Growth	*0.000*	*-0.008*	*-0.007*	*-0.006*	*-0.006*	*-0.006*	*-0.023**	*-0.023**
	(0.004)	*(0.005)*	*(0.005)*	*(0.005)*	*(0.005)*	*(0.005)*	*(0.010)*	*(0.010)*
GDP per Capita	*0.000*	*-0.000*	*-0.000*	*-0.000*	*-0.000*	*0.000*	*0.000*	*0.000*
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Debt/GDP	*-0.002*	*0.000*	*-0.002*	*-0.000*	*-0.001*	*-0.000*	*0.001*	*0.001*
	(0.003)	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.002)*	*(0.001)*	*(0.001)*
Coalition	*-0.812***							
	(0.365)							
KAOPEN*Coalition Size	*-0.017*							
	(0.208)							
Opposition Party Seats		*0.004****						
		(0.001)						
KAOPEN*Opposition Party Seats		*0.000*						
		(0.001)						
Government Party Vote Share			*-0.005**					
			(0.003)					
KAOPEN* Government Party Vote Share			*0.002*					
			(0.002)					
Polity				*0.009*				
				(0.012)				
KAOPEN*Polity				*0.007*				
				(0.008)				
Political Globalization					*0.011****			
					(0.004)			
KAOPEN*Political Globalization					*-0.001*			
					(0.002)			
Political System						*-1.013****		
						(0.201)		
KAOPEN*Political System						*0.042*		
						(0.093)		
Corruption Control							*-0.59****	
							(0.188)	
KAOPEN*Corruption Control							*0.033*	
							(0.086)	
Rule of Law								*-0.4****
								(0.163)
KAOPEN*Rule of Law								*0.131***
								(0.061)
Constant	*-0.783***	*-1.452****	*-0.872***	*-1.390***	*-1.744***	*-1.494****	*-2.736***	*-2.703***
	(0.299)	*(0.162)*	*(0.224)*	*(0.169)*	*(0.260)*	*(0.187)*	*(0.354)*	*(0.333)*
Observations	*450*	*1352*	*913*	*1294*	*1246*	*1189*	*1019*	*1020*
Pseudo R^2	*0.159*	*0.110*	*0.132*	*0.096*	*0.124*	*0.140*	*0.238*	*0.237*
χ^2	*51.493*	*60.702*	*68.330*	*53.369*	*68.357*	*86.829*	*58.687*	*52.853*
****Significant at p<0.01; **significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*								

***Table 4.6:* Financial Liberalization, Political Polarization and Political Institutions on the Likelihood of Currency Crises**
Time Period: 1980-2013
Income Group: Developing Economies
Estimation Methods: Multivariate Probit Method

	(1) Currency Crisis	(2) Currency Crisis	(3) Currency Crisis	(4) Currency Crisis	(5) Currency Crisis	(6) Currency Crisis	(7) Currency Crisis	(8) Currency Crisis
KAOPEN	-0.581**	-0.130**	-0.237*	-0.066	0.176	-0.117**	-0.139	-0.086
	(0.285)	(0.055)	(0.119)	(0.058)	(0.152)	(0.049)	(0.090)	(0.084)
Growth	-0.027	-0.035**	-0.014	-0.035**	-0.035**	-0.029*	-0.007	-0.009
	(0.017)	(0.012)	(0.012)	(0.011)	(0.013)	(0.013)	(0.015)	(0.016)
Real Interest Rate	0.013*	0.024***	0.015*	0.021***	0.021***	0.022***	0.022**	0.021**
	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.008)	(0.008)
Depreciation	0.043*	0.055**	2.427***	0.051**	0.049***	0.050***	1.752**	1.599*
	(0.018)	(0.020)	(0.684)	(0.018)	(0.019)	(0.018)	(0.659)	(0.689)
Terms of Trade	-0.003	0.001	0.004	0.002	0.000	0.002	0.010	0.008
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)
Inflation	0.013**	0.021**	-0.010	0.019**	0.019***	0.020***	0.009	0.010
	(0.006)	(0.007)	(0.008)	(0.006)	(0.006)	(0.006)	(0.009)	(0.009)
Budget Surplus	0.013	-0.003	-0.001	-0.002	-0.008	-0.008	-0.006	-0.006
	(0.009)	(0.009)	(0.008)	(0.008)	(0.010)	(0.009)	(0.013)	(0.013)
M2/Reserves	-0.005	0.002	0.003	0.002	0.002	0.005	0.000	-0.001
	(0.009)	(0.002)	(0.004)	(0.001)	(0.002)	(0.004)	(0.004)	(0.005)
Domestic Credit	-0.002	0.000	-0.001	0.000	-0.001	0.002	0.003	0.003
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Money Growth	0.003	0.002	-0.000	0.002	0.003	0.001	-0.006	-0.005
	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)
GDP per Capita	0.000*	0.000	0.000**	0.000*	0.000	0.000**	0.000**	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Banking Crisis	0.610***	0.819***	0.561**	0.863***	0.778***	0.739***	1.232***	1.203***
	(0.207)	(0.164)	(0.237)	(0.162)	(0.169)	(0.166)	(0.278)	(0.283)
Coalition	1.117**							
	(0.469)							
KAOPEN*Coalition Size	0.549							
	(0.354)							
Opposition Party Seats		0.003***						
		(0.001)						
KAOPEN*Opposition Party Seats		0.001						
		(0.001)						
Government Party Vote Share			0.004					
			(0.003)					
KAOPEN* Government Party Vote Share			0.003					
			(0.002)					
Polity				0.010				
				(0.011)				
KAOPEN*Polity				-0.016*				
				(0.009)				
Political Globalization					0.012***			
					(0.003)			
KAOPEN*Political Globalization					-0.005*			
					(0.002)			
Political System						-0.280		
						(0.183)		
KAOPEN*Political System						0.052		
						(0.113)		
Corruption Control							-0.420**	
							(0.166)	
KAOPEN*Corruption Control							-0.34***	
							(0.103)	
Rule of Law								-0.271
								(0.185)
KAOPEN*Rule of Law								-0.209**
								(0.094)
Constant	-2.37***	-0.18***	-2.07***	-2.03***	-2.61***	-2.01***	-2.89***	-2.77***
	(0.387)	(0.183)	(0.246)	(0.168)	(0.251)	(0.175)	(0.304)	(0.307)
Observations	481	1432	1008	1390	1328	1217	1078	1078
Pseudo R^2	0.201	0.212	0.269	0.212	0.231	0.194	0.307	0.290
χ^2	42.312	92.186	55.866	90.241	95.709	79.643	76.109	69.351

****Significant at p<0.01; **significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors.

***Table 4.7:* Financial Liberalization, Political Polarization and Political Institutions on the Likelihood of Twin Crises Time Period: 1980-2013 Income Group: Developing Economies Estimation Methods: Multivariate Probit Method**								
	(1) Twin Crisis	***(2) Twin Crisis***	***(3) Twin Crisis***	***(4) Twin Crisis***	***(5) Twin Crisis***	***(6) Twin Crisis***	***(7) Twin Crisis***	***(8) Twin Crisis***
KAOPEN	*-0.058*	*-0.174***	*-0.071*	*-0.122*	*-0.024*	*-0.268***	*-0.010*	*-0.025*
	(0.140)	*(0.074)*	*(0.128)*	*(0.111)*	*(0.225)*	*(0.072)*	*(0.107)*	*(0.070)*
Growth	*-0.104****	*-0.09****	*-0.07****	*-0.09****	*-0.10****	*-0.092***	*-0.045**	*-0.048**
	(0.026)	*(0.016)*	*(0.019)*	*(0.016)*	*(0.017)*	*(0.018)*	*(0.021)*	*(0.021)*
Real Interest Rate	*0.001*	*0.002*	*0.001*	*0.002*	*0.001*	*0.001*	*0.018*	*0.016*
	(0.007)	*(0.008)*	*(0.007)*	*(0.007)*	*(0.007)*	*(0.007)*	*(0.009)*	*(0.009)*
Depreciation	*-0.002*	*0.008*	*1.498****	*0.005*	*0.012*	*0.014*	*2.200****	*2.186***
	(0.007)	*(0.008)*	*(0.381)*	*(0.008)*	*(0.008)*	*(0.009)*	*(0.625)*	*(0.696)*
Terms of Trade	*-0.014*	*-0.007*	*-0.012*	*-0.006*	*-0.010*	*-0.005*	*0.001*	*0.001*
	(0.007)	*(0.006)*	*(0.009)*	*(0.006)*	*(0.006)*	*(0.006)*	*(0.007)*	*(0.007)*
Inflation	*0.001*	*-0.000*	*-0.016***	*-0.000*	*-0.001*	*0.001*	*0.018*	*0.015*
	(0.004)	*(0.002)*	*(0.006)*	*(0.002)*	*(0.002)*	*(0.003)*	*(0.012)*	*(0.013)*
Budget Surplus	*0.023*	*0.016*	*0.003*	*0.009*	*0.012*	*0.001*	*-0.012*	*-0.007*
	(0.015)	*(0.015)*	*(0.010)*	*(0.011)*	*(0.017)*	*(0.022)*	*(0.015)*	*(0.017)*
M2/Reserves	*0.001*	*0.004**	*0.015***	*0.004**	*0.005***	*0.013**	*0.014**	*0.016***
	(0.002)	*(0.002)*	*(0.006)*	*(0.002)*	*(0.002)*	*(0.006)*	*(0.006)*	*(0.006)*
Domestic Credit	*0.005*	*0.004*	*0.006*	*0.005**	*0.004*	*0.016****	*0.011***	*0.010***
	(0.004)	*(0.003)*	*(0.004)*	*(0.003)*	*(0.003)*	*(0.005)*	*(0.004)*	*(0.003)*
Money Growth	*-0.002*	*0.001*	*-0.001*	*0.000*	*0.001*	*-0.001*	*-0.022*	*-0.021*
	(0.007)	*(0.004)*	*(0.006)*	*(0.003)*	*(0.004)*	*(0.006)*	*(0.011)*	*(0.012)*
GDP per Capita	*0.000**	*-0.000*	*-0.000*	*0.000*	*-0.000*	*0.000*	*0.000*	*-0.000*
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Coalition	*0.581*							
	(0.451)							
KAOPEN*Coalition Size	*-0.080*							
	(0.411)							
Opposition Party Seats		*0.007****						
		(0.001)						
KAOPEN*Opposition Party Seats		*0.001*						
		(0.001)						
Government Party Vote Share			*-0.004*					
			(0.003)					
KAOPEN* Government Party Vote Share			*0.000*					
			(0.003)					
Polity				*0.015*				
				(0.020)				
KAOPEN*Polity				*-0.012*				
				(0.016)				
Political Globalization					*0.025****			
					(0.005)			
KAOPEN*Political Globalization					*-0.002*			
					(0.003)			
Political System						*-1.186***		
						(0.512)		
KAOPEN*Political System						*0.035*		
						(0.176)		
Corruption Control							*-0.82****	
							(0.288)	
KAOPEN*Corruption Control							*0.243***	
							(0.107)	
Rule of Law								*-0.445**
								(0.260)
KAOPEN*Rule of Law								*0.236****
								(0.079)
Constant	*-2.215****	*-2.230****	*-2.006****	*-2.03****	*-3.40****	*-2.418****	*-3.418****	*-3.04****
	(0.372)	*(0.167)*	*(0.269)*	*(0.167)*	*(0.339)*	*(0.219)*	*(0.481)*	*(0.428)*
Observations	*478*	*1430*	*1004*	*1388*	*1322*	*1214*	*1080*	*1080*
Pseudo R^2	*0.179*	*0.199*	*0.300*	*0.170*	*0.229*	*0.235*	*0.422*	*0.400*
χ^2	*37.887*	*73.377*	*71.578*	*69.277*	*78.645*	*74.711*	*87.449*	*76.663*

****Significant at p<0.01; **significant at p<0.05, *significant at p<0.10*
Note: Numbers in brackets are robust standard errors.

4.8 Conclusion

This research paper investigates the impact of the intensity of financial liberalization on the likelihood of a banking, currency and twin crisis using a dataset that includes 93 developing countries over the time period 1980-2013. An integral component of this researching study also examines the impact of political institutions and political polarization independently, and jointly with the intensity of financial liberalization on the likelihood of a banking, currency and twin crisis. The econometric technique deployed in this research paper includes the multivariate probit regression model. Appendix 3 (refer to section 4.11) validates these findings through robustness checks with different econometric methods. The key inferences deduced in this research paper are the following:

1. For developing countries, it is observed that increasing intensity of financial liberalization (or the variable KAOPEN) decreases the likelihood of a banking, currency and twin crisis. The robustness checks in appendix 3 of section 4.11, which includes the usage of the lagged variables, the deployment of the conditional fixed effects logit model and the random effects probit model, confirm the uniformity of the findings.
2. In assessing the impact of the key macroeconomic determinants that affect the likelihood of banking crises, it is evident that in the presence of an explicit deposit insurance scheme, there is a greater chance of a banking crisis occurring. This confirms the moral hazard problem associated with deposit insurance schemes. Growth and money growth reduce the likelihood of a banking crisis on the other hand increase in the depreciation of the exchange rate, m2/reserves and domestic credit increase the likelihood of a banking crisis. Depreciation, real interest rate, inflation, and a banking crisis increase the likelihood of a currency crisis but growth reduces the likelihood of a currency crisis. For the case of twin crises, depreciation, m2/reserves and domestic credit increase the likelihood of a twin crisis but growth reduces the likelihood of a twin crisis.
3. On the basis of the proxies used to measure political institutions and political polarization and their retrospective impact on the likelihood of crises it can be inferred that improvements in the conditions of political institutions, in

general, decrease the likelihood of a banking, currency and twin crisis. Interestingly, parliamentary systems as opposed to presidential systems, have a lower likelihood of inducing a banking and a twin crisis. Political polarization generally tends to increase the likelihood of a banking, currency and twin crisis.

The key inference deduced in this research paper contradicts the findings in the empirical literature in the associated field of research. The literature tends to examine pre-and post-liberalization impacts on the likelihood of a banking crisis[123] and find that post-liberalization, there is a greater likelihood of a banking crisis. However, a dummy variable is predominantly used to specify financial liberalization. In this research paper however, the KAOPEN variable is used which measures the intensity of financial liberalization. The inference shows that in general, for developing countries, it could be argued that increase in the intensity of financial liberalization is not necessarily associated with increase in the likelihood of a banking, currency and/or a twin crisis. However, this finding does not reject the argument that the economy is more susceptible to a banking, currency and twin crisis, post-liberalization, given the liberalization variable is binary. For developing countries, despite being common knowledge that institutional improvements mitigates the risk of financial crashes, this research paper confirms these theories with various proxies. One of the most interesting findings of the research paper stems from the impact of political polarization and its effect on the likelihood of crises. In developing economies, it is observed that higher polarization results in increased likelihood of crises. Therefore, from the perspective of the preservation and the welfare of the state, both in the short and the long term, there are numerous socio-political decisions policymakers must make. Should policymakers compromise their stance on endorsing democracy even if polarization (which can increase with democracy) can leave the financial system susceptible to a crisis? This question certainly opens an avenue that is beyond the researching scope of the thesis. However, these factors must be taken into serious considerations by policymakers, government officials and most importantly economists, particularly when making a case for developing countries.

[123] The literature tends to usually examine the impact on the likelihood of a banking crisis. Research papers examining the impact of financial liberalization on the likelihood of a currency crisis is usually conjoined with the impact on a banking crisis. Individual examination, as noted in the empirical and theoretical review is limited for the impact on currency crisis alone.

4.8.1 Contribution to the Literature

Contrary to the predominantly used variable for financial liberalization in the existing researching arena, this research paper uses the Chinn-Ito index as opposed to the binary financial liberalization variable that takes the value of 1 or 0. There are no existing research paper that has looked at the likelihood of a crisis at different levels of financial openness, especially with the Chinn-Ito index that measures the intensity of financial liberalization. This research paper also divulges into the impact of political polarization, independently and jointly with financial liberalization on the likelihood of a banking, currency and twin crisis. While, there is a common tendency for economists to only use a political variable to serve as a control for 'law and order' for example, these research papers however, do not explore and definitely do not sufficiently examine the impact of key political variables and their resulting impact on the likelihood of crisis. This certainly was and still continues to be an 'elephant in the room' due to the severity in which these political theories have been untested empirically. This research paper addresses these problems and considers political factors to be a fundamental component of the economic manifestations of developing countries and thereby makes a significant contribution to the literature. Furthermore, even when political variables have been used in the past, the coefficients for these political variables systematically tended to be statistically insignificant.

4.8.2 Suggestions for Further Work

An unavoidable extension of this researching work would be to explore and determine the threshold of the intensity of financial liberalization on the likelihood of minimizing a banking, currency and twin crisis using a probit or logit regression method. The novelty of this research would not only be stimulating in the realms of academia but policymakers could certainly benefit if they were able pinpoint threshold levels after which economies are susceptible to a currency crisis for instance. This could then be explored for other key macroeconomic determinants as well. Another avenue that should also be heavily explored, particularly in the context of developing economies, is the impact of political factors and how governments can redesign institutional setups in order to accommodate growth while mitigating the risk of a financial collapse.

4.9 Appendix 1: Explorative Data Analysis

4.9.1 Explorative Data Analysis 1: Historical Trends

***Panel 4.1:* Historical Trends of KAOPEN and Episodes of Banking, Currency and Twin Crises**

***Figure 4.1:* Crises Episodes**

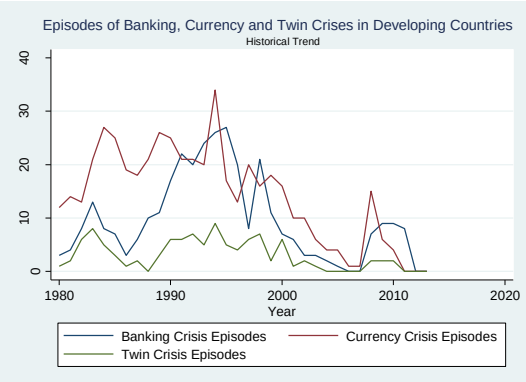
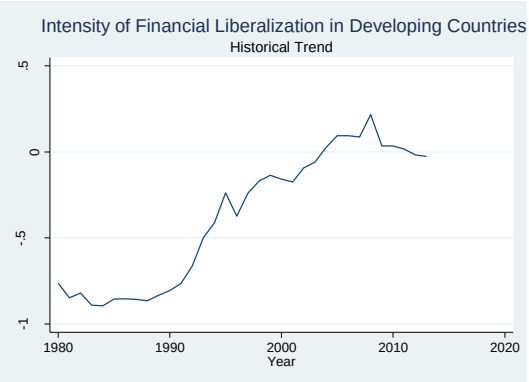


***Figure 4.2:* KAOPEN**



Panel 1 looks at the historical trends of KAOPEN and the number of episodes of banking, currency and twin crises in the dataset. Figure 4.1 shows the episodes of banking, currency and twin crises that have occurred each year from 1980-2013. In general it can be observed that historically developing countries have undergone more currency crises than banking crises. Figure 4.2 illustrates the historical trend of KAOPEN, there was a steady increase from the 90s, but there is a slow decline after the global financial crash of 2008/09.

4.9.2 Explorative Data Analysis 2: Scatter Graphs

***Panel 4.2:* Scatter Plots of KAOPEN on Episodes of Banking, Currency and Twin Crises**

***Figure 4.3:* KAOPEN on Banking Crisis**

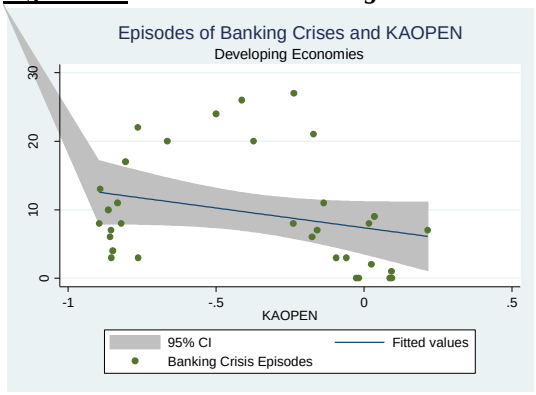


***Figure 4.4:* KAOPEN on Currency Crisis**

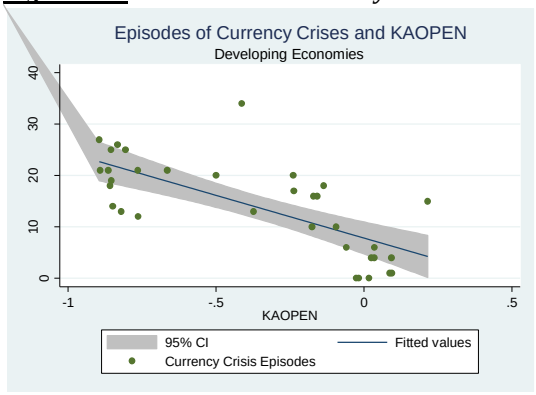
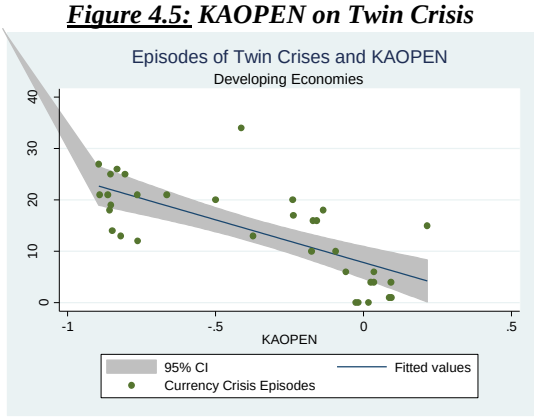


***Figure 4.5:* KAOPEN on Twin Crisis**



Panel 2 illustrates the relationship between KAOPEN and the episodes of crises. Figures 4.3, 4.4 and 4.5 resonate with the same picture that the probit regression results gave, that increasing KAOPEN results in decreased episodes of banking, currency and twin crisis.

4.9.2 Explorative Data Analysis 3: Quadratic Relationships

***Panel 4.3:** Quadratic Relationships of KAOPEN and Episodes of Banking, Currency and Twin Crises*

***Figure 4.6:** KAOPEN on Banking Crisis*

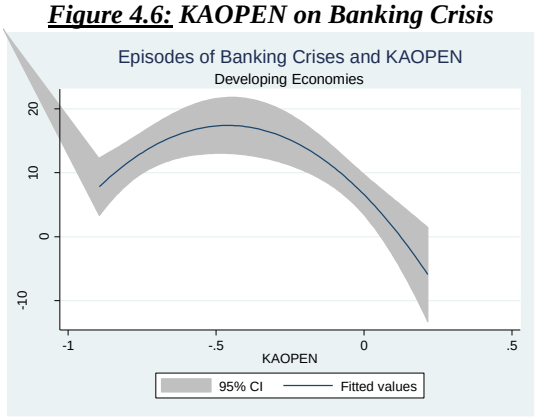


***Figure 4.7:** KAOPEN on Currency Crisis*

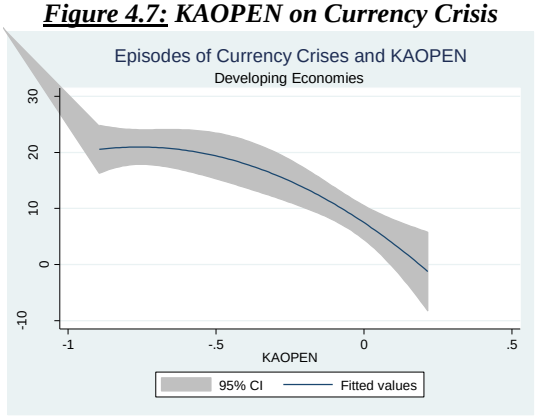
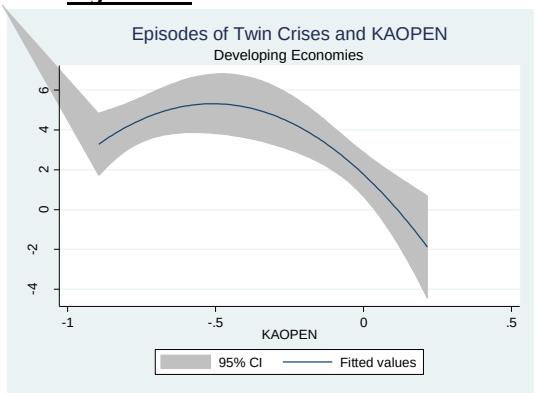


***Figure 4.8:** KAOPEN on Twin Crisis*



In this research paper, in the probit regression analysis, along with the various robustness tests executed, the squared term and its subsequent regression results have not been examined. This is because Angkinand, Sawangngoenyuang, and Wihlborg (1998) in their research paper concluded from their study that there is an inverted U-shaped relationship between financial openness and likelihood of a twin crisis. This goes to show that if the technicality of the threshold models could be applied in the probit regression model, the point after which KAOPEN causes a decline in the likelihood of a crisis can be determined. However, this is beyond the scope of this particular research paper.

4.10 Appendix 2: Predictive Margins

The predictive margins section graphically illustrates the relationship between the key independent variable of interest, KAOPEN, along with the proxies for political institutions and political polarization on the likelihood of a banking, currency and twin crisis.

4.10.1 Predictive Margins: Intensity of Financial Liberalization on Likelihood of Crises

From figures 4.9, 4.10, and 4.11, it is evident that increasing KAOPEN, or increasing intensity of financial liberalization results in a decreased likelihood of a banking, currency and twin crisis respectively.

Panel 4.4: Predictive Margins of Intensity of Financial Liberalization

Figure 4.9: KAOPEN on Banking Crisis

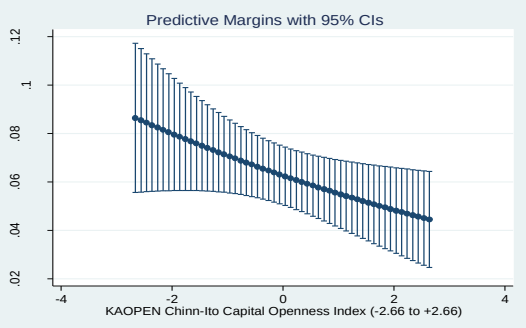


Figure 4.10: KAOPEN on Currency Crisis

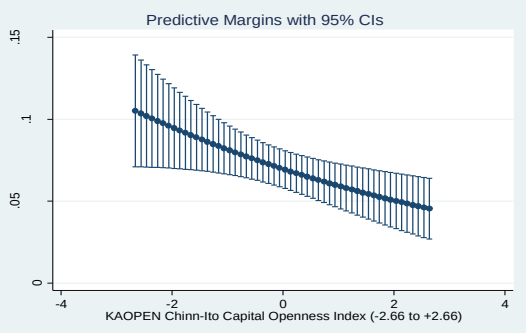
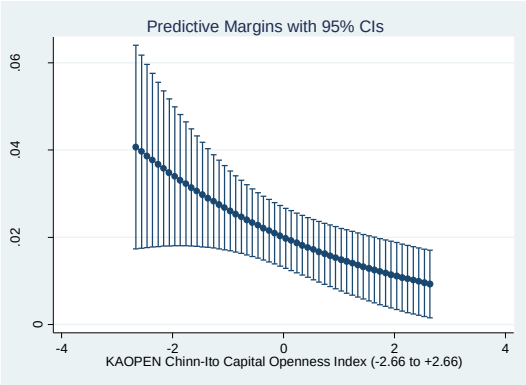


Figure 4.11: KAOPEN on Twin Crisis



4.10.2 Predictive Margins: Political Factors on Likelihood of Crises

There are four proxy variables used to account for political institutions and four to account for political polarization and their subsequent impact on the likelihood of crises. The probit regression results for these are presented in tables 4.5, 4.6 and 4.7. However, the graphical representation is presented in this subsection. Panel 5 looks at the predictive margins of political factors on the likelihood of a banking crisis. In figure 4.12 it is evident that increase in the winning coalition size decreases the likelihood of a banking crisis. This is consistent with the sign of the regression coefficient in table 4.5. Increase in opposition party increases the likelihood of a banking crisis according to figure 4.13. Similarly, increase in government party vote share decreases the likelihood of a crisis as illustrated in figure 4.14. Figure 4.15 does not paint a definitive picture as to whether or not increase in polity score increases the likelihood of a banking crisis. The coefficient for combined polity score is statistically insignificant in table 4.5. In figure 4.16 it is seen that political globalization increases the likelihood of a banking crisis and in figure 4.17 it is evident that parliamentary systems reduce the likelihood of a banking crisis. Control of corruption and enforcement of rule of law both reduce the likelihood of a banking crisis as shown in figures 4.18 and 4.19 respectively.

Panel 6 looks at the predictive margins of political institutions and political polarization on the likelihood of a currency crisis. Winning coalition size, opposition party seats, government vote share, polity score and political globalization increase the likelihood of a currency crisis as illustrated in figures 4.20, 4.21, 4.22, 4.23, and 4.24 respectively. The regression coefficients in table are not statistically significant for a few of these variables therefore the findings from these illustrations cannot be taken for definitive deductive purposes. A parliamentary system reduces the chances of a currency crisis and controlled corruption and enhancement of rule of law reduces the likelihood of a currency crisis as illustrated in figures 4.25, 4.26 and 4.27 respectively. Panel 7 looks at the predictive margins of political factors on the likelihood of twin crisis. Winning coalition size, opposition party seats, combined polity score and political globalization increase the likelihood of a twin crisis as shown in figures 4.27, 4.29, 4.31 and figure 4.32 respectively. Increase in government vote share, control of corruption and rule of law as presented in figures 4.30, 4.34 and

4.35 respectively, all reduce the likelihood of a twin crisis. However, for figure 4.35, it must be noted that that the results are only significant for a limited number of observations, especially when the rule of law ranges from -1 to 0. A parliamentary system reduces the chances of a twin crisis occurring than a presidential system in a developing country as presented in figure 4.33. For the regression coefficients that are statistically significant in table 4.7, the direction of impact on the likelihood of crisis, is consistent with the figures presented in panel 7.

Panel 4.5: Predictive Margins of Political Factors on Likelihood of Banking Crisis

Figure 4.12: Winning Coalition Size

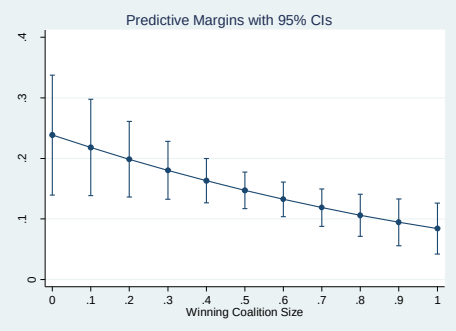


Figure 4.13: Opposition Party Seats

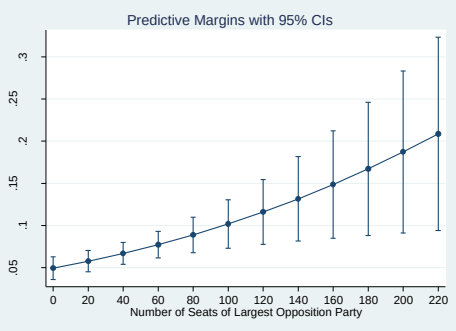


Figure 4.14: Government Party Seats

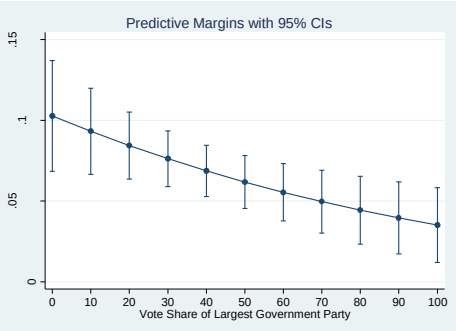


Figure 4.15: Polity Score

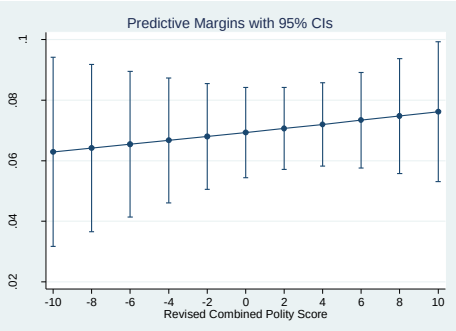


Figure 4.16: Political Globalizaiton

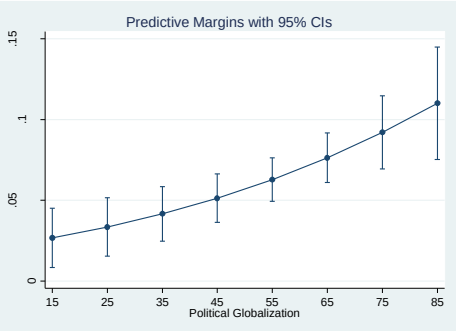


Figure 4.17: Political System

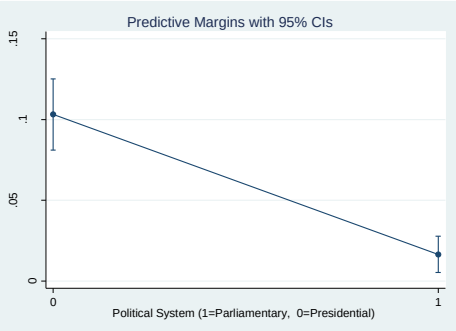


Figure 4.18: Control of Corruption

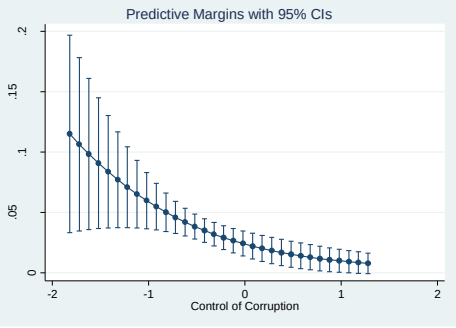
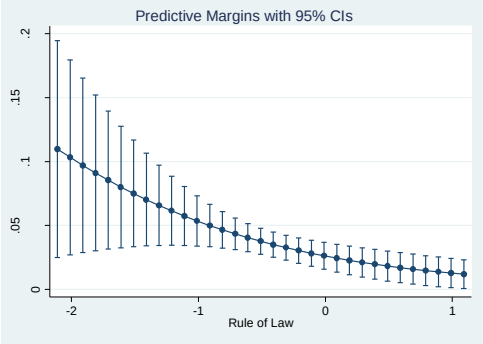


Figure 4.19: Rule of Law



Panel 4.6: Predictive Margins of Political Factors on Likelihood of Currency Crisis

Figure 4.20: Winning Coalition Size

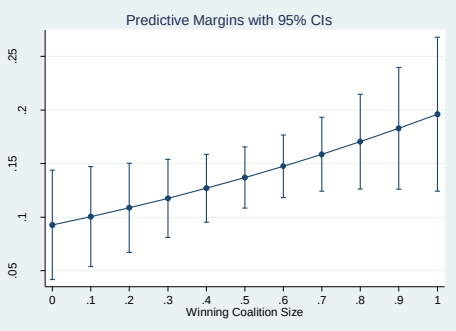


Figure 4.21: Opposition Party Seats

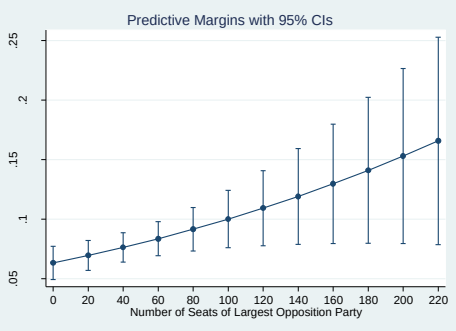


Figure 4.22: Government Party Seats

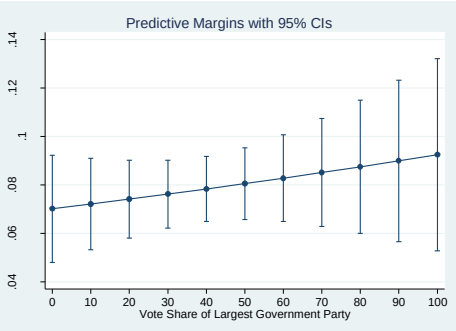


Figure 4.23: Polity Score

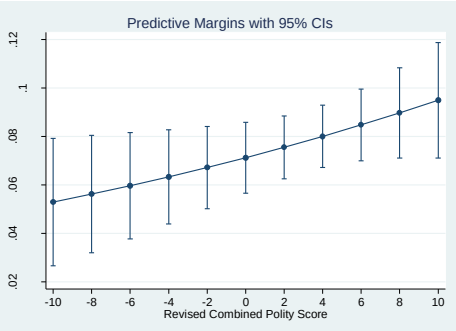


Figure 4.24: Political Globalizaiton

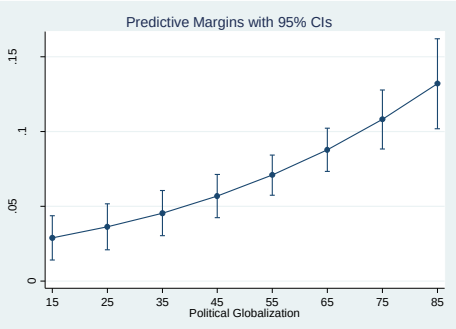


Figure 4.25: Political System

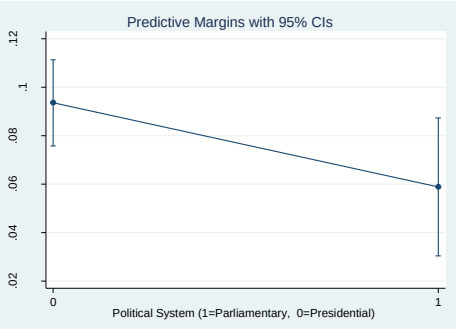


Figure 4.26: Control of Corruption

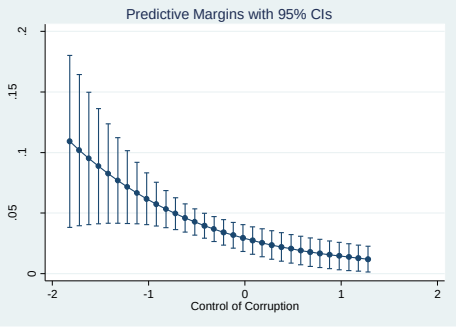
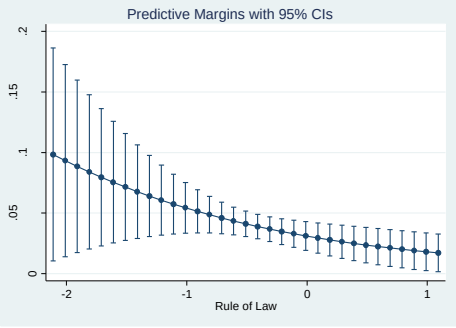


Figure 4.27: Rule of Law



Panel 4.7: Predictive Margins of Political Factors on Likelihood of Twin Crisis

Figure 4.28: Winning Coalition Size

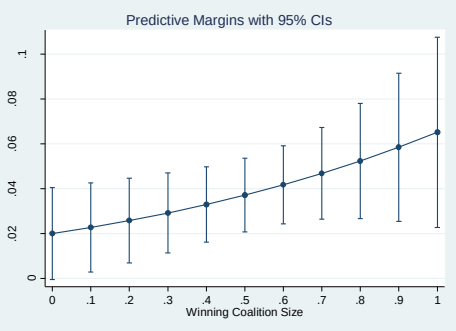


Figure 4.29: Opposition Party Seats

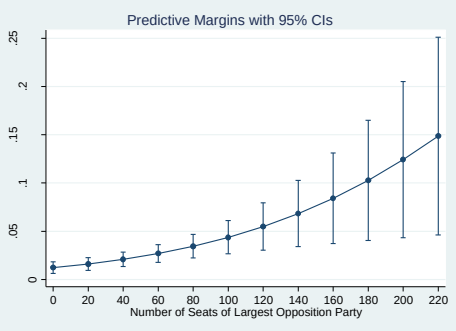


Figure 4.30: Government Party Seats

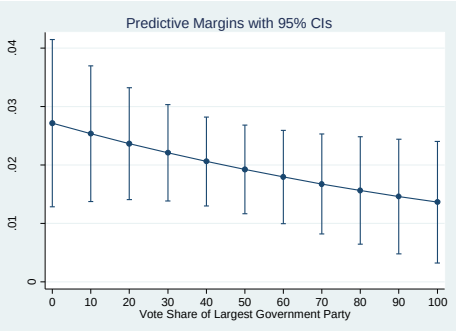


Figure 4.31: Polity Score

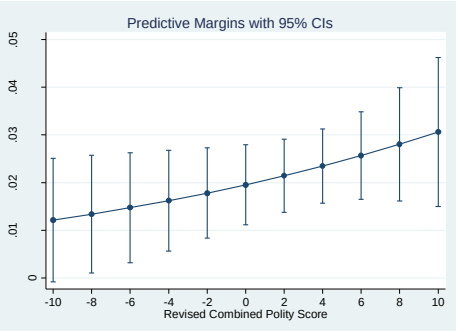


Figure 4.32: Political Globalizaiton

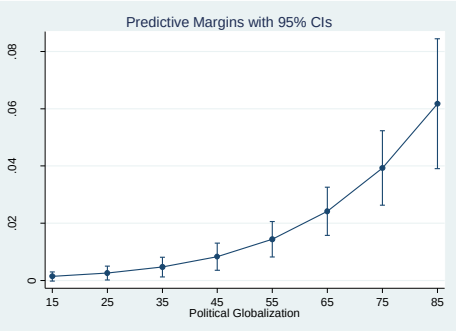


Figure 4.33: Political System

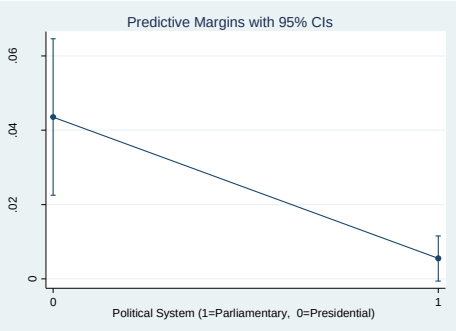


Figure 4.34: Control of Corruption

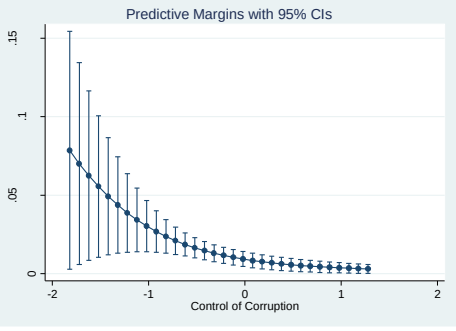
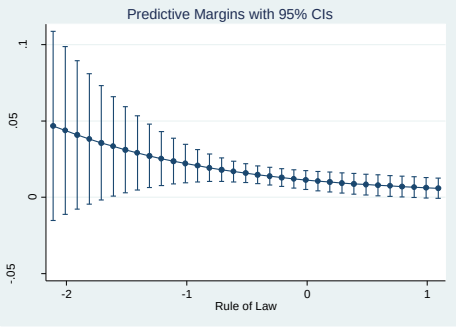


Figure 4.35: Rule of Law



4.11 Appendix 3: Robustness Checks

These robustness checks are used to validate the findings in the body of the research paper, they are presented accordingly and they are the following:

1. Robustness Test 1: Lagged Variables
2. Robustness Test 2: Conditional Fixed Effects Logit Model
3. Robustness Test 3: Random Effects Probit Model
4. Robustness Test 4: Credit Boom and the Mundlak Approach

4.11.1 Robustness Test 1: Lagged Variables

Table 4.8: *Intensity of Financial Liberalization on Likelihood of Crises using Lagged Variables* *Time Period: 1980-2013* *Income Group: Developing Economies* *Estimation Methods: Multivariate Probit Method*			
	(1) ***Banking Crisis***	***(2)*** ***Currency Crisis***	***(3)*** ***Twin Crisis***
KAOPEN$_{t-1}$	*-0.064** *(0.038)*	*-0.092*** *(0.039)*	*-0.136*** *(0.061)*
Deposit Insurance$_{t-1}$	*0.202** *(0.112)*		
Growth$_{t-1}$	*-0.068**** *(0.013)*	*-0.047**** *(0.011)*	*-0.060**** *(0.015)*
Real Interest Rate$_{t-1}$	*0.004* *(0.006)*	*0.005* *(0.005)*	*0.016**** *(0.006)*
Depreciation$_{t-1}$	*0.409* *(0.252)*	*0.341* *(0.271)*	*0.218* *(0.445)*
Change in Terms of Trade$_{t-1}$	*0.002* *(0.005)*	*0.003* *(0.004)*	*0.005* *(0.006)*
Inflation$_{t-1}$	*-0.001* *(0.005)*	*0.010**** *(0.003)*	*0.003* *(0.005)*
Budget Surplus$_{t-1}$	*0.014* *(0.010)*	*-0.013** *(0.007)*	*-0.006* *(0.008)*
M2/Reserves$_{t-1}$	*0.009* *(0.006)*	*0.003* *(0.002)*	*0.004*** *(0.002)*
Domestic Credit$_{t-1}$	*0.005**** *(0.002)*	*-0.001* *(0.002)*	*0.006*** *(0.003)*
Money Growth$_{t-1}$	*-0.002* *(0.004)*	*0.010**** *(0.003)*	*-0.001* *(0.004)*
GDP per Capita$_{t-1}$	*-0.000* *(0.000)*	*0.000*** *(0.000)*	*0.000* *(0.000)*
Debt/GDP$_{t-1}$	*0.002** *(0.001)*		
Banking Crisis$_{t-1}$		*0.673**** *(0.167)*	
Constant	*-1.420**** *(0.158)*	*-1.721**** *(0.127)*	*-2.303**** *(0.136)*
Observations	*1357*	*1438*	*1438*
Pseudo R^2	*0.096*	*0.112*	*0.106*
χ^2	*48.156*	*67.462*	*41.872*
****Significant at p<0.01; **significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

The usage of lagged variables for both the financial liberalization variable as well as the macroeconomic control variables is of common practice in the associated field of research. Often, it is attributed to the fact that past occurrences, usually in the

form of the de jure financial liberalization (dummy variable) that takes precedence and eventually has a bearing on growth and/or fragility. This also goes for all the other control variables. In order to avoid the conflict of argument, despite the financial liberalization variable being used here as being continuous and measuring the intensity rather than the date of liberalization, it could potentially discard all claims of delegitimizing the results acquired in the body of the research paper.

Table 4.8 looks at the impact of the lagged effect of the intensity of financial liberalization, along with lagged effects of other macroeconomic controls on the likelihood of a banking, currency and twin crisis. The results found in regression model 1 (the banking crisis model) are fairly consistent with that of table 4.3. Lagged KAOPEN reduces the likelihood of a banking crisis and the result is statistically significant at the 10% significance level. Deposit insurance increases the likelihood of a banking crisis and the result is also statistically significant at the 10% significance level. Growth reduces the likelihood of a banking crisis, the coefficient for which is statistically significant at the 1% significance level. Domestic credit increases the likelihood of a banking crisis and the result is statistically significant at the 1% significance level. An additional finding that was not statistically significant in the previously reported regressions is that external debt tends to increase the likelihood of a crisis when it is lagged. Therefore, this goes to show accumulated external debt in the past, can propagate a banking crisis in the present. Regression model 2 shows that lagged KAOPEN, growth and budget surplus reduce the likelihood of a currency crisis and inflation, GDP per capita and banking crisis increases the likelihood of a currency crisis. The results are consistent with those found in table 4.3. For the twin crisis model, the impact on the likelihood of a twin crisis with those without lags are not dissimilar except real interest rate tends to increase the likelihood of a twin crisis, for which the coefficient is statistically significant at the 1% significance level.

4.11.2 Robustness Test 2: Conditional Fixed Effects Logit Model

***Table 4.9:* Intensity of Financial Liberalization on Likelihood of Crises using Fixed Effects Logit Model Time Period: 1980-2013 Income Group: Developing Economies Estimation Methods: Conditional Fixed Effects Logit Model**			
	(1)* *Banking Crisis	***(2)* *Currency Crisis***	***(3)* *Twin Crisis***
KAOPEN	*-0.647*** (0.224)*	*-0.289** (0.165)*	*-0.283 (0.518)*
Deposit Insurance	*0.994* (0.541)*		
Growth	*-0.146*** (0.039)*	*-0.057* (0.032)*	*0.107 (0.089)*
Real Interest Rate	*-0.015 (0.012)*	*0.009 (0.009)*	*0.030 (0.034)*
Depreciation	*0.826 (0.555)*	*0.029 (0.028)*	*4.850*** (1.583)*
Change in Terms of Trade	*-0.006 (0.011)*	*-0.009 (0.009)*	*-0.024 (0.027)*
Inflation	*0.005 (0.008)*	*0.011*** (0.004)*	*0.069** (0.033)*
Budget Surplus	*-0.036 (0.049)*	*-0.025 (0.040)*	*-0.132 (0.096)*
M2/Reserves	*0.119** (0.048)*	*0.024 (0.018)*	*0.214*** (0.069)*
Domestic Credit	*0.022 (0.013)*	*0.032*** (0.012)*	*0.041** (0.018)*
Money Growth	*-0.026** (0.010)*	*0.003 (0.006)*	*-0.043* (0.024)*
GDP per Capita	*-0.002*** (0.001)*	*-0.001*** (0.000)*	*-0.001 (0.001)*
Debt/GDP	*0.009* (0.005)*		
Banking Crisis Dummy		*0.951*** (0.363)*	
Constant			
Observations	*609*	*736*	*323*
Pseudo R^2	*0.275*	*0.222*	*0.504*
χ^2	*104.243*	*100.468*	*80.365*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10 Note: Numbers in brackets are robust standard errors.*			

The conditional fixed effects logit model was used as a robustness check in order to account for endogeneity bias and to also account for unobserved heterogeneity. Furthermore, it erodes the problem of omitted variable bias. The coefficients of the variables are fairly consistent with that in table 4.3, however, for regression model 1, it is observed that M2/Reserves increases the likelihood of a banking crisis and money growth reduces the likelihood of a crisis along with GDP per capita. Furthermore, as observed in table 4.8, it is also observed that debt increases the likelihood of a banking crisis. For regression model 2, the noteworthy and the variables that shed light or give a new perspective is that of domestic credit, which while acceptable in theory was not statistically significant in table 4.3, however, it is observed here that domestic credit increases the likelihood of a currency crisis. However, this result is in contrast to the one found in table 4.3, and that is the fact that GDP per capita was seen to induce a currency crisis, however,

according to this result, it reduces the likelihood of a currency crisis. For the twin crisis model, it can be seen that depreciation, inflation, M2/Reserves, and domestic credit increase the likelihood of a twin crisis whereas money growth reduces it.

4.11.3 Robustness Test 3: Random Effects Probit Model

Table 4.10: Intensity of Financial Liberalization on Likelihood of Crises using Random Effects Probit Model *Time Period: 1980-2013* *Income Group: Developing Economies* *Estimation Methods: Random Effects Probit Model*			
	(1) *Banking Crisis*	*(2)* *Currency Crisis*	*(3)* *Twin Crisis*
KAOPEN	*-0.230**** *(0.087)*	*-0.146*** *(0.064)*	*-0.203** *(0.109)*
Deposit Insurance	*0.364* *(0.247)*		
Growth	*-0.084**** *(0.018)*	*-0.035*** *(0.015)*	*-0.115**** *(0.023)*
Real Interest Rate	*-0.004* *(0.006)*	*0.026**** *(0.007)*	*0.002* *(0.007)*
Depreciation	*0.670*** *(0.299)*	*0.049*** *(0.019)*	*0.012* *(0.023)*
Change in Terms of Trade	*-0.002* *(0.005)*	*-0.002* *(0.005)*	*-0.009* *(0.008)*
Inflation	*-0.001* *(0.004)*	*0.020**** *(0.005)*	*-0.000* *(0.004)*
Budget Surplus	*-0.019* *(0.021)*	*-0.007* *(0.014)*	*0.014* *(0.027)*
M2/Reserves	*0.021*** *(0.009)*	*0.002* *(0.004)*	*0.006* *(0.004)*
Domestic Credit	*0.009** *(0.005)*	*0.003* *(0.003)*	*0.011*** *(0.005)*
Money Growth	*-0.011*** *(0.005)*	*0.003* *(0.004)*	*0.000* *(0.006)*
GDP per Capita	*-0.000*** *(0.000)*	*0.000* *(0.000)*	*-0.000* *(0.000)*
Debt/GDP	*0.001* *(0.002)*		
Banking Crisis Dummy		*0.812**** *(0.189)*	
Constant	*-1.755**** *(0.348)*	*-2.514**** *(0.243)*	*-2.835**** *(0.419)*
Observations	*1450*	*1536*	*1535*
χ^2	*49.329*	*88.612*	*30.482*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

The reason why random effects probit model was included as a robustness checks were to validate the results found using the multivariate probit model illustrated in table 4.3. The reason for using the random effects probit model are the following: (a) accounts for variables that are time invariant; (b) often, there is the possibility particularly for cases of financial liberalization where the variable, despite being continuous and measuring intensity and not being a binary variable, is often persistent over time for a specific country and this may give a biased result as this is a criticism directed towards the usage of fixed effects (Richey and Brown, 2016); (c) another criticism directed towards using fixed effects is that it excludes the non-crisis nations, but the random effects probit model includes both the crisis and non-crisis nations. The results observed in table 4.10 are not indifferent to that observed in table 4.3 and therefore there is no need for repetition.

4.11.4 Robustness Test 4: Credit Boom and the Mundlak Approach

This sub-section addresses three key facets to validate the findings reported in the main findings and they include (1) the usage of the HP filter in order to account for 'credit boom,' (2) the Mundlak approach to address endogeneity, and (3) the usage of the lagged dependent variable to model dynamics.

The Hodrick-Prescott (HP) filter has been used to decompose the time series into a trend for the case of the annual data used in this panel dataset for the 'domestic credit' variable. After determining the 'HP trend' using $\lambda=100$[124], the residual is extracted and then this is denoted as 'credit boom.' Note, that the lagged value for the 'credit boom' variable has been used. This approach is similar to the approach taken by Caballero (2014), however, while Caballero (2014) looks at bonanzas and lending booms, focusing on FDI and EFPI, for this robustness check the domestic credit variable has been used. Furthermore, in accordance with the approach taken by Caballero (2014), a dummy variable for 'credit boom' has been developed, where a positive residual equates to one (boom) and a negative residual equates to zero. The Mundlak approach has also been adopted in this research paper to validate the main findings of this chapter. The Mundlak approach averages the time variant variables and thereby is a means to address the problem of endogeneity. Furthermore, the lagged dependent variables are included as regressors to model dynamics for the banking, currency and twin crisis models.

Table 4.11 uses the credit boom variable (continuous), deploys the Mundlak approach to average the time variant variables and models dynamics by using lagged dependent variables. The results for the control variables are fairly consistent with those reported in the main findings section. Rather expectedly, inclusion of the lagged dependent variable illustrates that a banking crisis in the previous time period is highly likely to cause a banking crisis in the present. This is also true for when the lagged variables are taken for the currency crisis and the twin crisis, both of which show positive and statistically significant results. However, it is observed that the results for the key independent variable of interest, the KAOPEN variable, are

[124] The lambda or $\lambda=100$ is commonly used when filtering annual data. This is supported by Backus and Kehoe (1992), the European Central Bank (2000) and Apel (1996).

statistically insignificant despite having a negative association with the likelihood of crisis. However, the ‘credit boom’ variable displays a positive and statistically significant coefficient which suggests that credit booms are in fact more likely to cause a crisis. Table 4.12 reports similar findings to that of table 4.11. However, for this table, as per the method deployed by Caballero (2014), a dummy variable is used to account for ‘credit boom.’ It is observed that when there is a credit boom there is a greater likelihood of a banking crisis occurring as opposed to when there is not a credit boom. This goes to show that perhaps developing countries in particular, do not have the necessary institutional prerequisites to sustain credit booms.

***Table 4.11:* Intensity of Financial Liberalization on Likelihood of Crises using Credit Boom and Mundlak Approach Time Period: 1980-2013; Income Group: Developing Economies; Estimation Method: Multivariate Probit Regression**			
	(1)* *Banking Crisis	***(2)* *Currency Crisis***	***(3)* *Twin Crisis***
KAOPEN	*-0.112* *(0.081)*	*-0.068* *(0.072)*	*-0.174* *(0.100)*
Deposit Insurance	*0.001* *(0.156)*		
Growth	*-0.054*** *(0.017)*	*-0.023* *(0.016)*	*-0.063*** *(0.024)*
Real Interest Rate	*0.001* *(0.008)*	*0.012* *(0.009)*	*-0.009* *(0.010)*
Depreciation	*0.338* *(0.336)*	*2.142**** *(0.565)*	*1.279**** *(0.364)*
Change in Terms of Trade	*-0.002* *(0.006)*	*-0.000* *(0.004)*	*-0.016** *(0.007)*
Inflation	*-0.003* *(0.005)*	*-0.010* *(0.008)*	*-0.013** *(0.014)*
Budget Surplus	*0.008* *(0.012)*	*-0.005* *(0.012)*	*0.014* *(0.014)*
M2/Reserves	*0.019** *(0.008)*	*0.012* *(0.008)*	*0.018* *(0.009)*
Credit Boom$_{t-1}$	*0.050**** *(0.011)*	*0.004* *(0.009)*	*0.014* *(0.015)*
Money Growth	*-0.002* *(0.005)*	*0.000* *(0.009)*	*-0.002* *(0.006)*
GDP per Capita	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*	*-0.000**** *(0.000)*
Debt/GDP	*0.002* *(0.003)*		
Banking Crisis$_{t-1}$	*2.114**** *(0.156)*		
Banking Crisis Dummy		*0.559*** *(0.213)*	
$\overline{KAOPEN}$	*0.126* *(0.117)*	*0.095* *(0.098)*	*0.328*** *(0.155)*
$\overline{Growth}$	*-0.015* *(0.011)*	*-0.022* *(0.009)*	*-0.012* *(0.012)*
$\overline{Real\ Interest\ Rate}$	*-0.001* *(0.012)*	*-0.010* *(0.010)*	*0.001* *(0.010)*
$\overline{Depreciation}$	*-0.012* *(0.018)*	*-0.574* *(0.381)*	*-2.434* *(0.989)*
$\overline{Change\ in\ Terms\ of\ Trade}$	*0.044* *(0.034))*	*0.010* *(0.006)*	*-0.012* *(0.054)*
$\overline{Inflation}$	*-0.002* *(0.002)*	*-0.002* *(0.002)*	*-0.000* *(0.001)*
$\overline{Budget\ Surplus}$	*-0.005* *(0.023)*	*-0.0034* *(0.019)*	*-0.026* *(0.020)*
$\overline{M2/Reserves}$	*0.0314**** *(0.010)*	*0.024** *(0.007)*	*-0.029* *(0.017)*
$\overline{Credit\ Boom}$	*-0.120* *(0.081)*	*-0.0055* *(0.055)*	*-0.081* *(0.072)*
$\overline{Money\ Growth}$	*0.005* *(0.003)*	*0.010** *(0.004)*	*0.023*** *(0.009)*
$\overline{GDP\ per\ Capita}$	*0.000**** *(0.000)*	*0.000**** *(0.000)*	*0.000**** *(0.000)*
$\overline{Debt/GDP}$	*-0.009* *(0.006)*	*-0.009** *(0.003)*	*-0.018*** *(0.006)*
Currency Crisis$_{t-1}$		*0.0496*** *(0.178)*	
Twin Crisis$_{t-1}$			*0.980*** *(0.312)*
Constant	*-1.238**** *(0.287)*	*-1.354* *(0.237)*	*-1.133* *(0.294)*
Observations	*1436*	*1390*	*1392*
χ^2	*271.161*	*152.357*	*125.712*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

***Table 4.12:** Intensity of Financial Liberalization on Likelihood of Crises using Credit Boom Dummy and Mundlak Approach Time Period: 1980-2013; Income Group: Developing Economies; Estimation Method: Multivariate Probit Regression*			
	(1) Banking Crisis	***(2) Currency Crisis***	***(3) Twin Crisis***
KAOPEN	*-0.082* *(0.089)*	*-0.141* *(0.076)*	*-0.157* *(0.114)*
Growth	*-0.062*** *(0.021)*	*-0.031* *(0.019)*	*-0.080** *(0.036)*
Real Interest Rate	*-0.001* *(0.010)*	*0.010* *(0.009)*	*-0.013* *(0.010)*
Depreciation	*0.388* *(0.360)*	*3.086**** *(0.895)*	*1.936**** *(0.470)*
Change in Terms of Trade	*0.003* *(0.005)*	*0.001* *(0.004)*	*-0.022** *(0.010)*
Inflation	*-0.002* *(0.005)*	*-0.025*** *(0.008)*	*-0.019*** *(0.007)*
Budget Surplus	*0.003* *(0.012)*	*-0.006* *(0.014)*	*0.020* *(0.015)*
M2/Reserves	*0.019** *(0.009)*	*0.011* *(0.008)*	*0.023** *(0.010)*
Credit Boom Dummy$_{t-1}$	*0.123** *(0.161)*	*0.001* *(0.158)*	*-0.461** *(0.228)*
Money Growth	*-0.005* *(0.006)*	*0.001* *(0.005)*	*-0.006* *(0.008)*
GDP per Capita	*-0.000** *(0.000)*	*-0.000* *(0.000)*	*-0.000* *(0.000)*
Debt/GDP	*0.004* *(0.003)*		
Banking Crisis$_{t-1}$	*1.968**** *(0.182)*		
Banking Crisis Dummy		*0.453* *(0.265)*	
$\overline{KAOPEN}$	*0.175* *(0.130)*	*0.242** *(0.119)*	*0.429* *(0.238)*
$\overline{Growth}$	*-0.0126* *(0.017)*	*-0.012* *(0.013)*	*-0.012* *(0.011)*
$\overline{Real\ Interest\ Rate}$	*-0.000* *(0.016)*	*0.001* *(0.012)*	*0.023* *(0.018)*
$\overline{Depreciation}$	*-0.008* *(0.021)*	*-0.569* *(0.392)*	*0.055* *(0.308)*
$\overline{Change\ in\ Terms\ of\ Trade}$	*-0.063* *(0.036)*	*0.045* *(0.031)*	*0.036* *(0.072)*
$\overline{Inflation}$	*-0.005* *(0.004)*	*-0.001* *(0.001)*	*-0.002* *(0.005)*
$\overline{Budget\ Surplus}$	*0.013* *(0.022)*	*0.035* *(0.019)*	*0.046** *(0.022)*
$\overline{M2/Reserves}$	*-0.050* *(0.026)*	*-0.021* *(0.014)*	*-0.080** *(0.037)*
$\overline{Credit\ Boom}$	*-0.150* *(0.107)*	*-0.192** *(0.081)*	*-0.016* *(0.102)*
$\overline{Money\ Growth}$	*0.008* *(0.005)*	*0.010** *(0.004)*	*-0.003* *(0.007)*
$\overline{GDP\ per\ Capita}$	*0.000* *(0.000)*	*0.000* *(0.000)*	*0.000* *(0.000)*
$\overline{Debt/GDP}$	*-0.009* *(0.007)*	*-0.016*** *(0.005)*	*-0.043* *(0.016)*
Currency Crisis$_{t-1}$		*0.560*** *(0.196)*	
Twin Crisis$_{t-1}$			*0.649* *(0.417)*
Constant	*-0.803** *(0.393)*	*-0.817*** *(0.300)*	*0.591* *(0.672)*
Observations	*1158*	*1133*	*1135*
χ^2	*187.583*	*140.008*	*116.999*
****Significant at p<0.01;**significant at p<0.05, *significant at p<0.10* *Note: Numbers in brackets are robust standard errors.*			

4.12 Appendix 4: Country Group Classification

4.12.1 Developing Economies

These are the 93 developing countries (excludes high income countries as determined by the World Bank) used for regression analysis:

Albania
Algeria
Angola
Argentina
Armenia
Azerbaijan
Bangladesh
Belarus
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Cameroon
Chad
China
Colombia
Comoros
Costa Rica
Croatia
Djibouti
Dominica
Dominican Republic
Ecuador
El Salvador
Equatorial Guinea
Estonia
Ethiopia
Gabon
Georgia
Ghana
Grenada
Guatemala
Guinea
Guyana
Haiti
Honduras
India

Indonesia
Jordan
Kenya
Kyrgyz Republic
Lao PDR
Latvia
Lebanon
Lesotho
Liberia
Lithuania
Madagascar
Malawi
Malaysia
Maldives
Mauritania
Mauritius
Mexico
Moldova
Mongolia
Morocco
Mozambique
Namibia
Nicaragua
Nigeria
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Romania
Rwanda
Sierra Leone
Solomon Islands
South Africa
Sri Lanka
Suriname
Swaziland
Tajikistan
Tanzania
Thailand
Togo
Uganda
Ukraine
Uruguay
Venezuela, RB
Vietnam
Yemen, Rep.
Zambia

Conclusion

The objective of this thesis was to analyze, critically evaluate and understand the impact of financial integration on macroeconomic performance, poverty and inequality and crises, in developing countries. The thesis is structured as a coherent piece of work. This concluding section of the thesis will provide a concise summary of the key findings, then it gives an account of the contribution this thesis makes to the literature, then discussing the limitations of the thesis, subsequently exploring possibilities for further work and finally it provides prospective policy recommendations for developing countries.

5.1 Summary of Key Findings

Chapter 1 examines the theoretical linkages between financial integration and macroeconomic performance, poverty and inequality and financial fragilities. Furthermore, it provides a comprehensive evaluation of the existing empirical literature, identifying researching avenues that has not been explored. In the thorough examination of the theoretical and empirical literature, it is observed that the standard econometric procedures have been deployed to gain an understanding of the relationship between financial integration and growth. However, there was a scarcity in the researching base for threshold analysis. A fundamental reason why threshold analysis is important, is due in part to the fact that while it is possible to understand the direction of causality, or the magnitude of the impact, on a generic level, it must be dissected at understood at various stages of financial integration or at various levels of financial openness. Therefore, concerning the prospect of an empirical research paper that would be novel and enhance the literature would be to explore the research routes through threshold techniques. Furthermore, it was evident that the researching axiom that investigated the impact of financial integration on poverty and inequality was not explored as intensively as that for the relationship between financial integration and growth. This research paper focuses on developing countries and therefore it would undermine the researching prowess if one of the palpable criticisms of financial integration were to be avoided. Thus, there was a clear researching necessity to examine the linkages of financial integration and poverty and inequality further. Additionally, it was evident that it would also be value enhancing

to the literature to deploy threshold measures to gain a deeper understanding of the scale of impact at various stages of financial integration and the retrospective impact on poverty and inequality, and thereby allowing for the empirical research executed to be insightful for policymaking purposes.

In relation to the financial integration and crises literature, it was observed in chapter 1 that there was a clear tendency for empirical researchers to use the financial liberalization dummy variable (discrete variable) when examining the impact of financial liberalization on crises. However, the de jure measure of financial integration, particularly the de jure measure of capital account openness or the Chinn-Ito index, the key independent variable of interest in this thesis, had not been used. Therefore, it was an intriguing and non-negligible researching avenue to re-examine the crisis literature using the de jure measure of capital account openness. Furthermore, a noticeable loophole in the literature was the lack of empirical research examining the linkages of key political factors in the context of the crises literature. Particularly for developing countries, political stability or lack thereof, is one of the key determining factors in ensuring macroeconomic stability. While political scientists have theoretically examined the possible channels of influence of political factors influencing crises, there is an observable lacking in empirical research in this discipline. Therefore, one of the key researching components of this thesis, in the final empirical chapter, was to focus on the impact of the key political factors on crises, independently and interactively with financial liberalization.

Chapter 2 examines the impact of financial integration on growth for developing, emerging and transition economies, using 175 countries, over the time period 1970-2013. The key independent variable of interest was the de jure measure of financial integration or the KAOPEN. The dependent variable was growth. The research paper uses the Panel Threshold Regression (PTR) and the Logistic Smooth Transition Regression (LSTR) models, along with OLS estimations. There is a clear and observable variation in the threshold levels along with the coefficients below and above the thresholds for developing, transition and emerging economies. When regressions are executed for all countries, it is observed that for all the countries in the dataset, it is growth enhancing below the threshold but growth retarding above the threshold. For the case of the developing economies, the focused income group of this

thesis, it is observed that while it has a considerably high threshold level, above this threshold, it is quite evident that when financial markets are highly liberalized, for developing countries it is severely damaging to growth. In the case of emerging economies, there appears to be a low threshold level, interestingly, growth levels appear to increase both below and above the threshold. In contrast, for transition economies, there is a low threshold level, below this threshold level, it is growth retarding. Thus, it was generally observed that there is a tendency for countries to experience higher growth rates up until a certain threshold level, after which it is growth retarding; the only exception being the case of the emerging markets, in which case, it was observed that growth rates increase both below and above the threshold.

Chapter 3 investigates the impact of financial integration on poverty and inequality using 79 developing economies over the time period 1980-2013. The key independent variable of interest was the de jure measure of financial integration or capital account openness, the KAOPEN index. The key dependent variables of interest for this research paper were the four proxies used to measure poverty, four proxies used to measure income distribution and finally four proxies used to measure income inequality. This research paper used the Panel Threshold Regression (PTR) and the Logistic Smooth Transition Regression (LSTR) models, along with OLS estimations akin to chapter 2. In this researching chapter, it is observed that there is a low threshold level when looking at the impact of KAOPEN on poverty, however, while the estimation below the threshold is inconclusive, it is found that above this low threshold, increase in openness results in reduction of poverty. When empirically examining the impact of KAOPEN on various income bands, it is observed that below these relatively low thresholds, increase in openness results in increased income share for the poorest and richest 10% and 20%. However, above the threshold, increase in openness is associated with a decline in income share for the poorest 10% and 20% but an increase in income share is observed for the richest 10% and 20%. In measuring the impact of KAOPEN on income inequality, it was observed rather interestingly that inequality increased both below and above the threshold, but inequality increased faster below the threshold as opposed to when it was above the threshold. This reiterates the notion that the initial shock of financial influx can potentially increase inequality, but over time the rate at which inequality was increasing, eventually decreases.

Chapter 4 empirically examines the impact of the intensity of financial liberalization on the likelihood of banking, currency and twin crises using 93 developing countries over the time period 1980-2013. This research paper also empirically investigates the impact of political institutions and political polarization on the likelihood of banking, currency and twin crises, both independently and jointly with the intensity of financial liberalization. The research paper uses the multivariate probit regression method in order to measure the impact of the intensity of financial liberalization on the likelihood of crises. For developing countries, increase in the intensity of financial liberalization reduces the likelihood of crises. This finding contradicts the traditional finding that post-liberalization, there is a greater likelihood of a crises. However, this chapter does not challenge that finding due to the fact that the research papers examining the crises linkages tend to use the binary dummy variable but for this research paper a continuous financial liberalization variable has been used. For the case of political institutions and political polarization[125] it is found that improvement in the conditions of political institutions results in the reduced likelihood of crises. On the contrary, increased political polarization increase the likelihood of crises.

Table 5.1 summarizes the key findings of the three empirical chapters reported in this thesis which includes chapters 2, 3 and 4. In this table, there is a general summary of the key findings and then a detailed analytical overview of the key variables of interest and their subsequent impact on growth, poverty and inequality and crises. In reference to the summary provided for chapter 2, table 5.1 only gives the findings for developing countries.

[125] Refer to the proxies used to measure the conditions of political institutions and the level of political polarization in chapter 4 for a detailed synopsis and to gain a deeper understanding of the details of the variables used.

Table 5.1: Summary of Key Findings			
Chapter 2: Impact of Financial Integration on Growth			
	Growth		
Summary of Key Results	After examining the main findings presented in the body of the chapter and after validating it with the results deduced from the robustness checks in the appendix, it is observed that for developing countries, there appears to be a high threshold level for capital account openness (KAOPEN). The growth effects below this high threshold level is generally inconclusive, however, above this high threshold, or when the financial markets have a high degree of capital account openness, it is observed that it is severely damaging to growth.		
$KAOPEN - T\ if\ KAOPEN < T$ or $W^{low}(KAOPEN - c^*)$	The results below the threshold are observed to be inconclusive as the results are statistically insignificant.		
$KAOPEN - T\ if\ KAOPEN > T$ or $W^{high}(KAOPEN - c^*)$	Above the threshold, it is generally observed that increase in capital account openness is damaging to growth for developing countries. These results are negative and statistically significant.		
PTR (T) or LSTR (c)*	The threshold level appears to be significantly high; however, the reader is only aware about the impact on growth above this threshold as the coefficient below the threshold is statistically insignificant. There are instances in which the LSTR is a better estimator than the PTR, and vice versa, but, generally, a high threshold level for capital account openness is observed.		
Chapter 3: Impact of Financial Integration on Poverty and Inequality			
	Poverty	*Income Distribution*	*Income Inequality*
Summary of Key Results	In examining the main findings and after validating these findings with the robustness checks, it is observed that financial integration, above a certain threshold level of capital account openness reduces both absolute and relative poverty. However, it is observed that above this threshold, while income share increases for the highest 20% and 10%, income share of the lowest 10% and 20% declines. This is validated by observing an increase in income inequality due to increase in capital account openness where it is important to note that income inequality increases faster below the threshold as opposed to when it is above the threshold.		
$KAOPEN - T\ if\ KAOPEN < T$ or $W^{low}(KAOPEN - c^*)$	The impact of capital account openness on absolute and relative poverty below the (low) threshold is inconclusive.	Below a low threshold for capital account openness it is observed that income share of the richest 10% and 20% along with the poorest 10% and 20%, all increase. The coefficients are positive and statistically significant.	It is observed that both below and above the threshold income inequality increases with increasing capital account openness. The coefficients are positive and statistically significant.
$KAOPEN - T\ if\ KAOPEN > T$ or $W^{high}(KAOPEN - c^*)$	Above this (low) threshold it is observed that increasing capital account openness results in reduced absolute and relative poverty. The coefficients are negative and statistically significant at all	Above this low threshold, it is observed that increase in capital account openness results in an increase in income share of the highest 10% and 20% and decline in the income share of the poorest 10% and 20%. The coefficients	Income inequality rises above the threshold but it is important to note that income inequality rises faster below the threshold as opposed to when it is below the threshold. This evidence supports

	significance levels.	are positive for income share of the highest 10% and 20% and negative for the poorest 10% and 20%. Note that the coefficients are statistically significant.	the idea that initial levels of financial integration can give rise to inequality, however, with time, the distribution of income is fairer. The coefficients are positive and statistically significant.
PTR (T) or LSTR (c)*	There is a low threshold level observed for capital account openness.	A low threshold level for capital account openness is observed.	A low threshold level is observed for capital account openness.
Chapter 4: Impact of Financial Integration on Crises			
	Banking Crisis	*Currency Crisis*	*Twin Crisis*
Summary of Key Results	It is generally observed that increase in the intensity of capital account openness results in a reduction in the likelihood of a banking, currency and twin crisis. Improvements in the conditions of political institutions are seen to reduce the likelihood of banking, currency and twin crisis. On the contrary, increase in political polarization increases the likelihood of banking, currency and twin crisis.		
KAOPEN	Increase in capital account openness results in a reduced likelihood of a banking crisis as the coefficient appears to be negative and statistically significant.	Increase in the intensity of capital account openness appears to reduce the likelihood of a currency crisis. This result is negative and statistically significant.	Increase in the intensity of capital account openness reduces the likelihood of a twin crisis; the result is negative and statistically significant.
Political Institutions	Improvement in the condition of political institutions reduces the likelihood of a banking crisis. The result is negative and statistically significant.	Improvements in the condition of political institutions reduce the likelihood of a currency crisis. The result is negative and statistically significant.	Improvements in the condition of political institutions reduce the likelihood of a twin crisis. The result is negative and statistically significant.
Political Polarization	Increased political polarization increases the likelihood of a banking crisis. The result is positive and statistically significant.	Increased political polarization increases the likelihood of a currency crisis. The result is positive and statistically significant.	Increased political polarization increases the likelihood of a twin crisis. The result is positive and statistically significant.

5.2 Contribution to the Literature

This thesis makes significant contributions to the literature by addressing key researching questions and exploring researching avenues that have not been examined thoroughly, or at least to the extent deemed sufficient by the author. In the quest to explore these unexploited researching routes there are numerous researching questions that seemed thought provoking and sufficiently interesting to execute independent researching studies. However, within the limitations of the academic guidelines, the first chapter (chapter 1) explored the theoretical and empirical literature to bring to the fray the underlying and the unanswered as well as the prospective research questions that could be value enhancing to the literature. Subsequently, these research questions were theoretically and empirically explored in separate research papers in chapters 2, 3 and 4. Each of these chapters make distinctive contributions to the literature.

In chapter 2, the focus of the thesis is on the impact of financial integration on growth and the key contribution that this chapter makes is through the usage of the LSTR methodology. This is in part due to the fact that the PTR methodology has often been used in the FI-growth literature. Furthermore, it is important to note that the usage of the de jure measure of financial integration, the KAOPEN index is also novel in the sense that the literature has not executed a threshold examination using this particular variable as they have normally tended to use de facto measures of financial integration instead. Additionally, this chapter specifically pinpoints the exact threshold level as opposed to other papers where the threshold level is either not clearly identified or there is obscurity in the findings. From the purely technical viewpoint, the commonly used PTR methodology does not incorporate the problem of heteroscedasticity that the LSTR methodology does take into account. Furthermore, this researching chapter also tests the validity of the thresholds. For instance, simply identifying the threshold level is insufficient, the threshold denotation itself must be validated through tests that determine the accuracy of nonlinearities. The LSTR methodology also takes into account the possibility of the regression model having more than a single threshold. This is a factor that is unaccounted for in other research papers as they typically tend to assume that there could only be two regimes with one threshold, but this is not the case for all regression models as observed in chapter 2.

Therefore, not only does this chapter provide inferences that are value enhancing, but it also underlines the fallacies in the theoretical and empirical deductions in research papers that have deployed threshold regression methods.

In chapter 3, an empirical examination is carried out measuring the impact of financial integration on poverty and inequality using both the PTR and LSTR methodologies akin to the econometric methods deployed chapter 2. Thus, from the technical viewpoint, the contribution to the literature is similar to the contributions made in chapter 2, particularly in the form of the usage of the LSTR methodology that incorporates 'smooth' transition from one regime to the other as opposed to the instantaneous change in regimes via the PTR methodology. Furthermore, validity of the thresholds is tested for along with remaining nonlinearities. From the overall researching viewpoint, there is a scarcity of research papers that focus on the impact of financial integration and poverty and there are no papers that deploy threshold techniques to examine the impact of capital account openness on poverty and inequality. Therefore, the researching avenue that has been explored in this chapter is an insightful source of contribution to the associated field of research.

In chapter 4, through the empirical examination of the impact of the intensity of financial liberalization on the likelihood of crises, several insightful deductions are inferred. The key contribution that this research paper makes to the literature is the usage of the de jure measure of capital account openness (KAOPEN) or the intensity of financial liberalization. Conventionally, the literature tends to use a binary variable to account for financial liberalization and then the subsequent regression would report the likelihood of crises pre and post-liberalization. However, this research paper uses a continuous variable to account for financial liberalization and thereby allows the researchers to have the ability to examine the likelihood of crises at various levels of financial openness using the regression model. Furthermore, this research paper critically examines the impact of key political factors and their retrospective impact on the likelihood of crises. Numerous research papers have included political variables but they are often included as controlled and are often left to the periphery in the discussion of macroeconomic vulnerabilities or financial fragilities. Therefore, this research paper gives serious consideration and importance to political factors that are often undermined due to the inability of researchers to effectively quantify these

political variables and use them appropriately to address key research questions that are beneficial for policymaking purposes. For developing countries, it is undeniable that that political stability plays a significant role in ensuring macroeconomic stability and thereby mitigating crises.

5.3 Policy Recommendations

On the basis of the inferences deduced from the empirical investigations, the policy recommendations for developing countries are outlined in this subsection. Within this subsection, the first section discusses policies that would allow developing countries to maximize their growth levels. The second section focuses on inclusive growth, addressing poverty and inequality. The third section focuses on policy recommendations that would help mitigate crises.

5.3.1 Fostering Growth

The macroeconomic policies that would ensure maximization of growth in developing countries would mean that macroeconomic stability has been ensured. In order to foster high growth levels, particularly in developing countries, the institutional conditions are integral facets of development. On the basis of the findings of this research paper, particularly the focused investigation that examines the impact of financial integration on growth, illustrates that high levels of financial openness reduces the prospect of high growth, in fact it is growth retarding. Therefore, the prospect of having unregulated financial markets is ruled out as a policy measure to induce growth in developing countries. The justification for this policy recommendation would be in part due to the fact that developing countries do not have the infrastructural framework or the institutional capacity that would allow for smooth absorption of unregulated financial influx. Therefore, without sound institutional conditions there must be regulation of the financial markets in developing countries. This is to ensure that liberalization does not exceed the threshold limit, because as it has been proven in this researching study, that beyond this threshold level, it is growth retarding. The scenario is different for the case of emerging economies, as growth levels increase both below and above the threshold and therefore it goes to show that emerging economies have a higher absorptive capacity or better equipped institutions to facilitate financial influx. Even then, one cannot overlook the Asian Financial Crisis of 1997 and thereby must proceed with caution when it comes to financial liberalization. Hence, policymakers must ensure for developing countries, the general consensus would be to liberalize partially or regulate moderately.

5.3.2 Inclusion in Global Financial Integration

A fundamental criticism that can be attributed to financial integration is the notion of inclusive growth. A staunch criticism of global financial integration and interconnectedness of global financial markets is that it fails to incorporate the poorest 10% and 20% of the population. This thesis reaffirmed the notion that while increase in financial integration does reduce poverty, at the same time, it also reduces the income share of the poorest 10% and 20% while increasing the income share of the richest 20% and 10%. Furthermore, it is observed from this thesis that increase in openness also increases income inequality. There is a clear tradeoff between alleviation of poverty and increase in income inequality even though in the early stages of financial openness income share for all income groups increase and poverty decreases, this is not the case after a certain threshold level of financial openness. A key reason why this is fundamental in the policymaking level is due to the fact that income disparity induces social unrest. In populous developing nations, if there is an insurgency against the wealthiest few, this could potentially be calamitous both from the political viewpoint as well as the socio-economic viewpoint. Thus, governments and policymakers alike must acknowledge the political risks associated with burgeoning inequality in the developing world. Governments and policymakers must develop an institutional setup that allows for the poorest 10% and 20% to realize the benefits of financial integration, otherwise serious questions will be asked of those that govern these countries and the elitists that reside in these nations – as a populous class struggle would be detrimental for all.

5.3.3 Mitigating Crises

Arguably greatest threat associated to financial integration is the prospect of crises. This research paper examines the impact of the intensity of financial liberalization on the likelihood of crises. Contrary to popular belief that liberalization precedes a crisis, the findings in this thesis illustrates that increase in the intensity of financial liberalization in fact reduces the likelihood of a banking, currency and twin crises. It also denotes that it does not reject the argument that there is a greater likelihood of crises post-liberalization. However, there are other factors that can independently and jointly (with the intensity of financial liberalization) impact the

likelihood of crises. For instance, governments and policymakers must seriously take into account the role of key political factors and key political players in the context of being the drivers of growth as well as crises. A conundrum that arises from this research paper is the fact that with greater political polarization the likelihood of crises increases. In this case, one cannot recommend that the developing nations should be free of political polarization as the democratic rights of the people will be tarnished completely, resulting in an authoritarian regime. However, institutional improvements, both in the context of the improvement of macroeconomic institutions as well as political institutions reduce the likelihood of crises and the government must focus on improving these institutions in order to mitigate the risks associated to financial integration and the possibility of crises.

5.4 Limitations of the Thesis

It could be argued that one of the biggest limitations of the thesis is the inability to answer or venture into the avenues that are both thought stimulating and thought-provoking, but it would not have been within the scope of this researching thesis, due to the restrictions of a thesis that is being composed under academic guidelines. However, the thesis that has already been produced there are limitations and possible criticisms and arguably the most important limitation would be the lack of serious consideration for key political factors in the discussion of growth and poverty and inequality. The crises chapter discusses it, although, there could have been a standalone paper that focuses chiefly on political factors jointly with financial liberalization. However, due to the fact that there is a word limit and venturing into this researching path would mean that this could constitute to be an entirely distinctive thesis. Therefore, this standalone researching avenue was not explored to the desired extent. The other limitation of this thesis is that the KAOPEN variable developed by Chinn and Ito (2006) is considered to be exogenous despite the fact that numerous papers have used this variable in their research papers for regression analysis.

5.5 Avenues for Further Research

There are several researching trajectories that this thesis could have taken. However, due to the limitations in the guidelines in the composition of the thesis, one cannot supersede or leave a researching question incomplete or unexamined. Therefore, there were interesting researching questions and avenues that were not investigated. For further research, in this section, interesting researching avenues that could and very well should be explored, are discussed. This thesis critically examines the impact of financial integration on growth, deploying both the PTR and LSTR methodologies. However, for further work, an interesting addition would be to examine other institutional factors interacted with the de jure measure of financial integration. This would be particularly relevant in the policymaking level as this would also allow governments to calibrate their macroeconomic policies that are fundamental for macroeconomic stability and growth. For instance, the determination of the required level of government spending or the target inflation rate in conjunction with financial liberalization would be an effective tool for policymakers to weigh the pros and cons of their decisions. Similarly, in order to grasp a greater understanding as well as a greater policymaking action plan in order to alleviate poverty but also reduce the burgeoning inequality, institutional interaction terms must be used jointly with the intensity of financial liberalization. With regards to crises, an interesting researching avenue would be to deploy threshold measures that would take into account financial openness and the level after which it is susceptible to a banking, currency or twin crises. This would be interesting to examine and hugely beneficial on the policymaking level.

Arguably the most important researching avenue that has not been explored to the desired extent is the significance of key political factors and their subsequent impact on growth, poverty and inequality and the likelihood of crises both independently and jointly with financial liberalization. However, this researching avenue would in itself constitute a separate thesis as the scale of the researching question is large and due to the scarcity of empirical research papers, it would be novel and useful for policymaking purposes. Critical examinations of particular geographic zones of developing regions would be even more interesting as the dynamics and the political culture will have similarities. Additionally, in the context

of political factors determining economic outcomes, it would also be interesting to examine the manner in which economic outcomes have a bearing on distinctive political outcomes of which, a researching route that could be of particular interest would be the examination of political reforms or political liberalization after periods of economic distress.

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