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Privatisation, Corporate Control and Employment Growth:

Evidence From A Panel of Large Polish Firms, 1996-2002

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PRIVATISATION, CORPORATE CONTROL AND EMPLOYMENT GROWTH: EVIDENCE FROM A PANEL OF LARGE POLISH FIRMS, 1996-2002.[♠]

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ABSTRACT

Using panel data on large Polish firms this paper examines the relationship between corporate control structures, sales growth and the determinants of employment change during the period 1996-2002. We find that privatised and *de novo* firms are the main drivers of employment growth and that, in the case of *de novo* firms, it is foreign ownership which underpins the result. Interestingly, we find that being privatised has a positive impact on employment growth but that this impact is concentrated within a range of three to six years after privatisation. In contrast with the findings of earlier literature, we find evidence that there are no systematic differences in employment response to negative sales growth across the ownership categories. On the other hand, employment in state firms is less responsive to positive sales growth. From these combined results we infer that the behaviour of state firms is constrained by both insider rent sharing and binding budget constraints. Consistent with this, we find that privatised companies, three to six years post-privatisation, are the firms for whom employment is most responsive to positive sales growth and as such, offer the best hope for rapid labour market expansion.

KEY WORDS: employment, transition, privatisation, asymmetry, ownership, insiders, corporate control

JEL CLASSIFICATION: P31, C23, J23

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1. INTRODUCTION

In a macroeconomic context characterised by 5% economic growth alongside 20% unemployment (Poland, 2004, 1st quarter) the task of understanding employment determination in Poland assumes particular importance. Using detailed firm level panel data relating to large Polish firms between 1996 and 2002, we concentrate on identifying potential micro determinants of employment growth.

We motivate our investigation with reference both to the existing economics literature on firm behaviour as well as to the particular Polish context. Research in the early years of transition reflected the view that state firms, faced by soft budget constraints, would not be willing to reduce the excessive employment levels inherited from the socialist period, and hence the quantity side of the labour market would exhibit inertia. Coupled with the fact that employees held actual or effective control rights to many enterprises and the expectation of insider dominated outcomes became of particular concern. In this context, the observed enterprise adjustments that did occur were viewed by some as surprising. Firms *did* respond to output shocks by downsizing labour and wages. These adjustments reflected the imposition of hard budget constraints across all ownership groups.

As the privatisation process has become embedded and the industrial structure more consolidated, later research (Grosfeld and Nivet, 1997) has pointed to considerable heterogeneity in enterprise responses. Indeed, behaviour has been described as being dependent on ownership, firm size, local labour market conditions and the nature of 'shock' experienced. More recent research has developed several of these themes further still (Christev and Fitzroy, 2002).

We draw on, but extend, the existing literature and provide an updated account of the micro foundations of labour demand and the evolving structure of corporate governance in Poland. Our contribution is essentially twofold. First, we adopt a novel approach to capturing the effects on employment dynamics of ownership stake. In particular this enables us to investigate the impact of ownership on employment growth along three important dimensions: state versus private control; domestic versus foreign control; and the time elapsed since privatisation. Second, in using more recent data, we are able to comment on the continuation or otherwise of a variety of 'stylised facts' emerging from the earlier literature and, in so doing, provide an updated, contemporary insight into the determinants of labour demand in large Polish firms.

We find that a) privatised and *de novo* firms are the main drivers of employment growth and that, in the case of *de novo* firms, it is foreign owned firms, more often able to assume full ownership control, that explain this result; b) being privatised has a positive impact on employment growth but that this impact is concentrated within a range of three to six years after privatisation; c) in contrast with the findings of earlier literature, we find evidence that there are no systematic differences in employment response to negative sales growth across the ownership categories, but that employment in state firms is less responsive to positive sales growth; d) privatised companies, three to six years post-privatisation, are the firms for whom employment is most responsive to positive sales growth and as such, offer the best hope for rapid labour market expansion; e) previous employment and internal wage levels influence current employment in the anticipated way; f) firms operating in multiple regions exhibit higher levels of employment growth and g) firms engaged in the mining, heavy industry and construction sectors are associated with lower levels of employment growth.

We proceed as follows. Section 2 further motivates our approach through a survey of related literature. Section 3 details our data, describes our econometric approach and presents our empirical specifications. Section 4 discusses the results in the context of our initial motivations and section 5 concludes.

2. EMPLOYMENT DETERMINATION: HYPOTHESES AND RELATED LITERATURE

There is a long history of both theoretical and empirical literature relating to aspects of employment behaviour in various categories of enterprise, in various countries, at various times. The transition process has provided a new and fertile ground for such studies. By way of motivation for our investigation, in this section, we reflect briefly on key themes to emerge from the literature discussing the corporate control-employment relation [1].

Inevitably, in view of the legacy of labour managed firms and the rapid privatisation process initiated in the early 1990's, a great deal of the early analysis (e.g Earle and Estrin (1996), Kollo (1998)), focused explicitly on the relative roles of 'insiders' and 'outsiders' in influencing employment (and wage) outcomes. As time has passed, the structures of corporate control have grown in both diversity and complexity. While not forgetting the persistent importance of the 'Socialist legacy', this observation prompts us to redefine and recombine our categories of corporate control along two dimensions. First, we wish to examine the behavioural differences between state owned, privatised and *de novo* companies (firms first created following the start of 'transition') and second, we make the distinction between foreign and domestically controlled firms. This approach facilitates a more subtle understanding of Polish employment dynamics.

2.1 Employment dynamics and Corporate Control

Looking first at issues of corporate control, there are at least three sensible arguments suggesting that *de novo* firms are likely to be more efficient in employment creation. First, they do not suffer from the excessive employment inherited from the command economy period. Second, the position of insiders is weaker, since *de novo* firms do not carry with them the institutional legacy of the Socialist system. Third, newly create firms are more likely to be in a part of their 'life cycle' characterised by expansion and growth (Geroski 1995). To the extent that these three conditions no longer apply the situation regarding privatised companies is more ambiguous.

The behaviour of newly privatised firms is likely to be affected by (a) the necessity to shed the inherited labour surplus and (b) the binding constraints on employment reduction often imposed by the privatisation contracts. It follows from this that, in later periods, as corporate control structures develop, the power of insiders subsides and the owners provide greater access to new resources, one should observe more positive employment trends. Indeed, though highly speculative, we might expect the employment path after privatisation to resemble the 'J-curve', albeit with a potentially flatter initial section of the curve arising from delays in the first phases of job shedding and restructuring. Pursuing a similar logic, foreign controlled companies are likely to hold an advantage over domestically owned firms, enjoying both, greater leverage to counterbalance the position of insiders, as well as access to strategic resources enabling expansion.

Turning to the accumulated evidence pertaining to corporate control issues, Konings *et al.* (1996) find evidence that, in the early transition period (i.e. pre 1991), new private firms, in which insiders are hypothesised to be less influential, contributed significantly to Polish job growth. Basu *et al.*

[1] Appendix 1 summarises the key literature.

(2000) and Grosfeld and Nivet (1997) did not find significant differences in employment behaviour for different ownership sectors in the early transition period in Poland (i.e. 1990-1991), but importantly, new firms were not identified in either case. Grosfeld and Nivet (1997) offer an explanation for the absence of differences between privatised and state firms. Specifically, half of the privatised enterprises in their sample held an explicit commitment to keep employment levels stable during the first 1.5-3 years post-privatisation. This suggests the need to examine more recent firm behaviour. Faggio and Konings (2003) examine job creation, destruction and employment growth in five transition economies (Poland, Slovenia, Bulgaria, Romania and Estonia), with firm level panel data from 1993-97. They find that, in Poland and Romania, state ownership has a negative effect on employment growth in comparison with firms under majority private domestic ownership, and that, large firms in more advanced transition economies downsized faster than in the laggards.[2] More recently Bhaumik *et al.* (2004), using data from four Asian and African emerging economies, found that *de novo* foreign firms created more employment than privatised foreign firms.

2.2 The Response of Employment to changing sales

The manner in which employment responds to positive/negative sales shocks can be analysed within the context of at least three different theoretical models. Since it is not our intention to test differences between these models we make only passing reference to them in what follows. Instead, we draw on them to motivate parallel conclusions regarding possible indicators of insider status within an empirical framework of employment equations and in a context of diverse corporate control possibilities[3].

[2] Papers on other transition countries, discussing ownership cross sections include Konings *et al.* (2003) on Ukraine, Rutkowski (2002) on Croatia, Brown and Earle (2002) and Konings and Lehmann (2001) on Russia, Dong (1988) and Lee (1999) on China. See summary in Appendix 1.

Given the extent to which insiders have sustained control of state firms in both the late socialist period and in the transition period, we expect to observe either employee control or at least the strong position of employees in the bargaining process, hence lower employment adjustments to output changes[4]. There is a well-rehearsed literature, rooted in the 'classic' employee control model[5], arguing that firms dominated by insiders have low employment responsiveness to product demand shocks. Indeed, the labour managed firm always varies employment "*by a smaller amount in response to given price changes than do their capitalist counterparts*" (Laidler and Estrin, 1989). These types of employee ownership model can be readily incorporated as a limiting case of more recent 'efficient contract' models[6].

In this contemporary class of models bargaining is always related to both wages and employment and full insider control refers to the extreme, in which all bargaining strength lies with labour. According to Brown and Ashenfelter (1986), if only the internal wage (and not the alternative wage) is instrumental in determining employment, the outcome is consistent with monopolistic price setting by the union and unilateral employment setting by the employer (i.e. the 'right to manage' model) [7]. In this case employment will be lower than under efficient contracts.

On a related theme, an interesting implication stemming from Oswald's (1993) analysis, and consistent with the notion of insider control, is that the employment response may be weak or even negative in response to a positive demand shock. That is, we may observe *asymmetry* of outcomes in

[3] For a good and accessible discussion of the problems related to empirical testing of employment determination models, see Booth (1995).
[4] Earle and Estrin (1996) and Köllo (1998) offer a good discussion of the insiders' control model in the context of transition economies.
[5] e.g. Ward (1958), Vanek (1970), Ireland and Law (1982).
[6] See the seminal paper of Brown and Ashenfelter (1986).
[7] Under this framework a union chooses a wage rate constrained by demand for its member's labour (see Dunlop (1944), Currie (1991)).

response to positive and negative demand shocks. The underlying motivation for the asymmetry hypothesis can be traced back to Lindbeck and Snower (1987) yet, in the context of the transition economies, asymmetry has a specific interpretation. In particular, asymmetry may be suggestive of an environment, in which insider power is combined with financial constraints, such that, employment is inelastic with respect to increased sales but falling sales do prompt adjustments. Thus, observations of weak or even negative upward output elasticity of employment are consistent with the insider hypothesis. More generally, in the absence of the 'insiders effect' and accompanying financial constraints we expect to observe *symmetry*.[8]

The early empirical evidence from the transition countries is strongly suggestive of negative wage elasticity of employment (to a declining degree as transition progresses) but there is little clear evidence relating to the outside option. For Poland, Basu *et al.* (2000) find own wage elasticity of –0.84 immediately after transition began; Grosfeld and Nivet present a figure of between –0.03 and –0.13 for the years 1988 – 1994; and Christev and Fitzroy (2002), using later data from 1994-1997, find wage elasticity of –0.08. For Hungary, Köllö (1998) finds elasticity declining from –0.6 to –0.3 by the start of transition. Körösi (2002), covering the period 1992-1999 for Hungary, finds that, in the initial years of transition, labour demand was much more responsive to own wages but by 1999 characteristics of employment adjustment in Hungarian firms, had converged on that of their Western counterparts. In sum, the literature suggests that ownership-wage elasticity coefficients are negative, but vary strongly with sample characteristics and time.

[8] Haskel *et al.,* (1997) study asymmetry in the UK. They find that employment adjustment is more common in times of a positive demand shock, as compared to a negative demand shock. Thus, the asymmetry is reversed as compared to that expected in transition economies, perhaps emphasising the severity of the financial constraints.

Estrin and Svenjar (1998) and Kőllő (1998) investigate the asymmetry hypothesis by looking at employment growth differences among firms experiencing/not experiencing declining real sales. Based on data from the early transition period (1986-9, 1989-2 and 1992-3) Kőllő finds that the elasticity of labour demand is relatively high for firms with decreasing output (0.2-0.3), yet insignificant for those with increasing output. This is a finding consistent with a strong insider influence. That is, such firms may be forced to adjust employment downwards due to financial constraints, yet may make employment choices consistent with the maximisation of average income, when faced by growth in sales. Estrin and Svenjar (1998), using firm level data from 1988-1993 for Poland, Czech Republic, Slovak Republic and Hungary, find that employment responded to both decreasing and increasing sales, but that the response was higher for firms with increasing sales: 0.36-0.44 as opposed to 0.12-0.35. Christev and Fitzroy (2002) focus on Polish firms for a later period (1994 – 1997) and find that employment growth responds only to *decreasing* sales. They offer the interpretation that inherited labour hoarding persisted among Polish firms in that period. It is worth noting however, that their sample did not include *de novo* firms.

So, what lessons can be culled from this corporate control/employment determination literature? First, if insiders maintain control over firms, we will observe low responsiveness of employment to output. If, additionally, there is an asymmetry in response to negative and positive sales shocks, this is indicative of a strong insider presence alongside binding financial constraints. Second, due to the absence of insider effects and the greater propensity for accessing new resources, we may expect *de novo* enterprises and foreign controlled companies to perform well in terms of employment growth. Additionally, for privatised companies, the time frame might prove to be important, with positive employment effects only materialising after some initial period of restructuring. Finally, if we

observe a negative correlation between employment and internal wage levels we can reject the 'strong bargaining efficiency hypothesis'.

3. METHODOLOGICAL APPROACH AND DATA

3.1 Data Description

This study is based on data procured from publicly available company level information relating to Poland's largest companies. The data is sourced from a project (involving participation of one of the co-authors), financed by the Polish Committee for Scientific Research (grant 1H02C-024-19)[9] and utilises all publicly available information on Poland's largest companies. Information is sourced from the Warsaw Stock Exchange and several lists of the 500 largest (revenue) companies published by journals and magazines, including *Rzeczpospolita*, *Polityka*, *Gazeta Bankowa*, *Nowe Zycie Gospodarcze*, *Zycie Gospodarcze* and *Businessman*. Ultimately, the veracity of the information used is verified and corrected in line with the companies' annual reports - now accessible in most cases. Our panel of firms is unbalanced since, inevitably, there are missing values, particularly for wages, in certain companies/years. In addition, to limit the impact of potential measurement error, we eliminate 0.5% of observations in each tail of our key variables (employment, wage and sales dynamics). This leaves us with a sample of 273 firms covering a range of corporate control structures and industrial sectors. 44.3% of our sample are majority state owned, 19.7%/16.6% are privatised with majority domestic/foreign ownership, 10%/9.5% are *de novo* companies under domestic/foreign control and 19.1% of the companies were quoted on the Warsaw Stock Exchange. The average employment level is 3,679 though, since there are a number of very large employers, the distribution is somewhat skewed, as indicated by a median employment level of 1,250. In terms

[9] Other results of the project are available in an edited volume in Polish (Baltowski, 2002).

of sectoral activity, 9.4% of companies were in mining and heavy industry, 14.3% in the chemical industry, 12.2% in light industry, 11.9% in engineering, 17.3% in utilities, 7.0% in construction, 18.2% in trade and 9.7% in other services. Investigating the sector-corporate control nexus we find some correlation. Specifically, a) firms in utilities, mining and heavy industries typically include a preponderance of large state firms, while those in trade do not; b) large privatised firms are likely to be found in engineering and construction and unlikely to be located in utilities and trade; c) as expected, large *de novo* companies are likely to be located in trade and less likely to emerge in utilities, mining and heavy industry.

Utilising sample information on location, we categorise the companies into seven groups – six European NTS macro regions (see Appendix 2 for details) and a 'nation wide' category, corresponding to those firms (16.1%) registered in the capital, but operating in more than one location. Once more, the regional distribution of firms correlates with the ownership cross-section. Unsurprisingly, in view of the presence there of mining and heavy industry, state owned (*de novo*) firms are more (less) likely to be located in the South West and South Central. In contrast, state (*de novo*) firms are less (more) likely to be among the firms operating nation-wide, though perhaps again there is a sectoral explanation, in the form of 'trade'. Large *de* novo firms are more common in Eastern Poland, Central Poland and in the capital, while large privatised firms are less likely to be located in Eastern Poland.

Aside from the standard range of data issues, there were several other data processing problems worthy of discussion. In principle, Polish state companies were prevented from buying shares in other privatised companies. In reality, this applied neither to privatisations (or semi-privatisations)

resulting from bank-led restructuring programmes, nor to post-privatisation ownership transfers including, for instance, companies privatised via the National Investment Funds programme. As a consequence, a number of 'privatised' companies are wrongly attributed to the private sector rather than to the state sector. These cases are not necessarily easy to detect, due to the multi-layered nature of cross-company ownership, but the data has been corrected where possible. On a related theme there are problems with distinguishing the dominant ownership class from minority owner groups. There are also cases of companies being wrongly classified as '*de novo*' private companies, either because they have been formally registered as a new company as part of the privatisation proceedings, or because they are new companies created by other state-controlled firms. The former case relates in particular to companies privatised through employee buy-outs (see Mickiewicz and Baltowski, 2003). We are also aware of the fact that some sources do not distinguish between individual companies and consolidated balances of capital groups with similar names. Compiling both categories into one time series would create a serious data distortion. All possible attempts were made to distinguish between the two and in the case of double entries (i.e. both consolidated and unconsolidated data), only one is included in our data.

In view of the importance we attach to the role of corporate control we have paid special attention to the construction of the ownership cross-section. It is straightforward to identify *de novo* firms but problems arise once we begin to construct ownership indicators for privatised versus state companies. In most cases, future information pertaining to ownership was available in pre-sample time and it has been well established that the privatisation processes impacted upon firm behaviour prior to the formal privatisation date.[10] In constructing our variables, we therefore take into account the time of privatisation. In addition, while our sample contains data pertaining to 1996 through

2002, we have identified 2003 privatisations in order to capture the effect of forthcoming privatisations.[11] Appendix 2 provides full variable definitions and Table 1 descriptive statistics for the key variables.

{Table 1 about here}

A precursory examination of the relationship between employment levels and real sales dynamics (Table 1) is also noteworthy. Immediately we observe that state owned companies perform less well in terms of sales growth but at the same time shed less labour than private firms. Furthermore, the distribution of the percentage change in state employment is massed in the centre, (i.e. has lower absolute values at the 25th and 75th percentiles) compared with the other categories. Indeed, the difference between the 75th percentiles of the state and *de novo* sectors is particularly striking. For the foreign *de novo* sector, the growth of both employment and output is high, and the difference with the sample median is highly significant. For domestic *de novo* firms, while the median values are similar, the distributions of both variables would appear to be flatter. In contrast to *de novo* companies, privatised firms have been more prone to labour shedding, though interestingly, foreign ownership is associated with greater employment preservation. On the other hand, domestically owned privatised companies have flatter distributions for both employment and sales dynamics. Significantly, foreign and domestic privatised firms do better in terms of real sales dynamics than the state sector, but not as well as *de novo* companies. Finally, companies operating nation-wide exhibit better performance than those with activities concentrated in one major location, for both employment and sales dynamics.

[10] See Megginson and Netter (2001) for further discussion on methodology.
[11] We are indebted to an anonymous referee for discussion of these points.

3.2 Econometric Techniques and Specification

To explore the hypotheses outlined above we employ generalised method of moments techniques (GMM). In their seminal paper, Arellano and Bond (1991) find that GMM is superior to instrumental variable estimators and recommend one step GMM for inference (*Ibidem,* p.293). More recently, Judson and Owen (1999) support the conclusion that this estimation method is superior to feasible alternatives for unbalanced panels with a short time dimension. The GMM estimator is robust in that it does not require information pertaining to the exact distribution of the disturbances. The estimator allows for the endogeneity of all regressors by using predetermined variables as instruments. In essence, this model involves estimation in differenced form of the general distributed-lag model. The estimator transforms the dependent variable into first differences, and relies on the use of an instrument matrix:

$$Z_i = \begin{bmatrix} y_{i1} & 0 & 0 & \dots & 0 & \dots & 0 \\ 0 & y_{i1} & y_{i2} & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & \dots & \dots & \dots \\ 0 & 0 & 0 & \dots & y_{i1} & \dots & y_{i,T-2} \end{bmatrix}$$

with each row corresponding to the first differenced equation, for individual observation i and periods $t = 3,4,\dots,T$ and, where the equation includes exogenous variables, the vectors of these are added to the matrix, in first differences. The critical assumption for the validity of the instruments is the orthogonality condition, given by:

$$E\left[Z_i' \Delta v_i\right] = 0 \text{ for } i = 1, 2, 3, \dots, N \qquad \text{(i)}$$

where v_i denotes disturbances and $\Delta v_i = (\Delta v_3, \Delta v_4, \dots, \Delta v_T)'$

Using this set of conditions, the assymptotically efficient GMM estimator minimises:

$$J_N = \left(\frac{1}{N} \sum_{i=1}^{N} \Delta v_i' Z_i \right) W_N \left(\frac{1}{N} \sum_{i=1}^{N} Z_i' \Delta v_i \right) \quad \text{(ii)}$$

where, for the one-step version, the weight matrix W_N is given by:

$$W_N = \left[\frac{1}{N} \sum_{i=1}^{N} \left(Z_i' H Z_i \right) \right]^{-1} \quad \text{(iii)}$$

where H is a (T-2) square matrix with 2's on the diagonal, -1's on the first off-diagonals and zeros elsewhere (Bond 2002).

The validity of the underlying assumptions for (i) can be tested using the Sargan test, which relies on test statistics, NJ_N, which has an assymptotic χ^2 distribution, with the null hypothesis that the moment conditions are valid. In addition the identifying assumption is that there is no serial correlation in the disturbances, v_{it}, tested by the null hypothesis that there is no second order serial correlation in the first-differenced residuals (Bond 2002; Arrelano and Bond 1991). We report the results of both tests for all our specifications.

Referring to our hypotheses, we focus our attention on the five ownership categories – state, foreign privatised, domestic privatised, domestic *de novo* and foreign *de novo* – described in Appendix 2. In addition, we split the privatised and *de novo* groups using 'time from privatisation' and 'time from founding'[12], including the t-1 observations one year beforehand to account for expectations, as discussed in the previous section. For both groups, we order all observations along the time dimension, and split observations into three categories of similar size. For privatised companies, this yields the following groupings: (i) one year before privatisation – two years after privatisation, (ii) three to six years after privatisation, (iii) seven years and more after privatisation. The founding

[12] We are grateful to two anonymous referees for discussion on this point.

of *de novo* companies was heavily clustered around 1989-1991 and so we generate the following categories: (i) companies founded less then seven years ago, (ii) companies founded eight to nine years ago, (iii) companies founded at least ten years ago. We also experiment with an alternative categorisation of *de novo* firms: (i) companies founded less than nine years ago, (ii) companies founded at least nine years ago.

Our key indicator of the enterprises financial position is the sales growth experienced by the firm – a variable we interact in various ways to investigate the theoretical insights outlined in the previous sections. In addition, to investigate non-linearities in the responsiveness of employment to sales, we introduce two dummy variables based on our splitting of the sample into three groups reflecting the high, low and mid-range sales growth. The 'high growth' ('low growth') dummy takes the value of one for the one third of observations with the highest (lowest) sales growth.

We estimate the following basic specification:

$$\Delta employment_{it} = \alpha + \beta \Delta employment_{it-1} + \chi \Delta real\_wage_{it} + \delta \Delta real\_sales_{it} + \varepsilon \Delta real\_sectoral\_wage_{it} + \boldsymbol{Z}\gamma + \sum O_{it} + \sum S_i + \sum R_i + \sum T_t + \upsilon_{it} \quad (1)$$

where O_{it}, S_i, R_i and T_t relate to ownership, sectoral, regional and time controls respectively and $\boldsymbol{Z}$ is a matrix of interactive effects with a corresponding column vector of coefficients $\boldsymbol{\gamma}$.

We estimate equation (1) without ownership and interactive effects and report our results in column 1, Table 2. Specification (2) introduces the five ownership controls enumerated above, with *state* as the omitted category. In specification (3) the distinction between foreign and domestic privatised

companies is dropped. In specification (4) the privatised and *de novo* groups are split according to the timing of privatisation or founding of *de novo* companies (three categories for each group, see above). Specification (5) simply uses two time categories rather than three. Specification (6) introduces interactive effects between sales and ownership categories. Specification (7) retains the same interactive effects, but now includes dummies for low and high sales growth. In specification (8) we interact the 'high' and 'low' sales growth dummies with all ownership controls. Finally, specification (9) replaces the interactive effects for all private sector dummies with interactive effects using the state dummy.

{Table 2 about here}

4. RESULTS

Taking the specifications in the above order, as expected, the lagged dependent variable is positive and significant, with the corresponding coefficient taking values between 0.48 and 0.53 in alternative specifications. This result reflects a somewhat smaller effect than Christev and Fitzroy (2002) who cover similar firms in an earlier period and obtain an estimated coefficient of 0.7 on lagged employment growth. Both cases suggest that employment growth is path dependent. The internal wage is negatively significant with a coefficient varying narrowly between –.72 and -.74 across the specifications. Higher internal wage growth is associated with lower employment growth and the 'strong efficiency' hypothesis is clearly rejected. The size of the effect is higher than that found by both Christev and Fitzroy (2002) and Grosfeld and Nivet (1997), but lower than that found by Basu *et al.* (2000) (see Appendix 1). Turning to outside options we find that sectoral wages are negative but insignificant[13]. According to the 'weak efficiency' hypothesis the outside wage

[13] We also experimented with measures for regional unemployment and wages but found both to be insignificant. In the case of sectoral wages, the significance improved when we used CPI instead of PPI as deflator (not reported).

available to workers should be negatively related to employment change (Brown and Ashenfelter 1986).

In terms of sales change we find a positive relationship with employment change, suggesting that output expansions are being transformed into employment growth. For the whole sample (Table 2, specification (1)), the output elasticity of employment is 0.39, which is marginally higher that found in other studies for both Poland and Hungary (Basu *et al.* (2000), Kőllő (1998), Grosfeld and Nivet (1997)), where the coefficient remains in the range of 0.2-0.3 (see Appendix 1).

We turn now to our corporate control categories. The ownership dummies reveal that the difference between state and private sector firms is not the same for all private sector subcategories. In particular, our results (which refer to 1999-2002, with 1996-1998 data used as instruments for the GMM estimator), suggest that there is no longer any clear advantage of *de novo* domestic firms in employment creation. However, in our sample period, both *de novo* foreign companies and privatised firms (both foreign and domestic) were associated with higher levels of employment creation than state firms (specifications2 and 3).

To investigate the issue in more detail, we replace the distinction based on the foreign – domestic ownership contrast, with that based on the time of privatisation and age of companies (for *de novo* firms). We detect no significant effects for *de novo* companies, probably because the overwhelming majority of them were created in the period immediately following liberalisation i.e. 1989-1991. As a consequence, 'time from founding' is highly correlated with the general set of time controls as well as any other time specific components incorporated in other variables.

In contrast however, for privatised firms, we find that it is (approximately) the period of three to six years after privatisation, where the growth of employment is the strongest, and superior to that observed in our other corporate control categories.[14] This result may have wider implications. It may indicate that a large number of privatisation studies in transition countries have relied on time horizons, too short to capture the full effects of privatisation. That is, the adjustment in firm's behaviour is not instantaneous following privatisation, instead it relies on the implementation of complex restructuring and organisational programmes. The reliance on overly short time spans for comparisons was, of course, natural in empirical studies, given the lack of longer time series, nevertheless, the classic 'pre-transition' studies on privatisation excluded the privatisation year, and focused on the time of one to three years after privatisation (Megginson *et al.* 1994; for overview of empirical studies on privatisation, see Megginson and Netter 2001; Djankov and Murrell 2002). Our results may indicate that longer time horizons are required to fully capture (at least) employment effects.

In specification (6) we interact ownership with total sales. The result seems to suggest that, in the private sector, employment is less responsive to sales. However, two qualifications apply. First, if the results are read in conjunction with the positive coefficients on the private ownership dummies, an alternative interpretation emerges. This more subtle interpretation suggests that, in the sample time window, the overall positive trend in employment dominates any short-term sales elasticity of employment in the private sector. Second, specification (6) does not differentiate between

[14] While the chosen period was naturally obtained from splitting the ordered subsample of privatised firms into three groups, we also experimented with other time boundaries to check robustness. In particular, if we take a 2-6 year period, the results remain significant, even if marginally less than for the 3-6 year period. Other time boundaries produce less significant results.

employment responses to high and low sales growth. It is to the latter issue which we now turn our attention.

In specification (7), we incorporate the dummies reflecting high and low sales growth. The latter proves to be positive and significant indicating that, where the slump in sales is particularly severe, employment does not fully adjust downwards in line with sales. Specification (8) interacts these two controls with ownership dummies. We find that for privatised companies (three to six years after privatisation) employment is more responsive to high sales growth than for any other ownership group. The results for this specification suggest that the high responsiveness of employment to growth in sales dominates the basic positive trend in employment detected earlier, for this group of privatised companies. Finally, in specification (9), we replace the private sector interactive effects by the interactive effects with the state sector dummy. We find that employment in the state sector is significantly less responsive to high sales growth than in the private sector. Employment in the state sector is also less responsive to low sales growth, but the second effect is insignificant. Put differently, the negative association of the state/revenue interactive term shows that revenue growth in state firms translates into far lower employment growth than in other firms. This result is consistent with our prior expectations on insider effects. It follows that the downwards elasticity of employment might be even lower for the state sector, were it not for the presence of hard budget constraints.

Generally, the results demonstrate the existence of clearly differing dynamics depending on ownership status. Christev and Fitzroy (2002), separating their sample into firms with positive and negative sales growth, conclude that there is no evidence of a '*significant positive employment*

response to positive sales growth'. Our more recent data reveals clear evidence that, in the private sector, a strong positive response to revenue growth has emerged in large Polish firms. For state owned firms the effect is significantly weaker. We interpret this as evidence that, outside of state owned firms, the inheritance of surplus employment pools is no longer a significant impediment to employment growth. In addition, *state* firms with negative revenue growth also exhibit lower employment elasticities than the aggregate suggests. The latter observation is in line with Christev and Fitzroy (2002) who find that '*state owned enterprises exhibit the smallest significant response to negative shocks*'.

In short, state firms, whether experiencing expanding revenues or otherwise, exhibit lower employment elasticities than all firms. This result hints at alternative interpretations. First, it is consistent with sustained or consolidated insider (employee) control, where firms are less likely to raise employment in response to positive shocks and due to financial constraints have to lay off workers when faced with negative shocks. Alternatively, assuming that some form of 'labour hoarding' was still occurring in state companies, an increase in revenue may help the companies to cover the costs of redundancies while, in the absence of growth, labour shedding is not possible.

Lastly, we report our results on the regional and sectoral dimensions. We find no significant results for regional controls, apart from one related to firms operating in multiple regions, which seem to outperform other firms.[15] This finding may partially reflect a firms propensity to locate multiple branches rationally and reap associated efficiency gains, subsequently transformed into employment generation. Another possibility is that multiple location weakens the bargaining position of insiders

[15] It may also be noted that firms in the Central Region (including the capital) were creating more employment, but the results were marginally insignificant ($p>0.1$).

resulting in more employment growth[16]. The sectoral controls point towards lower employment growth for the mining & heavy industry and construction sectors. We have particular confidence in the robustness of these results since not only are they consistent across specifications but they are also based on orthogonal contrasts rather than reflecting simple sectoral dummies. In particular, the poor performance of employment in the mining and heavy industry sector is consistent with ex-ante expectations.

6. MAIN CONCLUSIONS

Using data from a panel of large Polish firms, covering a longer and later period than other studies (e.g. Grosfeld and Nivet (1997), Basu *et al.,* (2000) and Christev and Fitzroy (2002)) we make a series of interesting and important findings concerning firm employment behaviour and its relationship with corporate control structures and sales growth. Not only does our data enable us to investigate employment determination further into the transition period but also allows us to identify *de novo* companies, which by the late 1990's were already appearing among Poland's largest firms.

First, we find that privatised and *de novo* firms are the source of employment creation and that among *de novo* firms it is foreign controlled companies that drive the growth in employment. Moreover, these *de novo* foreign companies create more employment than their privatised foreign equivalents, a result consistent with recent evidence for other emerging economies (Bhamik *et al* 2004). The latter argue that the "*MNE affiliate is likely to expand its operations in a host country*

[16] We also experimented with the regional quality of infrastructure categories, introduced by Duffy and Walsh (2001). We detected some weak evidence of better infrastructure being associated with more employment creation. However the results were very sensitive to specification, including use of PPI instead of CPI as deflator, and we do not report them here. It could be an interesting topic for further research, however, the regional data on employment may be a more natural match for such a study; for firm level data, the regional affiliation has a clear measurement error built in.

faster if it has full control over the local affiliate's operations then when it has to share control with the domestic firm in the host industry" (*Ibid.*, p. 8). The explanation for this is that greenfield investment (*de novo*) is almost always associated with full ownership control, while brownfield investment typically takes the form of joint ventures.

Our second important finding, along the corporate control dimension, is that, within the privatised group, there is a positive impact of privatisation on employment concentrated within a range of three to six years after privatisation. We believe that this result has important methodological and policy implications since many studies on privatisation in transition countries have focused on the relatively short period following privatisation. Our finding may shed some light on the ambiguity of conclusions derived earlier. In addition, privatised companies within this window of three to six years post-privatisation have the highest responsiveness of employment to positive sales growth. More concretely, these are the firms that appear to possess the largest potential for rapid expansion.

In terms of negative sales we find no evidence of systematic differences in employment response to across the ownership categories. However, employment in state firms is less responsive to high positive sales growth. Interpreting these results together, we infer that the overall behaviour of state firms is constrained by both insider rent sharing (resulting in low upwards elasticity) and hard budget constraints (implying downwards elasticity).

In addition, we find that firms operating in multiple regions seem to outperform other firms. This may reflect the firm's propensity to locate multiple branches rationally and to thereby reap related

efficiency gains, which are then transformed into employment generation. Another possibility is that multiple location weakens the bargaining position of insiders resulting in more employment growth.

Finally, moving away from the corporate control dimension, we find that employment is affected by internal wages and not external wages. This may reflect monopoly price setting unions and unilateral employment setting by the employer (Brown and Ashenfelter, 1986), regardless of the ownership sector. However, since our measures of outside options are not ideal, this final result should be interpreted with caution. Indeed, overall, we place considerably more emphasis on our principal results pertaining to corporate control and place the issue of 'outside options' on the agenda for future research.

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Table 1: Descriptive statistics, 1998-2002: 25th , 50th and 75th percentiles.

Category	*Δ Number of employees*	*Δ Real wage*	*Δ Real sales*
All companies	-11.0% -3.0% 1.0%	-3.5% 1.0% 8.0%	-8.0% 0.7% 10.4%
State firms	-9.0% -2.0% 0.0%	-3.0% ***-0.3% 4.7%	-8.8% ***-2.0% 4.1%
De novo foreign firms	-4.0% ***2.0% 10.5%	-8.0% 3.8% 12.1%	-2.3% ***7.3% 17.3%
De novo domestic firms	-12.0% *2.5% 15.0%	-2.0% 3.5% 9.4%	-7.7% **6.9% 17.7%
Privatised foreign firms	-15.2% **-4.0% 0.0%	-3.3% *4.2% 13.1%	-7.3% *2.4% 12.2%
Privatised domestic firms	-19.0% **-5.5% 3.2%	-4.4% 3.2% 12.0%	-10.5% **2.0% 17.4%
Companies with multiple major locations nation-wide	-9.7% *1.0% 9.8%	-7.0% 2.4% 10.0%	-7.8% †3.5% 16.8%

Notes:

1. The numbers given in each cell are 25th , 50th and 75th percentiles respectively.
2. For computational ease, percentage changes are approximated by logarithmic differences.
3. *** Significant at 0.001; ** Significant at 0.01; * Significant at 0.05; †Significant at 0.1. Significance levels relate to Pearson χ^2 (continuity corrected) based on the non-parametric test on the equality of medians.

Table 2: Estimation results

Dependent variable: ΔEmployment	(1)	(2)	(3)	(4)	(5)
Lagged dependent variable	.535 (.082)***	.508 (.091)***	.509 (.081)***	.514 (.080)***	.524 (.084)***
ΔReal sales	.389 (.047)***	.378 (.047)***	.378 (.047)***	.381 (.047)***	.386 (.047)***
ΔReal wage	-.723 (.069)***	-.718 (.068)***	-.718 (.068)***	-.723 (.069)***	-.719 (.07)***
ΔReal sectoral wage	-.089 (.242)	-.096 (.238)	-.096 (.238)	-.109 (.241)	-.113 (.242)
ownership dummies (omitted benchmark = state majority ownership)					
De novo foreign ownership		.057 (.029)†	.057 (.029)†		
De novo domestic ownership		-.007 (.028)	-.007 (.028)		
Privatised foreign ownership		.033 (.023)			
Privatised domestic ownership		.036 (.021)†			
Privatised (all)			.035 (.018)*		
ownership dummies: - time from privatisation (for privatised companies), and – time from being founded (for de novo firms)					
De novo: founded less than 7 years ago				-.002 (.060)	
De novo: founded 8y-9years ago				.032 (.039)	
De novo: founded more than 10 y ago				.019 (.026)	
De novo: founded less than 9 years ago					.033 (.043)
De novo: founded 9 years and more ago					.009 (.024)
1 year before - 2 years after privatisation				.026 (.027)	
3 to 6 years after privatisation				.048 (.025)†	.042 (.025)†
7 years and more after privatisation				.012 (.023)	.004 (.023)
sectoral controls:					
service sector versus industry	-.006 (.004)	-.003 (.004)	-.003 (.004)	-.004 (.004)	-.005 (.004)
trade versus other services	.002 (.012)	-.008 (.013)	-.008 (.013)	-.003 (.013)	-.004 (.013)
mining and heavy ind. versus other ind.	-.01 (.004)**	-.010 (.004)*	-.010 (.004)*	-.011 (.004)*	-.011(.004)**
utilities versus other industry	-.004 (.003)	.001 (.004)	.001 (.004)	-.002 (.004)	-.002 (.004)
construction versus other industry	-.03 (.005)***	-.03 (.006)***	-.03 (.006)***	-.03 (.005)***	-.03 (.005)***
engineering versus other manufacturing	.008 (.009)	.007 (.009)	.007 (.009)	.008 (.009)	.008 (.009)
chemical sector versus other manufact.	-.004 (.008)	-.001 (.008)	-.001 (.008)	-.003 (.008)	-.003 (.008)
companies with multiple major locations	.051 (.025)*	.045 (.025)†	.045 (.025)†	.050 (.025)*	.052 (.025)*
Constant	-.011 (.024)	-.035 (.026)	-.035 (.026)	-.027 (.026)	-.020 (.026)
Second-order autocorrelation: **z**	-0.09	0.03	0.03	0.02	-0.04
Sargan test for over-ident. restrictions: χ^2	10.36	10.50	10.51	9.99	10.21

Table 2 (continued): Estimation results

Dependent variable: ΔEmployment	(6)	(7)	(8)	(9)
Lagged dependent variable	.501 (.081)***	.499 (.081)***	.493 (.082)***	.483 (.079)***
ΔReal sales	.455 (.055)***	.528 (.078)***	.550 (.084)***	.525 (.078)***
High Δ real sales (highest 1/3, dummy)		-.004 (.029)	-.045 (.039)	.034 (.034)
Low Δ real sales (lowest 1/3, dummy)		.044 (.024)†	.050 (.029)†	.031 (.032)
ΔReal wage	-.733 (.068)***	-.736 (.068)***	-.736 (.069)***	-.736 (.068)***
ΔReal sectoral wage	-.070 (.237)	-.060 (.239)	-.050 (.240)	-.010 (.236)
ownership dummies:				
De novo foreign ownership	.068 (.030)*	.070 (.030)*	.089 (.062)	.052 (.035)
De novo domestic ownership	.010 (.027)	.012 (.027)	.046 (.062)	-.005 (.033)
3 to 6 years after privatisation	.073 (.028)**	.079 (.029)*	.004 (.054)	.055 (.034)
7 years and more after privatisation	-.001 (.024)	-.001 (.024)	-.025 (.045)	-.021 (.030)
interactive effects:				
ΔReal sales * 'de novo foreign'	-.274 (.109)*	-.294 (.110)**	-.439 (.171)**	-.348 (.112)**
ΔReal sales * 'de novo domestic'	-.282 (.107)**	-.303 (.11)**	-.449 (.170)**	-.356 (.110)***
ΔReal sales * '3 to 6 y after privatisation'	-.018 (.010)†	-.012 (.010)†	-.019 (.010)†	.055 (.034)
ΔReal sales * '7 y and more after privat.'	-.015 (.015)	-.015 (.015)	-.014 (.015)	-.021 (.030)
Low Δ real sales * 'de novo foreign'			-.063 (.103)	
Low Δ real sales * 'de novo domestic'			-.148 (.110)	
Low Δ real sales * '3-6y after privatis.'			.048 (.070)	
Low Δ real sales * '7y & more after pri.'			.027 (.073)	
High Δ real sales * 'de novo foreign'			.040 (.092)	
High Δ real sales * 'de novo domestic'			.057 (.097)	
High Δ real sales * '3-6y after privatis.'			.149 (.074)*	
High Δ real sales * '7y & more after pri.'			.057 (.067)	
Low Δ real sales * 'state ownership'				.012 (.037)
High Δ real sales * 'state ownership'				-.099 (.045)*
Constant	-.029 (.026)	-.039 (.028)	-.033 (.029)	-.034 (.028)
Second-order autocorrelation: **z**	-0.06	-0.08	-0.17	-0.22
Sargan test for over-ident. restrictions: χ^2	11.84	11.83	11.71	11.94

Notes: (1) Estimator: Arellano-Bond 1 step generalised method of moments. (2) *** Significant at 0.001; ** Significant at 0.01; *Significant at 0.05; † Significant at 0.1. (3) Number of firms: 273. Number of observations: 713. (4) Standard errors in parentheses. (5) Time controls & regional controls included but not reported.

Appendix 1: Summary of existing empirical research

Transition Economies: Central Europe				
Authors	*Country and Time*	*Wage elasticity*	*Output/sales elasticity*	*Other selected comments*
Basu *et al.,* (2000)	Poland,1988-1991	-0.3 (1988/89) -0.84 (1990/91)	0.2	Privatised firms create less employment than other firms.
Grosfield and Nivet (1997)	Poland, 1988-1994, largest firms	-0.03 pre-transition -0.13 transition	0.06 pre-transition 0.25 transition	Privatised firms increased employment by 20% more than SOE's (1990-1).
Kőllő (1998)	Hungary, 1986-1993	-0.6 pre-transition -0.3 (1992/93)	0.2 – 0.3 decreasing 0 increasing 0.2 Sales elasticity	Firm size and export status important
Estrin and Svnejar (1998)	Poland, Czech Republic, Slovak Republic and Hungary 1989-93		Poland: significant for both increasing and decreasing, pre and post transition.	The degree of autonomy of the firm is not linked to elasticity of labour demand.
Christev and Fitzroy (2002)	Poland ,1994-1997	-0.08	More elastic for decreasing sales.	
Faggio and Konings (2003)	Poland, Slovenia, Bulgaria, Romania and Estonia, 1993-1997			Negative effect of state ownership on employment. Large firms downsized faster in advanced transition countries
Kőrősi (2002)	Hungary, 1992-9		Some evidence of asymmetry	Ownership not important for labour demand
Rutkowski (2002)	Croatia, 2000-1		No asymmetry evidence	Productivity, capital intensity & investment increase employment Ownership not important for LD. Smaller firms tend to grow faster.

continued

Transition Economies: China, CIS				
Authors	*Country and time*	*Wage elasticity*	*Output/Sales elasticity*	*Selected results*
Dong (1998)	China, 1984-1990	Negative own wage elasticity		Negative alternative wage elasticity consistent with weak efficiency
Lee (1999)	China, 1980-1994		Positive output elasticity	Profit/employees negatively affect employment in post 1985 period . Measures of insider power and corporatisation are insignificant factors.
Konings and Lehman (2001)	Russia, 1996-1997			State owned firms employment decline was less responsive to wage changes than private and mixed firms.
Konings *et al*., (2003)	Ukraine, 1998-2000			Negative relationship between firm size and net employment growth. New private firms show higher employment growth.
Non-transition countries				
Brown and Ashenfelter (1986)	US, 1948-1965	Negative own wage elasticity		Negative local unemployment elasticity consistent with weak efficiency in employment contracts.
Burgess (1988)	U.K, 1964-82	-0.06		
Card (1990)	Canada, 1966-1983	-0.03 to –0.58		Weak relation between employment and industry wage.
Haskel *et al.,* (1997)	UK, 1990		Employment adjustment more to positive shocks	
Smolny (2002)	Germany, 1980-1992			Product innovation is positively associated with employment growth.
Checci and Navaretti (2003)	Several EU countries	-0.3 Sweden -1.06 Spain		

Appendix 2: Definition of Variables

Variable name	*Description of variable*	*Details / comments*
state ownership	State owned firm	Majority state ownership dummy
de_novo foreign ownership	*De novo* private foreign firm	A new private company (i.e. neither state owned nor was ever state owned), with majority foreign shareholdings
de_novo domestic ownership	*De novo* private domestic firm	The same, but with majority domestic shareholdings
privatised foreign	Privatised firm, foreign	Privatised, with majority foreign shareholdings
privatised domestic	Privatised firm, domestic	Privatised, with majority domestic shareholdings
privatised: 1y before – 2y after, 3y – 6y after, 7y after and more	Dummies categorising privatised companies according to the time of privatisation	The three categories were chosen, so that all observations on privatised companies available over the panel time span are split into three roughly equal groups
de_novo, founded: less then 7y before, 8y-9y before, 10y before and more	Dummies categorising *de novo* companies according to the time of founding	The three categories were chosen, so that all observations on *de novo* companies available over the panel time span are split into three roughly equal groups
employment	Natural logarithm of number of employees	Available for 1996-2002
real wage	Natural logarithm of real wage cost	natural logarithm of (average monthly wage cost in zlotys/producer price index). Data 1996, 1998-2002. PPI: Central Statistical Office, two digit NACE
real sales	Natural logarithm of real sales	Total sales/PPI. Available for 1996-2002.
Δ *real sales*	Change in revenue given as logarithmic difference (the operator Δ has the same meaning for other variables)	
high Δ *real sales*	Dummy variable, which takes the value of one for one third of observations with highest growth in real sales	
low Δ *real sales*	Dummy variable, which takes the value of one for one third of observations with lowest growth in real sales	
Δ *real sales * state (de novo)*	Refers to the interaction (multiplication) of the ownership dummy with the given variable (in this example: with sales change)	

continued

Variable name	*Description of variable*	*Details / comments*
Year controls	1999, 2000, 2001 dummies	Four years allowed given the GMM lag structure (three cross sections lost in constructing lags and taking first differences)
Sectoral controls	- services versus industry - trade versus other services, - mining & heavy industry versus other industry, - utilities versus other industry, - construction versus other industry, - engineering v. other manufacturing, - chemical v. other manufacturing	Sectoral controls are constructed as orthogonal contrasts. When replaced by simple dummies, the results do not change. However, using orthogonal contrasts allows the sectoral controls to be uncorrelated with each other. Moreover, instead of being constructed as the difference against one benchmark group, the orthogonal contrasts allow describing the structure of sectoral differences in a more reach way. Details of coding are available on request.
External characteristics		
real sectoral wage	Logarithm of real sectoral wage	Logarithm of (average monthly wage in zlotys/PPI). Available for 1996-2002, two digit NACE sectors
region I	Central: Mazowieckie, Łódzkie	Six European NTS macro regions, according to the classification being introduced in 2004.
region II	South Central: Małopolskie, Śląskie	
region III	East: Lubelskie, Podkarpackie, Podlaskie, Świętokrzyskie	
region IV	North West: Lubuskie, Wielkopolskie, Zachodniopomorskie	
region V	South West: Dolnośląskie, Opolskie	
region VI	North Central: Kujawskie, Pomorskie, Warmińskie	
multiple locations	Dummy for companies operating nationwide	This and the previous regional categories are mutually exclusive