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A land of milk and honey with streets paved with gold:
Do emigrants have over-optimistic expectations about incomes abroad?

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Non-Technical Abstract

Millions of people emigrate every year in search of better economic and social opportunities. Anecdotal evidence suggests that emigrants may have over-optimistic expectations about the incomes they can earn abroad, resulting in excessive migration pressure, and in disappointment amongst those who do migrate. Yet there is almost no statistical evidence on how accurately these emigrants predict the incomes that they will earn working abroad. In this paper we combine a natural emigration experiment with unique survey data on would-be emigrants' probabilistic expectations about employment and incomes in the migration destination. Our procedure enables us to obtain moments and quantiles of the subjective distribution of expected earnings in the destination country. We find a significant under-estimation of both unconditional and conditional labor earnings at all points in the distribution. This under-estimation appears driven in part by potential migrants placing too much weight on the negative employment experiences of some migrants, and by inaccurate information flows from extended family, who may be trying to moderate remittance demands by understating incomes.

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Abstract

Millions of people emigrate every year in search of better economic and social opportunities. Anecdotal evidence suggests that emigrants may have over-optimistic expectations about the incomes they can earn abroad, resulting in excessive migration pressure, and in disappointment amongst those who do migrate. Yet there is almost no statistical evidence on how accurately these emigrants predict the incomes that they will earn working abroad. In this paper we combine a natural emigration experiment with unique survey data on would-be emigrants' probabilistic expectations about employment and incomes in the migration destination. Our procedure enables us to obtain moments and quantiles of the subjective distribution of expected earnings in the destination country. We find a significant under-estimation of both unconditional and conditional labor earnings at all points in the distribution. This under-estimation appears driven in part by potential migrants placing too much weight on the negative employment experiences of some migrants, and by inaccurate information flows from extended family, who may be trying to moderate remittance demands by understating incomes.

"Fortunes are being made by taking the life savings off gullible people in return for getting them, illegally, into a country like Britain. The sales talk is doubtless about a land flowing with milk and honey, and streets paved with gold."

The Campaign for Political Ecology[1]

"…for our relatives who live in the isle, in their small minds they think that money grow[s] out of trees, and thus expect people overseas to provide them with their need[s]…Tongans returning home for visits make the situation worse by exaggerating their success and wealth and creating unrealistic expectations"

Tongan online discussion group (quoted in Lee,2003, p. 36)

Does migration make people better off? Revealed preference would suggest yes, as evidenced by the large number of people choosing to pursue life in a different land each year. However, as the above quotes illustrate, some critics contend that migrants may hold unrealistic expectations of the incomes they can earn abroad. Such expectations may be inflated by television and film images of life abroad (Mai, 2004), and by returning migrants presenting an overly positive image of their lives overseas. Typical anecdotes tell of migrants working 14 hours a day and living six to a room returning for a three-day holiday at home, bringing consumer goods and spending a lot to show how successful they have become. As a result, it could be the case that many intending migrants overestimate the incomes they can earn abroad.

Whether or not emigrants are overly optimistic about incomes abroad is a question of key policy importance, given the large and growing migration pressures around the world. For example, surveys of 15 to 24 year olds taken in late 2005 and early 2006 found that

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[1] http://eco.gn.apc.org/Population/immigration.html

91 percent of Albanians, 88 percent of Romanians, 80 percent of Ethiopians, 78 percent of Bangladeshis and 76 percent of Iraqis said that they would emigrate if they had the legal opportunity (World Bank, 2006). Eagerness to emigrate from Tonga to New Zealand is reflected in the excess applications for an annual immigration quota. If this enormous pressure to emigrate reflects mistaken beliefs about the incomes that can be earned abroad, then migration may lead to disappointment and frustration for the migrant, resulting in social problems in the destination country. But it would also suggest that more accurate information on earnings abroad could help lower immigration pressures.

This paper uses unique survey data combined with a natural experiment in order to assess the accuracy of these concerns by determining whether potential emigrants have correct expectations about the incomes they would earn working abroad. We survey Tongans who applied to emigrate to New Zealand under the Pacific Access Category (PAC), which allows a quota of Tongans to immigrate each year, in addition to those approved through other categories.[2] Many more people apply than the quota allows, and so a lottery (referred to as a ballot) is used to determine who can emigrate through the Pacific Access Category.[3] We elicited expectations about employment and income in New Zealand from individuals in Tonga who had applied to emigrate but whose names were not chosen in the ballot. Expectations were elicited by adapting the probabilistic expectations questions used by Dominitz and Manski (1997), Dominitz (1998) and Manski (2004). These

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[2] The main other categories are family sponsored migration and a business/skilled category. In the 2004/05 financial year New Zealand admitted 58 Tongans through the business/skilled category and 549 through family sponsored channels. Most migrants under the family sponsored categories enter as parents, children, or spouses/domestic partners of existing New Zealand residents.

[3] Individuals must also fulfill other eligibility requirements in order to migrate through the Pacific Access Category, including being aged 18 to 45, and meeting English, health and character requirements.

responses are then used to estimate the subjective distribution of earnings in New Zealand of ballot losers, which can be compared to the distribution of earnings realized by the ballot winners who emigrated.

In contrast to the concern that migrants could be over-optimistic, we find striking evidence that they underestimate both the odds of being employed, and the incomes that they could earn if employed abroad. The mean percent chance of being employed in New Zealand expressed by the ballot losers is 57 percent, compared to a 75 percent actual employment rate among emigrant ballot winners. The means of the mean and median expected weekly earnings in New Zealand conditional on being employed are $337 and $303, much less than the actual mean ($564) and median ($515) incomes earned by the ballot winners. Combining the expectations of employment with the conditional earnings distribution, we arrive at mean unconditional expected earnings which are only 46 percent of the actual mean earnings of immigrants in New Zealand.

We show that expected earnings do predict whether or not individuals apply to migrate, and then explore several explanations for the underestimation of employment likelihoods and expected earnings. We find individuals to have lower expectations of employment in New Zealand if they live close to the houses of migrants who were unable to take up their initial job offers. This is consistent with the behavioral/psychological literature in which individuals place disproportionate emphasis on negative events (Taylor, 1991). We find that the degree of underestimation of earnings is greater when individuals have cousins, uncles and aunts in New Zealand compared with those who either have no relatives or

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who have immediate family in New Zealand. The anthropological literature on the Tongan diaspora (Lee, 2003), shows that the extended family can place large demands for remittances on migrants. We view the underestimation of earnings by potential emigrants with extended family abroad as suggesting that immigrants mitigate this remittance pressure by understating their earnings abroad when communicating with their extended family.[4] We also find the degree of underestimation to be larger for males than for females. Males and females earn similar amounts in Tonga conditional on age and education but there is a large male earnings premium in New Zealand. This male earnings premium in New Zealand appears to be unknown to potential emigrants in Tonga.

Our results show that potential emigrants can have very erroneous expectations about the incomes that can be earned abroad. We find this even in Tonga, a country where over three-quarters of households have at least one resident who has been to New Zealand, with a migrant stock in New Zealand equal to 17 percent of its population at home and with 75 percent of households receiving remittances. Thus we would expect that potential migrants in other countries, which have weaker links to destination countries and smaller migration information networks to draw upon, are also likely to have incorrect expectations about potential incomes abroad.

The paper also contributes to a nascent literature on measuring expectations in developing countries. Early work by Ravallion (1987) asked rice traders in Bangladesh

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[4] Tonga is very remittance-dependent. According to data are from the Tongan Household Income and Expenditure Survey (http://www.spc.int/prism/Country/TO/stats/Surveys/HIES-new/hhincom-new.htm) 21 percent of household monetary income is from remittances. Moreover, the average immigrant household in our survey in New Zealand sends remittances to Tonga of $1900 cash and $600 goods per year, from an annual income of $33,000. Hence these are significant income flows for both senders and receivers.

whether they thought the price would go up, go down, or stay the same, and the amount of change. Expectations were found to track prices fairly well on average, although there was a tendency to overestimate price changes. A series of recent studies have attempted to elicit probabilities in agricultural contexts. These include Luseno et al (2003) and Lybbert et al (2005) on rainfall expectations, Santos and Barrett (2006) on herd size, and Hill (2006) on coffee prices. These studies have generally found reasonably accurate expectations, with updating in response to new information. These existing studies have asked expectations about events in which respondents have substantial existing experience. Like these studies, we find reasonably accurate expectations when asking Tongan immigrants in New Zealand about employment and earnings in Tonga. However, in contrast, we find substantial inaccuracies when we look at expectations about an important life decision for which individuals do not have direct experience.

The remainder of the paper is structured as follows. Section 2 describes the Pacific Access Category and the survey upon which this paper is based. Section 3 outlines in detail how expectations are measured. Sections 4 and 5 compare expectations about employment and income in New Zealand to the actual distributions experienced by migrants. Section 6 then explores several explanations for the difference between actual and expected work outcomes, and Section 7 concludes.

2. Description of the Survey and Experimental Design

The data used in this paper are from the Tongan component of the Pacific Island-New Zealand Migration Survey (PINZMS), a comprehensive household survey designed to

measure multiple aspects of the migration process. The unique feature of PINZMS is that it is based on a natural experiment that enables the income gains from migration to be estimated free of any selection bias (McKenzie, Gibson and Stillman, 2006). New Zealand has a special immigration category, established in 2001, called the Pacific Access Category (PAC), which allows an annual quota of 250 Tongans to emigrate to New Zealand without going through other migration routes, such as categories for family reunification, skilled migrants and business investors.[5] Almost ten times as many applications are received than the quota allows, so a ballot is used by the New Zealand Department of Labour (DoL) to randomly select from amongst the applicants. Once their ballot is selected in the lottery, applicants must then provide a valid job offer in New Zealand within six months in order to have their residence application approved and be allowed to immigrate.[6]

The survey design and enumeration, which was overseen by the authors in 2005, covered three sub-samples of applicants to the 2002/03 and 2003/04 PAC ballots: (a) individuals who had their names drawn in the ballot, whose residence applications were approved, and who had emigrated to New Zealand (ballot winners) (b) individuals who applied for the PAC, but whose names were not drawn in the ballot and so they were still residing in Tonga (ballot losers); and (c) individuals who had their names drawn in the ballot, but who had not emigrated to New Zealand at the time of the survey (typically because their

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[5] Specifically, any Tongan citizen aged between 18 and 45, who meets certain English, health and character requirements, can register to migrate to New Zealand. The person who registers is a Principal Applicant. If they are successful, their immediate family (spouse and children under age 18) can also apply to migrate as Secondary Applicants. The quota of 250 applies to the total of Primary and Secondary Applicants, and corresponds to about 70 migrant households.

[6] The spouse of an applicant can also be used to meet the job offer condition if they are included on the initial application. Applicants with dependent children must also meet a minimum income requirement. See McKenzie, Gibson and Stillman (2006) for a more detailed description of the PAC.

residence application was still being processed).[7] McKenzie, Gibson and Stillman (2006) show that there is little selection among ballot winners, and so we focus on a comparison of migrants and ballot losers here. We use the sample of ballot winners still in Tonga in part of the paper, and also employ a sample of individuals who did not apply to the PAC, collected as part of the same survey.

While the survey obtains labor market information from all adults the detailed questions on expectations are directed only at the Principal Applicants. We have 65 Principal Applicants in the immigrant sub-sample and 78 in the sample whose ballot application was unsuccessful. Table 1 reports selected characteristics for these two groups.

3. Measuring Expectations

We elicited probabilistic expectations about employment and income in New Zealand from the sample of PAC ballot losers in Tonga. We will compare these expectations to the realized employment and income outcomes of the ballot winners, who had emigrated to New Zealand. We also reversed the procedure by eliciting probabilistic expectations about employment and income in Tonga from the immigrants in New Zealand.

3.1 Survey Questions

We follow the approach pioneered by Dominitz and Manski (1997) in measuring expectations. Expectations about employment in New Zealand were obtained by first

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[7] A detailed description of the sampling rules used to ensure that each sample is representative is provided by McKenzie, Gibson and Stillman (2006).

explaining the concept of probabilities and then asking the following question in our survey in Tonga:

> "I would now like you to think about what you would be doing right now if you were living in New Zealand. What do you think is the percent chance that you would be working for pay?"

Our field experience suggests that respondents interpreted this question as pertaining to a situation in which they had been successful in the PAC ballot, in which case they would have been living in New Zealand for the same (short) duration as our migrant sample. If potential migrants interpreted this with regard to their expected situation after several years of living in New Zealand, we would expect them to overstate incomes relative to the realized incomes of the migrant group. As will be seen, we observe the opposite.

All individuals who expressed a percent chance greater than zero of working for pay were then asked what they thought were the lowest weekly amount and highest weekly amount that they could possibly be earning in New Zealand if they were working for pay in New Zealand right now. As Dominitz and Manski (1997) note, these questions serve to decrease overconfidence problems in which respondents tend to focus too much on central tendencies and not consider the uncertainty in potential outcomes. They also act to decrease anchoring problems whereby respondents' beliefs are influenced by the amounts that the interviewer asks about.

The average of the answers to the highest and lowest weekly incomes were then used by the interviewer to read a set of threshold levels of income, *Y1*, *Y2*, *Y3*, and *Y4*, from a predetermined table on the questionnaire. Respondents were then asked:

> "Thinking about the income that you would be earning if you were working in New Zealand right now, what do you think is the percent chance that your own weekly income from work would be less than *Y1* New Zealand dollars?"

The same question was then asked for thresholds of *Y2*, *Y3* and *Y4* dollars. For example, an individual whose average of the highest and lowest weekly incomes was $375 would be asked what the percent chance was that their income would be less than $300, $350, $400 and $450.

3.2 Comparison with other approaches

Very few surveys of migrants ask questions about expectations. It is therefore worth discussing the rationale for adopting the probabilistic questions used here in lieu of some of the more traditional qualitative and attitudinal questions. For employment, instead of asking the percent chance of being employed, a traditional approach could involve asking a question such as "what do you think your likelihood of being employed would be if you were living in New Zealand right now: very likely, likely, unlikely, highly unlikely". As Dominitz and Manski (1997) and Manski (2004) note, such a question would have at least two drawbacks over the probabilistic question. The first is that it makes it very difficult to compare responses across individuals, since each individual can interpret terms such as "very likely" differently. Secondly, the coarseness of the response limits how much information can be obtained from such a question.

A more direct question with income would be to ask would-be emigrants how much they would expect to be paid if they were working in New Zealand. A variant of this is used in the New Immigrant Survey, which asks immigrants to state how much they think workers usually earn in various jobs in the United States. However, as Dominitz (1998) points out, it is not clear if individuals are reporting means, medians, modes, or some other quantiles of their subjective distributions when they respond to such questions. In contrast, by eliciting probabilities, we can estimate all quantiles and moments of interest from the subjective earnings distribution.

3.3. Fitting the Subjective Earnings Distribution

We summarize briefly here the procedure for estimating the subjective distribution of earnings conditional on working. We follow closely the approach of Dominitz and Manski (1997), where further details are provided.

The four responses about percent chances for the income threshold questions are divided by 100 and then interpreted as points on the subjective cumulative distribution function (CDF) of weekly labor income if they were working in New Zealand. Thus for each individual i, we observe

$F_{i,k} = P(y_i < Y_{i,k}|z=1, \varphi_i)$ $k=1,2,3,4$

where y_i denotes earnings in New Zealand, $Y_{i,1}$, $Y_{i,2}$, $Y_{i,3}$ and $Y_{i,4}$ are the earnings thresholds that i is asked about, φ_i is i's information set, and $z=1$ denotes that the expectations are conditional on working in New Zealand. Let $G(Y; \mu, \sigma^2)$ denote the CDF

of a log-normal distribution, where $\log Y \sim N(\mu, \sigma^2)$. For each respondent, we then find estimates μ_i, σ_i^2 to solve the least squares problem[8]:

$$\min_{\mu,\sigma^2} \sum_{k=1}^{4} \left(F_{i,k} - G\left(Y_{i,k}; \mu, \sigma^2\right)\right)^2$$

Once a distribution has been fitted for each respondent, we can then obtain moments and quantiles of interest from the fitted distribution. We extract the mean, standard deviation, median and selected percentiles from the fitted distribution. The log-normal distribution fits the elicited points very closely. One measure of the goodness of fit is the mean absolute difference between the elicited and fitted distributions. This average difference is 0.017, and 73 out of the 77 observations have mean absolute errors below 0.05. These fits are closer than those achieved by Dominitz and Manski (1997) with one year ahead labor income in the United States.

Figure 1 provides an illustration of the elicited and fitted distributions for four of our 77 respondents. Respondent 1 reported a lowest possible income in New Zealand of $100 and highest possible income of $300. This led to them being asked about the thresholds {150, 200, 250, 300}, for which they gave the sequence of probabilities {0.6, 0.7, 0.75, 0.8}. The upper left panel shows all four points lie very close to the fitted CDF, with a mean absolute difference between the elicited and fitted distributions of 0.003. The estimated median is $110 and estimated mean is $224. The estimated 75th percentile of the distribution is $246, which accords well with the elicited probability of 0.75 of having income less than $250.

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[8] Note that if at least three of the four elicited probabilities take zero or one values, then the solution is a degenerate log-normal distribution. None of our respondents fell into this category, and so the least squares problem is well-formulated, with a unique non-degenerate solution for each individual.

The CDF of respondent 30 (lower left panel) illustrates a close fit, even when all the elicited probabilities are of 0.8 or higher. Here the lowest and highest incomes were given as $100 and $400, and we estimate a median of $130 and mean of $149. Such cases show that the midpoint of the highest and lowest values can be a misleading estimate of the average. The CDFs of respondents 3 and 64 (upper and lower right panels) show examples of less accurate fits (mean absolute differences of 0.043 and 0.032). However, even in these cases the fit is quite close, suggesting the log-normal distribution is an appropriate approximation to the subjective CDF.

4. Expectations about Employment

Figure 2 shows the histogram of responses to the percent chance of being employed in New Zealand as expressed by the PAC ballot losers in Tonga. The vertical line at 75.4 percent shows the actual employment rate in New Zealand at the time of our survey for the PAC ballot winners. It is immediately clear that on average potential emigrants are underestimating the likelihood of being employed.

Table 2 explores this further by presenting the mean and quantiles of this distribution. The mean percent chance of being employed expected by potential emigrants is 57.2 percent. This is lower than both the 72.7 percent employment rate that they currently have in Tonga, and lower than the 75.4 percent employment rate of the PAC immigrants in New Zealand. When we break the data down by gender, we see that the underestimation seems to be coming only from males. Both males and females express an average percent chance of being employed in New Zealand of 57 percent, however

amongst our sample of PAC ballot winners in New Zealand, males have an 88 percent employment rate and females a 52 percent rate.[9] The confidence interval for the male expected rate covers rates all less than the rates in the confidence interval for the mean actual rate. In contrast, although the sample of female immigrants is relatively small, making the confidence intervals wide, the point estimates are close for the average expected rate and actual rate.

5. Expectations about income in New Zealand

5.1 Earnings Conditional on Working

The first row of Table 3 presents the mean, standard deviation, and selected quantiles from the weekly wage distribution of PAC immigrants working in New Zealand. We wish to compare this actual wage distribution to the expectations that potential emigrants have about work income in New Zealand. To begin, Table 3 reports on the lowest and highest income amounts that PAC ballot losers say they would be earning if currently working in New Zealand. The mean lowest amount is $212 per week, and mean highest amount is $551 per week. Even this highest amount is lower than the mean actual work income of $564 per week earned by the PAC immigrants.

The bottom of Table 3 then presents the mean and different quantiles of the estimated conditional earnings distribution for each individual. The means of the mean and median expected weekly earnings in New Zealand are $337 and $303. Comparing these to the mean ($564) and median ($515) of the actual distribution of wages, we see that both are

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[9] Note that these employment rates reflect conditions at the time of the survey. It is possible that policy changes intended to make it easier for migrants to take up job offers could have increased employment rates since this time (see Gibson and McKenzie, 2006 for early evidence).

only 59-60 percent of the actual earnings. That is, potential emigrants are underestimating earnings by 40 percent. This underestimation occurs across the whole distribution, but appears proportionately larger at the bottom of the distribution. The mean 10th percentile of expected earnings is only 54 percent of the 10th percentile of actual earnings, and the mean 90th percentile of expected earnings is 73 percent of the 90th percentile of actual earnings. The mean 90th percentile of expected earnings is $512, which is still less than the mean of actual earnings.

Figure 3 show kernel densities of the actual wage distribution for PAC immigrants in New Zealand, and kernel densities of the mean, median, 10th, and 90th percentiles of the expected wage distribution of ballot losers. All the expected wage distributions are shifted to the left compared to the actual wage distribution – again showing the general tendency to understate earnings. The 90th percentile distribution is more spread out, and has positive mass between $800 and $1350, showing some potential emigrants expect the upside of earnings in New Zealand to be quite high. However, the proportion expecting this still seems too low relative to the realized data: 13 percent of potential emigrants expect to have a one in ten chance of having incomes above $800 if they work, giving a predicted 1.3 percent of individuals with incomes above this level at any given time. However, in practice we observe 3 out of the 48 immigrant workers (6 percent) having wage income above $800 in New Zealand. The small sample sizes make such comparisons suggestive only, but they at least do not show evidence of overestimation of incomes, even at the very top of the distribution.

5.2 Unconditional Earnings

The unconditional distribution of expected earnings can then be obtained by combining the conditional earnings distribution with data on the expected probability of being employed. Since the income from work is zero if the individual is not working, we have for work income y:

$$P(y_i \mid \varphi_i) = P(y_i \mid z_i = 1, \varphi_i) \, P(z_i = 1)$$

where $z_i = 1$ indicates that individual i is employed in New Zealand and φ_i is $i's$ information set. Combining the elicited expectations about the probability of employment given in Figure 2 with the conditional earnings distributions in Table 3 we obtain the unconditional earnings distributions.

Table 4 reports the actual unconditional earnings distribution of immigrants in New Zealand and compares this to the expected unconditional distribution. The mean of the mean expected earnings is $196 per week, only 46 percent of the actual mean earnings of $423. The mean of median expected earnings is $178, only 40 percent of the actual median earnings of $445. That is the combination of individuals underestimating the likelihood of being employed if in New Zealand and underestimating the earnings they will get if employed leads to large underestimation of unconditional earnings.

5.3 Do expectations help predict actual decisions?

The importance of the finding that potential emigrants underestimate incomes to be earned abroad depends in part on whether or not these expectations play a role in the decision to migrate. Classic theories of migration, such as Sjaastad (1962) and Harris and

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Todaro (1970) predict that expectations of incomes and employment abroad should matter. To examine whether expectations help predict actual decisions in our data, we compare the unconditional income expectations of ballot losers to those of individuals who did not apply for the Pacific Access Category. Column 1 of Table 5 shows that the median expected income is positively and significantly associated with the decision to apply for this migration category. Furthermore, this continues to be true after controlling for an individual's pre-application income and employment status. Expecting $100 more income after migrating is associated with a 10 percentage point increase in the likelihood of applying for migration. Thus, although our sample is relatively small, there is evidence that these expectations do predict economic behavior.

6. What explains the underestimation of income?

The above results show that Tongan would-be emigrants substantially underestimate the incomes they could earn in New Zealand. We now explore several explanations for these results, guided by the anthropological literature, discussions with our survey team, and our knowledge of the PAC procedure.

6.1 Poor expectations in general?

A first explanation for the underestimation of employment and income possibilities in New Zealand is that the questions were not well understood by the survey participants. Or even if the questions are understood, individuals may be poor at forming expectations even about events for which they have more direct experience. To check against this, we asked the immigrants in New Zealand analogous questions as to their percent chance of

being employed, and to the income earned, if they were working in Tonga at the time of the survey. Since all are recent emigrants from Tonga, and most were working there, one should expect them to have reasonably accurate expectations.

Table 6 compares the expectations the immigrants in New Zealand have about work in Tonga to their own previous experiences and to the experiences of the group of PAC ballot losers. For employment, the mean and median expected chances of working are 68 percent and 80 percent. This compares well to both their own prior employment rate (80%) and to the current employment rate of ballot losers (73%). When we look at males and females separately, we find that the mean expected percent chance of employment expressed by males is less than that of females, despite males having higher past employment rates. Nevertheless, the median expected percent chance of being employed for males is 80 percent, close to the actual prior rate of 83 percent.

When we consider conditional income expectations, we find that the expectations again seem fairly accurate when comparing to income prior to emigration. The mean of the mean expected earnings is 158 pa'anga, compared to a mean prior income of 154 pa'anga and a mean income among the ballot losers of 189 pa'anga. So the immigrants may not incorporate wage growth and inflation that have occurred since they left Tonga, but otherwise express expectations very close to their own experiences.

6.2 Very lucky immigrants?

A second explanation for the difference between subjective expectations and the realized outcomes of immigrants is that the immigrants all happened to receive very high draws from their subjective earnings distributions. To see how lucky immigrants would have had to have been for this to explain the difference, we draw an income from the estimated subjective conditional earnings distributions for each would-be emigrant, and use this to construct an estimate of the mean expected earnings among the would-be emigrants. We do this 10,000 times. In only 2 out of these 10,000 draws do we obtain a subjective mean equal to or greater than the actual mean conditional income for immigrants of $564. Moreover, we get a subjective mean no more than 10 percent below the actual mean in only 10 out of the 10,000 draws, and a subjective mean no more than 20 percent below the actual mean in only 33 out of the 10,000 draws. Therefore it appears extremely unlikely that the large gap between expected and actual earnings can be attributed to the immigrants all receiving very good draws from their subjective earnings distributions.[10]

6.3 Comparison to the wrong reference group

Our survey allows us to compare the expectations of PAC ballot losers to the realized outcomes of PAC ballot winners at the same point in time. However, although we have complete information on how PAC ballot winners fare in New Zealand, it appears unlikely that individuals in Tonga do. A third potential explanation for the understated

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[10] Of course these calculations assume that draws from the subjective distributions are independent across individuals. In practice all individuals could receive a common positive shock. However, consider the very extreme case of perfectly correlated draws, so that if one individual draws from the 95th percentile of his or her subjective distribution, all other would-be emigrants also draw from this percentile of their distributions. Even in the case, the probability of getting a mean subjective income of $564 or higher is only 0.067.

employment probabilities and expected income is therefore that it arises from forming

expectations on the basis of information coming from the wrong reference group. We

consider two possible likely reference groups. The first is that PAC ballot losers have

received some information about how the winners are doing, but have only heard about

the experiences of individuals whose initial job offers fell through. The second is that

PAC ballot losers base their expectations on the experiences of earlier cohorts of

migrants.

Feedback from migrants whose job offers fell through?

The Pacific Access Category requires individuals with successful ballots to obtain a job

offer before immigrating to New Zealand. The job offer must be for "ongoing and

sustainable employment" and should be a full-time job which pays salary or wages (not

commission or self-employment) and which complies with employment law in New

Zealand. Despite having a job offer, our survey found that only 39 percent of the Tongan

immigrants coming through the PAC during our sample period actually worked in the job

that they had the offer for upon arriving in New Zealand. Amongst those not taking up

the job offer, 68 percent found that the job was no longer available upon moving to New

Zealand, due in large part to the time elapsing between filing their residence application,

having it approved, and actually moving to New Zealand.[11]

As a result of this, a potential explanation for the low income expectations is that

potential emigrants may have heard from friends and relatives that job offers would

disappear by the time of immigration, leading new immigrants to have to search for new

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[11] Gibson and McKenzie (2006) provide more details of how this job offer functions in practice, and show that the proportion of immigrants taking up their job offer increased after a policy change in October 2004.

jobs and to take up jobs which are lower paid. Alternatively, even if information is available from both those taking up their initial jobs and those not doing so, the psychological literature suggests individuals may place disproportionate weight on negative outcomes compared to positive.[12]

The second row of Table 3 shows that although the income earned by immigrants not taking up their initial job offer is lower than the average immigrant income, it is still much higher than the expected income. The mean and median work income of immigrants who did not start work in the job for which they had their initial job offer is $520. The mean of the mean expected income ($337) is still only 65 percent of this.[13]

We can test for possible information flow from PAC migrants to ballot losers using GPS coordinates collected on the locations in Tonga of houses of ballot losers and of the houses where migrants lived before migrating (and where some family member of the migrant is likely to remain). We use this to measure the distance of PAC ballot losers from the closest emigrant who didn't take up their initial job offer, and the proportion of PAC emigrants who didn't take up their initial job offer within a 6km radius of the house of the ballot loser. The first two columns of Table 7 show no significant effect of distance to PAC emigrants on conditional income expectations, with the signs of the coefficients showing, if anything, higher expected incomes for ballot losers living closer to those who didn't take up their initial job offer.

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[12] Montgomery (1998) discusses the psychological evidence for this, and suggests in a developing country setting that negative outcomes could play a disproportionate role in expectations about child mortality.
[13] Similarly, if we relate the expected income to a hypothetical migrant income based on the *offered* wages (even when these offers were not taken up), the underestimation is just as large. The mean and median offered wages were $528 and $480.

Columns 3 and 4 of Table 7 then consider the effect on expectations about being employed if they migrate to New Zealand. Here we do find significant effects of distance. Ballot losers who live closer to any PAC migrants who didn't take up their initial job offer expect lower likelihoods of being employed in New Zealand. Column 4 shows the size of the effect to be reasonably large. Individuals for which all PAC migrants within a 6 kilometer radius did not take up the initial job offer say they have a 19.6 percentage point lower likelihood of being employed. The constant term is 63%, and 65% if no controls other than the proportion of emigrants within 6km not taking up their initial job offer are used. Both of these are lower than the actual employment rate of 75% experienced by migrants in New Zealand, suggesting that feedback from migrants with bad experiences explains some, but not all of the low employment expectations. Overall, these results therefore suggest that proximity to the houses of migrants who did not take up their initial job offer lowers expectations about employment in New Zealand, but has no sizeable or significant effect on expected incomes conditional on working.

Basing expectations on earlier cohorts

Potential migrants may also base their expectations on the experiences of earlier cohorts of Tongans migrating to New Zealand. Unemployment rates for Pacific Islanders in New Zealand have fallen sharply over the last decade, with the male unemployment rate falling from 15.2% in 1996 to 6.8% in 2005. Using the New Zealand Income Survey, we can look more closely at recent Tongan migrants in New Zealand (e.g. individuals who have lived in New Zealand for five or less years). Averaging over 1997-99, the percentage of 20-46 year olds employed was 44%, rising to 53% over 2001-03. While PAC migrants, as economic migrants coming with job offers, have higher employment

rates than other Tongan migrants, who mostly come in through family reunification categories, the mean percent chance expected of employment in New Zealand of 57 percent is not inconsistent with employment expectations being based on the experiences of earlier migrants.

Pay increases for wage workers in Tonga are relatively rare, with public sector workers not receiving pay increases between 1996 and 2005. Thus, basing income expectations on experiences several years ago is quite accurate in Tonga, and potential migrants may expect the same to apply in New Zealand. Mean (median) wage incomes conditional on working for recent Tongan migrants aged 20-46, expressed in 2004 New Zealand dollars, average $416 ($393) over 1997-99, and $509 ($470) over 2001-03. The mean mean and mean median expected wage incomes of $337 and $298 are thus 81% (76%) of the 1997-99 mean (median). So it is possible that low expectations of incomes are driven in part by potential migrants basing their experiences on average migrants migrating almost ten years before them. However, this would still then raise the question as to why potential migrants from a country with very large migrant networks do not have more recent labour market information.

6.4 Psychological Effects of Losing the Ballot Draw?

We asked the expectations questions at a time when individuals already knew whether or not their name had been drawn in the ballot. A fourth possibility for the understated expectations is that ballot losers attempt to make themselves feel better about losing in the ballot by downplaying the employment and income possibilities abroad. The fact that

individuals can apply again for the PAC ballot the next year may reduce such an effect, but it may still be present. To examine this possibility, we consider also the expectations of the third group in our sample: individuals whose name was drawn in the ballot, but who had not yet migrated. These individuals were typically in the process of trying to find job offers or waiting for their applications to be processed, and the majority of them migrated after our survey.[14]

We should expect any psychological effects to be much less severe for this group of ballot winners still in Tonga. However, they have very similar expectations to the group of ballot losers. The mean percent change of working if in New Zealand is 54 percent, compared to 57 percent for ballot losers. The mean (median) expected wage income conditional on working is $382 ($337) compared to $337 ($303) for ballot losers. These are still substantially below the actual employment rates and incomes of the migrants, suggesting that psychological effects of losing the ballot are not playing an important role in the understated expectations of the ballot losers.

6.5 Extended Family trying to Moderate Remittance Demands?

The Tongan-born population in New Zealand was 17,682 by the time of the 2001 Census, compared to a population in Tonga of just over 100,000. As a result, many Tongans know someone in New Zealand, who may be a source of information about job opportunities. Those applying to move to New Zealand under the PAC have more relatives in New Zealand than those not applying (McKenzie, Gibson and Stillman, 2006). Among our

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[14] Approximately 75% of ballot winners still in Tonga at the time of our survey had migrated to New Zealand as of 22 September 2006.

sample of PAC ballot losers, 51 percent have a parent or parent-in-law in New Zealand, 87 percent have a sibling or sibling-in-law, 55 percent have an aunt or uncle, and 53 percent have a cousin.

Extended family such as uncles, aunts and cousins are an important source of remittances, with 43 percent of all remittances coming from extended family (McKenzie, 2006). However, the remittance demands from extended family are seen by many as a burden on migrants. Based on her study of Tongan migrants in Australia, anthropologist Helen Lee writes that

"these young people often argue that it is important to meet the needs of the immediate family before others, and while they uphold the importance of respect and of ties to the extended family, many believe that obligations to extended family create unwarranted demands on families already struggling to make ends meet".   Lee (2003, p155)

One mechanism that immigrants might use to try and mitigate the pressure to remit to extended family, or to at least reduce the level of remittances sought, might be to claim that they are earning less than they actually are. If this is the case, conditional on the total immigrant network that potential emigrants have in New Zealand, we should expect them to have lower expectations of income if this network includes extended family.

Table 8 explores this hypothesis by regressing the median[15] expected earnings conditional on working on usual wage equation variables (age, sex, years of education), usual wage income in Tonga which should proxy for other labor market attributes, a

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[15] Similar results were obtained using mean expected earnings, and also for other quantiles.

dummy variable for whether or not the individual had been to New Zealand before the PAC ballot, and the total immigrant network, measured as the number of different types of relatives an individual has in New Zealand.[16] Columns 1 and 2 then include dummy variables for having an immigrant uncle/aunt and immigrant cousin respectively. We see that these are significantly negatively associated with lower income expectations in New Zealand. Columns 3, 4 and 5 show that in contrast, immigrant siblings and immigrant parents are positively associated with income expectations. Column 6 then enters both of the extended family indicators, uncle/aunt and cousin. While neither is individually significant, they are both negative, and strongly jointly significant (p-value=0.006).

Table 9 carries out the analogous regressions for the percent chance of being employed in New Zealand. In contrast to the conditional income regressions, we do not see significant or sizeable associations with the presence of immediate or extended family in New Zealand. Employment status of migrants is likely to be something more verifiable than earnings (other community members abroad will likely observe whether or not a migrant is working, but not their income). Thus if extended family are trying to moderate remittance demands, it seems plausible that they would be able to do so more readily through less accurate information on income earned, than through misreporting their employment status.

These results thus show that having extended family in New Zealand lowers expected earnings, conditional on total family network size. This might be entirely rational if

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[16] This is a count from zero to nine, based on questions asking whether the potential migrant has each of the following in New Zealand: father or father-in-law, mother or mother-in-law, brother or brother-in-law, sister or sister-in-law, child or child-in-law, grandparent, aunt or uncle, cousin, nephew or niece.

extended family members are less useful than immediate family members in helping new immigrants find good jobs in New Zealand. In column 1 of Table 10 we therefore reestimate the last column of Table 8, but this time for actual income earned by PAC immigrants in New Zealand. We use the coefficients from this equation to predict what the PAC ballot losers would earn in New Zealand. We take the difference between this predicted amount and their mean expected amount as a measure of the degree of underestimation of income.

Column 3 of Table 10 then examines the correlates of the degree of underestimation. Having an immigrant uncle or aunt, or an immigrant cousin in one's migrant network is strongly associated with underestimating the income that can be earned in New Zealand. We also see that males tend to underestimate income by more than females, and that those with more years of education are less likely to underestimate income.

One concern with these results is that the predicted income is based on a sample size of only 48 principal applicants working in New Zealand. A particular concern is that the coefficient on years of education is negative in equation (1), and very imprecise. This is the result of small sample size and the influence of a couple of individuals who are working while attending tertiary institutions. Hourly wages have a positive and insignificant relationship with years of schooling for the same sample. Therefore, in column 2 of Table 10 we reestimate the earnings equation for the full sample of 74 workers amongst the PAC immigrant households. This leads to a positive coefficient on years of education. Column 4 uses the predicted income from column 2. We again find

that potential emigrants with cousins in New Zealand and males are more likely to underestimate income, while those with more education do less underestimation. Having an uncle or aunt in New Zealand is now negative and insignificant, although it is positive and insignificant if we omit cousin from this equation.

Comparing Column 2 of Table 10 to column 6 of Table 8 also shows these differences. Potential emigrants get the signs right on most variables: they expect wages to rise with their incomes in Tonga, years of education, age, previous experience in New Zealand, and total migrant network. However, males and those with cousins in New Zealand expect to earn less, whereas these characteristics are associated with immigrants earning more in New Zealand. In Column 5 of Table 10, we examine the interaction between gender and having a cousin in New Zealand. This interaction is negative and insignificant. Therefore females are just as affected by having cousins in New Zealand as males, if not more so.

6.6 No male wage premium in Tonga?

Table 6 shows that male and female immigrants have very similar expectations of the wages that they would earn if they were working in Tonga. Mean expected wages are 158 pa'anga for males and 157 pa'anga for females. These are close to the mean prior incomes of 146 pa'anga for males and 172 pa'anga for females. Among our sample of unsuccessful ballots, we also find that females have higher mean incomes than males, although the difference is not significant.

In Table 11, we explore the differences in work income between male and female workers in Tonga after controlling for years of education, age, and marital status. Restricting ourselves only to principal applicants for the Pacific Access Category, we see males having a positive and insignificant wage premium for the prior income of immigrants in New Zealand, and a negative and insignificant wage premium for the current income of unsuccessful ballots. We then look to broader samples of workers in Tonga. Column 3 shows that for all Tongan wage workers in our survey, the male dummy is negative, small, and statistically insignificant, while Column 4 shows a small positive and insignificant coefficient using the Tongan Labor Force survey. It therefore appears that there is no male wage premium in Tonga. We can not reject that male and female workers of the same age and education earn the same amount.

Tongan workers moving to New Zealand therefore face quite a different wage distribution than they do in Tonga. In particular, columns 5 and 6 of Table 11 show that male immigrants under the PAC earn significantly more than female immigrants. Male principal applicants earn $163 more per week on average than female principal applicants. Recall that the degree of male underestimation of income in New Zealand relative to females was $165-187 in Table 10. Therefore almost all of the male difference in underestimating earnings in New Zealand can be accounted for by the male wage premium in New Zealand. Looking more broadly at all Pacific Island immigrants in New Zealand, column 7 also shows a substantial male wage premium, similar in size to that obtained from our sample in column 6.

The male wage premium for Tongan immigrants in New Zealand appears to result from differences in occupation among male and female migrants. Typical jobs for the male immigrant workers in our survey include builder, welder, construction worker, carpenter, technician, and factory worker. Typical jobs for female immigrants include cleaner, sales assistant, and grocery packer. In contrast, although some of immigrants worked in similar positions in Tonga, both men and women also worked in more white-collar jobs, such as teaching, banking services, and as government employees.

6.7 Comparing explanations

We have found that potential emigrants tend to underestimate both their likelihood of working and the income they can earn when working in New Zealand. The low expectations of employment appear to be driven in part by potential migrants overweighting the experiences of migrants who were unable to take up their initial job offer, and may also be due to potential migrants basing expectations too much on the experiences of earlier cohorts who migrated when unemployment rates for Tongans in New Zealand were much higher.

The underestimation of income appears to result in large part from the presence of extended family members such as cousins, uncles and aunts in the information network of potential migrants. These cousins, aunts and uncles appear to be offsetting the pressure to send remittances to extended family by downplaying their earnings in New Zealand. The tendency of males to underestimate income may be due to the fact that there is a large

gender gap in earnings in New Zealand, but not in Tonga. However, it is not clear why knowledge of this gender gap has not passed back to potential emigrants in Tonga.

7. Conclusions

We have combined a natural experiment on emigration with survey data on would-be emigrant's expectations about employment and incomes in the migration destination. Contrary to anecdotal stories which raise fears of over-optimistic expectations, we find striking evidence that emigrants tend to underestimate the employment likelihood and the income they can earn abroad. The degree of underestimation appears to be in due to potential migrants placing excess weight on negative employment experiences of a few migrants, to extended family lowering remittance pressure, and to changes in the male wage premium between Tonga and New Zealand. They suggest that more accurate information about earnings opportunities abroad may actually increase migration pressure.

More broadly, our work demonstrates the feasibility of asking probabilistic expectations questions to individuals in developing countries, even in cases in which the event for which expectations are elicited is not one for which the individual has direct prior experience. Since individual decisions are driven by their subjective expectations, the large gap we find between realized outcomes for immigrants and expected outcomes for comparable would-be emigrants suggests that inference based on realized outcomes alone may be very misleading.

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Figure 1: Examples of Fitted Lognormal Distributions for Expected Earnings

Respondent 1: F = (0.6, 0.7, 0.75, 0.8)
Y=(150, 200, 250, 300)
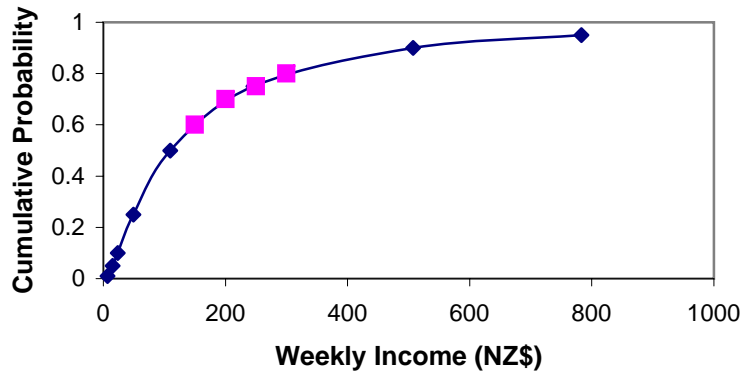
Respondent 3: F=[0.2, 0.45, 0.5, 0.6]
Y=[650, 700, 750, 800]
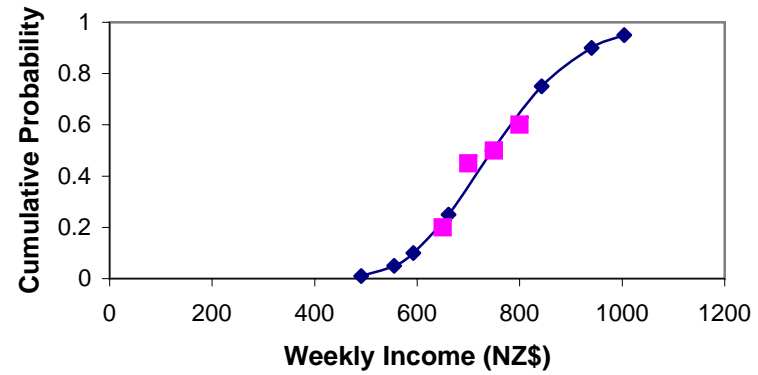
Respondent 30: F=[0.8, 0.9, 0.95, 1.00]
Y=[200, 250, 300, 350]
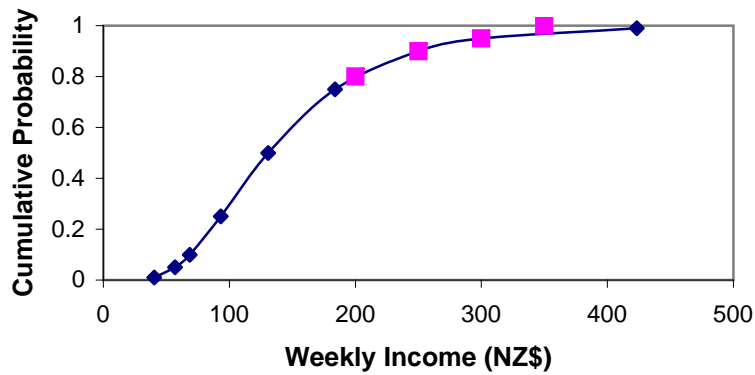
Respondent 64: F=[0.2, 0.4, 0.5, 0.75]
Y=[250, 300, 350, 400]
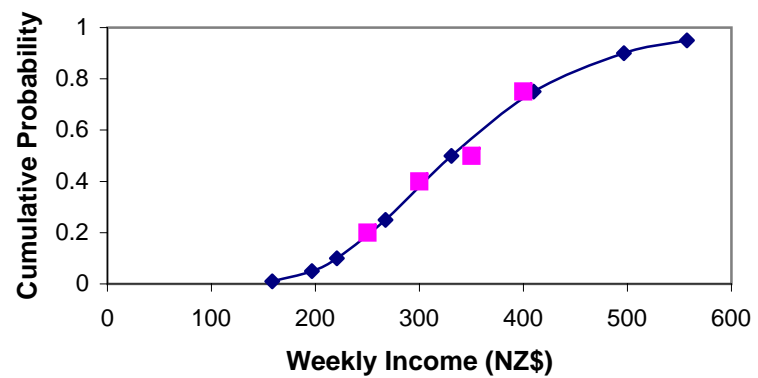
Note: Squares show probabilities elicited. Diamonds show the 1, 5, 10, 25, 50, 75, 90 and 95th percentiles of the fitted distribution.

Figure 2: Histogram of Expectations of Employment in New Zealand
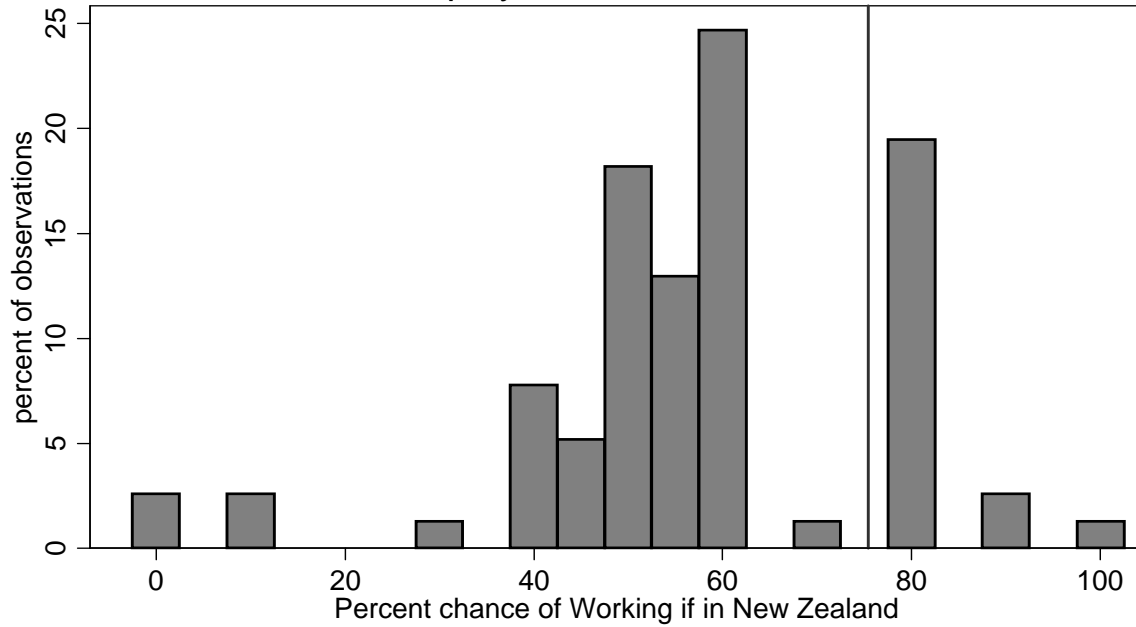
vertical line shows actual employment rate

Figure 3: Conditional Earnings Distributions of Actual and Expected Weekly Earnings in New Zealand

Actual Wages of Migrants
Median Expected Wage
Mean Expected Wage
Expected Wage 90th percentile

Expected Wage 10th percentile
Median Expected Wage
Mean Expected Wage
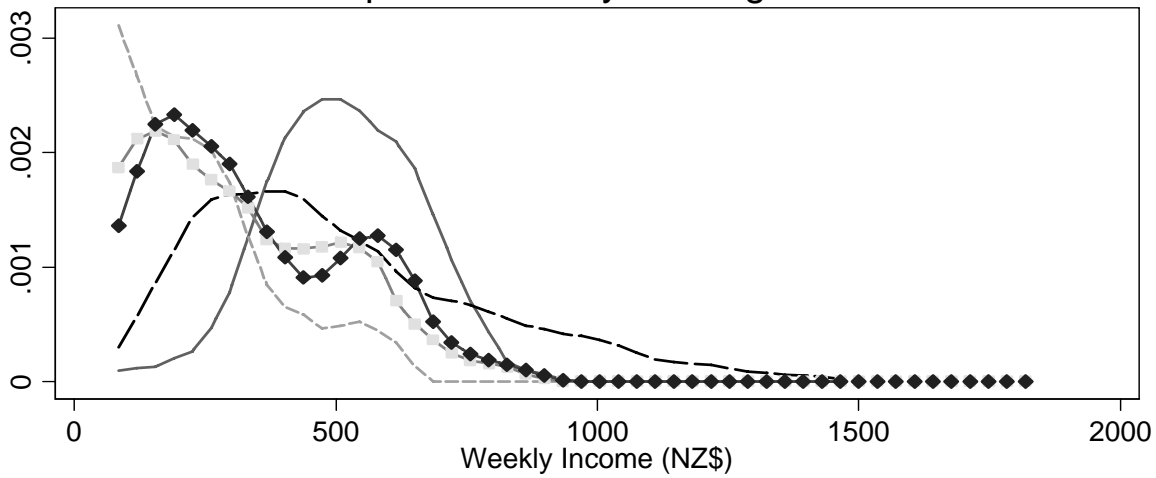
Table 1: Summary statistics for New Zealand and Tongan samples

	Tongan migrants in New Zealand through Pacific Access Category		Tongans who applied to migrate to New Zealand but had unsuccessful ballots	
	Mean	S.D.	Mean	S.D.
Percent male	64.6		51.3	
Years of Education	12.7	1.8	11.6	2.4
Age	33.2	8.2	33.7	6.2
Percent married	69.2		64.1	
Total Migrant Network in New Zealand before applying	4.1	1.5	3.6	1.3
Usual income in Tonga	123.1	107.4	138.2	121.2
Usual income in Tonga conditional on working	154.5	97.9	188.5	102.3
Percent employed while in Tonga	80.0		73.1	
Sample Size	**65**		**78**	

Table 2: Actual and Expected Employment Rates in New Zealand

	# obs	Mean	S.D.	25th	Median	75th	95% C.I. for the mean
Percent of PAC principal applicants employed in NZ	65	75.4					[64.6, 86.1]
male migrants	42	88.1					[77.9, 98.3]
female migrants	23	52.2					[30.1, 74.3]
Percent of PAC ballot losers employed in Tonga	78	72.7					
Percent chance that they…							
Would be working for pay if living in NZ now	77	57.2	18.8	50	55	60	[53.0, 61.5]
for males	40	57.0	20.7	50	60	80	[50.4, 63.6]
for females	37	57.5	16.7	50	55	60	[51.9, 63.1]
Percent saying percent chance of working in NZ<75%	77	76.6					

Table 3: Actual and Expected Conditional Weekly Income Distributions
Weekly income in New Zealand dollars conditional on working

	Mean	S.d.	10th	25th	50th	75th	90th
Actual Income:							
Actual Income for Migrants in NZ	564	283	360	431	515	622	700
Income for Migrants who did not take up initial job offer	520	153	360	434	520	642	692
Expected Income:							
Lowest amount expected by those in Tonga	212	108	100	100	200	300	300
Highest amount expected by those in Tonga	551	293	200	300	500	900	1000
Expected earnings distribution							
Mean of expected earnings	337	191	111	172	298	501	615
5th percentile	173	145	20	57	131	242	391
10th percentile	195	153	29	70	148	268	430
25th percentile	238	169	49	94	196	341	495
50th percentile	303	191	85	132	265	479	576
75th percentile	394	220	135	211	364	578	713
90th percentile	512	271	208	301	459	676	935
95th percentile	608	330	298	368	526	782	1117

Table 4: Actual and Expected Unconditional Weekly Income Distributions
Weekly work income in New Zealand dollars, whether or not working

	Mean	S.d.	10th	25th	50th	75th	90th
Actual Income for Migrants in NZ	423	347	0	72	445	600	692
Expected earnings distribution							
Mean of expected earnings	196	122	58	103	186	263	344
5th percentile	102	88	8	30	85	130	251
10th percentile	114	94	12	38	100	147	267
25th percentile	140	105	19	52	134	188	301
50th percentile	178	120	33	81	174	243	333
75th percentile	230	142	64	123	219	313	384
90th percentile	297	174	109	159	271	401	514
95th percentile	350	208	139	201	320	449	614

Table 5: Do expectations help predict the desire to migrate?
Dependent variable: Dummy for whether or not they applied for the Pacific Access Category

	(1)	(2)
Median of unconditional expected income ('00s)	0.120***	0.103**
	(0.043)	(0.047)
Income in 2003 in Tonga ('00s)		0.0360
		(0.088)
Employment status in 2003 in Tonga		-0.0579
		(0.13)
Observations	131	128

Note: marginal effects from probit estimation over sample of non-applicants and ballot losers
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6: Expectations of Migrants in New Zealand about work in Tonga

	Mean	S.D.	25th	Median	75th	95% C.I. for the mean
Employment						
Actual Employment						
Percent of Migrants employed in Tonga before migrating	80.0					[70.0, 89.9]
males	83.3					[71.5, 95.1]
females	73.9					[54.5, 93.3]
Percent of Unsucessful ballots employed in Tonga 2005	72.7					
Expected Employment						
Percent chance that migrants would be working for pay						
if they were living in Tonga now	67.5	37.3	30	80	100	
males	64.8	37.5	30	80	100	
females	72.4	37.1	40	90	100	
Conditional Income (for those working)						
Actual Income						
Income in Tonga before migration	154	98	80	128	200	[127, 182]
males	146	95	80	123	165	[113, 179]
females	172	104	80	152	250	[118, 225]
Income of Unsuccessful ballots in 2005	189	102	100	155	250	[161, 216]
males	163	81	100	130	220	[130, 196]
females	211	115	120	180	280	[168, 255]
Expectations of Income if working in Tonga						
Mean of expected earnings	158	147	68	106	162	
males	158	146	70	110	162	
females	157	153	53	98	163	
Median of expected earnings	122	121	45	85	131	
males	128	131	50	89	123	
females	111	101	43	66	160	

All income amounts are expressed in Tongan pa'anga.

Table 7: Do expectations vary with distance to houses of PAC migrants?

	Median expected conditional earnings		Percent chance of being employed	
	(1)	(2)	(3)	(4)
Usual Weekly Income in Tonga	0.522***	0.538***	0.0223	0.0146
	(0.17)	(0.16)	(0.025)	(0.025)
Distance to closest Emigrant house (km)	5.781		-0.132	
	(17.9)		(2.07)	
Distance to closest house of emigrant who didn't take up initial job offer (km)	-3.208		0.812*	
	(3.23)		(0.44)	
Proportion of emigrants with houses in 6km radius who didn't take up job offer		28.56		-19.59**
		(78.4)		(8.75)
Constant	238.0***	218.4***	50.96***	63.08***
	(37.6)	(42.1)	(4.46)	(5.60)
Observations	74	74	75	75
R-squared	0.12	0.11	0.14	0.13

Robust standard errors in parentheses.
Columns 3 and 4 also control for employment status in Tonga in 2003 and 2004.
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Correlates of Median Expected Earnings in New Zealand
Dependent Variable: Median of Expected Earnings

	(1)	(2)	(3)	(4)	(5)	(6)
Usual Weekly Income in Tonga	0.357**	0.385**	0.335*	0.341*	0.343*	0.390**
	(2.07)	(2.25)	(1.90)	(1.84)	(1.80)	(2.37)
Years of Education	16.71**	17.18**	12.56	13.75*	13.87*	18.79***
	(2.34)	(2.43)	(1.58)	(1.81)	(1.80)	(2.70)
Male Dummy	-62.48	-69.93	-88.57*	-74.68	-72.26	-62.03
	(-1.36)	(-1.50)	(-1.77)	(-1.56)	(-1.50)	(-1.37)
Age	1.346	2.155	1.516	0.685	1.000	2.216
	(0.41)	(0.69)	(0.46)	(0.21)	(0.31)	(0.70)
Had been to NZ before 2000	65.82	60.30	60.75	65.68	66.48	61.84
	(1.35)	(1.25)	(1.25)	(1.34)	(1.37)	(1.28)
Total Migrant Network	16.95	19.36	-0.463	3.966	5.774	23.60
	(0.97)	(1.05)	(-0.024)	(0.22)	(0.35)	(1.35)
Has a Migrant Uncle/Aunt	-97.89**					-76.86
	(-2.21)					(-1.55)
Has a Migrant Cousin		-96.22**				-72.13
		(-2.22)				(-1.51)
Has a Migrant Brother			58.53			
			(1.08)			
Has a Migrant Sister				24.25		
				(0.54)		
Has a Migrant Parent					13.79	
					(0.31)	
Constant	17.84	-26.62	43.56	59.80	51.62	-37.01
	(0.11)	(-0.17)	(0.26)	(0.36)	(0.31)	(-0.23)
Observations	74	74	74	74	74	74
R-squared	0.25	0.25	0.21	0.20	0.19	0.28

Robust t statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Correlates of Expectations about employment in New Zealand

	(1)	(2)	(3)	(4)	(5)	(6)
Employed in Tonga in 2004	3.751	4.572	3.828	3.043	3.699	5.037
	(0.58)	(0.76)	(0.62)	(0.48)	(0.58)	(0.80)
Usual Weekly Income in Tonga	0.0249	0.0265	0.0260	0.0272	0.0267	0.0244
	(0.87)	(0.99)	(0.95)	(1.00)	(0.95)	(0.88)
Years of Education	-0.599	-0.287	-0.464	-0.439	-0.414	-0.454
	(-0.67)	(-0.29)	(-0.51)	(-0.49)	(-0.44)	(-0.47)
Male Dummy	2.500	3.205	2.483	3.185	3.053	2.601
	(0.52)	(0.71)	(0.52)	(0.71)	(0.65)	(0.55)
Age	-0.405	-0.318	-0.349	-0.350	-0.368	-0.337
	(-1.32)	(-0.95)	(-1.01)	(-1.05)	(-1.15)	(-1.06)
Had been to NZ before 2000	2.633	2.370	2.472	2.789	2.769	2.028
	(0.51)	(0.47)	(0.49)	(0.54)	(0.53)	(0.41)
Total Migrant Network	-1.410	-0.466	-1.274	-0.423	-1.003	-0.803
	(-0.73)	(-0.24)	(-0.59)	(-0.21)	(-0.57)	(-0.41)
Has a Migrant Uncle/Aunt	5.252					6.934
	(1.09)					(1.36)
Has a Migrant Cousin		-4.158				-6.246
		(-0.90)				(-1.25)
Has a Migrant Brother			2.366			
			(0.36)			
Has a Migrant Sister				-3.206		
				(-0.64)		
Has a Migrant Parent					0.251	
					(0.061)	
Constant	72.16***	66.40***	69.37***	69.44***	69.56***	67.87***
	(4.26)	(3.54)	(3.88)	(3.97)	(3.86)	(3.74)
Observations	75	75	75	75	75	75
R-squared	0.08	0.07	0.07	0.07	0.06	0.10

Robust t statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Predicted Earnings and Overestimation relative to Predicted Earnings
Dependent Variable: Actual Work Income in New Zealand (columns 1 and 2)
Predicted Earnings Minus Mean Expected Earnings (columns 3, 4 and 5)

	Actual Income		Degree of Underestimation		
	Principal Applicants (1)	All Migrants (2)	(Predicted-Expected Income)		
			based on (1) (3)	based on (2) (4)	based on (2) (5)
Usual Weekly Income in Tonga	0.342	0.300	-0.0342	-0.0764	-0.0926
	(0.87)	(0.96)	(-0.21)	(-0.47)	(-0.56)
Years of Education	-11.74	6.784	-30.73***	-12.21*	-12.77*
	(-0.60)	(1.12)	(-4.22)	(-1.68)	(-1.75)
Male Dummy	138.8*	115.9**	187.3***	164.5***	196.6***
	(1.71)	(2.07)	(4.11)	(3.61)	(2.79)
Age	2.682	0.269	1.483	-0.930	-0.684
	(0.55)	(0.082)	(0.47)	(-0.30)	(-0.22)
Had been to NZ before 2000	79.42	80.11	25.59	26.28	17.04
	(1.15)	(1.56)	(0.53)	(0.54)	(0.35)
Total Migrant Network	7.727	20.20	-20.44	-7.968	-9.207
	(0.21)	(0.67)	(-1.17)	(-0.46)	(-0.54)
Has a Migrant Uncle/Aunt	-101.3	-122.6**	193.5***	-30.37	
	(-1.10)	(-2.02)	(3.85)	(-0.60)	
Has a Migrant Cousin	102.8	136.7**	177.0***	210.9***	236.6***
	(1.01)	(2.18)	(3.71)	(4.42)	(4.16)
Has a Migrant Cousin*Male					-69.02
					(-0.83)
Constant	407.7	197.3	388.1**	177.7	157.3
	(1.35)	(1.30)	(2.34)	(1.07)	(0.88)
Observations	48	74	74	74	74
R-squared	0.14	0.16	0.59	0.40	0.40

Robust t statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Wages Conditional on Working in Tonga and in New Zealand

	Weekly work income in Tonga (pa'anga)				Weekly work income in NZ		
	Prior income of migrants in New Zealand	Current income of unsuccessful ballots	All workers surveyed in Tonga	Tongan Labor Force Survey	PAC principal applicants	All PAC migrants	All Pacific Island migrants in NZ Income Survey
Male dummy	18.15	-27.70	-7.849	5.193	162.8	125.3**	122.42***
	(0.68)	(-0.99)	(-0.54)	(0.97)	(1.64)	(2.23)	(6.08)
Years of Education	30.19***	14.64	7.604***	10.51***	-7.367	6.474	#
	(3.60)	(1.53)	(2.97)	(7.39)	(-0.42)	(1.22)	
Age	-20.51	-33.39	7.839***	-3.024	44.01	57.25	11.53**
	(-1.48)	(-1.06)	(2.78)	(-0.88)	(0.91)	(1.62)	(2.07)
Age Squared	0.349*	0.541	-0.0714**	0.0638	-0.534	-0.766	-0.13**
	(1.73)	(1.18)	(-2.22)	(1.19)	(-0.72)	(-1.49)	(1.96)
Married Dummy	33.49	-26.65	-7.603	20.19***	-105.9	-96.29	34.21
	(1.31)	(-0.78)	(-0.46)	(3.49)	(-0.84)	(-1.00)	(1.40)
Constant	6.031	534.2	-89.75	-13.93	-204.9	-556.5	133.80
	(0.026)	(0.92)	(-1.62)	(-0.28)	(-0.30)	(-1.08)	(1.19)
Sample Size	51	55	294	724	46	72	503
R-squared	0.47	0.26	0.09	0.15	0.12	0.11	0.16
Mean income:	154.5	188.5	167.6	102.4	590.6	533.5	519.2

Note: weekly work income in New Zealand is in New Zealand dollars
years of education not available in New Zealand IS, so dummies for different educational qualifications were included instead.