



The Impact of Liberalizing Labour Mobility in the Pacific Region

by

Terrie Walmsley¹, S. Amer Ahmed² and Christopher Parsons³

GTAP Working Paper No. 31

REVISED 2009

¹ Terrie Walmsley is the Director of the Center for Global Trade Analysis, Purdue University, 403 W. State St, West Lafayette IN 47907. Ph: +1 765 494 5837. Fax: +1 765 496 1224. Email: twalmsle@purdue.edu

² Amer Ahmed is an Extended Term Consultant with the Development Research Group at the World Bank. Email: sahmed20@worldbank.org.

³ Christopher Parsons is a graduate student at the University of Nottingham, and Consultant for the DECRG, World Bank.

THE IMPACT OF LIBERALIZING LABOUR MOBILITY IN THE PACIFIC REGION

Terrie L. Walmsley, S. Amer Ahmed and Christopher R. Parsons

Abstract

Due to the lack of political consensus at the previous General Agreement on Trade on Services (GATS), negotiations on the temporary movement of natural persons (Mode 4) have stagnated. However the recent labour shortages in several labour intensive sectors, particularly agriculture, in Australia and New Zealand has recently provoked a serious debate over the implementation of policies that would facilitate the supply and employment of guest workers. This paper implements a CGE model of bilateral migration flows (GMig2) to quantify the benefits of liberalizing GATS Mode 4 in the Pacific region. The results indicate that an increase in the labour forces of Australia and New Zealand from elsewhere within the Pacific region would raise welfare in Australia and New Zealand. However, the results also demonstrate that while the Pacific Islands economies could gain substantially from the movement of unskilled workers, the loss of scarce skilled workers could lead to significant declines in the welfare of those remaining, which could offset the gains from the movement of unskilled labour. Agreements regarding the movement of unskilled labour could therefore potentially constitute significant development policies which warrant further attention from policy makers.

Keywords: Applied general equilibrium modeling, Pacific, GATS Mode 4, labour mobility, skill, and welfare.

Table of Contents

1. Introduction	4
2. Labour Movements in the Pacific Region.....	5
Chart 1. Percentage of Total Foreigners Living in Australia	6
Chart 2. Percentage of Total Foreigners Living in New Zealand	6
3. Gains from Labour Movement Liberalization.....	10
4. Model and Data	11
5. Experiments.....	13
Table 1. Stock of Pacific Island Migrants by Skill in Australia and New Zealand....	14
6. Results	15
Table 2. Macroeconomic Effects Due to Unskilled Labour Increase	16
Table 3. Welfare of Pacific Islanders in the Pacific Islands with an Increase in Productivity of Returning Migrants	18
Chart 3. Impact of Increased Unskilled and Skilled Labour Movement on Sectoral Output in Australia	19
Table 4. Sensitivity Analysis: The Impact of Alternative Changes in Skilled Labour Quotas on Real GDP	20
Table 5. Sensitivity Analysis: The Impact of Alternative Changes in Unskilled Labour Quotas on Real GDP	21
Table 6. Regions.....	22
Table 7. Macroeconomic Effects Due to Unskilled Labour Increase	22
7. Conclusion.....	23
8. References	25

THE IMPACT OF LIBERALIZING LABOUR MOBILITY IN THE PACIFIC REGION

Terrie L. Walmsley, S. Amer Ahmed and Christopher R. Parsons

1. Introduction

The WTO's Uruguay round heralded a new wave of optimism for developing country members as the first multilateral discussions on trade in services got underway on the General Agreement on Trade on Services (GATS). The GATS identifies four "modes" of service delivery, the last of which is the '*temporary movement of natural persons*' (Mode 4)¹. Through the GATS Mode 4 and against a backdrop of years of capital and goods market liberalization, developing countries have hoped to capitalize on their abundant labour. However reticent policy makers on both sides of the negotiations have remained defensive, with little progress being made in spite of the fact that the welfare benefits from future services liberalization likely far outstrip the returns from additional goods market liberalization (Hertel et al, 2004).

As Grynberg (2002) notes, Mode 4 is one of the few areas where the agendas of the developing world and the developed world negotiators intersect. The rhetoric of GATS negotiations is often framed in a manner that highlights the differences between the North and the South, leading to defensive posturing by both sides. This is reflected in the fact that developed countries have been negotiating for greater liberalization of skilled service sectors, while less developed countries would prefer low and medium skilled services to be liberalized as well. What has often been neglected in these discussions, and has only recently received media coverage, is that many developed countries are experiencing shortages of unskilled labour –especially in agricultural sectors. At the same time, most developing countries have large numbers of unskilled workers, representing a significant comparative advantage in the trade of unskilled labour intensive services. There is thus an "excess demand" for unskilled workers which could be met by the "excess supply" in many developing countries. Australia is one such country with an increasing demand for unskilled workers, while the Pacific Islands represent a realistic source of those workers.

Traditionally, Australian migration policy has been based on the skill-level of the migrants and on family reunion. However, recent labour shortages in several labour intensive sectors, such as agriculture, have prompted various lobbies to push for the implementation of policies that would facilitate the supply and employment of guest workers – policies that could be implemented as GATS Mode 4 type liberalization. This paper hopes to contribute to this debate by examining the impact on Australia and New Zealand of increasing their skilled and unskilled labour forces. We use a global model of bilateral migration flows (GMig2, Walmsley, Winters and Ahmed, 2007) to examine and

¹ Defined in Grynberg (2002) from the GATS (Article I.2 (d) and Article XXVIII (b)) as "the production, distribution, marketing, sale, and delivery of a service by a service supplier of one Member through the presence of a natural person of a Member in the territory of another Member".

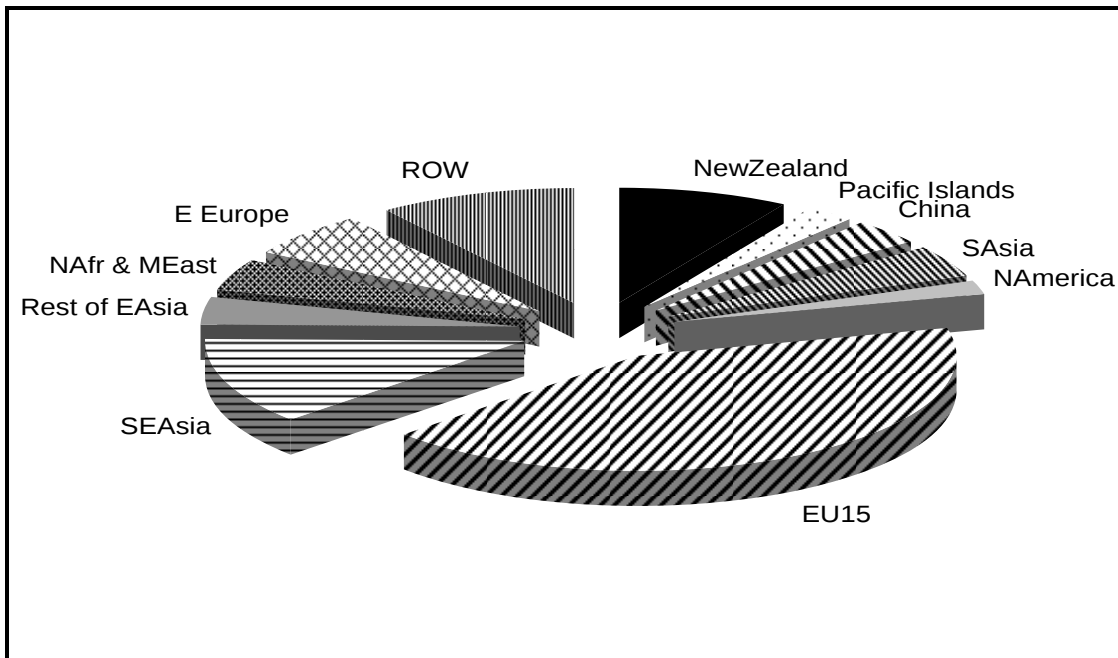
compare several scenarios where this labour is supplied by different sources – the Pacific Island economies, South East Asia or other developed economies.

The following section provides a brief background to labour movements within the Pacific region. Section 3 provides some more information on the potential gains from labour movement liberalization and will show why GATS Mode 4 is relevant to the guest worker policy discussions in the region. Section 4 gives a brief synopsis of the model and database used, and section 5 analyses the results and provides some sensitivity analysis. While it is beyond the scope of the paper to discuss in detail relevant policy options, some are alluded to in passing and conclusions are drawn in the final section.

2. Labour Movements in the Pacific Region

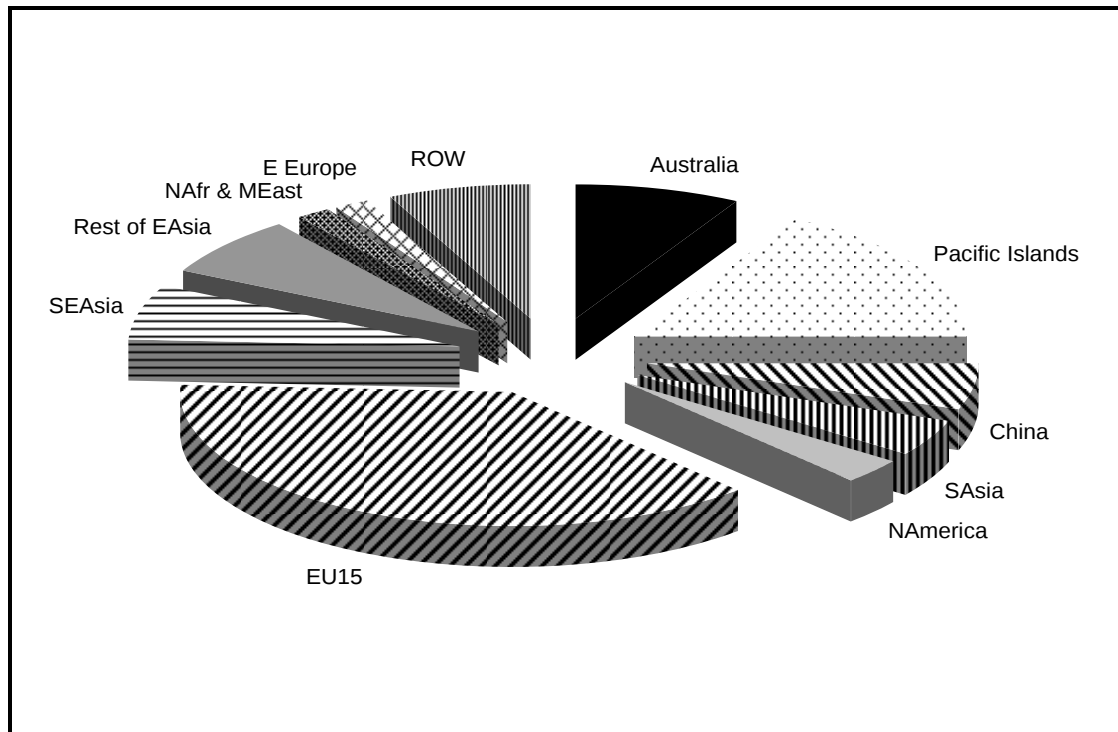
Australia and New Zealand represent two of the ‘big four’ traditional magnets of international immigration alongside Canada and the United States. Charts 1 and 2 show the shares of foreign labour in Australia and New Zealand respectively, contained in the data base and based on Parsons, Skeldon, Winters and Walmsley (2005). Both charts show that Europe is the largest provider of foreign labour to both Australia and New Zealand. New Zealand is also a large supplier of foreign labour to Australia, primarily due to their geographical proximity and ties through the Closer Economic Relations agreement. South East Asia and the rest of the world are also large suppliers of labour. The Pacific Islands are currently not an important source of foreign labour for Australia. In New Zealand however, the Pacific Islands represent the second largest source of foreign workers, followed by Australia and the rest of the world with immigrants increasingly being received from Pacific Rim nations. Taiwan, South Korea and China now represent the three highest countries for applications to New Zealand. Australia has also experienced increasing numbers of Asian migrants in recent history.

Chart 1. Percentage Total of Foreigners Living in Australia



Source: Parsons, Skeldon, Winters and Walmsley (2005)

Chart 2. Percentage Total of Foreigners Living in New Zealand



Source: Parsons, Skeldon, Winters and Walmsley (2005)

Australia and New Zealand are by far the largest economies in the Pacific region² and also the wealthiest on a per capita GDP basis being ranked 19th and 37th in the world respectively (CIA World Fact book 2006). Both have experienced fairly prolonged and sustained economic growth largely unfettered by the constraints that have consistently hampered the development of their Pacific neighbors. Not only are the Pacific Islands geographically remote, but they also remain on the periphery of the world economy, increasingly dependent on the wider world; the highest recipients of overseas aid on a per capita basis. Narrow production bases, declining terms of trade, failures to diversify, significant diseconomies of scale (due to incredibly small domestic markets³), and an inability to compete effectively in the global marketplace have resulted in large trade deficits. Increasingly vulnerable, the Pacific Islanders remain highly susceptible to external shocks.

The countries and territories of the Pacific territories have experienced significant migration, with large internal movements toward urban conurbations, simultaneously accompanied by international emigration. Traditionally high fertility rates, coupled with rising life expectancy, have resulted in relatively high population growth rates. International migration from the territories of the Pacific is viewed in part as a means of relieving population pressure on the already scarce resources whilst increasing both the earning potential of the migrant abroad, through higher salaries, and the income of the sending family, through remittances. Migration is primarily driven by the large disparities in the social and economic factors between the sending and host nations. Prospects of superior health standards, better education and higher wages fuel the spiraling aspirations of moving abroad (Connell, 2003). Migration in the region should be viewed neither as merely a response to ailing economies nor simply a development strategy, but more as an intrinsic part of life that many islanders take almost for granted. This is perhaps best demonstrated by the increasing reliance on remittance flows, particularly in Polynesia, where remittances constitute 47% and 18% of annual GDP in Tonga and Samoa respectively (Walmsley, Ahmed and Parsons, 2006).

Australia and New Zealand attract approximately 40% of all Pacific Island migrants (Parsons et al 2005). These migrants constitute almost 3% (2001) of the global Pacific Islanders population, making up 0.51% of Australia's and 3.12% of New Zealand's populations. 36%, 69%, and 45% of expatriates from Tonga, the Cook Islands, and Samoa respectively can be found in New Zealand, while 32% and 48% of expatriates from Fiji and Nauru reside in Australia. In the case of some of the Pacific Islands the number of Islanders abroad relative to those at home is startling, with 37% of all Cook Islanders and 64% of all Niueans living in New Zealand in 2001 (Parsons et al., 2005). Having once flooded into New Zealand in the post-war drive to recruit unskilled and medium skilled workers, the numbers of Pacific Islanders has dramatically fallen over the medium term though. The introduction of the points system in 1991 on the one hand,

² The region is assumed to comprise of Australia, New Zealand, and the Pacific Island economies, American Samoa, the Cook Islands, Fiji, French Polynesia, Guam, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Caledonia, Norfolk Island, the Northern Mariana Islands, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna.

³ All the Pacific Island nations are below the richest 150 countries in the world as measured by GDP with the exception of PNG (126).

combined with a falling demand for lower skilled workers on the other, has skewed immigrant arrivals away from the more traditional sending region of the Pacific, toward other Pacific Rim nations. Australia largely reflects the patterns observed in New Zealand; although on a larger scale, involving more migrants from a greater number of source countries. The reliance of Pacific Communities on sending nationals abroad is going to continue, and though their future remains far from certain, any future reductions in migration barriers could represent a significant development policy for them.

The recent labour shortages in several labour intensive sectors in Australia and New Zealand has prompted various lobbies to push for the implementation of policies that would facilitate the supply and employment of guest workers and placed the possibility of allowing more labour from the Pacific Islands into Australia back on the agenda. According to the Australian Farm Institute, the Australian farm sector has high seasonal labour requirements, with an estimated 27,500-80,000 harvest workers required (Australian Farm Institute, 2005). As a response to these impending labour requirements, the National Farmers Federation's Labour Shortage Action Plan has called for a guest workers scheme that would specifically recruit low to medium-skilled workers from Pacific Rim countries for work in sectors facing seasonal shortages such as citrus fruit harvesting (Millbank, 2006).

A recent proposal, in the context of Australia's 2005-2006 immigration program, to introduce a guest-worker program to bring in low-skilled Pacific Islanders was rejected by legislators (Millbank, 2006). Highlighting how seriously this issue is being taken by Australian policy-makers, Millbank's report also mentions that the Australian Labour Party has issued a "Pacific Policy Discussion Paper" proposing a small-scale guest worker program initially targeting 10,000 guest workers a year for the first five years, with the workers coming from the Pacific Islands and working primarily in seasonal horticultural jobs.

Reflecting the continuing interest in possible guest-worker programs, despite the recent legislative rejection, Australia's Senate Committee on Employment, Workplace Relations and Education is continuing to study the possible use of Pacific Islands' labour to meet the demands of the labour intensive agricultural sectors (Millbank, 2006). These schemes would be in addition to pre-existing temporary migrant visas and policies allowing backpackers to work temporarily on farms (the Working Holiday Maker program). Temporary migration schemes, such as the guest-worker programs proposed by many, however have been criticized for the possible socio-political effects they would bring. Guest worker schemes in Europe, in which overstays by the workers and their families have had significant social impacts, have been cited as examples of how guest worker policies can have unpredictable effects on an economy with the creation of an unassimilated underclass of foreign workers who originally came under a guest worker scheme but overstayed. Aside from concerns about overstays and implementation issues, critics have also argued that region specific guest worker schemes run a large risk of exploitation of the guest workers, as has been argued was the case in the controversial employment of South Pacific islanders on Queensland plantations in the 19th century.

Millbank (2006) also mentions that one of the criticisms of a seasonal guest worker program was that labour shortages in certain regions coincided with an

unemployment rate of about 8.5% for unskilled Australian workers. This may imply that a guest worker scheme would exacerbate the unemployment rate. However, in explanation of the present unemployment and labour shortage coincidence, the paper points out that the agricultural work is very unattractive to many Australian workers due to the remoteness of the farm locations and low pay. As such, the impact of a guest worker scheme on the employment rates of Australian farm workers may be conjectured to be minimal.

While many of the other concerns are valid, many advocates of a guest worker scheme are now pointing at other, more recent, guest-worker programs in other countries as examples of more acceptable temporary movement schemes. The UK and Germany have both implemented seasonal horticultural worker programs while Canada's Seasonal Agricultural Workers Program (SAWP) has been providing certain Canadian agricultural sectors with about 20,000 workers from the Caribbean and Mexico. Due to the similarities in the immigration policies of Canada and Australia, the SAWP has been mentioned in the recent Australian discussions as a model for a possible Australian guest-worker program.

At this juncture, it should be pointed out that even though GATS Mode 4 – as a temporary movement – is *not* migration, it is commonly treated synonymously with temporary migration. As such, many of the arguments commonly cited against migration including the erosion of cultural traditions, excessive drains on the public purse and anxieties relating to assimilation, are simply not relevant in the case of GATS Mode 4 (Winters, 2003). Winters identifies within GATS Mode 4, three types of (North-South) flows; the movements of the skilled from developed to developing countries, the flows of skilled workers from developing to developed nations, and the flows of the unskilled, from developing to developed countries. Some headway has been made in the former, in the area of 'commercial presence abroad', with 'intra-corporate transferees'. As the Pacific Islands have little or no 'commercial presence abroad' it is of little use to them however.

Iredale (2000) notes the great reluctance for Pacific communities to either send *or* receive skilled labour, an unwillingness exacerbated by fears of the brain drain. The outflow of skilled workers does tend to both widen wage gaps and lower average levels of skill, reducing outputs and already dwindling tax bases⁴. In the Pacific region such movements of the educational elite have left many remaining stocks of skilled workers severely depleted. In the decade between 1966 and 1976, half of the total number of residents in the Cook Islands that possessed any vocational qualification emigrated (Cook Islands, 1984). Echoing this crisis, approximately 75% of all administrative and managerial workers and 25% of all professional and technical workers left Fiji between 1987 and 1995 (APMRN, 1997)⁵. Due to low domestic demand and insufficient capacities to train large numbers of skilled workers, island communities find replacing skilled labour extremely problematic. In Fiji for example the cost of hiring a foreign

⁴ In the case of GATS mode 4 these 'brain drain' arguments may not be appropriate since (at least theoretically) workers return home

⁵ The APMRN points out that due to the problems of measuring migration in Fiji, the observations made by the paper are drawn from examination of more than one set of emigration data. For more details please refer to APMRN (1997)

worker are between double and quadruple that of a domestic worker (APMRN, 1997). Moreover island communities are often hit harder by the loss of this labour, a doctor emigrating from a rural area can represent a substantial loss of the local skilled labour force for instance. This leads in many cases to a critical weakening of service provision in rural areas. The consequences of the 'brain drain' remain far from certain. It is quite plausible that workers abroad increase their productivity to such an extent that when they return this more than compensates for their loss, the so-called 'beneficial brain drain' (Winters, 2003). The increased return to education through temporary movement also warrants attention (Commander, Kangesniemi and Winters 2002). Acquiring skills is likely to remain a high priority for many. Kiribati and Tuvalu stand out as examples of nations not just in the Pacific, but in the world, that specifically train people to work abroad.

These potential brain gains in the context of the Pacific are unlikely to be realized. If the domestic pool of skilled workers dwindles sufficiently, then net gains are improbable even if migrants return with vastly superior productivity. If the country has had to endure an extended period with few or virtually no skilled workers – a '*transitory brain drain*' – the consequences may be more long lasting, and may include worsening living standards and the quality of education and health care, together with dramatic reductions in wages and output.

Moreover, in some occupations there is simply no substitute for unskilled labour. For the Pacific communities this is the resource in which they possess a comparative advantage and relatively large endowments, and therefore is an area in which they seek greater openness and better market access. This is where the differences, the fundamental basis on which trade generates net gains are greatest, and where the successful exploitation of these differences will yield the largest welfare benefits. As in most developed nations both Australia and New Zealand have an increasingly educated and more highly skilled though aging population. Over time therefore the scarcity of unskilled labour will continue to increase and more opportunities will arise for the Pacific communities to send unskilled workers abroad.

3. Gains from Labour Movement Liberalization

The idea that temporary migration liberalization between developed and developing countries can yield welfare gains to one or multiple participants has been examined extensively in the literature.

Back-of-the-envelope (BOTE) calculations, based on rolling temporary labour schemes, estimate large global welfare gains from relatively small liberalizations, of between \$200bn (Rodrik, 2004) and \$300bn Winters (2001). Winters (2001) assumed approximately 5% of the industrial world's populations moved overseas for employment and that that 75% the difference in wages for a worker moving from a low income country to a high income country are due to differences in individual characteristics;. So, given a wage gap of \$24,000 p.a., the welfare gains from moving 50 million workers would amount to approximately \$300bn per year. Rodrik's (2004) BOTE estimate provides a smaller – but still significant – gain of \$200bn for developing countries, from

a 3% increase in developed countries' labour forces supplied by developing countries on a temporary basis.

More systematic approaches based on various modeling scenarios corroborate these computations. Walmsley and Winters (2005) – based on bilateral migration flows (as opposed to from a global migrant pool) – used a Global Migration Model (GMig) to find that a 3% increase in the developed countries' labour forces, with the additional labour coming from developing countries, would provide a global welfare increase of approximately \$150bn. More recent estimates by Walmsley, Winters and Ahmed (2007) using an improved framework (the GMig2 model) have produced higher gains than those previously found. The GMig2 model has the advantage of incorporating bilateral migration data, thereby being able to more accurately simulate the effects of liberalizing immigrant labour quotas.

Simulations from other models based on bilateral migration flows concur with these higher estimates. van der Mensbrugghe (2006) used the World Bank's LINKAGE recursive-dynamic general equilibrium model to look at real income, and found a global welfare gain of \$674bn from a 3% increase in the labour force of high-income countries, with the developing world supplying the additional workers. This paper also found that natives in all countries and new migrants in high-income countries experienced welfare gains.

Indeed if these estimates be given with certainty they would certainly represent lower bound estimates since they fail to account for any dynamic effects, those associated with 'brain circulation'⁶, or the spillover and indirect effects of increased service provision (Winters 2003).

In Section 3 guest-worker schemes in Australia were described as being a possible policy response to meet the demand for unskilled workers in the agricultural sector. GATS Mode 4 liberalization of unskilled worker movement from the Pacific Islands to Australia and New Zealand can be thought of as one way to think about a guest-worker scheme, especially given the pre-existing migrant flows in the Pacific. Given the generally positive gains to the labour importer and – in some cases – the labour exporter described in this section, it is reasonable to expect positive economic effects for the receiving countries – Australia, New Zealand – and possibly the sending region, i.e. Pacific Islands. This paper thus seeks to examine the extent of any gains (or losses) from a liberalization of unskilled labour movement in the Pacific.

4. Model and Data

GATS Mode 4 can be modeled at either extreme from which it can be viewed, i.e. from a perspective of pure labour migration or analogous to greater trade in goods. Here we choose to model with an increase in the population.

⁶ Brain circulation can be considered to occur in the scenario where the loss of skilled workers is mirrored by an influx of skilled workers, either new migrants or return migrants. It has been argued that returning migrants gain higher productivities and experience while overseas, which they bring back to their country of origin.

We use a standard global applied general equilibrium model (GTAP, Hertel, 1997) which has been adjusted to take into account bilateral labour flows. The model, termed GMig2, is similar to the model used in Walmsley and Winters (2005). In that model Walmsley and Winters (2005) hypothesized a global pool to intermediate the flow of labour between countries, which circumvented the problem of the lack of bilateral data on the stocks of migrants. In this model, bilateral labour flows are modeled directly and therefore data is an important aspect of this model. The benefit of this approach is that we have bilateral data which allows us to track the bilateral flows of labour, their productivities and their remittances directly.

The database used with the Bilateral Labour Migration Model (GMig2, Walmsley, Ahmed and Parsons, 2006) is based on the GTAP Data Base Version 6.1 (Dimaranan, 2006) and is augmented with the bilateral migration database developed by Parsons, Skeldon, Winters and Walmsley (2005) and remittance data from the World Bank (Ratha, 2003). These data were used to estimate bilateral wages and remittances in the model.

A number of assumptions are made in creating the GMig2 data base and in the GMig2 model itself, which are examined in greater detail in Walmsley, Winters and Ahmed (2007).

Changes in migration are modeled by ‘shocking’ the number of migrant workers ($LF_{i,r,c}$) in the model. This shock then reduces the number of workers in the labour supplying regions and increases the labour force of the labour importing region (equation 1). It is assumed that there is an excess of demand for quotas and hence the quota is completely filled. The population of the home and host regions also changes, reflecting the change in the labour force and any movement of their families.

$$LF_{i,r} = \sum_c LF_{i,c,r} \quad (1)$$

Where $LF_{i,c,r}$ is the number of workers of skill i from c , living in r .

$LF_{i,r}$ is the number of workers of skill i in c .

Migrant workers are assumed to gain a portion of the difference between their wages at home and the wages in the host region, reflecting the fact that their productivities have also changed (2).

$$W_{i,r,c} = W_{i,r,r} + BETA \times (W_{i,c,c} - W_{i,r,r}) \quad (2)$$

Where $W_{i,c,r}$ is the wage earned by workers of skill i from c , living in r .

BETA is the proportion of the different obtained.

The labour force is then allocated across sectors so as to equalize the percentage change in the wage earned by all workers. In the labour importing economies this increased labour force allows production to increase, while wages fall with the larger supply of labour. Returns to capital increase as production rises and capital becomes relatively scarce. In the labour exporting countries production and returns to capital fall, while wages rise with the decreased labour force.

The income of migrant workers depends on the income from labour, less the portion of this income sent home as remittances. The rest is spent in the host economy. A constant remittance to income ratio is used to determine bilateral remittances in the database⁷. Income on all other factors (land, natural resources and capital) and tax revenue accrue to the permanent resident household. Remittances (RM) sent back supplement the income of the permanent workers at home.

$$Y_{r,c} = \sum_{l \in LAB} Y_{l,r,c} - RM_{r,c} \quad (3)$$

$$Y_{r,r} = \sum_{i \in LAB} Y_{i,r,r} + \sum_{f \in ENDW} Y_{f,r} - D_r + T_r + \sum_{l \in LAB} \sum_{c \in REG} RM_{l,r,c} \quad (4)$$

Where $Y_{r,c}$ is the income earned by workers from region r , living in c .

$Y_{i,r,c}$ is the income earned by $i \in$ skilled and unskilled labour workers from region r , living in c .

$RM_{r,c}$ is the remittances sent back by workers from region r , living in c .

$Y_{f,r}$ is the income earned on $f \in$ land, capital and natural resources in region r .

D_r is depreciation in r .

T_r is tax earnings in r .

The results are the comparative static short run impacts of these policies. That is, they show how much better (or worse) off the residents of each region are in the short run, before capital has had time to respond to changes in the rates of return. The shock to the labour forces of the home and host regions are permanent in that the host country labour force is now higher and the home country labour force is lower, however the people filling those positions are temporary. This is referred to as the revolving door approach.

5. Experiments

The purpose of this paper is primarily to examine how increases in the flows of temporary labour to Australia and New Zealand would affect the region. Quotas on Australia and New Zealand's temporary movement of natural persons were increased by 1.5% of their labour forces. In addition to this experiment, return migration was considered in another experiment where 10% of new migrants ("guest workers") were assumed to return, taking back with them a greater productivity. The increase in productivity was equal to half the difference between what their productivities would have been in their country of origin and what it was in their erstwhile host country. Return migration occurring with increased productivity of the returnees thus simulates brain circulation.

The authors tested the impact of these increased quotas being filled by alternative sources of foreign labour. The alternative sources of this labour include the Pacific Island

⁷ In the model remittances remain constant proportions of incomes.

economies⁸, other labour exporting developing countries, the countries of South-East Asia and the developed economies. Under these assumptions the increased quotas are supplied according to the labour force shares, hence the extent to which a country fills these places diminishes significantly as labour is sourced from more countries.

Table 1 shows the stock of Pacific Island migrants in Australia and New Zealand prior to and after quotas are increased by 1.5% and 3% respectively. There are currently only about 111,000 migrant workers from the Pacific Islands in Australia and New Zealand. As mentioned above, in terms of numbers Australia and New Zealand have similar numbers of migrants from the Pacific Islands, with New Zealand having more unskilled workers and Australia having more skilled workers. The 1.5% increase in the labour forces of Australia and New Zealand, with the additional migrant labour coming from the Pacific Islands, causes the migrant worker population to more than double to 291, 000 (Table 1). These increases of 1.5% in the Australian and New Zealand labour forces amount to declines in the Pacific Islands' skilled and unskilled workers of 6% and 4% respectively⁹.

Table 1. Stock of Pacific Island Migrants by Skill in Australia and New Zealand (Numbers of people)

	Skilled		Unskilled		Total	
	Australia	New Zealand	Australia	New Zealand	Australia	New Zealand
Initial	23,513	16,336	27,247	43,270	50,760	59,606
1.5%	76,765	26,536	125,494	63,070	202,259	89,606
3%	130,018	36,735	223,742	82,871	353,759	119,606

Source: Walmsley, Terrie L., S. Amer Ahmed and Christopher R. Parsons (2006)

Further sensitivity analysis was conducted to examine the impact of varying the magnitude of the increase in quotas. Specifically, the 1.5% increase in labour was compared with the case where the labour force was increased by 3%. A 3% increase in the quotas of Australia and New Zealand leads to over 306,613 unskilled and 260, 447 skilled migrants from the Pacific Island economies. This amounted to 9% and 13% of the Pacific Islands economies unskilled and skilled labour forces.

⁸ The Rest of Oceania is made up American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Federated States of, Nauru, New Caledonia, Norfolk Island, Northern Mariana Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna.

⁹ The reason for this large difference is that while the Pacific Islands have a reasonably large population of approximately 7million, only 5% of its labor force is skilled as compared to approximately 30% of Australia's and New Zealand's labor forces. Hence skilled labor is a very scarce resource in the Pacific Islands' economies.

6. Results

In this section we examine the results of the experiments outlined above. In the first section we examine the macroeconomic implications and the impact on the real income/welfare of the permanent residents. Section b) looks at the sectoral implications while Section c) conducts sensitivity analysis on the size of the changes in Australia's and New Zealand's labour forces and we compare these results with results from the case where other economies supply the increased quotas: South East Asia, developing and developed economies.

a) Macroeconomic Effects

The macroeconomic effects of increasing the skilled and unskilled labour forces of Australia and New Zealand by 1.5% each can be seen in Table 2. Table 2 describes the effects of increasing the unskilled labour force on each of the three economies and those attributable to the increase in skilled labour.

Examining row I in Table 2, it can be seen that Real GDP increases in Australia and New Zealand due to greater access to labour endowments, both skilled and unskilled. The rental price of capital rises for the two labour importing countries, reflecting the increased demand for capital which accompanies the abundance of both skilled and unskilled labour. The inflow of unskilled results in larger gains, although there are more new unskilled workers. Trade and investment also rise with the new policy, suggesting that the long run gains will be even greater for Australia and New Zealand.

Real GDP in the Pacific Islands falls with movement of both labour types particularly with the movement of unskilled labour to Australia and New Zealand. This is an interesting result, since it would make more sense for the GDP losses to be greater when there is a loss of the already scarce skilled labour from the Pacific Islands. However, the real GDP changes for the Pacific Islands in row I of Table 2 can be explained by comparing the number of migrants of each skill type leaving the Pacific Islands. After the labour force increase, about 63,000 skilled workers left the Islands, whereas more than 118,000 unskilled workers. When these are taken into account the losses are greatest from the loss of a skilled worker.

In the Pacific Islands, the scarcity of skilled labour raises the real wage of skilled labour by 4.15% (row IV, Table 2), reducing the returns to capital by 0.38%. The 2.5% rise in unskilled real wages arising from the unskilled labour movement (Table 2), on the other hand, is relatively small compared to the impact of skilled migration on skilled wages. Since the Islands' unskilled workers constitute a much larger percentage of their labour force the loss due to the movement of each unskilled worker is less significant than the loss due to each skilled worker. The long run implications of this policy do not look any better, with investment falling.

Alongside the improvement in the real wages the Pacific Islands also experience a 1 percent improvement in terms of trade as the prices of its exports rise relative to imports. This is due to a real exchange rate appreciation resulting from the substantial rise remittances – a type of Dutch disease effect. Trade falls as a result, with the fall in exports considerable.

Table 2: Macroeconomic Effects Due to Unskilled Labour Increase (% Change)

		Australia		New Zealand		Pacific Islands	
		Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
Real GDP	I	0.4	0.3	0.39	0.19	-1.12	-0.79
Terms of Trade	II	-0.02	0.03	-0.05	-0.02	0.58	0.4
Real Wages of Unskilled	III	-0.61	0.19	-0.67	0.11	2.5	-0.27
Real Wages of Skilled	IV	0.32	-0.69	0.27	-0.8	-0.31	4.15
Real Investment	V	0.56	0.74	0.54	0.2	-0.84	-0.63
Real exports	VI	0.11	-0.2	0.33	0.13	-2.99	-1.93
Real Imports	VII	0.35	0.29	0.38	0.13	-0.34	-0.13
Welfare of permanent residents	VIII	496.24	438.79	71.74	39.74	1.75	-2.46

Source: Authors' results

In terms of incomes and welfare, the increased flow of skilled and unskilled migrant workers from the Pacific Islands into Australia and New Zealand causes the welfare of permanent residents of Australia and New Zealand to rise. This is due to the fact that the increased labour endowment in Australia and New Zealand increase the real returns to capital and tax revenues, which offsets the losses due to the fall in wages. Existing foreign workers in Australia and New Zealand, including those from the Pacific Islands, lose as these wages fall¹⁰. The newly arrived Pacific Islanders located in Australia and New Zealand gain significantly due to the fact that they are supplying the increased quotas.

¹⁰ Since foreign workers are temporary, they do not own capital and therefore the rise in returns to capital does not compensate for the loss in labor income.

The welfare of the permanent residents of the Pacific Islands falls by \$0.7m. All of this loss is the result of the increase in quotas on skilled labour. The reduction in the supply of skilled workers in the Pacific Islands reduces production, and despite the increased inflow of remittances, welfare falls by \$2.46m. The loss of unskilled labour actually raises the welfare of permanent residents (\$1.75m); in this case the loss of unskilled labour on the economy is more than offset by their remittances. This is not the case for skilled because skilled workers are relatively scarce in the Pacific Islands.

Two assumptions made in the model may affect these results. First, although we assume a revolving door returning migrants do not experience an increase in productivity as a result of their temporary work abroad. However temporary worker schemes are often linked with capacity building and hence returning migrants are expected to experience increased productivities. Table 3 shows the impact of increasing the productivity of returning skilled and unskilled labour. The increase in productivity is determined by assuming that returning 10% of Pacific Islanders continue to gain 50% of the difference between their productivities abroad and at home after returning¹¹. This leads to the equivalent of a 3.2% increase in the productivity of the skilled workforce in the Pacific Islands; and 2.2% of the unskilled labour force. The increased productivities of skilled and unskilled returning migrants raise the welfare of Pacific Islanders significantly, offsetting the relatively small initial loss resulting from the skilled workers temporarily moving abroad¹².

The second assumption is that the quotas are assumed to be filled. It could be argued that an increase in the real wages of skilled workers in the Pacific Islands of 4.15% might provide a large enough incentive to skilled Pacific Islanders that they choose not to move to Australia and New Zealand. High levels of previous permanent migration however do not confirm this. There are many reasons other than wages which affect a person's decision to migrate, including job satisfaction, the quality and amount of public services such as health and education, the availability and cost of transport and telecommunication to overcome isolation, etc.

¹¹ Remember that a Pacific Islander living in the USA will gain 75% of the difference in productivities between a Pacific Islander working at home and an American person working in America. Hence when they return we assume they keep 50% of this difference.

¹² This experiment assumes that the temporary flow of labor is continuous. As workers move home with higher productivities they are immediately replaced with other temporary workers such that the labor supply in the Pacific Island's is permanently lower. This is the revolving door feature referred to above.

Table 3. Welfare of Pacific Islanders in the Pacific Islands with an Increase in Productivity of Returning Migrants

	Skilled Labour		Unskilled Labour	
	Productivity	Initial Loss of Labour	Productivity	Initial Loss of Labour
Welfare of Pacific Islanders in the Pacific Islands (\$US millions)	61.87		88.21	
Decomposed into productivity and loss of labour force (\$US millions)	64.33	-2.46	86.46	1.75

a. Assumes 10% of workers return with 50% of gains

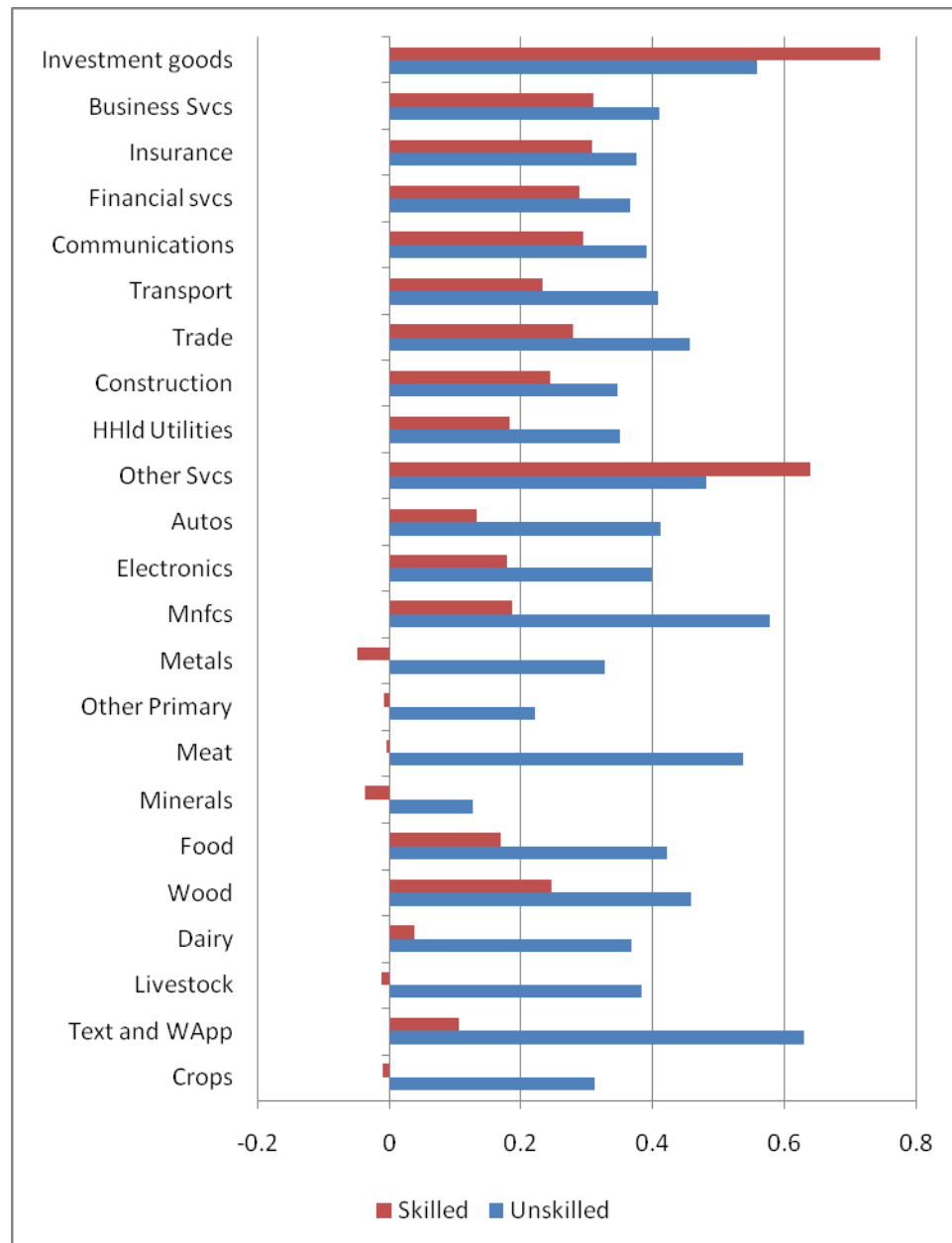
Source: Authors' results

b) Sectoral Output

Chart 3 illustrates the effects of the liberalization on the sectoral output of Australia¹³. Output in Australia and New Zealand increases in all sectors, although the unskilled labour gains are larger and more evenly spread across agriculture, manufactures and services, than the increase in skilled workers which have an insignificant effect on the agricultural sectors due to the fact that agriculture is not very skilled labor intensive. It is for this reasons that the agricultural sector are the primary advocates of the policy to increase the temporary mobility of unskilled workers.

¹³ We choose not to display the results for the Pacific Island's given that the sectoral detail of the Pacific Islands underpinning this analysis is unlikely to be accurate; although as expected we see large declines in sectoral output in the Pacific Islands across the board. The effects on New Zealand are similar to those on Australia. The effects on the other regions are mostly negative and insignificant.

Chart 3. Impact of Increased Unskilled and Skilled Labour Movement on Sectoral Output in Australia (%)



Source: Authors' results

c) Sensitivity Analysis

In this section we examine how sensitive the results are to some of the assumptions we have made regarding the size of the shocks and the origins of the new temporary workers.

Skilled Labour

The scarcity of skilled labour in the Pacific Island economies means that the movement of skilled workers to Australia and New Zealand can have a significant adverse effect on the Pacific Island economies. The increase in Australia's and New Zealand's skilled labour force by 1.5% is equivalent to a fall in the Pacific Islands' skilled labour force of 6.5%. In this section we investigate further the impact of alternative shocks to skilled labour. Table 4 shows that reducing the quota to an increase of only 0.2% of the Australian and New Zealand skilled workforce reduces the losses to the Pacific Island economies considerably, and the gains to Australia and New Zealand. Increasing the quota, on the other hand, significantly increases the losses in terms of real GDP and welfare.

Another aspect of the skilled story is the underlying share of skilled labour in the Pacific Islands. There is some uncertainty regarding the share of skilled workers in the Pacific Islands, with estimates ranging from 27% of the total labour force to 4%, in the Pacific Islands. Reducing the share of skilled in the Pacific Island's labour force to 4% significantly increases the losses made by the permanent residents in the Pacific Islands, with the loss in GDP rising to 6.3%¹⁴. Hence it is not simply the number of skilled workers that move abroad which drives losses in real GDP and welfare, but the share of skilled workers relative to unskilled workers, or the relative scarcity of skilled to unskilled workers in the home economy.

Table 4. Sensitivity Analysis: The Impact of Alternative Changes in Skilled Labour Quotas on Real GDP

	Alternative quotas (skilled 27%) ^a			Data (skilled 4%) ^a
% increase in Australia and New Zealand's skilled labour forces (shock)	3%	1.5%	0.20%	1.5%
% of Pacific Islander's skilled worker population	13%	6.5%	0.8%	38%
% change in real GDP				
Pacific Islands	-1.6	-0.79	-0.1	-6.3%
Australia	0.6	0.3	0.04	0.3%
New Zealand	0.38	0.19	0.025	0.23%

a. Share of skilled to total labour force of Pacific Islands.

Source: Authors' results

¹⁴ The impact on welfare is even more significant, with the welfare of permanent residents falling by \$783m.

Unskilled Labour

In the case of unskilled labour, the losses in real GDP increase, but the welfare gains to the Pacific Islanders living in the Pacific Islands increases, as the quota is increased from 1.5% to 3% (Table 5). Similarly the gains to Australia and New Zealand also increase as more unskilled labour is obtained from the Pacific Islands.

Table 5. Sensitivity Analysis: The Impact of Alternative Changes in Unskilled Labour Quotas on Real GDP

	Alternative quotas (unskilled 73%) ^a			Data (unskilled 96%) ^a
% increase in Australia and New Zealand's skilled labour forces (shock)	3%	1.5%	0.20%	1.5%
% of Pacific Islander's skilled worker population	8.9%	4.4%	0.6%	3.4%
% change in real GDP				
Pacific Islands	-2.25	-1.11	-0.15	-0.77
Australia	0.79	0.4	0.05	0.4
New Zealand	0.79	0.4	0.05	0.4

a. Share of unskilled to total labour force of Pacific Islands.

Source: Authors' results

Alternative Labour exporters

In the following sections we examine the case where Australia and New Zealand again increase their quotas on the temporary movement of labour by 1.5%, however the new labour is supplied by South East Asia (including also China) (only), South East Asia and the Pacific Islands, all developing countries, and all developed countries respectively. Table 6 lists the regions and how they link to these categories.

Table 6: Regions

Region	Categories
Australia	Host
New Zealand	Host
Rest of Oceania	Pacific Islands and Developing
China	South East Asia and Developing
South Asia	Developing
North America	Developed
EU15	Developed
S.E. Asia	South East Asia and Developing
Rest of East Asia	Developed
North Africa and the Middle East	Developing
Eastern Europe	Developing
Rest of World	Developing

The results from these alternative scenarios are shown in Table 7.

Table 7. Macroeconomic Effects Due to Unskilled Labour Increase

Labour sending economies		Australia		New Zealand		Pacific Islands	
		Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
Pacific Islands	Real GDP (% change)	0.4	0.3	0.39	0.19	-1.12	-0.79
	Welfare (\$US millions)	496.24	438.79	71.74	39.74	1.75	-2.46
South East Asia	Real GDP (% change)	0.4	0.3	0.4	0.2	0	0
	Welfare (\$US millions)	486.61	437.77	71.9	41.86	0.71	0.04
South East Asia and Pacific Islands	Real GDP (% change)	0.4	0.3	0.39	0.2	-0.26	-0.13
	Welfare (\$US millions)	487.83	437.82	71.86	40.87	-0.44	-2.59
Developing^a	Real GDP (% change)	0.4	0.3	0.4	0.2	-0.15	-0.07
	Welfare (\$US millions)	485.98	431.24	71.69	41.27	-0.5	-1.47
Developed	Real GDP (% change)	0.56	0.42	0.64	0.36	0	0
	Welfare (\$US millions)	684.53	607.86	116.77	74.67	0.79	-0.05

- a. This scenario represents a North-South liberalization of GATS Mode 4. The developing labour exporting regions comprise the Pacific Islands, China, South Asia, South East Asia, North Africa and the Middle East, Eastern Europe and the Former Soviet Union, and the Rest of the World.

Source: Authors' results

For Australia and New Zealand it makes almost no difference where the migrants are sourced. The only differences occur when workers are obtained from other developed economies, since labour from these economies have higher productivities than from the developing economies. The productivity differences between developing countries are not significant enough to cause significant differences in the gains to Australia and New Zealand.

For Pacific Islanders the losses in terms of real GDP depend on the extent to which they supply the workers, that is the losses are lower in all cases because they supply less of the new quotas. Somewhat surprising, is that the changes in the real incomes/welfare of the permanent residents don't just fall but become negative (particularly for unskilled). The fall in welfare is expected as the inflow of remittances back to the Pacific Islands is now lower; the change in sign of welfare shows that with the lower levels of movement of people, remittance inflows are now too small to offset the losses from the lower supply of labor in the economy.

7. Conclusion

This paper provides further evidence of the potential gains to be made by both labour exporting and importing regions from negotiations under GATS Mode 4. Here we examine the impact on welfare, Real GDP and wages of Australia and New Zealand increasing their quotas on skilled and unskilled labour from the Pacific Islands economies by 1.5% of their labour force. The results show that Australia and New Zealand would gain considerably from increasing quotas, particularly on unskilled labour, through GATS Mode 4. This is consistent with the current debate in Australia in which the National Farmers Federation's is lobbying for a guest workers scheme that would specifically recruit low to medium-skilled workers from Pacific Rim countries for work in sectors facing seasonal shortages such as citrus fruit harvesting. This result is also consistent with other findings, such as Walmsley and Winters (2006) and Walmsley, Winters and Ahmed (2007).

The paper also found that Australia's and New Zealand's choice of sending partner, among developing economies, did not affect the welfare gains accruing to them; however this result is likely to be dependent on the quality of the remittance and other data. The gains made by Australia and New Zealand were similar regardless of whether labour came from the Pacific Islands, South East Asia or a combination of developing economies. Of course the choice of sending region had a considerable impact on the welfare of the sending economies themselves.

The Pacific Island economies gained substantially from sending unskilled labour to Australia and New Zealand under GATS Mode 4. In the case of skilled labour, however, the loss of scarce skilled labour was shown to have a significant negative impact on the permanent residents remaining in the Pacific Islands and significantly increased the wages of the remaining skilled workers.

When GATS Mode 4 was linked to capacity building efforts for return migrants the results for the permanent residents remaining in the Pacific Islands were positive overall. Hence, while unskilled labour movements result in unambiguously positive

gains, the impact of increased mobility of skilled labour is clearly negative without return migration, since remittances do not completely offset the loss of skilled workers in the Pacific Islands. Hence programs, such as the ones currently being debated in Australia, which relate to unskilled labour, are likely to result in substantial benefits to the Pacific Island economies. If skilled migration is an inevitable part of Pacific Island economies, then it is imperative that temporary schemes incorporate capacity building efforts and encourage higher remittance rates to assist with mitigating the losses from the skilled migration.

Finally, this paper also examined the case where the quotas were met by an increase in labour from developed economies. In this case, the gains made by Australia and New Zealand were much greater than when labour was supplied by developed economies, due to the higher productivities of workers from Europe, North America and the rest of East Asia.

8. References

- Asia Pacific Migration Research Network (APMRN) (1997), 'Migration Issues in the Asia Pacific', Working paper no. 1 compiled by Patrick Brownlee and Colleen Mitchell, Published by the APMRN Secretariat Centre for Multicultural Studies - Institute for Social Change & Critical Inquiry ; University of Wollongong, Australia, (1997)
- Australian Farm Institute (2005) "Australian Farm Sector Demography: Analysis of Current Trends and Future Farm Policy Implication" Surry Hills.
- Bertram, G. and R.F. Watters (1985). "The MIRAB economy in South Pacific microstates", *Pacific Viewpoint*, No. 26, pp. 497-520.
- Chambers, A. (1986). *Reproduction in Nanumea: An Ethnography of Fertility and Birth*, Working Papers in Anthropology No. 72, (Auckland, University of Auckland).
- CIA World Factbook (2006) <http://www.cia.gov/cia/publications/factbook/>
- Commander S, Kangesniemi M and Winters L A (2002) 'The brain drain: curse or boon? A survey of the literature', paper for the International Seminar on International Trade, Stockholm, May, 2002.
- Connell, J (2003) Migration Patterns and Policies in the Asian and Pacific Region , Asian Population Studies Series No. 160
- Cook Islands (1984). *Cook Islands Development Plan*, Rarotonga, Cook Islands.
- Dimaranan, Betina V, Editor (2006). *Global Trade, Assistance, and Production: The GTAP 6 Data Base*, Center for Global Trade Analysis, Purdue University.
- Freund, C. and Spatafora, N (2005). "Remittances: Costs, Determinants and Informal Flows", World Bank Policy Research Working Paper No. 3704, The World Bank, Washington DC
- Grynberg, R. (2002). "Liberalizing Global Labour Markets: Recent Developments at the WTO". *The Estey Centre Journal of International Law and Trade Policy*, V 3, No. 1, pg. 82-105.
- Hertel, Thomas W., Kym Anderson, Joseph Francois, and Will Martin, 2004. "The Global and Regional Effects of Liberalizing Agriculture and Other Trade in the New Round," Chapter 11 (221-244) in Agriculture and the New Trade Agenda: Creating a Global Trading Environment for Development, M. Ingco and A. Winters (eds.), Cambridge University Press.
- Hertel, T. W. (ed), (1997): *Global Trade Analysis: Modeling and Applications* Cambridge: Cambridge University Press.
- Iredale, Robyn (2000). "Skilled migration policies in the Asia-Pacific region", *International Migration Review*, vol. 34, pp. 882-906.
- Millbank, Adrienne (2006) "A Seasonal Guest-Worker Program For Australia?" Research Brief No. 16 2005-06, Parliament of Australia, Parliamentary Library; Social Policy Section, 5 May 2006.

Munro, D. and R. Bedford (1980). "Historical backgrounds", in A Report on the Results of the Census of Tuvalu, (Funafuti, Government of Tuvalu), pp. 1-13.

Parsons, C. R., R. Skeldon, L. A. Winters and T. L. Walmsley (2005), "Quantifying the international bilateral movements of migrants", DRC Working Paper No WP-T13, Sussex University, United Kingdom.

http://www.migrationdrc.org/publications/working_papers.html

Ratha, D. (2003), "Workers' Remittances: An Important and Stable Source of External Development Finance", Global Development Finance 2003, World Bank, Washington DC

Ratha, D. (2004), Understanding the Importance of Remittances, Migration Policy Institute, Available: <http://www.migrationinformation.org/Feature/display.cfm?id=256>

Rodrik, D 2004. 'How to Make the Trade System Work for Development'. Mimeo, Available:

<http://ksghome.harvard.edu/~drodrik.academic.ksg/How%20to%20Make%20Trade%20Work.pdf>

van der Mensbrugghe, D. (2006) "The Potential Gains from International Migration". *Global Economic Prospects: Economic Implications of Remittances and Migration 2006*", The World Bank, Washington DC

Walmsley, T. L. and Winters, L. A. (2005) "Relaxing Restrictions on the Temporary Movement of Natural Persons: A Simulation Analysis", *Journal of Economic Integration*, December, 20(4).

Walmsley, Terrie L., L. Alan Winters, and S. Amer Ahmed (2007): Measuring the Impact of the Movement of Labor Using a Model of Bilateral Migration Flows, GTAP Technical Paper No. 28, Center for Global Trade Analysis, Purdue University, West Lafayette, IN, USA.

Walmsley, Terrie L., S. Amer Ahmed and Christopher R. Parsons (2006): "The GMig2 Data Base: A Data Base of Bilateral Labor Migration, wages and Remittances", GTAP Research Memorandum, No. 6, Center for Global Trade Analysis, Purdue University, IN, USA.

Winters L Alan 2001. 'Assessing the Efficiency Gain from Further Liberalization: A Comment,' in Sauve, P and Subramanian, A (eds) *Efficiency, Equity and Legitimacy: The Multilateral Trading System and the Millennium*. Chicago: Chicago University Press. 106-113

Winters, L Alan 2003. 'The Economic Implications of Liberalising Mode 4 Trade', Chapter 4 in Mattoo A and Carzaniga A (eds) *Moving People to Deliver Service*. Oxford: Oxford University Press. 59-92.

Winters, L Alan (2005), 'Developing Country Proposals for the Liberalisation of Movements of Natural Service Suppliers', Development Research Centre on Migration, Globalisation and Poverty Working Paper T8, University Sussex.