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Factor flows between Australia and New Zealand

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Factor Flows between Australia and New Zealand

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NZ Trade Consortium working paper no 27

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1. The Importance of Factor Flows

Economic relations between Australia and New Zealand comprise trade in goods, services, labour and capital. Table 1 lists the dependence of Australia on New Zealand markets, and the dependence of New Zealand on Australian markets, in the simple sense of the magnitude of imports and exports of goods and services and factor flows with the other country. To make these flows comparable, each flow between Australia and New Zealand is expressed as a share of the total corresponding flow between the country and the Rest of the World.

As is well known, this table shows that all of these shares are considerably higher for New Zealand than for Australia. That is, the New Zealand economy is more dependent on the Australian economy than the reverse.

Looking at the comparisons within each column, we find that both the Australian and the New Zealand economies are more dependent on each other for factor supplies than they are for trade in goods and services. In particular, two flows really stand out as making Australia and New Zealand dependent upon each other. These are New Zealand supplies of labour to the Australian labour markets and trans-Tasman foreign direct investment. Consequently, while the usual focus on economic relations is on trade in goods and services, I shall focus on trade in factors.

2. Short run economic effects of Trans-Tasman migration

Net trans-Tasman migration has been consistently from New Zealand to Australia since 1970. (See Carmichael, 1993). As at 30 June 2001, there were an estimated 460,000 New Zealand citizens in Australia. This stock of New Zealand citizens was made up of 377,2000 (or 82 per cent) resident in Australia and 82,800 Visitors. (Department of Immigration, Multicultural and Indigenous Affairs, website www.immi.gov.au, “New Zealand Movement”).

The incomes earned by migrants are roughly the same in annual value as trade in goods between the two countries. Suppose there are 300,000 New Zealanders resident in Australia who work and earn an average A\$30,000 per year, both of which are conservative estimates. This generates an annual income of A\$9,000 million compared to the total trade between the countries of A\$11,000 million in 2000.

Standard analysis of migration uses Neoclassical general equilibrium models. It is necessary to present the results in a little detail because the detail is important and because essentially the same analysis applies to the effects of capital movements between countries.

The standard model is a two-factor one-good model, first used by Berry and Soligo (1969) to analyse the effects of international movement of labour alone and independently by MacDougall (1960) to analyse the effects of the movement of capital alone. One factor is (homogeneous) labour and the other is (homogeneous) capital. There is constant returns to scale and all markets are perfectly competitive. Both factors are assumed to receive the value of their marginal products.

This analysis predicts that, in the country of emigration – which in this case is New Zealand- an emigration of labour must raise the incomes of the labour group and it must lower the income of capital. These effects are due to the increase in the capital stock per head of population that causes the marginal product of labour to increase and that of capital to decrease. It is this opposite effect on different income earners that complicates the national assessment of emigration.

These qualitative conclusions are quite robust. They hold for a variety of models with many factors and many goods, under the usual assumptions of constant returns to scale in all industries and perfectly competitive goods and factor markets. The modern general equilibrium analysis of the many-good many-factor case makes use of the device of the national product function (see Ruffin, 1984). In this general model, emigration must raise (or at the worst leave them unchanged¹) the income of the worker or occupational group from which emigrants are drawn and must lower the

income (or at best leave it unchanged) of some other factors owners in the economy

In the aggregate, emigration lowers the incomes of all income groups remaining in the country under the standard assumption that the emigrant owned no capital before emigration. This holds because the loss to capital income is greater than the gain to labour. This is an inframarginal effect, first noted by Berry and Soligo (1969). This result too generalises to an economy with many factors and goods.²

However, the average per capita income per head of population in the country of emigration must rise under these assumptions. This is because there is a different set of people residing in the country before and after the migration and the assumption has been made that emigrants had below-average income since they owned no capital.

Is New Zealand worse off as a result of these flows? This is actually a tricky question. The answer depends on whom you regard as New Zealanders. If you take “New Zealanders” to mean those remaining in New Zealand, the answer is yes, they are worse off – for the reasons given above. But if you take New Zealand welfare to be the average real income of the population of New Zealand, the answer is no, New Zealand is better off.³ The former criterion is probably better as it focuses on the income of fixed groups. It also avoids the paradox that the criterion of average real income may show a rise (fall) whereas all of the groups in the population at the beginning of the comparison are actually worse (better) off.

These results are informative because they are not intuitive. However, two other basic complications need to be introduced. One is that emigrants own a share of the national capital stock and the other is that there are many different groups of workers with different wages from which emigrants may be drawn. Both complications may lead to different results.

Assume now that the emigrant owns capital, leaves it behind but receives the return to capital in the country to which he/she has migrated. In this case, the more capital owned by emigrants the better for the residents remaining. This is because the emigrant then bears part of the inframarginal fall in income to capital. If the emigrant owned a share of capital equal to the national average, the residents remaining now must receive a higher average income, as Berry and Soligo (1969) noted. (Again the average income per head of population must rise.)

The second complication is that there are many different types of labour, not a single homogeneous stock of labour. Assuming, as before, that each worker receives the value of his/her marginal product, the effects on the income of those remaining are unchanged; they must lose. The magnitude of these income changes will vary now with the type of labour who

migrates. (However, the average income per head of population may also fall if the emigrating workers are drawn from above average-wage groups. This may hold even if they owned capital.)

Given the wide variation of labour incomes and the major share of labour income in national income, these compositional effects are likely to dominate the effects from diversified ownership of capital and labour. “The evidence suggests that emigration to Australia occurs across all skill categories roughly in the same proportion as the population as a whole.” (Bushnell and Choy, 2001, p. 10). (In contrast, they note that emigrants from New Zealand to other countries tend to be higher skilled.) Hence, the average income per head of population, as well as the average income of those remaining in New Zealand, has risen.

From an Australian point of view, the same Neoclassical analysis predicts that a net inflow of labour would lower the incomes of those groups in the Australian labour force with whom the incoming New Zealanders compete for jobs, raise the incomes of some other groups in Australia and, in the aggregate, increase the incomes of the existing Australia population.⁴ In a country of immigration, the last effect is known as the “immigration bonus”, a term coined by US economists (see Borjas, 1995). This result holds for both low-wage and high-wage immigrants.

It is possible that the effect on the average incomes of the population of Australia and of New Zealand might both be positive. This could happen if the New Zealanders emigrating came predominantly from lower income groups. One is reminded here of the quip popularly attributed to the former New Zealand Prime Minister Muldoon: “Trans-Tasman migration is great. It raises the IQ on both sides of the Tasman.”

The standard analysis, in my view, presents too negative a view of inter-country factor movements. It emphasises conflict between different groups of factor owners because of changing factor proportions in the industries in which they are employed and the possibility of conflict between the interests of the country of emigration and the country of immigration. However, the effect, whether positive or negative, of labour movements from New Zealand to Australia on incomes is likely to be small in both countries. Calculations by US economists of the “immigration bonus” show that it is small (see Borjas, 1995).

From the point of view of long run growth, furthermore, the effect of trans-Tasman labour flows has been to make the population of Australia and New Zealand *combined* better off. The gains to Australian national income exceed the losses to New Zealand national income. There is a proposition in the literature on common markets that factor flows by themselves must unambiguously increase the aggregate product of the common market area.⁵ This is simply a consequence of the movement of factors to the location of

higher marginal productivity. In the case of trans-Tasman labour migration, workers in Australia have a higher marginal productivity due to higher capital per worker and a superior technology.

If the residents remaining in the country of emigration, New Zealand, are worse off and the residents of the immigration country, Australia, are better off as a result of the migration of factors, the gain to Australia from the “immigration bonus” could be used to compensate the residents of the losing country. Here I cannot help observing that New Zealand actually contributes part of the social security benefits (old age pensions, superannuation and payment for severe disabilities) paid by the Australian government to recipients who have migrated from New Zealand to Australia. These are people who have spent no time or a short time in the Australian workforce. There is an asymmetry here as the Australian Government does not bear any of the costs of their education, that is, their human capital accumulation but it receives all of the taxes on incomes and expenditures from New Zealand migrants working in Australia.

Moreover, both Australia and New Zealand have had broad based immigration policies that have admitted both high skilled and low skilled workers in many occupations and both, as discussed below, have received net inflows of capital as well as labour. Consequently, the effect of immigration policies and capital inflows combined has been to increase the stock of all primary factors and the size of the economies.

We should focus on the effects of these flows on economic growth and, in particular on total factor productivity. Unfortunately, we know little of the effects of migration on total factor productivity. One feature of trans-Tasman immigrants is that they are English-speaking whereas immigrants from other countries into both Australia and New Zealand have an increasingly Non-English-Speaking background. We do not know if this has an effect on the relationship between migration and total factor productivity.

3. Long run wage rate divergence

I want to move on to important long run consequences from migration that have received little attention in New Zealand or Australia.

There have been arrangements between the Australian and New Zealand government guaranteeing the free movement of labour for citizens of Australia and New Zealand, the so-called Trans-Tasman Travel Arrangements (TTTA), since 1973. These in turn continued earlier arrangements that date back to the 1920s. (The early documents are set out in Burnett, 1980.) Indeed, there has been free movement of labour and people between Australia and New Zealand since Federation in Australia, except for the category of “coloured” persons other than Maoris and Aborigines, for whom entry was restricted in both countries until 1973 (Burnett, 1980).⁶

Economic theory predicts that a common market in labour should equalise the real wages in the common market. One should note that equalisation of the price of labour requires National Treatment as well as freedom of movement. The Trans-Tasman Mutual Recognition Arrangements (TTMRA) did not come into place until 1997. However, in the context of Australia and New Zealand, one can easily exaggerate the importance of mutual recognition. For many professions and trades, there has been a substantial degree of harmonisation across the Tasman Sea of professional standards and entry qualifications that date back many decades. Consequently, one should expect that the free movement of labour would have brought about the equalisation of wage rates between Australia and New Zealand if the forces of economic theory determine labour market movements.

I have compared series in both countries of average weekly earnings for men and women combined for the period 1989 to 2001. 1989 is as far back as one can go in the current New Zealand series because the (quarterly) series of average weekly earnings before 1989 was compiled by the Department of Labour rather than Statistics New Zealand on a different basis. These two post-1989 series appear comparable though there are minor differences; the New Zealand statistics relate to full time equivalents whereas the Australian statistics relate to fulltime workers only. The two series were first annualised. Then the Australian series has been converted to New Zealand dollars using the yearly average bilateral exchange rate.

One might argue that one should compare series of real (wage) incomes. That is, one should deflate each national series by the appropriate national price deflator. This is standard microeconomic theory; utility maximisers respond to real wage rates. But it is doubtful if it should be applied in this instance. There are two arguments in support of the nominal or undeflated series. First, it is nominal incomes calculated at the current exchange rate

that would-be migrants will compare. Second, it is the nominal Australian income that is relevant when an immigrant from New Zealand earns income in Australia and sends part of it back to New Zealand to support family or repay debt or when he/she returns at a later date to New Zealand with accumulated wealth.

Figure 1 shows the NZ weekly average wage rate relative to the Australian weekly average wage rate. The trend is downwards. (The fluctuations are due to movements of the bilateral exchange rate.) The figure for 1989 was 0.72 and the figure for 2001 had fallen to 0.66. In fact, labour market rates between the two countries have *diverged* over the last decade.

What seems to have happened is that bilateral migration has had an equalising effect but this has been dominated by the divergence of the rate of growths of total factor productivity over the 1990s. This was the period when Australia has had a high rate of total factor productivity growth relative to other OECD countries (including New Zealand).

4. Trans-Tasman FDI

The short run effects of FDI across the Tasman can be analysed in much the same way as the analysis above of labour movements.

Net movements have been strongly from Australia to New Zealand. In the case of capital flows, there is no concern over compositional effects or accompanying movements of the population. (FDI may induce the movement of executive and skilled staff to accompany the direct investments but such labour will not usually settle permanently.) Consequently, from the New Zealand point of view, an inflow of capital from Australia will tend to lower the rate of return to domestic capitalists, raise the income of labour and in the aggregate raise the income of New Zealanders.

In the case of capital movements in the form of FDI, there is a common argument that FDI brings another benefit to the recipient economy in the form of technology transfer to this country. This may be an important growth effect. Unfortunately, there are no studies of the technology effects of Australian direct investments in New Zealand to my knowledge.

Bilateral capital flows have given rise to important policy debates in recent years; notably, the issue of triangular taxation, as it is known, of corporate profits paid out as dividends. Both countries have similar tax systems in regard to equity income; in particular, both have dividend imputation systems and there is a double taxation agreement between Australia and New Zealand. Yet, in some circumstances when a resident of one country owns shares in a company resident in that country and earning income from a subsidiary in the other country, there is still double taxation of dividend income. This is known as the “triangular tax problem”. It is perceived as horizontally inequitable as the same does not hold for labour, rents or interest income earned in the other country.

The source of the problem is that dividend imputation credits of one country are not recognised by the taxation authority of the other. The economic issue is that this creates a bias towards investing funds in the home country and against foreign investment in the member country. It also implies a bias towards servicing markets in the other country through exporting rather than through foreign investment. At the annual meeting of the Trade Ministers in 2002, it was announced that the Treasurer and Minister of Finance in the two governments are developing a mechanism for possible relief on triangular taxation (Joint Communiqué, 2002).

More important than this discrepancy are the differences between the two countries in tax rates and other features of the company income taxation regimes. Similarly, there are differences in corporate governance regulations in the two countries. These differences derive from the lack of

harmonisation of important features of the taxation and regulatory regimes affecting direct investments in the two countries. This lack of harmonisation distorts the allocation of capital in the CER area.

5. Globalisation of capital and labour markets

These long run trends in the CER region need to be placed in a global context.

Australia and New Zealand are unusual economies in that they have been (net) importers of both capital and labour for all of their post-Colonial history, that is, from about 1840. (This ignores the periods of the two World Wars and a few depression/recession years in both countries when net immigration was negative.) Indeed, probably only Australia, New Zealand and Canada have this status throughout their modern (post-European settlement) economic history. This makes the two economies particularly susceptible to changes in world factor markets.

In the case of Australia, we have long historical time series from 1861 to 1992 constructed by Clarke and Smith (1996) for both net immigration and net capital inflows. The immigration series is normalised by population and the capital inflow (= balance of payments deficit) is normalised by GNP. For immigration, this Australian series is permanent plus long term plus short term movements.⁷ This series shows that the very long run (130 years) average is a rate of net migration equal to roughly 0.75 per cent of the population. In the last 50 years the average rate of net migration has been about 0.5 per cent. In the last decade it has been about 0.4 per cent of the population or roughly 90,000 per annum.

In the case of New Zealand, the corresponding series over the last decade of All People Arriving less All People Departing shows an average of about 10,000 net arrivals per year, that is, about 0.25 per cent of the population per year until 1997-98 and then three years of negative net migration, returning to positive net migration in 2001 and an exceptionally large net gain in 2002. (Statistics New Zealand website www.statistics.govt.nz, “External Migration”).

Thus, both countries exhibit a secularly declining rate of net immigration. The New Zealand series reveal a much lower rate of net migration than for Australia but we are really both in the same boat, witnessing a substantial change in long term migration patterns. The New Zealand series also exhibit much greater year-to-year fluctuations than do the Australian series.

The second feature of the long term series is that migration is a two-way flow. Countries of immigration also experience substantial emigration. In Australia permanent departures have been increasing relative to permanent arrivals sharply since 1997. In 1999-2000 permanent departures were 44.5 per cent of permanent arrivals (DIMIA, 2001, “Permanent and Long term Movement”). It is interesting to note that in the US, the world’s largest recipient of net immigration, emigration is rising relative to immigration

too. Data for the 1990s indicate that the emigration flow was 22 per cent of the immigration flow in the US (Kramer, 2002, p.48). Increasing emigration is responsible for a part of the decline in the net immigration rates in Australia and New Zealand. (The other part is a declining gross immigration rate.)

The net inflows from all sources into both countries are affected fundamentally by the bilateral flows across the Tasman. From the Australian point of view, using the statistics of permanent migration (Settler Arrivals and Permanent Departures), in 1999-2000 there were 92,272 settler arrivals from all sources. Of these 31,610 were from New Zealand. This comes close to offsetting the number of Australians departing permanently in the same year (41,078). Thus, without the inflow from New Zealand, the net migration to Australia from the Rest of the World excluding New Zealand would be greatly reduced. Since 1995-96 New Zealand has been the single most important source of annual immigrant arrivals, replacing the UK which had been the most important source ever since the beginning of settlement (see DIMIA, 2001, Table 4).

When we calculate in a similar way the net immigration into New Zealand from the Rest of the World excluding Australia, the figure jumps upwards because we are excluding the large annual loss to Australia. In terms of net migration from outside the CER region, the immigration rates of the two countries are much more similar.

A secularly declining gross immigration rate and an increasing emigration rate in both countries are symptoms of a loss of competitiveness in the world markets for mobile labour. There is evidence that there is competition among countries for some types of labour, particularly skilled labour. A clear example of this is in the IT market, where a number of countries have sought to attract IT personnel from other countries (including Australia and probably, though I have no knowledge of this, New Zealand). Much the same applies to the market for medical staff, skilled market operators in financial markets, nurses, teachers and – I must add - academics and some other markets. There is competition in all of these areas among the major English-speaking countries; the US, Canada, the UK, Australia, New Zealand, Hong Kong and Singapore. The governments of all of these countries have visa categories for both permanent and temporary movements in these skilled labour market areas and employer groups regularly advertise in Australian and New Zealand for skilled labour.

In labour markets, this loss of competitiveness in the CER region is due primarily to the fact that average incomes in the region have declined relative to those in the US, Hong Kong, UK and other destinations with which we compete for labour movements. Table 3 reproduces estimates by Maddison (2001) of the real income of selected countries in 1950 and 1998. Maddison has constructed a wonderfully long series of real per capita

incomes in many countries, converting the national currency measures into “international dollars” using Purchasing Power Parity exchange rates. The countries listed are those from which Australia and New Zealand have historically drawn immigrants (such as the UK, Ireland and Italy), other countries which have also received immigrants from around the world (Canada and the US) and some Asian countries. The year 1998 is a little unfavourable to New Zealand as it was a year of recession but this makes little difference as the change in rankings are due to differences in trend growth rates over the 50 year period.

Between 1950 and 1998 the average compound rate of growth of the Australian economy and more particularly the New Zealand economy were slower than that of the world economy as a whole (2.2 per cent) and, in particular, slower than the rates of growth in a number of high-income fast-growing economies in Europe and in East Asia such as Japan, Singapore and Hong Kong. A number of countries have passed Australia and more have passed New Zealand in the international ranking by average per capita income. As a consequence, we have fallen from being the richest countries in the world.

6. Policy choices

What are the implications of this loss of competitiveness on world factor markets?

To make our economies more attractive to capital and labour from the Rest of the World, we have to become policy smart. This does not mean a return to assisted passages and other subsidies to migrants, nor does it mean matching Singapore and Malaysia and other countries that give substantial subsidies to foreign direct investment. Rather, it means making the economic environment more attractive to investors with new technologies and potential migrants with high levels of human capital.

For potential migrants, there is not much that can be done in the short run. In the longer run we need to adopt policies which raise the underlying rate of growth in New Zealand and maintaining the rate achieved in the last decade in Australia.

For foreign investors, we need, in Australia at least, clearer rules that indicate when foreign investment will be allowed in those industries subject to screening. We need to avoid the uncertainties that have bothered foreign investors in cases such as Woodside Petroleum and QANTAS. Then we need to remove disincentives in the form of tax rates and tax provisions that make Australia and New Zealand less attractive than alternative destinations. We need to improve corporate governance and to have stable exchange rates.

If measures are adopted to make the Australian and New Zealand factor markets more competitive, there will be an increased inflow of human-capital-intensive labour and high-technology FDI. This would increase national outputs by increasing the stocks of capital, human capital and labour. This in turn would help to increase our exports of goods and services since both imported capital and imported skilled labour are complements to goods and service production and raise total factor productivity. Most of all, it will boost our productivity growth as imports of capital and skilled labour from the Rest of the World are a source of technology and total factor productivity growth.

7. A Single Market between Australia and New Zealand for factors

At present the CER covers only trade in goods and services. There is a separate bilateral agreement that guarantees the free movement of persons and there has been a perennial discussion as to whether Australia and New Zealand should preferentially eliminate barriers to cross-investments. The obvious and desirable step to take now in the context of the evolving CER agreement is to extend the agreement to incorporate a Single Market between the two countries for factors.

There is a strong justification for this step in economic theory. An Australian economist, Murray Kemp (1993), has shown that the formation of a single market benefits the area as a whole, and it benefits all countries individually if there is compensation paid between countries. The argument requires National Treatment as well as free movement across borders of labour and capital, and in the case of a free trade area, it requires adjustment of the levels of national border taxes. It is an extension of the more familiar Kemp-Wan proposition that a customs union that frees trade in goods can increase the welfare of all member countries, provided there is an appropriate level of the common external tariff to maintain the quantities of imports from third countries and compensation between the countries. Panagariya and Krishnan (1997) and Ohyama (2002) proved that the Kemp-Wan proposition applied to free trade areas, provided each member adjusts the level of tariffs to maintain the level of imports from third countries. This proposition too can be extended to factor movements in a free trade.

The extension to the free movement of factors between members again derives from the benefits of allowing capital and labour to move to the location where the marginal productivity of the factor is greatest.⁸ This is the common sense of the argument. These efficiency gains from freeing the movement of factors are standard and do not need elaboration here. (I argued the general case for a Single Market in the CER area in Lloyd, 1991). Indeed, they have already been recognised partially in steps taken within the CER, notably the Trans-Tasman Mutual Recognition Arrangement of 1996 and harmonisation of other policies such as food standards and business laws.⁹

There is a second benefit in the case of the CER. Incorporation of the TTMA into CER would make it a treaty level commitment. Incorporation of provisions guaranteeing the freedom of movement of capital and national treatment would complete the “four freedoms” and firmly establish the generality of free trade between the two countries. It would be desirable for the capital provisions to cover all forms of equity and portfolio capital, not merely foreign direct investment.

What I want to emphasize here is the benefits of a Single Trans-Tasman Market in competition in the markets of the Rest of the World and, in particular, the benefits in making Australia and New Zealand more attractive to labour and capital migrating from the rest of the world. . This includes both attracting capital and labour to Australia and New Zealand and retarding the outward migration of labour, especially skill-intensive labour to the Rest of the World. Commitment to a Single Market would be a signal to investors and potential migrants that there is a progressive integrated market in the region.

A Single Market does not require political union in any form, merely greater bilateral government coordination of policies affecting market access and treatment in these markets. Such coordination is well developed under existing CER agreements such as those relating to food standards and mutual recognition in goods and labour markets.

In particular, it does not require that New Zealand join the Federation of Australian States. This would be a far more radical step in terms of economic policy harmonisation as well as in terms of New Zealand forgoing its independence with respect to national security and foreign powers. In the economic sphere, joining the Federation of Australian States would mean a unified fiscal system, a common currency and central bank and automatic harmonisation of policies in all areas where the Commonwealth has exclusive powers or where there are common Commonwealth and State policies.

Rather a Single Market is the logical next step in the integration of the two economies. In practical terms, this should involve two measures. One is the declaration of the principle of a Single Market based on the Four Freedoms and equal area-wide treatment of goods, services, enterprises and labour. The second is the systematic implementation of this principle. In general terms, this could follow the precedent of the Single Market in the EU where the EU-92 measures to implement the single market were based on the 1985 White Paper (Commission of European Communities, 1985). The choice of modalities to harmonise individual policies and the institutional arrangements would need to conform to Australian and New Zealand law and practice.

7.1 FOOTNOTES

1. This case arises when the number of factors is equal to the number of goods. In this case, factor prices are determined by goods prices alone, independently of the national factor endowments. Once goods prices are fixed, so too are factor prices and therefore input proportions, provided both goods continue to be produced. All of the adjustment to changes in national endowments is in the changing outputs of the two industries which adjust to maintain full employment in the economy. This result is used in the familiar textbook treatment of the 2x2 (or nxn) Heckscher-Ohlin model of factor price equalisation and the Rybczynski Theorem. But it is a very special and unlikely case.
2. The modern analysis of factor movements uses the national product function, $G(p,v)$. G is the national product, p is the vector of prices of goods produced in the nation and v is the vector of (fixed) endowments of factors. This function is an aggregator. One can regard the nation, assuming it is a price-taker, as producing a single composite product, the national product. $G(p,v)$ is homogeneous of degree one in the factors on the assumption of constant returns to scale in all industries, and it is increasing and concave in v . Thus, the marginal (national) product of varying the aggregate national endowment of a factor is positive and decreasing. This function acts like a single output production function and the marginal and inframarginal effects used by Berry and Soligo (1969) and MacDougall (1960) carry over.
3. Both of these criteria ignore the welfare of former New Zealanders departing. If their welfare is included, the answer is unambiguously yes.
4. The net inflow of labour might raise or lower the average per capita income of the Australian population (including the new migrants), depending chiefly on whether the new migrants earn incomes above or below the average for the existing Australian population. This is difficult to judge as we do not have statistics of the income of New Zealanders resident in Australia. We know that New Zealand citizens in Australia in 2000 had a higher labour force participation rate (78.4 per cent) than Australian citizens (67.3 per cent) and a slightly lower unemployment rate (6.0 per cent) than Australian citizens (6.2 per cent) (DIMIA, 2002). As English-speaking immigrants, immigrants from New Zealand may not experience the fall down the occupational/income ladder that some non-English-speaking immigrants do.

5. This is a general equilibrium result. For a simple proof using the national product function again, see Lloyd (1996, footnote 6). The proof requires that the two countries have identical production technologies and that the prices of goods are equalised by free goods trade between the countries. If there are differences in the technologies between the countries due, say, to superior management methods, and the factors migrate to the country with the higher productivity take on the productivity (for a given factor intensity) of the receiving country, the result holds *a fortiori*. If there are goods price differences between the countries, there is an index problem in comparing real outputs and the result may not hold.
6. It appears that there was a brief period between 1901 and 1905 when trans-Tasman movements of both Maoris and Australian Aborigines was restricted.
7. The measurement and analysis of migration in a country is plagued by the use of a number of different definitions of net migration. One can measure migration flows, in both directions or net, in terms of permanent movements, or permanent plus long-term or permanent plus long-term plus short-term. Each has its advantages. One is really interested in permanent migration. The difficulties arise because some migrants who declare their intention of coming for only long-term or short-term change their status to permanent residence, and because some permanent settlers re-migrate and some permanent departures return home. Each of these measures has advantages.
8. This argument has long been recognised in the EC/EU where the original Treaty of Rome contained the Four Freedoms (the free movement of goods, services, labour and capital) and the National Treatment of capital and labour, and the modality of mutual recognition developed from the Cassis de Dijon case before the European Court of 1979.
9. Strictly speaking, the positivity of the gains from free trade in factors also requires equalisation of goods and factor taxes; otherwise, the equalisation of factor prices need not imply the equalisation of the values of the marginal products of factors.

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Table 1

Australian Dependence on New Zealand and New Zealand Dependence on Australia, 2000

		Percentage of Australian total to/from NZ (%)	Percentage of NZ total to/from Australia (%)
Trade in Goods	- Exports	5.9	20.2
	- Imports	3.8	22.1
Trade in Services	- Exports	7.3	22.0
	- Imports	5.2	33.7
Direct Foreign Investment - Inward		3.3	38.5
Direct Foreign Investment - Outward		6.7	75.5
Settler Arrivals		34.3	16.8
Permanent Departures		19.0	51.5

Sources: For Australia: Department of Foreign Affairs and Trade, *The APEC Region Trade and Investment, 2001* and DIMIA website- various.
For New Zealand: The entries for Trade in Goods are from Department of Foreign Affairs and Trade, *The APEC Region Trade and Investment, 2001*. The remaining entries are from NZIER sources.

Note: There are some differences in the definitions used in the Australian and New Zealand statistics.

Table 2

Average Weekly Wage Rates

	\$/week NZAW	\$/week AUSAWE	Ratio of nominals ratio	\$NZ/\$A EX RATE	NZ/AUS
1989	510.49	539.50	0.946	1.3073	0.724
1990	540.24	573.52	0.942	1.2961	0.727
1991	555.40	599.25	0.927	1.3325	0.696
1992	567.72	618.72	0.918	1.3503	0.680
1993	570.89	634.87	0.899	1.2429	0.723
1994	583.70	659.40	0.885	1.2188	0.726
1995	598.03	690.47	0.866	1.1183	0.774
1996	616.02	717.42	0.859	1.1258	0.763
1997	635.17	742.25	0.856	1.1104	0.771
1998	648.26	772.70	0.839	1.1602	0.723
1999	663.18	792.20	0.837	1.2084	0.693
2000	676.00	827.10	0.817	1.2651	0.646
2001	699.51	865.90	0.808	1.2197	0.662

NZ/AUS is (NZAW/(AUSAWE*EX RATE))

Table 3

Per Capita GDP in Selected countries, 1950 and 1998.

	1990 International Geary-Khamis dollars	
	1950	1998
Australia	7,493	20,390
New Zealand	8,453	14,779
United States	9,561	27,331
Canada	7,437	20,559
United Kingdom	6,907	18,714
Ireland	3,446	18,183
Norway	5,463	23,660
Switzerland	9,064	21,367
Netherlands	5,996	20,224
Italy	3,502	17,759
Japan	1,926	20,431
Hong Kong	2,218	20,352
Singapore	2,219	23,582

Source: Maddison (2001, Tables C1-c, C3-c).

Figure 1

Relative New Zealand/Australian Average Weekly Wages Rates

