Should Canada Diversify its Trade Pattern? An Overlapping-Generations CGE Analysis of Trade and Ageing

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Abstract

A recurrent theme from politicians and commentators alike is that Canada is too exposed to the U.S. economy and could benefit from diversifying its trade pattern. In this paper we examine the validity of these calls in a context of world demographic changes. Although population ageing in Canada is expected to have a negative impact on welfare, international trade should prop up real consumption per capita through terms of trade improvements during the first half of the 21st century. This reflects a population ageing gap between Canada and many of its trading partners with "younger" populations whose demographic projections entail relatively smaller negative supply shocks and lesser relative price increases. The gains resulting from the globalization of trade flows might be intensified through an accurate pattern of North-South trade diversification that takes into account the extent and timing of population ageing in diverse regions of the world. The main policy implication of this analysis is that a diversification of Canada's trade away from the U.S. in favor of faster-ageing countries such as Japan or Europe is not necessarily desirable.

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1.   Introduction

Canada's debate on trade policy is typically centered on two questions, one strategic and one tactical. The strategic question is whether Canada should diversify its trade pattern away from the U.S., or whether it should pursue deeper integration with the U.S. The tactical question is how we should do so (Head, 2007; Hart, 2007). For example, Canada could engage more with the rest of the world through multilateral trade negotiations (the Doha Round), through formal free trade and investment agreements with selected countries, through ad hoc bilateral trade and investment promotion (Team Canada missions) or through a unilateral decision to free-trade regardless of what other countries do. Canada could pursue deeper integration with the U.S. by reducing the burden of the border, through harmonization of regulatory procedures, common external tariff, customs union, liberalization of NAFTA rules of origin, liberalization of the remaining restrictions on U.S. direct investment in Canada, free movement of labor, and negotiations to curb U.S. trade remedy laws [*e.g.*, Harris (2003); Goldfarb (2003); Dobson (2002); Mandel-Campbell (2008)].

Tables 1 and 2, based on the GTAP 6 database (Dimanaran and McDougall, 2005), provide a convenient starting point to the strategic debate by illustrating the bilateral import and export shares of Canada and several other countries/regions, U.S., European Union (E.U.), Japan, China, India, and an aggregate of the Rest of the World (ROW). For example, 61% of Canadian import originates from the U.S. (Table 1), while 75% of our export goes to the U.S. (Table 2). Aside trade with the E.U., Canadian trade with other markets and in particular with emerging markets such as China and India is

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clearly marginal -- 3.7% and 0.5% of our import originate from these countries, while

1.8% and 0.3% of our export go to these two countries.

The strategic positions on Canadian trade policy are easily foreseen from these

two tables. On one hand, some commentators argue that the Canadian economy is too

much exposed to the U.S. economy and that alternative markets must be developed in

order to diversify away from the U.S. economy. One could argue, for example, that the

recent financial crisis and subsequent faltering of the U.S. economy has changed the

dynamics of the world market and that this should remind Canadians of the risk involved

in having so many eggs in the American basket. On the other hand, others advocate an

almost exclusive focus of trade policy on the U.S. For example, Hart (2007) claims that:

"more than ever, the two-way movement of goods and services across the Canada-U.S.

border is Canada's economic lifeline…Engagement with our Southern neighbour is the

indispensable foundation of any Canadian policy to maximise benefits from international

trade and investments."

The fact is that in the 2000s, trade "negotiation resources" have been spread thinly

between multilateral trade negotiations at the WTO, bilateral or regional trade

negotiations, Team Canada missions to promote trade and investment across the world,

and several initiatives that have been undertaken to reduce the increasingly dysfunctional

impact of the Canada-U.S. border administration (due, in part, as a response to the new

security realities created by 9/11). And although economic life without the U.S. is

difficult to imagine, especially due to the geographical proximity of both countries, the

true issue with respect to the strategic question and the best allocation of "negotiation

resources", as pointed out by Head (2007), is about our effort on the margin: "Would the

allocation of more resources to deeper integration with the U.S. generate larger marginal net benefits than a similar resource allocation directed at broader integration with the rest of the world?" Hart (2007) claims that "teams up to 85 individuals representing 20 or more federal agencies routinely travel back and forth between Canada and South Korea in pursuit of a trade agreement that may never see the light of the day". On the other hand, Pastor (2008) ironically refers to the "North American game of Scrabble" which, since 2001, leads political leaders of Canada, Mexico and the U.S. to devise intergovernmental committees, meeting periodically to "spell new acronyms that purport to be initiatives", while if one measures progress by examining the growth in trade, the reduction in wait times at the borders, and the public support for integration, all of these initiatives have failed miserably.

Both opponents and proponents in this debate, however, typically trumpet "huge" potential gains resulting from their favoured option without providing much estimate of these gains. In reality evidence is rare and when it exists, does not necessarily corroborate these claims. With respect to deeper integration with the U.S., Georges (2009) evaluates, using a CGE methodology, the economic impact of moving to a North American customs union by decomposing the concomitant gains occurring from liberalizing rules of origins (ROO) and establishing a common external tariff. Canadian real GDP could increase by 0.5% on a permanent basis, but most of this gain would originate from the elimination of ROO. The study also shows that the gains resulting from a potential customs union have been falling over time relative to a beneficial impact of about 1% of real GDP that could have been captured in the 1990s. The reason is that ROO are now less distortionary than when NAFTA was concluded due to the erosion of

NAFTA tariff preference since the phasing in of the Uruguay Round measures. Hence this option, which would require an intensive use of negotiation resources due to a current lack of interest in the U.S. for a customs union with Canada, does bring "some", but certainly not "huge", net benefits. Furthermore, if the Doha Round of multilateral MFN liberalization was pursued, a quite hypothetical statement at this stage, the perceived additional gains that could be captured from a customs union would also continue to plummet.

The claims related to significant gains from diversifying trade away from the U.S. are even less substantiated and the objective of this paper is to shed some light on their magnitude. Demography is often used as an argument for the relative decline in importance of the North American market and the need for diversification. For example, Helliwell (2002) claims that: "North America is destined, through the joint forces of demography and catch-up, to be a smaller and smaller share of the world economy. To focus emphasis on the smaller part of the global pie may seem attractive during booming times in the United States economy, but would be a short-sighted strategy".[1] This paper therefore quantifies the economic impact of trade diversification within the perspective of an overall ageing world, when globalization is intensifying both international trade and capital flows. For this, we use a multi-country overlapping-generations computable general equilibrium model that takes into account the demographic shock that several regions of the world will experiment during the first half of the 21st century. The model represents seven regions of the world that make up the world economy: Canada, the U.S., Japan, the E.U., China, India and the rest of the world (ROW) which is aggregated into

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[1] Helliwell believes that the emphasis should be on policies that will make Canada a base for world trade rather than just North American trade. By developing worldwide trade networks, Canada can reduce its dependence on North America.

one region to close the model. The model has an overlapping-generations structure based on Samuelson (1958), Diamond (1965) and Auerbach and Kotlikoff (1987). Each region produces one single good which is an imperfect substitute to the good produced in any other region (the Armington assumption). Consumers in each region consume a basket of all the imperfectly substitute goods produced in all regions of the world. In this paper we restrict our analysis to endogenous capital flows, assuming immobility of labor between countries. The model is available upon request from the authors.

Our simulations show that although population ageing in Canada is expected to have a negative impact on welfare, international trade should prop up real consumption per capita through terms of trade improvements during the first half of the 21st century. This reflects a population ageing gap between Canada and many of its trading partners with "younger" populations whose demographic projections entail relatively smaller negative supply shocks and lesser relative price increases. However, the gains resulting from the globalization of trade flows might be intensified through an accurate pattern of North-South trade diversification that takes into account the extent and timing of population ageing in diverse regions of the world. The main policy implication of this analysis is that a diversification of Canada's trade away from the U.S. in favor of faster-ageing countries or regions such as Japan or E.U. (a North-North trade diversification scheme) is not necessarily desirable.

The rest of the paper is as follows. Section 2 reviews demographic projections of some countries in the 21st century, and shows why trade and ageing issues are intimately linked in the globalisation trends of trade, capital and labour flows, which justifies the use of a multi-country model of overlapping generations that simulates world population

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ageing and addresses trade diversification issues.   Section 3 provides some simulation results and explores the demographic argument in favour of (against) North-South (North-North) trade diversification patterns. Section 4 gives some policy implications and concludes.

2.   Population ageing and globalization

According to the United Nations (UN) demographic projections, population ageing will be a defining feature of the economic landscape of major industrialized and emerging countries in the world during the course of the 21st century. Population ageing is typically explained by a combination of factors: declining fertility rates, rising life expectancy, and net migrations. Most OECD countries, albeit at different degrees, have experienced significant declines in fertility rates and increases in life expectancy since the 1960s and 1970s. When we look at non-OECD countries, population growth in China is also slowing and its population will age at a rapid pace over the next decades, while the population in other emerging non-OECD countries, like India is still growing rapidly and their populations remain relatively young. Latin America is also at the beginning stages of a demographic process with a relatively young population.

More specifically, Table 3 provides the assumptions behind the "medium variant scenario" of the UN demographic projections in each region of the world. Over the next 10 years, the total fertility rate (i.e., the number of children per woman in her lifetime) is assumed to average 1.3 in Japan, 1.5 in E.U. and Canada, 1.8 in China, 2.0 in the U.S., and 2.3 in India. The UN demographic projections also assume that the total fertility rate in many regions of the world will eventually converge to 1.85 by 2050 although it will remain lower in Japan (1.6) and in E.U. (1.76).

Also, according to current data, Japan and Canada enjoy higher life expectancy at birth, followed by the U.S., E.U., and China. Moreover, the UN demographic projections assume that life expectancy will rise by 5 to 6 years over the next 50 years for these countries. In contrast, India has a much lower life-expectancy at birth, although the UN demographic projections assume that life expectancy in India will rise rapidly over the next decades, from 65 years in 2005-2010 to 75.6 years in 2045-2050. Finally, the projections assume that Canada, E.U., the U.S. and Japan will continue to enjoy net in-migration over the next decades, while India and China will face net international out-migration.

The demographic assumptions behind Table 3 can be used to project the extent and timing of ageing across developed and developing countries. Figure 1 illustrates the magnitude of the demographic shock using a simulated elderly dependency ratio (population 65+ as a ratio of the population 15-64) by regions of the world, over the period 1980 to 2070.[2] As can be seen, Japan is by far the fastest ageing country, with the elderly dependency ratio rising from 25% in 1990 to 70% by 2040. The E.U. has the second highest elderly dependency ratio, followed by Canada, although the *change* between 1990 and 2040 is similar to Canada. The elderly dependency ratio is expected to rise from 25% in 1990 to about 50% in 2040 in the E.U., compared to a rise from 18% to 43% for Canada. In contrast, the U.S. has a more moderate increase in the elderly dependency ratio, which is projected to move from 20% in 1990 to 32% in 2040 in part

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[2] Figure 1 gives a baseline old-age dependency ratio consistent with the UN medium variant demographic projections. It is generated by superimposing, into our multi-country OLG model, laws of motion of populations calibrated using exogenous demographic factors such as fertility rates and life expectancy (survival rates).

because the U.S. has a much higher total fertility rate than in most industrialized countries.

The Chinese elderly dependency ratio follows a quite different pattern than in the other regions of the world. In 1990, China had one of the lowest elderly dependency ratio (about 10%) after India and the ROW. However, the drastic fall in the fertility rate combined with net out-migration will lead to a sharp increase in the elderly dependency ratio over the next several decades, reaching 30% in 2040 and continuing to rise. Finally, India and the ROW have relatively younger populations. Therefore, their elderly dependency ratio is expected to rise more modestly from 10% in 1990 to less than 20% in 2040.

There is a rich and abundant literature of country-specific studies examining the macroeconomic and fiscal implications of population ageing. However, country-specific analyses usually neglect the aspects of globalization. Ignoring the rest of the world can be misleading in terms of implications for growth in living standards, labor market flows, and international capital flows, for a number of reasons. First, globalization and the rise of a huge, but relatively unskilled labor force in China and India may have significant implications for incomes in North America and Europe. For example, based on the Heckscher-Ohlin model and the factor price equalization theorem, it has often been argued that trade with China may be one of the factor contributing to the tendency for a distributional shift in rich countries against unskilled workers in favor of the higher skilled, even in the context of immobility of labor across countries. While much of the initial research suggested that trade has played only a small role in raising inequality -- as skill-using and unskilled-labor-saving technological change would have the same effect --

more recent work focusing on the role of imported intermediate inputs has generated larger estimates of the negative impact of trade on unskilled wages in rich countries (Feenstra, 2000, and Feenstra and Hanson, 2004).

Second, country-by-country demographic analysis might lead to the conclusion that greater immigration is a valuable option to offset declining fertility rates. This may not be true in a global context, where immigration is a zero-sum game. For example, while Canada may think of itself as a 'small open economy' for immigration purposes, and thus able in theory to import as many immigrants as it wants, (see Fougère, Harvey, Mérette, and Poitras, 2005), this is simply not true of the OECD as a whole. In particular, international competition for skilled workers is becoming a more important issue, and it can only be examined in a global context, preferably with endogenous labor flows.

Finally, there is empirical evidence that demographic changes induce international capital flows. According to Higgins (1998), the demographic "center of gravity" for investment demand should be earlier in the age distribution than that for the savings supply. Thus, regions that have a higher proportion of their population in the high savings years (45-60 years old) should, other things equal, tend to export their excess savings and thus run a current account surplus. Using simulated multi-regions overlapping generations models, Börsch-Supan, Ludwig, and Winter (2006), Krueger and Ludwig (2007), Fehr, Jokisch and Kotlikoff (2005), Équipe Ingénue/Ingenue Team (2007), and Feroli, (2003, 2006) have shown that population ageing will indeed induce capital flows between countries. Typically, it is argued that the difference in pace and magnitude of demographic changes across countries may influence international capital flow movement between faster and slower ageing regions of the world. The international

capital market would be able to offer better returns to savings and partly accommodate faster ageing countries while stimulating capital-deepening and therefore growth in younger countries.

The multi-country OLG literature cited above does not truly model international trade. Typically, these models feature a one-good world. All countries produce the same perfectly substitutable good so that, although the investment-saving balance will lead to current account deficits or surpluses, the only transaction with other countries takes place in the form of physical capital investment. Other traded goods flowing between countries are not modeled. Our model, developed and described in Mérette and Georges (2009), formally introduces trade in goods between countries by using the Armington assumption of imperfectly substitutable goods. Each region in the model produces one single good which is an imperfect substitute to the good produced in any other regions. Therefore, households in each region consume a basket of all the imperfectly substitute goods produced in all regions of the world. For the purpose of this study, we aggregated all sectors of the GTAP6 database into one single (imperfectly substitutable) good for each country.[3] A detailed description of the model, its calibration and the demographic shock is provided in Mérette and Georges (2009).

3. Simulated Results

Population ageing will lead to a reduction in labor force growth. Thus, it can be interpreted as a negative labor supply shock which reduces potential output. Figure 2 presents the impact of population ageing in our multi-country model on real GDP per capita over the period 1980 to 2070. As expected, among the seven regions, Japan and

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[3] However, the code of the model is written more generally to allow for a sectoral decomposition and multi sectoral production in each country, for future extensions.

E.U. are the most negatively affected by population ageing, with an earlier and sharper decline in real GDP per capita. Relative to the "no-ageing" steady state scenario, real GDP per capita in both Japan and E.U. begins to fall at the start of the 21st century, while it continues to increase for a while in the other regions.[4] The fall in the Japanese and E.U. GDP per capita (due to ageing) is about 15% between 2000 and 2050. Although Japanese workers typically retire later than workers in other regions, this is not sufficient to offset the negative effect of population ageing on real GDP.

Soon, North America will also be negatively affected by ageing. Indeed, real GDP per capita for Canada and the U.S. peaks in 2010 and declines thereafter. The impact of ageing on Canada is however much more pronounced with a fall of 13% between 2010 and 2050 versus 8% for the U.S. during the same period. Looking at the other side of the ageing spectrum, India and the ROW have relatively younger populations and a similar profile in the elderly dependency ratio. As can be seen in Figure 2, India strongly benefits from the demographic changes as its real GDP per capita increases until 2030 with respect to the initial steady state and then stabilizes thereafter at that level. Like India, the ROW has a relatively younger population and its impact on GDP is similar to one experienced by India, although real GDP falls very modestly after 2030.

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[4] Our objective is to gauge the impact of ageing with respect to a control scenario without ageing --a "non-ageing" steady state scenario. Establishing a "shock minus control" measure of ageing by "removing" a large demographic shock is not a conceptually easy exercise because the model assumes rational expectations in a variety of markets. For example, we cannot simply subtract from our simulated results the calibrated values generated for a specific year or a specific period of time (1980-2000), and which are based on the assumptions that the economy, in that period, is at a steady state with stable populations. By doing this we would remove both the "pure" demographic shock as well as the impact of the change in expectations about the future demographic shock. To better capture the pure demographic shock we therefore subtract, from the simulated values obtained over the 1980-2070 horizon, (the most pertinent horizon in regard to the demographic transition), the simulated values reached in year 1980. This procedure cancels off the expectations about demographic transition already embodied in stock variables such as physical capital stocks and net assets position in 1980 and therefore provides a better approximation of the pure impact of ageing.

Finally, the impact of ageing in China is stunning. The Chinese economy has an abundant workforce at the turn of the 21st century, and this contributes to raise real GDP per capita until 2010. Eventually however, as the demographic shock in China due to the one-child policy starts to kick off, the supply of labor falls and contributes to lower real GDP per capita below the initial steady state. By 2070, the fall in real GDP per capita (of close to 20 percentage points with respect to 2010) is even stronger than the one Japan is likely to experience.

Although the fall in GDP should contribute, through an income effect, to lower consumption per capita, globalization through international trade should help sustaining consumption in most OECD countries through favorable terms of trade effect. Most of the multi-country OLG literature discusses a "one-good" world and therefore cannot capture this terms of trade effect. However, in our model, the goods produced are assumed to be imperfectly substitutable across countries (the Armington assumption) and the price-elasticity of demand for a country's good is not infinite. Agents consume a diversified basket of goods. Therefore, if, for demographic reasons, the relative supply of a country's good shrinks with respect to the supply of other countries, then the relative price of its good should increase and older (younger) than average countries should see an improvement (deterioration) in their terms of trade (Table 4). An improvement in the terms of trade means that countries can import more than before, for unchanged real export, so that *ceteris paribus*, their real consumption can increase. Thus, in an open economy context with imperfectly substitutable goods, real consumption per capita is not likely to fall as much as it would in either a closed-economy or a one-good world-economy context. In contrast, younger countries might have a smaller increase in their

consumption per capita (relative to a closed economy or a one-good world benchmark) as they experience deterioration in their terms of trade which requires, *ceteris paribus*, supplying more of their goods on world markets.

Globalization permits consumers of all countries to access a geographically more diversified basket of goods and to increase the foreign share of their basket. Figure 3 illustrates that older and more "open" countries benefit from consuming a larger share of those goods produced by younger countries and whose price did fall relatively. Real consumption per capita in Japan tends to fall because of the strong negative income effect (Figure 2). Although Japan could potentially benefit from a strong appreciation in its terms of trade, it does not materialize because it is a relatively "closed" economy. In contrast, the much more open economies of E.U. and Canada strongly benefit from the terms of trade appreciation. Indeed, this "price" effect more than offsets the income effect of Figure 2 and real consumption per capita continues to increase up to 2020, after which it declines until 2050 by roughly 3% for Canada. Notice that in North-America, the relative performance between the economies of the U.S. and Canada is reversed. While in terms of GDP per capita, the U.S. is doing better, Canada's per capita consumption, thanks to its more open economy, does not fall below its 2010 level for most of the 21st century, whereas the U.S. will be below its 2010 level for most of the century. India and the ROW get a strong boost in their consumption per capita despite terms of trade deterioration, as they also benefit from a strong positive income effect. This income effect is itself stimulated by capital deepening in India and the ROW (see Mérette and Georges for further details).

The case of China is again striking, especially when observing the diametrically opposite directions taken by China and India's real consumption paths from 2020 on. For China, both income and price effects contribute to reinforce the negative impact on real consumption per capita. Indeed, the timing of the one-child policy makes the Chinese economy both a (still) relatively young country with respect to OECD countries but an old one with respect to India and other parts of the world. Being caught between younger and older countries, the relatively closed Chinese economy does not benefit from terms of trade appreciation occurring to the older, more open, OECD countries, nor does it strongly benefit from capital deepening through net foreign capital inflows. This analysis is pursued further in Mérette and Georges (2009).

Figure 4 shows how Canada would gain if it was diversifying its trade away from the U.S. in favour of specific trade partners. For these experiments, we reduce the U.S. share in Canadian consumer basket from the current 61% to 51% while successively increasing the share of other partners as shown in Table 5. This reorientation of trade flows is not likely to happen quickly even under draconian policy measures. Therefore the change in shares is implemented permanently, but incrementally, by 2.5% points every ten-year over a forty-year period, starting in 2020 until the full share change is achieved in 2050.[5]

Our results indicate that relative to the benchmark case of strong dependence of Canada's trade with the U.S. economy, Canadians would benefit from a diversification scheme with India, and to a lower degree with China, but would lose from a diversification scheme with E.U. or with Japan. For example, if Canadians were

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[5] From a modeling perspective this shock is implemented by exogenously changing the share parameters in the Armington-based import demand functions.

increasing the share of Indian goods in their consumption basket by 10 % points, this would be enough to offset the negative impact of ageing by propping-up the real consumption per capita along a slowly upward-sloping path above its 2020 level. Therefore, between 2020 and 2050, real consumption per capita in Canada would increase by about 1.5% instead of falling by 3%. Hence, real consumption per capita would be roughly 4.5% above its benchmark level in 2050 if this diversification scheme was introduced. Other diversification schemes do not provide such benefits. In particular, diversification with E.U. or Japan would accentuate the loss of welfare that is expected due to population ageing. The choice of diversifying to Europe instead of India would cost to each Canadians roughly 6% of real consumption by 2050.

Figure 5 shows the results for both North-North and North-South diversification schemes. In the North-North diversification away from the U.S., the share of Japanese and E.U. goods increases each by 5% points in the Canadian consumption basket (while the U.S. share falls by 10% points). The North-South diversification scheme represents a weighted average of the previous diversification schemes to China, India, and the ROW – the 10% points share increase is spread equally between China, India, and the ROW. The ROW is a composite of all remaining countries/regions of the world, such as Russia, Africa, South-America, Oceania, Arabic countries, Turkey and Turkic countries. Figure 5 illustrates that, according to our simulations, North-South diversification schemes may improve Canadian welfare by propping up real consumption per capita, whereas North-North diversification schemes away from the U.S. would amplify the expected burden associated with population ageing in Canada.

Our analysis of trade diversification has focused on import diversification. Yet, many commentators seem to stress export diversification. However, Goldfarb (2006) raises doubt about export diversification as a way to increase economic welfare. She applies the concepts of return and risk of the investment portfolio theory to a country's "trade portfolio" using export growth and export values as measures of return, and export volatility as a measure of risk. If further geographic diversification of Canadian export reduces volatility while maintaining or only slightly decreasing export values, then such diversification could improve economic welfare. Goldfarb argues eventually that "over the past decade, Canadian export to the U.S. have been less volatile on average than have exports to most other regions…Shifting exports away from the U.S. over the past decade would likely have increased volatility and decreased trade growth, making Canada worse off, assuming all else was equal".

While we are sympathetic to the position she is pushing, we argue that the emphasis of our paper on *import* trade shares instead of *export* shares or export diversification is more relevant to the case of trade diversification. Export is not an end in itself (at the macro level of the economy, of course, not necessarily at the micro-level of the individual firm) and, to quote Krugman (1993), "the need to export is a burden that a country must bear because its import suppliers are crass enough to demand payments". Unlike the misleading mercantilist "concession language" of trade negotiators, trade theory shows that the main objective of international trade and the ensuing gains from trade for a country as a whole comes from the possibility to import some goods at a relatively lower price than the opportunity cost to produce them with domestic resources.

In order to illustrate this point, we now assume that India decides to increase its share of Canadian goods by 5% points (of its total imports) while reducing the share of goods originating from the rest of the world by 5%. Table 6 shows the benchmark and counterfactual shares. We see that this maintains Canada as a smaller import supplier to India than the U.S., but a larger import supplier than Japan or China. Figures 6, however, shows that the economic welfare of Canadians as defined by real consumption per capita remains virtually unchanged, which tends to confirm that *import* trade shares are more crucial to the case of trade diversification as a way to improve economic welfare than *export* shares or export diversification.

4.   Policy implication and conclusion

To the strategic question of whether Canada should diversify its trade pattern, our answer is a strongly-qualified yes, with three substantial caveats. First, the quest of the Canadian government for regional trade diversification and FTAs with some countries seems out of tune with our analysis given their foreseeable faster-ageing demographic patterns. Canada has embarked on a series of bilateral negotiations as documented in Tables 7-9. Three new FTAs have been signed (but not yet ratified) in 2008: two of these are with South-American countries (Peru and Columbia), and one with European countries forming the European Free Trade Association (EFTA). Pending bilateral trade negotiations are currently conducted with other Central and South American countries (Panama, Dominican Republic, Central America CA-4, the Caribbean Community), with some Asian countries (Korea, Singapore), one Arab country (Jordan), and, most recently, with the E.U. (the Canada-European Joint Report Towards a Comprehensive Economic Agreement).

We share the opinions of Head (2007) and Hart (2007) that agreements with countries like Israel, Costa Rica and Chile are unlikely to bring high benefits *per se*, and devoting major resources to an agreement with other small Central and South-American countries also seems of dubious value. Brazil (or Mercosur) however, (which is not included explicitly but is part of the ROW in our model), would probably be a more relevant partner. Moreover, our demographic argument for North-South trade diversification raises serious concerns about the relevance and economic impacts of the recently concluded free-trade agreement between Canada and the EFTA as well as the trade-related negotiations between Canada and the E.U. which have been officially launched in Prague in May 2009. In the absence of strong support from the business community as a whole, such negotiations are easily derailed by import-competing interests. It took ten years to successfully negotiate a FTA between Canada and the EFTA even if this is a "first-generation" type of agreement with an emphasis on tariff elimination and which does not include substantial new obligations in areas such as services, investment, and intellectual property. Some news already suggest that officials from both sides of the Canada-E.U. negotiations appear to be strides apart about what exactly is on the table. Incidentally, this might be a good opportunity for Canadian trade policy makers to reflect on the wisdom of this negotiation's resource allocation.

However, India's demography and evident economic momentum argues for greater Canadian policy ambition. As suggested by Dobson (2006), "Canada needs a comprehensive strategy that goes beyond the International Policy Statement that sets a rather narrow goal of surpassing $2 billion in exports to India by 2010 or an incremental initiative to facilitate industry and scientific collaboration". Our study shows that there is

room for a deeper investigation of the potential benefits of a bilateral negotiation with India. Furthermore, as pointed out by Dobson (2006), "an FTA negotiation would send a powerful signal of commitment to Canadian business interested in penetrating the Indian market and using India as a platform for Asian operations". The key point, here, is that the "positive" influence of export lobbying would offset the negative lobbying influence of the import-competing interests, which could accelerate negotiations. Finally, as shown by Mérette and Georges (2009), although the growth potential of China has attracted much attention worldwide, an analysis that takes into account the global demographic context shows that India, more so than China, is a key promising developing country of the 21st century if it pursues its effort to integrate the world economy through both trade and capital flows liberalization while accelerating the movement of its workforce out of agriculture into the unskilled-labor intensive industry of the "organized" sector (Panagariya, 2006).

For our second caveat, much related to the tactical issue of *how* to diversify trade away, we need to be very explicit about what our modeling exercise does and does not. In this paper, our focus is on the welfare impact of an exogenous change in trade shares that would diversify our trade pattern away from the U.S., and not on the mechanism that might lead to a change in these shares. However, the size, composition, and direction of trade flows result from the decisions of millions of private producers and consumers. These decisions may be influenced by government policy, but large and rapid shift of trade shares might require draconian policy measures.

In 1957, Dienfenbaker the –then– Prime Minister of Canada announced that Canada would switch 15 percent of its trade from the United States to Great Britain. At

the time, as stated by Hart (2002), it would have required a doubling of U.K. exports to Canada, a willingness by Canadians to shun the many desirable goods they were buying from the U.S. while substituting less desirable goods from the U.K., and a capacity by U.K. customers to absorb twice the value of Canadian shipments they were purchasing. Of course, this policy was rather naïve and blurred by nostalgia of Canada's historic ties to Britain and by a lack of appreciation of the extent to which commercial ties with U.K. customers and suppliers had been severed and new ones with the United States put in place.

Fearing that our proposal be compared to that naïve policy impromptu, we stress the importance of supplementing our analysis by (CGE) studies of policies and institutions that might cause endogenous changes in trade shares, whether multilateral or bilateral trade negotiations, or less formal trade missions (although, as pointed out by Head and Ries (2007), Canada's trade missions appear to have no significant effect on bilateral trade with the visited country).

Third, trade policy is not solely within the control of a single government. Rather, it requires the active cooperation of at least one other government, either in the negotiation of new agreements extending improved access or other commitments, or in the implementation of various other concessions. In other words, it is not sufficient to identify trade partners that might be a good fit for Canada, we also need to promote what we can offer.

This caveat might appear awkward given that the economist's case for free trade is essentially a unilateral one: a country serves its own interest by pursuing free trade (eliminating tariff and non-tariff barriers) regardless of what other countries may do.

However, as Kruman (1997) puts it, "policy-oriented economists must deal with a world that does not understand or accept that case. Anyone who has tried to make sense of international trade negotiations eventually realizes that they can only be understood by realizing that they are a game scored according to mercantilist rules, in which an increase in export – no matter how expensive to produce in terms of other opportunities forgone – is a victory, and an increase in imports – no matter how many resources it releases for other uses – is a defeat."

The implicit mercantilist theory of "concession" language that underlies trade negotiation does not make sense on any level but it nevertheless governs actual policy and if we "have a fairly liberal world trading system, it is only because countries have been persuaded to open their markets in return for comparable market-opening on the part of their trading partners;…in practise, countries seem willing to do themselves good only if other promise to do the same." (Krugman, 1997). Hence our question, why should India be interested in a FTA with Canada?

One response is suggested by Dobson (2006) when she claims that: "Since 1991, successive governments have sought to liberalize trade and capital flows to increase India's share of world trade and to integrate more deeply into the world economy. As well, India has played a leading role in the multilateral negotiations at the WTO;… [bilaterally,] the United States is India's obvious strategic priority in the Western hemisphere, but recent analyses of the feasibility of a comprehensive U.S.-India bilateral FTA conclude that it is a radical idea for both countries whose time has not yet come, even though it would bolster India's economic liberalization agenda." Hence, a negotiation with Canada would be a significant strategic signal of India's potential

importance to the North American economies and would serve Indian interests beyond the Canadian market.

Our study implicitly includes Brazil and Russia to the extent that these countries are part of the ROW region that closes the model. In future research we plan to explicitly introduce Brazil and Russia into our framework to contrast BRIC economies (Brazil, Russia, India, and China) with JEU economies (Japan, E.U. and the U.S.). The decline in working-age population is projected to take place later in BRIC than in JEU, but will be steeper in Russia and China than in India and Brazil. More favorable demographic shifts in BRIC suggest that JEU may want to develop further north-south trade. The later ageing process in India and Brazil over Russia and China also suggest that the economic opportunities may become larger with the former two economies in the second quarter of the 21st century.

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Table 1. Bilateral import shares

↓	CAN	USA	EU	JPN	CHN	IND	ROW
CAN	0.0	15.7	1.1	2.1	1.7	1.3	1.2
USA	60.8	0.0	10.4	18.0	10.6	9.6	17.0
EU	15.3	22.8	54.5	19.3	17.3	26.2	30.5
JPN	3.9	9.9	3.3	0.0	17.8	4.2	8.5
CHN	3.7	8.9	3.0	14.7	0.0	4.4	6.2
IND	0.5	1.0	0.7	0.7	0.8	0.0	1.2
ROW	15.8	41.7	27.1	45.2	51.8	54.3	35.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: GTAP6

Table 2. Bilateral export shares

→	CAN	USA	EU	JPN	CHN	IND	ROW	*Total*
CAN	0.0	74.6	10.1	3.1	1.8	0.3	10.2	100.0
USA	16.2	0.0	29.3	8.2	3.3	0.7	42.3	100.0
EU	1.4	11.5	54.5	3.1	1.9	0.6	26.9	100.0
JPN	2.1	27.5	18.0	0.0	10.7	0.6	41.2	100.0
CHN	2.2	28.5	18.9	14.9	0.0	0.7	34.8	100.0
IND	1.7	19.9	28.6	4.7	3.5	0.0	41.6	100.0
ROW	1.6	22.2	28.4	7.6	5.9	1.4	32.9	100.0

Source: GTAP6

Table 3. Total Fertility Rate, Life-Expectancy at Birth and Net Migration by Region of the World

Country/Region of the World	2005- 2010	2015-2020	2025-2030	2035-2040	2045-2050
Canada					
Total fertility rate	1.53	1.55	1.65	1.75	1.85
Life-expectancy at birth	80.7	82.0	83.2	84.2	85.3
Net Migration (thousands)	200	200	200	200	200
USA					
Total fertility rate	2.05	1.94	1.85	1.85	1.85
Life-expectancy at birth	78.2	79.5	80.7	81.8	83.1
Net Migration (thousands)	1199	1100	1100	1100	1100
EU					
Total fertility rate	1.45	1.52	1.61	1.69	1.76
Life-expectancy at birth	74.6	76.4	78.2	79.7	81
Net Migration (thousands)	951	792	808	808	808
Japan					
Total fertility rate	1.27	1.30	1.40	1.50	1.60
Life-expectancy at birth	82.6	84.2	85.2	86.1	87.1
Net Migration (thousands)	54	54	54	54	54
China					
Total fertility rate	1.73	1.83	1.85	1.85	1.85
Life-expectancy at birth	73	74.9	76.6	78.1	79.3
Net Migration (thousands)	-350	-345	-320	-320	-320
India					
Total fertility rate	2.81	2.32	1.97	1.85	1.85
Life-expectancy at birth	64.7	68.4	71.4	73.7	75.6
Net Migration (thousands)	-250	-240	-240	-240	-240

Source: UN Population Division, World Population Prospects: The 2006 Revision, Medium Variant Scenario.

Table 4. Terms of Trade (1980 = 1)

	1990	2000	2010	2020	2030	2040	2050	2060
Canada	1.00	1.00	1.01	1.01	1.02	1.03	1.04	1.04
U.S.A.	1.00	1.00	1.01	1.01	1.01	1.01	1.01	1.02
EU	1.01	1.02	1.03	1.04	1.06	1.07	1.08	1.09
Japan	1.00	1.01	1.02	1.03	1.04	1.05	1.05	1.06
China	1.00	1.00	1.00	1.00	1.01	1.01	1.02	1.02
India	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.98
ROW	0.99	0.99	0.98	0.98	0.97	0.97	0.97	0.97

Source: Authors' simulations.

Table 5. Current and counterfactual country shares in Canada's import

↓	Benchmark import shares	Diversifying to EU	Diversifying to Japan	Diversifying to China	Diversifying to India	Diversifying to ROW
CAN	0.0	0.0	0.0	0.0	0.0	0.0
USA	60.8	50.8	50.8	50.8	50.8	50.8
EU	15.3	25.3	15.3	15.3	15.3	15.3
JPN	3.9	3.9	13.9	3.9	3.9	3.9
CHN	3.7	3.7	3.7	13.7	3.7	3.7
IND	0.5	0.5	0.5	0.5	10.5	0.5
ROW	15.8	15.8	15.8	15.8	15.8	25.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: GTAP 6 and Authors' computations

Table 6. Current and counterfactual country shares in India's import

↓	Benchmark import shares	Diversifying to Canada
CAN	1.3	6.3
USA	9.6	9.6
EU	26.2	26.2
JPN	4.2	4.2
CHN	4.4	4.4
IND	0.0	0.0
ROW	54.3	49.3
Total	100.0	100.0

Source: GTAP 6 and Authors' computations

Table 7. Free Trade Agreements

Agreements Partners	Announced and "In force" dates
Canada-US FTA	12-Oct-1987 *(superseded by NAFTA, which includes Mexico)*
North American FTA	01-Jan-1994
Canada-Israel	01-Jan-1997
Canada-Chile	05-Jul-1997
Canada-Costa Rica	Announced: August 2001 01-Nov-2002
Canada-EFTA (European FTA)	Announced: October 9, 1998 26-Jan-2008
Canada-Peru	Announced: June 7, 2007 29-May-2008
Canada-Columbia FTA	Announced: June 7, 2007 21-Nov-2008

Source: Foreign Affairs and International Trade Canada.

Table 8. FTA bilateral trade negotiations

Canada-Panama	Announced: May 6-7, 2008; Inaugural rade negotiations: October 27-31, 2008
Canada-Dominican Republic	Announced: June 7, 2007; Inaugural trade negotiations: December 10-14, 2007
Canada-Central America-4 (El Salvador, Guatemala, Honduras and Nicaragua – the CA-4)	Inaugural trade negotiations: November 21, 2001; Renewed formal negotiations: February 23-27, 2009
Canada-Caribbean Community (CARICOM*)	Announced: July 19, 2007; Inaugural meeting of trade negotiators: October 18 2007
FTAA: Free Trade Area of the Americas	Call for early resumption of FTAA: November 4-5, 2005
Canada-European Joint Report Towards a Comprehensive Economic Agreement	Announced: October 17, 2008 Inaugural trade negotiations: May 6, 2009
Korea	Announced: November 19, 2004; Inaugural meetings: July 15, 2005
Singapore	Announced: October 21, 2001; Inaugural meetings: January 2002
Jordan	Negotiation concluded: August 25, 2008

*CARICOM Members are: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago.
Source: Foreign Affairs and International Trade Canada.

Table 9. Foreign Investment Promotion and Protection (FIPAs)

Canada - Bahrain	Pending
Canada – Tunisia	Pending
Canada – Tanzania	Pending
Canada – Indonesia	Pending
Canada – Madagascar	Negotiations concluded
Canada – Vietnam	Pending
Canada - Mongolia	Pending
Canada - India	Negotiations concluded
Canada – China	Pending
Canada – Jordan	Negotiations concluded
Canada - Kuwait	Pending
Canada - Peru	20-Jun-2007
Canada - Croatia	30-Jan-2001
Canada - Costa Rica	29-Sep-1999
Canada - Lebanon	19-Jun-1999
Canada - Uruguay	02-Jun-1999
Canada - El Salvador	Signed: 31-May-1999
Canada - Armenia	29-Mar-1999
Canada - Thailand	24-Sep-1998
Canada - Panama	13-Feb-1998
Canada - Venezuela	28-Jan-1998
Canada - Egypt	03-Nov-1997
Canada - Ecuador	06-Jun-1997
Canada – Romania	11-Feb-1997
Canada – Barbados	17-Jan-1997
Canada - Philippines	13-Nov-1996
Canada - Trinidad and Tobago	08-Jul-1996
Canada - South Africa	Signed: 27-Nov-1995
Canada - Latvia	27-Jul-1995
Canada - Ukraine	24-Jul-1995
Canada - Hungary	21-Nov-1993
Canada - Argentina	29-Apr-1993
Canada - Czech and Slovak Federal Republic	09-Mar-1992
Canada - USSR	27-Jun-1991
Canada - Poland	22-Nov-1990

Source: Foreign Affairs and International Trade Canada.

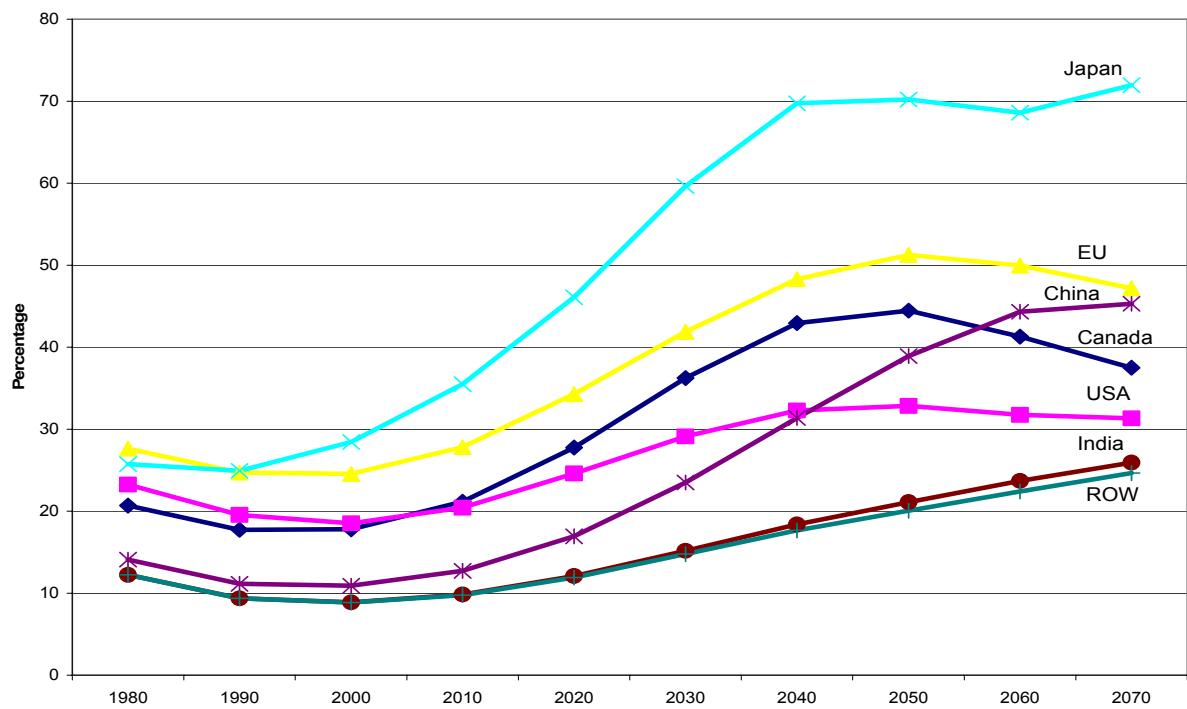**Figure 1. Simulated Elderly Dependency Ratio by Region of the World**

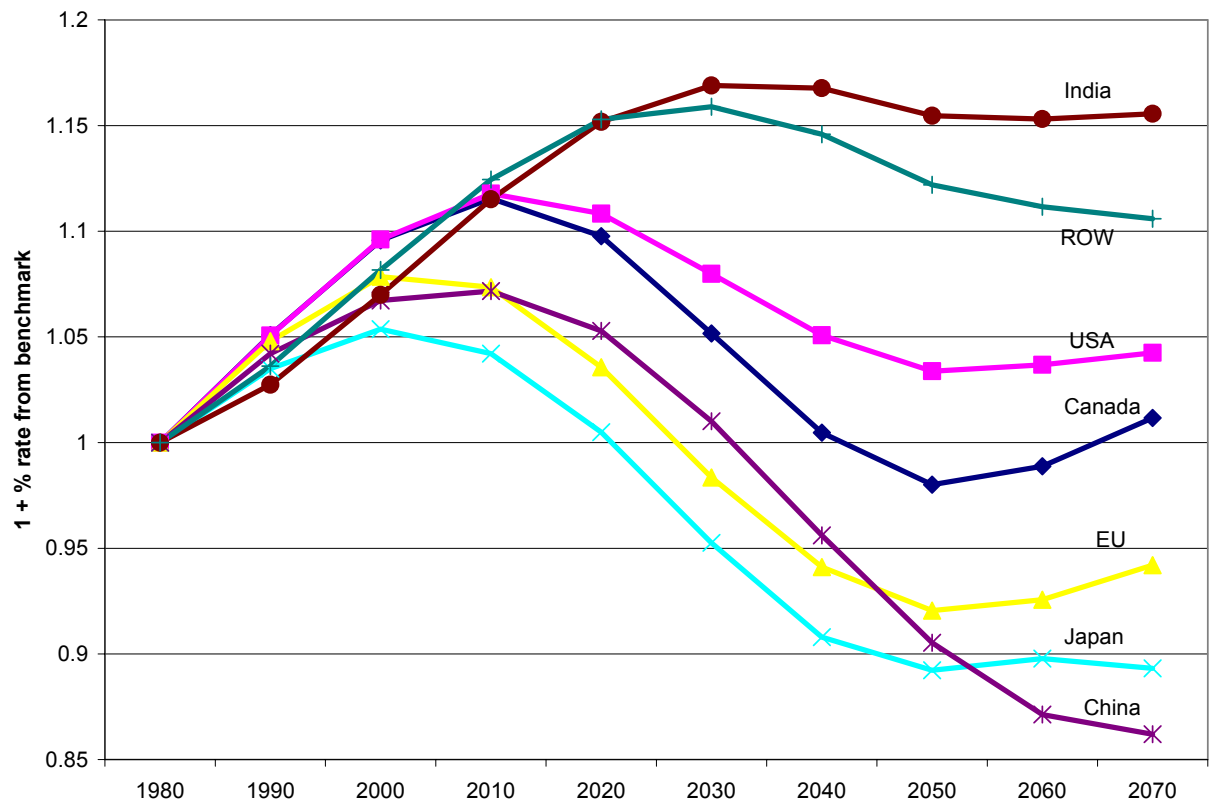**Figure 2. Real GDP per Capita --** Relative deviation with respect to initial steady state

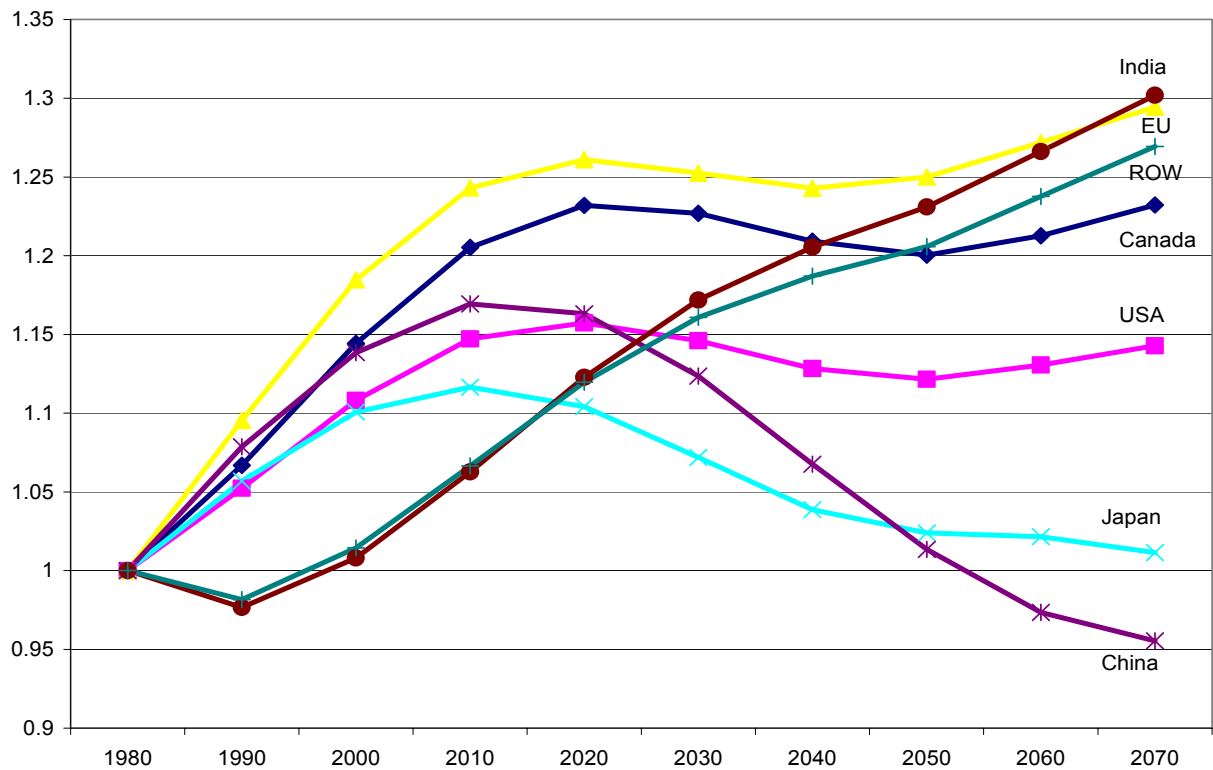**Figure 3. Real Consumption per Capita --** Relative deviation with respect to initial steady state

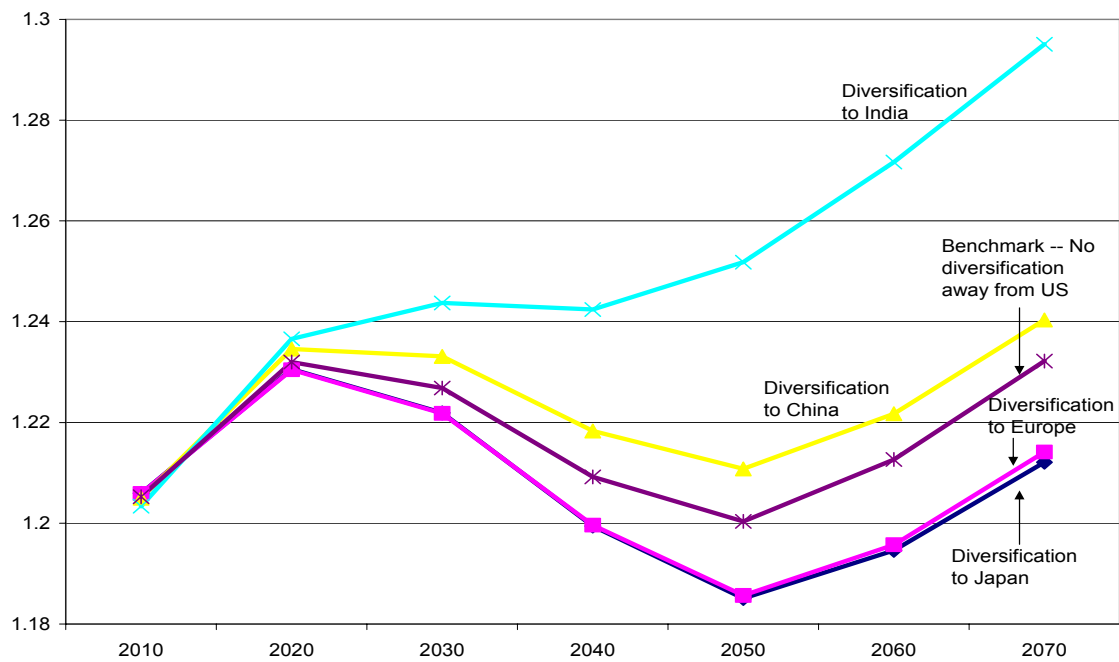**Figure 4. Diversifying Canada's import away from the U.S.**

Figure 5. North-North and North-South Diversification schemes

North-South Diversification
(China, India, ROW)

Benchmark -- No
Diversification away from US

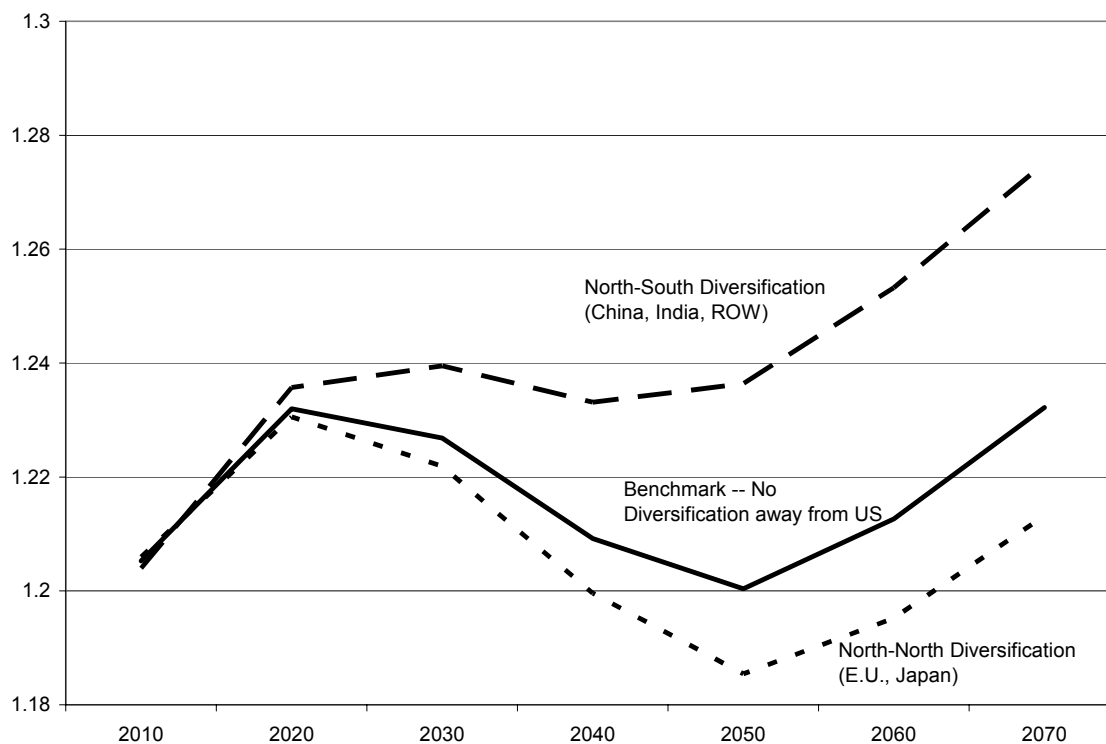North-North Diversification
(E.U., Japan)

Figure 6. India's diversification in favor of Canada as an import supplier

Benchmark -- No
Diversification away from US

India's Import
Diversification to Canada