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Economic and social objectives of immigration: The evidence that informs immigration levels and education mix

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Table of contents

1. Introduction

Any discussion of the number and type of immigrants entering Canada typically focuses on a number of economic, demographic, humanitarian and social objectives. These objectives often generate conflicting conclusions regarding immigration policy direction. To complicate matters, concerns regarding short run objectives may or may not line up with longer run goals. And finally, conclusions regarding immigration policy depend upon whose perspective the goals reflect, those of the immigrant themselves, Canadian workers, Canadian employers, or Canadian society as a whole.

This paper asks what the recent evidence tells us –or just as importantly does not tell us - about the relationship between particular objectives on one hand, and policy regarding immigration levels and immigrants' educational attainment (or mix) on the other. The focus is on policy regarding immigrant selection. To what extent can the available evidence point us in a particular policy direction regarding levels and the educational mix of immigration? *Particular attention is paid to the reliability of the evidence.* It matters whether the evidence is relatively definitive, or remains controversial with little consensus. The immigrant "mix" can potentially refer to the distribution of entering immigrants across a number of characteristics, including immigrant class, educational attainment, ethnic background (source region) and occupation. This paper focuses on the "mix" by educational attainment for two reasons. First, educational attainment is one of the best single predictors of numerous social and economic outcomes. For that reason, educational attainment has a long and important history in the immigrant selection process in Canada. Second, researchers have focused on educational attainment in a host of immigration studies. Other characteristics such as language skill or immigrant class are obviously important, but with the exception of immigrants' economic outcomes, there is little evidence available on the role played by these variables in immigration objectives, such as increasing Gross Domestic Product (GDP) per capita, maintaining a positive fiscal balance, or social cohesion. There is simply more research available on the role played by immigrant educational attainment.

The economic objectives discussed in the paper include increasing GDP per capita, the effect of immigration on the wages of Canadians, using immigration to fill both immediate skill shortages and longer run aggregate labour shortages, improving the economic outcomes of immigrants themselves, and finally, the effect of immigration on the fiscal balance. There is a section discussing the relationship between immigration and social cohesion, and a smaller section on the role of immigration in meeting demographic goals. Finally, the conclusion attempts to summarize what lessons might be drawn - if any - from this body of research for the development of immigration policy. The research is filtered through the lens of immigration policy regarding educational mix and levels. As noted by Sweetman and Warman (2008) immigration is often associated with humanitarian and nation-building objectives as well as economic and social objectives.[1] They are excluded from this analysis.

The review produces a few general observations. First, there are significant methodological challenges associated with the research on many of the economic objectives. This needs to be considered when assessing the evidence from a policy perspective. This observation applies to the effect of immigration on GDP per capita and the wages of the Canadian born, the

[1] Humanitarian objectives associated with the refugee and possibly family reunification programs are excluded from this analysis, as are other more specific considerations such as the effect of immigration on housing demand and prices, and the impact on public services. For a broader take on immigration effects for the UK, see The House of Lords Select Committee on Economic Affairs (2008).

identification of labour shortages to which immigration may be expected to respond, and the effect of immigration on the fiscal balance. The Canadian research on the economic outcomes of immigrants is more definitive. And the focus should be on Canadian results. While international research is included in this paper, such research is not necessarily applicable to Canada. The characteristics of immigrants differ dramatically among countries (e.g. typically more highly educated in Canada), as do economic structures and social programs. Research findings can differ as a result.

Second, taken at face value, the current evidence suggests that the overall effect of altering immigration levels on many economic objectives is small. It follows that, based on the evidence, aggregate economic effects would not be a major consideration in immigration policy. To the extent that a research consensus exists, it suggests that immigration has a small, or no, effect on GDP per capita, the wages of the domestic-born, and the fiscal balance.[2] There are dissenting views, as is noted in the paper. Research also suggests that immigration mix and levels *do* significantly affect the economic outcomes of immigrants themselves, and policy plays a significant role regarding these outcomes.

Third, developing evidence-based immigration policy related to labour shortages presents perhaps the most difficult challenge. Regarding specific occupational shortages, the reliable information required to identify such shortages typically does not exist. If a specific skill shortage can be accurately identified, determining whether it is more than short-run is difficult. Shortages are often associated with business cycle peaks or economic "booms" and are short-lived, requiring short-run rather than longer run solutions such as changes to immigration. The effects of other possible wage, training and migration adjustments are often overlooked in the analysis. And little evidence exists regarding the actual role of immigration in alleviating specific occupational shortages. Regarding longer-run aggregate labour shortages (the looming labour shortage related to aging of the population), research in this area faces very significant methodological challenges, particularly when estimating future labour demand. There is no consensus regarding the extent of future aggregate labour shortages. A few studies have identified significant shortages over the next decade, but others have concluded that there will not be a general labour supply-demand mismatch at very aggregate levels. All believe there will be labour shortages in specific occupations and regions, as is often the case. Such shortages may be short or longer term.

Fourth, regarding the educational mix of immigrants, the evidence suggests a continued focus on highly educated and skilled immigrants for a number of reasons. Occupational projections conclude that most new jobs over the next decade will require a post-secondary education (including post-secondary educated trades) and that there will be labour surpluses in many lower skilled occupations. The longer they reside in Canada, the more likely, highly educated immigrants economically outperform the less skilled. Short-run economic results can be misleading. Hence, highly educated immigrants are more likely to generate a net positive fiscal balance over the longer run, paying more taxes and using less government benefits than their less-skilled counterparts. Highly educated immigrants are more likely to have highly educated children, resulting in a more highly educated population and labour force. Although little evidence on the topic exists, the high educational and skill levels of immigrants and their children may be partly responsible for the relatively (to other countries) positive social

[2] The more numerous U.S results on the effect on the fiscal balance may not apply to Canada because of the weaker immigrant economic outcomes in Canada and differences in social programs. There is relatively little Canadian research on this topic.

integration of immigrants and the high level of acceptance of immigrants in Canada. However, the potentially negative effect of a concentrated supply of highly educated immigrants on the wages of the Canadian-born highly educated requires monitoring.

Fifth, the evidence has for some time suggested that demographic goals related to a rising dependency ratio can be helped little by changing immigration levels. Immigration objectives regarding the overall size of the Canadian population are beyond the scope of the paper.

Sixth, there has been little evidence to date that the historically high Canadian immigration levels have contributed in a significant way to a serious immigrant backlash, or a decline in the social cohesion of the nation. There are a host of reasons for this result, which is somewhat unique internationally. Having said that, rising ethnic diversity and/or a rising concentration of particular ethnic groups– which is driven by high immigration levels – is associated with falling levels of "trust" and a decreased overall "sense of belonging". Evidence based on the European experience suggests that if there is a significant anti-immigration movement, it may well be in reaction to perceived problems around culture, religion and social cohesion rather than perceived negative economic effects of immigration on workers. While research to date suggests that a change in immigration levels have had only a small effect on social cohesion, continued monitoring of the potential social effects of immigration mix and levels is warranted. Canada is in a sense in uncharted waters, given the high immigration rates over a prolonged period. Useful analysis requires more recent information. Conducting some variant of the earlier *Ethnic Diversity Survey* would prompt such monitoring and related research.

2. Economic objectives

2.1. GDP per capita

Most economists would argue that the main economic objective of immigration is to increase the economic well-being, usually expressed as GDP per capita, of already existing residents of Canada. There has been very little Canadian research that directly addresses this question. Early research (e.g. Swan, 1991) and most current economic research suggest that immigration has a very small effect on such well-being (see Green and Green, 1999). A more recent paper by Duncan, Fang and Gunderson (2012) suggested that an increase of 100,000 in immigration would have a small negative effect on GDP per capita in Canada. A recent HRSDC paper focusing on highly skilled immigrants came to a similar conclusion (Fougere et al, 2011). Recent U.S. research found that immigration had a positive effect on productivity (Peri, 2012). Another recent U.S. paper found that the 1990s increase in immigration in the U.S boosted innovation (through the patent process) significantly, largely because immigrants are more likely to be in the science and engineering occupations than the native born (Hunt and Gauthier-Loiselle, 2009). This increase in patents was in turn estimated to have increased GDP per capita in the U.S. during the 1990s. However, estimating the effect of immigration on GDP per capita is extremely difficult, and there may be factors that have been ignored in the current research, particularly if one is thinking about longer-run outcomes. For example, the contribution of the very successful second generation to economic growth is not considered in the research. This contribution can take the form of higher levels of educational attainment of the labour force and higher levels of earnings than would have not existed without immigration. The children of immigrants tend to do better along these dimensions than those with Canadian parents.

Given the difficulty of empirically determining the direct effect of immigration levels on GDP per capita, and the fact that there is little recent relevant Canadian evidence, one must be cautious about the lessons to be drawn from this research. Regarding the educational mix, for many years most researchers have concluded that a highly educated labour force is generally beneficial for economic growth. In the absence of other considerations, this would suggest a tilt towards more highly educated immigrants, who tend to produce more highly educated offspring.

In general, this is one area of research that could benefit from additional attention. Most of our knowledge is based on research from other countries (notably the U.S.) where the characteristics of immigrants and the industrial structure of the economy are very different from those in Canada. Expanding the research to take a longer term perspective by including the contribution of the second generation would be helpful.

2.2. The effect of immigration on the wages of domestic workers

Ensuring little negative effect on the wages of domestic workers is an important goal in most western countries. Most international research finds only weak effects of immigration on the wages of domestic workers (see Kerr and Kerr, 2011; Longi et al 2006, 2009; Okkerse 2008 for meta-surveys of the literature). However, there are a number of methodological issues that plague this area of research, and must be considered when interpreting the results. There are two basic types of studies. One focuses on small areas, and compares the wages and employment of the native-born (e.g. Canadian) across areas with varying proportions of the population who are immigrants. In this way the effects of immigration levels on wages are determined. But this approach faces two significant methodological problems. First, immigrants may tend to select

areas with higher wage growth, producing an upward bias in the wages of the native-born in high immigrant receiving communities. Second, the native-born may emigrate from regions with a large immigrant population, biasing the wage levels of those who remain.[3] In response to these problems, the second type of study focuses on the country as a whole, rather than comparisons among regions. These studies tend to make comparisons among groups that are defined by characteristics such as education and age. Highly educated immigrants are seen to be competing with highly educated native born, and the share of the population who are immigrants in these education-age cells is the major explanatory variable, potentially affecting the wages of the native-born. But many factors may be associated with high or rising wages, and there is often not sufficient information to determine the causal effect of immigrant levels on wages. Also, this approach restricts, say, highly educated immigrants to competing with the highly educated native-born, and thus affecting their wages. But in fact highly educated immigrants are likely to compete with less educated domestic workers as well, particularly during their first few years in the country, thus affecting their wages. Such effects will be missed. Hence, both major approaches suffer from significant methodological issues. Various statistical techniques are employed to overcome these problems, with varying degrees of success.

Nonetheless, many studies have been done internationally (although few in Canada) and the preponderance of research shows small effects of immigration on the wages and employment of the native-born. A meta-analysis of the research by Longhi, Nijkamp and Poot (2008) and reported in Duncan et al (2012) involved 45 international studies that provide estimates for 1,572 effects on wages (854), employment (500), unemployment (185) and labour force participation (33), Of the 1572 effect sizes, most (58%) were statistically insignificant, implying no effect of immigration on the outcome variable (wages, unemployment, employment or labour force participation). One-quarter found a statistically significant negative effect, and 17% a statistically significant positive effect. In the U.S. research, Borjas (2003) has found large negative wage effects due to immigration. He argues that the studies of regional labour markets – which find few significant effects of immigration on the wages of American workers - in particular have significant methodological problems as noted above.

Papers from a recent symposium on this topic were published in the *Journal of the European Economic Association* (2012). They tended to find small positive, small negative or no effect of immigration on the wages of the native-born in the U.S and U.K. But some papers focused on the importance of estimating the degree of substitutability between native-born and immigrant labour. If they are perfect substitutes, then immigrants will compete directly with the native born and are more likely to have a negative effect on native born wages. If they are imperfect substitutes, then the degree of competition is much less, and the competition is more likely to be between immigrants themselves than between immigrants and the native born. This would result in immigration levels having more of an effect on immigrant's wages than those of the native born. Two papers, Ottaviano and Peri (2012) and Manacorda et al. (2012) conclude that immigrants and the native-born are imperfect substitutes in the U.S. and the U.K. They found little or a small positive effect of rising immigration levels on native-born wages, but a significant negative effect on the wages of immigrants, particularly recent immigrants. This is consistent

[3] There may be a selection bias. Immigrants may choose areas with better than average economic outcomes, and hence even though the proportion of the population who are immigrants is high, the native-born still do well in these areas. Another problem plaguing these studies relates to the migration of the native-born. They may choose to leave the region in response to migration. Hence, no wage or employment effect may be found because outmigration reduced the supply of labour in areas of high immigration, reducing the downward pressure on wages. Native-born workers with wage losses may move to other regions, and be missed in the study.

with recent Canadian work by Hou and Picot (2013) who conclude that rising immigration cohort levels have a negative effect on the wages of immigrants in that cohort.

Regarding the effect of immigration on the wages of the native born, perhaps Orcutt Duleep (2013) says it best when she concludes that for the U.S. "despite extensive empirical research, there is still no decisive answer as to whether poorly educated immigrants help, hurt, or have no significant effect on the employment and wages of poorly educated natives."

The immigration debate in Canada has been little concerned with the effect of immigration on the labour market outcomes of domestic workers. Canada is unique among western immigrant receiving countries in this regard. The focus in Canada has been on the deteriorating outcomes of immigrants, which has also been observed in most western nations. As a result, there has been little research on the effect of immigration on labour market outcomes of native-born workers in Canada. This is unfortunate, since international studies may or may not be applicable to Canada. Canadian immigrants have different characteristics (notably more highly educated) and the economy has a different industrial structure than that of many other countries. This can impede the applicability of international results to Canada. There are two recent relevant papers. Aydemir and Borjas (2007) found that a level of immigration at 1% of population induced increase in the labour supply, roughly what is observed in any given year due to immigration, would reduce average wages by around 0.35%, a relatively small effect. The second paper found very small negative effects when conducting the research at the national level, and little or no effect when done at the regional level (Tu, 2010).

There is no doubt that immigration has the potential to affect the wages of the Canadian born workers. Whether that effect is positive or negative, and its size, is largely an empirical question, and depends in part on whether immigrants and the native born are perfect or imperfect substitutes in the labour market. It depends on who is competing with whom for jobs. Borjas et al (2012) argue that immigrants and the native born are perfect substitutes, while Card (2012), Manacorda et al (2012) and Ottaviano and Peri (2012) argue that they are not. Card (2012) also argues that while one's first response may be to believe that rising labour supply (through immigration) reduces wages, this is not necessarily the case. Increases in population do not necessarily result in falling wages. Rising population also increases labour demand, as well as supply. The effect, Card argues, depends on whether fixed capital adjusts to the increase in labour supply. If it does not, then the capital labour ratio will fall, and with it productivity and wage levels. But if the availability of capital adjusts, and the capital-labour ratio remains constant, then wages of the native-born will not fall.

Furthermore, rising levels can have positive effects for some native-born workers, and negative effects for others, depending upon the types of immigrants entering the country, and whether immigrants and domestic workers are complements or substitutes. But there may be other related effects. A large influx of immigrant labour, particularly the less skilled, can have some effects, not only on wages but also on technological change and the capital-labour ratio. U.S. research found that during a thirty year period of substantial investment in machinery in manufacturing, plants in cities with rapid growth in lower skilled immigrant labour adopted significantly less machinery per unit output than those in cities with little immigration (Lewis, 2007). This potentially affects productivity levels, and hence ultimately, the wages of workers. Clearly more research on these issues is required in Canada.

2.3. Filling skill and labour shortages through immigration

Broadly speaking, labour shortages occur when the demand for workers in a particular occupation exceeds the supply of workers who are qualified or available to do that job at the current wage. Such shortages are often short-run in nature, as wages and production processes adjust to alleviate the shortage. Other possible adjustments include workers retraining to move to new occupations, regional mobility, delayed retirements and, of course, immigration. Longer-term shortages may result from impediments in the market that prevent adjustment, or demographic forces that constrain labour supply. Of course, this definition requires an additional term of reference -- geographic, economic or temporal -- to properly delimit what is considered to be a shortage. Hence, it is necessary to make a distinction between (i) shortages due to labour market mismatches, resulting in specific needs that cannot be fulfilled within a skill, industry, occupation or geographical area, and (ii) an aggregate labour shortage that occurs when the economy is close to full employment and it is difficult to find workers to fill vacancies (Ferrer, Picot and Riddell, 2012). The "current" labour shortages referred to by the press and business groups are typically of the first type. The discussion of the "looming future labour shortage" related to the aging of the population and retirements is more often the second type. Identifying occupational or general labour shortages of either type is difficult.

2.3.1. Current skill shortages due to labour market mismatches

We will start with current shortages due to labour market mismatches (type i). There are a number of methods used to identify such shortages: (1) direct identification by employers though surveys of firms or interaction with the immigration system (e.g. seeking immigrants through the Provincial Nominee Program), (2) by "key informant" analysts in a region, (3) by the identification of "symptoms" of a skill shortage such as rapidly rising wages or declining and extremely low unemployment within a region and/or occupation, or (4) by short-term occupational forecasting models. Due mainly to a lack of necessary information, none of these approaches are very reliable. Furthermore, many labour shortages are short-term in nature. They are often identified at business cycle peaks or during a "boom" period for an industry, and disappear with the change in the business cycle. Other adjustments such as those outlined above can also contribute to the short-term nature of such shortages.

The Association of Certified General Accountants (CGA) studied recent labour shortages in the *skilled trades* area (2012). They concluded that:

1. Labour shortages are difficult to observe and directly measure. Employers surveys are subjective and overestimate shortages, and the statistical information needed to identify current shortages at the regional and occupational level is simply not available from StatsCan or elsewhere.
2. Pan-Canadian assessments of labour shortages are not informative, as they may hide regional imbalances
3. Where labour shortages were reasonably identified, they tended to be rather sporadic and did not persist for more than a year at a time over the past ten years
4. Deriving provincial estimates of future labour shortages at an occupational level is a daunting undertaking.
5. The age structure in the skilled trades and labour mobility barriers are not likely to seriously influence labour shortages in the trades.
6. Some form of educational barrier may exist in the trades.

The CIC *Evaluation of the Provincial Nominee Program* (2012) concluded that while filling perceived current labour market shortages was the program objective most often indicated by the provinces, only one province had any systematic method of identifying such shortages.

Another recent study by a CIBC bank economist (Tal, 2012) attempted to use the "symptoms" of a current occupational labour shortage to identify such shortages. He identified 25 occupations accounting for one-fifth of all employment as being in a labour shortage position. Their wages had risen an average 3.9% in the previous year, more than double the average growth rate economy-wide. Another set of 20 occupations had displayed no wage growth the previous year and hence were labelled as being in labour surplus. While labour demand, relative to supply, in the "shortage" occupations was almost certainly stronger than in the "surplus" occupations, did this constitute a current labour shortage that demanded a response through immigration and other means? The author thought so, indicating that "this labour market mismatch is big enough not only to reduce the effectiveness of monetary policy, but also to limit the growth potential of the labour market and the economy as a whole."

But this example points out the difficulty in identifying shortages. There was no regional breakdown, likely because the statistical information needed was not reliably available at a sub-national level. The wage indicator was tracked for only one year. Wage trends may have been totally different in previous or subsequent years. If this approach truly identified such shortages, they may have been short-lived. And does a 3.6% annual increase in wages signal a serious shortage? A serious immigration response would tend to suppress the wages, as the "shortage" dissipated. Such an approach suggests that even after close to three decades of little gain in wages, significant growth should be immediately interpreted as a serious labour shortage and wage growth suppressed. Real income growth would be hard to achieve under such circumstances. Finally, health occupations were one of the major shortage categories. But the wages of health workers are not set in an open labour market. They have more to do with the fiscal position of governments. Hence, wage or unemployment indicators do not work well in this case. Having said that, tracking wage and employment indicators at an occupational level can be a useful exercise to monitor relative supply/demand shifts at a very aggregate level, but unfortunately the statistical information needed to identify local shortages typically does not exist.

Perhaps the most widely cited recent occupational skill shortage was in IT occupations during the late 1990s in both Canada and the U.S. These "shortages" did exist, but not for as long as people anticipated. They were identified at the peak of a "boom" period in the industry and disappeared in a relatively short period of time, with unfortunate consequences for IT workers, particularly immigrants. In 1996, the U.S. Bureau of Labor Statistics projected that over the next decade employment would double from 1.0 million jobs to 2 million jobs. But at the height of the dot-com and high tech boom of the late 1990s, labour supply increased far more rapidly. By 1998, occupations in the high tech sector grew by 350,000 employed persons per year, instead of 100,000 as projected by the Bureau. The supply came from the kind of adjustments observed during shortages; persons from other disciplines shifting into the computer occupations in response to a booming job market. Given the rapid growth of employment, in 2000 the Bureau raised its projected employment demand, predicting a long-term shortage situation. The dot-com collapse in 2001 and the offshoring of computer jobs to India and other low wage countries sharply reduced the demand for these jobs. In 2000 programmers had the lowest unemployment rate in the country (1.7% compared to a rate for all workers of 3.9%). By the next year, unemployment among programmers had tripled, exceeding the national rate (Freeman, 2006).

Similarly, Citizenship and Immigration Canada responded to the information technology (IT) boom of the late 1990s by increasing the emphasis on selecting IT professionals and engineers. Among the skilled principal applicants, the number with 'intended' occupation listed as engineering or an IT profession rose from only a couple of thousand through the 1980s, to about 9,000 by 1995, to 25,000 annually by 2000. By 2000, there were more engineering graduates entering Canada through immigration (17,000) than were graduating from the Canadian university system (11,400). A similar story holds true for computer science graduates. In Canada this had unforeseen, as well as unfortunate, consequences. The unanticipated computer and telecommunication bust of 2001 disproportionately affected this group of immigrants. The decline in immigrant entry earnings during this period was concentrated among skilled principal applicant IT and engineering workers.[4] Forecasting the run up in demand in the late 1990s would have been next to impossible, as was the bust over the 2001-2005 period. Forecasting methods did not perform well.

Immigration is a tool best designed to respond to longer run issues, not short-run needs. Most immigrants are in Canada for the duration of their life.[5] Hence, if immigration is to respond to "current" skill shortages, it is important to distinguish likely short-lived shortages from long-term ones. As the CGA study noted, most shortages tend to be short-term. Employers clearly have information related to immediate human resource requirements that is not available to centralized analysts and planners. Utilizing such information in the selection process seems reasonable. But they have the same difficulty identifying longer run shortages as other analysts. Ensuring that an immigrant has a job at entry does not necessarily ensure that the immigrant has the types of skills needed to maintain longer term employment and meet longer-run labour market needs. Cyclical and structural economic changes and other adjustments by firms and workers can reduce demand for occupations in high demand at the time of immigration. Hence, if immigrants are to be selected to fill "current" skill shortages, it is imperative that they have the human capital necessary to adjust to economic changes in the longer run.

2.3.2. Long-term aggregate labour shortages

Since the immigration system is best suited to meeting longer-term goals, it is perhaps better positioned to respond to the second type of shortage, aggregate labour shortages observed when there is essentially full employment and demographic factors may play an important role. Such shortages are identified almost exclusively through the use of forecasting or simulation models. These models typically produce long-term projections of both the supply of labour, hence encompassing any important demographic changes that may be coming down the road, and the demand for labour. It is the demand side that is the most difficult. We will first look at the difficulties involved in producing such projections, and then outline what some of the more reliable models are telling us regarding future aggregate labour shortages.

Freeman (2006), in a paper assessing the occupational demand forecasts produced by the US Bureau of Labour Statistics (BLS), found that only one-quarter of the actual variation in employment growth by occupation was captured in the forecasts produced by the BLS. He argued that much of the projection error stemmed from unexpected technological change affecting occupational demand within an industry. Production processes can change quite

[4] Among men, these immigrants saw their entry-level earnings fall by 37% between the 2000 and the 2004 entering cohorts. Other groups registered some decline, but much less -- around 11% fall in earnings (Picot and Hou, 2009).
[5] A discussion of temporary worker programs – often hailed as the solution to the short-run labour shortages -is beyond the scope of this paper.

rapidly. This structural change is very difficult to foresee, even if the model has some way of handling them. Consumer preferences for output from various industries also changes in unforeseen ways, rendering the forecasts obsolete. Freeman (2006) also noted that these models assume that the labour demand requirements will be met by domestic supply or immigration. But labour supply is becoming increasingly global. In many occupations, notably high tech and manufacturing occupations in recent years, firms look to a global supply when confronted with shortage situations. They may use foreign direct investment, off shoring or subcontracting to reach out to labour supply in other countries. This will obviously affect perceived supply-demand imbalances domestically.

As a result, the models may do a reasonable of job projecting supply and demand imbalances for occupations that are not susceptible to rapid technological change, or shifts in consumer preferences that influence labour demand by industry. However, it is often the occupations that do in fact undergo such structural changes that develop a shortage. Users of the simulation models often argue quite correctly that the models are designed to simulate possible outcomes under various assumptions, not forecast the future. That is indeed one value of the models. But when using them to alter immigration policies, they must be thought of as forecasts…of what would occur with various levels of immigration.

But surely, one might argue, there are definite longer term trends that could be used to identify the types of immigrants needed. For example, the oil boom is here to stay, is it not? Are occupational shortages identified in that industry not likely to be longer term, no matter what the forecasting models predict? As noted above, we had a similar situation in the 1990s with the high tech boom, when it was obvious that in the "knowledge-based" economy – a term not heard a lot today – the demand for IT workers would continue to grow. It did not. Even in the petroleum industry the environment can change very quickly, as a number of recent events are suggesting. With the dramatic increase in the supply of natural gas, the ability of the U.S. to move towards energy self-sufficiency because technological change is opening up oil reserves, and uncertainty regarding China's economic future, it is difficult to know how the oil boom will proceed. At the time of writing, Alberta is experiencing a surplus of heavy oil (over current demand), an associated unexpected shortfall in oil revenues due in part to falling demand in the U.S for Canadian oil and difficulties in getting the product to market.

Putting aside the difficulties in forecasting aggregate labour shortages for the moment, what are some of the studies telling us?

The Conference Board has produced a number of projections of aggregate labour supply shortages for Ontario, Alberta and B.C., among others. This particular model does not attempt to project demand and supply by occupation, as many models do, but only for the economy as a whole. The 2007 Ontario report reported a shortfall of 364,000 workers by 2025. If one took this as a serious forecast, that would mean finding an average additional 30,000 workers per year between 2013 and 2025. However, as the Conference Board points out, these estimates are to be used as an indication of what may occur if (1) the economy is functioning at its potential capacity, (2) unemployment is at the level one would expect in an economy functioning at full capacity, and (3) no significant adjustments are made in response to a labour shortage that builds slowly over time. It is quite possible that none of these assumptions would be realized in fact.

But it is Alberta that is the focus of the discussion regarding labour shortages. What do the models tell us about that province's future? The Conference Board produced a similar projection for Alberta as for Ontario and came up with a projected shortfall of 332,000 workers by 2025, a

requirement of about 28,000 workers per year between 2012 and 2025. The Alberta government has developed a complex labour supply and demand projection model that produces results for about 500 occupations. It is similar to the Canadian Occupational Projections System (COPS) model used in the federal government, only more detailed. Their work suggests a much smaller aggregate labour shortage than the Conference Board report. They project a smaller cumulative overall mismatch of 114,000 workers by 2021, suggesting the need for an additional 11,000 workers per year between 2011 and 2021, the forecast period. This is about 0.5% of the Alberta workforce, not a large number. The table below provides the results for some occupations that have been discussed as being in short supply.

The projected overall shortfall of about 11,000 workers per year over the projections period accumulates to about 114,000 workers by 2021. From an immigration "levels" perspective, this analysis is not sounding an immediate alarm, even if one assumed that immigration is the only answer to such potential shortfalls, which is not the case. There are also not big numbers associated with the trades and constructions occupations listed below.

Projected average annual shortages by occupation, Alberta

Occupation	2011 to 2016	2017 to 2021
All Occupations	8,600 per year (0.4% of labour force)	12,400 per year (0.5% of L.F.)
Engineers	100 per year (0.5%)	157 per year (0.7%)
IT workers	144 (0.4%)	160 (0.4%)
Engineering Tech.	75 (0.5%)	155 (0.6%)
Nurses	150 (0.4%)	? (?)
Masonry trades	83 (0.5%)	73 (0.5%)
Other construction trades	192 (1.2%)	74 (0.4%)
Electrical trades	155 (0.6%)	116 (0.4%)
Machinery Mechanics	126 (0.5%)	125 (0.4%)
Heavy equipment operators	246 (1.4%)	203 (1.0%)
Truck drivers	348 (0.5%)	301 (0.4%)

From "Alberta's Occupational Demand and Supply Outlook", 2011 to 2021, Govt of Alberta

In a separate study, the Alberta Employment and Immigration department reviewed demographic trends in the economy in particular, and concluded in a 2009 report that "although a widespread skill shortage due to an aging labour force is unlikely, pockets of skill shortages may continue to emerge."

The federal government's COPS model has been producing labour supply and demand projections for decades, with methodological updates along the way. While it suffers from the shortcomings associated with all projections models, it is likely the most sophisticated model in use at the present time, with the most experience. In their 2011 projections, covering the period to 2020, they came to a number of conclusions for Canada as a whole.

- Two thirds of the job openings to 2021 will require a post-secondary education. The labour demand will be concentrated among the highly skilled.

- At broad skill levels, job openings and job seekers are projected to be in balance. No aggregate labour shortage at broad skill levels.
- Some specific occupations, representing about 15% of employment, may see some labour shortages.
- Most of these occupations are in the health area, and almost all are high skilled occupations. There are a few with very significant projected shortages, such as managers in mining oil and gas.
- There is a projected surplus in lower skilled occupations. The occupations in projected surplus represent about 25% of all employment.

The COPS model suggests that there is no looming aggregate labour shortage in Canada at a broad skill level, at least to 2020. And it is probably at this level (i.e., identifying skill requirements at the university, college, high school, trades, unskilled level) that projections models are most reliable and useful. They can account for major demographic trends, although even at this level of detail the demand side is difficult to forecast. These results suggest that there will be more of a problem regarding occupations that are in surplus (notably lower skilled occupations) and the attendant unemployment and perhaps training needs than among occupations in shortage. There will, of course, be pockets of shortages in some occupations for some period of time, as is always the case. But there is no projected need for an increase in the number of workers in Canada to meet the projected labour demand at the aggregate level, beyond those already anticipated based on historical trends. But this is a Canada wide analysis. There will be differences among regions. There is already some adjustment taking place to such regional shifts. Given the stronger economy in the west, the number of immigrants selecting Ontario (mainly Toronto) has dropped dramatically, choosing instead to move to the west.[6] And interprovincial migration is increasingly shifting towards the west, even from Ontario.

These more recent studies confirm earlier work. McMullen at al (2004) concluded that there was no strong evidence of an economy-wide looming labour shortage, although there might well be localized industry-specific shortages.

To summarize, localized "current" skill shortages do exist, but are very difficult to identify given the current available labour market information, and many are short-term in nature. It is difficult for the immigration system to respond to such shortages, at least through permanent residency. The immigration system may be better suited to responding to aggregate labour supply shortages. These are identified by forecasting models, which have inherent difficulties associated with them, particularly regarding the demand side forecasts. They are more effective in producing "what if" scenarios than actually forecasting the future. The Conference Board's projections suggest that in an economy running at full capacity with historically low unemployment, significant aggregate labour shortages could develop. But other studies and models generally conclude that there is little evidence to support the notion that there is a looming aggregate labour shortage, at least to the early 2020s. They do suggest that localized occupational skill shortages may develop. They also indicate that the labour demand will be greatest among jobs requiring post-secondary education, and that there will likely be a labour surplus among many low-skilled occupations.

[6] Forty-nine percent of all entering immigrants moved to Toronto in 2002. By 2011 this share had fallen to 31%. The share going to the west (Man/Sask/Alta,/BC) rose from 24.1% to 36.4% over the same period.

2.4. Economic outcomes of immigrants

Improving the economic outcomes of immigrants at entry is another prominent economic goal driving immigration policy. Unlike the topics covered above, where definitive answers are often hard to come by, in this case the research is clear and relatively conclusive. Following are the main points in the literature.

- Generally speaking, economic outcomes deteriorated among cohorts entering in the 1980s and early 1990s, improved somewhat in the late 1990s, and then continued deteriorating again in the early 2000s. During the recessionary period of 2008-09, recent immigrants (entering within the previous five years) again saw their relative economic position deteriorate compared to the Canadian born. This deterioration is more evident in earnings than employment data.
- Poverty rates among immigrants have tracked the earnings trends, generally deteriorating since the 1980s.
- It is important to note that there were periods of improvement in immigrants' economic outcomes -- most notably during the late 1990s, and for the federal skilled workers, during the mid-2000s. These improvements appear to have been driven by changes in immigrant selection policy as well as the business cycle.

Much has been written about the deterioration and its causes (recent papers include Aydemir and Skuterud, 2005; Frenette and Morissette, 2005; Green and Worswick, 2010; Picot, 2008; Sweetman, 2010; Picot and Hou, 2009; for reviews see Picot and Sweetman 2012, Reitz, 2007). The causes of the decline in entry earnings more or less agreed to in the literature include:

- Changing source regions, particularly during the 1980s, affecting factors such as language, possibly education quality, cultural differences, and discrimination;
- A decline in the monetary returns to pre-immigration labour market experience;
- A general decline in the earnings at entry of all labour market entrants, not just immigrants during the 1980s and 1990s. This has turned around since 2000;
- The IT bust of the early 2000s; and
- Changing literacy skills in English and French among immigrants.

Given the extensive coverage of this issue, little more will be said here except to refer to two very recent research papers that relate to mix and levels. One paper concludes that the size of an entering immigrant cohort – i.e. the annual level of immigration – affects the entry earnings of the immigrants in that cohort (Hou and Picot, 2013). A 10% increase in the size of a cohort[7] is associated with a 0.8% decline in the earnings of immigrant men in that cohort. This result does not necessarily mean that wages of entering immigrants will always fall when immigration levels are increased. There may be other pressures pushing wages up.[8] However, the finding does

[7] A "cohort" may refer to the annual level of immigration, or it may refer to a subset of entering immigrants, such as those with a university degree or other educational attainment levels.

[8] For example, during an economic expansion, improving economic conditions will tend to *increase* the wages of entering immigrants. If the number of immigrants entering the country is rising during the expansion, that will tend to *decrease* wages of the entering immigrants. Hence, there are two "effects" that are driving wages in opposite directions. If the positive wage effect of improving economic conditions more than offsets the negative wage effect

suggest that (1) the increase in immigration levels may have contributed somewhat to the earnings decline among entering immigrants since the 1980s, and (2) that the negative effect of a recession on the earnings of entering immigrants may be partially offset by reducing the size of the entering immigrant cohort. Many students of immigration policy have recommended such a move.

The second paper found that the earnings decline at entry was particularly concentrated among highly educated economic immigrants, particularly during the 1990s when the number of immigrants in this group was rising relatively fast. This observation, combined with the findings of the paper mentioned above, may suggest a reduction in the number of highly educated economic immigrants. But there may be other issues, such as changes in language skills, affecting this result. Furthermore, this result applies to earnings during the first few years in Canada (i.e. entry earnings). The study also found that in the longer run, highly educated immigrants outperform the less educated economically. Earning trajectories are much steeper for the more highly educated than the less-educated (e.g., trades and high school educated). The longer the immigrant is in Canada, the greater the economic advantage of having a degree (Picot, Hou and Qiu 2013). Hence, short-term economic outcomes for entering immigrants are not necessarily good predictors of longer-run results, particularly by education level.

What are the implications for policy regarding "mix and level" ? Numerous policy changes have been introduced since the early 1990s, and particularly since the early 2000s. In particular the immigration "mix" -including changes in immigrant class, educational attainment, age, language ability and occupation - has been altered a number of times to respond to the decline in immigrant entry earnings. It has met with some success, see CIC evaluations of Immigration Refugee Protection Act (IRPA) and of the Provincial Nominee Program (PNP), although relative (to the Canadian born) entry earnings among immigrants remain well below the levels of the 1970s.

There has been little change in immigration levels in response to the economic deterioration. Some analysts argue that the mere existence of the economic decline demonstrates that the Canadian economy has a problem regarding "absorption capacity" that should be considered in any discussion of levels. The recent findings mentioned above suggest that levels, at least for some groups, could reasonably be a part of this discussion. Others argue that the issue is not one of aggregate supply, but of getting the "mix" right through proper selection, including increased use of employers in selection, and increased support for integration programs. Such assistance has been strengthened. No matter which interpretation is adopted, the research does not support an increase in immigration levels while immigrant economic outcomes are suppressed.

of the increase in the level of immigration, then wages of entering immigrants will rise, even though immigration levels were increased.

2.5. The fiscal balance

Immigrants are both recipients of government expenditures and payers of taxes. Researchers have long been concerned about the question of whether the net fiscal balance for immigrants is positive or negative; what is the cost or benefit to the taxpayer if immigration is increased (or decreased). More recently, analysts are asking a variant of that question. Would increasing immigration produce a significant positive net fiscal balance that would help offset the expected upcoming rise in pension and health care expenditures associated with an aging population? The idea is that if immigrants were young and employed, they would pay more in taxes than they received in benefits and the surplus would help offset higher pension and health care costs. Given the well-known results regarding the effect of immigration on the population age distribution (reviewed later), most analysts hold little hope that this strategy would work. Immigrants are not sufficiently different from the Canadian born in age to make a big difference, and recent immigrants are not doing well in the labour market, at least early in their careers in Canada (although the young do better). Immigration levels would have to be increased by a very large amount to make much of a dent in the expected rise in expenditures.

Hence, we will concern ourselves with the first question: would increasing (or decreasing) immigration provide a direct net cost or benefit to taxpayers through the fiscal balance at all levels of government? We will add a second question related to mix: does changing the mix of immigration, particularly regarding education, affect the net fiscal balance? Like many of the topics addressed in this paper, the methodologies and data required to answer these questions may or may not be up to the task. Early studies tended to take a snap-shot of the immigrant and native-born populations at a point in time, and through an accounting procedure tally up the various kinds and levels of taxes paid. This total is balanced against the types of government expenditures received for social services, health, education, transportation and other services.

Aside from the tremendous strain such an approach puts on the available data,[9] the "snap-shot" approach has a fundamental constraint. It is affected by the age distribution of immigrants at the time of the snapshot. A snapshot taken when there are a lot of young, working immigrants will lead to a relatively positive view of the net fiscal balance, since they are more likely to be paying taxes than receiving benefits. If the snapshot were taken with a large number of middle age families with many children in school, the balance might be less positive, or negative. If the snapshot included primarily immigrants who had been in Canada for only a relatively few years, the net fiscal balance is more likely to turn out negative, since "recent" immigrants have more employment issues and lower paying jobs than longer standing immigrants, and hence are less likely to contribute through taxes.

Ideally one would take a longitudinal approach, asking about the taxes paid and benefits received over an immigrant's life-time in Canada. Some researchers have even attempted to include the children of immigrants in the calculation, arguing that if they make a net positive contribution to the government fiscal balance this should be considered, since it is a direct result of immigration. Most of the "longitudinal" analysis has been done by American researchers using a generational accounting approach. This approach also suffers from some issues. It has recently been argued that since emigration of immigrants has not been included in the analysis, the approach

[9] The data often does not provide the detail necessary to estimate expenditures and benefits for specific groups such as immigrants.

underestimates the net positive contribution of immigrants.[10] It is also necessary to make some assumptions regarding "discount rates" and future events regarding economic outcomes of immigrants in the longitudinal approach. And like virtually all research in this area, the demands on the data are substantial.

Recognizing the methodological challenges, what does the research suggest?

In a recent paper, Duncan, Fang and Gunderson (2012) review the international literature. They specifically mention 13 studies across five countries: Spain, Germany, New Zealand, the U.S and Canada. There are a variety of methodological approaches used in these studies, including the life-cycle (or longitudinal) methodology. All find a net positive contribution by immigrants to the government fiscal balance; some small and some larger. Rather than reiterating this review, we will focus on relevant finding in Canada and the U.S.

In a major 1998 review of the demographic and fiscal effects of immigration in the U.S, Smith and Edmonston note that research on the fiscal effects of immigration was lacking, and that many studies represented advocacy, not science. They observed that the immediate fiscal effects were tremendously sensitive to the age of the immigrant population, and that the effects must be evaluated in the longer run. Using a cross-sectional (i.e. snapshot) methodology of calculating taxes paid and benefits received in a given year, one of the papers in the review focuses on two states, New Jersey and California. In both cases they find that immigrant households received more in government services than they paid in taxes. The net fiscal burden was estimated to be $229 per native-born worker in New Jersey and $1174 in California. The fiscal burden was higher where immigrant families were older and where there were more less-educated immigrants with poorer wage prospects. The difference between immigrants and the native born was greater on the tax than the benefits side. Immigrants were estimated to pay 69% as much in the way of taxes as the native born, likely because of poorer job prospects.

Another paper in the review used three approaches to estimate the net fiscal balance associated with immigration. They are (1) the "snap-shot" approach described above, (2) a longitudinal approach that attempts to measure taxes paid and government benefits received over the life-cycle of the immigrant and the second generation (which requires some assumptions regarding the course of future events), and (3) a "snapshot" approach that includes the taxes paid and benefits received by the 2nd generation as well as the immigrants themselves. As noted, approach (1) produces a net negative fiscal contribution, while methods (2) and (3) both produce net positive fiscal contribution of immigrants.

In related U.S research, Lee and Miller (2000*)* stress the importance of taking a longitudinal approach to the analysis of the fiscal balance. They conclude that "most analysts agree that the overall fiscal consequences of altering the volume of immigration would be quite small and should not be a major consideration for policy". They find that increasing US immigration by 100,000 per year would initially raise taxes to support the new immigrants, and later reduce them as the immigrants become more established and produce a net positive fiscal contribution. However, in both cases the increase or fall in taxes was less than 1% of the current tax levels. Importantly for this paper, they also conclude that admitting only highly educated immigrants of young working ages would be highly fiscally beneficial.

[10] That is because it is typically the immigrants who are doing less well in the labour market, and hence are more likely to contribute to a negative fiscal position re taxes and benefits, who leave the country. Failing to exclude these immigrants from calculations later in life tends to underestimate the positive fiscal contribution of immigrants.

In other U.S. work also employing a longitudinal intergenerational accounting approach, Auerbach and Oreopoulos (2000) found that the composition of immigration was a more important consideration than the level of immigration when thinking about the fiscal balance. They conclude that even a very large change in the level of immigration would have only a small impact on the country's fiscal balance. They find that "changing the immigration level is neither a major source of the current fiscal balance nor a solution for it." They conclude that the overall fiscal impact of immigration is unclear. But they stress that the composition of immigration – notably the educational level of immigrants- is important, and that altering the educational composition does have the potential to reduce the overall government fiscal burden. They estimate that if the U.S moved to a policy that resulted in half of all immigrants having greater than a high school education (i.e. at least some post-secondary), it would reduce the government fiscal burden on taxpayers by 7% to 10%.

Other U.S. research is reviewed in Kerr and Kerr (2011). They note that the early research found both positive and negative fiscal contributions by immigrants. In one early study, Borjas (1995) found that the net impact of immigration ranged from a $16K cost to a $60k benefit, depending upon the assumptions made. His more recent work suggests a net benefit. Most recent U.S. studies conclude that the average net cost or benefit is very small, as noted above. From an immigration "mix" perspective, some very interesting work by Storesletten (2000) for the U.S. found that there was very large heterogeneity among groups regarding net costs or benefits. He found that highly educated immigrants often succeed in the labour market, and pay more taxes than they use in public goods and services. Uneducated and elderly immigrants tended to cause large net economic costs to society. The calculated differences were striking, ranging from a net $36K cost to the country's fiscal position to a $96k benefit, depending upon the education level of the immigrant.

The Canadian research in this area is much less advanced. Early studies argued that over the lifecycle, a representative immigrant makes a modest positive net contribution to the treasury. (Akbari, 1989, 1995). More recent research by Devoretz (1999) argued that this contribution varies by geographic location, depending upon the characteristics of the immigrants and the government services available. The US research also stresses the point that national results may not apply to cities or states where immigrants tend to concentrate. Devoretz found a net positive fiscal benefit over the lifetime of the immigrant households, similar to Akbari. He also found positive public finance transfers for households in Toronto and Vancouver, but a reversal in Montreal, as "the net lifetime public transfer for a foreign born household in Montreal is negative."

A very recent paper that received considerable media attention found somewhat different national level results, estimating that immigrants receive approximately $6000 more in benefits over taxes paid in 2006 (Grubel and Grady, 2011). This analysis used the "snapshot" approach, and estimated all taxes paid, and government benefits received in 2006 (based on census data) by immigrants who arrived in Canada between 1987 and 2004, as well as by the remainder of the population. The difference between these two groups was mainly in taxes paid (i.e. immigrant pay lower taxes since many have lower annual incomes), not benefits received. The finding that the difference is more in taxes paid than benefits received is typical of studies using this methodology. In a paper written in response to this research, Javdeni and Pendakur (2012) correct what they consider to be errors in the Grubel and Grady paper, and conclude that the right estimate is closer to $450 net benefits received over taxes paid, not $6000.

The results of the Grubel and Grady paper differ somewhat from that of most of the literature. As with most research in this difficult area, there are a number of difficulties that the Grubel and Grady paper must deal with. The issues with the "snapshot" approach were discussed above. The results can vary considerably, depending upon the characteristics (notably age, length of time in Canada) of the immigrants included in the snapshot.[11] In this particular case, the immigrant sample was heavily weighted towards "recent" immigrants. They tend to have poorer employment prospects and hence pay lower taxes than immigrants in Canada for a longer period of time. Estimating total taxes paid and benefits received over a life-cycle is a conceptually sounder approach. However, it too has its limitations, since assumptions regarding discount rates and the path of future events must be made. There are a number of aspects of the Grubel and Grady paper that lead to results that differ from those observed in other Canadian papers.[12]

Duncan, Fang and Gunderson (2012) employ yet another approach by using a macroeconomic model to estimate the labour market effects of an additional 100,000 immigrants. They find that taxes paid by immigrants exceed government expenditures received. However, as they note, this is in part because immigrants tend to enter in the tax-paying years of their life-cycle, and many of the government expenditures come later. Furthermore, the simulation stops at age 65, and effects on the fiscal balance after that age are excluded. Again, a life-cycle approach is needed to obtain an overall estimate of the taxes paid and benefits received. As observed by others, Duncan et al. note that the less skilled (educated) immigrants tend to access transfer programs more than the higher skilled, and with higher earnings, the more highly educated pay higher taxes.

As noted in a recent review by Kerr and Kerr (2011, NBER), "the literature on public finances does not allow many definitive conclusions." Having said that, the preponderance of the research outlined above, both international and domestic, suggests that the fiscal effect of immigration is not likely a major policy issue when considering immigration *levels*. The U.S. research in particular, combined with the demographic results presented earlier, suggests that any positive fiscal contribution to the treasury that may be produced by immigration is not going to significantly influence the future government fiscal balance, which may experience some pressure due to the aging of the population. The majority of the research also suggests that immigrants, over their life-cycle and that of their children, do not place significant negative pressure on the fiscal balance. However, for Canada in particular, the recent evidence is sparse. And Canada's social safety net differs significantly from that in the U.S., affecting the findings. As in many areas of immigration research, U.S. results do not necessarily apply to Canada.

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[11] Available data typically does not allow an accurate estimate of government benefits received by various groups (like immigrants) since the data are not collected in this way. Assumptions must be made.

[12] By focusing on immigrants who had arrived since 1987 (the previous 18 years) their sample is not representative of immigrants in Canada. Recent immigrants (in Canada for 5 or 10 years) are over-represented, and they have poorer economic outcomes, and hence pay less taxes. Economic outcomes and taxes paid increase with years spent in Canada, at least during their working years. Immigrants entering as young children are also under-represented, and they tend to do as well as the Canadian born economically (again with higher taxes paid). Javdeni and Pendakur addressed this issue by selecting immigrants who entered between 1970 and 2004, but there are issues here as well, since the cohorts entering during the 1970s tended to do better economically than more recent cohorts. However, economic outcomes among very recent entering cohorts of economic immigrants (since 2005) have improved due in part to the IRPA legislative changes introduced in the early 2000s. This improvement will be missed in the estimates of taxes paid. Furthermore, Javdeni and Pendakur argue that some of the tax revenue goes to support pure public goods such as National Defense and basic research. They see this as "free money" for the Canadian born, received from immigrants. They estimate that 10% of tax revenue is used in this way and that this reduces the fiscal transfer to immigrants by $1600. Grudel and Grady dispute this estimate (2012).

Conducting a life-cycle analysis of the fiscal balance associated with immigration using more recent data would be useful.

But the research has more to say about the mix or *composition* of immigration. The U.S. research in particular noted the fiscal benefits of tilting immigration towards the highly educated. Over their life cycle they earn higher wages, pay more taxes and use government transfer system less than their less educated immigrant counterparts. The selection of immigrants in Canada has focused on the highly educated. The research on the fiscal balance provides support for continuing this practice.

3. Demographic impact

Immigration will influence the size of the population, its age distribution and its diversity across numerous dimensions including its ethnic composition, and educational attainment. The affect of immigration levels on population growth can be relatively easily determined through demographic projections. It has been known for years that immigration will contribute the majority of the population growth in the coming years, but that under virtually all immigration scenarios, growth will slow. Hence, the level of immigration selected depends upon how much of a slowdown in population growth one feels can be tolerated. Issues regarding a country's (or province's) population and its effect on economic and political activities are excluded from this paper.

It is also relatively easy to determine the effect of various immigration scenarios on the age distribution of the Canadian population, and more importantly, on the dependency ratio. We have known about these effects since the 1990s. Basically, Canada is heading towards a rise in the dependency ratio, no matter how defined. The early work by Denton et al. (1997) suggested that the dependency ratio – the ratio of 0-14 plus 65 and over population to that aged 15 to 64 – would increase from 11% to 16% by 2041, and to prevent such an increase would require immigration levels of over 1 million per year. More recent work suggests similar kinds of results. While the number of immigrants and their age can influence the dependency ratio, the effect is quite small. Hence, using the effect on the dependency ratio to set either the age distribution or the level of immigration does not seem like a useful approach. There are other considerations on which immigration has a much more profound effect. One is the diversity of the population.

Recent population projections by Statistics Canada suggest that by 2031, perhaps two thirds of the population in Toronto and Vancouver will consist of immigrants or their children. Montreal may see this number at 50%. Such a scenario raises questions regarding social cohesion and the effect on neighbourhoods in these cities. Canada has to date largely escaped any significant deterioration in social cohesion related to immigration. Immigration is still viewed positively by most Canadians. However, this is the exception rather than the rule in western countries. Other major immigrant receiving countries, including the U.S. and Australia, and certainly many European nations, have experienced a significant immigrant backlash. Given that increasing levels of immigration, and changes in source regions and ethnic groups have led to social cohesion issues in other countries, it may not be wise to ignore this issue in Canada when thinking about "mix and levels."

4. Immigrant selection and social cohesion

A socially cohesive society is one in which *all* groups have a sense of "belonging, participation, inclusion, recognition and legitimacy" (Jensen 1998). Social cohesion is threatened if a significant group or groups endure isolation, exclusion, non-involvement politically, economically or socially, or rejection by society at large. It may also be threatened if the sense of interpersonal trust or "sense of belonging" is reduced among particular groups. There are numerous government policies that influence the degree of social cohesion in a country, including institution building, anti-discrimination measures, support for political and societal participation by all groups, promoting successful economic outcomes of all groups, among others. However, we are concerned in this paper with the immigration selection process and its contribution to, or threat to, social cohesion.

Different researchers use different terms and concepts when discussing issues related to what may be called social cohesion or social solidarity. This area of research is conceptually very complex, with no real consensus in the literature. However, in this paper we will use the term social cohesion.

Governments have traditionally employed a couple of alternative strategies to promote social cohesion (Soroka, Johnston and Banting 2007). Perhaps the most popular has been to attempt to develop a common body of norms and shared values that are believed to be required for a society to endure harmoniously. The focus is on the question "who are we" and on the assimilation of immigrants. Given Canada's history of two founding societies and level and diversity of immigration, particularly in the past 30 years, this approach presents real challenges. The second strategy is to focus less on a broad set of common values, but rather on widespread political and economic engagement by all groups, and a general consensus regarding the important institutions and processes required for a society to function harmoniously. Given multiple identities and diverse values, the focus is on "how are we to live together". Support by all groups for institutions and processes (the rule of law, protection of minority rights, freedom of religion, freedom of the press, anti-discrimination legislation, etc) through which tensions can be alleviated and conflict adjudicated is essential, as is the economic, social and political participation by all groups, so that no group feels isolated or rejected. This second approach likely holds more promise in an ethnically diverse society such as Canada's.

How does this relate to mix and level? Soroka, Johnston and Banting (2007) focus on six dimensions of social cohesion (pride in country, sense of belonging, interpersonal trust, social values, social networks, and voting) and ask if there are significant differences among ethnic groups in these indicators. There are a few observations that are relevant here.

Even after accounting for differences among ethnic groups in immigration status, years in Canada, age, and religion, many ethnic groups (notably East Asian, Caribbean/African and South Asian/Middle Eastern) had a weaker "sense of belonging" to Canada than did British/northern European respondents who were the reference group. These same ethnic groups also had a lower level of interpersonal "trust" than the reference group. This is in part because first generation immigrants' "trust" levels reflect in part their country of origin (Soroka, Helliwell, and Johnston, 2003). The degree of future ethnic (or source region) diversity is of course driven by immigration policy. The implications of these results for our purposes are not straightforward. In general, the results suggest that if immigration levels remain high or increase, and the "mix" of new immigrants by ethnic group remains as in the recent past, this would tend to place downward pressure on the "sense of belonging" and interpersonal trust observed in

Canada in the future, as the share of some ethnic groups in the Canadian population increases. However, some research suggests that the lower levels of "trust" observed among some ethnic groups does not persist beyond the 1st generation (Soroka, Helliwell and Johnston), although the results from Soroka et al. 2007, noted above, do not suggest that.

Aside from the "trust" and "sense of belonging" measures noted above, after controls little difference was observed among ethnic groups across the remaining four measures of social cohesion (Soroka et al., 2007). These included pride in country, social values as measured by support for gay marriage and support for women staying at home, membership in bridging groups, and reported voter turnout. Some ethnic groups did register significantly different attitudes and results as compared to the British/northern European reference group in the raw data. This result suggests that such differences do actually exist in Canada. In an attempt to better understand the phenomenon, a number of "controls" were introduced, notably years in Canada, and many of the differences in attitudes disappeared. The researchers found that "length of time in Canada drives what at first glance appears to be strong ethnic differences," and that "the integrative power of Canadian life for newcomers is impressive." These results suggest that increased immigration levels for some ethnic groups, particularly visible minorities, tend to affect these dimensions of social cohesion if the number of "recent" immigrants is high.

Other research has focused directly on the relationship between neighbourhood ethnic diversity and one dimension of social cohesion, "generalized trust" among the majority white population. (i.e. in general, what is your level of trust in other people). There are two prevailing hypotheses. The first posits that people are more disposed to trust others like themselves, and hence increasing neighbourhood ethnic diversity will erode trust. The second argues that an individual's cultural and country context dictates his/her attitudes and behaviors related to trust and other dimensions of social cohesion. Such beliefs are learned in childhood, vary from one culture/country to another, depending upon the context, and persist through adulthood, and even across oceans. Immigrants bring these beliefs to their new home and, as was seen above, time in Canada may alter them somewhat, but not altogether. This hypothesis may relate more to issues such as trust in the police, in the rule of law and the judicial system, the protection of minority rights, the media, and so on.

There appears to be a consensus in the U.S. research that increasing neighbourhood ethnic diversity reduces the level of generalized trust, an important component of social cohesion. Increasing immigration levels leads to increased neighbourhood ethnic diversity, and hence lower trust levels in society. Putnam is the most visible proponent of this research and perspective. He argues that in the short run rising immigration and ethnic diversity reduces social solidarity and social capital. All races tend to "hunker down" so that trust (even in one's own race), altruism, and community co-operation is lower. But he also argues that in the longer run immigration and diversity are likely to have important positive cultural, economic, fiscal and developmental effects. While this may well be true, he provides little real evidence to support this conclusion.

But what of Canada? The context is very different and U.S. findings do not necessarily apply. Canadian immigrants are more highly educated, more likely to be Asian, and less likely to be Hispanic. Furthermore, Canadian history and culture, and hence possibly attitudes, regarding diversity are very different. Since confederation there have been two principle founding races with different cultures and religions. The Canadian context is quite different.

The Canadian research produces more mixed results. Stolle et al., (2008) confirm the American finding for Canada, and conclude that in both countries rising neighbourhood diversity has a negative effect on trust among the white population. Aizlewood et al (2005) argue that the U.S. results do not apply to Canada because visible minority and immigrant groups have higher trust levels than others. They also find that trust levels are higher among the more highly educated and higher income groups, a finding observed by others as well. This is important for the immigrant "mix" dimension; tilting the immigration mix towards the highly educated may positively influence trust and possibly other outcomes related to social cohesion.[13]

In recent Canadian research, Hou and Wu (2009) distinguish between neighbourhood ethnic diversity and minority group concentration within a neighbourhood. They conclude that there is a positive association between neighbourhood ethnic diversity and trust (unlike the U.S. research), but a negative relationship between the degree of a single minority group's concentration in a neighbourhood and trust levels among the majority group. However, rising ethnic diversity is usually associated with the rising concentration of some minority group in neighbourhoods, and the effect of the latter dominates that of the former. Hence, increased immigration levels, when most immigrants come from developing nations, tends to lead to increased dominance of a minority group in neighbourhoods, and hence lower trust levels. Thus, the evidence suggest that in general, rising immigration levels and the resulting increased concentration of visible minority groups in neighbourhoods leads to lower trust levels in Canada. Research involving many European countries concluded that the U.S. results regarding the effect of diversity on trust levels of individuals were confirmed (Hooghe et al 2009).

A more recent paper (Fieldhouse and Cutts, 2010), using across country comparisons, confirms that increased neighbourhood diversity reduces the level of generalized trust in the U.S, and the U.K. In the same special journal edition (Kesler and Bloemraad, 2010) suggest that the negative correlation between ethnic diversity and trust (as well as other dimensions of social cohesion) is not necessarily a given. They argue that there is no general link between immigration-generated diversity and what they refer to as collective-mindedness. Rather, the direction and strength of the relationship depends upon the policy context and institutional arrangements. Comparing outcomes across 19 countries, and focusing specifically on immigration, their analysis supports the view that immigration decreases trust, civic engagement and political participation in some advanced democracies. They argue that their analysis also raises important qualifications. Specifically, they find that in more economically equal societies and in more multicultural countries, where cultural minorities are recognized and accommodated, the negative effects of immigration on trust and engagement are mitigated. Whether economic inequality and multicultural policies are the specific causal factors driving the variation in outcomes observed, or simply proxy variables reflecting the effects of other unmeasured variables is not clear. However, the notion that policy and institutional arrangements matter seems reasonable.

At least at this time, concerns regarding the effect of immigration "levels and mix" on social cohesion are greater in Europe and in the U.S. than in Canada. The past few years have seen strong opposition to immigration in many European nations. Card, Dustmann and Preston (2012) found that although both trade policy and immigration policy affects workers wages and jobs to about the same degree, concerns over immigration policy were much greater than concerns over trade policy. Yet most research, including that for Europe, suggests that

[13] Assuming that the positive relationship between trust and education holds for immigrants from very different cultures as that found in Canada or the U.S.

immigration has a modest effect on wages, job availability and economic growth. Hence, the strong opposition may seem puzzling to an economist.

Three economists (Card et al.) looked at the importance of two factors in establishing the views of Europeans regarding immigration: the effect of immigration on wages, taxes and benefits, and what they referred to as "compositional amenities," meaning the perceived impact of immigration on cultural and religious life, social cohesion and tension. When asked whether more or fewer immigrants should be allowed entry to the country, concerns over compositional amenities were 2 to 5 times more important in explaining the variation in answers than concerns over wages/taxes/benefits. Compositional concerns also accounted for much of the divergence in opinion between less and more highly educated respondents. It is concerns over the effect of immigration on customs and traditions, language, cultural life and social tension that is driving the resistance to immigration in many European countries, more than economic concerns. Political scientists have reached a similar conclusion (e.g. see Sides et al, 2007 and Sniderman and Hagendoom, 2007)

These findings may not apply to Canada. On the social front, research is suggesting that because of the celebration of diversity that exists in Canada, Canadian national identity is less threatened by immigration than is the case in other countries (e.g. Johnston et al, 2010). And on the economic front, immigration is seen by the population and both national and regional politicians to be economically advantageous, something not observed in many other developed countrieswhere immigration is seen by many as more of a threat to domestic workers. Currently the reaction by Canadians to immigration in both the social and economic domains appears to differ from that in many other developed nations. But the international results do suggest that if at some time in the future there were to be serious concerns by Canadians regarding immigration, it may well come from concerns over social cohesion and culture, rather than economic issues.

5. Summary and conclusion

Taken at face value, much of the current economic evidence suggests that the overall economic effect of altering immigration levels would be small, and should not be a major consideration for policy. However, the research producing such evidence often faces significant methodological challenges and there is often a lack of Canadian research. And such a conclusion flies in the face of much commonly accepted wisdom in the political and business communities, as well as the public at large. The exception to this general conclusion relates to the economic outcomes of immigrants themselves, where immigrant selection policy clearly matters and the research is more definitive.

Perhaps the best way to expand on and summarize the conclusions is to proceed from the perspective of the policy analyst considering immigration selection policy in the light of economic and social objectives. Of these, perhaps the most commonly cited economic objective is to increase GDP per capita. But the research suggests immigration has only a small effect, either positive or negative, on this outcome. Hence, this objective is not a major consideration for policy regarding immigration levels. Not so fast, others argue. The research in this area is methodologically difficult, excludes other possible effects. For example, there are U.S. papers that find that immigration boosts productivity and innovation (patents), the latter largely because immigrants are more likely to be engineers and scientists. This would tend to boost GDP per capita. Also, the very high educational level of the children of immigrants and their possible positive economic effects are excluded from this research and that could also boost GDP per capita. Finally, very little of the research is Canadian and the results may not be applicable to this country. Skeptics note that all of these factors tend to limit the usefulness of the research for policy purposes. But either way, this research has relatively little to say regarding the future direction of immigration levels.

The next most sited economic objective likely relates to filling occupational shortages. This paper outlined two possible types: "current" labour shortages associated with mismatches of various types, and longer term aggregate labour supply shortages of the type associated with the aging of the population and increased retirements.

Can the research inform us of immigration's role in responding to labour shortages?

Unfortunately, "current" skill shortages of substantial duration are very difficult to identify, for reasons indicated in the paper. Many such shortages are associated with the peak of the business cycle or an economic boom, or may be alleviated by other labour market adjustments, rendering them short term in nature. Current research produces little solid evidence on which to base policy decisions regarding "current" skill shortages. Employer surveys tend to overestimate shortages, have difficulty distinguishing a short-term from a longer term shortage, and do not account for other responses (besides immigration) that may alleviate the shortage. "Key informant" and "statistical indicators" approaches to identifying current shortages typically do not have the sufficiently detailed and reliable statistical information necessary to identify regional shortages in particular. And they too find it difficult to distinguish a short from a longer-term shortage, and account for the effects of other possible labour adjustments on the shortage. Immigration policy has difficulty responding reasonably to "current" shortages that will be of substantial duration if they cannot be reasonably identified.

Perhaps the immigration system is better designed to respond to longer-term aggregate labour supply shortages of the type often associated with the aging of the population and the expected large numbers of retirements. Here the evidence is mixed, and again it is difficult to point to

solid research given the difficulties of forecasting future demand-side events.[14] A very few studies, notably those by the Conference Board of Canada, do suggest a substantial shortfall by the early 2020s in aggregate labour supply if the economy is operating at capacity. But other forecasting exercises, including those by the federal and Alberta governments, suggest that such an aggregate imbalance is not expected. Most studies do anticipate shortages in particular occupations and regions, as commonly occur.

Some of these studies, notably the federal government's COPS analysis, which has been around the longest and is perhaps the most sophisticated, suggest a future labour surplus in many lower skilled occupations. They observe that most future jobs will require some form of post-secondary education. This evidence would suggest that we should not raise immigration levels in the unskilled and perhaps semi-skilled areas where labour surpluses often already exist and are forecast to develop in the future.

There are other potential economic benefits or costs associated with immigration that a policy analyst would want to consider; the effect on the wages of domestic workers, and the effect on the fiscal balance. The research suggests that these effects may be negative or positive, but in either case, likely quite small. Research in these areas is also methodologically challenging, with different methodologies tending to produce different answers (i.e. positive or negative effects). Canadian research in these areas is limited, and should be expanded. The results from the current research, combined with the methodological challenges, suggest that at this time these objectives are not a major consideration for immigration policy regarding levels.

The policy analyst can turn to research on one economic objective – improving the economic outcomes of immigrant themselves – for guidance, and they have done so in the past. Immigration policy clearly affects the economic outcomes of immigrants. Since the early 1990s policy changes have attempted to improve the outcomes of entering immigrants, often with considerable success. This policy response affected the "mix" of immigrants, however, not the levels. The characteristics of immigrants were altered (e.g. more highly educated, stronger language skills), and the types of programs under which immigrants entered adjusted (e.g. more economic immigrants, provincial selection, more employer input). These changes had positive effects on entry level earning at least. Whether they will achieve longer run success remains to be seen. In spite of this success, immigrant entry level earnings remain below that of the pre-1980 period.

When discussing immigration levels, the economic evidence has been interpreted a number of ways. Some analysts argue that the deterioration in economic outcomes is sufficient proof, by itself, of a problem regarding the "absorptive capacity" of the labour market. They suggest a reduction in levels. Others point to the research that shows that one can account for the fall in immigrant earnings without resorting to explanations regarding rising levels of immigration, and add that better integration programs are required. It seems likely that the increasing size of the entering immigrant cohort played some role in the earning of immigrants (as noted by a recent paper). However, there are many other factors that are collectively more important. The current evidence regarding immigrant economic outcomes provides little support for increasing immigration levels unless immigrant economic outcomes improve.

Regarding the educational mix of immigration, the current evidence points to maintaining a mix that is very heavily oriented towards the highly educated and skilled workers. For example:

[14] Projections of labour supply present fewer major difficulties, although the fact that labour supply is becoming global through off-shoring and international contracting out does complicate matters in some occupations.

- Most jobs in the future are expected to require a post-secondary education (university, college or highly-skilled trades)
- A labour surplus is expected in many lower skilled occupations
- In the longer run, highly educated immigrants earn much more than the less educated (high school) in Canada, even if their earnings are not much higher at entry, as has been the case in the 2000s
- Highly educated immigrants are more likely to contribute to a positive fiscal balance than the less educated, mainly because they pay higher taxes.
- The children of highly educated immigrants are more likely to be highly educated than their counterparts from less educated families, extending the advantages of higher education to the second generation.
- Arguably the high education level of immigrants is part of the reason for the lack of a significant deterioration in social cohesions and a negative response to immigration in Canada. More evidence is needed on this important issue.

However, there are two issues that require monitoring when the emphasis is placed on the highly educated. The first relates to potential constraints on productivity and output that stem from (perhaps short-run) occupational shortages in the trades or semi-skilled. The second issue relates to the effect on the wages of domestic workers. It is conceivable that even if the more highly educated immigrants are more economically successful in the longer run, there may be a point at which their levels start to suppress the wages of domestic workers, notably the highly educated.

The discussion to this point has focused largely on what the evidence tells us about the effect of immigration levels and the educational mix on economic goals. There are other humanitarian and nation-building objectives not covered in this paper. But there is one social objective that should not be ignored. Social cohesion, and the effect of immigration on it, requires continuous monitoring. This is one area in which Canada has had considerable success by international standards. There is little evidence suggesting that immigration has seriously weakened social cohesion in Canada, unlike the situation in many other countries. That said, rising ethnic diversity – which is driven mainly by immigration - is associated with falling trust levels and a decreased overall "sense of belonging", at least in the short run. And trust is a very important determinant of both social cohesion and the smooth functioning of business and civic transactions. The European experience suggests that if there is a significant anti-immigration reaction in a country, it may be driven more by the perceived problems related to culture, religion and social cohesion than by perceived economic issues associated with immigration. Canada has not faced such issues. In general Canadians do not perceive immigration as presenting serious difficulties in either the economic or social sphere. Assessing why this is the case, and ensuring that immigration policy, both the mix and levels dimensions, remains on a path to promote such outcomes is important. The characteristics (i.e. mix) of immigrants entering Canada are very different from those immigrants to European and the U.S. This may play a role in the differential reaction to immigration in Canada. Immigration policy regarding both mix and levels has the potential to significantly affect social cohesion, both positively and negatively. Canada is in somewhat uncharted waters, given the high (by international standards) immigration rate over a relatively long period. Unfortunately the major Canadian data sources available to monitor and understand the effect of immigration on social cohesion are dated. It may be time to conduct some variant of the earlier Ethnic Diversity Survey.

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