Macroeconomic Impacts of Canadian Immigration: Results from a Macro-Model

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ABSTRACT

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We use a macro-econometric forecasting model to simulate the impact on the Canadian economy of a hypothetical increase in immigration. Our simulations generally yield positive impacts on such factors as real GDP and GDP per capita, aggregate demand, investment, productivity, and government expenditures, taxes and especially net government balances, with essentially no impact on unemployment. This is generally buttressed by conclusions reached in the existing literature. Our analysis suggests that concern should be with respect to immigrants themselves as they are having an increasingly difficult time assimilating into the Canadian labour market, and new immigrants are increasingly falling into poverty.

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INTRODUCTION

Canada is a nation of immigrants. As such, it is not surprising that there is considerable interest in how immigrants fare in the Canadian labour market as well as the impact they have on the Canadian labour market and the macro economy in general. The latter dimension – the impact on the macro economy is the focus of this paper. The main outcomes of interest include: real GDP and GDP per capita; unemployment; aggregate demand and especially for housing; investment; productivity; and government expenditures, taxes and net government balances.

With respect to the dimension of how immigrants themselves fare in the Canadian labour market, the literature is in (unusual) virtual agreement that immigrants are having problems economically assimilating or integrating into the Canadian labour market in the sense of catching up to the earnings of domestic-born workers who otherwise have similar wage determining characteristics. Importantly, the problem is getting worse in the sense that the assimilation is slower for the more recent cohorts of immigrants who may never expect to fully catch up to the earnings of comparable domestic-born workers.[1]

In part for this reason, the proportion of recent immigrants (in Canada for 5 years or less) who were in poverty (defined as falling below the Statistics Canada Low-Income cutoff) increased from 24.6% in 1980 to 34.2% in 1985 to 31.3% in 1990 to an astonishing 47% in 1995, falling to 35.8% in 2000 and 36% by 2005 (Fleury 2007; Picot and Sweetman, 2005, p. 11; Picot, Lu and Hou 2010, p. 14). This increase in the poverty rate of immigrants was occurring at the same time as poverty rates for the non-immigrant population were generally falling.

Recent immigrants to Canada have also been identified as one of the five groups most likely to be in persistent poverty, defined as having a cumulative income of the economic family over the period that falls short of the cumulative amount of that family's post-transfer, post-income tax low-income cutoff. The percentage of each group that was likely to have persistent low-income over the period 1996-2001 was: unattached individuals age 45-64 (29.2%); disabled persons (26.1%); recent immigrants (25.6%); lone parents (21.8%); and Aboriginals living off-reserve (15.7%). These compared to an average of 3.4% for the non-risk groups (Hatfield 2004, p. 19).

This slower labour market assimilation and increasing poverty is a tinderbox that can ultimately disrupt into social discontent. This is the case especially since immigrants have expressed concern that they have been attracted into Canada by an immigration policy that gives points for skills and education but such credentials are often not recognized (Bauder 2003; Grant 2005b; Grant and Nadin 2007; Wald and Fang 2008 and Akbari and Aydede 2011 for immigrants with post-high school education).

The tinderbox of potential concerns on the part of immigrants from their lack of economic assimilation could turn into an inferno if it were also accompanied by negative reactions on the part of domestic-born Canadians if immigrants were having a negative impact on the labour market for domestic-born workers or on the macro-economy in general. The purpose of this paper is to examine whether there is such a negative effect.

The paper begins with a discussion of the theoretically expected impact of immigration on various dimensions of the domestic economy. The next section provides an illustrative review of the literature on the impact of immigration on labour markets and net fiscal balances involving the difference between expenditures and taxes. This is

followed by a description of the macro-econometric forecasting model used to estimate the effects of immigration on the macro-economy in terms of outcomes such as real GDP and GDP per capita, unemployment, aggregate demand and especially for housing, investment, productivity, and government expenditures, taxes and net government balances. The paper concludes with a summary and discussion of the policy implications.

EXPECTED IMPACT OF IMMIGRATION ON DOMESTIC ECONOMY

In theory, immigration can have a complex impact on various dimensions of the domestic labour market, including wages, employment, labour force participation and unemployment.[2]

The supply influx of immigrants can obviously lower domestic *wages* as they compete with domestic workers for jobs. This effect is likely to be greatest for domestic workers who are close substitutes for immigrants. As such, if the immigration is of low-skilled workers then the wages of low-skilled domestic workers should fall (in relative terms at least) and the wages of higher skilled workers may rise if they are complements to the less skilled workers. If the immigration is of high-skilled workers (as is generally the case in Canada), and if their skills are recognized and utilized, then the wages of high-skilled domestic workers should fall and the wages of lower skilled workers may rise if they are complements to the more skilled workers. To the extent that new immigrants are potential substitutes for immigrants who came into the country earlier, then the wages of the earlier immigrants are more likely to fall.

The effect on the *employment* of domestic-born workers will follow the same pattern as that of wages. That is domestic workers are more likely to be displaced if they

3

are close substitutes for immigrants while their employment may increase if they are complements. The magnitude of the employment adjustment will depend in part on the degree to which domestic wages are flexible. If they are inflexible (as is often the case in European labour markets and in the short-run) then the brunt of the adjustment will occur on employment. If wages are flexible (as is more often the case in North America and in the long run) then the employment adjustments will be smaller.

Adjustment may also occur in the form of *labour force participation.* Domestic workers who compete for jobs that immigrants would occupy may drop out of the labour force altogether if they feel their chances of obtaining a job are reduced (i.e., the discouraged worker effect). In contrast some family members may enter the labour force to sustain family income if they feel that the jobs of other family members are in jeopardy (i.e., the added worker effect).

Unemployment of domestic-born persons can also be affected depending upon how the previously discussed adjustments play out. The unemployment of domestic-born workers will increase if they are of the skill type that competes with the immigrants and if wages are not flexible. Any increase in unemployment in turn can place downward pressure on domestic wages.

Immigration, however, can be associated with many other factors that can offset these generally potentially negative effects (Sweetman 2005, Sweetman and Warman 2008). Because of their high skills due to the skills-based point system and increased importance of Provincial Nominee Programs in Canada, immigrants may break skill shortages and production bottlenecks and this can expand the job opportunities for domestic-born workers. Immigrants obviously also increase aggregate demand,

especially associated with housing but also with investment. The investment may come from immigrants themselves (especially the business class) as well as increased investment to take advantage of the complementary new immigrants. Over the long term, the impact of immigration on the industrial structure of regions can be substantial. For example, as noted by Richard Florida (2010, p. 58), the ability to attract international talent has "long been a defining characteristic of leading financial centers".

Importing people through immigration to domestically produce goods and services can be a substitute to importing such goods and services from other countries. It can also expand exports to the former source countries because of greater information flows and reduced transactions costs as immigrants are familiar with both their new host country and their former source country. In essence, immigration can foster increased productive economic activity with the former home country (Baker and Benjamin 1997, Globerman 1995, Kuhn and Wooton 1991 and Head and Ries 1998).

These positive effects of immigration can increase profits especially because of the associated demand increases and the increased supply of labour to work with the existing other inputs. The increased supply of labour can be particularly important to the extent that it reduces skill shortages and production bottlenecks. This can also keep down the prices of domestic goods and services, albeit the increase in housing demand can put upward pressure prices in that sector.

Clearly, basic theoretical considerations highlight that immigration can have positive or negative or offsetting effects on domestic labour markets as well as on other dimensions such as aggregate demand, investment and trade. As is so often the case, it is necessary to appeal to the empirical evidence to determine the impact.

The same applies to the expected impact of immigration on government fiscal balances (expenditures including transfers less taxes). At times when the ageing population is expected to impose a heavy fiscal burden through age-related programs like pensions and health care, immigration is often looked upon as a possible way to mitigate that burden. As with the impact of immigration on the domestic labour market, the impact on the fiscal burden is theoretically indeterminate. Immigrants will obviously use government services like education and health care, and they can receive transfers like employment insurance, social assistance and public pensions. But they obviously also pay taxes in various forms. Immigration can also alter the age distribution of the population in a way that yields relatively more taxes and fewer public expenditures.

As well, by adding to the population size, immigration can lower the cost of public services where economies of scale exist. Importantly, immigrants can also contribute to covering or spreading the cost of providing pure public goods the value of which is not diminished by additional users (e.g., national defense). In effect, immigrants contribute to the provision of pure public goods without any offset in their availability to others.

Given these various forces working in different directions, the impact of immigration on government fiscal balances will depend upon whether they will pay into the system more than they will take out. As will be illustrated later when the evidence is discussed, this will depend upon such factors as their age, education and skill level. Again, it is necessary to appeal to the empirical evidence.

EVIDENCE FROM LITERATURE ON IMPACT ON DOMESTIC ECONOMY

With respect to the impact of immigration on domestic labour markets, the international evidence is mixed although most studies tend to show little or no effect. Estimating the impact of immigration is difficult, however, since immigration is seldom exogenous; that is, immigrants likely come to countries and locations where the economy is growing. As well, immigration may induce an exit of domestic workers if they find their job opportunities are negatively affected by immigrants. Many of the studies in the literature, however, deal with these issues.

The most comprehensive review of the literature involves a meta-analysis of the international literature on the impact of immigration on domestic labour markets (Longhi, Nijkamp and Poot 2008). Their meta-analysis involved 45 studies that provided 1,572 effect sizes: 854 on the impact on wages; 500 on employment; 185 on unemployment; and 33 on labour force participation. Of the 1572 effect sizes 905 were from the U.S., 422 from eight European countries (Austria, France, Germany, Netherlands, Norway, Portugal, Spain and the UK); and 177 from three other countries (Australia, Canada and Israel). The effects from Canada were from three studies: Akbari and Devoretz (1992), Gross (2004) and Aydemir and Borjas (2007). All effects were measured by the common metric of the t-statistic. The impact on domestic workers is considered to be positive if the t-statistic is positive and statistically significant. It is considered to be negative if the t-statistic is negative and statistically significant, and it is inconclusive if the t-statistic is statistically insignificant. Four outcomes are utilized: wages, employment, labour force participation and unemployment. Their t-statistic on the unemployment measure is

reversed so that a positive coefficient is evidence of a positive or desirable effect on domestic-born workers.

Their meta-analysis results give rise to the following generalizations. Most (58%) of the estimates across the four outcomes are statistically insignificant implying *no effect*, about 25% show a statistically significant *negative* impact while about 17% show a statistically significant *positive* impact on domestic workers (p. 10). The biggest difference across the four different outcomes is with respect to unemployment where 82% showed no effect, 12% a negative effect and 6% a positive effect. This suggests that the adjustments that occurred in the other dimensions (e.g., wages and labour force participation) were such that unemployment was largely unaffected. The impacts are smaller in smaller geographic areas and local labour markets which are more open to other mechanisms of adjustment such as trade, internal migration and capital mobility so that domestic-born persons can "escape" potentially harmful effects through out-migration, capital inflows or additional local demand. The negative impacts are larger for previous immigrants who are likely to be substitutes for new immigrants. The negative impacts are smaller for high-skilled domestic-born workers since they are the least likely to be substitutes for immigrants who tend to be low-skilled in most countries. (As indicated subsequently, this is not the case for Canada where immigrants tend to be highly skilled in part because of the point system.) The extent to which the results are different depending upon the quality of the study is mixed. Negative effects tend to be less often found in studies considered to be of high quality because they have the advantage of using pooled data or they are recent studies and hence likely to use better data and methodologies or they are based on "natural experiments" involving exogenous

increases in immigration or other more rigorous methodologies. However, negative effects are slightly more often found in studies published in journal articles that have the quality control of peer review. They find no evidence that publication bias is important in this literature. Overall, Longhi, Nijkamp and Poot (2008, p. 24) conclude: "The impact of immigration on the labour market of the native born population is quantitatively very small." Specific studies of that literature are discussed in their article and in Dungan, Fang and Gunderson (2010) and in the references in this study.

The limited number of Canadian studies tend to find no negative effect of immigration on the domestic labour market (e.g., Akbari and Devoretz 1992, Grant 1998, Gross 2004, Marr and Siklos 1995 and Tu 2010). An exception is Aydemir and Borjas (2006) who find a negative effect over the period 1971-2001. Interestingly they find that immigration increases wage inequality in the US (because their emphasis on family re-unification implies less-skilled immigrants) but reduces it in Canada (because the skills-based emphasis implies high-skilled immigrants).

A small number of Canadian studies also examine the health status of immigrants and their usage of the health care system compared to Canadians (e.g., Chen et al. 1996, Laroche 2000, McDonald and Kennedy 2004 and Wen et. al. 1996). Those studies generally find that immigrants and non-immigrants are fairly similar in health status (if anything immigrants may be slightly more healthy) and in their use of the health care system. As stated by Laroche (2000 p. 69, 70): "Immigrants' and non-immigrants' health status and use of health care services are, overall, not significantly different… Canada's immigrant population is more or less as healthy as the average native-born Canadian and will use, on average, similar amounts of health services."

With respect to the receipt of transfer payments from such sources as unemployment insurance, welfare and housing subsidies, the Canadian evidence generally suggests that immigrants tend to access them less than, or at least no more than, persons born in Canada.[3] The evidence is mixed as to whether immigrants assimilate into using them more the longer they remain in Canada and whether more recent cohorts of immigrants tend to access such programs more often, although the more recent and comprehensive evidence suggests that these latter two effects do not occur. Not surprisingly, accessing of transfer programs by immigrants is higher for the less skilled and it varies by immigrant class in descending order from high to low usage being refugees, family class, assisted relatives, skilled workers and business class. Some recent evidence also suggests that immigrants disproportionately access programs that provide financial assistance to families with children given the prevalence of children and lower income among immigrants.

Immigrants not only access transfer payments and public services but they also contribute to taxes and they share in the cost of public goods while, by definition, not reducing their availability to others. As such, their impact on net fiscal balances (expenditures minus taxes) is ultimately an empirical proposition. The evidence for a wide range of countries is reviewed in Dungan, Fang and Gunderson (2010). Illustrative studies are discussed below.

Based on the methodology of inter-generational accounting, Collardo and Iturbe-Ormaetxe (2004) find that increased immigration would substantially improve the government fiscal balance in Spain, while more modest positive effects are found for Germany in Bonin et al. (2000). These positive effects for those countries largely reflect

their large portions of older persons who are associated with substantial pension and health care expenditures, and the smaller portions that are in the tax paying years of their life-cycle. Immigrants, in contrast, are more often in their tax paying years.

For New Zealand, Slack, Wu and Nana (2007) also estimate a positive net fiscal impact from immigration, with that positive impact trending upwards over time and increasing with the duration of residence of immigrants, in part because they move to higher paying occupations and therefore pay higher taxes and draw less on unemployment insurance or other transfers. Based on a Computable General Equilibrium model, the New Zealand Department of Labour (2009) also finds a net positive impact. The model also found other positive effects: reduced production costs; increased competitiveness that boosts exports; increased investment and consumer spending; and increased GDP and GDP per capita.

Kirdar (2010) estimates the net fiscal impact of immigrants to Germany when return migration is an endogenous choice and when account is taken of the select characteristics of return migrants. He finds large positive net fiscal impacts suggesting that other studies, none of which account for such return migration and its selection bias, substantially underestimate the positive net effects of immigrants on the net fiscal balance. This is so because return migrants contribute to the system when in Germany but do not receive substantial transfers associated with the pension system because they leave. Furthermore, return migrants are a select group in terms of having otherwise high unemployment rates whereby they would draw from the unemployment insurance system. Whether these generalizations for Germany, which has high return migration, would apply to other countries is an open and interesting question. They do suggest,

however, that the common practice of not accounting for return migration can underestimate the positive contribution of immigrants to the net fiscal balance.

For the U.S., Lee and Miller (2000), Smith and Edmonston (1996) and Storesletten (2000) also generally find positive effects on government balances with the effects greatest for immigrants who are young or middle-aged and higher skilled. Based on an inter-generational accounting methodology, Auerbach and Oreopoulos (2000) find the net effects of immigration for the U.S. fiscal balance to be fairly small, although it would improve that balance if there was a shift to more educated and skilled immigrants.

Based on Canadian data and a life-cycle model, Akbari (1989a, 1989b 1991, 1995) also finds that immigrants are generally associated with positively contributing to the net fiscal balance in Canada, and this applies to immigrants from third-world countries as well. Because they often enter in the tax-paying years of their life-cycle, immigration has often been touted as a potential source of funds to help pay for the looming future expenditures associated with pay-as-you-go systems like public pensions and health care – expenditures that will increase dramatically because of the ageing population. The Canadian evidence, however, suggests that immigration in any feasible amounts will not change the age structure of the Canadian population sufficiently to substantially mitigate such expenditures (e.g., Guillimette and Robson 2006, Sweetman and Warman (2008, p. 28).

THE FOCUS MACROECONOMETRIC MODEL

In their comprehensive meta-analysis Longhi, Nijkamp and Poot (2008, p. 1) state: "Economic theory alone cannot give a decisive answer about the expected impact

of immigration on the labour market. Careful empirical research is needed because an influx of migrants triggers a range of responses from local employers, housing and other markets, native-born and earlier-immigrant households, investors, the public sector, etc." At the end of their analysis, they further conclude (p. 25): "The present paper [their meta-analysis of the literature] has said nothing about the speed of adjustment of the labour market. The long-run impact, that also involves a change in the level of new investment, is likely to be quite different from the impact in the short-run. The effect of immigration on gross fixed capital formation is presently still an under-researched topic… Furthermore, we have also not considered the literature on the impact of immigration on prices… In addition it would be particularly fruitful for future research to shift attention to dynamic aspects of the labour market … Such study of the ways in which the 'churning' in the labour market and the productivity of firms are influenced by changes in immigration levels offers much promise for new primary research."

The purpose of the remainder of this paper is to follow the spirit of those suggestions by providing evidence of the impact of immigration on the Canadian economy. The main outcomes of interest include: real GDP and real GDP per capita; unemployment; aggregate demand (especially for housing); investment; productivity; and government expenditures, taxes and net government balances.

Our analysis is based on simulations with the FOCUS (Forecasting and User Simulation) model of the Canadian economy (Version FOC09A).[4] FOCUS is a medium-size model of the Canadian macroeconomy developed and maintained at the Policy and Economic Program within the Rotman School of Management at the University of Toronto. The model has been developed in the tradition of the Keynesian-Classical

synthesis; that is, markets (especially the labour market) can fail to clear for extended periods of time and most expectations are not fully "rational" in the sense of being formed with full knowledge of the model and of the present and future values of all exogenous variables. There are, however, some mechanisms in the FOCUS model for explicitly recognizing expectations and for permitting them to change relatively quickly in light of changes in, for example, the money supply or the exchange rate. While it has its own special properties, FOCUS can be viewed as representative of the class of multi-equation macro models often used to conduct macro policy analysis.

By current standards, FOCUS is of medium size, comprising over 700 variables, of which over 300 are determined within the model. Included are all the major macroeconomic variables of general interest, such as GDP and national income and their components, wages and prices, employment and unemployment, interest rates, international trade and capital flows, and the exchange rate. FOCUS has been especially designed for policy analysis and strategic analysis of long term developments. To this end it has been made congruent with current economic theory, and many policy levers and options have been built into the model's structure. For example, a user can specify one of a number of `targets' for monetary policy. FOCUS is a national model – there is no disaggregation by region or province within Canada, and the provincial and local government sectors are modeled in aggregate. The model only distinguishes the government and the aggregate private sectors – there is no disaggregation by industry. This has the benefit of keeping the model's size manageable and its properties comprehensible, but it does mean that we have been unable to determine immigration impacts on an industry-by-industry basis.

The FOCUS model has been used to develop both short-term and long-term forecasts for the Canadian economy since the early 1980s. It has also been used to analyse the impact of a wide range of policy innovations or other shocks to the Canadian economy – including federal government budgets, workers' compensation and other payroll taxes; the stabilization impacts of unemployment insurance, minimum wage changes; public pension reforms; harmonizing sales taxes; free trade agreements and alternative productivity growth paths.

To our knowledge, there have been no attempts in the last two decades to use a macro-econometric model to study the impact of immigration in Canada. Earlier macro models had been used to simulate the impact of immigration on unemployment, but they have generally been considered inadequate because they focused on the supply influx of labour without considering the associated demand increases (discussed in Swan 1991).

The technical issues, assumptions and related adjustments used to obtain the simulations are discussed in more detail in Dungan, Fang and Gunderson (2010). These required obtaining additional information related to the immigrants in such areas as: their labour force participation; the full-employment unemployment rate; expenditures on government services and infrastructure; government transfer expenditures at the federal, provincial and local levels; remittances and funds brought by immigrants; and the wages of immigrants relative to Canadian-born workers.

We model the impact of an increase of 100,000 *additional* immigrants per year above base-case levels, with the same increase occurring in each of the years 2012 through 2021. This figure is consistent with having total annual immigration equal to about one percent of the Canadian population (i.e., recent immigration of approximately

250,000 per year plus an additional 100,000 equals 350,000 or around 1% of the population). That figure has been mentioned as a long-term goal for Canada by the former Citizenship and Immigration Minister Elinor Kaplan and more recently re-iterated by the former Official Opposition Critic for Youth, Citizenship and Immigration, Justin Trudeau. The figure of 100,000 additional immigrants has also been used by Beach, Green and Worswick (2011) in their policy simulations.

Since the model tends to behave linearly at least within the range of reasonable size "shocks", then other impacts can be predicted in a straightforward fashion. For example, the impact of an alternative simulation involving only 50,000 additional immigrants each year would be approximately half of that of the additional 100,000 simulation, and an increase of 200,000 additional immigrants would be approximately double that of the additional 100,000 immigrants. While the results could be considered 'linear' for changes within these ranges, any larger changes in immigration in either direction would likely require further research into important additional effects – for example, the absorptive capacity of the economy for a large increase, or the impact of key labour-shortage bottlenecks for significant decreases in immigration from current levels.

The 100,000 per year are distributed by gender and individual ages using the average distribution of immigrants for the last three years available to us (that is, for the population periods covering July 1-June 30 for 2006-7, 2007-8 and 2008-9). The assumed additional immigrants are 'aged' each year, with the changes in total population, and in the source populations by gender and age that enter the FOCUS model all calculated in an external spreadsheet.

SIMULATION RESULTS

The results from the simulation are divided according to the following categories: economic growth and per capita income; labour market variables; financial variables; and fiscal impacts. Table 1 gives the results based on the realistic assumption that the ratio of immigrant/domestic wages reflects the ratio of their productivity reflecting the lower utilization of immigrant skills; Table 2 assumes (ideally) that new immigrants are paid and have the same marginal product as domestic or 'base-case' workers.

Economic Growth and Per Capita Income

As indicated in Table 1, real GDP increases by 2.3% by 2021, the end of the 10-year simulation period, but population increases by 2.6% because of the additional one million immigrants over the period, so that real GDP *per capita* falls slightly. This occurs largely because of assumptions we have incorporated (that are relaxed in the simulations of Table 2) reflecting the fact that immigrants are initially paid below the level of the domestic or 'base-case' workforce and recent cohorts only slowly assimilate into the labour market (based on evidence from the literature).

On a year-by-year basis, real per capita income first rises slightly above the base-case, then falls below it and then, by the last year, is still below the base-case but less so than in the middle years of the simulation. This rather complex pattern is the result of several processes. First, the initial surge in aggregate demand brought by new immigrants causes a temporary increase in productivity as the model's econometric employment equation shows a clear lag the in the response of employment to an increase

in production. That is, for a year or two after a demand surge, all else equal, some new labour is hired, but the existing work force also works more intensively, yielding a temporary increase in productivity (and therefore in GDP per capita). As this process fades (that is, employment catches up with output) then our assumed lower level of productivity for new immigrants takes full effect (and the number of new immigrants relative to the base case population is growing) so that a loss of average productivity and real GDP per capita is evident. However, at the same time there is an underlying build up of the capital stock that is occurring, and a shift in the components of demand, both of which increase the productivity of the domestic or base-case work force and of the new immigrant workforce. (It is impossible to say how much of this improvement goes to each group). By the tenth year of the simulation, real GDP per capita is still below base, but *less* below base than would be true if only the lower productivity level of new immigrants was all that was happening. (If we assume that none of the additional productivity improvement accrues to the new immigrant work force, then we can calculate that by 2021 GDP for the base-case population increases by $6.5 billion (2002 dollars) or that real per capita income of the base-case population has increased by 0.37% -- a far-from-negligible increase and considerable benefit to the existing population when the positive impacts on government balances discussed below are also added in.)

With respect to the components of GDP, the impact on personal consumption is slightly lower than that on overall GDP. The same is true for government current and capital expenditures, which we have assumed do not increase at the same per capita rate for additional immigrants as the overall per capita government expenditure in the economy in the base case. There is a pronounced surge in aggregate demand mainly in

housing, and, perhaps surprisingly, in non-residential and machinery-and-equipment investment. These last two are stimulated by the overall growth in the economy and by a positive impact on corporate profits, which tend to expand in advance of the overall economy. The economy generates additional new capital for the immigrants to work with by an almost automatic process, while of course the stimulus to provide additional housing is an important addition to aggregate demand. It is also the case in the Canadian economy that workers in the investment sector -- both residential and nonresidential -- are somewhat more productive, on average, than those in the consumer sector; therefore the shift to investment production that occurs because of additional immigration adds to overall economy wide productivity.

Labour Market Variables

Unemployment is not affected, reflecting the fact that immigrants increase aggregate demand for goods and services (especially housing) and this roughly offsets any increase in unemployment as they enter the labour market and search for employment. The initial increase in aggregate demand comes mainly from housing and consumption. In later years it also comes from an increase in non-residential and machinery-and-equipment investment, stimulated by various factors: the overall growth in the economy; the generation of new capital to work with the new immigrants; and the positive impact on corporate profits, which tend to expand in advance of the overall economy. Unfortunately it is not possible in the model to separate the impact on the unemployment of immigrants and non-immigrants.

Productivity for both domestic workers and new immigrants is increased because of the increase in investment relative to consumption and the fact that the average workers in the investment sector (residential and nonresidential) are somewhat more productive than those in the consumer sector. This effect partly, but only partly, offsets the assumed lower productivity of new immigrant workers as they are not placed on jobs commensurate with their skills.

Financial Variables

The Bank of Canada is assumed to respond to the immigration increase by maintaining (approximately) the base-case inflation path (which is set to the Bank's 2% inflation target). At the same time, however, the Bank must increase monetary aggregates, because the underlying potential growth path of the economy is increased by the additional immigration.

In the resulting simulation, the CPI inflation rate stays very close to base, falling slightly below it in the first two years of the simulation and rising very slightly above it in subsequent years. (Note that the lower earnings of new immigrants do not translate into potentially lower inflation in this scenario we have also assumed that these lower earnings reflect lower productivity reflecting the underutilization of their substantial skills – that is, unit labour costs do not change.) To obtain this inflation path, the Bank must adjust short-term interest rates – first slightly below base and then to a maximum of 30 basis points above base. Despite slightly higher interest rates, the opportunities for new investment in machinery and in new non-residential structures are such that these still increase considerably, as noted above.

The exchange rate is subject to mixed pressures: Immigrants' funds brought into Canada would otherwise appreciate the dollar, but as remittances build these are partly offset. There is also a surge in aggregate demand that increases on imports, and this is especially the case as machinery investment expands since the majority of such investment is imported. In the final years of the simulation the exchange rate is clearly, but modestly, depreciating (by about 2% relative to base) and there is a negative impact on the Current Account of the Balance of Payments in virtually every year of the simulation.

Fiscal Impacts

Governments' expenditures increase in response to new immigration but the increase in expenditures is less than the increase in taxes paid by immigrants for various reasons: the taxes are more immediate while many of the expenditures come later; there are economies of scale in the provision of government services; immigrants tend to enter in the tax paying years of their lifecycle.

Because taxes paid by immigrants exceed expenditures, immigration adds to overall government balances (i.e., by $14 billion in total and by roughly $8 billion at the federal level by the 10th year of the simulation). This represents a significant reserve against future needs or could perhaps be redeployed into additional social programs or tax cuts.

Alternative Simulations

As indicated previously, the model tends to behave linearly at least within the range of reasonable alternative assumptions about the magnitude of additional

immigration. As such, an alternative assumption of say 250,000 additional immigrants

would be predicted to have impacts about 2.5 times those based on our assumption of an

additional 100,000 immigrants. In spite of the fact that this would be pushing the limits

of a reasonable assumption of additional immigration since it would be doubling the

numbers that have been admitted over the last decade, an alternative simulation based on

an additional 250,000 immigrants yielded effects that were approximately 2.5 times those

of our simulation based on 100,000 immigrants (results available on request).

In an additional alternative simulation presented in Table 2, we assume that new

immigrants earn and contribute to GDP at the same rate as the base-case work force. The

purpose of this simulation is to indicate what gains could be had from integrating

immigrants more quickly and fully into the economy or selecting immigrants who can be

more quickly integrated. In this case, after 10 years, real GDP growth is greater than

population growth so that real GDP per capita increases. There is a greater net gain in

productivity from accumulation of new capital and the reorientation of output in the

economy to investment goods and to net exports. Government balances are $22 billion

higher than in the base case. Again, there is no negative impact on the unemployment rate

as the demand directly or indirectly associated with new immigrants meets their addition

to the potential supply capacity of the economy

CONCLUDING OBSERVATIONS

Our simulations indicate that additional immigration is likely to have a positive

impact on the Canadian labour market and economy in general. This is the case with

respect to such factors as real GDP and GDP per capita, aggregate demand, investment,

productivity, and government expenditures, taxes and especially net government balances, with essentially no impact on unemployment. This is generally buttressed by conclusions reached in the existing literature; however, that literature is by no means in agreement.

The real concern, however, is with respect to immigrants themselves in that they appear to be having an increasingly difficult time economically assimilating into the Canadian labour market, and new immigrants are increasingly falling into poverty. Furthermore, existing immigrants are likely to be adversely affected by expanding immigration since new and existing immigrants are likely substitutes. Improving the economic integration of immigrants into the Canadian labour market is likely to be beneficial not only for the immigrants themselves but also because such integration is also likely to enhance the generally positive impact that immigrants have on the Canadian economy.

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TABLES

Immigration + 100,000/year; *Using Census 2006 Wage Ratios for Immigration Wage/Productivity*

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Real Gross Domestic Product	0.43	0.87	0.89	0.79	0.92	1.21	1.40	1.61	2.00	2.29
Real Gross National Product	0.43	0.87	0.85	0.65	0.72	1.03	1.28	1.53	1.97	2.34
Expenditure on Personal Consumption	0.31	0.62	0.90	1.06	1.13	1.19	1.30	1.45	1.64	1.86
Expenditure by Governments	0.16	0.32	0.46	0.61	0.77	0.92	1.06	1.20	1.34	1.46
Investment Expenditure	1.21	2.45	2.20	1.56	2.02	3.17	3.71	3.86	4.40	4.70
Residential Construction	2.48	4.65	4.69	5.00	6.90	8.74	9.14	9.46	10.45	10.47
Non-Residential Construction	0.34	0.83	0.56	-0.04	0.02	0.65	1.10	1.34	1.77	2.12
Machinery and Equipment	0.50	1.48	1.08	-0.54	-1.06	0.10	1.11	1.13	1.44	2.15
Exports	0.02	0.08	0.10	0.04	-0.07	-0.13	-0.07	0.11	0.35	0.60
Imports	0.13	0.36	0.65	0.82	0.89	0.97	1.02	0.93	0.81	0.84
Gross Domestic Product	0.39	0.79	0.87	0.87	1.08	1.41	1.67	1.92	2.30	2.62
Implicit Deflator for GDP	-0.05	-0.08	-0.02	0.08	0.16	0.20	0.26	0.30	0.30	0.33
GDP Deflator - Inflation Rate *	-0.05	-0.04	0.06	0.11	0.08	0.05	0.06	0.04	0.00	0.03
Total Population ('000) *	100	200	300	400	500	600	700	800	900	1000
Total Population	0.29	0.57	0.84	1.11	1.37	1.63	1.87	2.12	2.35	2.59
Source Population ('000) *	79	159	241	324	409	495	582	670	761	852
Source Population	0.28	0.56	0.83	1.10	1.38	1.65	1.92	2.19	2.46	2.73
Unemployment Rate *	-0.06	-0.19	-0.18	-0.05	0.02	0.00	0.00	0.00	-0.05	-0.09
Employment	0.34	0.80	1.08	1.16	1.28	1.54	1.82	2.09	2.45	2.82
Labour Force	0.28	0.59	0.88	1.10	1.30	1.55	1.82	2.10	2.40	2.72
Participation Rate *	0.00	0.02	0.03	0.00	-0.05	-0.07	-0.07	-0.06	-0.04	-0.01
Finance Co. 90-Day Paper Rate *	-0.10	0.03	0.29	0.31	0.14	0.08	0.14	0.09	0.02	0.14
Industrial Bond Rate *	-0.10	0.03	0.30	0.32	0.15	0.08	0.15	0.10	0.02	0.14
Consumer Price Index	-0.05	-0.10	-0.07	0.02	0.07	0.10	0.14	0.17	0.17	0.18
CPI - Inflation Rate *	-0.05	-0.05	0.04	0.09	0.05	0.03	0.05	0.03	-0.01	0.02
Average Annual Wages and Salaries	-0.08	-0.08	-0.04	-0.03	-0.04	-0.07	-0.10	-0.14	-0.15	-0.12
Real Annual Wages per Employee	-0.02	0.02	0.02	-0.05	-0.11	-0.17	-0.24	-0.31	-0.31	-0.30
Productivity Change (GDP/Employee)	0.09	0.06	-0.19	-0.37	-0.36	-0.33	-0.42	-0.48	-0.46	-0.53
Exchange Rate (US $/Cdn $)	-0.12	-0.28	-0.05	0.27	0.37	0.10	-0.40	-1.05	-1.65	-2.02
Balance on Current Account ($ Mill) *	283	-1457	-3095	-4221	-5681	-7795	-9339	-8847	-7435	-6933
Consolidated Government Balance ($ Mill) *	2211	4662	5237	4768	5111	6395	7490	8924	11744	14313
Federal Gov't Balance (NA Basis) ($ Mill) *	1282	2591	2734	2399	2751	3706	4492	5458	7238	8804
Ratio: Federal Debt to GDP (%) *	-0.2	-0.4	-0.6	-0.7	-0.8	-1.0	-1.2	-1.4	-1.7	-2.0
Prov'l Gov't Balance (NA Basis) ($ Mill) *	811	1721	1986	1802	1748	1934	2067	2362	3127	3774
Ratio: Provincial Debt to GDP (%) *	-0.1	-0.3	-0.4	-0.4	-0.5	-0.7	-0.8	-0.9	-1.0	-1.2
Personal Savings Rate (%) *	0.0	0.0	-0.2	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
Nominal After-Tax Corporate Profits	2.1	3.1	1.9	1.0	2.2	4.1	5.0	5.7	7.1	7.6
Real Personal Disposable Income	0.2	0.5	0.7	0.8	0.8	0.8	0.9	1.0	1.2	1.4

(* Indicates change in levels; otherwise percentage change)

TABLE 2: FOCUS MODEL – Policy and Economic Analysis Program
Immigration + 100,000/year; *Variant assuming NO difference in Immigrant/Domestic Wage/Productivity*

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Real Gross Domestic Product	0.45	1.03	1.34	1.48	1.71	2.03	2.29	2.58	3.02	3.44
Real Gross National Product	0.45	1.05	1.37	1.49	1.70	2.05	2.36	2.70	3.24	3.77
Expenditure on Personal Consumption	0.33	0.68	1.05	1.38	1.64	1.87	2.08	2.29	2.53	2.82
Expenditure by Governments	0.17	0.33	0.48	0.63	0.78	0.93	1.07	1.21	1.35	1.48
Investment Expenditure	1.26	2.89	3.39	3.14	3.31	4.05	4.58	4.96	5.72	6.30
Residential Construction	2.55	5.30	6.20	6.53	7.70	9.13	9.72	10.36	11.52	11.87
Non-Residential Construction	0.36	1.07	1.26	0.94	0.82	1.11	1.41	1.66	2.13	2.57
Machinery and Equipment	0.54	1.87	2.40	1.70	1.24	1.91	2.79	3.18	3.93	5.02
Exports	0.02	0.14	0.30	0.45	0.54	0.62	0.72	0.91	1.18	1.50
Imports	0.13	0.30	0.51	0.65	0.74	0.85	0.95	0.92	0.83	0.84
Gross Domestic Product	0.43	0.94	1.24	1.40	1.64	1.96	2.22	2.48	2.86	3.20
Implicit Deflator for GDP	−0.03	−0.09	−0.10	−0.08	−0.07	−0.07	−0.07	−0.09	−0.16	−0.23
GDP Deflator – Inflation Rate *	−0.03	−0.06	−0.01	0.02	0.01	0.00	0.00	−0.02	−0.07	−0.07
Total Population ('000) *	100	200	300	400	500	600	700	800	900	1000
Total Population	0.29	0.57	0.84	1.11	1.37	1.63	1.87	2.12	2.35	2.59
Source Population ('000) *	79	159	241	324	409	495	582	670	761	852
Source Population	0.28	0.56	0.83	1.10	1.38	1.65	1.92	2.19	2.46	2.73
Unemployment Rate *	0.02	−0.10	−0.15	−0.11	−0.07	−0.05	−0.02	0.01	−0.03	−0.08
Employment	0.23	0.65	1.00	1.21	1.40	1.63	1.87	2.11	2.43	2.81
Labour Force	0.25	0.54	0.84	1.09	1.32	1.58	1.85	2.12	2.40	2.72
Participation Rate *	−0.02	−0.01	0.00	−0.01	−0.04	−0.05	−0.05	−0.05	−0.04	−0.01
Finance Co. 90-Day Paper Rate *	−0.12	−0.12	0.03	0.09	0.01	−0.05	−0.03	−0.11	−0.21	−0.15
Industrial Bond Rate *	−0.13	−0.12	0.03	0.09	0.01	−0.05	−0.03	−0.11	−0.22	−0.15
Consumer Price Index	−0.03	−0.11	−0.15	−0.15	−0.17	−0.20	−0.21	−0.25	−0.32	−0.40
CPI – Inflation Rate *	−0.03	−0.07	−0.04	−0.01	−0.02	−0.03	−0.02	−0.03	−0.08	−0.08
Average Annual Wages and Salaries	−0.02	−0.01	0.05	0.11	0.17	0.20	0.21	0.18	0.16	0.17
Real Annual Wages per Employee	0.01	0.10	0.20	0.27	0.34	0.40	0.42	0.43	0.49	0.57
Productivity Change (GDP/Employee)	0.22	0.37	0.32	0.26	0.30	0.38	0.40	0.44	0.56	0.60
Exchange Rate (US $/Cdn $)	−0.18	−0.68	−0.95	−1.05	−1.14	−1.37	−1.77	−2.38	−3.08	−3.65
Balance on Current Account ($ Mill) *	288	−1113	−1959	−1999	−2102	−2902	−3750	−3185	−1502	47
Consolidated Government Balance ($ Mill) *	2186	5186	7304	8551	9965	11866	13505	15497	18840	22460
Federal Gov't Balance (NA Basis) ($ Mill) *	1246	2886	3910	4439	5187	6290	7234	8403	10382	12442
Ratio: Federal Debt to GDP (%) *	−0.2	−0.5	−0.7	−0.9	−1.2	−1.5	−1.8	−2.1	−2.5	−2.9
Prov'l Gov't Balance (NA Basis) ($ Mill) *	836	1948	2773	3271	3723	4249	4651	5177	6145	7198
Ratio: Provincial Debt to GDP (%) *	−0.1	−0.3	−0.5	−0.6	−0.8	−1.0	−1.2	−1.4	−1.6	−1.9
Personal Savings Rate (%) *	0.0	0.0	0.0	−0.1	−0.2	−0.2	−0.2	−0.2	−0.1	−0.1
Nominal After-Tax Corporate Profits	2.1	3.8	3.4	2.6	2.8	3.7	4.2	4.8	6.0	6.6
Real Personal Disposable Income	0.3	0.6	0.9	1.2	1.4	1.6	1.8	2.0	2.3	2.6

(* Indicates change in levels; otherwise percentage change)

32

[1] Studies that document and/or review the literature on the declining economic position of immigrants into Canada include Beach, Green and Worswick (2011), Bloom and Gunderson (1991), Baker and Benjamin (1994), Bloom, Gunderson and Grenier (1995), Grant (1999), Frenette and Morisette (2003), Hum and Simpson (2004), Warman and Warswick (2004), Aydemir and Skuterud (2005), Picot and Sweetman (2005), Hiebert (2006), Reitz (2006, 2007a, 2007b), Zietsma (2007), Ferrer and Riddell (2008) and Tu (2010). Akbari (2011), however, highlights that these studies are based on national data. In recent years, policy makers have focused on achieving greater geographic distribution of immigrants and smaller provinces and rural areas are adopting initiatives to attract and retain immigrants with some success in terms of improvements in their economic performance.

[2] The theoretically expected impacts of immigration are set out, for example, in Benjamin, Gunderson, Lemieux and Riddell (2007, pp. 333-338), Berry and Soligo (1969), Borjas (1994, 1995, 1999), Coppel, Dumont and Visco (2001), Friedberg and Hunt (1995), Hatton and Williamson (1993), Simon (1999) and Smith and Edmonston (1977).

[3] Canadian studies in this area include Baker and Benjamin (1995a, 1995b), Crossley, McDonald and Worswick (2001), DeSilva (1997), Langlois and Dougherty (1997), Lui-Gurr (1995), Marr and Siklos (1999, 2001), Siklos and Marr (1998a, 1998b) and Ostrovsky (2012). More details on these studies and evidence for other countries is discussed in Duggan, Fang and Gunderson (2010).

[4] Detailed documentation for Focus version 09A can be obtained from the Policy and Economic Analysis Program, Rotman School of Management, University of Toronto. An earlier version of the model is fully documented in Dungan and Jump (1995). The model is updated, maintained and operated on the University of Toronto's CHASS computer system.