

Canadian Economics Research on Immigration Through the Lens of Theories of Justice

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August 2, 2017

We would like to thank an anonymous referee for helpful suggestions and Michelle Laing for research assistance.

Abstract

We assess the current state of knowledge in the economics of immigration and consider how economic theories of knowledge can be used to further the goal of developing a just immigration policy. In the process, we highlight the contributions of economists working in Canada and Canadian economists internationally in furthering our understanding of this important research area. We identify research gaps such as the need for more research on the underlying causes of the poor returns to foreign work experience for immigrants from non-traditional source countries and the effect of immigrants on stimulating innovation. More research is also needed on the implications of temporary foreign worker (TFW) programs and the growing importance of employers in immigrant selection systems.

Key Words: immigration, wages, justice, discrimination, gender, family, second generation.

JEL Class.: J24, J30, J31, J61, J71, D63

1 Introduction

Perhaps no other policy is so evidently tied to nation building as immigration. This is particularly true for Canada - an immigrant nation that has been defined by the interactions of immigrants with the indigenous people who were here before them, by the effect of immigration in permitting the exploitation of our vast natural resources, by the impact of educated immigration on defining and building our human capital stock, and by its implications for turning Canada into an increasingly ethnically diverse society. With such a profound influence on our society and our economy, the salient question in this policy area must surely be, what set of immigration policies would be most helpful in making Canada a more just society? Our goal in this review is to examine the substantial economics literature on immigration and the effects of immigration policy in search of evidence that can inform discussions about that question. Our focus will primarily be on papers about Canada and/or written by Canadians but, being Canadian, we recognize that we are not the only or even necessarily the best people working on these questions and we will make use of evidence from other parts of the world where needed. One goal of the paper will be to point out where there are gaps in knowledge about the effects of Canadian immigration.

Amartya Sen argues for an assessment of society's institutions and policies based on the pragmatic question of whether a given institution or policy increases the justness of a society, as opposed to comparing them to what he calls transcendental theories (Sen (2009)). The latter comparison would involve asking, in our context, what is the most just set of institutions and policies related to immigration. We have purposefully phrased our question in Sen's pragmatic tradition since we think there is at least some hope of consensus about a direction for improvement even among people who prefer different transcendental theories. In essence, we are like a group of people in Alberta's foothills setting out on a mountain climbing expedition. We may disagree on which is the highest and best mountain to climb but we can agree on which direction is up toward the mountains. Determining the direction up and taking steps in that direction seems like a worthy initial goal. In doing that, context matters. One key way that questions of justice interact with the economy is through the roles that people are assigned in the productive system. Whether one gets a job, and the wage and working conditions of that job, are key determinants of social and self respect that themselves play a key role in nearly all liberal theories of justice. That means that to determine how to adjust institutions or policies to improve justice we need to understand how jobs and wages are assigned. In the case of our specific question, we need to know what jobs immigrants get, what wages they are paid, whether they are able to implement their skills, whether they are treated with respect in the job market, and how the presence of

immigrants affects those same outcomes for those who have arrived before them. ¹

The other main context we need is the form of immigration policies and other policies and institutions that affect immigrants and mediate their impact on residents. If we are to figure out the direction up hill, we need to know where we are now and what directions have already been tried. In addition, the empirical work in this area often refers to specific policy effects and so one needs to have some understanding of past and current policy to assess that work. For those reasons, we start the paper with a description of historical immigration policy in Canada. A key feature of immigration policy in Canada and elsewhere is a tension between using immigration to try to meet short term demand (often described by non-economists as filling labour and skill gaps in the economy) and using it for longer term structural goals such as building the overall skill level of the workforce. At different times in our policy history, one or the other of these goals has dominated - though both are typically always at play to some extent. We will target much of our discussion at the specific question of whether it is better to focus on short versus long term goals (again, with our notion of better being ultimately about improvements in the justness of Canadian society).

A key element of considerations about the role of immigration in creating a more just society is understanding how immigrants themselves fare in the receiving economy. A society that uses immigrants as a source of labour to the benefit of the residents but does so in a way that disregards the well-being and freedoms of the immigrants themselves will almost certainly be judged to be a less than just society. This will lead us into a discussion of what is sometimes called immigrant assimilation - how immigrants fare in terms of their earnings, employment and skills acquisition with time in the economy. Considering those outcomes forces us to think about credentials that immigrants have when they arrive and their ability to translate those to skills that are valued in the Canadian context. We will want to know how these patterns are mediated by factors such as education, country of origin, and language ability since those may be targets of immigration policy, and also whether any difficulties arise because of racial or ethnic discrimination rather than skills deficits. That information relates directly to questions of justice and how to improve it. For example, if the immigrant adjustment mechanism is one in which women are expected to give up their goals to promote those of their husbands, that is an important piece of information.

Under most liberal theories of justice, the justness of a society will be partly (though only partly) related to its material well-being and how that is distributed. Thus, a key question we will want to ask is how immigration affects economic growth and whether it

¹For the rest of this paper we will refer to the prior arrivals as residents since referring to them as the native born, as is standard in the literature, leaves out previously arrived immigrants. In places, however, native born more accurately reflects the relevant grouping in the data and in those instances we will use that label.

helps or harms the least well-off in society. We take up these questions in the fifth section of the paper. The conclusions from studying the outcomes for immigrants themselves are important for this discussion because we need to know the true (as opposed to the nominal) skill composition of the immigrant inflow in order to understand its impact on residents.

It is worth pointing out at the outset three (of possibly many) senses in which our discussion is narrow. First, our focus is on the relationship of immigration to the creation of a more just society in a receiving country (Canada, in particular). This leaves aside issues of justice related to how Canadian immigration affects the sending countries. Second, we only briefly discuss the important questions related to refugees and the balance between our moral obligations and any costs of taking in refugees. A complete discussion of the justness of a receiving country would include both these considerations but in both cases we are hampered by a relative paucity of related economic research. These are just the first of many points at which we will indicate a need for more research. The third sense in which we are narrow is that the notions of justice we will raise are all from the Western, liberal tradition. This is a reflection of our own limitations not of any notion that this is the only lens through which to view justice. Hopefully, our discussion of results from the economics literature will be of value for those who view questions of justice in the context of other traditions.

The paper proceeds in six sections, including the introduction. In the second section, we provide a brief description of Canadian immigration policy. In the third section, we present a rudimentary discussion of the inter-relationship between immigration and theories of justice. In the fourth section, we provide an extended discussion of studies of immigrant outcomes, and in the fifth section, we examine the impact of immigration on residents. The sixth section contains conclusions. As we will see as we progress through our discussion, Canadians have made considerable contributions to understanding the immigrant experience and the impact of immigration on receiving economies. Moreover, quite a number of their important contributions have been published in the *Canadian Journal of Economics*.

2 Canadian Economic Immigration: Historical Policy Context

Immigration policy has played a fundamental role in the formation of Canada from the outset of European settlement and colonization here. In Harold Innis's formulation of the Staple Thesis, immigration was complementary to and determined by the nature of the dominant staple good at each stage. In the early stages, defined by fishing and fur trading, Innis argues that immigration and settlement policy was focused on the goal of

establishing military outposts to guard the staples routes. The shifts toward timber followed by wheat and extractive resources, however, required much more complementary labour and, in consequence, an immigration policy to bring in that labour (Innis (1956)). This is most evident in the National Policy of Sir John A. MacDonald but continued through the importation of labour for the Western economy in the 1920s and for manufacturing and extractive resources in the 1950s (Green (1976)). The immigration policy that developed to control these flows had a set of defining characteristics. First, it took as its goal the development and growth of the Canadian economy, with humanitarian and other goals viewed largely as secondary. Second, it was overtly racist in nature, with a set of 'preferred' source countries from which immigration was relatively easy and a set of 'non-preferred' countries, from some of which migration to Canada was virtually impossible. Third, it embodied an inherent tension between longer term goals such as simply expanding the population of the country and shorter term goals of meeting specific occupational targets and adjusting to the 'absorptive capacity' of the economy during recessions and booms (see Green and Green (1999) and Green and Worswick (2004)). By the late 1950s, the short and long term goals were in conflict as substantial inflows of unskilled immigrants arrived at the same time as a recession and a growing desire to move toward a more skill based economy (Green (1976)).

In the early 1960s, the Canadian government employed the powers to shape immigration that it had given itself over previous decades to undertake a fundamental shift toward selecting a more skilled inflow. However, the previously 'preferred' countries could not provide enough highly educated immigrants for Canada on their own and so the shift necessitated an official abandonment of the discriminatory element of Canadian immigration policy. This shift began with policy changes in 1962 and culminated with the introduction of the point system in 1967. From that point forward, immigrant selection was to be based on objective criteria related to skills, family reunification, or humanitarian concerns - not race (Green (1995)). The system established in 1967 was based on defining three broad categories of immigrants: 1) the family class (immigrants sponsored by family already in Canada); 2) the economic class; and 3) humanitarian immigrants (refugees). While the method of choosing immigrants has varied considerably over the ensuing decades, this basic three group structure has persisted. A key innovation at that time was the introduction of the point system under which the applicant was assessed points based on his/her personal characteristics and was admitted if those characteristics garnered enough points to clear a pre-defined threshold. Characteristics such as age, education, intended occupation, official language fluency and having an approved job offer have all been factors which were associated with different numbers of points under the point system at times since 1967.²

²See Green and Green (1995) and Beach et al. (2011) for detailed descriptions of the history of the Canadian point system of immigration.

The weight placed on different characteristics has varied substantially over time. Through the 1970s and 1980s, a great deal of weight was placed on intended occupation under the point system, meaning that the immigrants were seen as filling gaps in the supply of certain types of workers in Canada that were identified using an occupational projection system. This approach fell out of favour by the early 1990s in part because of the inaccuracy of occupational projections. In response, weight in the point system was shifted toward education and experience. This was a victory for the long term goal approach and coincided with a move to maintain immigration at relatively constant levels regardless of the state of the Canadian labour market. It also resulted a sharp increase in the number of principal applicants landing in the Skilled Worker category having university degrees.³ This change was complemented by the introduction of credential equivalency assessments (through the Foreign Credential Referral Office beginning in 2007) and formal language testing for Skilled Worker principal applicants (beginning in 2010). We have not seen evaluations for these changes to determine if they had an effect on immigrant earnings.

The increased emphasis on education which began in the early 1990s was further reinforced with the introduction of the Immigrant and Refugee Protection Act (IRPA) in 2002 which removed occupational restrictions. This allowed the intake of immigrants under the Skilled Worker category to be driven almost entirely by characteristics thought to be positively correlated with human capital, such as education, age and language fluency. However, this emphasis on long-term, human capital goals began to be reversed with the twin events of the onset of the resource boom and the election of the first Harper government in 2004. The combination of rising demand for labour in the West in particular and a government which placed greater emphasis on business goals led to a shift back toward an immigration policy focused on short term, ‘gap filling’ goals.⁴ The shift was profound and was embodied in three main components of the overall immigration system: changes in the federal immigrant selection system; the rise of provincial control over immigration policy; and the substantial expansion in the Temporary Foreign Worker (TFW) inflow.

The changes in the federal selection system were reflected, in part, in the introduction of BILL C-50 in April 2008 which allowed for the Minister to issue instructions limiting the admission of immigrants intending to work in certain occupations. This shifted the federal intake of economic immigrants away from the pure human capital motivation of IRPA and led to a series of small changes intended to target certain occupations defined as embodying skill gaps in the Canadian economy. Also introduced in 2008, was the Canadian Experience

³The Skilled Worker category is a subset of the Economic class. The Principal Applicants (PA) under the Skilled Worker category are the group of immigrants assessed under the points system.

⁴Arguably this trend started with the introduction in 1998 of the Provincial Nominee Program, described in detail below.

Class (CEC) which allowed for a separate entry stream for applicants with proficiency in either English or French and either two or more years of work experience in Canada or two or more years of post-secondary education acquired in Canada. More recently, the structure of the selection system was fundamentally changed with the adoption of the Express Entry system for the economic class. This system is based on an Expression of Interest (EOI) approach previously implemented in New Zealand and Australia. Under this approach, an applicant first registers an EOI which is done easily on-line and involves an assessment of the applicant's stated characteristics. As in the original point system, the applicant is awarded points based on characteristics but in this case, having enough points to exceed a pre-defined threshold does not guarantee the applicant entry. Instead, it puts her or him in a pool for a year. Approximately every two weeks, the top people ranked by points are given entry. Importantly, the points for selection from that pool have included a substantial number of points for having arranged employment - so substantial, in fact, that having arranged employment alone was enough to obtain entry in the first versions of the system. This implied that skills screening may have suffered since it effectively shifted the distribution of entrants from a random set who exceeded the points threshold to one that could be dominated by firms seeking to hire from the low end of the distribution. Indeed, one of the examples cited by the government to justify reforms of the Express Entry system was that there were too many fast food cooks gaining entry because they had arranged jobs even though their skill level as it would be assessed under the points system was low. Nonetheless, the Express Entry system does have the advantage of eliminating backlogs and helping firms find workers.

Roughly coincident with these changes at the federal level has been a shift in the role of provinces in immigrant selection. Throughout most of Canada's history, immigration has been a federal policy domain (as one would expect given the right of immigrants to migrate freely within Canada). However, the 1978 Cullen-Couture agreement gave Quebec the capacity to influence the size and composition of economic immigrants landing within its borders ([Parent and Worswick \(2004\)](#).) The 1991 Canada-Quebec agreement extended this role for Quebec and led to Quebec's parallel system for selecting economic immigrants. While the federal and Quebec systems have historically shared many features, a key difference is the large emphasis placed on French language fluency of new immigrants within the Quebec system.

Following Quebec's lead, the other provinces soon became interested in having their own influence on the selection of immigrants arriving within their borders. To facilitate this, the federal government and the provinces (and territories) have established Provincial Nominee (PN) programs beginning in 1998 ([Baglay \(2012\)](#)). There currently are 11 Provincial Nominee (PN) programs supporting provinces and territories. In each PN programme,

applicants apply under streams set out by the province and are nominated by the province to take one of a set number of spots allocated to the PN programme for that province. Those streams tend to emphasize perceived shortages in local businesses and, for that reason, the PN programme as typically used is another element of the shift toward greater emphasis on shorter term job placement over longer term skills assessment.

The third major change in immigration policy has been the expansion of the TFW component. Canada has always had a TFW element to its immigration policy, covering everything from nannies to seasonal agriculture workers to entertainers and skilled technicians. But in the mid-2000's both the size and scope of the system changed. In fact, by 2011 the annual TFW inflow (190,000) was similar in size to the annual permanent inflow (249,000). Moreover, the expansion was targeted at filling perceived labour shortages of all types in the West in particular. By 2007, the TFW programme included a low skilled stream that even allowed fast tracking of fast food restaurant counter workers in what were claimed to be high labour demand areas. This part of the TFW inflow was scaled back at the end of the Conservative government but is seemingly being revived to some extent in recent policy.

In summary, Canada has a rich immigration history with a number of important policy developments that have kept Canada and its high quality micro data in the immigration research spotlight internationally. In the ensuing sections of the paper, we review many of the key studies by economists that attempt to understand the economic performance of immigrants in Canada and their impact on other workers, taking into account the dynamic policy context that has existed in Canada since the 1960s. But, first, we will try to place those discussions in a wider context.

3 Immigration and Theories of Justice

At the outset of this paper, we argued that the ultimate measure for any policy is its impact on improving the justice of the society.⁵ As we saw in the previous section, Canada has used immigration policy in very different forms over the course of its existence and it seems to us hard to avoid thinking about issues of distributive justice alongside considering the economic impacts of these policies. This is most evident in the explicitly racist approach to immigration prior to 1962. Most Canadians now see those policies as unjust - selecting immigrants on the basis of a characteristic to which we should, in justice, be blind. But that immediately raises questions about other restrictions we place on immigration. Do we have a

⁵Recall that we take the admittedly narrow perspective of focusing on the justice of the receiving society rather than of the global community.

case, in justice, for restricting inflows by skill level because it benefits residents even if that is the least beneficial approach for other people in the world? Is the recent policy shift toward greater emphasis on allowing migrants in only temporarily one that can be defended under theories of justice? These questions lead to the biggest question of all: do the residents of a prosperous country have a right under justice to restrict immigration?

We believe that many economists would read a list of questions such as these and see them as potentially interesting but outside of their purview as economists. This outlook is potentially rooted in an appeal to the First and Second Welfare Theorems. Under those theorems, society determines a distributive goal and it is our task as economists to determine the set of transfers and market-failure correcting taxes to get us to that goal. Charles Blackorby in his 1990 Innis Lecture described this outlook as economists seeing ourselves as the equivalent of bus mechanics with someone else determining how fast the bus will go, where it will go, and who will sit where on the bus. But he also pointed out that in a second best world - where the assumptions underlying the Welfare Theorems do not hold - the clean dichotomy between goals such as justice and policy effects on the functioning of the economy cannot be maintained ([Blackorby \(1990\)](#)). Immigration policy is a prime case in point. Obviously, the underlying assumption of stable preferences cannot be maintained when the policy we are considering is one which adds extra people to the economy. Alternatively, if we bring in workers temporarily (so they are not added to the collection of preferences on which policy decisions are based), but do not provide them with protections from exploitation, then we will affect notions of mutual respect among those working in the economy that will reflect on the justice of the society in ways that cannot be separated from the economic impacts of those workers.

To us, the implication of the failure of the assumptions underlying the Welfare Theorems is not that all economists should become philosophers and certainly not that we should become post-modernists who treat all policy impacts as relative. Rather, we think that we should - at least from time to time - put our questions about the economy in the broader context of distributive justice and ask whether that changes the evidence we seek to gather in order to contribute to the overall debate on how to construct a more just society. Moreover, from our vantage point, economic arguments seem to hold a heavy weight in policy discussions, and economists have an effect on the debate if we do not mention issues of justice in our contributions. Of course, there is no single theory of justice to which we can all appeal, nor should there be. Because of this, the contribution of economists may involve setting out options rather than making single prescriptions. In terms of the bus analogy, it involves not just fixing how the bus runs but making clear that the way it runs will interact with broader goals about its destination and speed. In any case, as we will see, many economists often take this approach already (at least implicitly), and many of the questions raised by theories

of justice are ones that we are already studying.

What, then, can we learn from the study of immigration by economists (and particularly Canadian economists) about the role of immigration in constructing a more just society? In answering this, we first need to grapple with the question of whether it is inherently unjust for a prosperous country to restrict immigration. One can divide opinions on this question into two broad camps - the cosmopolitan camp that believes that the correct level of consideration is one that incorporates all the people in the world with equal weight, and a communitarian camp that puts greater weight on the people resident in a country (Canada, in our case). Theories of justice can provide guidance in considering these positions but are far from pointing to a definitive conclusion. Indeed, contrary positions are possible even within the same theory. People taking a libertarian perspective, for example, often argue for unrestricted immigration based on the notion that restrictions of freedom of movement are inherently unjust. However, a libertarian might equally argue the opposite position. For Robert Nozick, if a position is reached from a combination of just acquisitions and just transfers, there is no argument in justice for redistribution (Nozick (1974)). For immigration, if a set of people constructed a prosperous society through just acquisitions and transfers, people from outside that society would not have a right to enter it. People from outside the society would always have the right to make offers that would involve citizenship in exchange for something but the residents of the prosperous society are under no obligation to accept those offers. In Canada's case, of course, this raises important questions about the interaction of indigenous rights and immigration that are beyond our purview in this paper (again, because we know of no related economic research).

The possibility of reaching contrary conclusions is particularly evident under the predominant theory of justice created in the 20th Century: John Rawls' theory of justice as fairness. Rawls, famously, develops a thought experiment which he sees as emphasizing the key characteristics of justice as fairness when considering the form of just institutions for a society. In the thought experiment, a set of rational citizens consider the form they want for the institutions for their society behind a veil of ignorance where none of them knows anything about the role they will occupy in the society governed by those institutions. Rawls argues that these citizens will choose institutions that are to the benefit of the least well-off person, allowing inequality only to the extent it generates incentives that yield actions that benefit that person. Putting deliberations behind the veil of ignorance emphasizes the fundamental equality of people, including the notion that true justice will ignore claims based on advantages and positions within society's constructs.

It seems intuitive that one part of the ignorance in the deliberations behind the veil would be about what country a person will live in, and several philosophers have adopted

that outlook. Entertaining the possibility that any one of us could have been born into a poor or a rich society emphasizes the fundamental equality of all people. This is very similar to the stance taken in the UN's recent New York Declaration for Refugees and Migrants, which is built on the declaration that "all human beings are born free and equal in dignity and rights" ([United Nations General Assembly \(2016\)](#)). The commitments within the declaration are then targeted at all nations and people, striving to "reach the furthest behind first" - a very Rawlsian statement, even if not built explicitly within his framework.

Interestingly, though, [Rawls \(1993\)](#) himself in his *The Law of Peoples*, argues for a different conclusion. In particular, he argues that citizens of self-governing entities have strong moral obligations to one another - obligations of mutual concern, respect and justification of our actions. These form the basis of social justice and make possible the mutually supported institutions that are required for a just society. In this, communitarian, line of thought these mutual obligations cannot reasonably be expected to exist on a global level. Rawls, quoting Kant, argues that a world government is bound to descend into tyranny and into fractured fighting as different regions seek to promote their ends ([Rawls \(1993\)](#)). That is, the world will break up into more natural agglomerations - perhaps ones at which common cultures that reinforce mutual obligations and respect arise. Thus, Rawls argument is a pragmatic one that fits with Hume's notion of justice as being naturally and ultimately useful. While it seems natural to think about having people from the whole world deliberating together behind the veil when determining just institutions and that the primary institution (the nation state) seems morally arbitrary from this vantage point, for Rawls it is simply not possible to construct and maintain the institutions needed for social justice on a global level.

In a situation where there are disputes even within theories, economic reasoning and empirical evidence may be useful in helping make effective policy. Within the Libertarian context, for example, deliberations about whether to allow immigration is difficult because of uncertainty about what is being offered, particularly in the presence of potential general equilibrium effects. It is one thing for individual residents to decide whether to make transactions with migrants (such as renting out an apartment) at existing prices but quite another to decide whether to welcome migrants if their arrival could change the prices in a detrimental fashion. Those general equilibrium considerations seem not to enter the discussions of libertarian philosophers but they should and, of course, it is one way in which economists are particularly suited to contribute to the debate. In a different context, Rawls' own position on migration is based on the argument that people have difficulty forming relationships that form the basis of just interactions with too broad a group. Canadian political scientists and philosophers have been at the forefront of studying the impact of ethnic diversity on support for social programmes in a society ([Banting \(2010\)](#)). The

evidence emerging from this literature is mixed. Several international studies find that voter support for social programmes aiding the poor is notably weaker in countries where immigration increases ethnic diversity. But, interestingly, the Canadian evidence is that increased diversity has had no effect on either poll responses about support for social transfers or on actual spending on transfers (Banting et al. (2006), and Green and Riddell (2017)). This may suggest Rawls' concerns are not wholly warranted (at least in the Canadian case), opening the possibility of justification for more open borders. This is an area where there is potential for more contributions from economists. Canada is home to a set of very good political economists but very little work on political economy questions about Canada itself.

4 Research on Immigrant Labour Market Outcomes with a Focus on Canada

The two key considerations in thinking about immigration and justice are outcomes for immigrants themselves and their impacts on others. We will start with the immigrants themselves. We are interested in the immigrant experience both because how a society treats newcomers (especially, newcomers that make up a fifth of the population) is a key element in judgements on its justice and because we will want to know whether immigrants are able to translate their skills to the host economy when trying to evaluate their impacts on others.

4.1 A Framework for Considering Immigrant Outcomes

In order to discuss immigrant outcomes in Canada, we will work with a version of the framework we set out in Green and Worswick (2012). In particular, we will consider a Mincer type human capital investment model with people indexed by: source country (k); year of arrival (c) - which we will discuss as indexing their cohort; age at arrival (a); and completed schooling level (s). We will represent the native born as being from source country, $k = 0$, with arrival age, $a=0$. We will return to the question of cohorts for the native born later but, for the moment, will act as if there is no such concept for them. Individuals start their working life in Canada with an amount of initial human capital, $e^{H_{cka}^s}$. The initial human capital is a combination of schooling, training, and work experience, and, importantly, we think of this as effective human capital rather than just observed human capital. So, a person with a PhD who is driving a taxi in Canada is not counted as having high effective human capital. The combination of indexes allows for the possibility that a given observed level of human capital translates into different effective levels depending on source country

and cohort of arrival. Also, whether age of arrival is before school completion, so that the person's highest degree is Canadian can also matter. Further, we define human capital very broadly to include the earnings capacity derived from all skills and abilities. Given that, we can write $H_{cka}^s = H_{cka}^{s0} + \mu_{cka}^s$, where H_{cka}^{s0} is human capital derived from investments and μ_{cka}^s is average ability for people in the given entry cohort, school, age at arrival, and source country combination. The average ability reflects both selectivity into different schooling levels and selectivity associated with the choice to migrate.

Following [Mincer \(1974\)](#), we can adopt a reduced form version of more complete human capital investment models by representing human capital investment decisions in Canada as a declining linear function of time in the labour market:

$$I(x_C) = \gamma_0 - \gamma_1 x_C \quad (1)$$

where, $I(x_C)$ is the proportion of time in a year that a person spends investing in Canada at x_C years in the Canadian labour market, and γ_0 and γ_1 are parameters chosen by the individual. For immigrants who completed their schooling abroad, $x_C = t - c$, where t is the current year. For residents who completed their schooling in Canada, x_C equals current age minus s minus 5. We assume that human capital generated is proportional to time spent investing with a proportionality factor, ρ . Then, following [Mincer \(1974\)](#), we arrive at a log earnings expression given by:

$$\ln y_{ckai}^{st} = H_{cka}^{s0} + \mu_{cka}^s - \gamma_0 + \ln R_{st} + (\rho\gamma_0 - \gamma_1)x - 0.5\rho\gamma_1 x^2 + \epsilon_i \quad (2)$$

where, R_{st} is the price of a unit of human capital in year t , and we have taken account of the fact that observed earnings depend on the proportion of time spent not investing. In general, we would expect that γ_0 and γ_1 should have subscripts corresponding to source country, age at arrival, and entry cohort since investment strategies will vary with these dimensions. For example, as [Duleep and Regets \(2002\)](#) point out, if human capital production is complementary in initial human capital and time investing then source country/entry cohort entry groups that have difficulty translating their initial human capital into the Canadian labour market but can use it in new human capital production will have high values of γ_0 and, as a result, Canadian earnings profiles with low entry values and high slopes.

A key implication from this framework is that nominal skill levels at the time of arrival for immigrants are not the relevant concept when considering immigration and human capital. Instead, we will want to study earnings patterns because they capture the effective implementation of human capital. In addition, earnings just after arrival (a common point of focus) are not sufficient because low earnings at that point could reflect time spent investing, with subsequent pay-offs. Thus, we are ultimately interested in the whole earnings profile.

This is true, in part, because realization of potential through investing in skills is, in itself, valuable, as emphasized in Sen’s theory of capabilities and functionings. Thus, in considering the justice of immigration, we want to consider whether immigrants are able to translate their skills to the Canadian labour market both at time of arrival and through investments afterwards. A just immigration policy would provide a clear representation of difficulties in translating skills to prospective immigrants and help them in realizing their potential after arrival even (possibly) if it is not efficient to promote human capital investment for them. Formulating such a policy requires information on earnings profiles but also on post-arrival investment patterns. As we will see, we have good information on the former but much less on the latter.

We are also interested in immigrant earnings patterns because of their implications for impacts on residents. As the model demonstrates, those earnings patterns provide insight into the amount of effective human capital brought into the economy by immigrants rather than the nominal amount listed when they arrive. That is, Canada’s immigrant selection system may look like it results in largely skilled inflows but the earnings evidence may be otherwise. We will return to the question of immigrant impacts on residents in section 5, but we need to know what effective skills immigrants are bringing into the economy as a key input to that discussion.

4.2 Immigrant Earnings Assimilation

The first attempts to investigate immigrant earnings followed [Chiswick \(1978\)](#), working with cross-sectional data. The empirical specification was captured in a regression given by:

$$\ln y_{ckai}^{st} = \beta_0 + \beta_1 s_i + \beta_2 x_{it} + \beta_3 x_{it}^2 + \beta_4 DIMIG_i + \beta_5 DIMIG_i \cdot x_{Cit} \quad (3)$$

where, x_{it} is the total amount of experience that person i has in the sample year, t . For the native born this equals what we called x_{Cit} earlier while for immigrants it equals $x_{Fic} + x_{Cit}$, where x_{Fic} equals the amount of experience the immigrant had acquired in their source country by the time of their migration in year, c . In this specification, returns to schooling and experience in general are assumed to be equal for immigrants and the native born but immigrants are allowed to have a different return on experience after arrival in Canada, which would fit with them making investment decisions at that time. Both [Tandon \(1978\)](#) and [Meng \(1987\)](#) employ this approach, with the former using a sample of men in Toronto from the 1971 Canadian Census and the latter using the 1970 Canadian National Mobility Survey (CNMS). Both found that immigrants had lower earnings than native born workers with the same education and experience right after arrival but had higher earnings growth after arrival and surpassed native born earnings by about 14 years after arrival.

The results of these first studies appeared to demonstrate that immigrants are ultimately successful in translating their skills to the host economy and are a greater source of effective human capital than the native born on average. [Borjas \(1985\)](#) contested this conclusion, pointing out that in a cross-section (i.e., holding t constant), different values of $x_{Ct} = t - c$ correspond directly to both different amounts of time in the host economy and different entry cohorts. As a result, a positive coefficient on years since arrival in a cross-sectional dataset could reflect earnings growth for each cohort of immigrants or a decline in average earnings across successive entry cohorts. One can untangle these effects using repeated cross-sections of data, following the average earnings of what are called synthetic cohorts (e.g., immigrant men who arrived between 1980 and 1984) across the cross-sections. The growth in earnings for a given entry cohort between cross-sections identifies earnings growth within the host country while differences across cohorts at a given number of years since arrival identifies cohort specific effects. Implementing this in a flexible way involves pooled regressions including a complete set of dummy variables corresponding to each entry cohort (often defined by sets of immigrants entering in the same five year period) and interactions of those dummy variables with a years since arrival variable (or, alternatively, with more cross-sections, polynomials in years since arrival). In terms of our specification, (2), one might be tempted to interpret the cohort dummy coefficients as reflecting cohort ‘quality’ at arrival ($H_{cka}^{s0} + \mu_{cka}^s$) and the coefficients on the years since arrival variables as reflections of cohort-specific γ values. Doing so, however, would leave out $\ln R_{st}$, i.e., movements in prices of different types of human capital over time. This relates to the fundamental identification issue that one cannot separately identify time, cohort, and years since arrival effects for a given population, which arises because knowing any two of time, cohort, and years since arrival automatically reveals the third. Thus, seeing different earnings for two cohorts at the same number of years since arrival could reflect differences in the cohorts or, because the cohorts will attain a given number of years in Canada in different years, different values for $\ln R_{st}$. The standard approach to this is to use native born workers to identify general time effects and differences in earnings for immigrant cohorts relative to the native born to identify immigrant cohort and years since arrival effect.

The first study to take account of these issues for Canada was [Bloom and Gunderson \(1991\)](#), which used the 1971 and 1981 Censuses, allowing for differences in average earnings by cohorts but imposing a common years-since-arrival earnings profile for all cohorts.⁶ [Baker and Benjamin \(1994\)](#) used the 1971, 1981 and 1986 Canadian Censuses to estimate a more

⁶[Abbott and Beach \(1993\)](#) who took advantage of the fact that the Canadian National Mobility Survey (CNMS), while cross-sectional, had separate measures for full-time work experience, which are not exactly the same as time in Canada and, so, allow for a breaking of the perfect relationship between cohorts and experience in the cross-section.

flexible specification, in which they allow for different years since arrival profiles for different cohorts and also use either earlier arrivals or the native born to control for year effects. [Bloom et al. \(1995\)](#) provide estimates using the same data and the same, more restrictive specification used in [Bloom and Gunderson \(1991\)](#). Both [Baker and Benjamin \(1994\)](#) and [Bloom et al. \(1995\)](#) document substantial declines in immigrant earnings at time of arrival relative to native born earnings across successive cohorts, with the downward trend beginning with cohorts entering Canada in the late 1960s. The declines are substantial, with the 1981-86 entry cohort earning over 30% less than the late 1960s cohort at time of arrival. In addition, [Baker and Benjamin \(1994\)](#) show that these successive cohorts have years-since-arrival earnings profiles that are quite flat and get flatter across cohorts.

Subsequent studies have confirmed the results from these first cohort studies and found that the downward trend has continued ([Grant \(1999\)](#), [Hum and Simpson \(2004\)](#), [Green and Worswick \(2004\)](#), [Frenette and Morissette \(2005\)](#), [Aydemir and Skuterud \(2005\)](#)). The move towards a more educated inflow of economic immigrants in the 1990s did lead to a pause in the cross cohort decline of entry earnings of immigrants (see [Warman and Worswick \(2015\)](#)). However, once education is controlled for in a regression framework, a cross cohort decline in entry earnings of immigrants is apparent through the 2006 Canadian Census. Recent work by [Hou and Picot \(2016\)](#) indicates that there continue to be problems. They show that immigrant average earnings for the 1981 entry cohort was 74% of the (mainly native born) comparison group. The same number for the 2006 cohort was 55%, with the number for the 2010 cohort being 57%.

4.3 Explanations for the Downturn in Immigrant Earnings

The obvious question is why earnings have been trending down across entry cohorts. Different answers to that question have different implications for our assessments about justice and for our preferred policy responses. The first possible answer is that the trend is not real - that it reflects measurement issues. [Aydemir and Robinson \(2008\)](#) use administrative data to show that nearly a third of male immigrants to Canada later emigrate. The fact that emigration rates are higher for immigrants entering in the skilled worker and entrepreneur classes raises the possibility of bias in earnings growth obtained from the synthetic cohort estimation approach. In particular, if higher earnings members of a given immigrant cohort are more likely to emigrate then tracing mean earnings over time for the cohort will show lower earnings growth than what is actually experienced by those who stay. [Picot and Piraino \(2013\)](#) investigate this point, again using the Immigrant Database (IMDB) - an excellent data source in which immigrant landing records are linked to subsequent tax data. Lower earning immigrants are more likely to exit the earnings data but the same is true

for the native born. Consequently, earnings growth rates obtained from synthetic cohorts working with repeated cross-sections are reliable.

Another possible concern is that much of the early work used Census data, and if Census years do not happen to fall at cyclically similar points, then we could be constructing claims about trends that really reflect cyclical differences. [McDonald and Worswick \(1998\)](#) used 11 cross sections from the Survey of Consumer Finances (SCF) spanning the period from 1981 to 1992 and showed that the negative trend stands up to focusing on cyclically similar points. Immigrants are more sensitive to cyclical downturns and some of the declining cohort effects (measured relative to the native born) are due to the weak labour market conditions in this period. Similarly, [Hou and Picot \(2009\)](#) find that a substantial drop in immigrant outcomes for the cohort arriving in the early 2000s is related to the IT bust. They argue that a large part of the poor performance of immigrants who arrived in Canada in the 2000s can be explained by the fact that many immigrants who came to Canada just before this period had intended to work in either IT or engineering occupations. Together, this evidence indicates that the downward trend is not just a measurement issue but also that serious consideration should be given to returning to an approach that involves scaling back immigration at the bottom of recessions.

The timing of the turn in immigrant outcomes across cohorts has raised a clear candidate for a cause of the downturn: the shift in source country composition. As we explained in the previous section, Canada abandoned its preferred country policy beginning in the early 1960s and the result was a shift toward more immigrants from non-European countries. The fact that the downturn in outcomes starts with the cohorts entering in the late 1960s seems like more than coincidence. In fact, [Baker and Benjamin \(1994\)](#) find that up to a half of the cross-cohort decline they document is associated with shifts in the source country composition of the inflow. The arguments for why this could be true relate to the skills transfer issues captured in the H_{cka}^{s0} term in our framework and fall into three broad groups: 1) skills acquired in economies that are institutionally dissimilar to Canada are less productive in Canada than nominally equivalent skills acquired in Canada or more similar economies; 2) foreign obtained skills are equally productive to Canadian skills but potential employers lack information about the places where the skills were acquired and, so, discount them; and 3) discrimination, i.e., foreign acquired skills are equally productive and employers know they are but, because of racist ‘tastes’, treat them as inferior.

There is a considerable body of Canadian evidence showing that foreign acquired education receives a lower return than Canadian education in the Canadian labour market. [Schaafsma and Sweetman \(2001\)](#) find that returns to education for immigrants who arrive at young ages are the same as those for the native born but that the returns decline strongly

with age of arrival. Ferrer and Riddell (2008) also find lower returns to education for immigrants but also that sheepskin effects - jumps in returns with completion of degrees - are larger for immigrants. Importantly for our discussion, the sheepskin effects are particularly important for non-European source country immigrants. This raises the possibility that there are information problems in relaying the value of education from these countries and so signals become even more important. Using Canadian data from the International Adult Literacy Survey (IALS) (which contains a direct measure of where schooling levels were completed) Ferrer et al. (2006) investigate the source of lower returns to foreign degrees. In particular, they find that once a literacy test score is introduced as a control in the earnings regression model, the lower return to a foreign degree relative to a Canadian one is almost eliminated. There are two possible interpretations of this result: that foreign degrees are of lower quality than a typical Canadian degree, or that because the literacy tests are given in English or French in Canada, what is being captured is really a language effect. However, Li and Sweetman (2014) show that returns to education for immigrants with education acquired outside of Canada are higher if the scores on international literacy tests for that source country are also higher. In countries where education is of lower quality, children residing there perform worse on international tests and these test scores proxy this lower quality of education when introduced into an immigrant earnings model. Once this control for education quality is introduced, the lower return to foreign education is eliminated. Since the test taking in the source country is in that country's main language, this eliminates the language difficulty explanation and points strongly to the conclusion that foreign acquired education is simply less productive in the Canadian context. That is, it points away from explanations based on a simple lack of information about foreign degrees - the Canadian labour market is valuing the degrees correctly. Moreover, since the Ferrer et al. (2006) includes controls for cognitive ability, the results also do not fit with a discrimination interpretation since the definition of economic discrimination is that there are differences in earnings between identically productive individuals just because of membership in groups defined on productively irrelevant characteristics. Here, there is no difference once we control for productivity. Their finding that the return to cognitive ability is the same for immigrants and the native born points to the same conclusion.

The other major finding in this part of the literature is that there is a zero return to foreign acquired experience in the Canadian labour market. First presented in the Canadian context by Schaafsma and Sweetman (2001), this result has been found in many papers since. Green and Worswick (2012) show that this is strongly related to source country composition - that foreign experience was valued similarly to Canadian experience in earlier entry cohorts.⁷ The lack of return to foreign experience has gradually affected policy setting,

⁷See also, Aydemir and Skuterud (2005).

with fewer points given for foreign experience across successive versions of the point system. In contrast to foreign acquired education, there are no results of which we are aware that establish why foreign experience is given no value in the Canadian labour market.

While the findings on returns to education seem to point away from discrimination as a rationale for lower valuation of foreign acquired education, discrimination may still be an issue more generally. With the dramatic change in the distribution of source countries of immigrants following the end of the preferred country period in 1962, the proportion of immigrants to Canada at risk of facing discrimination due to their race, ethnicity or religious affiliation has risen dramatically. [Pendakur and Pendakur \(1998\)](#), working with data from the 1991 Canadian Census, find that visible minority immigrant men earn 16% less than native born white men with the same education and experience, and visible minority immigrant women earned 9% less than comparable native born white women. Of course, it is not clear we want to interpret these differentials as reflecting discrimination since there may be differences in productive characteristics other than education and experience between visible minority immigrants and native born white workers. Indeed, [Skuterud \(2010\)](#) finds that these earnings differentials decline across generations of immigrants, which does not fit with simple taste based discrimination (apart, perhaps, based on something like accent or culture related activity). On the other hand, [Oreopoulos \(2011\)](#) conducted an audit study in which he responded to job ads in Toronto with CVs with the same credentials but names randomized to sound English or French versus names sounding like they were from China, India, Pakistan, or Greece. He found that CV's with non-English sounding names had a 39% lower call-back rate, fitting with discrimination by employers. Interestingly, he also randomized whether immigrants with non-English sounding names had Canadian or foreign experience and confirmed the finding that employers do not value foreign experience in this setting. Overall, our conclusion is that lower earnings for non-European source country immigrants likely reflect a combination of less productive skills and discrimination. There is little evidence that their lower earnings just reflects lack of credential recognition - a conclusion supported by the results in [Oreopoulos \(2011\)](#).

Intertwined with both discrimination and immigrant productivity are issues of language skills and accents in English and French. Estimates from Census data indicate that low self-reported language skills are associated with lower earnings⁸ but it is not clear whether this reflects causation or just correlation. Low host country language skills may simply be signals of other issues, such as starting out in low-skilled jobs where there are no returns to such skills. There is no work of which we are aware that addresses this endogeneity problem

⁸For example, [Boudarbat and Lemieux \(2014\)](#) find speaking neither French nor English is associated with 7% lower earnings for females and 10% lower earnings for males in 2000, and that these penalties were larger than in 1980.

in the Canadian context. However, [Clarke and Skuterud \(2013\)](#) find that the introduction of formal language testing in the Australian selection system did not improve the outcomes of immigrants from a given source country relative to immigrants to Canada from the same source country. What the policy did to was shift the source country composition of the Australian inflow toward English speaking countries. This can explain much of the improved outcomes for immigrants to Australia relative to those entering Canada in recent years. This raises difficult issues of balancing the desire to select immigrants with characteristics that are associated with success in the host country with a desire to have a non-racist policy. We need more research on the causal effects of having English or French language skills in Canada to help in making decisions on such a policy.

While the shift in source country composition is important for understanding immigrant earnings patterns in Canada, most studies find that those shifts account for at most a half of the change in the relative earnings of immigrants across cohorts, leaving half to be explained by other factors. The sharp decline in entry earnings, in particular, raises the possibility that part of the explanation could be investment behaviour of the type emphasized in our human capital model. The problem with that explanation is that it should imply that earnings growth after arrival should be faster for the recent cohorts that have had successively lower entry earnings, but the opposite pattern is observed in recent decades. However, taking account of investment could still hold part of the key to understanding the earnings patterns. In discussing equation (2), we have described the comparator groups (generally, native born with the same education level) as capturing $\ln R_{st}$ - movements in the efficiency unit prices of human capital. But the native born, themselves, also respond to movements in these prices by making investment decisions. In [Green and Worswick \(2004\)](#) we argue that the best measure of general macro effects should include these investment responses. That is, the benchmark against which we should be judging immigrant success is one that takes account of typical behavioural responses to price changes. If other workers respond to price changes with increasing investment and, hence, lower earnings then it seems inappropriate to judge immigrants negatively for having lower earnings at the same time. Strong evidence in favour of paying attention to these issues is found in [Boudarbat and Lemieux \(2014\)](#), who examine differences between immigrants and the native born across the earnings distribution in 1980 and 2000. They show that the decline in relative immigrant earnings in this period is dominated by a relative decline in immigrant relative to native born earnings at the bottom of the distribution. However, their decompositions show that the extra decline at the bottom arises mainly because of changes among the native born: their earnings were relatively low in 1980 because of the high proportion of inexperienced workers - members of the baby boom generation. By 2000, the baby boom had moved to older ages and the lower tail of the native born distribution rose relative to that for immigrants. Interestingly, source country

and language ability shifts explain little of the change in the relative shapes of the earnings distributions but, as in earlier studies, do account for important shares of the relative shift in the location of the distribution as a whole.

Taking account of these movements for the native born focuses attention on the need to find a comparison group whose investment choices are likely similar to those faced by immigrants. Using tax data linked to immigrant landing records, [Green and Worswick \(2004\)](#) find that the strong negative cohort effects in entry earnings of immigrants to Canada since the early 1980s coincided with a similar (but smaller in magnitude) decline in the earnings of successive labour market entry cohorts of the native born. A novel feature of this study is the use of labour market entry cohort controls defined off of the year of entry into the mature labour market in Canada (assumed to be year the person turned 25 for the native born and the year that an adult arrival immigrant entered Canada for immigrants). They find that native born labour market entry cohort effects can explain around 40% of the immigrant arrival cohort entry earnings effects of immigrant arriving in Canada at the same time. In a widely cited paper published in the CJE, [Aydemir and Skuterud \(2005\)](#) find similar patterns using the Canadian Census data. These studies suggest that focusing on immigrant cohort differences and ignoring broader differences across labour market entry cohorts for all labour market participants could lead to the wrong policy conclusions. The Canadian labour market through the 1980s, 1990s and early 2000s may have become less welcoming to all new entrants, both recent graduates from Canadian educational institutions and new immigrants arriving in the Canadian labour market. In a follow up study, [Green and Worswick \(2012\)](#) develop a methodology for comparing immigrant and native born cohort effects based on present values of earnings in the receiving country. Using this longer run measure of labour market performance, they find that native born cohort effects can explain virtually all of the immigrant entry cohort differences experienced over the 1981 through 2003 period in Canada.

4.4 Earnings Outcomes of Immigrant Women and Family Investment Strategies

Many of the articles cited to this point focussed on men. However, a parallel literature has developed that focuses on women and that, at least in the early studies, suggests some very different behaviour relative to what was seen for immigrant men.

A key point of interest in examining earnings for immigrant women is whether they reflect a pattern in which immigrant women take jobs with no human capital investment, foregoing their own skills development in order to maintain family income while their husbands invest

in their own skills. This is often termed the Family Investment Hypothesis (FIH). Early support for the hypothesis came from Long (1980)'s finding in US cross-sectional data that immigrant women had earnings profiles that were higher than those of comparable native born workers just after arrival but were also flatter, while the male patterns were the opposite. Using the Canadian 1970 CNMS ⁹ Beach and Worswick (1993) find that earnings growth with years since migration was lower for immigrant women than for immigrant men, consistent with the FIH. In an influential paper using Canadian data, Baker and Benjamin (1997) find support for the FIH since that the human capital investment patterns of immigrant wives married to immigrant husbands are consistent with them playing a secondary role in the family so as to support their husbands' earnings growth. Worswick (1999) also finds Canadian evidence consistent with the FIH - immigrant-native born differences in household hours of work patterns are consistent with credit constraints forcing immigrant wives to work longer hours in the early years after migration than they would if the household were able to borrow money to support consumption and their husbands' career development.¹⁰

More recent research has generally been less supportive of the FIH. Work for the US (?) and Australia (Cobb-Clark and Crossley (2004)) find at most limited evidence in favour of the hypothesis. ¹¹ For Canada, Adserà and Ferrer (2014) use confidential Canadian census data and link the detailed occupational information to the O*NET occupational dictionary to generate a measure of skill requirements for jobs.¹² They find that earnings growth and skill accumulation patterns are very similar for immigrant and native born women and conclude that married immigrant women are no more likely to be secondary earners within their households than are married native born women. In a more recent paper, Adserà and Ferrer (2016) come to a similar conclusion but suggest there is some evidence that relatively less educated married immigrant women working in relatively low skill occupations may behave as secondary earners, possibly to support the skill acquisition of their immigrant husbands.

4.5 Implications for the Effectiveness of the Selection System

At this point, we have a picture of earnings for both immigrant men and women that consists of relatively low earnings at time of arrival combined with disappointing growth rates thereafter. It is natural to ask whether this implies that Canada's much vaunted skills based immigrant selection system is failing. Whether what seems, on paper at time of entry, to be a highly skilled addition to the workforce is, effectively, - whether because

⁹Also known to as the Job Mobility Survey.

¹⁰See also Worswick (1996).

¹¹See also Cobb-Clark et al. (2005) who use the LSIA data to study the educational investment behaviour of immigrant couples.

¹²See Imai et al. (2011) for a discussion of the methodology employed.

of non-transferable skills or discrimination - not skilled. Several papers have addressed the question of the efficacy of the point system by comparing characteristics and outcomes of Canadian immigrants with those for other countries. [Antecol et al. \(2003\)](#) examine immigrant outcomes in Canada, Australia, and the US using the 1980/81 and 1990/91 Censuses for each country. They find that once one takes out immigrants to the US from Latin America, both the education levels and relative incomes of immigrants in the three countries are similar, with immigrants to Canada and the US being particularly alike. This fits with earlier findings in [Duleep and Regets \(1992\)](#) and [Borjas \(1993\)](#) showing that outcomes for immigrants from the same source country are very similar between Canada and the US. Further, [Clarke and Skuterud \(2016\)](#) show that literacy scores in the International Adult Literacy Survey are very similar for Canada and the US, again after taking Spanish speakers out of the US sample. Australian immigrant literacy is somewhat better than for the other two countries in the period after Australia implemented its language test but mostly because of an induced change in the source country composition of the Australian inflow. On the other hand, both [Kaushal and Lu \(2014\)](#) and [Hou and Picot \(2016\)](#) find that changes in the Canadian selection system in terms of more emphasis on skills (in the 1990s) and more emphasis on pre-landing Canadian experience (in the 2000s) improved Canadian immigrant productive characteristics. The proportion of new immigrants with university degrees rose from 17% in 1992 to 45% in 2004 ([Hou et al. \(2008\)](#)). Thus, selection systems can have direct effects but much of their impact seems to come from induced shifts in source country composition. The US, in particular, has a substantial lower skilled component coming from Latin America. Some of this difference might stem from the US not having a points system but [Antecol et al. \(2003\)](#) argue that much of it is likely due to the ongoing inflows of undocumented immigrants to the US, which is not something determined by selection mechanisms in the documented part of the inflow. On net, though, whatever the selection system has accomplished in terms of observed skills, it seems to have done little in terms of immigrant earnings. Thus, the improvements in skills seem to be more nominal than real.

Our conclusion from the empirical literature is that immigrant human capital implementation, as reflected in earnings, has declined over successive cohorts of immigrants in spite of the point system.¹³ Given this, the overall decline in earnings reflects, in equal parts, a trend affecting all new entrants to the Canadian labour market and the shifting source country composition of the inflow. The reduced earnings associated with the latter are due to a combination of foreign acquired human capital that is not as productive in the Canadian economy and discrimination. Our reading of the literature is that the hopeful

¹³While the dramatic expansion of post-secondary education levels in the 1990s caused a pause and partial temporary rebound, the improvement was not as large as one would have expected had the new higher levels of education reflected a large increases in skills relevant to the Canadian labour market.

bromide that we simply need to do a better job of recognizing immigrant credentials is not true. There is no simple fix of this type.

4.6 Responses to Problems with Immigrant Earnings

In deciding how best to proceed in the face of these conclusions, it is useful to return to theories of justice for guidance. Consider, in particular, Sen's theory based on the ideas of capabilities and functionings. Sen defines functionings as 'the various things a person may value doing or being' (Sen (1999, p. 75)). This is a vague definition - purposefully so in order to allow for a variety of possibilities in terms of how people live. But the key is to think of functionings as different states a person could experience. For example, the state of being poor, in bad health, but with a good education, no feeling of personal danger, and having some opportunities to change your status. He then defines a person's capability as the set of functionings that are available to her. Sen defines this as "the substantive freedom to achieve alternative functioning combinations". So, substantive freedom corresponds to having a larger set of feasible functionings. This is a definition of freedom that includes primary resources of the kind that Rawls emphasizes (income, opportunities, and rights) but goes beyond just thinking about them as inputs to well-being to include concern for how they affect what a person can achieve and experience in life.

Thinking of immigrant experiences through this lens raises a few points. First, discrimination alters the set of functionings that are available to otherwise identically productive people and is, not surprisingly, a source of injustice. We need more research like that in Oreopoulos (2011) to help uncover potential fruitful routes to respond to the problem of discrimination rather than using point systems based selection to reduce the number of immigrants who would face discrimination here. Second, an inability to implement human capital acquired elsewhere after arrival in Canada is a reduction in substantial freedom that immigrants must keenly feel and that is, again, a source of injustice.¹⁴ These problems show up most directly in immigrant poverty rates. Hou et al. (2008) show that while native born poverty rates have been declining since about 1997, the rates for immigrants have been increasing. Many of the numbers they present are striking: over a third of immigrants live

¹⁴Though, it is possible that immigrants arrive knowing they will have difficulties but making the move in the interests of the subsequent generations. Canadian researchers have been at the forefront of the literature on the economic outcomes of the children of immigrants (see, for examples, Finnie and Mueller (2008), Aydemir et al. (2013), Aydemir and Sweetman (2008), Hum and Simpson (2007), Worswick (2004) and Warman and Worswick (2016)). These studies find that immigrant children and immigrants who arrive as children do relatively well in terms of educational attainment but since parental income plays some role in educational outcomes, they could do even better if the problem of poor immigrant earnings could be addressed (Bonikowska and Hou (2010)).

below the poverty line in their first year in Canada; two-thirds of immigrants will experience a spell of poverty in their first 10 years in Canada; and immigrant poverty rates are 2 to 3 times those of the (mostly native born) comparison group. Perhaps most troubling is that having a higher education has little impact on these poverty outcomes for immigrants, even though it has a substantial impact for the native born. Given these patterns, figuring out how to help immigrants implement their human capital in Canada is of first order importance for considerations of building a more just society.

The answer to improving immigrant outcomes does not appear to be simply credential recognition. Instead, part of the solution could lie in the investment that we have emphasized as key to the immigrant experience. While foreign acquired human capital may have limited direct productivity in the Canadian economy, it could well be productive in producing new human capital that has. One could imagine a scheme in which immigrants are given subsidized seats in universities and allowed to test out of classes in order to move quickly to the level at which they need to alter their human capital. This would not be a cheap investment but it might yield positive returns. Moreover, it would fit with Sen's notion of expanding the capabilities of immigrants. It would be useful to know more about immigrant human capital acquisition after arrival - how it is done, how much it would cost to be effective, and what is its real rate of return. If, alternatively, we are not willing to help fund this investment or such an investment turns out to have a low return then it would seem that justice requires transparency in our dealings with prospective immigrants. We should tell them about the results of research showing that if they come from certain countries, they will have difficulty transferring their human capital, and that the fact that they pass through a point system does not imply that the Canadian government has given them a stamp of likely success. In that case, we need to assess what such transparency would do to the composition of the inflow.

4.7 Future Directions of Immigrant Labour Market Outcomes Literature for Canada

It is impossible in this relatively short piece to describe all of the important papers written by Canadians on the labour market outcomes of immigrants. The studies described above are representative of that literature but students and new researchers should dig more deeply into the literature especially considering the new studies that seem to emerge each week.

Future research is needed on the underlying causes of the relatively low earnings of adult arrival immigrants especially those with work experience prior to coming to Canada. In addition, we need to learn more about the importance of employer discrimination for the

earnings of visible minority adult arrival immigrants. A gap in the literature relates to formal evaluations of the effectiveness of post-migration training programs such as language training. Convincing governments to support a high quality evaluation (ideally with an experimental design) should be top of the list of priorities for economists interested in this area.

The success of the next generation of research studies by economists on the labour market outcomes of immigrants will depend in large part on data developments. We are hopeful that new sources of data such as the synthetic CV approach of [Oreopoulos \(2011\)](#) will emerge to allow for analyses that shed light on open questions. In addition, the encouraging trend toward the linking of different sources of administrative data through Statistics Canada and other federal government departments suggests that new analyses may be possible on the rich data sets being created. As in the past, the extent to which cutting edge researchers can generate insights from these new administrative data sources will depend entirely on timely access to the data.

5 Immigration Impacts and Economic Justice

Next, we move beyond considering the factors that affect the economic outcomes of the immigrants and consider the broader question of the economic implications of the new immigrants for the receiving economy. It is worth keeping in mind our conclusion that the actual amounts of skill being imported to the Canadian labour market through immigration is much lower than the nominal amount based on the skills that immigrants list at arrival. At the same time, because of the large undocumented inflows to the US and its success in attracting skilled immigrants, the skill distribution of our overall flow is different from theirs. This is important to keep in mind since, as we will see, much of the existing literature in this area is American.

Perhaps the most directly useful evidence economists could contribute to the debate over immigration and justice is on the impact of immigration on residents in general and its distributional effects in particular. Even if there is a case on a theoretical level for the justice of open borders, such a policy may involve supererogatory acts on the part of residents: acts for which there is a moral argument but which require sacrifices that could be deemed beyond the call of duty. Alternatively, if we accept Rawls' argument that the nation state is the right unit for considering justice, we would want to know whether immigration raises or lowers the well-being of the least well-off person type among residents. In recent years, questions about the impact of immigrants on residents - and, in particular, on their wages and employment - have been a main focus of the economics literature on immigration.

Studies of the impact of immigration on residents are, ultimately, about general equilibrium effects and, as such, the appropriate unit of attention is an economy. That is, we would like to ask how do wages and employment of residents differ between economies with more and less immigration. It is worth noting in passing that existing papers have tended to phrase the relevant immigration change in almost catastrophic terms: what would be the effect of some versus no immigration; what is the effect of a large one time shock (of the size of the Mariel Boatlift shock in Miami); what would be the effect of having open borders? The more relevant question for Canadian policy is more like, what is the effect of increasing immigration from 0.8% to 1% of the existing population every year? We do not know of any papers that have expressed the problem in these terms.

Two main methodologies have been employed to study impacts of immigration at an economy level. The first is calibration - establishing a model of the whole economy, calibrating the defining parameters, and then simulating outcomes with different levels of immigration. This is the approach taken in [Hamilton and Whalley \(1984\)](#). Crucially, they use a model with a single aggregate output produced using a decreasing returns to scale production function. In this context, an increase in labour supply through immigration will necessarily lead to a decline in wages as more labour is now spread across the scarce factor. In fact, they find that removing legal barriers to global migration would lead to a decrease in wages in rich, receiving countries but generates an increase for citizens of poor countries that is far larger. In the end, they calculate that liberalizing global migration could generate an approximate doubling of world GDP.

John Kennan (whose Canadian connection is that he started his career at McMaster) uses the calibration methodology but incorporates insights from trade theory ([Kennan \(2013\)](#)). In particular, he works with a model with 2 goods, 2 factors of production (capital and labour), J countries, and a CES production function. Labour is specified in efficiency units and, following [Trefler \(1993\)](#), it is the wage per efficiency unit that is the key price. In this context, increased immigration from developing (low efficiency per worker) economies to developed (high efficiency per worker) economies implies an increase in the effective world supply of labour. The factor price equalization theorem implies that migration does not change the relative wages across countries (those are determined by relative labour efficiency) but, in the short run with fixed capital in the world, the increase in effective labour supply implies a world drop in the average wage. However, in the long run, capital is perfectly elastically supplied and investment will occur to the point where the prior average wage is re-established. Thus, in the long run there is no effect on wages at all and even in the short run, Kennan's calibrations imply that opening borders completely yield what he characterizes as modest effects on real wages while creating large increases in world output.

The other substantial approach to studying general equilibrium effects of immigration is to estimate those effects. This involves specifying economies or markets on a scale that allows for identification by examining differences in outcomes across those economies. Thus, this approach lends itself to examining impacts on individual economies. An examination of opening borders for the world economy, as [Kennan \(2013\)](#) does, requires the use of the calibration approach.

There is considerable debate in the empirical literature on the appropriate types of markets to use in the empirical analysis. The seminal paper in this area is [Card's \(1990\)](#) examination of the Mariel Boatlift. In 1980, Fidel Castro allowed Cubans to leave the country by boat if they wished to for a brief window of time. The majority of the Cuban emigres went to Miami and in a space of 5 months, they increased the size of the Miami labour force by 7%. To put this in perspective, this is the effective equivalent of a decade of Canadian immigration entering in a 5 month period. Card compared wage and employment outcomes for Miami residents to those in a set of comparator cities in a difference in difference analysis and shows, somewhat surprisingly, that the impact on wages and the employment rate after approximately 3 to 5 years was essentially zero.¹⁵ This finding spawned a large and growing international literature. By and large, this literature examines multiple local labour markets in a country and attempts to obtain exogenous variation in local immigrant supply shocks using instruments such as the ethnic enclave instrument that is based on the idea that immigrants move, for social reasons, to locations where there is a concentration of earlier arrivals from their same source country. These studies almost universally find a small impact of immigration on wages.¹⁶

As we saw in the discussion of [Kennan \(2013\)](#), a long run zero impact of immigration on wages is theoretically consistent in models with constant returns to scale production and perfectly elastic supply of capital. We might just be surprised that the long run seemed to arrive in 3 years in the case of the response to the very large Mariel Boatlift shock. Of course, a zero impact on the average wage might not just reflect a capital response. Inflows of immigrants might induce offsetting outflows of residents that result in much smaller net supply changes than the immigrant inflows on their own appear to imply. [Green and Green \(2016\)](#) estimate that the very large inflows of immigrants into Canada in the 1920s had small impacts on average wages here and that part of the reason for that was because the

¹⁵[Borjas \(2015\)](#) argues that using more modern difference-in-difference techniques, one finds that the Mariel Boatlift actually had negative effects on wages. However [Peri and Yasenov \(2015\)](#) show that Borjas's results suffer from small sample problems and that once these are addressed Card's original results stand up to the use of more modern techniques.

¹⁶See [The National Academies of Sciences, Engineering, and Medicine \(2016\)](#) for a comprehensive review of US and other international evidence.

immigrants themselves re-migrated to the US and redistributed themselves across regions and sectors in Canada. But [Card and Peri \(2016\)](#) present evidence that displacement effects are small in recent US data. Unfortunately, we are aware of no evidence on this point for Canada in recent years.

[Borjas \(2003\)](#) argues that labour supply and capital reactions to immigrant supply shocks render the use of local labour market variation to identify immigration effects problematic. In particular, what look like zero effects when comparing across local labour markets may amount to large effects at the national level - its just that supply reactions smooth differences across markets within the country. In response, he implements an approach in which markets are defined at the national level with separate markets for different skill groups delineated by education and experience. [Aydemir and Borjas \(2007\)](#) implement this approach using Canadian (as well as American and Mexican) data and find more substantial negative impacts of immigration on wages than those from the local labour market literature. However, [Card and Peri \(2016\)](#) show for the US that these larger results have less to do with the level of the market being used than with the fact that [Borjas \(2003\)](#) and [Aydemir and Borjas \(2007\)](#) use the fraction of workers who are immigrants as the relevant immigrant shock variable rather than the ratio of numbers of new immigrants to the initial stock of workers in a market even though the latter is what is relevant from theory. To this point, there has been no similar analysis of whether the Borjas approach yields smaller effects in Canada when using the theoretically implied immigration measure. However, there is no reason from our perspective to believe that [Card and Peri's \(2016\)](#) analysis would not apply to Canada and, as a result, we believe that a reasonable interpretation of the existing literature is that immigration has a negligible impact on average wages in the medium to long term, where the medium term could be as short as 3 to 5 years.¹⁷

A zero average effect on wages would seem to remove the supererogation argument against opening borders (that the receiving country must take on undue harm in order to do the right thing), at least to the extent of increasing inflows by amounts that fit with the data variation on which current estimates are built. But a zero effect on average could mask substantial variation across sub-groups in the economy and there could still be an argument against immigration if it resulted in large negative impacts on the least well-off balanced by gains for those at the top. In the US local labour market literature, there is some evidence of this pattern of effects but [Card \(2001\)](#) argues that it is appropriate to aggregate high school drop-outs and high school graduates into one labour market and that when one does so, the

¹⁷[Akbari and Devoretz \(1992\)](#) using cross-industry variation in a single year (1980) to estimate elasticities of substitution among immigrant labour, resident labour, and capital. They conclude there is no evidence of immigrant labour 'displacing' resident labour. Their study is one of the first of its kind for Canada and well done within the context of its literature but the approach does not meet modern identification standards.

size of the effects is small. [Peri and Sparber \(2009\)](#) find that the most negative effects are on previously arrived immigrants, with low skilled native born workers able to shift away from the effects of immigration shocks by moving into jobs with greater English requirements. However, [Aydemir and Borjas \(2007\)](#) show US immigration reduces low skilled native born wages while Canadian immigration tends to reduce the wages for university educated workers at the national level, arguing this fits with a more skill selective Canadian system. We are not entirely sure about this result, in part because of the arguments earlier about the size of the estimated effects in [Aydemir and Borjas's \(2007\)](#) but also because of our conclusion that the Canadian point system has not been overwhelmingly successful in bringing effective skills into Canada. This is an area where there is room for more work for Canada.

5.1 Impacts from Recent Policy Shifts:

Temporary Foreign Workers and Provincial Nominees

The conclusion that immigration may have limited impacts on Canadian wages is built from studies that have focused on permanent immigration in the context of the pre-2004 immigration system. As described in section 2, in more recent years, Canadian policy has shifted strongly toward emphasizing job connections for immigrants and this shift could imply a different set of effects from those estimated based on earlier permanent immigration inflows. In particular, part of the TFW programme in the late 2000's was targeted directly at lower skilled labour markets. This would make this part of Canada's immigration stream more like what has been seen in the US. In addition, parts of the Provincial Nominee (PN) programmes and the first versions of the Express Entry system put much more weight on having a job lined up than in the past.

The empirical evidence on these changes to the immigrant selection system is slim. For Provincial Nominees, [Pandey and Townsend \(2013\)](#) use administrative data to show that PN's have higher initial earnings but lower earnings growth compared to economic class permanent immigrants, with the lower education and language levels of the PN's accounting for most of their slower growth rate. There is room for more analysis on PN's - analysis that would also be helpful in understanding the shift toward a more 'jobs first' approach in the Federal selection system.

There has also been some work done on the TFW impacts. [Gross and Schmitt \(2012\)](#) use cross-provincial variation and estimate that TFWs increased unemployment rates in TFW receiving provinces relative to others. [Brochu et al. \(2016\)](#) show negative impacts of TFWs on wages, arguing that data on hours of work, absenteeism and quit rates fit with an efficiency wage model. However, there is some reason for concern about identification in the

[Gross and Schmitt \(2012\)](#) paper, and there is room for further investigations of the impacts of TFWs.¹⁸

The role of TFWs is a prime example of how it can be useful to think about policy questions in the context of justice. The government's own rationale for the programme is stated as follows: 'The Temporary Foreign Worker Program (TFWP) allows Canadian employers to hire foreign nationals to fill temporary labour and skill shortages when qualified Canadian citizens or permanent residents are not available' ([Immigration, Refugees and Citizenship Canada \(2017\)](#)). Behind this statement is an argument that filling skill gaps benefits other workers because it allows firms to operate that would shut down if the gaps were not filled. Thus, the case being made for the programme is about efficiency: certain complementary factors can greatly improve the output of the economy, at least in the short run. Economists tend to discount these arguments since there is no clear notion of what a shortage or gap means without referring to the wage. If there is excess demand, we expect the price system to provide a response. Attempts to fill 'gaps' will only interfere with price signals and slow or misdirect adjustments in the labour market. However, whether the production function could essentially take a Leontief form in the very short run is an empirical question and, as we said, one on which more information is needed.

But, of course, solving any efficiency problems is not enough to establish whether a policy is just. We need to consider how the policy affects the distribution of society's output and, more broadly, how it affects elements of a just society such as the ability of its members to pursue their notion of what is good, and mutual respect among members. While much of this seems to be the purview of philosophers, a debate over policy impacts requires information on who is affected and how. Most importantly, it is clear that a policy that is purported to have effects through 'filling gaps' is one in which general equilibrium considerations are particularly salient. General equilibrium effects are notoriously difficult to think through and our experience with studying them is what we can bring to the debate.

General equilibrium considerations have entered philosophical discussions of justice in ways that would seem familiar to economists. Most notably, Ronald Dworkin's account of justice is built around these considerations ([Dworkin \(1981\)](#)). As with Rawls, Dworkin

¹⁸In particular, the main variable that [Gross and Schmitt \(2012\)](#) use to identify TFW effects is the cost of international airline travel. Since the specification employs differences in provincial unemployment rates from the national average a variable such as this, which does not have provincial variation, should not be identified. The fact that there is an estimated coefficient for this variable may be because the differencing involves subtracting the national level unemployment rate from provincial unemployment rates unweighted by population, resulting in provincial deviations that do not actually sum to zero in a given year. As a result, the identifying variation is related to differences in movements of the simple average of provincial unemployment rates from the population weighted average. It is not clear how to relate this variation to the policy question at hand.

constructs a thought experiment which embodies the key assumptions he makes about the bases of justice. In his thought experiment, a set of people are on an island with resources that can be used for production and consumption. Each person is to get equal consideration in the use of those resources but is also responsible for her or his preferences. To reflect this, the society starts with an auction in which the citizens of the island bid on its resources using sea shells, with each person endowed with the same number of shells. People know their preferences and their talents but, importantly, do not know the set of prices that will emerge once the resources are divided up and markets are allowed to run. People are responsible for their own preferences in that they have no claim on transfers from others if their preferences turn out to be expensive, i.e., if they have strong preferences for a good that turns out to have large demand relative to the resources available to produce it. The result of the auction is a distribution of goods that satisfies Dworkin's notion of true equality: that no one envies anyone else's bundle. However, people will also face what he calls brute luck events that can alter their outcomes. Most importantly, their set of talents and the incomes that will follow from them are matters of brute luck. Dworkin's response to this problem is also a market one: people will want to buy insurance against bad brute luck outcomes and are responsible for any outcome for which they could have bought insurance. He sees the tax and transfer system as the real world embodiment of the insurance system people would have bought into before knowing things like who their parents are, what their abilities will be, and how those abilities will be remunerated in the market.

How would we think of TFW policy in this context? We could put it in Dworkin's framework by adjusting the resources on the island in the thought experiment to include a set of indentured servants. These servants are not part of the justice considerations, i.e., their consumption, etc. is not considered when searching for a just distribution. If they were simply part of the island environment then their presence doesn't change any of the considerations any more than the presence of, say, horses. The citizens of the island would be responsible for their own choices in the context of an environment that included these servants. In particular, if the citizens knew that the servants were relatively low skilled then they would also know that the final set of prices would include lower unskilled wages than if there were no such servants. The citizens could adjust to any difficulties related to these prices by getting training or education. Thus, education would play the role of insurance and there would be no claim in justice for bad outcomes for people who chose not to invest in education.

But, what if the indentured servants were brought to the island as a policy choice? Those in the working generation who had not invested in education and who suffered from the introduction of the servants would presumably not be held responsible for their education choice. There would be a case for a redistribution in their favour, though it is questionable

whether a simple transfer could really compensate them for their loss of standing as a worker in society. Moreover, there is also a question for future generations. Some people will have abilities that imply a low return to education but may have worked well in the tasks that now pay less because of the servants (think of the set of people who, in prior generations, would have worked in greenhouses in Western Ontario - jobs now mostly done by TFWs). As before, the tax and transfer system would need to make up for the bad luck of their ability draw but there would seem to be an added case for support since a policy choice made the price vector worse for them. Put a different way, when the equilibrium price vector is not just a balancing of preferences but a reflection of active policy choices then the set of just policy choices changes. Understanding how the price vector changes is central for deciding on just policies and that is where economists come in.

There are a set of empirical results that are needed to inform just policy making in this context. First, we need to know about the price and quantity responses to introducing TFWs. Part of this is impacts on wages and employment in the jobs in which TFWs directly compete but a larger part is impacts on other prices through general equilibrium channels. For example, bringing in more skilled TFWs will reduce returns to training that affect the life prospects of others. On the other side, bringing in nannies as TFWs could reduce the costs of work for resident women and encourage them to invest more in human capital in consequence. Second, we need to know the distributional effects of those price changes. In particular, under many theories of justice, we would be particularly concerned with whether there is a group who have limited ability to move to other parts of the labour market (perhaps because they have low aptitude for school) and what happens to them not only in terms of income but also in terms of self-esteem and respect from others. Third, we would particularly want to know about the extent of the impact and the possibilities for adjustment for generations who are in the labour market and past the usual ages for education when TFW levels are increased. Even with this information, the policy decision will be complex. It is not at all clear how one adjudicates the various claims when policy changes price vectors under Dworkin's theory. [Blackorby et al. \(2005\)](#) argue for a critical value version of utilitarianism that tends to preference greater quality of life over more people and this could be a useful tool for thinking about issues here.

But there are also wider questions about whether a just society can be built on the work of individuals who are given limited rights in the society. In many liberal theories of justice, a just society includes giving its members either the opportunity or the means to live what they consider to be a good and meaningful life. Central to most definitions of a good life is respect - both self-respect and respect from others. We would argue that a key source of such respect is a person's job - their role in the productive process - and it is not possible to untie TFWs' economic impacts from their effects on distribution of respect in this sense.

The TFWs have no political voice for altering the conditions they face and limited ability to make effective use of labour regulations. As with our discussion of wages, there are potential general equilibrium elements to TFW impacts on respect - especially whether having part of the labour force employed in a way that does not engender respect affects the level of mutual respect for and among all workers in the economy. Here, the empirical questions relate to how to get measures of impacts on respect. Simply asking workers about whether they feel respected is one route but not one toward which economists, with our preference for revealed preferences, tend to gravitate. An alternative is through measures of segregation in where individuals live and work. It is hard to see how people form bonds of mutual respect if they are strongly segregated in where they live. Thus, we could ask whether areas with more TFWs have greater segregation by income class, for example. While there has been some work on the impacts of segregation into ethnic enclaves on outcomes for permanent immigrants ([Warman \(2007\)](#)), we are not aware of any work in Canada on the extent of segregation among both temporary and permanent immigrants and its impact on residents.

The other main change in Canada's immigration policy - one that is somewhat related to the TFW expansion - is a shift toward greater emphasis on a jobs first selection approach. This is reflected both in changes in the Federal selection system, For Provincial Nominees, [Pandey and Townsend \(2013\)](#) use administrative data to show that PN's have higher initial earnings but lower earnings growth compared to economic class permanent immigrants, with the lower education and language levels of the PN's accounting for most of their slower growth rate. Here, too, there is room for more analysis.

Our main conclusion is that there is much work to be done in both the areas of TFWs and the shift in the system toward employer based selection. The policy changes in these areas represent fundamental shifts in Canadian immigration policy which have potentially important implications for the justice of our society. Economists can play a role in evaluating those implications. As concrete examples, we do not know of comprehensive investigations of the substantial live-in-caregiver and seasonal agricultural labour components of the TFW inflows. These are often justified as 'jobs that Canadians won't do' but, of course, that statement has little meaning without specifying the wage paid on those jobs. Is there an efficiency case for these programmes? More importantly, is there a case in justice for their existence?

5.2 Immigration Impacts on Innovation

To this point, we have focused on the potential negative labour market effects of immigration. Considering immigration within the context of an invariant production function that is, at best, constant returns to scale implies that immigration effects will tend to be either negative

or neutral. But many authors have advanced the possibility that immigration could have long term growth effects through a variety of channels. Key among these is the possibility that immigrants are particularly innovative, creating new inventions and firms that spur economic growth. For Canada, research on these questions has tended to focus on the question of whether immigrants are more likely to start a firm than residents. More specifically, the existing research examines the dual questions of the proportion of immigrants who become self-employed and their earnings (Li (2001), Antecol and Schuetze (2005), Frenette (2004), Schuetze (2010), and Hou and Wang (2011)). These papers show that immigrants have self-employment rates just after arrival that are either just below or about the same as the native born with similar characteristics and that their self-employment propensity grows with time in the host country - with much of the growth in the first 10 to 15 years after arrival. At the same time, however, immigrant self-employment earnings are well below those of the native born, causing several authors to conclude that immigrants are likely being pushed into self-employment due to barriers in the paid-employment labour market rather than being pulled in by business opportunities (Frenette (2004), and Hou and Wang (2011)). These papers also demonstrate that education and language ability are positively related to the propensity to become self-employed and that the propensity varies strongly by source country.

With the exception of Li (2001), these papers all rely on Census data and define self-employment either based on a class of worker variable or on whether the individual had significant self-employment earnings in the previous year. Importantly, while the class of worker categories includes owners of incorporated businesses, the owners of those businesses are counted as employees of their own corporations for purposes of reporting income. That means that self-employment earnings cannot be separated from paid employment earnings for these people and, as a result, researchers are forced to focus solely on the unincorporated self-employed in examinations of earnings. Green et al. (2016) use linked individual tax data, firm tax data, and immigrant landing records to examine entrepreneurial activity among immigrants who arrived in Canada after 2000. They find that immigrants are more likely to own a firm than their comparison group but the difference largely comes from immigrants being more likely to be self-employed as opposed to owning an incorporated business,¹⁹ and it is in incorporated firms that employment growth happens. Adding in that immigrant owned incorporated firms tend to be smaller, the conclusion is that immigrant entrepreneurs contribute less to employment growth than the comparison group. There is room for a lot more work in the area of immigrant entrepreneurs.

Firm ownership by immigrants is interesting in its own right but is only an indirect

¹⁹For data reasons, the comparison group is the Canadian born plus immigrants who arrived prior to 1980.

measure of immigrant contributions to innovation. [Hunt \(2011\)](#) examines the patenting, wages, and paper publication outcomes of immigrant versus native born Americans using the 2003 National Survey of College Graduates. She finds that immigrants who entered the US on student visas or temporary work visas strongly outperformed the native born in all categories while those who entered as permanent residents (who are largely family reunification class immigrants in the US) performed comparably to the native born. The advantage of the temporary visa entrants turns out to be almost entirely accounted for by their higher education and greater concentration in engineering and science fields of study. Given this, the Canadian selection system ought to imply a greater set of innovators even among the permanent resident entrants. However, [Hou and Picot \(2009\)](#) find that skilled class immigrant engineers suffered particularly large earnings declines after the tech bubble bust of the early 2000's, suggesting that policy in this area is nuanced and raising, again, questions about the transferability of skills.

[Gauthier-Loiselle and Hunt \(2010\)](#) examine the impact of skilled immigration on patent filing across US states. More specifically, their main specification has the change in patents per capita at the state level regressed on the change in skilled immigration, change in the proportion of native born who are skilled, and various state level controls. They find very substantial effects of skilled immigration on patenting: a 1% increase in immigrant university graduates' population share implies an 18% increase in patenting per capita. Combined with the results in [Hunt \(2011\)](#), this could imply some substantial gains to innovation from a selection system that emphasizes education and, in particular, STEM education - though identification issues in this line of research are difficult.²⁰ Of course, there is an issue about whether patents filed in a particular country benefit that country's growth in particular versus helping with growth in all countries. This might be a particularly salient question for a small economy like Canada's. In any case, it seems possible these issues could be studied for Canada using a combination of our excellent landing record data and patent data. Given the results in [Gauthier-Loiselle and Hunt \(2010\)](#), this seems like it should be high on the research agenda.

Immigration may also have an impact on technological change through more indirect channels. In particular, in models of technological choice, firms choose which of a set of existing technologies to implement based on the relative supplies of (and, therefore, the relative costs of) different factors of production (e.g. [Beaudry and Green \(2003\)](#)). Then, to the extent immigrants are more or less educated than residents, they will push the technological mix in different directions. [Lewis \(2011\)](#) examines implementation of IT technologies in different local markets in the US and shows that immigration has

²⁰[Gauthier-Loiselle and Hunt \(2010\)](#) use a variant of the ethnic enclave instrument, which is plausible but may raise concerns given that ethnic enclaves are sometimes sources of capital for starting new businesses.

this type of effect. [Beaudry and Green \(1998\)](#) show that education related wage and employment patterns for Canada fit with a model of technological choice but we do not know of a paper that examines the general equilibrium effects of immigration on technological adoption or invention for Canada.²¹ It is worth pointing out that to the extent these effects exist, empirical models based on assumptions of, say, fixed CES production functions are mis-specified and likely generate biased estimates of immigration impacts on the economy. But regardless of the measurement issues, it would be useful to know more about this potential channel since it would imply that being more selective on, say, education when assessing immigrant applicants could have effects in terms of aiding in the adoption of more advanced technologies. This would be a point in favour of policies that emphasize long run human capital over short term job connection characteristics of immigrants.

[Peri and Shih \(2013\)](#) provide estimates of the overall effect of bringing in foreign innovators by examining the impact of increases in the proportion of foreign born STEM workers on the wages and employment of university and non-university workers in Canada. They are motivated to investigate this question, in part, by the observation that as of 2006, one in three STEM workers in Canada was foreign born (compared to 1 in 4 in the US). Their approach is by now a familiar one: relate differences in wage changes between locations in Canada to changes in the supply of foreign STEM workers. To obtain estimates of the causal effect of the supply, they use a variant on the ethnic enclave instrument in which they predict the growth in foreign STEM workers in a location based on the proportions of STEM workers from each source country in that location in 1981 and the growth in the number of STEM workers from each source country at the national level. They find very large positive effects on the wages of the university educated: a 1% increase in the foreign STEM share of employment in a location implies between a 2.8 and 6.4% increase in university educated wages. They interpret this as showing that increasing STEM skills substantially increases productivity. These authors have produced similarly large estimates for the US and other authors from the IMF have recently generated large estimates for a set of developed economies.

These results are certainly striking but, at least in Canada's case, we think there is reason for some caution before fully accepting them. First, the instrument is somewhat odd. The standard rationale for the ethnic enclave instrument is that it is intended to

²¹Models of technological choice and the labour market have the same structure as Hecksher-Ohlin models of trade, with the different technologies being the equivalent of different goods. As in those models, factor price invariance results emerge unless, for example, capital is not perfectly elastically supplied in a model with two technologies and three factors of production (skilled labour, unskilled labour, and capital). The fact that [Beaudry and Green \(1998\)](#) find wage effects implies that capital is not perfectly elastically supplied in this instance.

capture supply shocks that come from immigrants moving to locations for social reasons reflected in prior concentrations of immigrants from their same source country rather than in response to demand shocks. But in that case the instrument should be based on the initial location of all immigrants - or even better, non-STEM immigrants. Using the initial location of STEM immigrants risks focusing on areas that are particularly beneficial to STEM workers, which could invalidate the exclusion restriction. The authors provide some investigations to respond to this concern but why not just use the better, non-STEM version of the instrument? Second, they find no effect of resident STEM workers on wages. Does this imply that foreign STEM education is better suited to the Canadian economy? Third, they find little significant effect on employment or on the wages of non-university educated workers. A productivity shift, if it is general in nature, should imply positive effects for both. Finally, there are only 17 locations available in the public use Census samples and the set of source countries that can be consistently defined across Censuses is restricted. Several of these concerns could be addressed by using different forms of the instrument and non-public use data. This would certainly be a worthwhile exercise.

5.3 Areas in Which There is Little to No Canadian Evidence

There are several key elements of immigration's impact on the Canadian economy on which we can do little more than make educated guesses. The first of these is the fiscal impact of immigration. On the benefit receipt side, [Crossley et al. \(2001\)](#), working from a specification in [Baker and Benjamin \(1995\)](#) with more data, find that immigrants in Canada receive both unemployment insurance and social assistance benefits at about the same rate as the native born. In fact, for the most part, they find little in the way of changes in receipt of benefits with time in the economy or across successive cohorts. [Ostrovsky \(2012\)](#) largely corroborates these findings with more up to date and better administrative data. Combining the fact that immigrants, on average earn substantially less than native born workers just after arrival and for some years thereafter with unchanged average benefit receipt would seem to imply that expanding immigration would likely be a net drag on Canada's fiscal situation. Indeed, [Javdani and Pendakur \(2014\)](#) shows for recent immigrants to Canada there is a transfer of roughly 500 dollars per year from the native born to immigrants. It does appear that the deteriorating earnings outcomes of new immigrants to Canada has led (unsurprisingly) to a deterioration in the net fiscal position of immigrants. However, the fiscal burden that this implies for the native born does not appear to be large and could likely be eliminated with a modest improvement in immigrant outcomes.

We know even less about the impact of immigration on capital formation and investment in Canada. To the extent that immigrants bring capital with them or induce complementary

capital inflows, predicted immigration impacts would be less negative or more positive. As discussed earlier, we are beginning to get some information on firm formation by immigrants but there is nothing of which we are aware that addresses capital investment issues.

Finally, there are important issues relating to the justice of the point system and the Express Entry system itself. For example, if the education that generates high points and a higher probability of entry to Canada is distributed through nepotism and the proceeds of corruption in sending countries then the justness of the point system seems tarnished. More broadly, what is the right balance between admitting people through the point system versus through family and refugee channels? We know of very little economic research related to these questions yet there is certainly room for economists to make a contribution in this area.

6 Conclusion

We return, in the end, to our original question of how to use research on immigration to aid in the goal of creating a more just immigration policy. As we said earlier, our arguments are not, generally, about definitive policy directions but about how evidence about immigration would enter into discussions about justice. In that regard, the well-known finding that successive generations of immigrants have tended to have worse and worse earnings outcomes (though, possibly, with some slowing of that pattern in recent years) in spite of their having rising nominal education skills is of central importance.

We argue that existing research points to this decline coming from a combination of skills of immigrants that are not highly productive in Canada, discrimination, and declining labour market outcomes for all new labour market entrants - whether or not they are immigrants. To the extent the decline is due to discrimination, this is a clear violation of notions of justice but the lack of transferability of skills also has implications for justice. In particular, under some theories of justice, institutions which do not help new entrants in their goals of realizing their potential are less than just. Responding to either of these concerns requires more evidence of a type that economists can provide. In particular, it would be useful to dig deeper into the source and nature of discrimination, perhaps using more audit studies of the type found in [Oreopoulos \(2011\)](#). In terms of transferring skills to the Canadian economy, there is considerable room for work on immigrant investment patterns and what determines them. Are, for example, immigrants not investing fully in human capital after arrival because of institutional blockages or credit constraints or out of choice given prices for skills in the economy?

The impact of immigrants on outcomes for others is also of central concern. There, the

main finding from the broader literature is that immigrants have only minimal impacts on the wages and employment rates of residents. However, the Canadian immigration policy context is sufficiently different - particularly from the US where much of the literature focuses - that there is both room and need for more work on this for Canada. It is particularly important to study the impacts of the recent shifts in Canadian policy toward a more employer-centred approach. This shift has occurred through the substantial expansion of the TFW program, through the shift in some of the control over immigrant selection toward the provinces, and through changes in the federal selection system itself. We argue that the TFW programme - and, in particular, the more unskilled component of it - raises important issues relative to larger justice goals. More generally, there needs to be discussion about trade-offs between any efficiency gains to bringing in immigrants through a more employer focused system and issues relating to new immigrants being more tied to their employer.

The Canadian research on immigration in economics over the last 50 years has been vibrant and informative and has had direct impacts on immigration policy in this country. We believe that examining this literature and the general questions it addresses through the lens of theories of justice helps to frame the results in the literature and point to new areas for research. But whether the reader agrees with our approach or not, it is hard to deny the importance and interest of this body of research.

References

- Abbott, M. G. and C. M. Beach (1993, August). Immigrant Earnings Differentials and Birth-Year Effects for Men in Canada: Post-war-1972. *Canadian Journal of Economics* 26(3), 505–524.
- Adserà, A. and A. Ferrer (2014, May). The Myth of Immigrant Women as Secondary Workers: Evidence from Canada. *American Economic Review* 104(5), 360–364.
- Adserà, A. and A. Ferrer (2016). Occupational Skills and Labour Market Progression of Married Immigrant Women in Canada. *Labour Economics* 39, 88–98.
- Akbari, A. H. and D. J. Devoretz (1992). The Substitutability of Foreign-Born Labour in Canadian-Production: Circa 1980. *Canadian Journal of Economics* 25(3), 604–614.
- Antecol, H., D. A. Cobb-Clark, and S. J. Trejo (2003). Immigration Policy and the Skills of Immigrants to Australia, Canada, and the United States. *Journal of Human Resources* 38(1), 192–218.

- Antecol, H. and H. J. Schuetze (2005). Immigration, Entrepreneurship, and the Venture Start-up Process. In Z. J. Acs, D. R. Audretsch, and S. C. Parker (Eds.), *International Handbook on Entrepreneurship, Volume 2*. Kluwer Academic Publishers.
- Aydemir, A. and G. J. Borjas (2007, June). Cross-Country Variation in the Impact of International Migration: Canada, Mexico, and the United States. *Journal of the European Economic Association* 5(4), 663–708.
- Aydemir, A., W.-H. Chen, and M. Corak (2013). Intergenerational Education Mobility Among the Children of Canadian Immigrants. *Canadian Public Policy* 39(S1), 107–122.
- Aydemir, A. and C. Robinson (2008, November). Global Labour Markets, Return and Onward Migration. *Canadian Journal of Economics* 41(4), 1285–1311.
- Aydemir, A. and M. Skuterud (2005, May). Explaining the Deteriorating Entry Earnings of Canada’s Immigrant Cohorts: 1966-2000. *Canadian Journal of Economics* 38(2), 641–671.
- Aydemir, A. and A. Sweetman (2008). First- and Second- Generation Immigrant Educational Attainment and Labour Market Outcomes: A Comparison of the United States and Canada. *Research in Labor Economics* 27, 215–270.
- Baglay, S. (2012). Provincial Nominee Programs: A Note on Policy Implications and Future Research Needs. *Journal of International Migration and Immigration* 13(1), 121–141.
- Baker, M. and D. Benjamin (1994). The Performance of Immigrants in the Canadian Labor Market. *Journal of Labor Economics* 12(3), 369–405.
- Baker, M. and D. Benjamin (1995). The Receipt of Transfer Payments by Immigrants to Canada. *Journal of Human Resources* 30(4), 650–676.
- Baker, M. and D. Benjamin (1997). The Role of the Family in Immigrants’ Labor-Market Activity: An Evaluation of Alternative Explanations. *American Economic Review* 87(4), 705–727.
- Banting, K. (2010, December). Is There a Progressive’s Dilemma in Canada? Immigration, Multiculturalism and the Welfare State. *Canadian Journal of Political Science* 43(4), 797–820.
- Banting, K., R. Johnston, W. Kymlicka, and S. Soroka (2006). Do Multicultural Policies Erode the Welfare State? An Empirical Analysis. In K. Banting and W. Kymlicka (Eds.), *Multiculturalism and the Welfare State*, pp. 49–91. Oxford: Oxford University Press.

- Beach, C., A. Green, and C. Worswick (2011). Towards Improving Canada's Skilled Immigration Policy: An Evaluation Approach. Policy Study 45, CD Howe Institute, Toronto, Canada.
- Beach, C. and C. Worswick (1993). Is There a Double-Negative Effect on the Earnings of Immigrant Women? *Canadian Public Policy* 19(1), 36–53.
- Beaudry, P. and D. A. Green (1998). What is Driving US and Canadian Wages: Exogenous Technical Change or Endogenous Choice of Technique? Working Paper 6853, NBER.
- Beaudry, P. and D. A. Green (2003). Wages and Employment in the United States and Germany: What Explains the Differences? *American Economic Review* 93(3), 573–602.
- Blackorby, C. (1990). Economic Policy in a Second Best Environment. *Canadian Journal of Economics* 23(4), 748–771.
- Blackorby, C., W. Bossert, and D. Donaldson (2005). Population issues in social choice theory, welfare economics, and ethics. Cambridge: Cambridge University Press.
- Bloom, D., G. Grenier, and M. Gunderson (1995). The Changing Labour Market Position of Canadian Immigrants. *Canadian Journal of Economics* 28(4), 987–1005.
- Bloom, D. E. and M. Gunderson (1991). An Analysis of the Earnings of Canadian Immigrants. In J. M. Abowd and R. B. Freeman (Eds.), *Immigration, Trade, and the Labor Market*. Chicago: University of Chicago Press.
- Bonikowska, A. and F. Hou (2010). Reversal of Fortunes or Continued Success? Cohort Differences in Education and Earnings of Childhood Immigrants. *International Migration Review* 44(2), 320–353.
- Borjas, G. J. (1985, October). Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants. *Journal of Labor Economics* 3(4), 463–489.
- Borjas, G. J. (1993). Immigration Policy, National Origin, and Immigrant Skills: A Comparison of Canada and the United States. In D. Card and R. B. Freeman (Eds.), *Small Differences That Matter: Labor Markets and Income Maintenance in Canada and the United States*, pp. 21–43. Chicago: University of Chicago Press.
- Borjas, G. J. (2003, November). The Labor Demand Curve is Downward Sloping: Re-examining the Impact of Immigration on the Labor Market. *Quarterly Journal of Economics* 118(4), 1335–1374.

- Borjas, G. J. (2015). The Wage Impact of the Marielitos: A Reappraisal. Working Paper 21588, NBER.
- Boudarbat, B. and T. Lemieux (2014). Why are the Relative Wages of Immigrants Declining? A Distributional Approach. *Industrial and Labor Relations Review* 67(4), 1127–1165.
- Brochu, P., T. Gross, and C. Worswick (2016). Temporary Foreign Workers and Firms: Theory and Canadian Evidence. Working Paper 6, Canadian Labour Economics Forum.
- Card, D. (1990). The Impact of the Mariel Boatlift on the Miami Labor Market. *Industrial and Labor Relations Review* 43(2), 245–257.
- Card, D. (2001). Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration. *Journal of Labor Economics* 19(1), 22–64.
- Card, D. and G. Peri (2016). Immigration Economics: A Review. *Journal of Economic Literature*.
- Chiswick, B. R. (1978). The Effect of Americanization on the Earnings of Foreign-Born Men. *Journal of Political Economy* 86(5), 239–249.
- Clarke, A. and M. Skuterud (2013). Why Do Immigrant Workers in Australia Perform Better Than Those in Canada? Is It the Immigrants or Their Labour Markets? *Canadian Journal of Economics* 29, 849–882.
- Clarke, A. and M. Skuterud (2016). A Comparative Analysis of Immigrant Skills and their Utilization in Australia, Canada, and the USA. *Journal of Population Economics* 29, 849–882.
- Cobb-Clark, D., M. Connolly, and C. Worswick (2005). Post-Migration Investments in Education and Job Search: A Family Perspective. *Journal of Population Economics* 18(4), 663–690.
- Cobb-Clark, D. and T. F. Crossley (2004, June). Revisiting the Family Investment Hypothesis. *Labour Economics* 11(3), 373 – 393.
- Crossley, T. F., J. T. McDonald, and C. Worswick (2001). Immigrant Benefit Receipt Revisited: Sensitivity to the Choice of Survey Years and Model Specification. *Journal of Human Resources* 36(2), 379–397.
- Duleep, H. O. and M. C. Regets (1992). Some Evidence on the Effects of Admissions Criteria on Immigrant Assimilation. In B. R. Chiswick (Ed.), *Immigration, Language and*

- Ethnic Issues: Canada and the United States*, pp. 410–439. Washington D.C.: American Enterprise Institute.
- Duleep, H. O. and M. C. Regets (2002). The Elusive Concept of Immigrant Quality: Evidence from 1970-1990. IZA Discussion Paper 631.
- Dworkin, R. (1981). What is Equality? Part 2: Equality of Resources. *Philosophy and Public Affairs* 10(4), 283–345.
- Ferrer, A., D. A. Green, and W. C. Riddell (2006). The Effect of Literacy on Immigrant Earnings. *Journal of Human Resources* 41(2), 380–410.
- Ferrer, A. and W. C. Riddell (2008). Education, Credentials, and Immigrant Earnings. *Canadian Journal of Economics* 41(1), 186–216.
- Finnie, R. and R. E. Mueller (2008, June). Access to Post-Secondary Education in Canada Among First and Second Generation Canadian Immigrants: Raw Differences and Some of the Underlying Factors. Technical report.
- Frenette, M. (2004, June). Do the Falling Earnings of Immigrants Apply to Self-Employed Immigrants? *Labour: Review of Labour Economics and Industrial Relations* 18(2), 207–232.
- Frenette, M. and R. Morissette (2005). Will They Ever Converge? Earnings of Immigrant and Canadian-born Workers Over the Last Two Decades. *International Migration Review* 39(1), 228–257.
- Gauthier-Loiselle, M. and J. Hunt (2010). How Much Does Immigration Boost Innovation? *American Economic Journal: Macroeconomics* 2(2), 31–56.
- Grant, M. L. (1999). Evidence of New Immigrant Assimilation in Canada. *Canadian Journal of Economics* 32(4), 930–55.
- Green, A. G. (1976). *Immigration and the Postwar Canadian Economy*. Toronto: Macmillan of Canada.
- Green, A. G. (1995). A Comparison of Canadian and US Immigration Policy in the Twentieth Century. In *Diminishing Returns: The Economics of Canada's Recent Immigration Policy*. CD Howe Institute and the Laurier Institute.
- Green, A. G. and D. A. Green (1995). Canadian Immigration Policy: The Effectiveness of the Point System and Other Instruments. *Canadian Journal of Economics* 28(4b), 1006–1041.

- Green, A. G. and D. A. Green (1999). The Economic Goals of Canada's Immigration Policy: Past and Present. *Canadian Public Policy* 25(4), 425–451.
- Green, D. A. and A. G. Green (2016). Immigration and the Canadian Earnings Distribution in the First Half of the 20th Century. *Journal of Economic History* 76(2), 387–426.
- Green, D. A., H. Liu, Y. Ostrovsky, and G. Picot (2016). Immigration, Business Ownership and Employment in Canada. Research Paper 375, Analytical Studies Branch, Statistics Canada.
- Green, D. A. and W. C. Riddell (2017). Is There a Trade Off Between Ethnic Diversity and Redistribution? The Case of Income Assistance in Canada. Clsrsn working paper, Vancouver School of Economics.
- Green, D. A. and C. Worswick (2004). Immigrant Earnings Profiles in the Presence of Human Capital Investment: Measuring Cohort and Macro Effects. Working Paper W04/13, Institute for Fiscal Studies.
- Green, D. A. and C. Worswick (2012). Immigrant Earnings Profiles in the Presence of Human Capital Investment: Measuring Cohort and Macro Effects. *Labour Economics* 19(2), 241–259.
- Gross, D. M. and N. Schmitt (2012, June). Temporary Foreign Workers and Regional Labour Market Disparities in Canada. *Canadian Public Policy* 38(2), 233–263.
- Hamilton, B. and J. Whalley (1984). Efficiency and Distributional Implications of Global Restrictions on Labor Mobility: Calculations and Policy Implications. *Journal of Development Economics* 14(1), 61–75.
- Hou, F., Y. Ostrovsky, and G. Picot (2008). Internal Migration of Immigrants: Do Immigrants Respond to Regional Labour Demand Shocks? Research Paper 318, Analytical Studies Branch, Statistics Canada.
- Hou, F. and G. Picot (2009, June). The Effect of Immigrant Selection and the IT Bust on the Entry Earnings of Immigrants. Working Paper 29, Canadian Labour and Skills Research Network, UBC.
- Hou, F. and G. Picot (2016). Changing Immigrant Characteristics and Entry Earnings. Research Paper 374, Analytical Studies Branch, Statistics Canada.
- Hou, F. and S. Wang (2011). Immigrants in Self-Employment. *Perspectives on Labour and Income* 23(3), 5–16. Statistics Canada Catalogue no. 75-001-X.

- Hum, D. and W. Simpson (2004). Reinterpreting the Performance of Immigrant Wages from Panel Data. *Empirical Economics* 29, 129–147.
- Hum, D. and W. Simpson (2007). The Legacy of Immigration: Labour Market Performance and Education in the Second Generation. *Applied Economics* 39(15), 1985–2009.
- Hunt, J. (2011). Which Immigrants are Most Innovative and Entrepreneurial? Distinctions by Entry Visa. *Journal of Labor Economics* 29(3), 417–457.
- Imai, S., D. Stacey, and C. Warman (2011). From Engineer to Taxi Driver? Occupational Skills and the Economic Outcomes of Immigrants. Working Paper 1275, Queen’s University.
- Immigration, Refugees and Citizenship Canada (2017). Fact Sheet - Temporary Foreign Worker Program. Technical report.
- Innis, H. A. (1956). An Introduction to Canadian Economic Studies. In M. Q. Innis (Ed.), *Essays in Canadian Economic History*, pp. 159–175. Toronto: University of Toronto Press.
- Javdani, M. and K. Pendakur (2014). Fiscal Effects of Immigrants in Canada. *Journal of International Migration and Integration* 15, 777–797.
- Kaushal, N. and Y. Lu (2014). Recent Immigration to Canada and the United States: A Mixed Tale of Relative Selection. *International Migration Review* 49(2), 479–522.
- Kennan, J. (2013). Open Borders. *Review of Economic Dynamics* 16, L1–L13.
- Lewis, E. (2011). Immigration, Skill Mix, and Capital Skill Complementarity. *Quarterly Journal of Economics* 126(2), 1029–1069.
- Li, P. S. (2001). Immigrants’ Propensity to Self-Employment: Evidence from Canada. *International Migration Review* 35(4), 1106–1128.
- Li, Q. and A. Sweetman (2014). The Quality of Immigrant Source Country Educational Outcomes: Do They Matter in the Receiving Country? *Labour Economics* 26, 81–93.
- Long, J. E. (1980, June). The Effect of Americanization on Earnings: Some Evidence for Women. *Journal of Political Economy* 88(3), 620–629.
- McDonald, J. T. and C. Worswick (1998, April). The Earnings of Immigrant Men in Canada: Job Tenure, Cohort, and Macroeconomic Conditions. *Industrial and Labor Relations Review* 51(3), 465–482.

- McWhinney, M. (1998). A Selection Criteria Chronology, 1967-1997: Critical Changes in Definition, the Point System and Priority Processing. Technical report, Strategic Research and Review Branch, Citizenship and Immigration Canada.
- Meng, R. (1987). The Earnings of Canadian and Native-Born Males. *Applied Economics* 19, 1107–1119.
- Mincer, J. A. (1974). The Human Capital Earnings Function. In *Schooling, Experience, and Earnings*, pp. 83–96. NBER.
- Nozick, R. (1974). *Anarchy, State, and Utopia*. New York: Basic Books. pp. 149-182.
- Oreopoulos, P. (2011). Why Do Skilled Immigrants Struggle in the Labor Market? A Field Experiment with Thirteen Thousand Resumes. *American Economic Journal: Economic Policy* 3(4), 148–171.
- Ostrovsky, Y. (2012). The Dynamics of Immigrant Participation in Entitlement Programs: Evidence from Canada, 1993-2007. *Canadian Journal of Economics* 45(1), 107–136.
- Pandey, M. and J. Townsend (2013). Provincial Nominee Programs: An Evaluation of the Earnings and Settlement Rates of Nominees. *Canadian Public Policy* 39(4), 603–618.
- Parent, D. and C. Worswick (2004). Immigrant Labour Market Performance and Skilled Immigrant Selection: The International Experience. Technical report, Project Report, 2004RP-07, CIRANO, Montreal, Quebec.
- Pendakur, K. and R. Pendakur (1998). The Colour of Money: Earnings Differentials Among Ethnic Groups in Canada. *Canadian Journal of Economics* 31(3), 518–548.
- Peri, G. and K. Y. Shih (2013). Foreign Scientists and Engineers and Economic Growth in Canadian Labor Markets. IZA Discussion Paper 7367.
- Peri, G. and C. Sparber (2009). Task Specialization, Immigration and Wages. *American Economic Journal: Applied Economics* 1(3), 135–169.
- Peri, G. and V. Yasenov (2015). Synthetic Control Method and Immigration Shocks: The Case of the Mariel Boatlift. Technical report, UC Davis Department of Economics.
- Picot, G. and P. Piraino (2013, November). Immigrant Earnings Growth: Selection Bias or Real Progress. *Canadian Journal of Economics* 46(4), 1511–1536.
- Rawls, J. (1993). The Law of Peoples. *Critical Inquiry* 20(1), 36–68.

- Schaafsma, J. and A. Sweetman (2001, November). Immigrant Earnings: Age at Immigration Matters. *Canadian Journal of Economics* 34(4), 1066–1099.
- Schuetze, H. J. (2010). Immigration Policy and the Self-Employment Experience of Immigrants to Canada. In T. McDonald, E. Ruddick, A. Sweetman, and C. Worswick (Eds.), *Canadian Immigration: Economic Evidence for a Dynamic Policy Environment*. Montreal: McGill - Queen's University Press.
- Sen, A. (1999). *Development as Freedom*. Oxford University Press.
- Sen, A. (2009). *The Idea of Justice*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press.
- Skuterud, M. (2010). The Visible Minority Earnings Gap Across Generations of Canadians. *Canadian Journal of Economics* 43(3), 860–881.
- Tandon, B. B. (1978). Earnings Differentials Among Native-Born and Foreign-Born Residents of Toronto. *International Migration Review* 12, 405–410. (Fall).
- The National Academies of Sciences, Engineering, and Medicine (2016). The Economic and Fiscal Consequences of Immigration. Technical report, Washington, DC: The National Academies Press.
- Trefler, D. (1993). International Factor Price Differences: Leontief Was Right! *Journal of Political Economy* 101(6), 961–987.
- United Nations General Assembly (2016, October). The New York Declaration for Refugees and Migrants. Technical report.
- Warman, C. (2007, May). Ethnic Enclaves and Immigrant Earnings Growth. *Canadian Journal of Economics* 40(2), 401–422.
- Warman, C. and C. Worswick (2015). Technological Change and Declining Immigrant Outcomes, Implications for Income Inequality in Canada. *Canadian Journal of Economics* 48(2), 736–772.
- Warman, C. and C. Worswick (2016). Immigrant Category of Admission of the Parents and Outcomes of the Children: How Far Does the Apple Fall? CReAM Discussion Paper 1618, Centre for Research & Analysis of Migration.
- Worswick, C. (1996). Immigrant Families in the Canadian Labour Market. *Canadian Public Policy* 22(4), 378–396.

Worswick, C. (1999). Credit Constraints and the Labour Supply of Immigrant Families in Canada. *Canadian Journal of Economics* 32(1), 152–170.

Worswick, C. (2004). Adaptation and Inequality: Children of Immigrants in Canadian Schools. *Canadian Journal of Economics* 37(1), 53–77.