The Labor Market Returns to Permanent Residency

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Abstract

We study the labor market returns to permanent residency (PR) using administrative data that links temporary and permanent visa records from 2004-2019 to matched employer-employee data in Canada. Using an event-study design that exploits variation in the timing of receiving PR among immigrants who initially arrived on temporary visas, we estimate the impact of PR on a wide range of labor market outcomes. We find a sharp, immediate, and persistent increase of roughly 10 percentage points in the probability of switching jobs after receiving PR. Additionally, we find an increase in labor earnings of 7-8 percent after three years, with roughly 40-50 percent of the gain attributable to increased sorting into higher-wage firms after receiving PR. We find limited heterogeneity by gender but larger effects for lower-wage workers. Firms with a larger share of temporary workers pay lower wages to all workers (based on estimated firm pay premia), suggesting negative firm selection into the temporary visa program. To interpret these results, we develop a search-and-matching model featuring heterogeneous workers and firms. Permanent residents and domestic workers search for jobs in the same labor market and engage in on-the-job search, while temporary visa holders search separately within a segmented labor market and do not receive outside wage offers. We calibrate the model to match our reduced-form results and use the model to simulate the longer-run effects of receiving PR, finding a doubling of the three-year effects of PR on earnings and firm pay premia over the next 10-15 years. We also simulate two counterfactual policies – (1) reducing the administrative burden of the temporary visa application process and (2) awarding all temporary visa holders permanent residency – and calculate the market-level effects on output, wages, profits, and social welfare.

**** PRELIMINARY AND INCOMPLETE ****

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1 Introduction

Immigrants have far-reaching effects on the economy and the labor market. Labor economists have studied how immigrants affect employment, wages, and wage inequality (Card, 1990, 2001; Borjas, 2003). Furthermore, researchers have studied the fiscal impacts of immigration, both directly, through taxes and government transfers (Blau and Mackie, 2017), and indirectly, through their impact on the wage distribution (Colas and Sachs, 2024). Beyond the labor market, economists have studied how immigrants affect the prices of non-tradable goods and services (Cortes, 2008), local real estate rental prices (Saiz, 2003, 2007), and voting behavior (Halla, Wagner, and Zweimüller, 2017; Mayda, Peri, and Steingress, 2022).

Economists typically interpret an increase in immigration as an increase in aggregate labor supply, which in turn affects the labor market through the structure of aggregate labor demand. For example, textbook models predict that an increase in the number of immigrants with low levels of education will increase the relative wages of natives with high levels of education and decrease the relative wages of natives with low levels of education (Katz and Murphy, 1992). In this standard framework, the labor market effects of immigration primarily depend on immigrants' human capital since in competitive labor markets, workers are paid their marginal product (which depends on a worker's skill and the aggregate supply of workers of different skill levels in the economy).

This framework, while undoubtedly useful, abstracts from important institutional features of immigration in practice. In many countries, immigrants typically arrive either as temporary visa holders or as permanent residents. While some visa programs allow immigrants to have the same "freedom of movement" between jobs as native-born citizens, others – such as the H-1B visa program in the United States – essentially "tie" immigrants to particular employers (U.S. Citizenship and Immigration Services, 2025h). Such distinctions between different types of visas could be important for the labor market outcomes of immigrants. For example, a "closed" visa can affect an immigrant's bargaining power and ability to search for more productive matches in the labor market and thus overall wage growth.

This paper examines the labor market outcomes of immigrants who arrive in Canada as Temporary Foreign Workers (TFWs) and subsequently receive permanent residency (PR). To do this, we link temporary visa records from 2004 to 2019 for roughly 200,000 temporary foreign workers to Canadian matched employer-employee administrative data. The temporary visa records contain information on the precise year and month that each visa was awarded (and the year and month

that each visa ended if the visa was temporary), along with the date that the individual successfully became a permanent resident.

We use the linked data and an event-study design to estimate the causal effect of permanent residency (PR) on labor market outcomes. Our research design compares across cohorts of immigrants arriving to Canada in different years but who took the same amount of time to transition from a temporary visa holder to a permanent resident. This design effectively "matches" temporary foreign workers based on their time-to-permanent residency and compares cohorts of immigrants who arrived to Canada in different years. Intuitively, our research design treats the duration of temporary residency as endogenous (allowing, for example, for higher-skilled immigrants to get awarded permanent residency more quickly, all else equal), but assumes that the specific year of arrival is plausibly exogenous. In support of this identifying assumption, we find that the event-study figures for all our main labor market outcomes show negligible pre-trends in the years leading up to the award of permanent residency. Additionally, we consistently find sharp changes in our main labor market outcomes immediately after permanent residency is received.

Turning to our main results, we find clear "on-impact" effects of permanent residency on the probability of a job-to-job transition. The effect is immediate and persistent, with an increase of roughly 10 percentage points each year during the first five years after permanent residency. Alongside the increased job switching, we find a clear increase in labor earnings of about 7-8 percent over three years, with larger earnings increases for lower-wage immigrants. The earnings effects emerge quickly and increase steadily over time, consistent with the persistently higher rates of job switching.

Lastly, we examine the sorting behavior of temporary workers who transition to permanent residency. To explore the role of firm heterogeneity, we estimate firm fixed effects from the full-population matched employer-employee data using an auxiliary two-way fixed effects model for log worker earnings. We find that when a TFW transitions to permanent residency, they sort to firms with larger firm pay premia. Our estimates indicate an increase in the firm fixed effects of about 3-4 percent. Mirroring the patterns for labor earnings, the effects of PR on firm pay premia emerge quickly and steadily increase over time. If we divide the estimated firm pay premia effects by the estimated earnings effects, we conclude that sorting to "high-wage firms" is about 40-50 percent of the overall earnings effects.

To guide and interpret our reduced-form empirical results, we develop a search-and-matching model with heterogeneous workers and firms that builds on the framework in Lise, Meghir, and

Robin (2016). In the model, firms can post job vacancies either for domestic workers and permanent residents or for temporary foreign workers (TFWs). In order to post a vacancy for a temporary foreign worker, a firm must submit a costly application to the government and can only post a vacancy for temporary workers if the application is successful (which happens probabilistically). Alternatively, job vacancies can be posted to recruit domestic workers and permanent residents, and we allow for both search by unemployed workers and on-the-job search for employed domestic workers and permanent residents. Workers meet vacancies at random according to an aggregate meeting function, and wages are set by Nash bargaining.

Workers can use outside offers to bid up their wages when they randomly meet a more productive firm, and productive firms can poach employed workers. However, for temporary workers, we assume that they cannot be poached. This is consistent with the institutional features of the TFW Program in Canada, which effectively "ties" TFWs to the specific employers that initially hired them. This design feature gives employers greater monopsony power over the temporary workers they employ. The model predicts that immediately after a temporary worker becomes a permanent resident, the probability of job switching increases and the earnings of the immigrants increase steadily as workers gradually move to more productive firms. Thus, the model can qualitatively match all our main reduced-form results in a parsimonious way.

We next calibrate the model to quantitatively match our reduced-form results and use it to analyze counterfactual immigration policies. We first show that the calibrated model can match the negative firm selection into the TFW program that we observe in the data. Next, we show that the calibrated model fits our reduced-form results on job transitions, earnings, and firm pay premia, although this requires that the distribution of TFW productivity increases after PR. Without this increase, we simulate smaller earnings effects of PR relative to firm pay premia effects. Third, we simulate the longer-run effects of PR using the model to extend well beyond the end of our event-study window. We find that the three-year estimates in our event study analysis understate the 15-year effect by about half, and we note that we find persistently higher job transitions 5 years later in our reduced-form analysis, which is also consistent with our calibrated model.

Lastly, we perform two counterfactual experiments. The first increases the probability of acceptance of a TFW application. This can be thought of as streamlining the program and reducing its administrative burden (Herd & Moynihan, 2018). We find that as the probability increases, more firms post vacancies in the TFW market, which increases output in that market and decreases output in the domestic market. Firm profits increase in both segments because of the reduction in

expected cost of a vacancy. The increase in output leads to an increase in social welfare, despite a reduction in average wages. In the second counterfactual experiment, we give all current TFWs permanent residency at once and examine the new equilibrium output, wages, profits, and vacancies. We find that "shutting down" the segmented labor market results in an increase in average wages and an increase in social welfare, but key to this result is the increase in productivity of TFWs after PR (which is necessary to match our reduced-form results). Without the increase in productivity, shutting down the TFW segment actually reduces social welfare.

Our paper makes several contributions to the literature. First, our paper complements existing evidence on the effects of mobility restrictions for foreign workers in the New Zealand (Townsend and Allan, 2024); Spain (Domenella, 2025); Switzerland (Ahrens et al., 2024); United Arab Emirates (Naidu, Nyarko, and Wang, 2016); and United States (Hunt and Xie, 2019; Wang, 2020). Townsend and Allan (2024) find that the elimination of temporary work restrictions in New Zealand increases job mobility but does not have an effect on earnings for migrants who obtain permanent residence. We complement Townsend and Allan (2024) by considering a novel research design as discussed above and investigating the effect of permanent residence on worker sorting to heterogeneous firms. Furthermore, Townsend and Allan (2024) analyze counterfactual scenarios using a static frictionless model of the labor market. In contrast, we develop a dynamic search-and-matching model which captures the institutional features of the temporary foreign worker labor market, such as restrictions on job mobility, and features labor shortages (based on the "tightness" of the labor market) which often motivates governments' use of temporary visas in the first place. With our model, we can explore counterfactual scenarios that are more relevant to visa policy in our setting and the United States, such as shortening or lengthening the average length of time before temporary immigrants are allowed to become permanent residents.

Domenella (2025) studies the impact of citizenship for temporary foreign workers that are required to work in particular occupations or geographic regions.[1] Similarly, Ahrens et al. (2024) study the effect of labor market restrictions that limit refugees' employment options to particular sectors, occupations, or geographic regions.[2] Our study differs from both Domenella (2025) and

[1] Domenella (2025) explains that the temporary foreign workers in Spain obtain legal authorization to work through temporary visas that must be renewed every one to two years. These visa renewals require temporary foreign workers to demonstrate that they are "attached" to the Spanish labor market. One way to indicate their attachment is to show that they will continue to work for the same employer after visa renewal. This indicates that ties to the employer are important but not legally required for these workers. In contrast to Domenella (2025), the temporary foreign workers in our setting are legally tied to their specific employers and are not allowed to switch employers unless they obtain a new temporary visa or permanent residence. Our job mobility restrictions are thus more strict.

[2] Ahrens et al. (2024) also study employment bans, where refugees are not able to work at all, and policies that allow employers to prioritize residents over refugees.

Ahrens et al. (2024) by focusing on temporary foreign workers with visas that restrict their movement *across employers*, not just sectors or geographic regions. Similar to both Domenella (2025) and Ahrens et al. (2024), we find that job mobility restrictions restrict workers' employment options and decrease earnings as a result.

Relative to Naidu, Nyarko, and Wang (2016), we provide evidence from a high-income country with visas that are fairly comparable to the temporary visas and permanent residency laws in the United States and other high-income countries. In the U.S. context, Hunt and Xie (2019) and Wang (2020) analyze survey data from the National Survey of College Graduates (NSCG), where employment and wages are recorded biennially for two or three cycles for a relatively small number of temporary foreign workers. We complement Hunt and Xie (2019) and Wang (2020) by using large-scale administrative matched employer-employee data containing the near universe of temporary workers in Canada over a 16-year period, along with a novel difference-in-differences design which conditions on time-to-PR and exploits the differential timing of entry to Canada. Our large administrative dataset allows us to estimate event studies separately for low- and high-skilled workers and consider a wider range of labor market outcomes.

Second, our paper is related to literature on the determinants of immigrant earnings and the recent work studying sorting and the role of firms in understanding earnings inequality between immigrants and natives. Recent evidence suggests that new migrants tend to cluster at low-wage firms (Amior and Stuhler, 2024; Gyetvay and Keita, 2024), and our work complements these papers by showing that temporary workers move to high-wage firms when mobility restrictions are eliminated. Other papers show that firm heterogeneity and differential sorting of immigrants and natives into firms are important for the immigrant-native pay gap (Pendakur and Woodcock, 2010; Dostie et al., 2023; Brinatti and Morales, 2024; Arellano-Bover and San, 2024; Tino, 2024; Xu, 2024), and we complement this literature by focusing on the role of the specific visa in shaping the labor market outcomes of immigrants. More broadly, our paper contributes to the literature on the determinants of immigrant earnings in Canada (Ferrer, Green, and Riddell, 2006; Skuterud and Su, 2012; Fortin, Lemieux, and Torres, 2016; Javdani and McGee, 2018) by demonstrating that temporary work permit restrictions lead to lower earnings for temporary foreign workers.

Lastly, we contribute to the literature on immigration policy (Beach, Green, and Worswick, 2011; Green and Worswick, 2017; Brochu, Gross, and Worswick, 2020; Doyle, Skuterud, and Worswick, 2025) by developing a new model of the labor market effects of immigration that carefully distinguishes between temporary residents and permanent residents. We calibrate the model to

our reduced-form results and simulate the long-run effects of obtaining permanent residency for a temporary foreign worker. We then run counterfactual policy experiments, including reducing the administrative burden of the TFW application process and awarding all temporary visa holders permanent residency. Consistent with the findings of Fukui and Mukoyama (2025), our model–which incorporates TFWs and ex-ante firm and worker heterogeneity–shows that on-the-job search leads to overvaluation of the match surplus in the market equilibrium, leading to excessive creation of vacancies.[3]

The remainder of our paper proceeds as follows. Section 2 presents a brief discussion of the Temporary Foreign Worker Program (TFWP) in Canada and other relevant institutional details. Section 3 describes the data that we use in our empirical analysis, which include the matched employer-employee data and the databases on temporary residents and permanent residents. Section 4 describes our research design and how we identify and estimate the average effect of permanent residency among the sample of individuals who begin as temporary residents and then transition to permanent residents. Section 5 presents our results. Section 6 presents our search-and-matching model. Section 7 describes our model-based calibration and our analysis of counterfactual policies. Section 8 concludes.

2 Background on the Temporary Foreign Worker Program

In this section, we describe the Temporary Foreign Worker Program (TFWP) in Canada. There was a major reform to the TFWP in 2014, so we consider the periods before 2014 and after 2014 separately. For an overview of the TFWP timeline, see Figure A1 in the Online Appendix.

2.1 Before 2014

The Temporary Foreign Worker Program (TFWP) was established by the Canadian federal government in 1973.[4] The main objective was to help employers address labor shortages when they were unable to fill vacancies with Canadian workers. The program initially allowed firms to hire high-skilled foreign workers. In 2002, the Low-Skill Pilot Project was launched which expanded the

[3]Fukui and Mukoyama (2025) demonstrate that even when the Hosios condition and a sequential-auction wage mechanism resolve the investment margin's "worker-stealing", the decentralized equilibrium in a job-ladder model fails to achieve the efficient outcome. The authors show that this leads the market to overvalue the match surplus, ultimately causing an excessive creation of vacancies.

[4]The TFWP was distinct from the seasonal agricultural worker program (SAWP) launched in 1966 and the Live-in Caregiver Program (LCP) which began in 1981.

program to include a separate stream for low-skilled workers. Between 2002 and 2014, whether a foreign worker would be hired through the high-skill or low-skill stream depended on their intended occupation. Occupations were classified during this period into low-skilled and high-skilled using National Occupation Classification (NOC) codes. Occupations with NOC codes 0 (managerial), A (professional), or B (skilled and technical) were categorized as high-skilled, whereas individuals with NOC codes C (intermediate and clerical) or D (elemental and labourer) were categorized as low-skilled.

Gross and Schmitt (2012) explain that there were three key restrictions associated with temporary work permits under the TFWP:

1. The temporary permits were fixed-term employment contracts, typically lasting one to two years, though TFWs could seek renewals or alternative work permits to extend their stay in Canada.

2. The permits were "closed work permits," meaning that TFWs were not allowed to switch employers.

3. There was a requirement to leave Canada after work permit expiration (unless the permit was renewed or a new permit was obtained).

There was no limit on the cumulative duration that TFWs could remain in Canada on a work permit until 2011, when the government implemented the "four-in, four-out" rule requiring TFWs without PR to leave Canada for four years after accumulating four years of work experience.

To hire a TFW, employers were required to first apply for a Labour Market Opinion (LMO) issued by Human Resources and Skills Development Canada (HRSDC). Appendix I.1 shows an example LMO application form for the low-skilled stream, and Appendix I.2 shows an example LMO application form for the high-skilled stream. The purpose of the LMO was for HRSDC to determine whether hiring the TFW would have an adverse affect on the Canadian labour market. If the application was successful, the applicant would receive a "positive" or "neutral" LMO, indicating that the TFW would have a positive or neutral affect on the Canadian labor market. A positive or neutral LMO was required for the employer to hire the TFW. Elgersma (2014) outlines the main conditions for a positive or neutral LMO:

1. The TFW must receive wages and working conditions comparable to those of Canadians in the same occupation and geographic region.

2. The employer must have made a "reasonable effort" to hire or train a Canadian worker before recruiting a TFW.[5]

3. The employer must provide evidence that hiring the foreign worker does not interfere with an ongoing labor dispute at the workplace.

Employers increased their chances of obtaining a positive or neutral LMO if they were also able to show that hiring the TFW would be beneficial to the Canadian labor market, for example if the worker filled a labor shortage, created new job opportunity, or transfered skills to Canadian workers.

Although employers were required to ensure that the wages and employment conditions of TFWs were comparable to those of Canadian workers in similar occupations in the same geographic region, it has been argued that many employers paid TFWs below market wages and subjected them to inferior working conditions (Thompson, 2016; Brochu, Gross, and Worswick, 2020).

Once granted a positive or neutral LMO, employers often collaborated with international recruitment agencies to hire TFWs. Employers also used job advertisements to attract TFWs – in some cases, they structured job postings in ways that appeared designed to favor foreign applicants, such as requiring specific language skills unrelated to the job's essential duties.[6] There were no significant application fees to request the LMO until 2013, when the government introduced a $275 application fee (Government of Canada, 2014).

Between 2002 and 2013, the government implemented several policies to facilitate employers' access to TFWs, including pilot programs to fast-track work permit applications. For instance, the Expedited LMO Pilot was launched in 2007, which allowed employers in Alberta and British Columbia to fast-track work permit applications for workers in 19 high-skilled and 14 low-skilled occupations (O'Donnell and Skuterud, 2021). Overall, there was a significant increase in the use of the TFW program in Canada during this period, with more than 3,500 employers using temporary foreign workers for 30% or more of their workforce (including 1,123 employers for 50% of their workforce) (Elgersma, 2014). Figure 1 shows the number of TFWs in Canada increased from 18,435 in 2002 to 79,195 in 2013.

[5]Proving that "reasonable effort" was made to recruit Canadians typically required first publicly advertising the job opening to Canadians before recruiting a TFW. The initial advertising requirements were 2 weeks within 3-months of requesting the LMO. The minimum advertisement length was later increased to 4 weeks in 2013.

[6]A notable example of this was a mining company in British Columbia that required Mandarin proficiency for low-skilled labor, as described in the December 7, 2012 CBC article, "Mandarin required in worker permits for B.C. mine project" (CBC News, 2012).

2.2 After 2014

In 2012–2013, media reports indicated that employers were exploiting the TFWP by overhiring and becoming overly reliant on temporary foreign workers, prompting the federal government to implement a major reform in 2014 (O'Donnell and Skuterud, 2021). One important change was the replacement of the LMO with the Labour Market Impact Assessment (LMIA). The LMIA process is more stringent than the LMO (O'Donnell and Skuterud, 2021). For example, the LMIA requires employers to provide additional details proving that they made a reasonable effort to recruit Canadians, such as the number of Canadian applicants to a job posting, the number interviewed, and justifications for not hiring them (Government of Canada, 2014). Employers are also required to attest that that hiring the TFW would not result in job losses for domestic workers at worksites employing TFWs. Appendix I.3 shows an example LMIA applicaton form.

Another modification was the division of the TFWP into high-wage and low-wage streams, based on whether the offered wage exceeded the median provincial or territorial wage. These wage-based streams differ from, but are similar to, the previous classification based on skill levels. High-wage positions typically include managerial, scientific, professional, technical, and skilled trades roles, while low-wage positions primarily encompass general laborers, food counter attendants, and sales and service workers (Government of Canada, 2014).

There were several other significant reforms to the TFWP in 2014. The application fee increased to $1,000 per position requested. In addition, the federal government introduced a cap limiting the proportion of low-wage temporary foreign workers to reduce employers' reliance on TFWs. For employers with at least 10 workers who apply for an LMIA, the cap limited the number of TFWs to 10% of their workforce, phased in from 2015 to 2016 (Government of Canada, 2014). Also, the "four-in, four-out" rule was eliminated in 2016, allowing TFWs to renew their work permits and remain in Canada longer than 4 years if desired.

2.3 Pathways to Permanent Residency

Most Temporary Foreign Workers (TFWs) hold temporary work permits that do not guarantee permanent residency, requiring them to apply through standard PR channels. The proportion of TFWs who obtained PR within five years of arrival increased from approximately 18% for those arriving between 2000 and 2004 to 25% for those arriving between 2010 and 2014 (Picot et al., 2022). Historically, it was more common for low-skilled TFWs to transition to PR, but the gap in

5-year transition rates between low-skilled and high-skilled TFWs has narrowed for recent cohorts. Among TFWs who arrived between 2000 and 2004, 11% of high-skilled workers obtained PR within five years, compared to 30% of low-skilled workers. However, this gap narrowed for the 2010–2014 cohort, with 27% of high-skilled workers and 30% of low-skilled workers achieving PR within five years. Appendix A discusses the relevant PR programs and the common pathways to PR for both low- and high-skilled workers.

2.4 Comparison to Immigration Pathways in the United States

In many ways, the TFWP is analogous to the H1-B program in the United States, since individuals with an H1-B program are temporary foreign workers who are tied to the specific employer. Like the H1-B, workers in the TFWP are allowed to declare the intention to immigrate permanently to Canada and apply for permanent residency through any of the available PR pathways. Appendix D describes the H1-B program in more detail and discusses several of the most common pathways to permanent residency in the United States.

3 Data

Our primary dataset is the Canadian Employer-Employee Dynamics Database (CEEDD), a comprehensive matched employer-employee dataset maintained by Statistics Canada. The CEEDD covers the near universe of individuals and firms in Canada from 2002 to 2019. This dataset integrates several sources: the T1 Personal Master File (T1PMF), which provides individual-level demographic information such as age, location, marital status, and gender; the T4 database linked to the record of employment (T4ROE), which includes job-level data on earnings and industry; the National Accounts Longitudinal Microdata File (NALMF), which contains details on firms' financial positions; the Immigrant Longitudinal Database (IMDB), which contains detailed demographic information on Canadian permanent residents; and the Temporary Resident (TR) File, which includes information on individuals' temporary permits.

3.1 Main sample

For our main analyses, we impose the following sample restrictions. First, we restrict the sample to individuals whose first temporary permit in Canada is associated with a Labor Market Opinion

(LMO) or Labor Market Impact Assessment (LMIA).[7] This variable is only available in the Temporary Resident (TR) file from 2004 onwards, so this restricts our sample to the period 2004 to 2019. Second, we restrict the sample to the "primary job," i.e., the job with the highest earnings in a given year. The corresponding employer is defined as the *primary* employer.

Next, we link the individuals that pass the above filters to firms for which we obtain firm effects from the AKM model.[8] To estimate the AKM firm effects, we use the full-population in the matched employer-employee data following the large AKM literature. The AKM firm fixed effects are identified using the subsample of *movers*, i.e., the subsample of individuals whose *primary* employer changes from one year to the next. For details on the AKM sample and estimation, see Section C in the Online Appendix.

Finally, to obtain our final sample for the empirical analyses, we restrict the sample to individuals who (a) hold temporary visas for 3 to 5 consecutive years prior to permanent residency and (b) have strictly positive earnings from their second year as a TFW until two years after permanent residency. Given that the first year of earnings for TFWs are guaranteed to be partial annual earnings, we exclude each TFW's first year of earnings from our analyses. In addition, to maximize sample size, we use a semi-balanced panel rather than a fully balanced sample, allowing individuals to enter or exit the sample after the 2-year cut-off.

3.2 The low-skilled and high-skilled subsamples

To classify a worker's skill, we use the NOC 2016 codes associated with the individual's "intended occupation" measured at the time of permanent residency.[9] To ensure that our low- and high-skilled samples are consistent with the low- and high-skilled TFWP streams, following Cardoso et al. (2023) we classify NOC codes 0, A, and B as high-skilled and NOC codes C and D as low-skilled.[10]

[7] As described in Section 2, the terminology changed from LMO to LMIA in 2014.

[8] If in year t individual i's *primary* employer j is not in the connected set of employers that we use to estimate the AKM model, we remove observation (i, t) from the data. Since the connected set is over 95% of all firms in the AKM sample, this removes very few observations (see Section C in the Online Appendix).

[9] The National Occupation Classification (NOC) 2016 is the nationally accepted taxonomy and organizational framework of occupations in the Canadian labor market, maintained as part of a collaborative partnership between Employment and Social Development Canada and Statistics Canada.

[10] While the TFWP was reformed in 2014 to classify workers based on high- and low-wages, we do not observe hourly wages in the CEEDD (only annual earnings) and thus maintain our skill classification using NOC codes for all years in the data. Note that the majority of our sample obtains PR before 2014, and the high- and low-wage streams are broadly consistent with the high- and low-skilled occupational classification prior to 2014 (see Section 2).

3.3 Measuring job-to-job transitions

A job-to-job transition occurs when one employment spell ends and another begins. A limitation of the CEEDD is that we do not observe the start or end dates of employment spells; we only observe the earnings that individuals' receive from each of their employers in any given year.[11] If we were able to observe the day, month, and year of each employment spell, we would say that a job-to-job transition occurred between the last day of the previous employment spell and the first day of the new one. However, this is not possible, so we must use earnings histories to estimate the timing of job-to-job transitions. To do so, we define an *employment spell* as a consecutive series of years where an individual receives strictly positive earnings from the same employer. A job-to-job transition occurs when an employment spell with one *primary* employer ends, and a new employment spell with a different *primary* employer begins. Let J_{it} be a binary variable equal to one if there is an job-to-job transition for individual i in year t and zero otherwise.

This approach to measuring job-to-job transitions ensures that we capture the year when the worker starts a new employment spell. Importantly, this does not always coincide with the year in which the individual's *primary* employer changes in the data. To understand why this is the case, consider the following example. Suppose that a job-to-job transition occurs for an individual in November 2010, where they move from firm A to B, although we do not observe this exact date in the data. Instead, we observe the following earnings history for the individual:

1. \$50,000 from firm A in 2009,
2. \$45,000 from firm A and \$5,000 from firm B in 2010, and
3. \$60,000 from firm B in 2011.

The *primary* employer in 2009 and 2010 is firm A and the *primary* employer in 2011 is firm B.[12] The job transition variable J_{it} is equal to one in 2010 and zero in 2009 and 2011. Compare this to an alternative binary variable J'_{it} that is equal to one if individual i's *primary* employer in year t

[11] For temporary foreign workers in the data, we observe the start and end dates of their temporary permits. However, the end dates of the temporary permits do not necessarily correspond to the end dates of employment spells, since individuals may renew their permit, obtain a new permit, or transition to PR before their permit expires. In addition, this information is obviously not available once individuals obtain PR. When individuals first arrive in Canada, we believe it is reasonable to assume that their employment start date corresponds to the start date of their temporary permit, and so we use these initial start dates to verify an imputation procedure for earnings, described in Section 3.4.

[12] Assume that the individual does not receive earnings from any other firms other than what is described above.

is different from their *primary* employer in year $t-1$.[13] Continuing with the example, J'_{it} is equal to one in 2011 and zero in 2009 and 2010. Thus, $J_{it} \neq J'_{it}$. Moreover, the preferred variable J_{it} correctly classifies the job-to-job transition in this example, while the alternative variable J'_{it} does not. In our main analyses, we use J_{it} as our preferred measure of job-to-job transitions, but we also conduct robustness exercises using J'_{it} and find that the results are similar.

3.4 Measuring full-year equivalent (FYE) earnings

We define full-year equivalent (FYE) earnings as the earnings for individual i in year t assuming that individual i is employed by their *primary* employer for all 12 months of the year. A limitation of the CEEDD is that we do not observe hours, only annual earnings, and therefore we do not know if the earnings at the *primary* employer correspond to FYE earnings. In particular, if an individual is employed by the *primary* employer for only a fraction of the year, we cannot observe their FYE earnings for that year. To overcome this limitation in the CEEDD, we impute FYE earnings by multiplying individual i's earnings in year t by 2 if and only if individual i experiences a job-to-job transition in year t. This method assumes that employment spell start and end dates are uniformly distributed throughout the year. Let Y_{it}^{obs} denote individual i's observed earnings in year t, and let $\widehat{Y}_{it} \equiv J_{it}(2Y_{it}^{obs}) + (1 - J_{it})Y_{it}^{obs}$ denote individual i's imputed FYE earnings in year t.[14]

3.5 Summary statistics

Disclosure for summary statistics is ongoing. Table 1 lists summary statistics for some of our main variables. The first three columns of Table 1 present summary statistics for individuals that eventually obtain PR. Column (1) shows summary statistics for all individuals who obtain PR, whereas Column (2) restricts to individuals who take between 3 and 5 years (inclusive) to obtain PR and Column (3) restricts to the "analysis sample" used to estimate our main reduced-form event study model. The analysis sample is balanced on time-to-PR, meaning that an individual with time-to-PR X must have strictly positive earnings from relative time $-X$ to $+2$. Column (4)

[13] A change in the *primary* employer is often used to measure a job-to-job transition in the AKM literature (see for example Card et al., 2018). However, as we explain, this approach to measuring job-to-job transitions potentially introduces measurement error, so we propose an alternate approach to measure job-to-job transitions for our main event-study analyses. Note that when we estimate the firm fixed effects using an AKM model, we follow the AKM literature exactly, so that the subsample of movers used to identify the firm fixed effects is defined as the subsample of individuals for which the *primary* employer changes.

[14] We also use an alternate imputation procedure $\widehat{Y}'_{it} \equiv J'_{it}(2Y_{it}^{obs}) + (1 - J'_{it})Y_{it}^{obs}$, where J'_{it} is a binary variable equal to one if individual i changes their *primary* employer in year t and zero otherwise (see Section 3.3), and we find that the estimates are similar.

presents summary statistics for individuals who never obtain PR.

All four samples exhibit similar second-year total earnings (presented in 2012 dollars) of around $51,000. Individuals across all four samples also tend to be similar in terms of the share who are high-skilled (60%), the share of men (70%), the share with a bachelor's degree (45%), and the share from an advantaged country (15%) (where the definition of advantaged country follows Dostie et al. (2023)). Columns (1)-(3) also show that, among individuals who obtain PR, the average time-to-PR is roughly similar across all samples and equal to around 3.7 (although the distributions of course differ since the second and third columns restrict to time-to-PR between 3 and 5 years). Reassuringly, the distributions of initial industries are also similar across Columns (1)-(3). Comparing Column (4) to Column (1) shows that individuals who never get PR are less likely to work in Accommodation and food services (NAICS 72) and more likely to work in Construction (NAICS 23), Professional, scientific, and technical services (NAICS 54), or a broad set of other industries.

4 Identification and Estimation

Our empirical design draws on the cohort-chained difference-in-differences framework of Balla-Elliott and Norwich (2025) (CCDID). While CCDID is written for an arbitrary sequence of staggered events, this paper specializes it to the immigration setting in which cohorts are indexed by two dimensions: time-to-permanent-residency and the calendar year of obtaining permanent resident. All identification and estimation results below can therefore be read as an application to a specific case of their general arguments.

We observe TFWs at the time of their first temporary visa and when they obtain permanent residency (their "landing year"). We denote the number of years it takes a TFW to obtain permanent residency as $g_1 \in \mathcal{G}_1$ and the landing year as $g_2 \in \mathcal{G}_2$, where $\mathcal{G}_1$ represents the set of possible time-to-PR values and $\mathcal{G}_2$ represents the set of possible years that TFWs can obtain permanent residency. In our data, $\mathcal{G}_1 = \{3, 4, 5\}$ and $\mathcal{G}_2 = \{2004, ..., 2019\}$. For each stream, we define a cohort $g = \{g_1, g_2\} \in \mathcal{G}$ where $\mathcal{G} \equiv \mathcal{G}_1 \times \mathcal{G}_2$.[15] Each individual i belongs to a single cohort g and we denote $G_i = \{G_{1i}, G_{2i}\}$ as the observed cohort for individual i, with the associated random variables G_{1i} and G_{2i} taking values in $\mathcal{G}_1$ and $\mathcal{G}_2$, respectively. To simplify, we may also write a realization as

[15] This definition is isomorphic to defining a cohort as the combination of first year with a temporary visa in Canada and year obtaining permanent residency. Note that we can either write cohort g as $\{3, 2005\}$ for example, or $g_1 = 3 \cap g_2 = 2005$ which will be useful below.

$G_i = g$ with values in $\mathcal{G}$.

With $g = \{g_1, g_2\}$, let $Y_{it}(g) = Y_{it}(\{g_1, g_2\})$ be the potential outcome for individual i in period t if they were externally assigned to cohort g. With this notation, we could consider individual i's outcome if both their time-to-PR g_1 and year-of-PR g_2 were different. In practice however, we will condition on a g_1 value and only consider counterfactual g_2 values. Thus, our identification approach and estimation strategy will be conditional on a g_1 value; as such, our common trends assumption is conditional on g_1 (Assumption 1 (CT), described below). With slight abuse of notation, we also define $Y_{it}(\infty)$ as unit i's potential outcome if they are untreated at time t. Therefore, we restrict the set of potential outcomes to $Y_{it}(\{g_1, 2004\}), \ldots, Y_{it}(\{g_1, 2019\}), Y_{it}(\infty)$ for a given g_1. Given this setup and following Sun and Abraham (2021), we can represent the observed outcome Y_{it} for $G_{1i} = g_1$ as:

$$Y_{it} = Y_{it}(g) = Y_{it}(\infty) + \sum_{g_2} (Y_{it}(\{g_1, g_2\}) - Y_{it}(\infty)) \cdot \mathbb{1}\{G_{1i} = g_1, G_{2i} = g_2\} \tag{1}$$

Remark 1. *Because the first year of earnings for TFWs consists of partial annual earnings and is excluded from the analysis, we only observe each individual in the pre-treatment period for $g_1 - 1$ years.*[16] *Compared to the cohort $g = \{g_1, g_2\}$, the cohort $g' = \{g_1, g_2 + 1\}$ obtains treatment a year later ($g_2 + 1$ compared to g_2) and is first observed a year later ($g_2 + 1 - [g_1 - 1]$ compared to $g_2 - [g_1 - 1]$). Therefore, in the first year that we observe cohort $g = \{g_1, g_2\}$, we do not observe annual earnings for any later treated cohorts.*[17]

4.1 Assumptions

Common Trends within Time-to-PR (CT)

We adopt the standard common trends assumption, except we condition on a given time-to-PR value g_1. This allows there to be differential trends among different cohorts that obtain PR faster or slower, but common trends across cohorts that obtain PR in the same amount of time.

[16] As explained in Section 3.4, our analyses focus on full-year equivalent (FYE) earnings. However, the first year of a TFW's earnings are guaranteed to be partial annual earnings. Thus, we exclude each TFW's first year from our analyses, implying that we only observe each individual in the pre-treatment period for $g_1 - 1$ years.

[17] For example, suppose we have cohort g={4,2010}. The first year that we observe that cohort in the data is 2007. However, we do not have a later-treated cohort that appears in 2007 because cohort $g' = \{4, 2011\}$ first appears in 2008. More formally, cohort $g' = \{g_1, g_2\}$ first appears in the data in year $g_2 - g_1 + 1$, whereas cohort $g = \{g_1, g_2 + 1\}$ first appears in the data in year $g_2 - g_1 + 2$.

Assumption 1 (CT). *For every combination of cohorts* $g = \{g_1, g_2\}$ *and* $g' = \{g_1, g_2'\}$ *with* $g_2' \neq g_2$ *time periods* $t \leq t'$*:*

$$\mathbb{E}[Y_{it}(\infty) - Y_{it'}(\infty)|G_{1i} = g_1, G_{2i} = g_2] = \mathbb{E}[Y_{it}(\infty) - Y_{it'}(\infty)|G_{1i} = g_1, G_{2i} = g_2'] \tag{2}$$

A way to weaken the assumption would be to impose that the common trend only apply in reference to a specific pre-treatment reference year, say $t = g_2 - 1$ or $t = g_2 - 2$.[18] In practice, we rely on the slightly stronger version of common trends as we discuss below.

No Anticipation (NA)

We also assume that, on average within a cohort g, the effect of adopting treatment in g is zero before the treatment occurs $t < g_2$. This assumes that individuals cannot predict their event date in the years beforehand in ways that allow them to change their outcome. Formally, this is stated as follows.

Assumption 2 (NA). *For every cohort* $g = \{g_1, g_2\}$ *and every* $t < g_2$*:*

$$\mathbb{E}[Y_{it}(g) \mid G_{1i} = g_1, G_{2i} = g_2] = \mathbb{E}[Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2] \tag{3}$$

Since we are considering outcomes that cannot be manipulated by the individual before obtaining PR, e.g., earnings, this assumption is plausible even if the time of PR is predictable. For example, even if a TFW knows they will get PR in a given year due to their PR application timing, since they are unable to change jobs or their earnings due to their temporary visa, no anticipation still holds. The "no anticipation" condition is a restriction on the outcome of interest which in our setting is constrained due to the institutional features of the TFW program, even if the time of PR is "fully predictable".

4.2 Target Parameter

The target parameter that we aim to identify and estimate is the cohort-specific average treatment effect on the treated in a given year. For a given cohort g in calendar year t, we write this as $\text{ATT}_t(g)$. For example, the treatment effect 4 years after obtaining permanent residency for

[18] Golosov et al., 2024 (GGMN) incorporate this assumption in their Online Appendix E.

cohort $g = \{3, 2005\}$ is denoted $\text{ATT}_{2009}(\{3, 2005\})$. Below we present the standard difference-in-differences identification argument.

Using potential outcomes notation, our target parameter can be written as follows (adapting from Callaway and Sant'Anna, 2021):

$$\begin{aligned} \text{ATT}_t(g) &\equiv \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_i = g] \\ &= \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2] \end{aligned} \tag{4}$$

where the second line makes clear our unique setup where we define cohorts not just by their year of treatment (obtaining PR) but how long it took them to do so. For cohort $G_i = g$, we observe $Y_{it}(g)$ for $t \geq g_2$ and $Y_{it}(\infty)$ for $t \in [g_2 - (g_1 - 1), g_2 - 1]$.[19]

The identification challenge is that we do not observe the counterfactual earnings history $\mathbb{E}[Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2]$ for individuals after PR, i.e., for all $t \geq g_2$. Through Assumption 1 (CT) and Assumption 2 (NA), we can recover this counterfactual trajectory using a baseline period $s < g_2$ and a comparison cohort $g' = \{g_1, g_2\}$ with identical time-to-PR as cohort g, are treated in year $g_2' > t \geq g_2$, and are observed in both years t and s.[20]

$$\begin{aligned} \text{ATT}_t(g) &= \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_i = g] \\ &= \mathbb{E}[Y_{it}(g) \mid G_i = g] - \mathbb{E}[Y_{it}(\infty) \mid G_i = g] \\ &= \mathbb{E}[Y_{it}(g) \mid G_i = g] - (\mathbb{E}[Y_{is}(\infty) \mid G_i = g] + \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g]) \\ &= \mathbb{E}[Y_{it}(g) \mid G_i = g] - \big(\mathbb{E}[Y_{is}(\infty) \mid G_i = g] + \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g']\big) \\ &= \mathbb{E}[Y_{it}(g) - Y_{is}(\infty) \mid G_i = g] - \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g'] \\ &= \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g] - \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g'] \end{aligned} \tag{5}$$

The second step exploits the linearity of the expectations operator, while the third adds and subtracts the same term. We then apply Assumption 1 (CT) to equate never-treated trajectories across cohort g and cohort g'. After consolidating terms by conditioning cohort, Assumption 2 (NA) allows for substitution of realized outcomes in place of potential outcomes. This is a difference-in-differences (DID) estimand from s to t between individuals who satisfy the restriction for g' and s using observed outcomes.

[19] This is PR year minus time-to-PR which is the first year in Canada as a TFW through the year the cohort obtains PR.

[20] In principle, one could use individuals who are never treated as a control group. In practice, all individuals receive PR at some point in our data, so this is not possible in our setting.

What if there is no not-yet-treated cohort in both t and s?

Due to Remark 1, it may be the case that there do not exist any individuals in a cohort g' who are observed in year s and have landing year $g'_2 > t$. Since each cohort $g = \{g_1, g_2\}$ is observed as not-yet-treated for $g_1 - 1$ years, this will occur whenever $t - s \geq g_1 - 1$.[21]

Following Balla-Elliott and Norwich (2025), we rely on a second not-yet-treated control cohort $g'' = \{g_1, g''_2\}$ that overlaps with cohort $g' = \{g_1, g'_2\}$ in some intermediate time period $p \in (s, t)$. This cohort g'' must be treated by year t, but not by year s, implying that $t \geq g''_2 > s$. This overlap in year p will allow us to "chain together" the parallel trends across periods and thus identify longer-run treatment effects.

Formally, construct the counterfactual $\mathbb{E}[Y_{it}(\infty)|G_i = g]$ using the intermediate period p and cohort g'' described above:

$$\begin{aligned}
\mathbb{E}[Y_{it}(\infty)|G_i = g] =& \underbrace{\mathbb{E}[Y_{is}|G_i = g]}_{\text{Observed}} \\
&+ (\underbrace{\mathbb{E}[Y_{it}|G_i = g']}_{\text{Observed}} - \underbrace{\mathbb{E}[Y_{is}|G_i = g']}_{\text{Not observed}}) \\
=& \mathbb{E}[Y_{is}|G_i = g] \\
&+ (\mathbb{E}[Y_{it}|G_i = g'] - \mathbb{E}[Y_{ip}|G_i = g']) - (\mathbb{E}[Y_{ip}|G_i = g''] - \mathbb{E}[Y_{is}|G_i = g''])
\end{aligned} \tag{6}$$

The first equality adds and subtracts the same term, $\mathbb{E}[Y_{is}|G_i = g']$, except now it is unobserved due to there being only $g_1 - 1$ years of pre-treatment data. The second equality holds under Assumption 1 (CT), where all the objects on the right hand side are now observed components. We therefore can build the counterfactual for $G_i = g$ even when we don't observe a single cohort in both s and t.

4.3 Estimation

To introduce our empirical specification, it will be helpful to express the ATT in terms of relative time as opposed to calendar time. We define r as the relative event time. Using the relationship $r = t - g_2$, we can write $\text{ATT}_{g_2+r}(g) = \text{ATT}_r(g)$. The parameter $\text{ATT}_r(g)$ is the ATT for cohort

[21] The reference period s is always chosen such that $s < g_2$. Depending on t, we could have $t - s < g_1 - 1$ or $t - s \geq g_1 - 1$. For example, consider $g_1 = 3$ and $g_2 = 2005$. Take $s = 2004$. Then for $t = 2006$, $t - s = 2006 - 2004 = 2 < g_1 - 1 = 3$ and we can identify $\text{ATT}_{2006}(\{3, 2005\})$ using cohort $g' = \{g_1 = 3, g'_2 = 2007\}$ as the control group. But for $t = 2009$, $t - s = 2009 - 2004 = 5 > g_1 - 1 = 3$ and we cannot directly identify $Y_{2009}(\infty|G_i = g)$ with a single cohort. This shows the problem that arises when we want to identify longer-run effects.

g at relative time r. As we explain in this section, we estimate each parameter one at a time and then aggregate, so whether we estimate $\text{ATT}_t(g)$ or $\text{ATT}_r(g)$ is a matter of notation only.

To estimate $\text{ATT}_r(g)$, we follow the spirit of stacking regressions to estimate DID parameters, as in Wing, Freedman, and Hollingsworth (2024) or used in Golosov et al. (2024). However, the stacking approach in Balla-Elliott and Norwich (2025) allows us to return a larger set of treatment effect parameters than methods. A formal proof that our regression estimand recovers the ATT parameters of interest is provided in Appendix B.

Subsetting the data into "slices"

We subset the data into "slices" using the procedure from Balla-Elliott and Norwich (2025) applied to our setting. We first restrict the data to all individuals with time-to-PR equal to g_1. Next, we further subset the data to include two types of individuals. The first type will be those in our cohort of interest $G_i = \{g_1, g_2\}$. The second type is comprised of not-yet-treated individuals, i.e., any individuals whose year of PR is such that $G_{2i} > g_2$. These individuals will serve as our control group. We keep these individuals in their pre-treatment years ($t < G_{2i}$ or $r < 0$). That is, each slice consists of (i, t) observations that fit one of the two criteria below:

$$\begin{aligned} \text{Treatment: } &\{(i,t) : G_{1i} = g_1 \text{ and } G_{2i} = g_2\} \\ \text{Control: } &\{(i,t) : G_{1i} = g_1 \text{ and } G_{2i} > g_2 \text{ and } t < G_{2i}\} \end{aligned} \tag{7}$$

We also add an additional restriction: any calendar year that appears in the data must include two different cohorts and any cohort must be in the data for more than one year. This is a requirement to estimate year and cohort fixed effects separately, and is normally taken for granted in other applications. If we only have one cohort for a given calendar year, we can't separately identify both the year and cohort effects, since there is no variation across cohorts within year.[22] The requirement of two observations per calendar year drops at least one year from the data. The earliest relative time for the treated cohort of interest will be dropped, since there are no later-treated cohorts in this time period. This will always be the case.[23]

Note that, relative to Callaway and Sant'Anna (2021) and Golosov et al. (2024), we keep a

[22] Mathematically, the requirement is that the rank of the combined year and cohort dummies needs to be equal to the number of time periods plus cohorts minus 2, for the reference groups. If there is only one observation in a year, this won't be true, since the group and year dummies for that individual will be collinear, reducing the rank.

[23] For example, a cohort with $g = \{5, 2005\}$ first appears in calendar year 2000, but the next-treated cohort with $g_2 = 2006$ first appears in 2001, so we cannot identify observations in 2000 apart from the cohort fixed effect for g.

larger set of observations as defined in (7): all years for treated individuals that overlap with not-yet-treated individuals and all pre-treatment years for later-treated cohorts.[24] This larger set of observations allows us to "chain together" parallel trends and estimate a larger set of parameters, as described above in Equation (6).[25]

Estimation within a slice

With the data defined as in (7), we implement the following regression to recover $\text{ATT}_r(\{g_1, g_2\})$ as δ_{rg}:

$$Y_{it} = \sum_{g_2} \gamma_g \mathbb{1}\{G_{2i} = g_2\} + \sum_{s} \tau_s \mathbb{1}\{s = t\} + \sum_{r \neq -1} \delta_{rg} \mathbb{1}\{G_{2i} = g_2, r = t - g_2\} + \varepsilon_{it} \tag{8}$$

where we define γ_g to be cohort fixed effects and τ_t to be calendar year fixed effects. We set $r = -1$ as the typical reference period. This specification is run among observations with the same time-to-PR value, g_1, since Assumption 1 (CT) conditions on this value. We need one time period and one cohort to serve as the reference groups for the fixed effects normalization.[26]

This specification only recovers $\text{ATT}_r(g)$, not ATT_r. In order to aggregate these parameters and their standard errors, we need to obtain the correct variance-covariance matrix across cohorts and relative times. We explain the stacking procedure in the next section.

Stacking and aggregation

We now iterate over all cohorts and create the slice subsets as defined above. We then append these slices into one "stacked" dataset, where some (i, t) observations from the original dataset will

[24] Callaway and Sant'Anna (2021) and Golosov et al. (2024) keep observations in one pre-treatment reference period and a given year after the cohort of interest's treatment for both the cohort of interest and not-yet-treated cohorts. Their estimation relies on data from two time periods: the reference year and the year whose treatment effects they hope to estimate.

[25] Each slice in CSA/GGMN estimate one cohort-by-(relative-)time effect parameter, whereas CCID estimates all cohort-by-relative time effects for a given cohort of interest.

[26] The relative event-year indicators are defined only for the treated individuals with $G_{2i} = g_2$. This makes our specification *almost* fully saturated; we do not capture a δ for each combination of g and r. To make it fully saturated, we would have to interact cohort with relative time indicators, and then obtain a δ coefficient for each interaction. This would not change our estimation results, since we already have treatment status interacted with the relative event-year indicators of interest. In addition, by assumption Assumption 2 (NA), the coefficients on dummy variables for not-yet-treated observations are equal to 0. We test this assumption only for the cohort of interest and not for the later-treated cohorts. This setup is the same as interacting relative year indicators with treatment status and ignoring the coefficients for not-yet-treated cohorts. That would saturate the regression per Sun and Abraham (2021). Note here that we are estimating many relative-time effects at once for the cohort of interest $G_i = \{g_1, g_2\}$ with this specification. This differs from Callaway and Sant'Anna (2021) and Golosov et al., 2024 who consider specifications that estimate a single relative time parameter at once.

be duplicated if they are used as control observations for different treated cohorts. This stacking procedure and estimation of Equation (8) for each cohort allows us to estimate the joint variance-covariance matrix for all cohort-by-relative time estimates in one single regression.

We aggregate the parameters across cohorts in order to present a time series of treatment effects across relative time. The aggregation below weights the estimates by the number of observations per cohort-relative time.

$$\text{ATT}_r \equiv \sum_g \text{ATT}_r(g)\mathbb{P}\{G_i = g \mid G_i \text{ observed at relative time r}\} \tag{9}$$

It may be improper if different cohorts appear at relative time r versus say $r+1$, so comparing ATT_r to ATT_{r+1} may incorporate both the difference in relative time effects and the composition of the included cohorts.[27]

5 Reduced-Form Results

In this section, we report event-study estimates of the effects of permanent residency (PR) on a variety of labor market outcomes. For each outcome, we report event-study estimates from three years before to three years after PR; i.e., from $t = -3$ to $t = +3$. The reported estimates are the relative time-aggregated estimates of Equation (8), and we report estimated standard errors clustered by individual. We consider the effects of PR on the following labor market outcomes: worker mobility, earnings and firm pay premia, and other firm characteristics (such as firm size, firm revenue, and firm value-added).

Worker Mobility

We begin by reporting the effects of PR on job switching. Figure 2a reports event-study estimates of the effects of PR on any job transition during the year (i.e., the dependent variable takes a value of one if the individual had any job transitions during the year and zero otherwise). The results show a clear, immediate, and persistent increase in the job transition rate, with an estimated increase of 10.8 percentage points for the first three years after PR.[28] Figure 2b shows that a little more than

[27] For example, if $G_{2i} \in [2005, 2010]$, regardless of g_1, we can estimate a relative time $r = 4$ ATT only for the group with $G_{1i} = 2005$. We can estimate $\text{ATT}_3(g)$ for $G_{1i} \in \{2005, 2006\}$, so the comparison between $\text{ATT}_3(g)$ and $\text{ATT}_4(g)$ will involve a change in included cohorts as well as a change in relative year.

[28] For each main outcome, we take a simple unweighted average of the event time dummies for $t = 1$, $t = 2$, and $t = 3$, and we report the average effect over these three years in the notes to each main figure.

half of the increase in job transitions involves switching industries after PR. In Appendix Table A1, we show that most of the industry switching is away from restaurants and into a broad set of other industries.

Earnings and Firm Pay Premia

We next report the effects of PR on earnings and firm pay premia.[29] Figure 3a reports event-study estimates of PR on log earnings, and the results show a clear increase in earnings after PR that steadily grows over time, indicating that workers experience an increase in earnings and end up on a steeper earnings trajectory after PR. Overall, we estimate that worker earnings are roughly 8 percent higher during the first three years after PR.

Figure 3b replaces log earnings on the left-hand side with the estimated firm fixed effect (i.e., $\hat{\phi}_j$) based on the primary employer of each worker in each year in the analysis sample. We find similar dynamics to the estimates for log earnings: a clear and immediate increase after PR and a steadily-increasing trend over time. These results indicate that, after PR, workers gradually move towards higher-paying firms.[30] The event-study estimates indicate that firm pay premia increase by roughly 4 percentage points, roughly 50 percent of the overall increase in earnings reported in Figure 3a. This suggests that moving to higher-wage firms accounts for a large share – but far from all – of the estimated increase in earnings after PR. Additionally, this suggests that worker earnings increase more than what would be predicted by the estimated firm pay premia, which can be interpreted as a potential violation of the AKM model that predicts that average wage changes for workers moving between firms are fully captured by the difference in the firm fixed effects. Below we illustrate how our job search model can reconcile these patterns.

Overall, the combination of the worker mobility results and the results for earnings and firm pay premia suggest a simple mechanism behind these reduced-form results: workers search more intensively on-the-job for outside offers after PR, and these workers end up receiving outside offers that are not matched, which leads to more job switching. As a result, workers move to higher-paying firms and experience an increase in earnings after PR.

[29] All monetary variables are adjusted for inflation, with 2012 as the base year in the consumer price index (CPI).

[30] The confidence intervals for the firm pay premia event-study estimates do not account for the estimation error in the firm fixed effects themselves, which stem from the auxiliary AKM model, so the true uncertainty in the pattern of the firm fixed effects after PR is likely to be somewhat larger than what is currently reported.

Firm Characteristics

Figure 4 reports the effects of PR on other firm characteristics that go beyond the estimated firm pay premia effects reported above. First, Figures 4a and 4b report results showing that workers move to larger firms after PR based on both the total number of employees and firm revenue, respectively. After PR, workers end up working at firms 25 percent larger and with 43 percent higher revenue. Figure 4c shows that workers also move to firms with higher value-added, and Figure 4d shows that workers move to firms with larger average co-worker fixed effects. The estimate for co-worker fixed effects is a predictable consequence of the fact that workers end up working at higher-wage firms after PR, given the widely-documented positive sorting of high-wage workers to high-wage firms (Abowd, Kramarz, and Margolis, 1999; Card, Heining, and Kline, 2013).

Heterogeneity

We investigate heterogeneity in the effects of PR for each of the main outcomes above by gender, worker "skill", and country of origin. Figure 5 reports results by gender, which show fairly similar estimates by gender for the effects of PR on worker mobility (job transitions and industry switching), worker earnings, and firm pay premia. Appendix Figure A2 shows that both men and women move to larger firms after PR, but the effects for women are significantly larger, though this does not translate into larger estimated earnings effects or larger estimated firm fixed effects after PR for women compared to men.

As described in Section 2 above, the TFW program has two pathways, one for low-skilled workers and one for high-skilled workers. Figure 6 reports results that compare the effects of PR for low-skilled and high-skilled workers. Figures 6a and 6b show similar estimated effects of PR on worker mobility for low-skilled and high-skilled workers, with very similar effects on job transitions and industry switching. By contrast, Figure 6c shows evidence of significantly larger earnings gains for low-skilled workers, with the estimated effects over the first three years of about 12 percent, compared to 4 percent for the high-skilled workers. Figure 6d shows a slightly larger increase in firm pay premia for low-skill workers compared to high-skill workers, with an estimated increase of roughly 5 percentage points compared to 4 percentage points.[31] Taking these estimates at face value, these results suggest that almost all of the increase in earnings for high-skill workers can

[31] Appendix Figure A3 reports the same additional firm characteristics by skill, and the results show that the effects of PR on firm size and firm value-added are somewhat larger for high-skill workers, while the effects of PR on average co-worker fixed effects are larger for low-skill workers.

be explained by the increase in firm pay premia, while for low-skill workers the firm pay premia account for about 40 percent of the increase in earnings.

While the TFW program has the two main pathways described above, the low-skill and high-skill designations are imperfect proxies for actual worker skill. Moreover, we are not able to precisely categorize workers into the high-skill and low-skill pathways through which they received their TFW status and must instead infer this imperfectly in the data based on workers' occupations after transitioning to PR.

Given this limitation, we complement the high-skill/low-skill TFW comparisons by using the estimated worker fixed effects for the TFWs for whom we can estimate worker effects (which covers a subsample of about XX percent of TFWs in our main analysis sample), and we divide this subsample based on whether the workers have estimated worker fixed effects above or below the median estimated worker fixed effect within this subsample. We then estimate the effects of PR on the same set of outcomes above within the above-median and below-median worker fixed effect subsamples. These results are reported in Figure 7, and the results show larger effects of PR for the below-median workers across all of the main outcomes, consistent with the results for our low-skilled subsample. The below-median workers have larger effects of PR on job transitions, industry switching, total earnings, and firm pay premia, and all of these differences (between the below-median and above-median subsamples) are strongly statistically significant. Appendix Figure A4 shows that the effects of PR on firm characteristics are also always significantly larger for below-median workers, with larger effects of PR on firm size, firm revenue, firm value-added, and average co-worker fixed effects.

Earnings Effects for Stayers Versus Switchers

Our final event study analysis compares the effects of PR for the subsample of "stayers" who do not change firms in the first three years after PR to all of the other workers who changed employers at some point in the first three years after PR. Figure 8 shows that the estimated positive effects of PR on earnings are entirely driven by the workers who change jobs, with no evidence of any positive effects of PR on earnings in the subset of workers who are "stayers." The estimated earnings effects over the first three years are 12 percent for the XX% of workers who change employers after PR, and the estimated earnings effects are roughly -3 percent for the "stayers." Obviously, the workers who stay at the same employer after PR are not a randomly selected sample within the set of workers who get PR in our analysis sample, but these results are consistent with outside offers and

job transitions as being the key mechanisms behind the main earnings effects. In our search-and-matching model that we develop below, we are able to match these results: in our model, there are no positive earnings effects for the stayers who have yet to switch jobs after PR because the firms hiring TFWs choose not to match outside offers after PR because the poaching firms can always outbid the firms hiring TFWs; as a result, the firms hiring TFWs do not pre-emptively increase earnings in anticipation of outside offers arriving since they do not plan to match the outside offers, anyway.

Robustness

We assess the robustness of our main event study results to alternative sample definitions, variable definitions, and specifications. Our primary earnings measure is a full-year equivalent (FYE) earnings measure (described in Section 3.4). For this measure, we use the earnings from the worker's *primary* employer (defined as the employer that pays the most in any given year) and double the earnings in any year with a job-to-job transition, where transitions are defined according to our preferred job-to-job transitions measure. We find that all of our main results are very similar using different measures of full-year earnings (e.g., using total earnings from all employers in a given year).

Additionally, when we extend our unbalanced panel out to $t = +5$, we find that many of our results are highly persistent (e.g., Appendix Figure A8 shows very similar magnitudes of results for $t = 4$ and $t = 5$ compared to the first three years after PR).

Moreover, our results are robust to a variety of alternate specifications. For example, we find very similar results if we control for higher order polynomials in age, include additional fixed effects for more granular categories of worker skill within the high-skill/low-skill classification, or include additional controls for marital status or province of residence.

Lastly, our main results are based on an identification strategy and estimation approach that stacks estimates across cohorts defined based on their time-to-PR. This aggregation approach addresses the recent critiques of standard two-way fixed effects models. Alternatively, we can estimate simpler two-way fixed effects models controlling for fixed effects for each time-to-PR cohort. We find very similar results across all of our main outcomes using this alternative estimation approach that is less robust to arbitrary patterns of treatment effect heterogeneity.

Firm and Worker Selection

We conclude this section by reporting descriptive patterns of selection into hiring TFWs. Figure 9 takes the sample of firms that hire at least one TFW during our sample period and divides the firms based on the share of workers that are TFWs. Figure 9a reports the distribution of the estimated firm fixed effects for the above-median and below-median firms, and the results indicate that the firms with higher TFW shares have lower average firm fixed effects, suggesting negative selection into greater use of the TFW program. Similarly, Figure 9b reports results which take the average of the estimated worker fixed effects at each of the same firms and shows even larger differences in the distribution of the average worker fixed effects in above-median firms by TFW share.

Lastly, Figure 10 compares TFWs to the rest of the workers. We combine current and former TFWs together and compare this combined group to all other workers. Figure 10a shows that TFWs work in firms with lower firm fixed effects than all other workers, which is consistent with the negative firm selection into the TFW program. Figure 10b shows that the average worker fixed effect is significantly lower for TFWs compared to the rest of the population.

Taken together, our reduced-form results suggest large changes in labor market outcomes after PR, with sharp increases in job transitions and increases in earnings and firm pay premia. These results appear especially large for low-skill workers (based on the estimated worker fixed effects). Lastly, high-wage firms appear less likely to hire TFWs and less likely to use the program as much as lower-wage firms. All of these findings motivate the development of a search-and-matching model of a segmented labor market that we describe in the next section.

6 Model

To interpret our reduced-form empirical results and consider counterfactual policies, we develop and estimate a search-and-matching model with heterogeneous workers and firms based on the framework in Lise, Meghir, and Robin (2016).

6.1 Model Setup: Heterogeneous Workers and Firms

Workers

We assume an infinitely-lived population individuals, divided into natives, permanent residents, and immigrants, with a unit mass of each group. We define $x \in [\underline{x}, \overline{x}]$ as worker ability, and we define the distribution of native, permanent resident, and immigrant worker ability in the full population as $l^{n}(x)$, $l^{\text{pr}}(x)$, and $l^{\text{tfw}}(x)$, respectively. In the model, we interpret immigrants as temporary foreign workers (TFWs), and when TFWs gain access to permanent residency (PR), they become observationally equivalent to native workers (conditional on x). Thus, we denote the combination of native and permanent residents as *domestics*, with the distribution of domestic worker ability as $l(x)$.

We define $u(x) = u^{\text{n}}(x) + u^{\text{pr}}(x)$ as the distribution of x among the domestic unemployed, and we define $U \equiv \int u(x)dx$ as the total unemployed domestic population. Similarly, we define $u^{\text{tfw}}(x)$ as the distribution of x among the TFW unemployed. Note that these individuals are immigrants from foreign countries who are assumed to be only searching for TFW jobs.[32] $U^{\text{tfw}} \equiv \int u^{\text{tfw}}(x)dx$ is defined as the total TFW unemployed population.

We assume that employed TFWs face an exogenous probability of transitioning to PR given by λ. This parameter governs the expected duration of a temporary visa. As described above, once a TFW obtains PR, the TFW becomes observationally equivalent to a domestic worker (conditional on x) and can generate outside job offers.

Firms (and Jobs)

Firms are single-worker jobs, and jobs are characterized by a labor productivity parameter which we denote by y. Jobs are persistent, but workers can voluntary leave them through on-the-job search. There is also an exogenous separation rate given by ξ. The number of available type-y jobs in the economy is given by $n(y)$, and the total number of jobs is $N \equiv \int n(y)dy$. The number of jobs created is endogenous and is subject to a free-entry condition, defined below, where the marginal entrant makes zero expected profits.

Jobs are either unfilled or matched. We consider two types of vacancies. First, there are standard vacancies available to domestics (which includes natives as well as TFWs who have transitioned to

[32] Formally, we assume that if a TFW that is employed loses their job, they become a "potential" TFW and must randomly match with a new employer that has applied for and successfully received a TFW permit.

PR). The number of standard type-y job postings is given $v(y)$ and the total number of vacancies is defined as $V \equiv \int v(y)dy$. Second, there are TFW vacancies, which are posted only after an (LMIA) application is successful. The number of type-y TFW applications is $a(y)$, and the total number of TFW applications is defined as $A \equiv \int a(y)dy$. The number of successful type-y applications is given by $v^{\text{tfw}}(y)$, and the total number of successful applications is given by V^{tfw}. The success rate is given by $p = \frac{V^{\text{tfw}}}{A}$, which does not depend on firm type.

We define the distribution of (x, y) domestic matches as $h(x, y) = h^{\text{n}}(x, y) + h^{\text{pr}}(x, y)$ and TFW matches as $h^{\text{tfw}}(x, y)$. There are separate balance equations for domestics and TFWs, which are given by the following expressions:

$$\int h(x, y)dy + u(x) = l(x)$$

$$\int h^{\text{tfw}}(x, y)dy + u^{\text{tfw}}(x) = l^{\text{tfw}}(x)$$

and

$$\int (h(x, y) + h^{\text{tfw}}(x, y))dx + v(y) + a(y) = n(y) \tag{10}$$

Equation 10 can be interpreted as follows. On the right-hand side is the total number of jobs for a type y firm. These jobs are either filled or unfilled. The first term on the left-hand side is the total number of filled jobs. The second term is the total number of type y vacancies. The last term is the total number of type y applications which accounts for the fact that not all applications are converted to vacancies.

In an (x, y) match, output is given by $f(x, y)$. We assume that an equally skilled domestic and TFW paired with a firm y produce the same output.

6.2 Meetings and Match Formation

Domestic Meetings

We define E as the number of domestic employed workers and let s denote the relative search intensity for domestic employed workers relative domestic unemployed workers (i.e., normalizing search intensity for domestic unemployed workers to 1). We assume that all meetings between jobs and potential workers occur randomly. The aggregate number of meetings between domestic searchers and vacancies is given by $M(U + sE, V)$.

We define $\kappa \equiv \frac{M(U+sE,V)}{[U+sE]V}$. From the worker's perspective, the rate at which an unemployed

and employed domestic worker meets a vacancy of type y is given by $\frac{M}{U+sE}\frac{v(y)}{V} = \kappa v(y)$ and $s\frac{M}{U+sE}\frac{v(y)}{V} = s\kappa v(y)$, respectively. From the firm's perspective, the rate at which a vacancy meets a worker x that is currently employed at job y is $s\kappa h(x,y)$. The rate at which a vacancy meets a worker x that is currently unemployed is $\kappa u(x)$.

TFW Meetings

We assume that *if a firm's LMIA application is successful*, then the firm meets a potential TFW unemployed worker at random. Let the aggregate number of meetings between firms (whose applications were successful) and potential TFWs be given by $M^{\text{tfw}}(U^{\text{tfw}}, V^{\text{tfw}})$.

Similar to the domestic workers, we define $\kappa^{\text{tfw}} \equiv \frac{M^{\text{tfw}}(U^{\text{tfw}},V^{\text{tfw}})}{U^{\text{tfw}}V^{\text{tfw}}}$. From the worker's perspective, the rate at which a successful type y application meets a potential TFW x is $\kappa^{\text{tfw}}v^{\text{tfw}}(y)$. From the firm's perspective, the rate at which a successful application meets a TFW worker x is $\kappa^{\text{tfw}}u^{\text{tfw}}(x)$.

Value Functions

Let $W_0(x)$ be the present value of unemployment for an x worker and let $W_0^{\text{tfw}}(x)$ be the present value of a TFW-x worker. Let $\Pi_0(y)$ be the expected value to a job of posting a vacancy, inclusive of the posting cost, and let $\Pi_0^{\text{tfw}}(y)$ be the expected value to a job of posting a TFW application. Let $W_1(w,x,y)$ be the present value of a wage contract for a domestic worker x employed at a job and let $W_1^{\text{tfw}}(w,x,y)$ be the present value of a wage contract for a TFW worker x employed at a job. Finally, let $\Pi_1(w,x,y)$ be the firm's expected profit for a domestic match and let $\Pi_1^{\text{tfw}}(w,x,y)$ be the firm's expected profit for a TFW worker.

The surplus of a match for a domestic is defined as:

$$S(x,y) = \Pi_1(w,x,y) - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + W_1(w,x,y) - W_0(x)\}$$

The surplus of a match for a TFW is defined as:

$$S^{\text{tfw}}(x,y) = \Pi_1^{\text{tfw}}(w,x,y) - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)\}$$

6.3 Wages

We define the wage for a domestic worker transitioning from unemployment as $w = \phi_0(x, y)$. We assume that wages are set by Nash bargaining, which leads to the following condition:

$$W_1(\phi_0, x, y) = W_0(x) + \beta S(x, y)$$

We will see below that $W_0(x)$ includes the flow value of unemployment plus the option value of matching with a firm.

We define the wage for a newly employed TFW worker be given by $w = \phi_0^{\text{tfw}}(x, y)$. Assuming Nash bargaining, this leads the following expression:

$$W_1^{\text{tfw}}(\phi_0^{\text{tfw}}, x, y) = W_0^{\text{tfw}}(x) + \beta^{\text{tfw}} S^{\text{tfw}}(x, y)$$

Renegotiation can happen if the worker gets an outside offer (in the case of a domestic worker).

Outside Offers

As in Lise, Meghir, and Robin, 2016, we allow for domestic employed workers to receive outside offers, but not TFWs. With current match surplus of $S(x, y)$, let y' be the alternate job that the domestic worker finds with surplus $S(x, y')$. There are three possible outcomes for the worker's match:

Case 1: $S(x, y') \geq S(x, y)$

If a domestic worker finds an alternative job y' such that $S(x, y') \geq S(x, y)$, then the worker moves to the alternative job. This is because the poaching firm can always outbid the incumbent firm. When the worker switches from y to y' the new bargained wage is $w = \phi_1(x, y, y')$ which satisfies:

$$W_1(\phi_1, x, y') = W_0(x) + S(x, y) + \beta[S(x, y') - S(x, y)]$$

The worker gets the entire surplus of the current match plus a share of the incremental surplus between the two jobs.

Case 2: $S(x, y) > S(x, y') > \beta S(x, y)$

Alternatively, if the worker finds an alternative job y' that produces less surplus than the current job, but more than the worker's share of the surplus at the current job, $W_1 - W_0(x) < S(x, y') < S(x, y)$, then the worker uses the outside offer to bid up wages.

Wages are bid up because the incumbent firm renegotiates with the worker since the surplus in the current match exceeds that of the poaching firm: $S(x,y) > S(x,y')$.

In this case, the new wage is $w = \phi_2(x,y,y')$ which satisfies:

$$W_1(\phi_2, x, y) = W_0(x) + S(x, y')$$

In other words, after receiving an outside offer from firm y', the worker gets the entire share of the surplus at the poaching firm when staying at their current firm y.

In these first two cases, the wage depends on the origin and destination firm type.

Case 3: $\beta S(x,y) \geq S(x,y')$

The worker has nothing to gain from the competition between y and y' because she cannot make a credible threat to leave, and the wage does not change.

6.4 Bellman Equations for Value Functions

Unemployed Workers

The value function for unemployed domestics can be written as:

$$rW_0(x) = b(x) + \kappa\beta \int S(x,y)^+ v(y) dy$$

Similarly, the value function for unemployed TFWs is:

$$rW_0^{\text{tfw}}(x) = b^{\text{tfw}}(x) + \kappa^{\text{tfw}}\beta \int S^{\text{tfw}}(x,y)^+ v^{\text{tfw}}(y) dy$$

Vacant Jobs

Consider the present value of profits for an unmatched job meeting a worker from unemployment with human capital x. Substituting $W_1(\phi_0, x, y) = W_0(x) + \beta S(x,y)$ into the equation for $S(x,y)$, we get:

$$\Pi_1(\phi_0(x,y), x, y) = \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + (1-\beta)S(x,y)$$

For firms which apply for a TFW, the present value of profits for a firm which meets a TFW from unemployment with human capital x is given by the following:

$$\Pi_1^{\text{tfw}}(\phi_0^{\text{tfw}}(x,y), x, y) = \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + (1-\beta)S^{\text{tfw}}(x,y)$$

Given the above expression for the bargained wage of a poached worker, the present value of profits for an unmatched job y that posts a vacancy and meets an employed worker with human capital x in a lower surplus match with productivity y' is:

$$\Pi_1(\phi_1(x,y,y'),x,y) = \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + (1-\beta)[S(x,y) - S(x,y')]$$

A firm always prefers matching with an x worker out of unemployment than poaching the same type of worker from another firm. This is simple to see since in this case, they get a share of $S(x,y)$ instead of $S(x,y) - S(x,y')$.

Consider the present value of a vacancy for a type-y job:

$$r\Pi_0(y) = -c + \kappa(1-\beta)\int S(x,y)^+ u(x)dx + s\kappa(1-\beta)\iint [S(x,y) - S(x,y')]^+ h(x,y')dxdy'$$

The firm can meet either an unemployed individual or an individual employed in a match. Note that in this case, there is no possibility of meeting any TFWs since the firm has not applied for a temporary visa permit.

If a firm wants to hire a TFW, it must apply to the government. We define the cost of an application to be c^{tfw}. If a firm tries to hire a TFW from the foreign pool of potential workers, then we have the following expression:

$$r\Pi_0^{\text{tfw}}(y) = -c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta)\int S^{\text{tfw}}(x,y)^+ u^{\text{tfw}}(x)dx$$

For an unfilled job, the firm compares $\Pi_0^{\text{tfw}}(y)$ to $\Pi_0(y)$.

This search-and-matching model creates a novel externality since the marginal firm's decision depends only on its private payoff, but it "congests" the market for domestic labor whenever it applies for a TFW by effectively removing a regular vacancy. This benefits other firms since they face less competition in searching for workers, but hurts regular domestic employed workers and the domestic unemployed. There are also spillover effects onto wages through the outside option for domestics and profits for firms.

Employed Workers

The value function for domestics working at wage rate w in a match (x, y) is:

$$[r+\xi+s\kappa v(A(w,x,y))][W_1(w,x,y)-W_0(x)] = w-b(x)-\kappa\beta\int[S(x,y')]^+v(y')dy' \\ +s\kappa\int_{A(w,x,y)}[\min\{S(x,y),S(x,y')\}+\beta[S(x,y')-S(x,y)]^+]v(y')dy'\}]$$

where $A(w,x,y) = \{y' : W_1(w,x,y) - W_0(x) < S(x,y')\}$ is the set of jobs that can lead to a wage change and $v(A) = \int_A v(y)dy$. The first term on the RHS is wage net of the flow value of unemployment. The second term is the expected excess value to the worker following an outside offer.

Employed TFWs

For employed TFWs working at wage rate w in a match (x, y), this is:

$$[r+\xi+\lambda][W_1^{\text{tfw}}(w,x,y)-W_0^{\text{tfw}}(x)] = w-b^{\text{tfw}}(x)-\kappa^{\text{tfw}}\beta\int[S^{\text{tfw}}(x,y')]^+v(y')dy' \\ +\lambda(W_1(w,x,y)-W_0(x))]$$

The first term is the net flow value of employment. The second term captures the expected value of transitioning to PR. When obtaining PR, the value of employment becomes the same as the value for domestic worker at the firm. Intuitively, a TFW produces the same amount for the firm. But now they have access to the same outside offers as regular workers. Thus, the firm must pay them the same wage in equilibrium.

Match output and joint surplus

First, consider a domestic match. Define $P(x, y)$ as the value of joint production of a (x, y) match. Thus, $S(x,y) = P(x,y) - W_0(x) - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$.

We show in Appendix E.2 that:

$$
\begin{aligned}
(r+\xi)S(x,y) =& f(x,y) \\
&+ s\kappa\beta \int [S(x,y') - S(x,y)]^{+} v(y')dy' \\
&- \left(b(x) + \kappa\beta \int S(x,y)^{+} v(y)dy \right) \\
&- \max \Bigg\{ - c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta) \int S^{\text{tfw}}(x,y)^{+} u^{\text{tfw}}(x)dx, \\
&- c + \kappa(1-\beta) \int S(x,y)^{+} u(x)dx + s\kappa(1-\beta) \int [S(x',y) - S(x',y')]^{+} h(x',y')dx'dy' \Bigg\}
\end{aligned}
$$

Note that the surplus of a match for a domestic depends on λ and p through $S^{\text{tfw}}(x,y)$.

Next, consider a TFW match. Following similar steps, we obtain:

$$
\begin{aligned}
(r+\xi+\lambda)S^{\text{tfw}}(x,y) =& f(x,y) \\
&- \left(b^{\text{tfw}}(x) + \kappa^{\text{tfw}}\beta \int S^{\text{tfw}}(x,y)^{+} v^{\text{tfw}}(y)dy \right) \\
&- \max \Bigg\{ - c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta) \int S^{\text{tfw}}(x,y)^{+} u^{\text{tfw}}(x)dx, \\
&- c + \kappa(1-\beta) \int S(x,y)^{+} u(x)d(x) + s\kappa(1-\beta) \int [S(x,y) - S(x,y')]^{+} h(x,y')dxdy' \Bigg\} \\
&+ \lambda[S(x,y) - (W_0^{\text{tfw}}(x) - W_0(x))]
\end{aligned}
$$

6.5 Steady-State Equilibrium

In a stationary equilibrium, outflows=inflows separately for natives, permanent residents, and TFWs. Thus, for all (x,y) we have the following two expressions. First, for natives, we have:

$$
\underbrace{(\xi + s\kappa v(\overline{B}(x,y)))h^{\text{n}}(x,y)}_{\text{Outflows of natives}} = \underbrace{[u^{\text{n}}(x) + sh^{\text{n}}(x,B(x,y))]\kappa v(y)}_{\text{Inflows of natives}}
$$

where $\overline{B} = \{y' : S(x,y') \geq S(x,y)\}$ is the set of jobs that imply an improvement in match surplus and $B = \{y' : 0 \leq S(x,y') < S(x,y)\}$ is the set of jobs that does not imply an improvement in match surplus.

Second, for permanent residents we have the following expression:

$$\underbrace{(\xi + s\kappa v(\overline{B}(x,y)))h^{\text{pr}}(x,y)}_{\text{Outflows of permanent residents}} = \underbrace{[u^{\text{pr}}(x) + sh^{\text{pr}}(x, B(x,y))]\kappa v(y) + \lambda h^{\text{tfw}}(x,y)}_{\text{Inflows of permanent residents}}$$

Which leads to the combined steady state expression for all domestics:

$$\underbrace{(\xi + s\kappa v(\overline{B}(x,y)))h(x,y)}_{\text{Outflows of domestics}} = \underbrace{[u(x) + sh(x, B(x,y))]\kappa v(y) + \lambda h^{\text{tfw}}(x,y)}_{\text{Inflows of domestics}}$$

Lastly, for TFWs, we have the following expression:

$$\underbrace{(\xi + \lambda)h^{\text{tfw}}(x,y)}_{\text{Outflows of TFWs}} = \underbrace{u^{\text{tfw}}(x)\kappa^{\text{tfw}}v^{\text{tfw}}(y)}_{\text{Inflows of TFWs}}$$

The distribution of matches is determined by these steady-state equations. The unemployment distribution and distribution of vacancies then follows from the balance equations above.

6.6 Free-entry condition

Following Lise et al (2016), we exogenously set the profitability threshold such that the lowest productivity job in the support makes zero profits. Thus, the free-entry condition is given by:

$$\max\{\Pi_0(\underline{y}), \Pi_0^{\text{tfw}}(\underline{y})\} = 0$$

The number of jobs, N, is given endogenously by this condition.

6.7 Welfare

The social welfare function is defined as follows:

$$W = \int f(x,y)(h(x,y) + h^{\text{tfw}}(x,y))dxdy + \int (b(x)u(x) + b^{\text{tfw}}(x)u^{\text{tfw}}(x))dx - cV - (c^{\text{tfw}}/p)V^{\text{tfw}}$$

The maximization problem for the constrained efficient allocation can be written as:

$$\max_{h,h^{\text{tfw}},u,u^{\text{tfw}},V,V^{\text{tfw}}} W$$

subject to accounting identities in Equation (10), steady-state equilibrium for domestics and TFWs

from Section 6.5, the matching and production technologies, vacancy costs, and unemployment benefit schedules for domestics and TFWs.

We are currently working to derive conditions for efficiency in this model by applying a sufficient statistics approach. We aim to characterize the constrained-efficient allocation to identify sources of inefficiency in the equilibrium allocation and determine how the immigration policy parameters p and λ can move the equilibrium closer to the efficient benchmark.

7 Calibration and Counterfactual Analysis

We calibrate the model developed in the previous section by finding combinations of parameters that allow us to quantitatively match our main reduced-form results. We use the calibrated model in several ways:

- First, we use the calibrated model to show that we can generate negative firm selection into the TFW program as an equilibrium outcome. The lower average worker fixed effects compared to the rest of the population motivates the assumption that TFWs have a lower distribution of productivity. This appears to be key to generating negative firm selection in equilibrium.

- Second, we use the calibrated model to simulate the effect of randomly giving PR to a small number of TFWs. We interpret this as conceptually equivalent to our event-study analysis, which isolates the partial equilibrium effect of PR by giving individual workers PR while holding aggregate labor market conditions constant. We show that we can find parameters that allow us to closely match our reduced-form results on job transitions, earnings, and firm pay premia, although this requires that the distribution of TFW productivity increases after PR. Without this, we consistently simulate smaller earnings effects of PR relative to firm pay premia effects. This implies that after PR, TFWs increase earnings both because they transition to higher-wage firms and because they experience earnings increases independent of the firm. Our model replicates this through a higher distribution of x for TFWs after they change jobs upon receiving PR. One broad interpretation of this is that, given the prevalence of job transitions into different industries, TFWs effectively find jobs that better utilize their existing human capital (rather than interpreting the change in x as literally an increase in human capital at the time of PR).

- Third, we simulate the longer-run effects of PR using the model to extend well beyond the

end of our event-study window. After PR, TFWs approach their new steady-state equilibrium in the domestic labor market, and we find that 15 years after PR the former TFWs have increased earnings and firm pay premia even further. We find that the three-year estimates in our event study analysis understate the 15-year effect by about half, and we note that we find persistently higher job transitions 5 years later in our reduced-form analysis, which is also consistent with our calibrated model.

- Lastly, we perform two counterfactual exercises. First, we increase the probability of acceptance of a TFW application. This can be thought of as streamlining the program and reducing its administrative burden (Herd & Moynihan, 2018). We then simulate the effects on output, wages, firm profits, and social welfare. Second, we give *all* current TFWs permanent residency at once and re-solve for the new equilibrium output, wages, profits, and vacancies.

The remainder of this section gives more details on each of these exercises.

7.1 Calibration Approach

We use the same functional forms as in Lise, Meghir, and Robin (2016) in our calibration, choosing a CES production function (i.e., $f(x,y) = A(\alpha x^{\rho} + (1-\alpha)y^{\rho})^{1/\rho}$) and a quadratic matching function ($M = \eta * (U + (1-s) * U)^{1/2} V^{1/2}$. We also follow Lise, Meghir, and Robin (2016) in choosing a flexible beta distribution for worker and firm heterogeneity, and we calibrate the model to have separate beta distributions for TFWs and domestic workers. Appendix Table XX gives more details on each of the parameters used in our main calibration.

In our exploratory calibrations, we have found three parameters to be important for matching our reduced-form results: s (on-the-job search for domestic natives and permanent residents) and a_y and b_y (the beta distribution of firm heterogeneity). Intuitively, the on-the-job search parameter is what determines the additional search that happens immediately after TFWs become permanent residents, since they do not engage in any on-the-job search while they are employed as TFWs. Therefore, we can choose s to match the estimated increase in job transitions after PR. The a_y and b_y parameters determine the distribution of firm pay premia, and so we can choose these parameters to match the increase in firm pay premia after PR, given that we find in the calibration that there is negative selection into segmented market based on y, so that TFWs in the model simulations go from working at firms with $y \leq y^*$ to working at firms with $y \geq y^*$.[33]

[33]We use discrete types of firms and so we find there is a threshold type y^* where the firms of this type are indifferent

Given these choices, we show in Figure 11 the simulated effects of taking workers at random and giving them PR, and we estimate the resulting average effects on job switching, earnings, and firm pay premia. We use simulated data from the model to construct figures analogous to our reduced-form event study estimates. We estimate an AKM-style regression on the simulated data in order to estimate the firm effects equivalent to the firm fixed effects in the data, and we put the firm effects on the left-hand side just as in our reduced-form analysis. Figure 11a shows that the calibrated model is able to closely match the increase in job transitions, while Figures 11b and 11c show that the calibrated model is able to match the increase in firm pay premia but it understates the increase in earnings. In Appendix Figure A7, we show that the under-prediction of the earnings effects comes partly from the existence of on-the-job search (i.e., with $s = 0$, the earnings effects and firm pay premia effects track more closely). But without $s > 0$, the model cannot explain the sharp increase in job transitions when TFWs get PR.

As a result, Figure 12 shows the effects of simulating the model with one additional parameter, which is the increase in the distribution of x that TFWs experience after PR. With this parameter we can effectively "scale up" any increase in earnings (above and beyond what would be expected by the firm pay premia), and all of the panels show that the results match closely.

7.2 Longer-run Effects

Using the parameters that allow us to closely match our reduced-form results, we can go further than the reduced-form results by simulating the longer-run effects of PR. We do this by going out 15 years after PR, as shown in Figure 13. The results show persistent increases in job switching and continued increases in earnings and firm pay premia, although the increases attenuate over time as the former TFWs gradually approach their new steady-state earnings in their new labor market. Quantitatively, we find that the 15-year effects of PR are about twice as large for earnings and firm pay premia as the estimated three-year effects in our event study figures. These results imply that the earnings gains for former TFWs emerges fairly quickly over the first few years after PR but our model calibrations suggest that the earnings effects would be expected to grow as the former TFWs continue to search for higher-wage jobs.

between searching for a TFW or a domestic worker, and so we solve for the equilibrium by estimating the share of $y = y^*$ firms making each choice in a way that preserves this indifference in the equilibrium in each segmented market.

7.3 Counterfactual Analysis

Our first increases the probability of TFW application acceptance. This brings the expected cost of a TFW vacancy closer to what we assume for the domestic labor market. We implement this change and then re-simulate the entire model, allowing firms to re-sort between the two segmented labor markets. The results are summarized in Table 3. Since the expected cost of a TFW vacancy decreases, more firms enter the TFW segmented market. This increases output in the TFW segment and decreases output in the domestic segment. Firm profits increase in both segments due to the reduction in the expected cost of a vacancy. The increase in output leads to an increase in social welfare, despite a reduction in average wages. As a result, the reduction in administrative burden increases profits more than it reduces wages, which increases social welfare if profits and wages are weighted equally by the social planner.

Our second counterfactual scenario involves a more dramatic change: granting *all* TFWs permanent residency immediately and solving for a new steady-state equilibrium in the labor market. These results are summarized in Table 4, which compares various features of the decentralized equilibrium to this counterfactual scenario. We find that "shutting down" the segmented labor market results in increases in both average wages and social welfare. A key factor in this result is the increase in productivity of TFWs after PR (which is necessary to match our reduced-form results). Without the increase in productivity, shutting down the TFW segment actually reduces social welfare. This result may seem surprising, but it stems partly from the fact that shutting down the TFW segment leads more workers to engage in on-the-job search, which actually reduces wages for all workers.

Naturally, these results are highly stylized, and the results are sensitive to specific parameters. That said, it is not easy to match all of the main reduced-form results, and the results put constraints on parameters. For example, the estimated effects of PR on transition rates put constraints on s, and the combination of the earnings effects and firm pay premia effects put constraints on ρ. In particular, the results rule out strong complementarity because that would further reduce the earnings effects of PR relative to the firm pay premia effects. Lastly, negative selection constrains various combinations of parameters. For example, increasing β eventually leads to violation of the "single-crossing" condition necessary for firms to negatively select into the TFW segment based on y. Given these constraints, we conjecture that our main conclusions regarding the welfare effects of "shutting down" the TFW labor market are likely to be fairly robust.

8 Conclusion

This paper provides new evidence on the labor market returns to permanent residency using administrative data linking temporary and permanent visa records to matched employer-employee data in Canada. We find that obtaining permanent residency has substantial and persistent effects on immigrants' labor market outcomes. Specifically, permanent residency increases the probability of job-to-job transitions by approximately 11 percentage points, increases earnings by 7-8 percent, and leads to higher-quality jobs as measured by firm-specific pay premiums.

Our empirical findings show that these effects emerge immediately after permanent residency is granted and persist for at least five years. The job mobility effects demonstrate how restricted employment options under temporary work permits reduces temporary visa holders' earnings and job quality. The earnings gains that follow permanent residency are substantial, with about 20-40 percent of these gains attributable to temporary foreign workers sorting into higher-paying firms upon obtaining permanent residency.

To interpret these findings, we develop a search-and-matching model with heterogeneous workers and firms that allows for differential job mobility between temporary and permanent residents. The model incorporates important institutional features of the Temporary Foreign Worker Program (TFWP), such as the application cost necessary for firms to hire temporary foreign workers. When firms post a vacancy for a TFW, this creates a novel externality by "congesting" the market for domestic labor by effectively removing regular vacancies. Our model shows how mobility restrictions for temporary foreign workers lower earnings and reduce job quality. When these restrictions are lifted through permanent residency, immigrants can search broadly and move to higher-productivity, better-paying jobs. The model's predictions align closely with our empirical results.

Our paper contributes to the immigration literature by highlighting how temporary visa mobility restrictions affect labor market outcomes, complementing previous work that attributes immigrant pay gaps primarily to human capital differences. Our findings demonstrate how institutional factors – particularly work permit restrictions – contribute to earnings differentials between temporary residents and domestic workers. These results have implications for immigration policy design, suggesting that the speed at which temporary workers are able to obtain permanent residency significantly affects both their ability to find good-quality, high-earning jobs while having quantifiable spillover effects onto the job opportunities of domestic workers.

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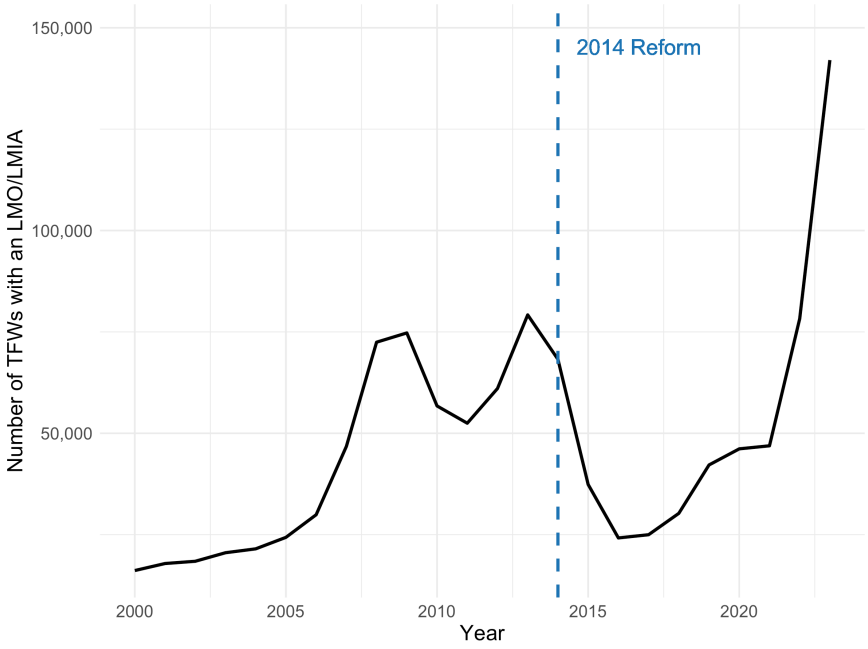
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Main Figures

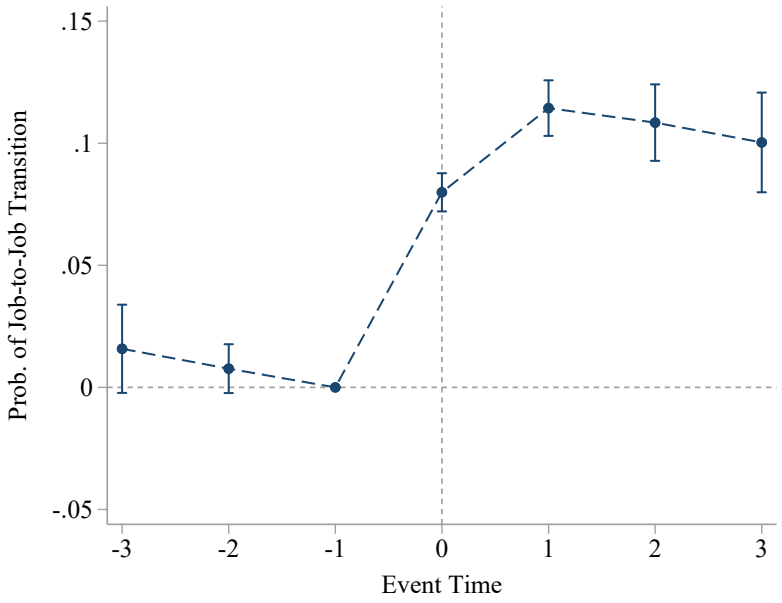
Figure 1: Temporary Foreign Workers (TFWs) with an LMO or LMIA in Canada, 2000 – 2023



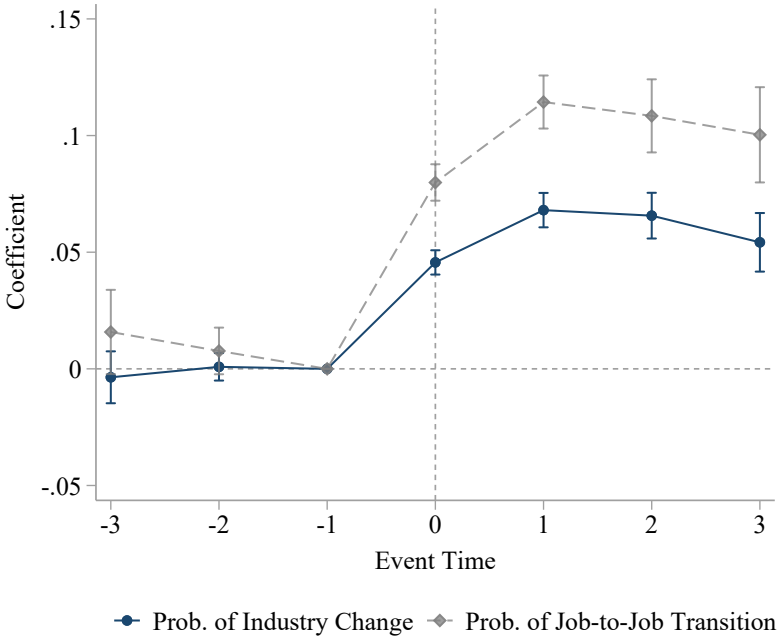
Notes: This figure presents the number of temporary foreign workers (TFWs) in Canada with a Labour Market Opinion (LMO) or Labour Market Impact Assessment (LMIA) on December 31st of each year from 2000 to 2023. *Source:* Immigration, Refugees, and Citizenship Canada (IRCC).

Figure 2: Worker Mobility Outcomes

(a) Probability of Job-to-Job Transition



(b) Probability of Industry Change

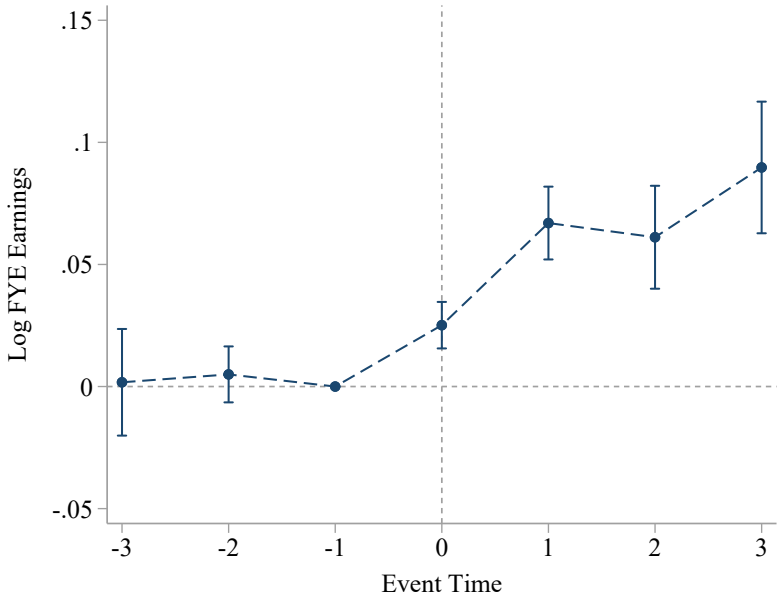


Notes: This figure shows event study estimates for worker mobility outcomes around the time of obtaining permanent residency (event time 0). Panel (a) shows the probability of job-to-job transitions, with an average increase in 10.8 percentage points in the post-treatment period. Panel (b) shows the probability of changing industries, with an average increase of 6.3 percentage points in the post-treatment period. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

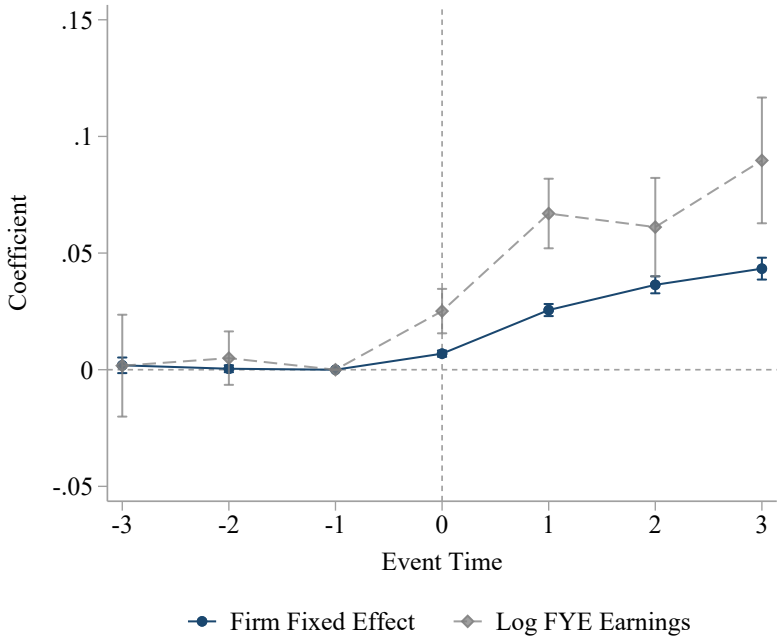
Figure 3: Earnings and Firm Quality

(a) Log Full-Year Equivalent Earnings

[0.8em]

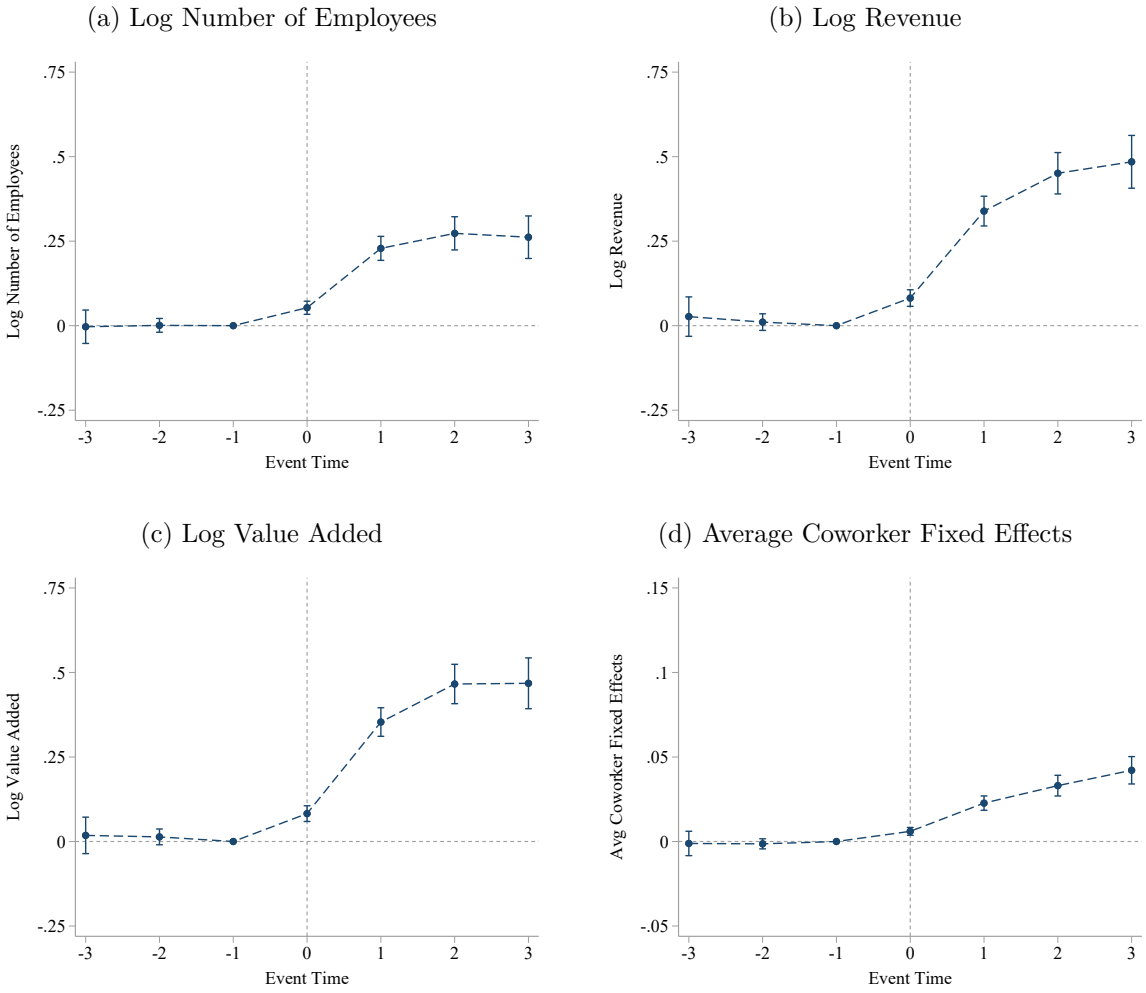


(b) Firm Fixed Effect



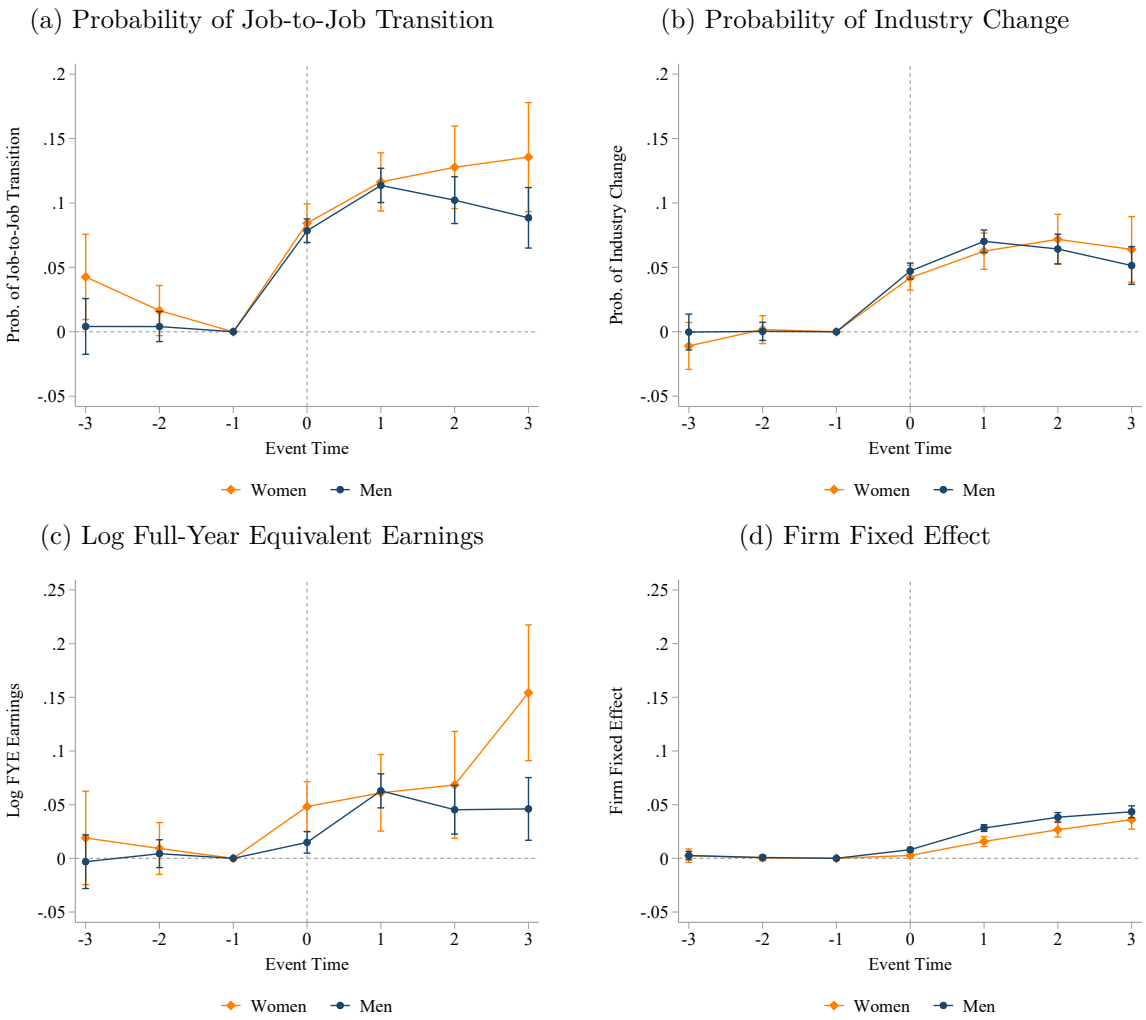
Notes: This figure shows event study estimates for log earnings and firm quality outcomes. Panel (a) shows changes in log full-year equivalent earnings, with an average increase of 0.073 log points in the post-treatment period. Panel (b) shows changes in firm fixed effects of the *primary* employer, where the firm fixed effects are estimated from an AKM model (see Appendix C). The average increase in firm fixed effects is around 0.035 after permanent residency (PR). Event time 0 represents the year of obtaining permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure 4: Firm Characteristics



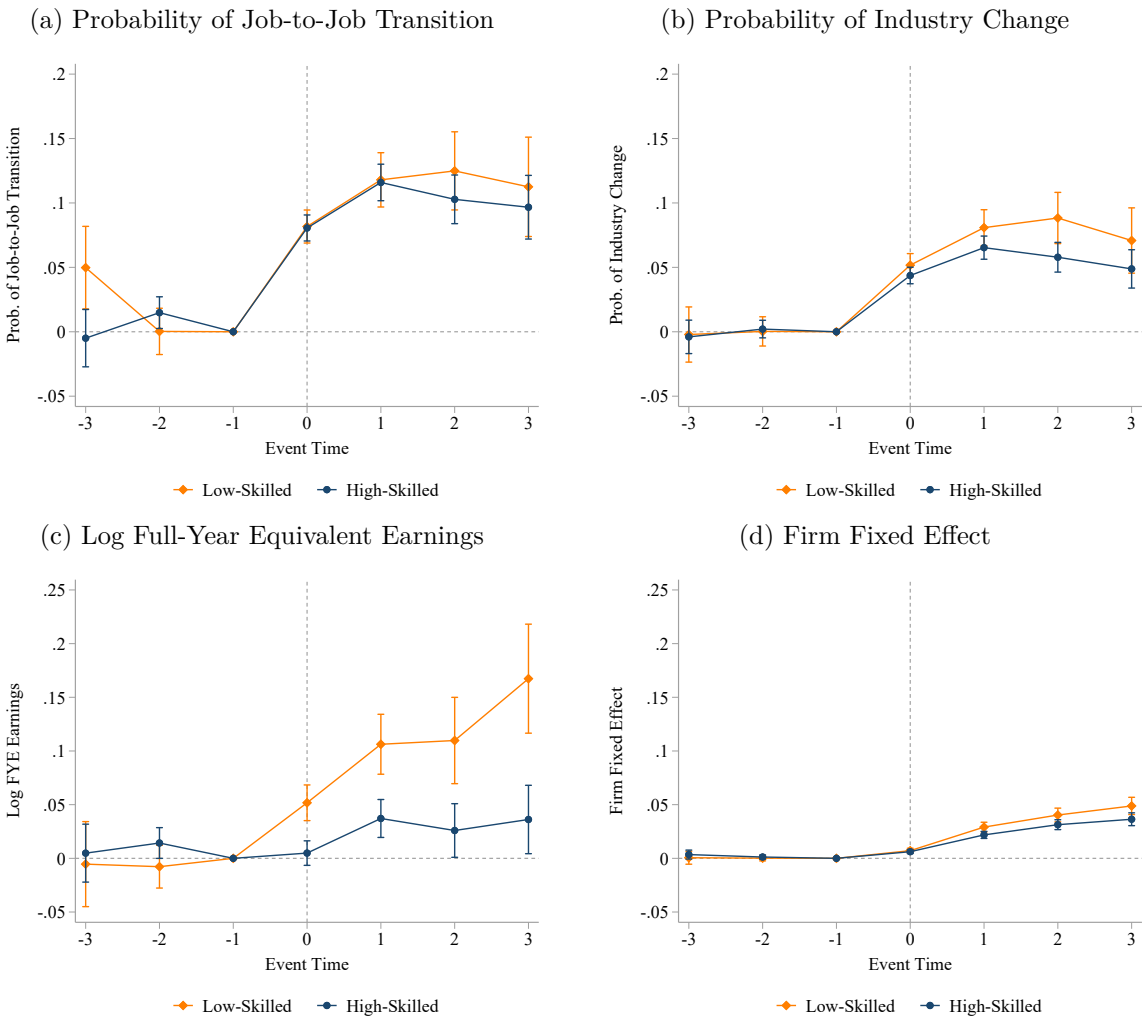
Notes: This figure shows event study estimates for characteristics of workers' *primary* employers. Panel (a) shows log firm size (number of employees), with an average increase of 0.255 log points in the post-treatment period. Panel (b) shows log firm revenue, with an average increase of 0.425 log points. Panel (c) shows log value added, with an average increase of 0.429 log points. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean), with an average increase of 0.033. All outcomes are measured at the firm-year level. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure 5: Worker Outcomes by Gender



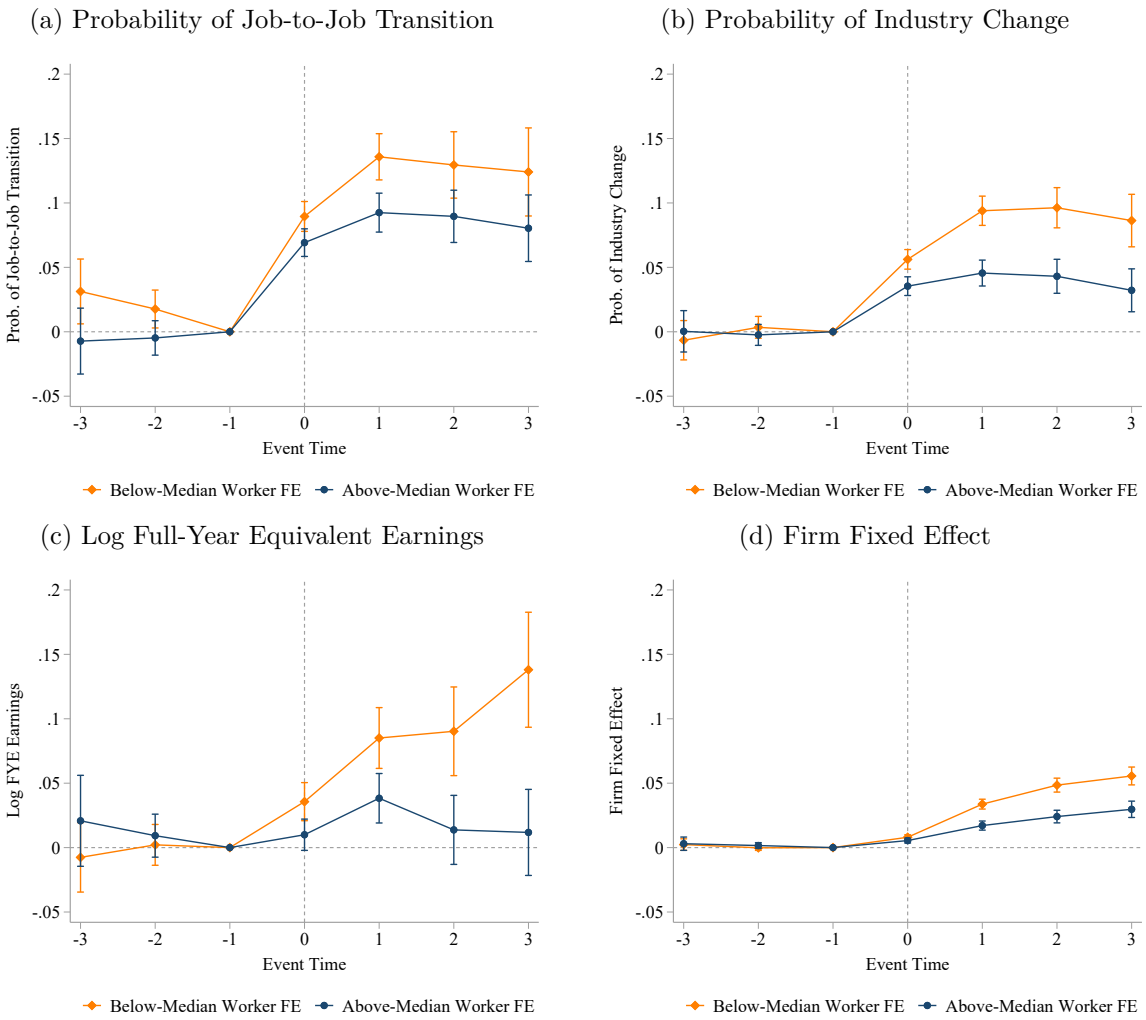
Notes: This figure shows event study estimates separately by gender. Orange lines represent women; navy lines represent men. Panel (a) shows job-to-job transition probability, with post-treatment averages of 12.7% for women and 10.1% for men. Panel (b) shows industry change probability, with averages of 6.6% for women and 6.2% for men. Panel (c) shows log full-year equivalent earnings, with average increases of 0.095 log points for women and 0.051 log points for men. Panel (d) shows firm fixed effects for the *primary* employer, with averages of 0.026 for women and 0.037 for men. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure 6: Worker Mobility Outcomes by Skill Level



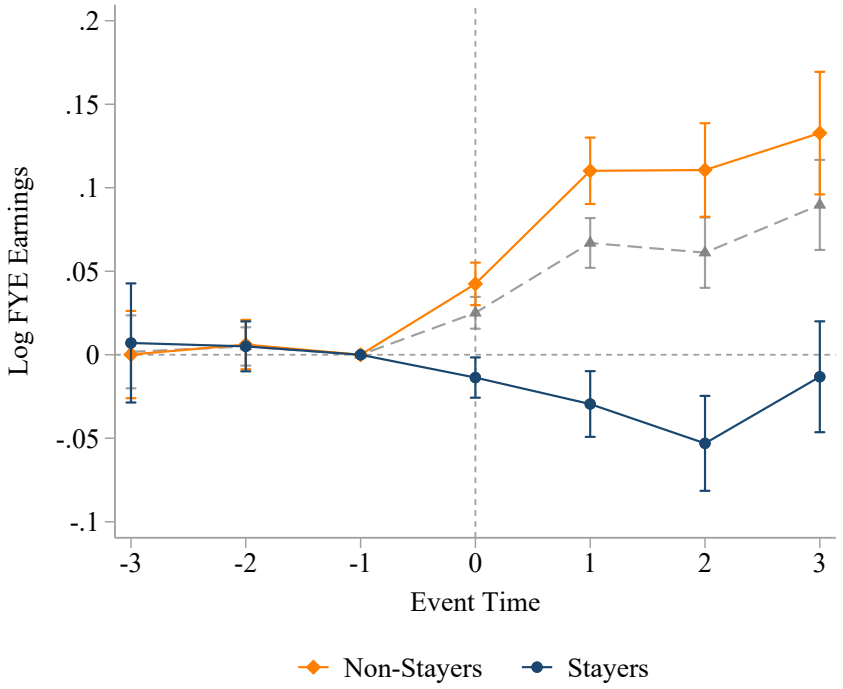
Notes: This figure shows event study estimates separately by skill level. The classification into low and high skilled workers uses the intended occupation at the time of permanent residency (see Section 3.2). Panel (a) shows job-to-job transition probability, with post-treatment averages of 11.8% for low-skilled workers and 10.5% for high-skilled workers. Panel (b) shows industry change probability, with averages of 8.0% for low-skilled and 5.7% for high-skilled workers. Panel (c) shows log full-year equivalent earnings, with average increases of 0.128 log points for low-skilled workers and 0.033 log points for high-skilled workers. Panel (d) shows firm fixed effects for the *primary* employer, with averages of 0.039 for low-skilled and 0.030 for high-skilled workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure 7: Worker Mobility Outcomes by Worker Fixed Effect



Notes: This figure shows event study estimates separately by above- and below-median worker fixed effects, where the worker fixed effects were estimated using an AKM model (see Appendix C). Orange lines represent workers with below-median worker fixed effects; navy lines represent workers with above-median worker fixed effects. Worker fixed effects are measured in the year before obtaining permanent residency. Panel (a) shows job-to-job transition probability, with post-treatment averages of 13.0% for below-median workers and 8.8% for above-median workers. Panel (b) shows industry change probability, with averages of 9.2% for below-median and 4.0% for above-median workers. Panel (c) shows log full-year equivalent earnings, with average increases of 0.105 log points for below-median workers and 0.021 log points for above-median workers. Panel (d) shows firm fixed effects for the *primary* employer, with averages of 0.046 for below-median and 0.024 for above-median workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

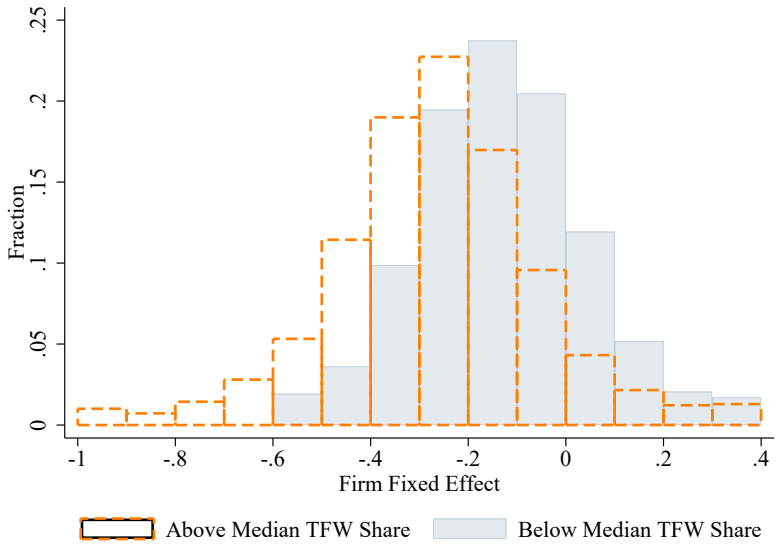
Figure 8: Log Full-Year Equivalent Earnings by Job Mobility Status



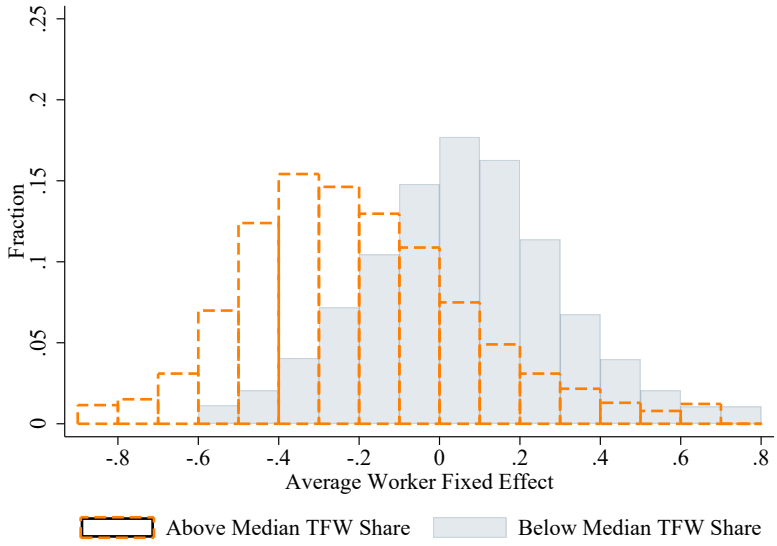
Notes: This figure shows event study estimates for log full-year equivalent earnings, comparing workers who stay with their pre-event employers throughout the sample period (stayers) versus those who change employers at least once (non-stayers). Orange lines represent non-stayers; navy lines represent stayers. The gray dashed line shows the baseline earnings effect for all workers from Figure 3. In the post-treatment period, non-stayers experience an average earnings increase of 0.118 log points, while stayers experience an average earnings decrease of 0.032 log points. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure 9: Firm Selection - Distribution of Firm and Average Worker Effects by TFW Employment Share for Firms that Hire TFWs

(a) Firm Effect



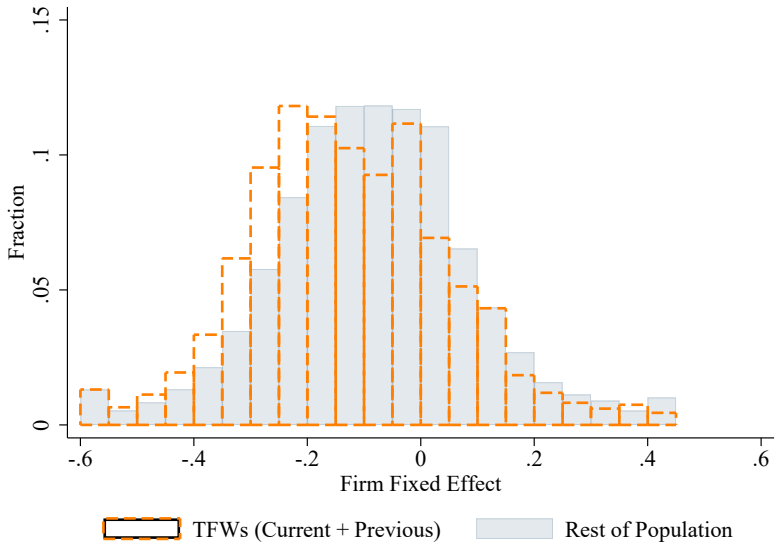
(b) Average Worker Effect of Employees



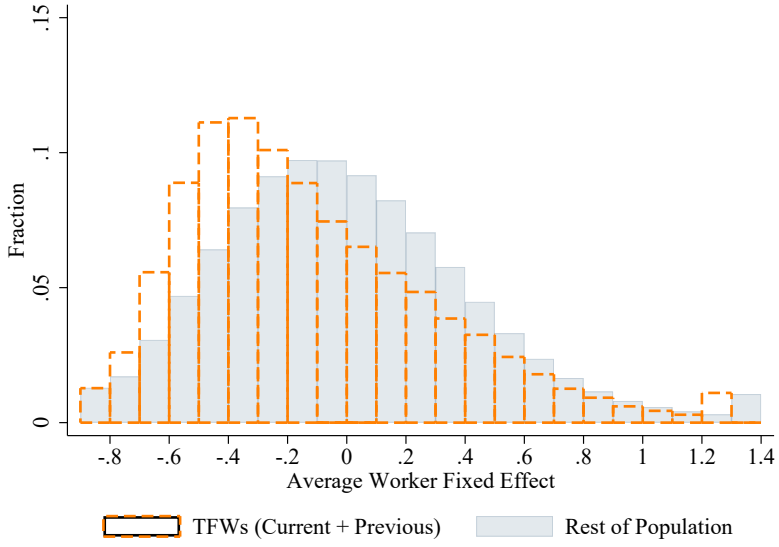
Notes: This figure shows the distribution of firm effects and average worker effects for firms that hired at least one TFW during the sample period, comparing firms with above-median versus below-median average shares of TFWs across all years. The worker and firm fixed effects were estimated using an AKM model (see Appendix C). Panel (a) shows the distribution of firm fixed effects above median, conditional on making a TFW hire. Panel (b) shows the distribution of average worker fixed effects above firm median, conditional on making a TFW hire. Orange bars represent firms with above-median TFW employment shares; navy bars represent firms with below-median TFW employment shares. The sample is restricted to firms that employ at least one temporary foreign worker.

Figure 10: Worker Selection - Worker and Average Firm Effects for TFWs vs. Rest of Population

(a) Average Firm Effect of Primary Employer

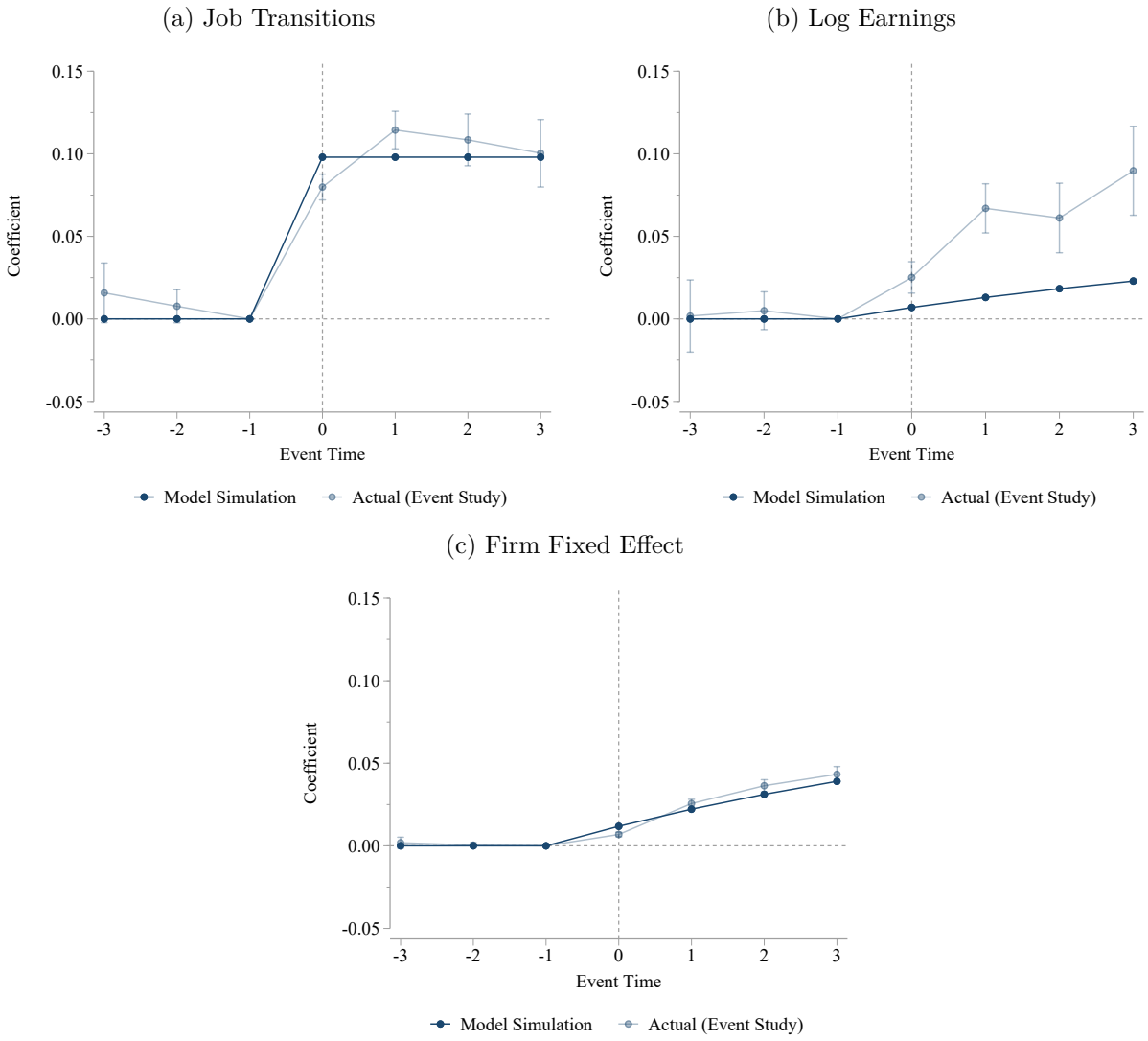


(b) Worker Effect



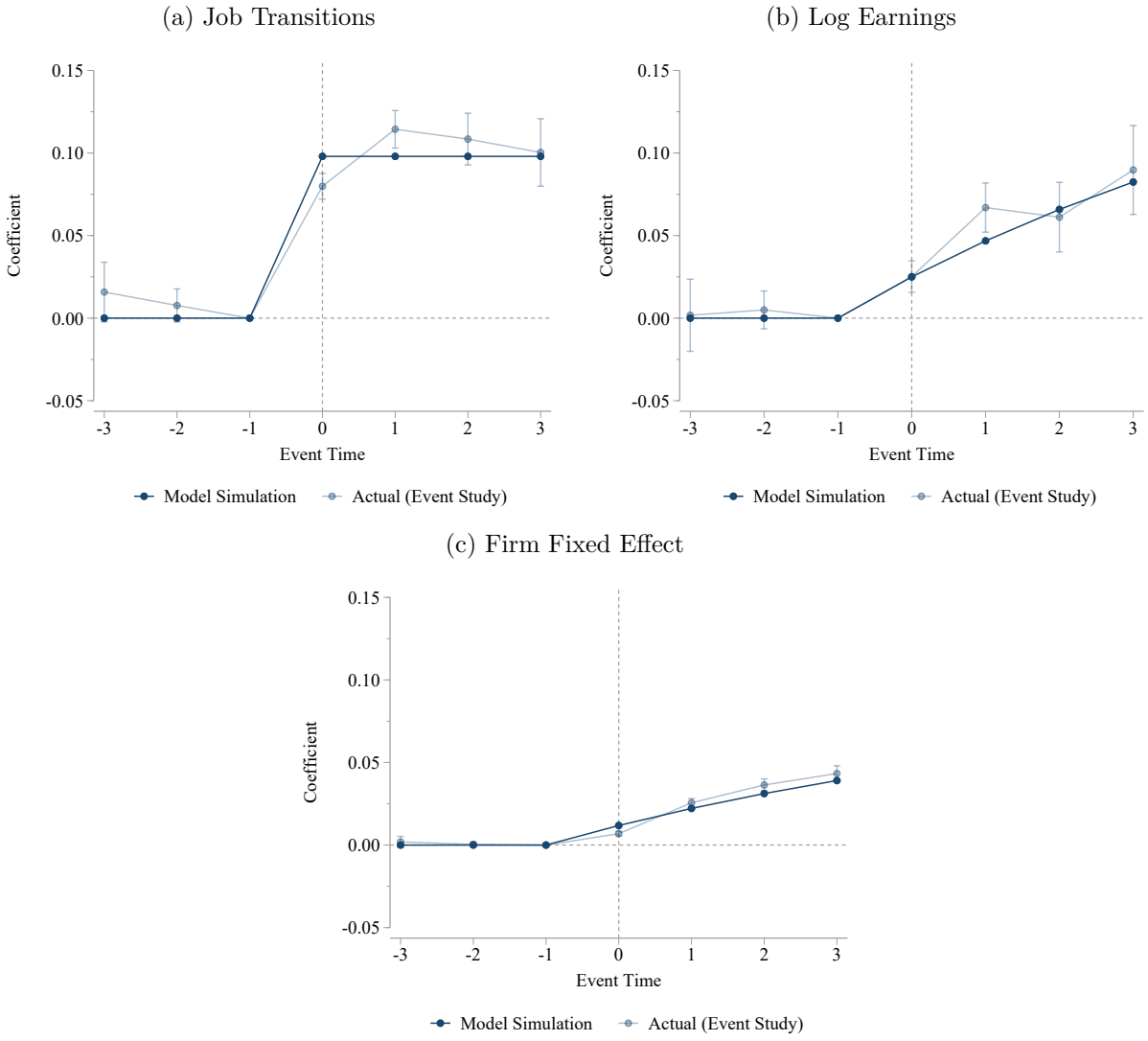
Notes: This figure compares the distribution worker effects and average firm effects of the *primary* employer between TFWs (current and previous) and the rest of the population. The worker effects and firm effects were estimated using an AKM model (see Appendix C). Panel (a) shows the distribution of average firm fixed effects for the primary employers of the workers. Panel (b) shows the distribution of average worker fixed effects. Orange bars represent TFWs; navy bars represent the rest of the population.

Figure 11: Model Simulations



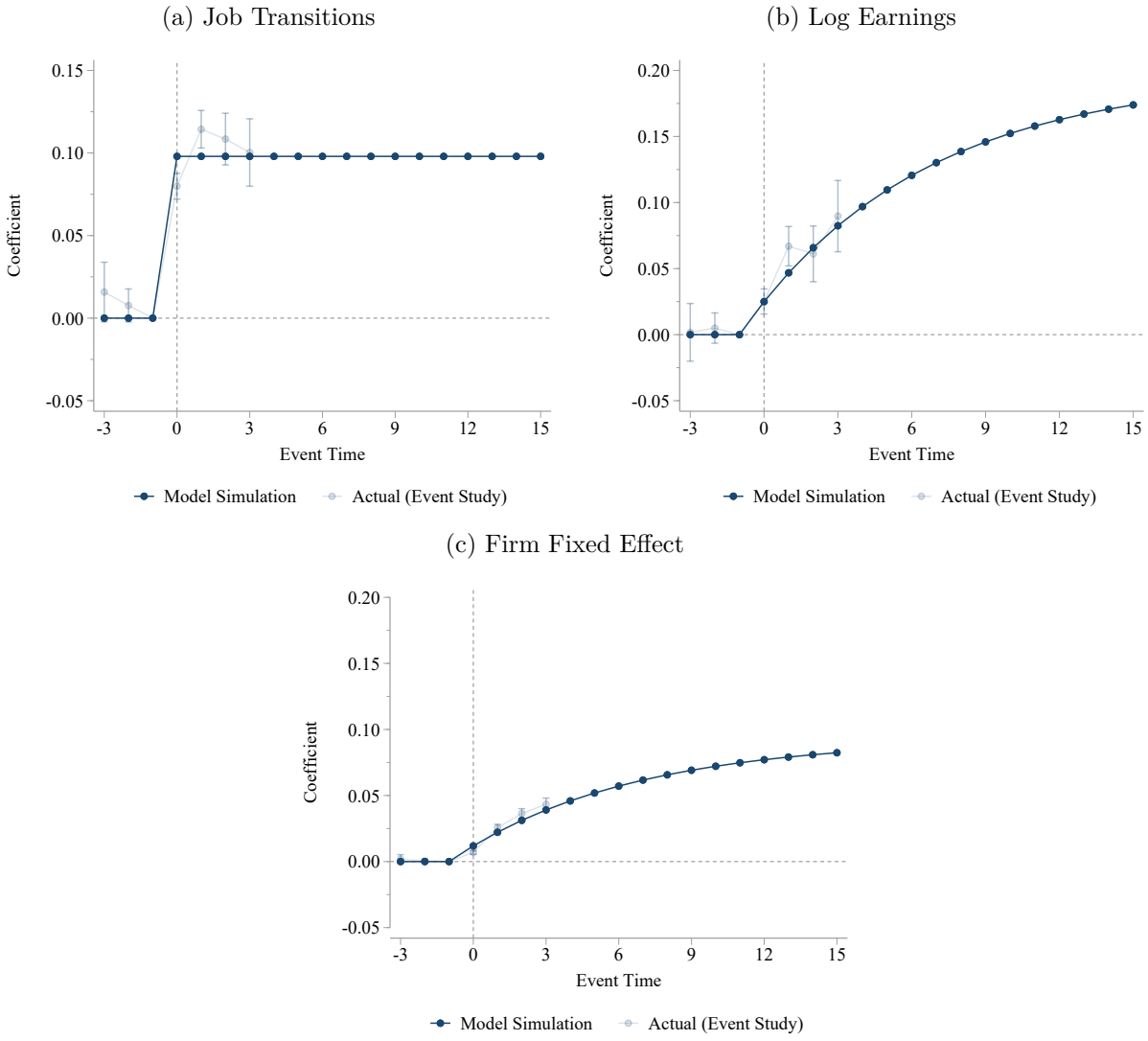
Notes: This figure shows the model simulation-based event study estimates for the effect of randomly giving workers permanent residency (PR). Panel (a) shows the probability of a job-to-job transition, with a post-PR effect of 10%. Panel (b) shows the increase in simulated wages after earning PR. Panel (c) shows the increase in the firm fixed effects from an AKM-style regression on the simulated data. The calibration sets the on-the-job search parameter s and the two beta-distribution parameters (a_y, b_y) to match the observed jump in job transitions and the rise in firm pay premia after obtaining PR. The calibrated model is able to match the increase in job transitions and firm pay premia, but understates the increase in earnings.

Figure 12: Model Simulations



Notes: This figure shows the model simulation-based event study estimates for the effect of randomly giving workers permanent residency (PR). Panel (a) shows the probability of a job-to-job transition, with a post-PR effect of 10%. Panel (b) shows the increase in simulated wages after earning PR. Panel (c) shows the increase in the firm fixed effects from an AKM-style regression on the simulated data. The calibration sets the on-the-job search parameter s and the two beta-distribution parameters (a_y, b_y) to match the observed jump in job transitions and the rise in firm pay premia after obtaining PR. An additional parameter, the increase in the distribution of x that TFWs experience after PR, is added to the calibrated model. The model now matches all three measures from the reduced-form event study estimates.

Figure 13: Model Simulations



Notes: This figure shows the model simulation-based event study for the effect of randomly giving workers permanent residency (PR) at a longer event horizon of 15 years. Panel (a) shows the probability of a job-to-job transition, with a post-PR effect of 10%. Panel (b) shows the increase in simulated wages after earning PR. Panel (c) shows the increase in the firm fixed effects from an AKM-style regression on the simulated data. The calibration sets the on-the-job search parameter s and the two beta-distribution parameters (a_y, by) to match the observed jump in job transitions and the rise in firm pay premia after obtaining PR. The results show persistent increases in job switching and continued increases in earnings and firm pay premia, although increases attenuate over time.

Main Tables

Table 1: Summary Statistics by Sample and PR Status

	Get PR (Never Get PR = 0)			Never Get PR = 1
	All	$3 \leq$ T2PR ≤ 5	Analysis Sample	All
	(1)	(2)	(3)	(4)
Sample Composition				
Analysis sample	0.22	0.42	1	0
Never get PR	0	0	0	1
$3 \leq$Time-to-PR ≤ 5	0.53	1	1	0
Unique individuals	113,000	60,000	25,000	107,000
Demographics				
Advantaged country	0.17	0.16	0.14	0.17
Male	0.70	0.69	0.74	0.69
Bachelor's degree	0.43	0.45	0.43	0.43
High skilled	0.63	0.61	0.59	0.60
Earnings				
Total 2nd-year earnings (2012$)	53,000	51,000	51,000	49,000
Initial Industry				
Accommodation and food services (72)	0.34	0.37	0.41	0.18
All other industries	0.23	0.21	0.17	0.28
Professional, scientific, and technical (54)	0.08	0.07	0.09	0.12
Construction (23)	0.08	0.08	0.08	0.15
Manufacturing (33)	0.05	0.05	0.06	0.06
Health care and social assistance (62)	0.05	0.04	0.00	0.03
Transportation and warehousing (48)	0.05	0.05	0.04	0.05
Retail trade (44)	0.05	0.05	0.05	0.04
Wholesale trade (41)	0.03	0.03	0.03	0.05
Time to PR				
Average time-to-PR (years)	3.74	3.76	3.68	–
≤ 2 years	0.29	0	0	–
≥ 6 years	0.18	0	0	–
3 years	0.24	0.45	0.50	–
4 years	0.17	0.33	0.32	–
5 years	0.11	0.22	0.18	–

Notes: This table presents summary statistics for temporary foreign workers (TFWs) by their permanent residency (PR) status. Column 1 includes all workers who eventually receive PR. Column 2 restricts to workers who take 3–5 years to receive PR. Column 3 further restricts to the balanced analysis sample, which requires positive earnings for all years from event time –X to +2, where X is the worker's time-to-PR. Column 4 includes workers who never receive PR. Industry codes in parentheses refer to 2-digit NAICS classifications. The "advantaged countries" classification follows Dostie et al. (2023). The classification into low and high skilled workers uses the intended occupation at the time of permanent residency (see Section 3.2). The industries shown are the top 10 initial industries for temporary foreign workers, with the "All Other Industries" category capturing all other industries not shown in the Table.

Table 2: Mincer-style Regressions for Log Wages

	Full-time workers only		Fixed effects (full-time only)		
	(1)	(2)	(3)	(4)	(5)
	No controls	With controls	Industry FE	Occupation FE	Ind × Occ FE
Temporary resident	-0.575	-0.579	-0.501	-0.526	-0.456
	(0.018)	(0.017)	(0.016)	(0.016)	(0.016)
Permanent resident	-0.080	-0.234	-0.199	-0.203	-0.173
	(0.018)	(0.017)	(0.016)	(0.016)	(0.016)
25-34 years		0.715	0.662	0.644	0.606
		(0.007)	(0.007)	(0.007)	(0.007)
35-44 years		1.012	0.936	0.913	0.854
		(0.007)	(0.007)	(0.007)	(0.007)
45-54 years		1.115	1.034	1.015	0.951
		(0.007)	(0.007)	(0.007)	(0.007)
55-64 years		1.015	0.936	0.924	0.864
		(0.007)	(0.007)	(0.007)	(0.007)
Bachelor's degree +		0.422	0.350	0.314	0.268
		(0.004)	(0.004)	(0.004)	(0.004)
Female		-0.268	-0.267	-0.259	-0.231
		(0.004)	(0.004)	(0.004)	(0.004)
N	345,040	345,040	345,040	345,040	345,040
Controls	No	Yes	Yes	Yes	Yes
Fixed effects	None	None	Industry	Occupation	Both

Notes: This table reports results from the estimation of Mincer-style regressions using the Canadian 2016 Census. The empirical specification is $Y_{i,j,o} = \beta_1 \cdot TR_i + \beta_2 \cdot PR_{it} + \mathbf{X}_i'\gamma + \varepsilon_i$, where TR_i and PR_i are indicators if individual i is a temporary resident or permanent resident. The omitted category is non-immigrants (i.e., native born). Y_i is real wages and $\mathbf{X}'$ is a vector of controls including age group and whether the highest degree obtained was a bachelor's degree or higher. The dependent variable is log(1+wage) where wage is the unconditional real wage. This variable is greater than 0 for all individuals who are full-time workers. All columns report standard OLS results on the log of real wage for full-time workers only. Real wages for all full-time workers are greater than 0. Columns (3)-(5) include fixed effects: column (3) includes industry fixed effects, column (4) includes occupation fixed effects, and column (5) uses industry interacted with occupation fixed effects. The sample includes individuals between ages 18-64. Standard errors in parentheses.

Table 3: Counterfactual Analysis Reducing Administrative Burden for TFW Applications

	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Increase p for TFW application	% change relative to DE
Panel A: Market-level outcomes			
TFW market segment:			
Output (market production)	0.281	0.291	3.39%
Wage bill	0.159	0.166	4.63%
Firm profits	0.103	0.107	3.95%
Market tightness (V/U)	0.333	0.430	29.29%
Domestic workers market segment:			
Output (market production)	0.421	0.420	-0.22%
Wage bill	0.207	0.205	-1.07%
Firm profits	0.179	0.181	1.09%
Market tightness (V/U)	0.537	0.523	-2.64%
Combined market:			
Output (market production)	0.702	0.711	1.23%
Wage bill	0.366	0.371	1.41%
Firm profits	0.281	0.287	2.33%
Market tightness (V/U)	n/a	n/a	
Panel B: Average wages and profits			
Average wage, TFWs	0.214	0.217	1.39%
Average wage, domestic workers	0.284	0.282	-0.72%
Average wage, all workers	0.249	0.249	-0.07%
Average profits per firm	0.165	0.165	0.15%
Panel C: Social welfare			
Social welfare in TFW market segment	0.269	0.279	3.57%
Social welfare in domestic workers market segment	0.405	0.405	-0.11%
Total social welfare	0.675	0.684	1.33%

Notes: This table presents results from our counterfactual scenario where we reduce the expected cost of a temporary foreign worker (TFW) application by increasing the probability of application acceptance in our calibrated model. This increase in the probability of application acceptance brings the expected cost of a TFW vacancy closer to what we assume for the domestic labor market. After implementing this change, we re-simulate the entire model, allowing firms to re-sort between the two segmented labor markets. The first column of results presents values from the decentralized equilibrium, the second from the counterfactual scenario, and the third presents the % change between the two. More firms enter the TFW segmented market, which increases output in this segment by 4.6% while decreasing output in the domestic segment by 0.2%. Firm profits increase by 4.0% in the TFW segment and 1.1% in the domestic segment due to the reduction in expected cost of a vacancy. The increase in output raises social welfare by 3.6% when the planner values wages and profits equally.

Table 4: Counterfactual Analysis Converting All TFWs to Permanent Residents

		Converting All TFWs to Permanent Residents			
	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Changing TFW x distribution to match PR results	% change relative to DE	Scenario: Holding TFW x distribution constant after PR	% change relative to DE
Panel A: Market-level outcomes					
TFW market segment:					
Output (market production)	0.281				
Wage bill	0.159				
Firm profits	0.103				
Market tightness (V/U)	0.333				
Domestic workers market segment:					
Output (market production)	0.421				
Wage bill	0.207				
Firm profits	0.179				
Market tightness (V/U)	0.537				
Combined market:					
Output (market production)	0.702	0.737	4.96%	0.700	-0.28%
Wage bill	0.366	0.369	0.85%	0.348	-5.08%
Firm profits	0.281	0.304	8.00%	0.292	3.80%
Market tightness (V/U)	n/a	0.516		0.485	
Panel B: Average wages and profits					
Average wage, TFWs	0.214				
Average wage, domestic workers	0.284				
Average wage, all workers	0.249	0.251	0.79%	0.238	-4.47%
Average profits per firm	0.165	0.174	5.41%	0.169	2.57%
Panel C: Social welfare					
Social welfare in TFW market segment	0.269				
Social welfare in domestic workers market segment	0.405				
Total social welfare	0.675	0.708	4.95%	0.673	-0.30%

Notes: This table presents results from our counterfactual scenario where we grant all temporary foreign workers (TFWs) permanent residency immediately. After implementing this change, we re-simulate the entire model, solving for a new steady-state equilibrium under two distributions for TFW productivity x. The second column of results reports the results when we change the TFW distribution to match our reduced-form results. We find that "shutting down" the segmented labor market results in an increase in average wages of 0.8% and social welfare of 5.0%. When we keep the TFW distribution constant, as in the fourth column of results, social welfare is reduced by 0.3% while average wages decrease 4.5%. This reduction in average wages and therefore social welfare is caused by an increase in on-the-job search when the TFW segment is shut down.

Online Appendix for "The Labor Market Returns to Permanent Residency"

A Pathways to Permanent Residency

A.1 Permanent Residency Programs

Most Temporary Foreign Workers (TFWs) hold temporary work permits that do not guarantee permanent residency, requiring them to apply through standard PR channels. There are four main programs that TFWs typically use to obtain PR: the Federal Skilled Worker Program (FSWP), the Canadian Experience Class (CEC), the Provincial Nominee Program (PNP), and the Family Class.

A.1.1 The Federal Skilled Worker Program (FSWP)

The FSWP, introduced in 1967, uses a point system to assess candidates based on factors such as language proficiency, education, work experience, and age. When the FSWP was first introduced, it also awarded points for short-term factors, such as occupational demand or pre-arranged employment, but a significant reform occurred in 2002 with the introduction of the *Immigration and Refugee Protection Act* (IRPA). The IRPA shifted the focus of the FSWP to long-term factors like education, language proficiency, and work experience, while removing categories related to occupation-specific demand (Beach, Green, and Worswick, 2011).

A.1.2 The Canadian Experience Class (CEC)

In 2008, the federal government introduced the Canadian Experience Class (CEC) as a fast-track pathway to permanent residence (PR) for high-skilled workers with Canadian work experience. Before the CEC, TFWs with Canadian work experience would have to apply for PR through the regular immigration streams, often facing long processing times. Many had to return to their home country while awaiting a PR decision (Government, 2012). To address this issue and retain high-skilled individuals, the government created the CEC to prioritize PR applications from high-skilled TFWs and international students already working in Canada, thus facilitating their transition to PR (Government, 2012). Initially, the CEC required two years of full-time work experience within 36 months, but this was reduced to one year in 2012. Note that since 2015, Immigration, Refugees, and Citizenship Canada (IRCC) requires individuals who are eligible for both the CEC and FSWP to apply to the CEC before the FSWP (Thevenot, 2022).[34]

[34] In 2015, the federal government introduced the Express Entry system to streamline the PR application process. Express Entry is not a standalone PR program but an online system that centralizes applications across multiple programs. It also mandates that individuals apply to certain programs in a specific order, such as the CEC before the FSWP, if eligible for both.

A.1.3 The Provincial Nominee Program (PNP)

Established in 1998, the PNP was introduced in response to concerns from Prairie and Atlantic provinces that they were not receiving enough immigrants, as most newcomers at the time settled in Vancouver, Toronto, and Montreal (Seidle, 2013).[35] At the time, federal programs also did not fully address provincial employment needs. The PNP was designed to allow provinces to participate in the immigration selection process based on their specific economic and demographic priorities.[36] For example, Manitoba has historically had high demand for low-skilled immigrants which would not be eligible for PR under federal programs such as the FSWP. There is a lot of variation in scope and size of PNP streams across provinces, with different streams for both high-skilled and low-skilled workers.[37] One of the requirements associated with the PNP is that individuals must settle in the province through which they obtain PR (Seidle, 2013).

A.1.4 The Family Class

In 1976, the *Immigration Act* outlined The Family Class as an important pathway to PR. The family class offers a pathway for individuals who have family members who are Canadian citizens or permanent residents. Through the Family Class, permanent residents or citizens of Canada are able to sponsor other family members, including spouses, dependents, and parents for PR. Sponsors must commit to financially supporting the individual that they sponsor.

A.2 Common Pathways to PR for TFWs

In this section, we discuss the common pathways to PR for TFWs. Picot et al. (2022) analyze 5-year PR-transition rates for three cohorts: those who arrived in 2000-2004, 2005-2009, and 2010-2014. The proportion of TFWs obtaining PR within five years of arrival increased from approximately 18% for those arriving between 2000 and 2004 to 25% for those arriving between 2010 and 2014 (Picot et al., 2022). Historically, it was more common for low-skilled TFWs to transition to PR, but the gap in 5-year transition rates between low-skilled and high-skilled TFWs has narrowed for recent cohorts. Among TFWs who arrived between 2000 and 2004, 11% of high-skilled workers obtained PR within five years, compared to 30% of low-skilled workers. However, this gap narrowed for the 2010–2014 cohort, with 27% of high-skilled workers and 30% of low-skilled workers achieving PR within five years.

Initially, the PNP was a relatively minor pathway to PR, with only 477 individuals obtaining PR through this program in 1999. However, it has grown into a major pathway for both low-

[35] Although the PNP was introduced in 1998, its legislative foundation is in the *Immigration Act* of 1976 (Seidle, 2013).

[36] The federal government always makes the final decision regarding an individual's PR application, but individuals who apply for PR through the PNP can be "nominated" by their province, greatly increasing their chances of federal approval (Seidle, 2013).

[37] For example, Seidle (2013) explains that as of 2013, Ontario only admitted high-skilled TFWs through its PNP, whereas British Columbia only admitted low-skilled workers or "critical impact workers". There have been significant changes to each province's PNP over time; for example, although Ontario only admitted high-skilled workers, they launched a stream for low-skilled workers in 2016 (O'Doherty, 2017).

and high-skilled workers. This increase has been facilitated by the federal government gradually increasing the provincial caps to the number of nominations over time in response to provinces' increased demand.

Historically, the FSWP was the primary pathway to PR for high-skilled TFWs, but transitions through the CEC and PNP have become increasingly common in recent years. Picot et al. (2022) show that among high-skilled temporary foreign workers (TFWs) who arrived in 2000–2004, 43% transitioned to PR through the FSWP within five years. However, this proportion dropped significantly to 8% for those who arrived in 2010–2014. By contrast, the PNP and CEC became the dominant pathways for the 2010–2014 cohort of high-skilled TFWs, with 48% obtaining PR through the PNP and 31% through the CEC. The rise in CEC and PNP admissions is partly mechanical, as the CEC program was unavailable in the early 2000's and the legislated caps to the PNP have increased over time. In addition, the popularity of the CEC among high-skilled TFWs stems from its points allocation for Canadian work experience, which they accumulate as TFWs in Canada.

Since low-skilled TFWs typically have lower levels of education and/or experience, and by definition work in low-skilled occupations, most are ineligible for the FSWP and CEC. As a result, the most common pathways for low-skilled TFWs tend to be streams within the PNP or the Family Class. Picot et al. (2022) show that for low-skilled TFWs (excluding live-in caregivers) who arrived between 2000 and 2004, the most common pathway to PR within five years was the Family Class, with 61% obtaining PR through this stream.[38] For low-skilled TFWs (excluding live-in caregivers) arriving between 2010 and 2014, the PNP became the primary PR pathway, accounting for 44% of transitions. For the 2010–2014 cohort, the Family Class share dropped to 33%, significantly lower than in the 2000–2004 cohort.

B Why does δ_{rg} recover $\text{ATT}_r(g)$?

To show formally that the estimand δ_{rg} recovers the $\text{ATT}_r(g)$ parameter, consider the fully saturated version of (8):

$$Y_{it} = \sum_{g_2} \gamma_g \mathbb{1}\{G_{2i} = g_2\} + \sum_{s} \tau_s \mathbb{1}\{s = t\} + \sum_{g_2} \sum_{r \neq -1} \delta_{sg} \mathbb{1}\{G_{2i} = g_2, r = t - g_2\} \tag{11}$$

where we now have a δ_{rg} coefficient for each G_{2i} by $r \neq -1$ combination, since there is a double summation over both g_2 and r values. If we were to combine all not-yet-treated cohorts and use them as a reference group for the relative time coefficients δ_{rg}, then we would have the same specification as earlier.

Now, consider Equation (11) for a given individual with either $t \geq G_{2i}$ (treated individuals)

[38] According to Table 4 in Picot et al. (2022), the most common PR pathway among *all* low-skilled TFWs arriving in 2000–2004 was the Live-in Caregiver Program (LCP). However, since this paper excludes workers in the LCP, the 61% statistic is derived from Table 4 after removing live-in caregivers.

and $t < G_{2i}$ (not-yet-treated individuals):

$$Y_{it} = \begin{cases} \gamma_g + \tau_t & \text{for } t < G_{2i} \\ \gamma_g + \tau_t + \delta_{rg_2} & \text{for } t \geq G_{2i} \end{cases} \tag{12}$$

By Assumption 1 (CT) trends condition, $Y_{it}(\infty) = \gamma_g + \tau_t$ and the first case does not include δ_{rg} since interaction effects are 0.

Next, to move from the individual level to the population level, we first use Assumption 1 (CT) to write down the expected potential outcome for a not-yet-treated individual as:

$$\begin{aligned} \mathbb{E}[Y_{it}(\infty)|G_i = g] =& \mathbb{E}[Y_{is}|G_i = g] \\ &+ (\mathbb{E}[Y_{it}|G_i = g'] - \mathbb{E}[Y_{ip}|G_i = g']) - (\mathbb{E}[Y_{ip}|G_i = g''] - \mathbb{E}[Y_{is}|G_i = g'']) \\ =& \gamma_g + \tau_s \\ &+ (\gamma_{g'} + \tau_t) - (\gamma_{g'} + \tau_p) + (\gamma_{g''} + \tau_p) - (\gamma_{g''} + \tau_s) \\ =& \gamma_g + \tau_t \end{aligned} \tag{13}$$

The common trends assumption allows us to represent the time dummy as a common τ_t, instead of a time dummy for each time-by-cohort combination. This is the case since we've defined the difference across time within cohorts to be equal, so time dummies don't depend on cohorts, and by setting one time dummy equal to 0, we can turn the time trend into dummies.

Similarly, the observed expected potential outcome for a treated individual for $r = t + G_{2i}$ is:

$$\mathbb{E}[Y_{it}(g) \mid G_i = g] = \gamma_g + \tau_t + \delta_{rg_2} \tag{14}$$

Lastly, conditioning on a given $r = t + G_{2i}$, we can write $\text{ATT}_r(g)$ as as the difference between Equation (13) and (14):

$$\begin{aligned} \text{ATT}_r(g) &= \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_i = g, r = t + G_{2i}] \\ &= (\gamma_g + \tau_t + \delta_{rg}) - (\gamma_g + \tau_t) \\ &= \delta_{rg} \end{aligned}$$

C Estimating firm pay premiums using the AKM model

C.1 Sample details

Prior to estimating the AKM model, the data cleaning closely follows the methodology outlined in Dostie et al. (2023) and Li, Dostie, and Simard-Duplain (2023), who both estimate an AKM model using the CEEDD.[39]

We begin with the full sample of individuals in the CEEDD, including non-immigrants, permanent residents, and temporary residents. Individuals with missing marital status, those who do not identify as male or female, and those outside the working age of 25 to 59 are excluded. Furthermore, the sample is limited to individuals whose employment income is at least as large as their self-employment income, where self-employment income includes earnings from business, farming, fishing, rental, commissions, and professional activities.

Since the CEEDD derives its data from tax records, it lacks specific labor market details such as hourly wages and hours worked. To address this, the sample is narrowed to full-time equivalent (FTE) workers, defined as those earning at least approximately $18,000 in 2012 dollars.[40] Moreover, individuals in the CEEDD may have multiple T4 records if they hold multiple jobs. To manage this, the sample is restricted to each individual's primary job, defined as the job that provides the highest income in any given year.

Following Dostie et al. (2023) and Li, Dostie, and Simard-Duplain (2023), firms in the public sector (NAICS 91), education (NAICS 61), and health sectors (NAICS 62) are excluded from the analysis. The sample is also restricted to incorporated firms that meet several criteria: they must have at least $50,000 in annual revenue, at least $100 in value-added per worker, and revenue that is at least as large as the total wage bill. Additionally, these firms must have at least two employees, where employment is defined as the average of all non-zero monthly employment submissions from the PD7.

Note that firm effects are only identified for firms in a "connected set," meaning that there exists a worker who moves between them at some point during the sample period. Thus, an important step prior to estimating the AKM-style model involves restricting the sample to the largest connected set of workers and firms from the matched employer-employee data.[41] Thus, firms that are not in the connected set are excluded.

[39] Dostie et al. (2023) estimate an AKM model using the CEEDD to decompose the immigrant-native earnings gap into individual-level and firm-level components. We mainly follow Dostie et al. (2023), only departing from their procedures when we define full-time equivalent (FTE) workers, which we obtain from Li, Dostie, and Simard-Duplain (2023).

[40] The FTE threshold is calculated by adjusting the minimum wage of $10.07 to 2012 dollars and multiplying by an average full-time work schedule of 38.8 hours per week over 48 weeks, following Li, Dostie, and Simard-Duplain (2023).

[41] To extract the largest connected set of workers and firms, we use the igraph package. The employer-employee data can be viewed as a graph where the firms are nodes and the edges are worker flows between firms. The largest connected set is equivalent to the maximal connected component of the worker-firm graph.

C.2 AKM estimation details

The AKM model (Abowd, Kramarz, and Margolis, 1999) assumes that the log of an individual's earnings can be decomposed into a the sum of a person effect, a firm effect, a time-varying index of individual characteristics, and a residual. Formally, the AKM model posits that the log earnings of individual i at firm j at time t can be written as:

$$y_{it} = \alpha_i + \psi_{\mathbf{j}(i,t)} + X'_{it}\beta + \varepsilon_{it}, \tag{15}$$

where α_i is the person effect for individual i, ψ_j is the firm effect for firm j, X_{it} is a vector of time-varying characteristics for individual i at time t, β is a conformable vector of coefficients, and ε_{ijt} is the residual. Included in the vector X_{it} are variables for marital status, province of residence, year effects, and controls for age.

To control for age effects, we include a quartic polynomial in normalized age in the vector of controls X_{it}. Since we also include year effects in X_{it}, the linear term of the polynomial in age is not identified.[42] Therefore, we omit the linear term of the polynomial in age and also normalize age by subtracting and dividing by the age at which the earnings profile is at a maximum. As explained by Card et al. (2018), omitting the linear term of the polynomial without including the additional normalization of age can bias the person effects upward.

For the estimator of the firm effects to be unbiased, firm-to-firm mobility must be uncorrelated with time-varying unobservables. This is often referred to as the "exogenous mobility assumption." Dostie et al. (2023) provide evidence supporting the exogenous mobility assumption in the CEEDD from 2001 to 2013, a period similar to our main sample.

[42] Age is a linear function of year and birth year, and the person effects are collinear with birth year.

D Two-step Immigration Pathways in the United States

In this section, we describe several "two-step" immigration pathways in the United States that involve temporary work visas prior to permanent residency. First, we describe the general process by which individuals can obtain an employment-based permanent visa. Then we discuss several temporary worker visas that can be used as a stepping stone towards a permanent visa application.

D.1 Employment-Based Permanent Visas

In general, individuals can obtain permanent residency through an employment-based immigration pathway via the following process. First, if required, the employer must obtain a permanent labor certification (PERM), issued by the Department of Labor. In cases where a firm is required to obtain a PERM, the employer must document recruitment efforts at the prevailing wage and attest that no qualified U.S. worker is available (U.S. Department of Labor, 2025c). PERM processing can exceed one year. The PERM certificate is valid for 180 days from the date it is issued. Approximately 95% of the PERM applications are approved by the DOL (U.S. Department of Labor, 2024).

Second, the employer or potential employee must file a petition for the permanent residency via a Form I-140 (U.S. Citizenship and Immigration Services, 2025l) with the Department of Homeland Security to receive the permanent visa. Processing times for these visas generally range between 4 to 6 months. Firms or individuals can pay an additional fee for premium processing to ensure the petition is reviewed within fifteen days. Approval of the petition by the Department of Homeland Security (DHS) establishes the individual's *priority date*, which determines their queue position depending on visa caps and availability. Once through the queue - or immediately if there is no backlog - the individual proceeds to the adjustment of status and/or consular processing stage. The individual receives the green card soon after. Approximately 90% of the submitted I-140 forms are approved by the DHS each year (U.S. Citizenship and Immigration Services, 2023).[43]

The U.S. allocates approximately 140,000 employment-based permanent visas annually across five preference categories (EB-1 through EB-5) (U.S. Citizenship and Immigration Services, 2025r). No single country of origin may receive more than 7% of the total annual allotment of permanent visas. Each preference category is associated with specific criteria that must be met. Due to these criteria, each visa has different processing timelines. Each visa also has slightly different requirements around PERM certification and who can (or cannot) file the DHS petition.

EB-1 (U.S. Citizenship and Immigration Services, 2025c) is allocated approximately 40,040 visas annually and includes three subgroups: workers of extraordinary ability (who may self-petition), outstanding professors or researchers, and multinational executives or managers. The latter two require employer sponsorship, while individuals in the first group can file a petition individually. All EB-1 categories bypass PERM certification. This visa tends to have the smallest backlog due

[43] Note that some individuals working in the United States under temporary visas that do not allow the worker to declare the intention to immigrate are prohibited from applying for a permanent visa.

to the strict criteria candidates must meet to qualify.

EB-2 (U.S. Citizenship and Immigration Services, 2025e) is allocated 40,040 visas annually and covers individuals with advanced degrees or exceptional ability. Most require PERM certification (U.S. Department of Labor, 2025b) before the employer files a petition for the worker.

EB-3 (U.S. Citizenship and Immigration Services, 2025f) is allocated 40,040 visas annually and covers skilled workers, professionals with bachelor's degrees, and *other workers* requiring less than two years of training. All EB-3 petitions require PERM certification before the I-140 petition. No more than 10,000 visas may go to individuals in the *other workers* category each year.

EB-4 (U.S. Citizenship and Immigration Services, 2025d) is allocated approximately 10,000 visas and covers special immigrants including religious workers, retirees of certain international organizations, and certain government employees. Does not require a PERM certification, but employer or organization must file petition with DHS.

EB-5 (U.S. Citizenship and Immigration Services, 2025b) is allocated 10,000 visas and provides conditional residence to investors placing $1,050,000 ($800,000 in targeted employment areas) in job-creating enterprises. PERM certification is not required, and the individual files a petition themselves. Instead of a form I-140, individuals file a form I-526. Conditional status is removed after review two years later, after the individual files a form I-829. If the individual does not pass review, permanent residency status is revoked.

D.2 Temporary Worker Visas as a Pathway to Permanent Residency

The following temporary visas are a couple examples that allow for the individual to declare an intention to immigrate and serve as pathways to permanent residency.

H-1B (U.S. Citizenship and Immigration Services, 2025j) visas serve specialty occupations requiring at least a bachelor's degree and are the most common temporary work visa in the United States. Employers must pay the prevailing wage for the occupation and comply with labor condition attestations. The annual cap totals 85,000 (65,000 regular plus 20,000 for U.S. master's graduates), distributed by lottery (U.S. Citizenship and Immigration Services, 2025i) - though there are *many* exemptions and waivers that allow the number granted each year to be much higher[44]. Universities and qualifying nonprofit research institutions are cap-exempt. H-1B explicitly permits dual intent, allowing holders to pursue permanent residence without jeopardizing temporary status. Most H-1B holders transition to EB-2 or EB-3 via the pathway previously discussed.

L-1 (U.S. Citizenship and Immigration Services, 2025m) visas serve intra-company transferees and have no annual cap. L-1A covers managers and executives who often transition to EB-1C without labor certification. L-1B covers specialized knowledge workers who typically pursue EB-2 or EB-3. Like H-1B, L-1 permits dual intent.

[44]Despite the cap of 85,000, exceptions and waivers push the number of H-1B visas issued each year to be much higher. In 2024, for instance, 219,659 total H-1B visas were issued (U.S. Department of State, 2024)

D.3 Temporary Worker Visas that Prohibit the Intent to Immigrate

The TN (Canadian/Mexican professionals), H-2A (U.S. Citizenship and Immigration Services, 2025k) (agricultural workers), and P-series (U.S. Citizenship and Immigration Services, 2025n, 2025o) (athletes/entertainers) visas prohibit immigrant intent or impose temporal constraints, typically requiring conversion to H-1B or another temporary visa before pursuing permanent residence (U.S. Citizenship and Immigration Services, 2025g, 2025p, 2025q). In addition, E-3 (U.S. Citizenship and Immigration Services, 2025a) visas are available exclusively to Australian nationals in specialty occupations, with a 10,500 annual cap (U.S. Department of Labor, 2025a). The E-3 visa officially requires non-immigrant intent, so many individuals convert to a different temporary visa that does allow intent to immigrate before applying to permanent residency.

E Proofs

E.1 Value function for employed TFWs (see Section 6.4)

$$
\begin{aligned}
r[W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)] = &\left(\underbrace{w - b^{\text{tfw}}(x) - \kappa^{\text{tfw}}\beta \int [S^{\text{tfw}}(x,y')]^+ v(y')dy'}_{\text{flow value of } W_1^{\text{tfw}} - W_0^{\text{tfw}}} \right) \\
&+\xi \left(\underbrace{W_0^{\text{tfw}}(x) - W_0^{\text{tfw}}(x)}_{\text{relative pay-off if the job is destroyed}} - (W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)) \right) \\
&+\delta \left(\underbrace{\int [\min\{S^{\text{tfw}}(x,y'), W_1^{\text{tfw}}(w,x,y') - W_0^{\text{tfw}}(x)\}]^+ \gamma(y')dy'}_{\text{relative pay-off if there is a productivity shock}} - (W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)) \right) \\
&+\lambda \left(\underbrace{W_1(w,x,y) - W_0(x)}_{\text{relative pay-off if the worker obtains PR}} - (W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)) \right)
\end{aligned}
$$

Re-arranging, this becomes the same expression as previously, but with λ on the LHS:

$$
\begin{aligned}
(r+\delta+\xi+\lambda)[W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)] = &\, w - b^{\text{tfw}}(x) - \kappa^{\text{tfw}}\beta \int [S^{\text{tfw}}(x,y')]^+ v(y')dy' \\
&+\delta \int [\min\{S^{\text{tfw}}(x,y'), W_1^{\text{tfw}}(w,x,y') - W_0^{\text{tfw}}(x)\}]^+ \gamma(y')dy' \\
&+\lambda \left(W_1(w,x,y) - W_0(x)\right)
\end{aligned}
$$

E.2 Equations for the match surplus (See Section 6.4)

E.2.1 Domestic workers

This follows the derivation in Appendix A of Lise et al. (2016) with the modification that $\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$ is the firm's outside option.

$$
\begin{aligned}
rP(x,y) = &\, f(x,y) + \xi[W_0(x) + \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} - P(x,y)] \\
&+ s\kappa \int \left[\max\left\{P(x,y), \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + W_0(x) + S(x,y) + \beta[S(x,y') - S(x,y)]\right\} - P(x,y)\right] v(y')dy' \\
&+ \delta \int \left[\max\left\{P(x,y'), W_0(x) + \max\{\Pi_0(y'), \Pi_0^{\text{tfw}}(y')\}\right\} - P(x,y)\right] \gamma(y')dy'
\end{aligned}
$$

$$
\begin{aligned}
rP(x,y) &= f(x,y) - \xi S(x,y) \\
&+ s\kappa \int \max\left\{0, \beta[S(x,y') - S(x,y)]\right\} v(y')dy' \\
&+ \delta \int \max\left\{P(x,y') - W_0(x) - \max\{\Pi_0(y'), \Pi_0^{\text{tfw}}(y')\}, 0\right\} \gamma(y')dy' \\
&+ \delta \int \left[W_0(x) + \max\{\Pi_0(y'), \Pi_0^{\text{tfw}}(y')\} - P(x,y)\right] \gamma(y')dy'
\end{aligned}
$$

$$
\begin{aligned}
rP(x,y) &= f(x,y) - \xi S(x,y) \\
&+ s\kappa\beta \int [S(x,y') - S(x,y)]^+ v(y')dy' \\
&+ \delta \int S(x,y')^+ \gamma(y')dy' - \delta S(x,y) + \delta \int \left[\max\{\Pi_0(y'), \Pi_0^{\text{tfw}}(y')\} - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}\right] \gamma(y')dy'
\end{aligned}
$$

Substituting in for $rP(x,y) = rW_0(x) + r\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + rS(x,y)$ and re-arranging, we get:

$$
\begin{aligned}
(r+\delta+\xi)S(x,y) =& f(x,y) - rW_0(x) \\
&+ \delta \int \left[\max\{\Pi_0(y'), \Pi_0^{\text{tfw}}(y')\} - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}\right] \gamma(y')dy' \\
&- \max\{r\Pi_0(y), r\Pi_0^{\text{tfw}}(y)\} \\
&+ s\kappa\beta \int [S(x,y') - S(x,y)]^+ v(y')dy' \\
&+ \delta \int S(x,y')^+ \gamma(y')dy'
\end{aligned}
$$

Setting $\delta = 0$ and subsituting in the expression for $\Pi_0(y)$, we obtain a simplified expression:

$$
\begin{aligned}
(r+\xi)S(x,y) =& f(x,y) - \left(b(x) + \kappa\beta \int S(x,y)^+ v(y)dy\right) \\
&+ s\kappa\beta \int [S(x,y') - S(x,y)]^+ v(y')dy' \\
&- \max\Bigg\{ - c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta) \int S^{\text{tfw}}(x,y)^+ u^{\text{tfw}}(x)dx, \\
&\qquad - c + \kappa(1-\beta) \int S(x,y)^+ u(x)d(x) + s\kappa(1-\beta) \int [S(x,y) - S(x,y')]^+ h(x,y')dxdy' \Bigg\}
\end{aligned}
$$

E.2.2 TFWs

For TFWs the derivation is similar, although we can omit the term associated with job-to-job transitions, and we include an additional term associated with obtaining PR. We have the following expression for the total surplus:

$$
\begin{aligned}
&rP^{\text{tfw}}(x,y) = \\
&\quad f(x,y) \\
&\quad + \xi[W_0^{\text{tfw}}(x) + \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} - P^{\text{tfw}}(x,y)] \\
&\quad + \delta \int \left[\max\left\{P^{\text{tfw}}(x,y'), W_0^{\text{tfw}}(x) + \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}\right\} - P^{\text{tfw}}(x,y)\right] \gamma(y')dy' \\
&\quad + \lambda[P(x,y) - P^{\text{tfw}}(x,y)]
\end{aligned}
$$

Following Section E.2.1, we set $\delta = 0$ and obtain:

$$
\begin{aligned}
rP^{\text{tfw}}(x,y) =& f(x,y) \\
&+ \xi[W_0^{\text{tfw}}(x) + \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} - P^{\text{tfw}}(x,y)] \\
&+ \lambda[P(x,y) - P^{\text{tfw}}(x,y)]
\end{aligned}
$$

$$
\begin{aligned}
rP^{\text{tfw}}(x,y) =& f(x,y) \\
&- \xi S^{\text{tfw}}(x,y) \\
&+ \lambda[P(x,y) - P^{\text{tfw}}(x,y)]
\end{aligned}
$$

$$
\begin{aligned}
r\Big(W_0^{\text{tfw}}(x) + \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} + S^{\text{tfw}}(x,y)\Big) =& f(x,y) \\
&- \xi S^{\text{tfw}}(x,y) \\
&+ \lambda[W_0(x) - W_0^{\text{tfw}}(x) + S(x,y) - S^{\text{tfw}}(x,y)]
\end{aligned}
$$

$$
\begin{aligned}
(r+\xi)S^{\text{tfw}}(x,y) =& f(x,y) \\
&- rW_0^{\text{tfw}}(x) \\
&- \max\{r\Pi_0(y), r\Pi_0^{\text{tfw}}(y)\} \\
&+ \lambda[W_0(x) - W_0^{\text{tfw}}(x) + S(x,y) - S^{\text{tfw}}(x,y)]
\end{aligned}
$$

$$
\begin{aligned}
(r+\xi+\lambda)S^{\text{tfw}}(x,y) =& f(x,y) \\
&- \left(b^{\text{tfw}}(x) + \kappa^{\text{tfw}}\beta \int S^{\text{tfw}}(x,y)^{+} v^{\text{tfw}}(y)dy\right) \\
&- \max\Bigg\{ - c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta)\int S^{\text{tfw}}(x,y)^{+} u^{\text{tfw}}(x)dx, \\
&\qquad - c + \kappa(1-\beta)\int S(x,y)^{+} u(x)d(x) + s\kappa(1-\beta)\int [S(x,y) - S(x,y')]^{+} h(x,y')dxdy' \Bigg\} \\
&+ \lambda[S(x,y) - (W_0^{\text{tfw}}(x) - W_0(x))]
\end{aligned}
$$

where

$$
\begin{aligned}
r(W_0^{\text{tfw}}(x) - W_0(x)) =& b^{\text{tfw}}(x) - b(x) + \kappa^{\text{tfw}}\beta \int S^{\text{tfw}}(x,y)^{+} v^{\text{tfw}}(y)dy \\
&- \kappa\beta \int S(x,y)^{+} v(y)dy
\end{aligned}
$$

E.3 Other proofs

E.3.1 Proposition 1: *The probability of job-to-job transition increases after PR and remains elevated.*

Consider a TFW who is type x and employed at a firm who is type y. Before PR, the probability of a job-to-job transition is 0. After PR, the probability of job-to-job transition is:

$$
s\kappa \int_{\overline{B}(x,y)} v(y')dy',
$$

where $\overline{B}(x,y) \equiv \{y' : S(x,y') > S(x,y)\}$.

The unconditional probability of job-to-job transition for a randomly chosen TFW immediately after they obtain PR is:

$$
s\kappa \int_x \int_y \int_{\overline{B}(x,y)} v(y')h^{\text{tfw}}(x,y)dy'dydx > 0.
$$

Thus the probability of job-to-job transition jumps after PR.

To show that the probability of job-to-job transition remains elevated after PR, we must note that the unconditional probability of job-to-job transition is positive for permanent residents and domestics:

$$
s\kappa \int_x \int_y \int_{\overline{B}(x,y)} v(y')h(x,y)dy'dydx > 0.
$$

E.3.2 Proposition 2: *Conditional on worker type, earnings for TFWs converge to earnings for domestics after PR.*

TO BE COMPLETED

F Identification of the structural model

Definitions.

1. Let $\underline{w}(x,y)$ be the theoretical minimum wage for a worker type x at firm y, i.e., the wage that solves $W_1(\underline{w}(x,y),x,y) - W_0(x) = 0$.

2. Let $\overline{w}(x,y)$ be the theoretical maximum wage for worker x at firm y, i.e., the wage that solves $W_1(\overline{w}(x,y),x,y) - W_0(x) = S(x,y)$, and let $\overline{w}(x) \equiv \max_y\{\overline{w}(x,y)\}$ be the theoretical maximum wage for a worker of type x.

Proposition 1. ***Monotonicity.*** (See Lamadon et al. (2013) for formal proofs.)

1. Job creation $n(y)$ and employment at type-y firms $h(y) \equiv \int_x h(x,y)dx$ are increasing in y.

2. Both $\overline{w}(x,y)$ and $\overline{w}(x)$ are increasing in x.

Notation.

1. Let i denote worker and j denote firm in the data. let $j(i,t)$ denote the employer of worker i at time t.

2. Let J_{it} be a binary variable equal to 1 if worker i switches jobs at time t.

3. Let H_{it} be a binary variable equal to 1 if worker i is employed at time t and 0 otherwise.

4. Let R_{it} denote worker i's earnings at time t (set to missing if worker i is unemployed at time t).

5. Let TFW_{it} be a binary variable equal to 1 if individual i is a TFW at time t and 0 otherwise.

6. Let N_{jt} denote the number of workers employed at firm j at time t.

Assumption 1. (These follow Lamadon et al. (2013).)

1. $x \in [0,1]$ and $y \in [0,1]$.

2. The cost of vacancies for domestics is normalized to zero, i.e., $c = 0$.

3. The discount rate r and the total number of vacancies V are known.

4. We know the joint distribution of $(J_{it}, H_{it}, R_{it}, N_{jt})$ in the matched employer-employee data.

Assumption 2.

1. The total number of vacancies for TFWs, V^{tfw}, the cost of a job-posting for a TFW c^{tfw}, and the probability of a successful LMIA p are known.

2. We observe TFW_{it} in the matched employer-employee data.

Proposition 1. ***Identification.*** *Under Assumptions 1 and 2, the main parameters of the model are identified.*

The proof is constructive and follows Lamadon et al. (2013) (henceforth LLMR) with some additional results for identification of parameters for TFWs.

F.1 Worker and firm types

The identification of firm and worker types follows LLMR.

Let y_j denote firm j's type. Let $F(.)$ denote the cumulative distribution function of firm employment in the data. Let N_j be the average number of employers for firm j across all years in the data. By the monotonicity of $h(y)$, it follows that $y_j = F(N_j)$ identifies the firm type.

Let x_i denote worker i's type. Define $\overline{R}_i \equiv \max_t\{R_{it}\}$ as the observed maximum earnings for individual i in the data. Then $\overline{w}(x_i) = \overline{R}_i$ is identified. Let $G(.)$ be the cumulative distribution function of maximum earnings in the data. By the monotonicity of $\overline{w}(x)$,it follows that $x_i = G(\overline{R}_i)$ identifies the worker type.[45]

Since we identify the firm and worker types, we can easily recover $u(x)$ (the total number of unemployed domestics who are type x divided by the total number of unemployed domestics), $u^{tfw}(x)$ (the total number of unemployed TFWs who are type x divided by the total number of unemployed TFWs), $h(x, y)$ (the total number of domestic type-x employees at type-y firms divided by the total number of employed domestics), and $h^{tfw}(x, y)$ (the total number of type-x TFWs at type-y firms divided by the total number of employed TFWs).[46]

F.2 Probability of job destruction ξ and probability of permanent residency λ

These are identified from the observed moments for employment to unemployment transitions and transitions to PR, respectively. Note that the identification of the probability of job destruction ξ follows LLMR.

F.3 Value of unemployment $W_0(x)$ and $W_0^{tfw}(x)$

The identification of $W_0(x)$ follows LLMR. Let $\underline{R}(x, y) \equiv \min_{i,t}\{R_{it}|x, y\}$ be the observed minimum wage for type-x workers employed by type-y firms. Then $\underline{R}(x, y)$ identifies $\underline{w}(x, y)$. Let $D_i \equiv \min\{t \geq 1 : H_{it} = 0\}$ be the first period that individual i is unemployed.

Note that workers who are type x, employed by firm type y, and earning the theoretical minimum wage are indifferent between their current employment and unemployment. Therefore, the following

[45] Note that we can use this approach to measure the worker type for both domestic workers and TFWs. We observe all TFWs after they transition to PR, so we can use their observed maximum wage after PR to recover their type x.

[46] In the model, these distributions are stationary over time. Thus, to calculate these in our data, we ignore the time dimension in the data. For example, to calculate $u(x)$ we use the *total* number of unemployed domestics in the data who are type x across all years divided by the *total* number of unemployed domestics across all years.

equation holds:

$$W_0(x) = E\left[\sum_{t=1}^{D_i-1} \frac{R_{it}}{1+r} + \frac{1}{(1+r)^{D_i}} W_0(x) \middle| TFW_{i1} = 0, x_i = x, H_{i1} = 1, R_{i1} = \underline{R}(x,y)\right]$$

The RHS of the above equation is the value of employment for worker type x at firm type y while earning the observed minimum wage (equal to the theoretical minimum), and the LHS is the value of unemployment. This equation can be re-arranged to identify $W_0(x)$:

$$W_0(x) = \frac{E\left[\sum_{t=1}^{D_i-1} \frac{R_{it}}{1+r} \middle| TFW_{i1} = 0, x_i = x, H_{i1} = 1, R_{i1} = \underline{R}(x,y)\right]}{1 - E\left[\frac{1}{(1+r)^{D_i}} \middle| TFW_{i1} = 0, x_i = x, H_{i1} = 1, R_{i1} = \underline{R}(x,y)\right]}.$$

Note that this identification argument requires

$$P\left[TFW_{i1} = 0, x_i = x, H_{i1} = 1, R_{i1} = \underline{R}(x,y)\right] \neq 0.$$

To identify the value of unemployment for TFWs $W_0^{tfw}(x)$, we use a similar argument to the approach in LLMR used to identify $W_0(x)$. Let $\underline{R}^{tfw}(x,y)$ be the observed minimum wage for TFWs who are type x at firm y, which identifies the theoretical minimum $\underline{w}^{tfw}(x,y)$. We can use the following equation to identify $W_0^{tfw}(x)$:

$$W_0^{tfw}(x) = E\left[\sum_{t=1}^{D_i-1} \frac{R_{it}}{1+r} + \frac{(1-\lambda)^{D_i}}{(1+r)^{D_i}} W_0^{tfw}(x) + \frac{(1-(1-\lambda)^{D_i})}{(1+r)^{D_i}} W_0(x) \middle| TFW_{i1} = 1, x_i = x, H_{i1} = 1, R_{i1} = \underline{R}(x,y\right]$$

Note that the above expression for the value of unemployment for TFWs differs slightly from the value of unemployment for domestics because we must allow for the possibility that TFWs transition to permanent residency before their first unemployment spell.

F.4 Identification of the surplus $S(x,y)$ and $S^{tfw}(x,y)$

We depart from LLMR for the identification of $S(x,y)$.[47] Consider a worker type x who moves from firm y to a firm of the same type.[48] Then the value of employment at the time of transition is:

$$W_1(\phi_1(x,y,y),x,y) = W_0(x) + S(x,y)$$

This implies that $\phi_1(x,y,y) = \overline{w}(x,y)$, since $W_1(\phi_1(x,y,y),x,y) - W_0(x) = S(x,y)$ so the

[47] LLMR consider a model where there is Bertrand competition between firms when a worker is poached. In our model, in contrast, there is Nash bargaining between firms when a worker is poached. This requires us to identify the surplus $S(x,y)$ using a different approach compared to LLMR.

[48] When a worker is employed by a firm type y and meets another firm type y, if the current wage is lower than the maximum wage that the worker could earn at a firm type y, either the worker will change firms or the wage will be renegotiated. The worker is indifferent between both options.

worker is earning the theoretical maximum wage. Then we can use the following formula to identify $S(x,y)$:

$$W_0(x) + S(x,y) = E\left[\sum_{t=\tau}^{D_i-1} \frac{R_{i\tau}}{1+r} + \frac{1}{(1+r)^{D_i}} W_0(x) \middle| TFW_{i\tau} = 0, J_{i\tau} = 1, x_i = x, y_{j(i,\tau)} = y, y_{j(i,\tau-1)} = y\right]$$

Note that the worker moves from one firm to the next, but they are both type y.

To identify the surplus for TFWs, first note that

$$\begin{aligned}(r+\xi+\lambda)[S(x,y) - S^{tfw}(x,y)] &= -W_0(x) + \lambda S(x,y) - \left[- W_0^{tfw}(x) + \lambda[S(x,y) - (W_0^{tfw}(x) - W_0(x))]\right] \\ &= -(\lambda+1)(W_0(x) - W_0^{tfw}(x))\end{aligned}$$

Therefore, given $S(x,y)$, we identify $S^{tfw}(x,y)$ using the above equation.

F.5 Job-search parameters $\frac{v(y)}{V}$ for all y, s, and κ

The identification of the job-search parameters follows LLMR. We observe the share of individuals who are unemployed and move to type y' firm in the next period:

$$P[y_{it+1} = y' | TFW_{it} = 0, x, H_{it} = 0] = \kappa v(y') 1[S(x,y') > 0]$$

This identifies $v(y')\kappa$. Since we observe $P[y_{it+1} = y' | TFW_{it} = 0, x, y_{it} = 0]$ for every y' in the data, we can also identify $\frac{v(y)}{v(y')}$ for all y, y'; this is equivalent to identifying $\frac{v(y)}{V}$ for all y. Since we assume that we know V (measured with external data), we can also identify κ.

We also observe the share of individuals who move from firm y to firm y':

$$P[y_{it+1} = y' | TFW_{it} = 0, x, y_{it} = y] = s\kappa v(y') 1[S(x,y') - S(x,y) > 0]$$

Given that $v(y')\kappa$ is identified above, this identifies s. Note that we can also use these moments to identify $\frac{v(y)}{v(y')}$ for all y, y'; this is equivalent to identifying $\frac{v(y)}{V}$ for all y; so $\frac{v(y)}{V}$ is over-identified for all y.

F.6 Job-search parameters $\frac{v^{tfw}(y)}{V^{tfw}}$ for all y and κ^{tfw}

Our approach to identifying the job-search parameters for TFWs is similar to the approach that LLMR use to identify the job-search parameters. We observe the distribution of firm types for TFWs:

$$P[y_{i1} = y | TFW_{i1} = 1, x] = \kappa^{tfw} v^{tfw}(y) 1[S^{tfw}(x,y) > 0]$$

so $\kappa^{tfw} v^{tfw}(y)$ is identified. Since we observe one of these moments for every y, we identify $\frac{v^{tfw}(y)}{v^{tfw}(y')}$ for all y, y'. This is equivalent to identifying $\frac{v^{tfw}(y)}{V^{tfw}}$ for all y. Since we know V^{tfw} by assumption

(we measure this using external data), we also identify κ^{tfw}.

F.7 The bargaining parameter β

Let $R_0(x,y)$ be the wage the worker earnings when hired out of unemployment. We know that this gives utility $W_0(x) + \beta S(x,y)$ so we can identify β using:

$$W_0(x) + \beta S(x,y) = E\left[\sum_{t=\tau}^{D_i-1} \frac{R_{i\tau}}{1+r} + \frac{1}{(1+r)^{D_i}} W_0(x) \middle| TFW_{i\tau} = 0, x_i = x, H_{i\tau} = 1, H_{i,\tau-1} = 0, R_{i\tau} = R_0(x,y)\right]$$

F.8 Value of a vacancy $\Pi_0(y)$, $\Pi_0^{tfw}(y)$

These expressions are identified because we identified all of their components above. Recall that the value of a vacancy for a domestic is:

$$r\Pi_0(y) = -c + \kappa(1-\beta)\int S(x,y)^+ u(x) d(x) + s\kappa(1-\beta)\iint [S(x,y) - S(x,y')]^+ h(x,y') dx dy',$$

and the value of a vacancy for a TFW is

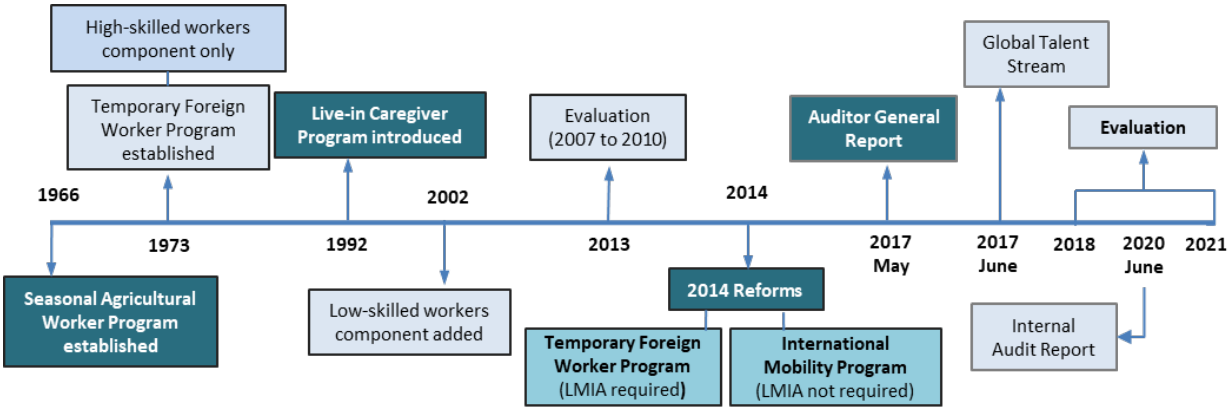
$$r\Pi_0^{\text{tfw}}(y) = -c^{\text{tfw}} + p\kappa^{\text{tfw}}(1-\beta)\int S^{\text{tfw}}(x,y)^+ u^{\text{tfw}}(x) dx.$$

F.9 Output $f(x,y)$

This is identified from the equation for the surplus of a match, given that all other components of that equation are identified (see Section 6.4).

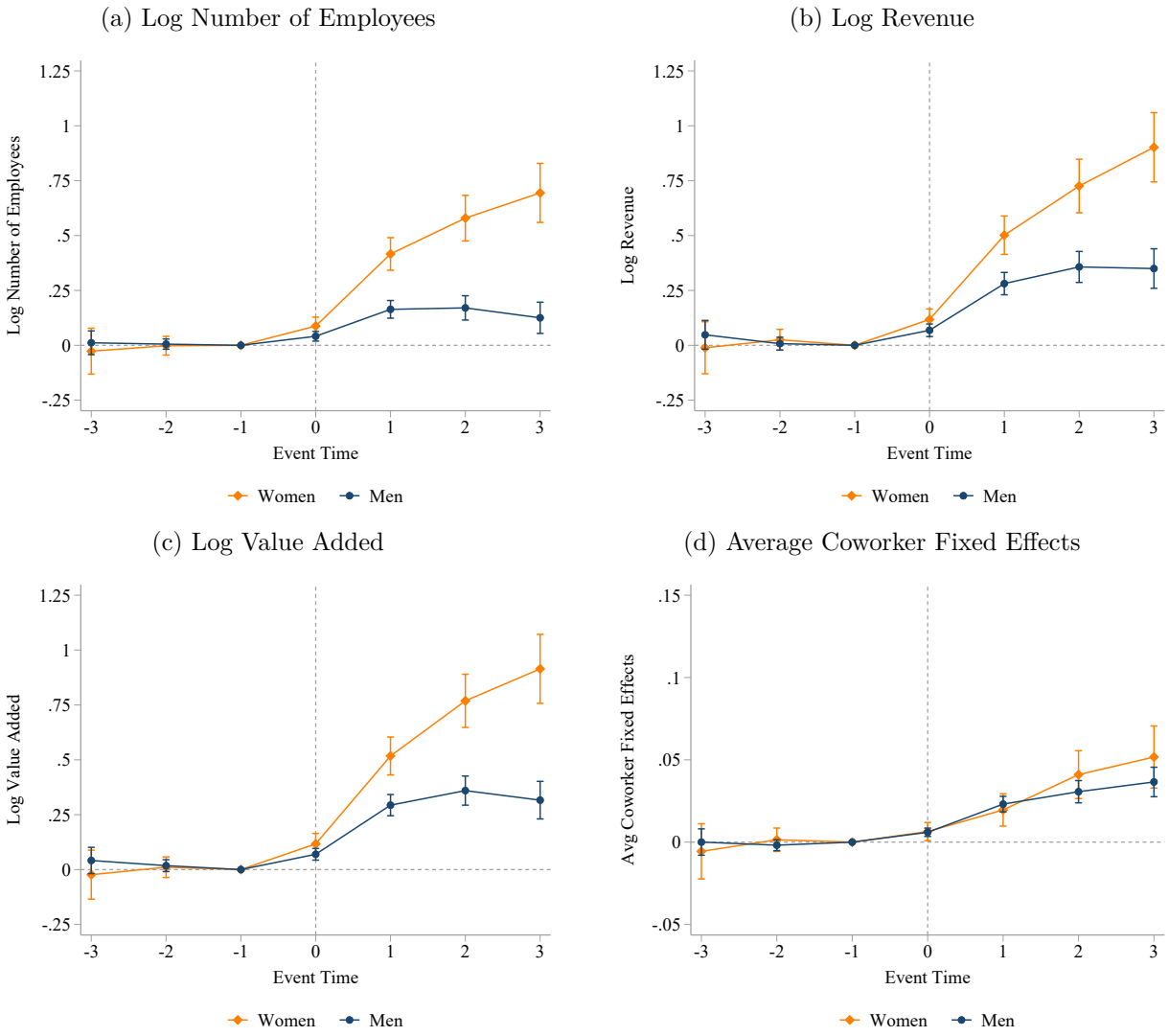
G Appendix Figures

Figure A1: Temporary Foreign Worker Program (TFWP) Timeline



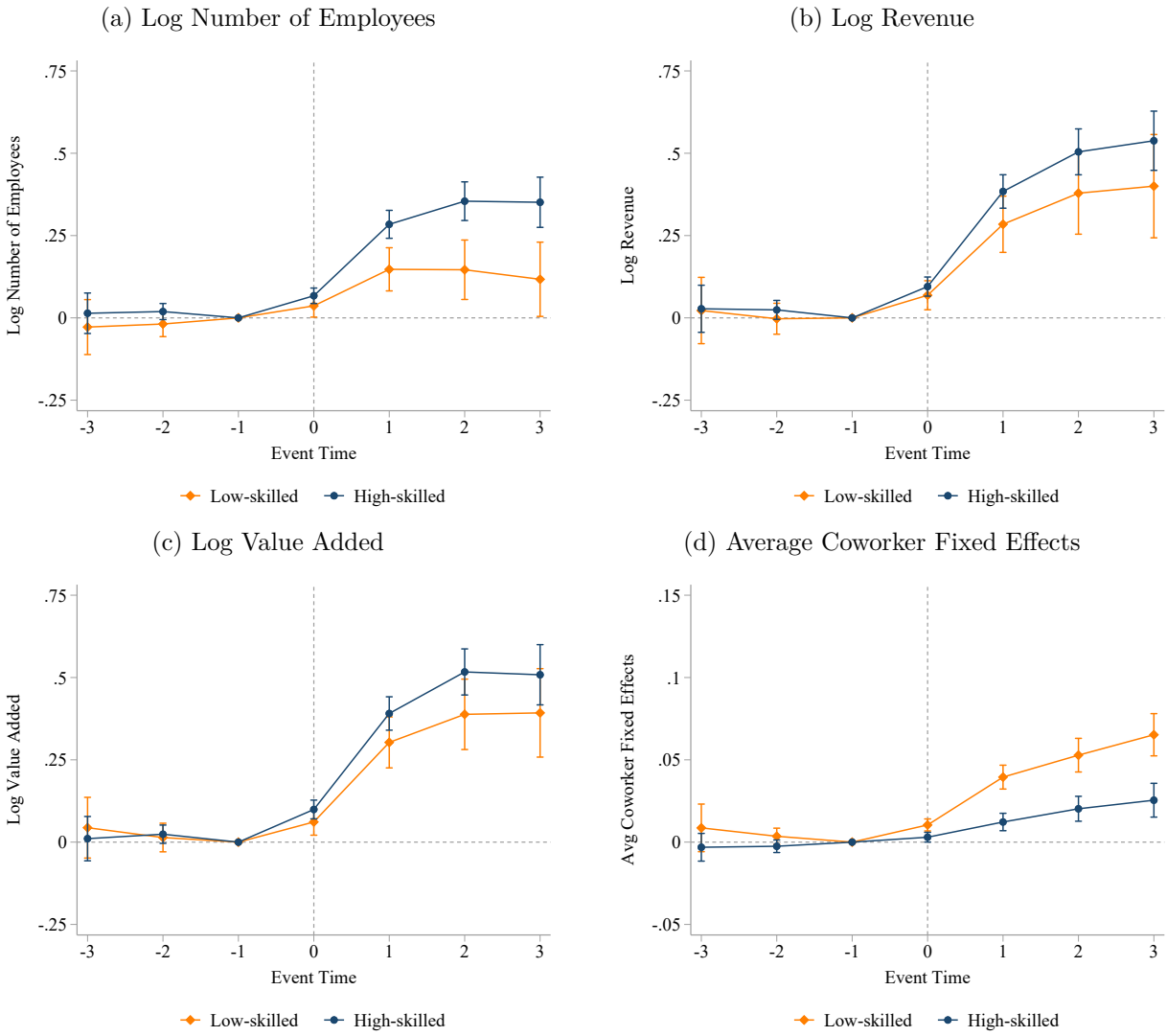
Notes: This figure shows the timeline of major policy changes to the Temporary Foreign Worker Program (TFWP) in Canada. *Source:* Figure 2 in Employment and Social Development Canada (2021).

Figure A2: Firm Characteristics by Gender



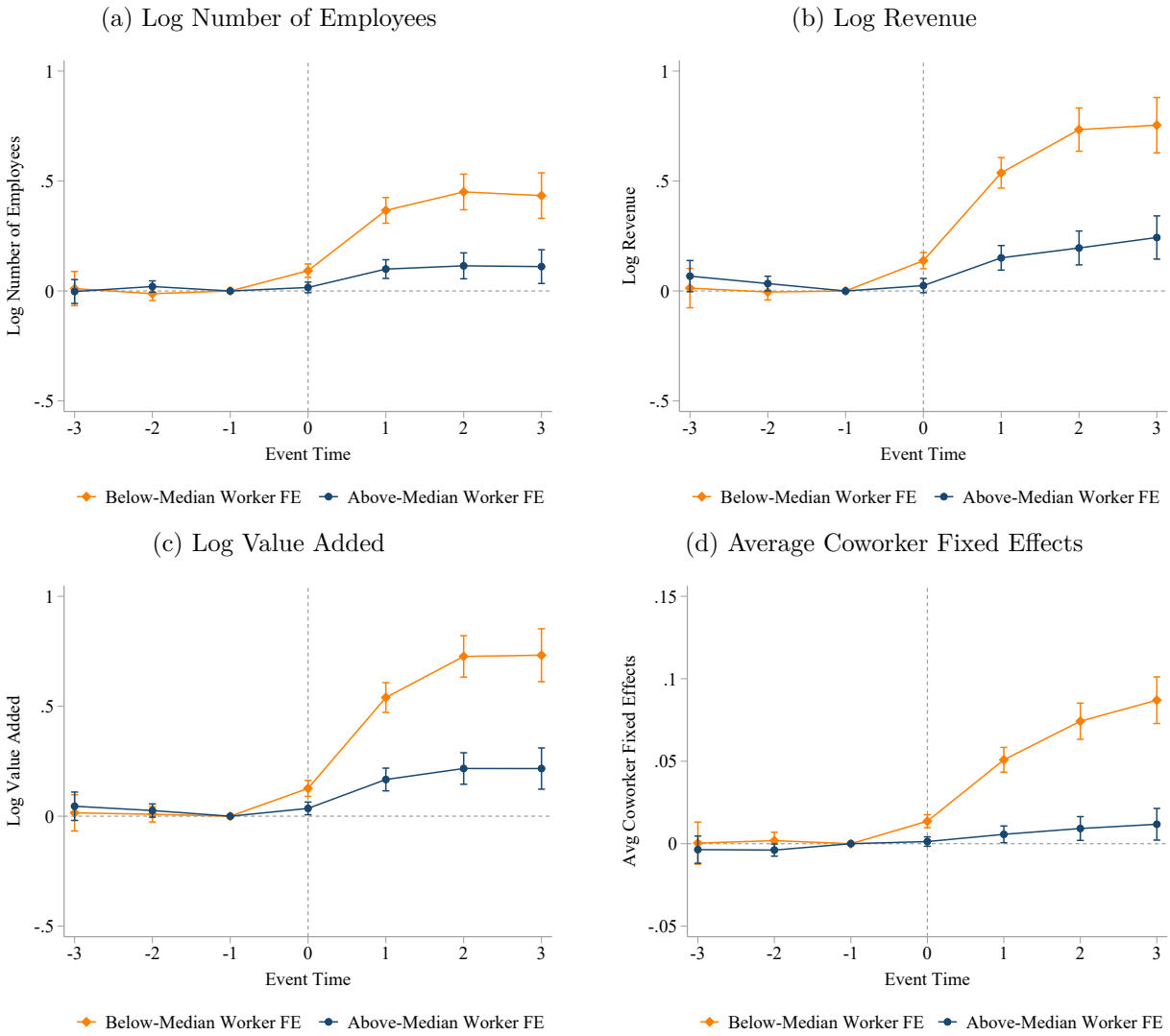
Notes: This figure shows event study estimates for firm characteristics of each worker's *primary* employer, where the event studies are estimated separately by gender. Orange lines represent women; navy lines represent men. Panel (a) shows log firm size (number of employees), with post-treatment averages of 0.563 log points for women and 0.153 log points for men. Panel (b) shows log firm revenue, with averages of 0.710 log points for women and 0.329 log points for men. Panel (c) shows log value added, with averages of 0.734 log points for women and 0.323 log points for men. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean), with averages of 0.037 for women and 0.030 for men. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure A3: Firm Characteristics by Skill Level



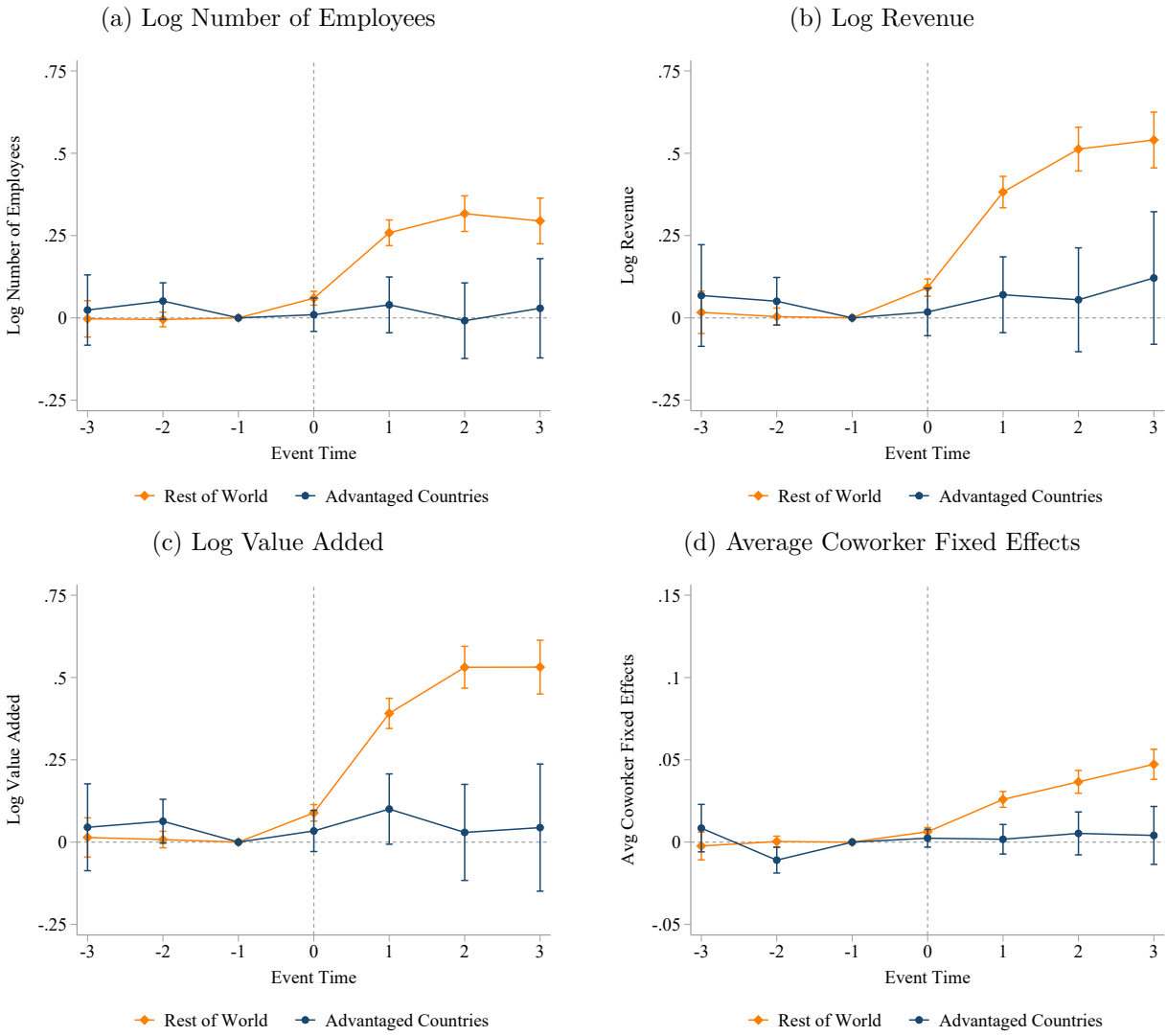
Notes: This figure shows event study estimates for firm characteristics of the worker's *primary* employer, where the event study is estimated separately by worker skill level. (For definitions of high- vs low-skilled workers, see Section 3.2.) Orange lines represent low-skilled workers; navy lines represent high-skilled workers. Panel (a) shows log firm size (number of employees), with post-treatment averages of 0.137 log points for low-skilled workers and 0.330 log points for high-skilled workers. Panel (b) shows log firm revenue, with averages of 0.354 log points for low-skilled workers and 0.475 log points for high-skilled workers. Panel (c) shows log value added, with averages of 0.361 log points for low-skilled workers and 0.472 log points for high-skilled workers. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean), with averages of 0.053 for low-skilled workers and 0.019 for high-skilled workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure A4: Firm Characteristics by Worker Fixed Effect



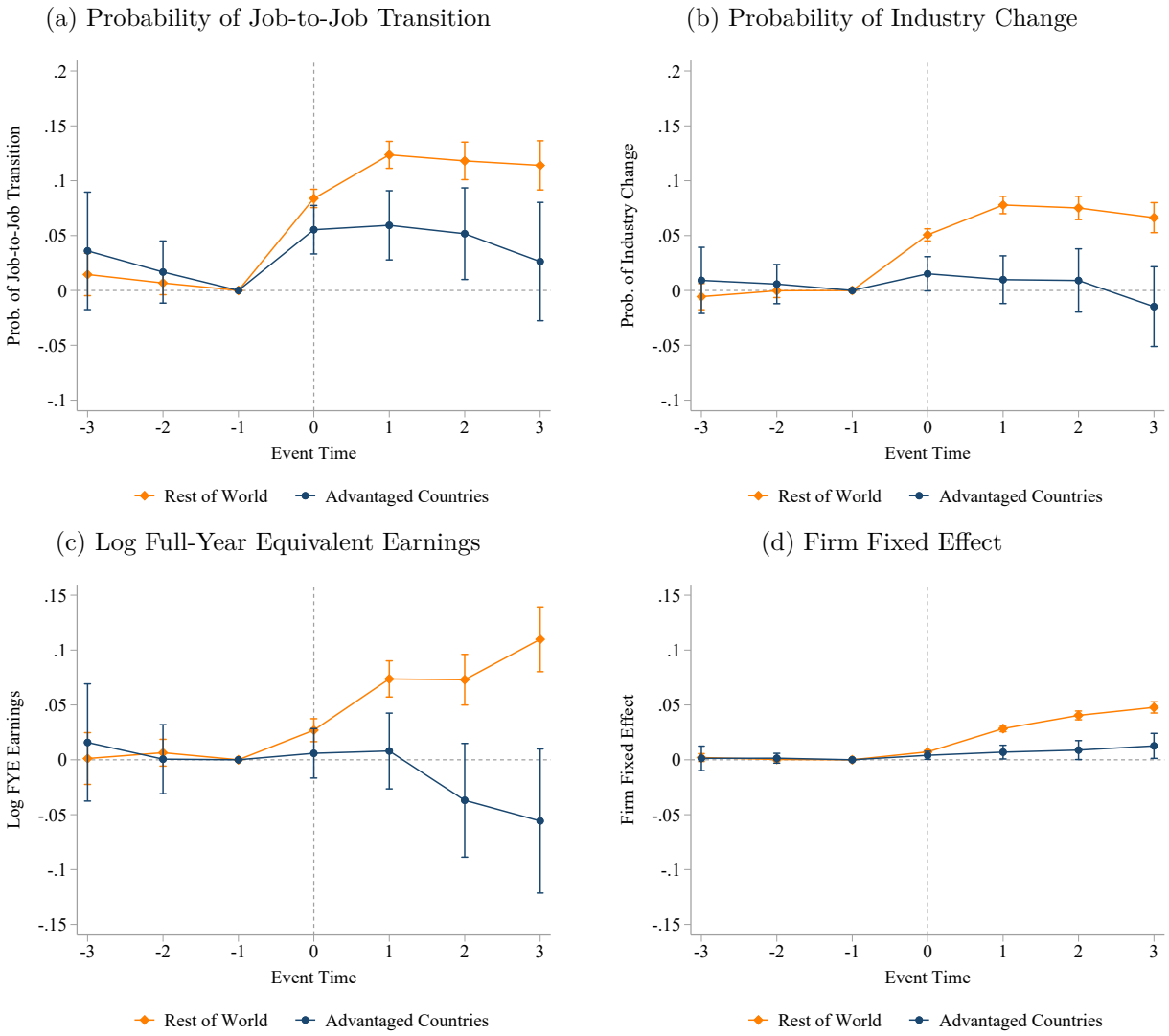
Notes: This figure shows event study estimates for firm characteristics of the worker's *primary* employer, where the event study model is estimated separately for workers with above- and below-median worker effects. The worker effects are estimated from an AKM model (see Appendix C). Orange lines represent workers with below-median worker fixed effects; navy lines represent workers with above-median worker fixed effects. Panel (a) shows log firm size (number of employees), with post-treatment averages of 0.417 log points for below-median workers and 0.108 log points for above-median workers. Panel (b) shows log firm revenue, with averages of 0.675 log points for below-median workers and 0.196 log points for above-median workers. Panel (c) shows log value added, with averages of 0.666 log points for below-median workers and 0.200 log points for above-median workers. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean), with averages of 0.071 for below-median workers and 0.009 for above-median workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure A5: Firm Characteristics by Country of Origin



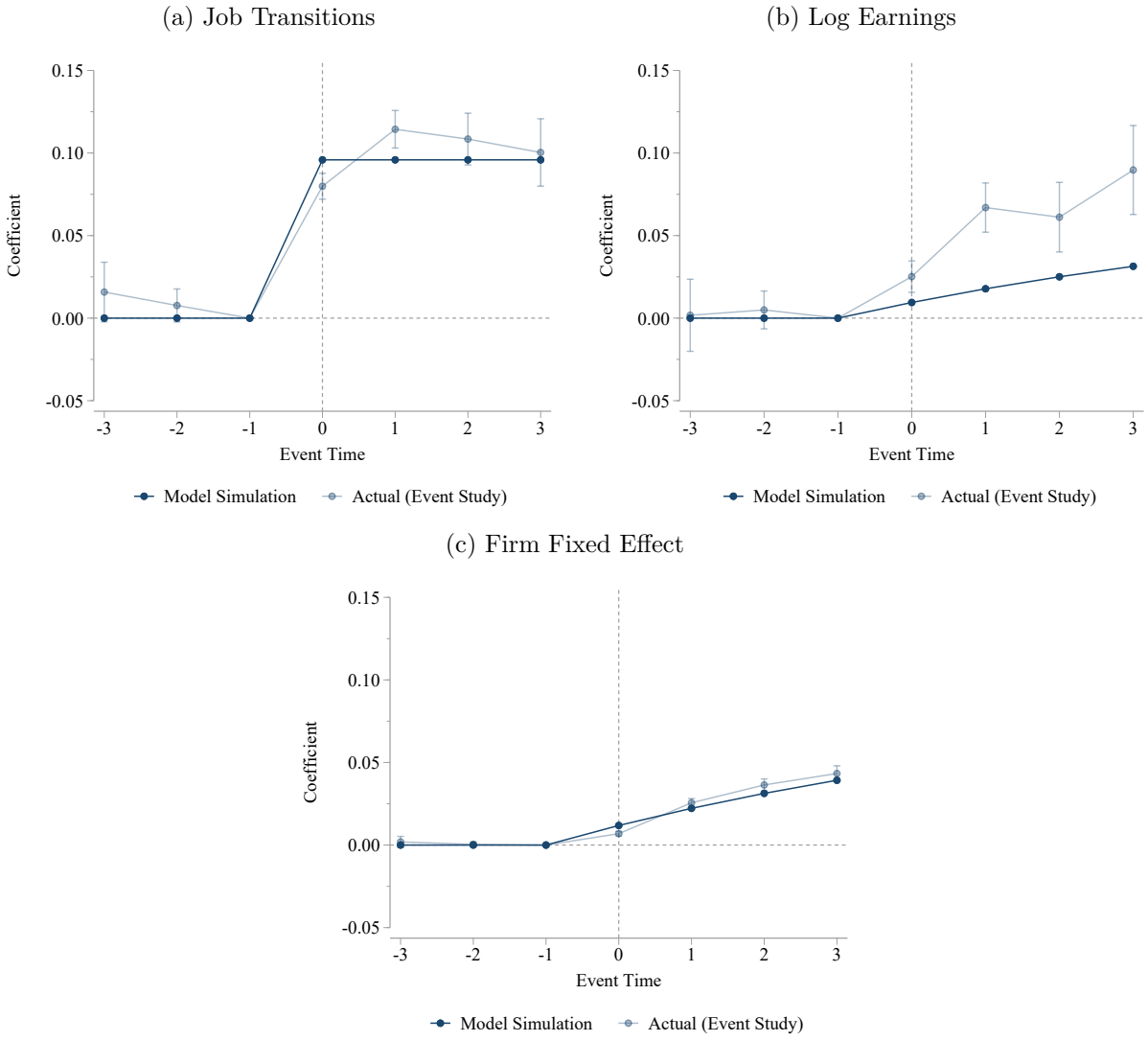
Notes: This figure shows event study estimates for firm characteristics of the worker's *primary* employer separately by origin country, where the classification into advantaged vs "rest-of-world" countries follows Dostie et al. (2023). Orange lines represent workers from rest-of-world countries; navy lines represent workers from advantaged countries. Panel (a) shows log firm size (number of employees), with post-treatment averages of 0.290 log points for rest-of-world workers and 0.020 log points for advantaged country workers. Panel (b) shows log firm revenue, with averages of 0.478 log points for rest-of-world workers and 0.082 log points for advantaged country workers. Panel (c) shows log value added, with averages of 0.485 log points for rest-of-world workers and 0.058 log points for advantaged country workers. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean), with averages of 0.037 for rest-of-world workers and 0.004 for advantaged country workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure A6: Labor Market Outcomes by Country of Origin



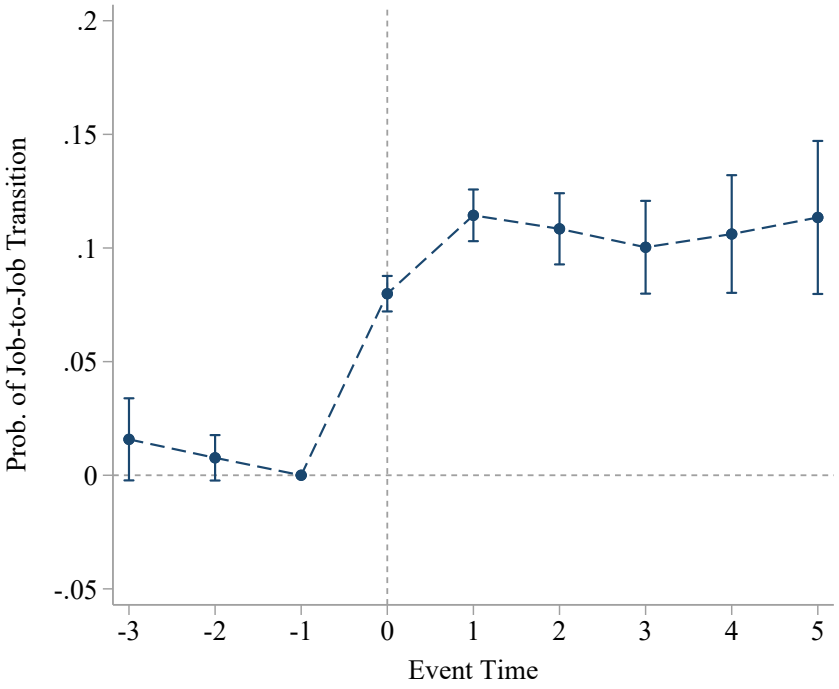
Notes: This figure shows event study estimates for labor market outcomes separately by origin country, where the classification into advantaged vs "rest of world" countries follows Dostie et al. (2023). Orange lines represent workers from rest-of-world countries; navy lines represent workers from advantaged countries. Panel (a) shows job-to-job transition probability, with post-treatment averages of 11.9% for rest-of-world workers and 4.6% for advantaged country workers. Panel (b) shows industry change probability, with averages of 7.3% for rest-of-world workers and 0.1% for advantaged country workers. Panel (c) shows firm fixed effects of the worker's *primary* employer, with averages of 0.039 for rest-of-world workers and 0.010 for advantaged country workers. Panel (d) shows log full-year equivalent earnings, with average changes of 0.086 log points for rest-of-world workers and -0.028 log points for advantaged country workers. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

Figure A7: Model Simulations



Notes: This figure shows event study estimates based on the model simulation for the effect of randomly giving workers permanent residency without on-the-job-search ($s = 0$). Panel (a) shows the probability of a job-to-job transition, with a post-PR effect of 10%. Panel (b) shows the increase in simulated wages after earning PR. Panel (c) shows the increase in the firm fixed effects from an AKM-style regression on the simulated data.

Figure A8: Probability of Job-to-Job Transition - Semi-balanced Sample



Notes: This figure shows event study estimates for the probability of job-to-job transitions using a semi-balanced sample. Event time 0 represents the year of obtaining permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown.

H Appendix Tables

Table A1: Summary Statistics by Immigration Status

	Non-immigrants	Immigrants	Non-Permanent Residents
Demographics			
Female	0.508	0.527	0.480
Age 18-24 years	0.124	0.058	0.305
Age 25-34 years	0.169	0.140	0.406
Age 35-44 years	0.155	0.183	0.152
Age 45-54 years	0.175	0.203	0.070
Age 55-64 years	0.182	0.164	0.026
Bachelor's degree or higher	0.203	0.323	0.439
Household size	2.775	3.368	3.476
Married/common law	0.585	0.688	0.450
Employment and Income			
Full-time workers	0.554	0.506	0.427
Real wage	$46,715.54	$44,183.91	$30,192.04
Unconditional wages	$32,099.97	$26,028.19	$17,720.77
Net capital gains	$13,538.68	$13,256.73	$14,377.58
Industry Breakdown			
Professional, scientific and technical services	0.070	0.094	0.127
Wholesale trade	0.040	0.040	0.029
Manufacturing	0.096	0.126	0.074
Health care and social asst	0.109	0.111	0.069
Accommodation and food services	0.041	0.067	0.124
Transportation and warehousing	0.048	0.061	0.032
Retail trade	0.094	0.087	0.083
Construction	0.093	0.061	0.056
Finance, insurance and management	0.045	0.062	0.046
Educational services	0.075	0.051	0.089
Public Admin	0.081	0.040	0.011
Admin, support, waste mgmt services	0.037	0.047	0.041
Industry missing	0.019	0.041	0.040
Some other industry	0.152	0.112	0.180
N	540,422	188,221	11,214

Notes: This table presents summary statistics for the working-age population (18-64 years) by immigration status in the 2016 Canadian Census. All dollar values are in 2012 dollars. All values except wages, household size and sample size are proportions. Real wage represents average annual earnings conditional on positive earnings. Unconditional wages include zero earners (missing wages set to 0). Net capital gains are reported annually. Industry breakdown shows the proportion of workers in each sector identified by NAICS codes. "Industry missing" includes individuals marked as 'not available' or 'not applicable', where 'not applicable' pertains to those who (1) worked before 2015, (2) never worked, or (3) aged less than 15 years. "Some other industry" includes agriculture, forestry, fishing; mining, quarrying; utilities; information and cultural industries; real estate and rental and leasing; arts, entertainment and recreation; and other services except public admin. Non-permanent residents include temporary workers, international students, and refugee claimants. There are no missing observations in the immigrant classification variable.

Table A2: Interacted Regressions for Full-time Workers

	(1)	(2)	(3)	(4)
Temporary resident	-0.487	-0.540	-0.454	-0.378
	(0.048)	(0.022)	(0.024)	(0.051)
Permanent resident	-0.159	-0.265	-0.204	-0.193
	(0.048)	(0.022)	(0.024)	(0.051)
25-34 years × Temp	-0.185		-0.131	
	(0.053)		(0.054)	
35-44 years × Temp	-0.078		-0.060	
	(0.060)		(0.060)	
45-54 years × Temp	-0.068		0.068	
	(0.071)		(0.071)	
55-64 years × Temp	0.466		0.469	
	(0.124)		(0.124)	
25-34 years × Perm	-0.071		-0.070	
	(0.023)		(0.023)	
35-44 years × Perm	-0.154		-0.153	
	(0.022)		(0.022)	
45-54 years × Perm	-0.106		-0.106	
	(0.022)		(0.022)	
55-64 years × Perm	0.016		0.017	
	(0.023)		(0.023)	
Female × Temp		-0.094		-0.081
		(0.034)		(0.034)
Female × Perm		0.068		0.073
		(0.008)		(0.008)
Bachelor's degree or higher × Temp			-0.243	-0.201
			(0.033)	(0.034)
Bachelor's degree or higher × Perm			-0.081	-0.079
			(0.009)	(0.009)
25-34 years	0.722	0.715	0.714	0.722
	(0.008)	(0.007)	(0.007)	(0.008)
35-44 years	1.038	1.012	1.011	1.038
	(0.008)	(0.007)	(0.007)	(0.008)
45-54 years	1.129	1.116	1.114	1.128
	(0.008)	(0.007)	(0.007)	(0.008)
55-64 years	0.999	1.016	1.014	0.999
	(0.008)	(0.007)	(0.007)	(0.008)
Bachelor's degree or higher	0.444	0.424	0.448	0.447
	(0.005)	(0.004)	(0.005)	(0.005)
Female	-0.286	-0.282	-0.270	-0.285
	(0.004)	(0.004)	(0.004)	(0.004)
N	345,040	345,040	345,040	345,040

Notes: This table reports regressions run on log(wage) where wage is real wages of full-time individuals. Here, all real wages are greater than zero. This table runs the regression without fixed effects but including interactions between each control variable, using only the sample of full-time workers.

Table A3: Interacted Regressions with Fixed Effects for Full-Time Workers

	(1)	(2)	(3)
Temporary resident	-0.349	-0.379	-0.363
	(0.051)	(0.051)	(0.050)
Permanent resident	-0.135	-0.159	-0.146
	(0.051)	(0.051)	(0.050)
25-34 years × Temp	-0.089	-0.081	-0.040
	(0.053)	(0.053)	(0.052)
35-44 years × Temp	-0.009	-0.001	0.061
	(0.059)	(0.059)	(0.058)
45-54 years × Temp	0.117	0.127	0.187
	(0.070)	(0.070)	(0.069)
55-64 years × Temp	0.498	0.501	0.535
	(0.122)	(0.122)	(0.120)
25-34 years × Perm	-0.058	-0.049	-0.033
	(0.023)	(0.022)	(0.022)
35-44 years × Perm	-0.132	-0.120	-0.093
	(0.022)	(0.022)	(0.022)
45-54 years × Perm	-0.087	-0.074	-0.047
	(0.022)	(0.022)	(0.022)
55-64 years × Perm	0.032	0.048	0.069
	(0.023)	(0.023)	(0.022)
Female × Temp	-0.050	-0.050	-0.024
	(0.033)	(0.033)	(0.033)
Female × Perm	0.068	0.092	0.078
	(0.008)	(0.008)	(0.008)
Bachelor's degree or higher × Temp	-0.203	-0.216	-0.215
	(0.034)	(0.034)	(0.033)
Bachelor's degree or higher × Perm	-0.076	-0.087	-0.087
	(0.009)	(0.009)	(0.009)
25-34 years	0.667	0.648	0.609
	(0.007)	(0.007)	(0.007)
35-44 years	0.958	0.934	0.871
	(0.008)	(0.008)	(0.007)
45-54 years	1.045	1.024	0.955
	(0.007)	(0.008)	(0.007)
55-64 years	0.918	0.903	0.841
	(0.008)	(0.008)	(0.008)
Bachelor's degree or higher	0.462	0.344	0.299
	(0.005)	(0.005)	(0.005)
Female	-0.283	-0.280	-0.250
	(0.004)	(0.004)	(0.005)
N	345,040	345,040	345,040
Fixed Effects	Industry	Occupation	Both

Notes: This table reports regressions run on log(wage) where wage is real wages of full-time workers only. Here, all real wages are greater than zero. This table runs the regression with fixed effects including interactions between each control variable, using only the sample of full-time workers. Column (1) includes industry fixed effects, Column (2) includes occupation fixed effects, and Column (3) includes both industry and occupation fixed effects.

I Sample Labour Market Opinion (LMO)

These appendices include sample PDF forms for the Labor Market Opinion (LMO) and Labour Market Impact Assessment (LMIA). The LMO was reformed and renamed to the LMIA in 2014.

The sample PDFs for the LMO were obtained from a historical archive of hrsdc.gc.ca on June 26, 2012, accessed via the Wayback Machine (https://web.archive.org/).

I.1 Sample LMO for a low-skilled stream

Low-skilled LMO: https://users.nber.org/~notom/research/low_skilled_LMO.pdf

I.2 Sample LMO for a high-skilled stream

High-skilled LMO: https://users.nber.org/~notom/research/high_skilled_LMO.pdf

I.3 Sample LMIA

LABOUR MARKET IMPACT ASSESSMENT APPLICATION
HIGH-WAGE AND LOW-WAGE POSITIONS

Employers should visit the Temporary Foreign Worker Program TFWP website at www.esdc.gc.ca/eng/jobs/foreign_workers/index.shtml, to verify that the Program is accepting applications for the specific occupation or sector for which they wish to hire the temporary foreign worker (TFW) and to determine if they are eligible to participate in the Program.

Personal Information Collection Statement

The information you provide on this form is collected by Employment and Social Development Canada (ESDC) under the authority of the *Immigration and Refugee Protection Act* (IRPA) and *Immigration and Refugee Protection Regulations* (IRPR), for the purpose of providing a Labour Market Impact Assessment (LMIA) in accordance with these statutes. Completion is voluntary; however, failure to complete this form will result in your LMIA application not being processed.

The information you provide may be shared with Citizenship and Immigration Canada (CIC) for the administration and enforcement of the IRPA and IRPR as permitted by the *Department of Employment and Social Development Act* (DESD Act), and may be accessed by the Canada Border Services Agency (CBSA) for the purpose of issuing work permits at Ports of Entry. ESDC may also provide information to CBSA in order for that agency to investigate and enforce the IRPA and IRPR in relation to an LMIA.

The information may also be shared with provincial/territorial governments for the purpose of administration and enforcement of provincial/territorial legislation, including employment standards and occupational health and safety legislation, as permitted by the DESD Act. The information may also be used by ESDC for inspections, policy analysis, research and evaluation in relation to the entry and hiring of TFWs to Canada or the IRPA.

The information you provide is administered under Part 4 of the DESD Act and the *Privacy Act*. You have the right to access and request correction of your personal information, which is described in Personal Information Bank PPU 440 and PPU 171 of Info Source. Instructions for making formal requests are outlined in the Info Source publication available online at infosource.gc.ca.

A person, who contravenes a provision set out under sections 126 or 127 of the *Immigration and Refugee Protection Act* (misrepresentation), could be liable to a fine or to imprisonment, or to both. Also, providing inaccurate information, in the context of this application, may lead to an administrative penalty such as being ineligible to access the Program for a period of two years.

BUSINESS INFORMATION

1. Employer ID Number (if applicable):		2. Canada Revenue Agency Business Number (first 9 digits are mandatory for Canadian businesses):	
3. Business Legal Name:		4. Business Operating Name:	
5. Business Mailing Address:			
6.City:	7. Province/State:	8. Country:	9. Postal Code:
10. Business Telephone Number:	11. Business Address (if different than mailing address):		
12. City:	13. Province/State	14. Country::	15. Postal Code:

16. Type of business (select all that apply):

☐ incorporated/limited ☐ partnership ☐ sole proprietor ☐ other, specify _____

17. Is the business a franchise?

☐ No ☐ Yes

If yes, is the corporate head office aware of this application for temporary foreign workers (TFW)?

☐ Yes ☐ No

Provide the name of the corporation:

18. Website Address:	19. Date Business Started: (YYYY-MM-DD)

20. Describe the principal business activity:

21. Primary Contact Name: First	Middle	Last	22. Job Title:

23. Contact Phone Number: Ext.	24. Fax Number:	25. E-mail:

26. Preferred Official Language of Correspondence:

English French

THIRD-PARTY, RECRUITER OR EMPLOYMENT AGENCY INFORMATION

1. Are you using the services of a third-party, recruiter or employment agency for the purpose of hiring a TFW?

☐ No ☐ Yes If yes, complete the boxes on the right

Note:
In some provinces/territories it is mandatory to be registered in order to recruit TFWs on behalf of an employer. For more information visit:
http://www.esdc.gc.ca/eng/jobs/foreign_workers/high_low_wage/index.shtml

2. Name of third-party, recruiter or employment agency:

3. Registration, license or certificate number:

4. Are you appointing a third-party to represent you in completing this application form or to provide advice in an immigration process?

☐ No ☐ Yes If yes, complete **Schedule A - Third-party representative**

5. Name of third-party representative:

6. A number of provinces/territories prohibit the charging of recruitment fees to TFWs for the purpose of securing a job offer. Have you the employer or any other third-party in connection to this job offer received payment from the TFWs to secure this offer of employment?

☐ Yes ☐ No

BUSINESS DETAILS

1. Number of employees currently employed nationally under this Canada Revenue Agency Business number (e.g. 5 franchises are covered by the business number and there are a total of 100 employees):

2. Total number of employees currently employed at the work location specified on this form:

3. Total number of Canadian/permanent resident employees at the work location specified on this form:

4. Total number of employees (including Canadians/permanent residents and TFWs) working in this occupation at this work location.

5. Total number of TFWs (as the result of receiving a positive LMIA) at the work location specified on this form:

6. Did you employ a TFW (as the result of receiving a positive LMIA) in the last two years, prior to December 31, 2013?

☐ Yes ☐ No

If YES – did you provide all TFWs employed by you in the last two years with wages, working conditions and employment in an occupation that were substantially the same as those that were described in the offer(s) of employment (and confirmed in the LMIA letter(s) and annexe(s))?

☐ Yes ☐ No

7. Have you applied for and received a positive LMIA on or after December 31, 2013, and employed a TFW in that position?

☐ Yes ☐ No

If YES – did you provide all TFWs employed by you, on LMIAs received on or after December 31, 2013, with employment in the same occupation as described in the offer(s) of employment (and confirmed in the LMIA letter(s) and annexe(s)) and with substantially the same wages and working conditions - but not less favourable than- those set out in that offer(s) of employment (and confirmed in the LMIA letter(s) and annexe(s))?

☐ Yes ☐ No

Note:
Employers should be aware that with recent changes to the Immigration and Refugee Protection Regulations, the look back period has changed from 2 to 6 years. However, this change is not retroactive and, therefore will not be fully implemented until January 2020.

8. Have you had an LMIA revoked within the previous 2 years from the date you submitted this application?

☐ No ☐ Yes

If yes, was the LMIA revoked because you had provided false, misleading or inaccurate information in the context of a request for an opinion.

☐ No ☐ Yes If yes, please provide the following details regarding this revocation:

Date (YYYY-MM-DD): _____ System File Number: _____

If the public policy considerations that justified the revocation are no longer relevant, please provide a detailed explanation:

9. Were any employees laid off in the past 12 months?

☐ No

☐ Yes If yes, how many Canadians/permanent residents? _____ How many TFWs? _____

Reason(s) for layoff(s) and occupations affected:

10. Does your business receive support through Employment and Social Development Canada's Work-Sharing program?

☐ No

☐ Yes If yes, provide details:

JOB OFFER INFORMATION

If you are requesting an LMIA to fill multiple jobs for the identical position/occupation, provide the job offer information only once.
However, if there are multiple jobs for different positions/occupations, use a separate application form for each unique position/occupation.

1. Are you applying for an LMIA to hire a TFW in a Caregiver position? ☐ No ☐ Yes

If yes, employers hiring:

- an In-home Caregiver must complete this form and **Schedule G - In-Home Caregiving Occupations.**
- a Caregiver to work in a Health Institution must complete this form.

2. Job Title:	3. Number of TFWs requested for this job offer (same wage, job description, location, etc.):

4. Expected employment duration:

_____ Days _____ weeks _____ months _____ years

Employment duration rational:

5. Expected employment start date (YYYY– MM –DD):

6. Provide exact location where the TFW will be working (number and street address):

7. City:	8. Province:	9. Postal Code:

10. Describe the main duties of the job:

11. Minimum education requirements of the job:

☐ Doctorate/PhD ☐ Doctor of Medicine ☐ Master's degree

☐ Bachelor's degree ☐ College level diploma/certificate ☐ Apprenticeship diploma/certificate

☐ Trade diploma/certificate ☐ Secondary school ☐ Vocational school diploma/certificate

☐ No formal education requirement

Additional Information:

12. Minimum experience/skills requirements of the job: (include years of experience and/or occupational designations such as CA, CMA, CGA, R.N.,P.Eng.)

13. Indicate the language requirement stated in the offer of employment:

☐ The offer of employment does not require the ability to communicate in any specific language.

☐ The offer of employment requires the ability to communicate orally in:

☐ English ☐ French ☐ English or French ☐ English and French

☐ The offer of employment requires the ability to communicate in writing in:

☐ English ☐ French ☐ English or French ☐ English and French

☐ The offer of employment requires the ability to communicate in a language other than English or French.

If this option is selected, identify the specific language needed and clearly describe why this is a bona fide employment requirement for performing the duties associated with the employment. If insufficient space, attach a separate signed and dated sheet.

14. Wage in Canadian dollars and number of work hours. **Note**: Employers must provide the calculation of an hourly rate.

$ per hour _____ $ per year _____

Overtime rate of $ _____ starts after _____ hours of work per week.

Number of hours per day _____ Total number of hours per week _____ Total number of hours per month _____

15. What is the wage range for these employees currently working in this occupation at this work location ?

Low-wage: $ _____ /hour High-wage: $ _____ /hour **OR** ☐ there are no employees currently working in this occupation at this work location

Note:
The wage range should be from the last 2 pay periods that have occurred within the 6 weeks prior to submitting the application.

16. Vacation (if applicable) Days: _____ (# of business days per year) OR Remuneration: _____ (% of gross salary)

17. Is the job offer for full-time employment (at least 30 hours of work per week) throughout the duration of employment covered by the LMIA ?

☐ Yes ☐ No If no, explain.

18. Is this employment seasonal? ☐ Yes ☐ No

19. Benefits:

☐ Disability insurance ☐ Dental insurance ☐ Pension ☐ Extended medical insurance (e.g. prescription drugs, paramedical services, medical services and equipment)

20. Other benefits (specify):

21. Are there any federal/provincial/territorial certification, licensing or registration requirements for this job?

☐ No

☐ Yes If yes, what is the name of the certifying/licensing/registering body?

Will the TFW have all required certification, licensing, or registration prior to entering and starting work in Canada?

☐ No If no, indicate the anticipated period of time to acquire all of the required qualifications after starting work

_____ Days: _____ weeks _____ months

☐ Yes If yes, the TFW must have proof that he/she already has all the required qualifications.

Note:
Securing the necessary documents to practice in Canada is the employer's and the worker's responsibility. CIC must be satisfied that the skilled workers are capable of performing the employment being offered to them. CIC will check to ensure the skilled workers hold the required certification, or license to practice in a regulated occupation in Canada. If the applicant is not certified or licensed, CIC will assess whether the applicant is likely to qualify for licensing/certification when in Canada.

22. Is the position part of a union?

☐ No ☐ Yes If yes, what is the name of the union and the local?

Has the union been consulted about the hiring of a TFW?

☐ No If no, explain.

☐ Yes If yes, what is the position of the union? Provide details and attach documentation, if available.

23. Have you attempted to recruit Canadians/permanent residents for this job?

☐ No If no, explain.

☐ Yes If yes, you must provide proof of recruitment (e.g. copy of advertisements and information to support where, when and for how long the position was advertised).

In addition, if you advertised on the Job Bank (or the provincial/territorial equivalent), provide the order number: _____

24. What are the potential benefits to the Canadian labour market for offering this job to a TFW(s)?

☐ Filling a labour shortage ☐ Development or transfer of skills and knowledge for the benefit of Canadians/permanent residents

☐ Other ☐ Direct job creation or job retention of Canadians/permanent residents

Provide Details:

25. Provide a rationale for the job offer you are making to the TFW(s) and describe how this will meet your employment needs:

26. Do you plan to hire or train Canadians/permanent residents for the position(s) for which you are requesting an LMIA ?

☐ No If no, explain.

☐ Yes If yes, provide a brief description of the training plan.

27. Will you provide the temporary foreign worker with suitable and affordable accommodation ?

☐ No, but I will assist by doing the following: _____

☐ Yes If yes, please indicate the rent : CAD$ _____ ☐ per week or ☐ per month

and describe the type of accommodation:

☐ Not applicable

SUMMARY OF RESULTS TO MEET MINIMUM RECRUITMENT AND ADVERTISEMENT REQUIREMENT

You must provide a brief summary of the results of the activities you conducted to meet the minimum recruitment and advertisement requirements to apply for an opinion.

1. Number of applications/resumes received from Canadians/permanent residents:	2. Number of Canadian/permanent resident applicants interviewed:
3. Number of Canadians/permanent residents offered the position:	4. Number of Canadians/permanent residents hired:

5. Number of job offers declined by Canadian/permanent resident applicants:	6. Number of Canadian/permanent resident applicants who were not qualified for the job:

7. For each unsuitable Canadian/permanent resident applicant, provide an explanation as to why the candidate did not meet the requirements of the position, if necessary, attach a separate sheet. However, do not provide the names of the candidates (e.g. applicant #1 – has not completed the apprenticeship program and therefore cannot work as a journeyperson, applicant #2 – (unable to communicate in English to the level required for service in a fast paced environment).

TRANSITION TO A CANADIAN WORKFORCE

There are 2 possible paths for employers to transition to a Canadian workforce. The path that an employer must follow is determined by the wage being offered to the TFW for the position, in relation to the provincial/territorial median hourly wage, based on Statistics Canada's Labour Force Survey (2014).

Exemptions:

The requirement to transition to a Canadian workforce is not applicable to employers who are hiring TFWs for:

- on-farm primary agricultural positions, specifically
    - farm managers/supervisors and specialized livestock workers (NOC 8251, 8252, 8253, 8254 and 8256); and
    - general farm workers, nursery and greenhouse workers and harvesting labourers (NOC 8431, 8432 and 8611).
- caregiver positions in a:
    - private household (NOC 3152, 3233, 3413, 6471 and 6474); and
    - health care facility (NOC 3152, 3233, 3413 and 6471).
- positions where they are submitting an application to exclusively support a TFW's permanent residence under an Express Entry program (the TFW will not be applying for a work permit).

Employers hiring TFWs in these positions, go to the IMPACTS ON THE CANADIAN LABOUR MARKET section

The provincial/territorial median hourly wages are as follows:

Alberta	$25.00	Nunavut	$29.00
British Columbia	$22.00	Ontario	$21.15
Manitoba	$19.50	Prince Edward Island	$17.49
New Brunswick	$18.00	Quebec	$20.00
Newfoundland and Labrador	$21.12	Saskatchewan	$22.00
Northwest Territories	$30.00	Yukon	$27.50
Nova Scotia	$18.85		

Is the wage you are offering for the position at or above the provincial/territorial median hourly wage in the province/territory where the job is located?

☐ No If no, complete the following Section A – Cap for Low-wage Positions

☐ Yes If yes, skip to Section B – Transition Plans for High-wage Positions

Section A - Cap for the Low-wage Positions

Employers hiring TFWs and offering a wage that is below the provincial/territorial median hourly wage will be subject to a maximum 10% cap on the proportion of these low-wage TFWs. The cap will be phased in over the next 2 years to provide employers who use the program with time to transition to a Canadian workforce.

Employers that have a low-wage TFW workforce will be subject to an established cap, which is the lesser of their current percentage of TFWs in low-wage positions, or

- 30% as of June 20, 2014
- 20% as of July 1, 2015; and
- 10% as of July 1, 2016.

Exemptions to the Cap Requirement:

There is one exemption to the low-wage cap requirement. Employers should check the box if the following is applicable to their business:

☐ The business has fewer than 10 employees nationally, including the position to be staffed with TFWs;

☐ Positions are truly temporary where the position:

- is part of a highly mobile workforce that regularly crosses inter-jurisdictional boundaries (e.g. provincial, territorial and/or international) as part of the business' ongoing operations; or
- will not be filled after the worker leaves; or
- is for 120 days or less.

Note:
The position should be no more than 120 days in length, however, this could be extended on a case-by-case basis if an employer can demonstrate that their peak season, project or event operates beyond 120 days.

Employers, who are exempt from the Cap requirement, go to the **IMPACTS ON THE CANADIAN LABOUR MARKET section.**

Employers, who are NOT exempt from the Cap requirement must complete **Schedule E - Cap for Low-wage Positions.**

Section B - Transition Plan for High-wage Positions

The Transition Plan is a mandatory requirement for all employers applying to hire TFWs, and are offering a wage that is at or above the provincial/territorial median hourly wage.

Rationale For Possible Exemption:

To be considered for an exemption from having to provide a Transition Plan, the employer must complete this section and provide a justification on how they meet the criteria indicated in the following question. Exemptions will be considered on a case by case basis.

Employers who are NOT exempt from the Transition Plan requirement must complete **Schedule C - Employer Transition Plan**.

1.What are the requirements of the position? Select all of the exemption criteria that apply to the position specified on this LMIA.

☐ The position has a limited duration which means – the job is time-limited and will no longer exist after the TFW leaves.

The employment duration is:

☐ 1 to 120 days;

☐ more than 120 days to a maximum of 2 years (e.g. non-recurring project-based positions)

☐ The position is exempt under the Quebec Facilitated Process

(**Note**: Under the Facilitated Process, a Transition Plan is only required on the second LMIA application for the same occupation.)

2. Provide details:

IMPACTS ON THE CANADIAN LABOUR MARKET

The questions in this section are to be completed by all employers. The response to these questions will assist the Program to determine the impact the employment of temporary foreign workers will have on the Canadian labour market.

For the purpose of the Program:

Offshoring - is the relocation by a company of a business process from Canada to another country. This would include an operational process, such as manufacturing, or supporting processes (e.g. accounting or IT services). More recently, offshoring has been associated with technical and administrative services supporting domestic and global operations from outside Canada.

Outsourcing - is the contracting out of a Canadian business process to a foreign or Canadian third party organization resulting in the entry of Temporary Foreign Workers into Canada.

1. Will the entry of these TFWs lead to job losses, now or in the foreseeable future, for Canadians/permanent residents as a result of lay-offs, outsourcing, offshoring or other factors related to utilizing TFWs?

☐ No

☐ Yes If yes, provide a summary of the impact of hiring these TFWs, on your workforce (e.g. lay-offs, relocations) and the Canadian workforce more generally

2. Is this job offer related to an activity, contract or a subcontract that will facilitate outsourcing or offshoring?

☐ No If no, go to the next section

☐ Yes If yes, you must:
- complete the following questions (a to c) and
- have each employer with whom you have a contractual arrangement to provide services, complete a separate **Schedule B – Impacts on the Canadian Labour Market.**

a.) Provide a summary of the contractual arrangement between the employer of record and the company receiving services including (but not limited to) information on: the purpose and scope of the project, the project timelines, the expertise required, and the number of Canadians and permanent residents working on the project.

b.) Provide details on how Canadians/permanent residents with whom you have a contractual arrangement for services will be positively and/or negatively affected by this arrangement? (e.g. lay-offs, relocation, displacement, promotions, restructuring, transfer of skills and/or knowledge).

c.) As part of this contractual arrangement, have you hired any foreign nationals through any work permit-exempt or Labour Market Impact Assessment-exempt processing stream?

☐ No

☐ Yes If yes, complete the following two questions (i) and (ii.)

c-i) Provide details on efforts in the past two years to hire and/or train Canadians/permanent residents for positions where a foreign national has entered under a work permit-exemption or Labour Market Impact Assessment-exemption.

c-ii) Provide a summary of the impact of hiring these foreign nationals on Canadians/permanent resident workers within the company receiving services under this contractual arrangement (e.g. lay-offs, relocation).

FILM AND ENTERTAINMENT REQUEST ONLY

1. Name of the production:	2. Total number of people involved in the production:

3. Type of Production:

4. A copy of the contract between the employer and the foreign entertainer must be included with this application form, except for film and TV requests.

Is the contract included with application? Yes No If no, please explain:

TEMPORARY FOREIGN WORKER INFORMATION

If you are hiring more than one TFW, use separate sheets to identify each worker coming to work for you in Canada.
If the TFW information is not available, leave this section blank.

Note:
After the positive LMIA letter and annexes have been issued, six months will be allocated to the:

- employer to provide ESDC/Service Canada with the names of the TFWs; and
- TFWs to submit an application for a work permit to Citizenship and Immigration Canada.

1. Surname (family name) as shown on the passport:	2. Given name(s) as shown on the passport:
3. Gender: ☐ Male ☐ Female	4. Date of Birth (YYYY–MM–DD):
5. Location of residence outside Canada: City: Country:	6. Citizenship(s):

7. If the TFW is currently in Canada, please indicate his/her location (city and province) and immigration status:

City: _____ Province: _____

Status: ☐ Temporary Foreign Worker (Foreign Live-in Caregiver) ☐ Temporary Foreign Worker ☐ Visitor ☐ Student ☐ Refugee Claimant

DECLARATION OF EMPLOYER

I am an unincorporated employer, sole proprietor or partnership. ☐ Yes ☐ No

If you answered "YES" to the above:

I understand that some provinces and territories operate, pursuant to agreements with the federal Department of Citizenship and Immigration, Provincial Nominee Programs. I hereby consent to ESDC providing the personal information contained in this request for a Labour Market Impact Assessment to the provincial/territorial government(s) of the province(s) or territory(ies) where I carry on business to be used by the province(s) or territory(ies) for the administration of their Provincial Nominee Programs.	☐ Yes ☐ No

Employers must check each box to declare that they comply (or will comply) with the statements below :

☐ I certify that I am an employer who does not, on a regular basis, offer strip tease, erotic dance, escort services or erotic massages. I understand that any LMIA application from an employer, who offers these services on a regular basis, will not be processed.

☐ I certify that I am actively engaged in the business in respect of which the offer of employment is made and understand that I must remain so during the period of employment for which the work permit is issued to the TFW(s).

☐ I certify that the offer is consistent with my reasonable employment needs

☐ I certify that I am reasonably able to fulfill the terms of the employment offer

☐ I certify that I am compliant with, and will comply with the federal/provincial/territorial laws that regulate employment and the recruitment of employees, in the province/territory in which it is intended that the TFWs work and, if applicable, with the terms and conditions of any collective agreement.

☐ I certify that all recruitment done, or that may be done on my behalf, by a third-party was, and will be, in compliance with federal/provincial/territorial laws governing recruitment. I acknowledge and understand that I will be held accountable for the actions of any third-party recruiting TFWs on my behalf.

☐ I certify that I am aware of the published recruitment and advertising requirements of the Temporary Foreign Worker Program. I am, and will continue to be, compliant with these requirements and I can provide proof upon request.

☐ I certify that the employment of a foreign worker will not adversely affect the settlement of any labour dispute in progress or the employment of any person involved in the dispute, should there be an ongoing or pending labour dispute at my business. I will inform Service Canada in the case one should develop.

☐ I will comply with the prevailing wage requirements and I agree to review and adjust, when applicable, the TFWs wages, at least annually, to ensure he/she continues to receive the prevailing wage for the occupation and region where he/she is employed.

☐ I certify that I will make reasonable efforts to provide a workplace that is free of abuse which includes physical, sexual, psychological or financial abuse.

☐ I certify that I will provide theTFWs with employment in the same occupation as that set out in the TFWs offer of employment and with wages and working conditions that are substantially the same as — but not less favourable than — those set out in the LMIA letter and annex A.

☐ I agree that I will not recover any costs, directly or indirectly, associated with seeking an LMIA from any TFW(s).

☐ I acknowledge and understand that for a period of six years from the first day of employment of theTFW(s), I may be subject to an inspection and I will retain any documents that relate to the LMIA application and the terms and conditions of the LMIA letter and annexes.

☐ If required, I will give all reasonable assistance to the officer conducting the inspection. I will attend interviews and on-site inspections, answer questions, provide information and documentation that relate to the conditions I have agreed to, pertaining to the LMIA letter and annexes.

☐ I understand that should an on-site inspection be required for verification of compliance with the conditions stated on the LMIA letter and annexes, the inspections may take place at any premises or location where the TFW(s) perform(s) work and any premises or place that the employer has provided to the TFW(s) as accommodations. In the case of private dwellings, employer consent or a warrant will be required.

☐ I will provide Service Canada with the names of the TFW(s) I intend to employ within six months from the date on the LMIA letter.

☐ I declare that the employment of the TFW(s) is likely to have a positive or neutral effect on the Canadian labour market and will not lead to job loss or reduction in work hours for any Canadian or permanent resident during the period of employment for which the work permit is issued.

☐ I agree to pay the total fee indicated in the Labour Market Impact Assessment Application - Processing Fee Payment section , either by credit card or certified cheque/money order. I also acknowledge that if I do not submit my payment, my LMIA application will not be processed. This attestation and the requirement to pay the processing fee are NOT applicable to employers who meet the definition of on-farm primary agriculture and are hiring TFWs in the following NOC codes 8251, 8252, 8253, 8254, 8256, 8431, 8432 and 8611.

Employers hiring TFWs in low-wage positions must check the following boxes to declare that they comply (or will comply) with the statements below.

☐ I have signed and enclosed a copy of the employment contract related to the job offer referred to in this LMIA application. I certify that this offer of employment meets all Program requirements. The terms and conditions in the offer, including the wages, working conditions, job duties and any benefits are (or will be adjusted to be) the same as those that will be described in the LMIA letter and annexes.

☐ I will retain a copy of the contract, related to the offer of employment, signed by all parties. I understand and agree that ESDC may request a copy during an employer compliance review or an inspection.

☐ I will pay all transportation costs for the TFW(s) to travel from their country of residence to the location of work in Canada and for the return transportation to their country of residence. If the TFW is already in Canada, I will pay all transportation costs from their residence in Canada to the location of work in Canada, and for the return transportation to their country of residence. I will not recover, directly or indirectly, any of these costs from any TFW(s).

☐ I will arrange and pay for private health insurance for the TFW(s), which is similar to provincial/territorial health care coverage, until he/she is eligible for provincial/territorial health care insurance coverage (where applicable) and will not recover these costs from the TFW.

☐ I am in good standing with the applicable workers' compensation program and I will register the TFW(s) under the appropriate provincial/territorial workers' compensation/workplace safety insurance plans, where available, or purchase, on-the-job injury or illness insurance that provides the TFW(s) with protection similar to the one offered by the applicable provincial/territorial law. I will not recover these costs from the TFW.

Important :

Employers must immediately inform Service Canada of any changes related to the foreign worker's terms and conditions of employment as described in the positive LMIA letter and annex. If Service Canada accepts the employer's changes to the original LMIA, the employers' file will be updated accordingly.

In accordance with the provisions of the Immigration and Refugee Protection Regulations, ESDC may conduct an inspection to verify the employer's compliance with the conditions set out in the positive LMIA letter and annexes. As a result, this inspection could include a review of the employer's file and if Service Canada does not have a copy of the changes, the employer will be held accountable for the information that is on file.

SIGNATURE OF EMPLOYER

The individual signing this form must have authority for either the hiring or financial decisions of the organization (e.g. owner, franchisee, general manager, or senior executive – such as VP Human Resources). For In-home Caregiver positions, employers must be a parent, legal guardian, be the recipient of care or have a valid power of attorney, etc.

I have read and I understand the Personal Information Collection Statement found at the beginning of this application. I declare that the information provided in this Labour Market Impact Assessment is true, accurate and complete.

Signature of Employer	Printed Name of Employer
Title of Employer	Date (YYYY-MM-DD)

A person, who contravenes a provision set out under sections 126 or 127 of the Immigration and Refugee Protection Act (misrepresentation), could be liable to a fine or to imprisonment, or to both. Also, providing inaccurate information, in the context of this application, may lead to an administrative penalty such as being ineligible to access the Program for a period of two years.

DOCUMENTATION REQUIRED

New employers hiring a TFW must always submit one document which supports their active engagement in the business. Returning applicants to the Program are not required to re-submit any documentation. However, ESDC/Service Canada may request employers submit additional documents when they are applying for a new LMIA. Employers, who provide documents that are not requested, may find that this slows down the processing of their application.

If a required document is not attached, please explain:

Proof of recruitment (e.g. copy of advertisement and information to support where, when and for how long the position was advertised)

Business registration or legal incorporation documents (if first LMIA application) Does not apply to employers of In-home Caregivers.

Municipal/provincial/territorial business license (where applicable and if first LMIA application) Does not apply to employers of In-home Caregivers.

Canada Revenue Agency:

- T2 Schedule 100 Balance Sheet Information (for corporations only – 2 most recent returns filed)
- T2 Schedule 125 Income Statement Information (for corporations only – 2 most recent returns filed)

Only required if this is the employer's first LMIA application. Does not apply to film and entertainment or employers of In-home caregivers.

Attestation by a lawyer, notary public or chartered accountant confirming that the business exists and the main activity of the business. (for sole proprietorship/ partnership)

Letter from a legal business confirming the existence of a contract for a good and/or service with the employer applying for an LMIA. Does not apply to employers of In-home Caregivers.

Provincial/territorial workplace safety and insurance (e.g. workers compensation board) clearance letter/certificate if applicable. Does not apply to businesses which currently do not have at least one employee.

Commercial lease agreement (where applicable and if first LMIA) Does not apply to employers of In-home Caregivers.

Film and Entertainment – copy of employment contract (except film and TV)

Provincial documentation requirements (for the provinces noted below):

ALBERTA - Employment Agency Business Licence (*Alberta's Fair Trading Act*) if applicable
BRITISH COLUMBIA - Employment Agency License (*British Columbia's Employment Standards Act*) if applicable
MANITOBA - Certificate of Registration (*Manitoba's Worker Recruitment and Protection Act*)
NOVA SCOTIA - Employer Registration Certificate *(Labour Standards Code)*
SASKATCHEWAN – Employer Registration Certificate (The Foreign Worker Recruitment and Immigration Services Act) (no documentation required, however employers must be registered).

Note:
In some cases the province may not provide a physical document but rather post the names of registered/certified employers on a website.

Send Application and all Supporting Documentation:

Employers must sign, and send the completed application and all required documentation to the Service Canada Centre responsible for processing applications in their area. A list of LMIA Processing centres is available on the ESDC website:
www.esdc.gc.ca/eng/jobs/foreign_workers/scc.shtml

Employers hiring In-home caregivers must send the completed application and all required documentation to the Service Canada Centre, in Ontario, responsible for processing In-home caregiver applications: www.esdc.gc.ca/eng/jobs/foreign_workers/scc.shtml#lcp

All employers requiring assistance can contact:
1-800-367-5693 (toll-free) from within Canada and the United States
506-546-7569 from outside Canada and the United States

Note:
A complete application means that employers have:

- filled out all of the fields in all of the necessary forms;
- included all of the required documentation;
- signed the forms where required; and
- submitted the fee payment with the application, if applicable

If an application is submitted and it is not complete, Service Canada staff will inform the employer that the application will not be processed. Incomplete applications and supporting documents submitted with the application will not be retained or returned to the employer. As a result, employers are advised to submit copies, not original documents.