The Labor Market Return to Permanent Residency*

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Abstract

Many temporary foreign worker programs issue "closed" visas that effectively tie workers to a single employer, restricting worker mobility and weakening bargaining power. We study the labor market return to temporary foreign workers (TFWs) gaining permanent residency (PR), which loosens this mobility restriction. Using administrative data linking matched employer-employee data in Canada to temporary and permanent visa records from 2004–2014 along with an event-study design, we find that gaining PR leads to a sharp, immediate, and persistent increase in the job switching rate of 21.7 percentage points and an increase in earnings of 5.7 percent three years after PR. Workers also sort into high-wage firms after gaining PR, and the increase in the firm pay premium is roughly 56 percent of the total earnings gain. We find larger earnings gains for job switchers across industries, low-skilled workers, and workers from low-income countries. To guide and interpret our reduced-form results, we develop a search-and-matching model featuring heterogeneous workers and firms. Permanent residents and native-born workers search for jobs in the same labor market and engage in on-the-job search, while TFWs 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 we use it to simulate the long-run effects of PR and consider two counterfactual policies: (1) increasing the cost to firms of posting a TFW vacancy and (2) allowing TFWs to switch employers freely under "open" visas. We evaluate how these policies affect output, wages, profits, and overall social welfare.

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1 Introduction

Immigration policy is a lever that many countries use to address labor shortages, particularly in sectors where employers report persistent recruiting difficulties (McKinsey Global Institute 2016). Governments often rely on temporary work permits that are designated for certain occupations, and a key design choice is whether such visas are "open"—allowing workers to switch employers—or "closed," tying workers to a single employer. Many temporary foreign worker programs adopt closed visas, including Australia, Canada, New Zealand, Singapore, South Korea, and the United States (U.S.). This ensures that labor supply is allocated to sectors that experience labor shortages.[1]

However, closed visas limit worker mobility and shift bargaining power toward firms. Workers must obtain permanent residency (PR) to freely switch employers, and this process can be costly and uncertain. As a result, this feature of the program has sparked a debate among policymakers amid concerns about potential worker exploitation and abuse. Writing for Fox News, Senator Bernie Sanders argued that "guest workers are often locked into lower-paying jobs and can have their visas taken away... if they complain about dangerous, unfair, or illegal working conditions."[2] In a similar vein, the UN Special Rapporteur's report on Canadian temporary foreign workers expressed that Canada's reliance on employer-specific (closed) work permits creates a power imbalance where "employers may have limited incentive to ensure decent working conditions, as workers do not have a meaningful choice of alternatives."[3] Several policy reforms have been proposed, including increasing the application fee for such visas and giving guest workers the freedom to switch jobs.[4]

Despite these concerns, there is relatively little empirical research that evaluates how the specific features of temporary visa programs affect the labor market outcomes of immigrants, other workers, and firms. A central challenge is identifying the causal impact of visa design features separately from unobserved differences between temporary foreign workers (TFWs) and other immigrants, such as differences in human capital. That is, TFWs could be paid less than other immigrants because of their visa status (closed) or because they differ in unobserved skills or the firms they are employed at. Another challenge is the lack of data linking individuals' immigration status over time to administrative matched employee-employer records, necessary to measure earnings precisely and track worker mobility across firms.

[1] Some countries, including Canada which is the focus of this study, also adopt open visas for high-skilled workers and international students.

[2] See https://www.foxnews.com/opinion/sen-bernie-sanders-h1-b-visas-hurt-one-type-worker-exploits-another-mess-must-fixed.

[3] See https://docs.un.org/en/A/HRC/57/46/Add.1.

[4] In the United States, President Trump recently proposed a $100,000 fee on new H-1B visas. See https://www.whitehouse.gov/presidential-actions/2025/09/restriction-on-entry-of-certain-nonimmigrant-workers/. In Canada, the federal government is exploring legislation changes that would allow TFWs to freely switch employers within the same industry. See https://www.theglobeandmail.com/business/article-temporary-foreign-workers-may-get-more-flexibility-to-move-jobs-as/.

This paper addresses both of these challenges using a quasi-experimental research design along with a novel administrative dataset from Statistics Canada that links visa records for roughly 200,000 TFWs who arrived in Canada between 2004 and 2014 to the Canadian Employer-Employee Dynamics Database (CEEDD). Our research design compares cohorts of immigrants (with the same skill classification) arriving to Canada in different years and taking the same amount of time to transition from a temporary visa holder to a permanent resident ("time-to-PR"). This design effectively "matches" TFWs based on their time-to-PR and skill and compares cohorts of immigrants who arrived to Canada in different years. Intuitively, this research design treats the duration of temporary residency as endogenous, but assumes that the specific year of arrival is plausibly exogenous and satisfies the standard parallel trends assumption conditional on skill type and time-to-PR. To guide and interpret these reduced-form results, we develop an on-the-job search model that incorporates TFWs and restricts their mobility between employers. We calibrate the model to match key empirical moments and use it to evaluate two counterfactuals: increasing visa program application fees and allowing TFWs to switch employers freely. In this way, the model-based analysis provides direct insight into policy reforms that are currently under active debate.

We begin in Section 2 by describing the Temporary Foreign Worker Program (TFWP) in Canada and other relevant institutional details such as pathways to PR. Section 3 describes the administrative dataset that we use in our empirical analysis, including the CEEDD and the databases on temporary residents and permanent residents. The CEEDD is a matched employer-employee database that contains information on taxable earnings for the near universe of Canadian workers. It also contains information on employer financial positions, such as revenue and value-added, which is uncommon in matched employer-employee databases from other countries. The Temporary Resident (TR) File contains information on the precise year and month that each visa was awarded (and the year and month that each visa ended), and the Longitudinal Immigration Database (IMDB) provides the date that the individual successfully became a permanent resident. Thus, our setting is well-suited to evaluating the causal effect of PR since we can track labor market outcomes for immigrants before and after they receive PR. Our data reveal that 51 percent of TFWs that first arrive in Canada with a closed visa become permanent residents during our sample period, which is consistent with the cost and uncertainty of PR discussed above.[5]

Section 4 describes our research design and establishes identification of the average treatment effect—the causal effect of PR on labor market outcomes—for the set of individuals who begin as TFWs and subsequently transition to permanent residents. We define our target parameter of

[5]Our analysis focuses primarily on immigrants who arrive as TFWs on closed work permits that require a labor market test (LMT), excluding immigrants who arrive under the Seasonal Agricultural Workers Program (SAWP) and Live-in Caregivers Program (LCP). In addition, our analysis excludes immigrants who work on open permits that are LMT-exempt, such as the International Mobility Program (IMP) and the Post-Graduate Work Permit Program (PGWPP). Finally, our sample excludes the public, education, and health sectors.

interest at the cohort level and then show how to identify it using a novel "stacked" difference-in-differences (DID) estimand under the parallel trends assumption and no anticipation condition. We obtain our treatment effect by aggregating across the cohort-specific treatment effects. Using a stacked DID estimator, we avoid the common pitfalls associated with the two-way fixed effects estimator (TWFE) in the presence of a staggered treatment with heterogeneous treatment effects.

In Section 5, we conduct a descriptive analysis to shed light on worker and firm selection into the TFWP, leading to three key findings. First, firms that have a relatively higher share of TFW employment tend to pay all of their employees lower wages compared to firms that hire TFWs infrequently.[6] This shows that there is negative firm selection into TFW hiring. Second, firms that have a relatively higher share of TFW employment ("TFW-intensive firms") tend to hire low-wage workers. Third, the firm effects for TFW-intensive firms are lower than firm effects for non-TFW-intensive firms conditional on firm productivity, which is measured using value-added per worker. This suggests that firms have greater monopsony power over TFWs compared to domestic workers or permanent residents.

Turning to our main reduced-form results in Section 6, we find that PR leads to a sharp, immediate, and persistent increase in the probability of a job-to-job transition of 21.7 percentage points. Alongside the increased job switching, we find an increase in earnings of 5.7 percent. The earnings effect emerges quickly and increases over time, consistent with the persistently higher rates of job switching. We also find that when a TFW obtains PR, they sort to firms with firm pay premia that are 3.2 percentage points higher, showing that workers climb the job ladder after PR.[7] Mirroring the dynamic pattern for earnings, the effect of PR on firm pay premia emerges quickly and increases over time. If we divide the estimated firm-pay-premia effect by the estimated earnings effect, we conclude that sorting to high-wage firms is 56 percent of the overall effect on earnings. Finally, we show that the change in the firm pay premium is driven primarily by moves across industries, and we find relatively larger impacts for low-wage workers and workers from low-income countries. In support of the parallel trends assumption, the event study figures for all our main labor market outcomes show negligible pre-trends in the years leading up to PR and sharp changes immediately after PR.

To guide and interpret our reduced-form empirical results, in Section 7 we develop a search-and-matching model that builds on the framework in Lise, Meghir, and Robin (2016). We depart from the standard competitive model of the labor market, which typically treats immigration as an increase in aggregate labor supply and abstracts from the institutional details of visa design

[6] We obtain this result in two steps. First, we use the full-population matched employer-employee data to estimate an auxiliary two-way fixed effects model for log worker earnings following Abowd, Kramarz, and Margolis (1999). Second, we compare the distribution of firm effects for employers that hire a larger share of TFWs to the distribution of firm effects for employers that hire TFWs more infrequently.

[7] Using the firm balance sheet data, we find similar results if we classify firms on the basis of observable firm characteristics such as firm size (revenue) or productivity (value-added per worker).

that are central to the policy debate (Katz and Murphy, 1992; Card, 2001; Borjas, 2003). The competitive model also assumes away labor market power, making it ill-suited for analyzing the economic consequences of closed visas which shift bargaining power from workers to firms.[8] Our main innovation is to add immigrants to the Lise, Meghir, and Robin (2016) model and build in the institutional features of the TFWP in Canada. The model allows us to examine the long-run causal effect of PR on job mobility, earnings, and worker-firm sorting, and consider the impacts of counterfactual visa policies (such as increasing the cost of a TFW application or loosening restrictions on worker mobility) on labor market outcomes and social welfare.

In the model, firms can post job vacancies either in the TFW labor market or in the labor market for domestic workers. In order to post a vacancy for a TFW, following our institutional setting, a firm must submit a costly application to the government and can only post a vacancy for a TFW if the application is successful (which happens probabilistically). When labor market tightness for domestic workers is high—i.e., when there is a "labor shortage" for these workers—it becomes relatively more profitable for the firm to post a vacancy for a TFW. This choice generates a congestion externality: when firms enter the TFW market, they reduce vacancies available to domestic workers, lowering the job-finding rates and outside options in the domestic market. We allow search for unemployed workers and on-the-job search for employed domestic workers, but assume that TFWs cannot search on the job. Workers meet vacancies at random according to an aggregate matching function, and wages are set by Nash bargaining. Domestic workers can be poached by more productive firms and can use outside offers to bid up their wages, creating a "job ladder" in the tradition of sequential auction models beginning with Postel-Vinay and Robin (2002). In contrast, because TFWs cannot search on the job, they cannot be poached or use outside options to negotiate higher pay, consistent with the institutional features of the TFW program in Canada. This design feature implies that the counteroffer mechanism in the sequential auction model is shut down for TFWs, giving firms greater monopsony power over the TFWs that they employ.

In Section 8, we calibrate the model to quantitatively match our reduced-form results on job transitions, earnings, and firm pay premia. Our calibrated model matches the negative firm selection into the TFW program that we observe in the data, even though this pattern is not explicitly targeted in the calibration. We simulate the long-run effects of PR on job transitions, earnings, and firm pay premia, well beyond the end of our event-study window. After PR, it takes roughly 15 years for TFWs to gradually approach their new steady-state equilibrium in the domestic labor market, and the long-run increases in earnings and firm pay premia are 50 percent larger than the three-year effects we estimate in our event-study window.

Lastly, we use our calibrated job search model to analyze two counterfactual policies. The first

[8]Some models of immigration feature monopsony in a frictionless setting. See, for example, Amior and Manning (2020). Amior and Stuhler (2023) consider immigration in the context of a job search model which is similar to the approach we take in this paper.

raises the expected cost of filling a TFW vacancy. Higher vacancy costs reduce profits and output in the TFW market, prompting some firms to shift production toward the domestic market. This reallocation increases domestic output—partially offsetting the decline in the TFW market—but it also raises labor market tightness and lowers expected domestic profits. Domestic wages rise, especially for low-wage domestic workers, due to increased labor demand, while TFW wages fall because fewer firms demand TFW labor. This illustrates the central trade-off of "choking off" TFW visas: domestic workers gain from higher wages, but firms and TFWs bear the cost through lower profits and wages. The second counterfactual allows TFWs to switch employers freely using open visas. We find that TFW wages rise sharply, as workers can now search on the job. Domestic wages fall (most notably for low-wage domestic workers) due to heightened labor market competition, and firm profits change little. The main takeaway is that restricting job mobility for TFWs may advantage domestic workers but comes at a cost to TFWs themselves.

Naturally, the policy counterfactuals are stylized and rely on specific model assumptions, so their implications should be interpreted cautiously. We view the counterfactuals as an initial step towards structurally evaluating different visa policies for TFWs. Overall, the model appears to be a promising foundation for policy analysis, as it jointly replicates the effect of PR on job mobility, earnings, and worker-firm sorting.

Our paper makes several contributions to the literature. First, our paper complements existing evidence on the effects of mobility restrictions for foreign workers in New Zealand (Townsend and Allan, 2025); United Arab Emirates (Naidu, Nyarko, and Wang, 2016); Spain (Domenella, 2025); Switzerland (Ahrens et al., 2024); and United States (Hunt and Xie, 2019; Wang, 2020). Arguably the most compelling evidence comes from Townsend and Allan (2025) who find that, at the worker level, loosening the restriction on worker mobility leads to an increase in job transitions but does not have an effect on earnings. We complement Townsend and Allan (2025) by considering a novel research design and studying the effect of PR on worker sorting to heterogeneous firms. Our contrasting findings indicate that PR increases earnings, in part through worker sorting into high-wage firms. Furthermore, Townsend and Allan (2025) interpret their findings through the lens of a static, frictionless model of the labor market that does not feature a theory of worker-firm sorting. By contrast, we jointly model job mobility, hiring wages, and wage growth using a dynamic search-and-matching framework that reflects key institutional features of the TFW labor market, such as closed work visas and labor shortages (based on labor market tightness). Our model-based results illustrate the mechanisms by which PR affects labor market outcomes and directly inform the policy debate.

Our paper complements Naidu, Nyarko, and Wang (2016) by providing evidence from a high-income country with a TFW program that is fairly comparable to programs in the U.S. and other high-income countries. In the U.S. context, Hunt and Xie (2019) and Wang (2020) study the effect

of PR on labor market outcomes by estimating individual fixed-effects models using the National Survey of College Graduates (NSCG). Two limitations of the NSCG are that employment and wages are observed biennially for only two or three waves for a relatively small sample, and it is not possible to distinguish between H1-B, L1-A, or L1-B visa holders. We complement Hunt and Xie (2019) and Wang (2020) by combining a novel difference-in-differences strategy with large-scale administrative matched employer-employee data, allowing us to estimate the effects of PR separately for low- and high-skilled TFWs and consider a wider range of labor market outcomes. In addition, by studying visas that restrict mobility across *employers*, we complement Ahrens et al. (2024) and Domenella (2025) who study the effect of restrictions that limit worker mobility across sectors, occupations, or geographic regions.

Second, our paper is related to literature on the role of firms in understanding pay gaps between immigrants and native-born workers. Recent studies show that new migrants tend to cluster at low-wage firms and subsequently move to high-wage firms (Damas de Matos, 2017; Amior and Stuhler, 2023; Dostie et al., 2023; Arellano-Bover and San, 2024; Gyetvay and Keita, 2024; Guo et al., 2025; Lehrer and Rawling, 2025), though none of these studies examine transitions from temporary visas to permanent residency. Our paper complements these studies by showing that TFWs move to high-wage firms when mobility restrictions are eliminated through permanent residency. Most closely related to our setting is Dostie et al. (2023), who showed descriptively that permanent residents climb the job ladder the longer they reside in Canada, and Lehrer and Rawling (2025), who extend their analysis by showing that roughly half of the between-firm job sorting disparities occur across industries. We complement this work by focusing on TFWs and using a quasi-experimental research design to estimate the causal effect of PR. More broadly, we contribute to the literature on the immigrant pay penalty and earnings assimilation by demonstrating how institutional features of visas can slow the earnings growth of new migrants (Yezer and Thurston, 1976; Chiswick, 1978; Lalonde and Topel, 1992; Baker and Benjamin, 1994; Bratsberg and Ragan, 2002; Ferrer, Green, and Riddell, 2006; Lubotsky, 2007; Pendakur and Woodcock, 2010; Skuterud and Su, 2012; Dustmann and Görlach, 2015; Javdani and McGee, 2018; Brinatti and Morales, 2024; Xu, 2024; Dostie, Jayaraman, and Vigezzi, 2025; Tino, 2025; Vigezzi, 2025).

Lastly, we contribute to the literature on the effects of TFWs on domestic workers and firms (Djajić, 1989; Müller, 2003; Kerr and Lincoln, 2010; Djajić, 2013; Peri, Shih, and Sparber, 2015; Green and Worswick, 2017; Beine and Coulombe, 2018; Brochu, Gross, and Worswick, 2020; Beerli et al., 2021; Clemens and Lewis, 2022; Doran, Gelber, and Isen, 2022; Amuedo-Dorantes et al., 2023; Green, Skuterud, and Tino, 2024; Mahajan et al., 2024; Doyle, Skuterud, and Worswick, 2025). Our paper is closely related to Brochu, Gross, and Worswick (2020), who study the implications of allowing firms to hire TFWs to fill job openings if they face challenges hiring in the domestic labor market. Their model predicts that increasing access to TFWs with lower outside

options incentivizes firms to offer lower wages to domestic workers. We complement their analysis by explicitly incorporating job mobility restrictions (i.e., closed visas) for TFWs into our model and by examining how these restrictions affect domestic workers, firms, and TFWs themselves through counterfactual policy experiments.

2 The Temporary Foreign Worker Program

This section describes the Temporary Foreign Worker Program (TFWP) in Canada and pathways to PR for TFWs. Our main analysis sample, described in Section 3.1, contains TFWs that arrived in Canada between 2004 and 2014 (inclusive) and transitioned to PR between 2007 and 2017 (inclusive). Therefore, we focus on the specific features of the TFWP and pathways to PR that are relevant for this time period. For an overview of the TFWP timeline, see Figure A.1 in the Online Appendix.

The TFWP was established by the Canadian federal government in 1973.[9] Initially, the TFWP was a broad program regulating TFWs in Canada, including streams with open and closed work permits. The main objective was to help employers address recruiting challenges when they were unable to fill vacancies with Canadian workers. Since we focus on TFWs with closed work permits, we describe the institutional details that are relevant for them.

At the onset of the program, the TFWP allowed firms to hire high-skilled TFWs with closed work permits. In 2002, the Low-Skill Pilot Project was launched which expanded the program to include a separate stream for low-skilled workers. A TFW would be designated as a high-skill or low-skill worker based on their "intended occupation," which followed the National Occupation Classification (NOC). Occupations in NOC group 0 (managerial), A (professional), or B (skilled and technical) were categorized as high-skilled, whereas occupations in NOC group C (intermediate and clerical) or D (elemental and labourer) were categorized as low-skilled. Figure A.2 shows the share of TFWs with a closed work permit from 2004 to 2016 in each skill level, excluding live-in caregivers and workers in the agricultural, public, health, and education sectors.[10]

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 accelerate work permit applications for workers in 19 high-skilled and 14 low-skilled occupations (O'Donnell and Skuterud, 2022). Overall, there was a significant increase in the use of the TFW program in Canada during this period. Figure A.3a shows the number of TFWs (excluding

[9]The TFWP is distinct from the seasonal agricultural worker program (SAWP) launched in 1966 and the Live-in Caregiver Program (LCP) which began in 1981. We exclude TFWs in the SAWP or LCP from our sample as discussed in Section 3.

[10]Table A.1 shows the top 20 occupations of these TFWs using 2-, 3-, and 4-digit NOC codes.

the SAWP and LCP) increased from 16,830 in 2004 to 102,610 in 2014.

2.1 Labour Market Opinion (LMO)

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).[11] There were no significant application fees to request an LMO until 2013, when the government introduced a fee of $275 (Employment and Social Development Canada, 2015). The purpose of the LMO was for HRSDC to determine whether a labor shortage existed. This included establishing that the employer made a "reasonable effort" to hire a Canadian worker or permanent resident and failed, which required first publicly advertising the job opening to Canadians. The initial advertising requirements were 2 weeks within 3 months of requesting the LMO, and the minimum advertisement length was increased to 4 weeks in 2013. In addition, employers increased their chances of obtaining a "positive LMO" if they were 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 a new job opportunity or transferred skills to other workers. Finally, an additional condition for receiving a positive LMO is paying wages comparable to those of Canadians in the same occupation and geographic region.[12] Despite the LMO, 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 an employer received a positive LMO, they could hire a TFW, who would then be issued a temporary work permit. There were three key features associated with these permits (Gross and Schmitt, 2012). First, they were fixed-term employment contracts that typically lasted between one and two years. Table A.2 lists the maximum duration of high- and low-skilled permits from 2002 onward. The maximum duration for low-skilled permits was one year from 2002 to 2007 and two years from 2007 to 2014, with no precise cap for high-skilled permits. Second, the permits were "closed" work permits, which meant that TFWs were generally not allowed to switch employers. Changing employers on a closed work permit was an onerous process, requiring a new employer to apply for and obtain a positive LMO, a difficult process given the significant administrative hurdles and often lengthy processing delays. Third, there was a requirement to leave Canada after the expiration of the work permit. Remaining in Canada for longer was only possible for TFWs who renewed their work permits with their existing employer or obtained a new permit. There was no limit on the *cumulative* duration that TFWs could remain in Canada on a temporary visa 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. This "four-in,

[11] Appendix L.1 shows an example LMO application form for the low-skilled stream, and Appendix L.2 shows an example LMO application form for the high-skilled stream.

[12] For a complete discussion of the TFWP and the LMO, see Elgersma (2014).

four-out" rule remained in place until 2016.

In 2012–2013, media reports indicated that employers were exploiting the TFWP by overhiring and becoming overly reliant on TFWs, prompting the federal government to implement a major reform in June 2014 (O'Donnell and Skuterud, 2022). Appendix A describes the 2014 reform and the TFWP after 2014 in more detail including the replacement of the LMO with the Labour Market Impact Assessment (LMIA). We note that since the immigrants in our sample arrived in Canada between 2002 and 2014 (inclusive), this reform is unlikely to affect our baseline estimates. As a robustness check, in Section 6 we exclude immigrants who arrived in 2014 and find that our results are very similar.

2.2 Pathways to Permanent Residency

Temporary work visas obtained through the TFWP do not guarantee PR. Rather, TFWs must apply for PR through the same pathways as other immigrants. The most common pathways to PR for TFWs are the skilled worker programs (including the *Federal Skilled Workers Program (FSWP)*, the *Canadian Experience Class (CEC)*, the *Federal Skilled Trades Program (FSTP)*, and the *Quebec Skilled Worker Program (QSWP)*), the *Provincial Nominee Program (PNP)*, and the *Family Class*.[13]

The FSWP is one of the oldest pathways to PR, implemented under the *Immigration Act* of 1967. It is a suitable pathway to PR for high-skilled TFWs (outside of Quebec which has its own system discussed below). Applicants to the FSWP are assigned points based on education, age, skilled work experience, language proficiency in English or French, ability to integrate into Canada, and whether or not a Canadian employer has agreed to hire them after PR. If the total number of points exceeds a cutoff, they are eligible for PR. For example, in 2010 the FSWP awarded up to 25 points for education, 24 points for language skills, 21 points for skilled work experience earned in Canada or abroad, 5 bonus points for one year of work experience *in Canada* (under the category of "adaptability"), 5 points for a job offer, with a minimum eligibility cutoff of 67 points as shown in Table A.3. The FSWP is a viable pathway for high-skilled TFWs because they generally rank high on the points system due to their high human capital.

In 2008, the federal government introduced the CEC as a fast-track pathway for high-skilled TFWs (outside of Quebec) with Canadian experience.Between 2008 and 2014, CEC applications were processed significantly faster than FSWP applications: 80% of CEC cases took 8 to 15 months, while 80% of FSWP cases took 37 to 47 months (Immigration, Refugees and Citizenship Canada,

[13] In 2015, Canada introduced EE to centralize the application process for the FSWP, CEC, and FSTP. Crucially, EE is an application management system, not a standalone immigration pathway. Applicants must first meet the minimum eligibility requirements of the FSWP, FSTP, or CEC to enter the EE pool, where they receive a Comprehensive Ranking System (CRS) score. Applicants in the EE pool with CRS scores above a minimum threshold are invited to apply for PR. See Appendix B for more details.

2015). CEC applicants are evaluated on a pass/fail basis, unlike the FSWP which uses a point system. To qualify, applicants must meet a minimum work experience requirement (reduced from two years to one in 2012) in a high-skilled (NOC 0, A, or B) occupation and demonstrate proficiency in English or French. The CEC is a viable pathway for many high-skilled TFWs who are eligible for the program because of their experience working in a NOC 0, A, or B occupation in Canada.

The FSTP, introduced in 2013, targets skilled trade workers in occupations such as construction, manufacturing, and electrical work. Applicants to the FSTP are evaluated on a pass/fail basis, similar to the CEC. TFWs are eligible if they have a Canadian certification in a skilled trade or if a Canadian employer has agreed to hire them after PR (Immigration, Refugees and Citizenship Canada, 2025). In contrast to the FSWP (which rewards high education) and the CEC (which targets high-skilled Canadian experience), the FSTP is tailored specifically for skilled trades.

The province of Quebec has its own skilled-worker program that is separate from the FSWP, CEC, and FSTP. The QSWP, or *Programme régulier des travailleurs qualifiés (PRTQ)*, was the province's primary immigration pathway for skilled workers up to 2024 (Moosapeta, 2022).[14] This program operated on a distinct, points-based system with criteria tailored to Quebec's specific economic and demographic needs. As detailed in Table A.4, the selection grid awarded a maximum of 26 points for education and training, 8 for work experience, 22 for language proficiency, 10 for a validated job offer, and 8 points for connections to Quebec, such as a previous stay or family members. The QSWP is a suitable pathway for TFWs who wish to settle in Quebec. High-skilled TFWs tend to score well on the points grid due to their high human capital, while some low-skilled TFWs may also achieve high scores through factors such as fluency in French, work experience, or ties to Quebec, since the selection grid does not directly assess occupational skill level.

The PNP, introduced in 1999, allows provinces and territories to design their own immigration streams with PR criteria tailored to their economic or demographic needs. It is intended for immigrants who have Canadian work experience, work in high-demand occupations in a given province, or have an ongoing job offer from a provincial employer. It is a particularly valuable pathway for low-skilled TFWs who are ineligible for the federal skilled worker programs. Prior to the PNP, Canada did not have a viable economic pathway for low-skill workers; all low-skilled immigration was for family reunification or humanitarian reasons. High-skilled workers may also prefer the PNP due to the less stringent selection criteria and faster processing times.[15] Applicants to the PNP select a stream, and the relevant provincial or territorial government reviews their application.[16]

[14]The QSWP was replaced by the *Skilled Worker Selection Program (SWSP)*, or *Programme de sélection des travailleurs qualifiés (PSTQ)*.

[15]For instance, between 2005 and 2009, 80% of PNP applications were processed within 12 months, whereas 80% of FSWP applications took approximately 55 months during the same period (Citizenship and Immigration Canada, 2011).

[16]The immigration streams in the PNP are diverse, with over 50 distinct PNP streams across 11 participating provinces and territories in 2011 (Citizenship and Immigration Canada, 2011). Table A.5 provides examples of

If the province or territory determines that an applicant meets the stream's eligibility criteria, it formally selects the applicant for PR through a process called a *provincial nomination*. Once nominated, the applicant receives the *Provincial Nominee Class (PNC)* designation and the federal government subsequently conducts medical, security, and criminal background checks and confirms that the applicant intends to reside in the nominating province before granting PR.[17]

The Family Class was introduced in 1976 as a pathway to PR for individuals who have family members who are Canadian citizens or permanent residents. Through the Family Class, permanent residents or citizens of Canada can sponsor other family members, including spouses, dependents, and parents, for PR. For family-class applicants who wish to reside in Quebec, the process includes an additional provincial step in which the Quebec government must approve the sponsor before the federal government grants PR. The Family Class program focuses on family reunification, not skills or work experience, so TFWs do not receive priority. It may be a viable PR pathway for low-skilled TFWs who are ineligible for the other pathways.

Table A.7 shows that 57% of the TFWs in our main analysis sample obtain PR through the PNP, 36% through the skilled worker programs (i.e., the FSWP, CEC, FSTP, and QSWP), and 7% through the Family Class. For high-skilled workers, 56% obtained PR through the skilled worker programs and 42% through the PNP. For low-skilled workers, in contrast, 78% obtained PR through the PNP, 15% through the Family Class, and 7% through the skilled worker programs.

2.3 Comparison to Immigration Pathways in the United States

The TFWP is similar to the H1-B program in the United States, since H1-B visa holders are also temporary workers who are tied to a specific employer. However, there are some important differences between these programs. In the United States, employers can hire foreign workers on H-1B visas without going through a labor market test. This test is required at a later stage when the employer wants to sponsor an H-1B visa holder for PR.[18] In contrast, Canadian employers must pass a labor market test at the time of hiring a TFW. This involves first advertising a job opening to domestic workers and submitting an LMIA which must be approved by the government, as discussed above. Another difference relates to the set of occupations that fall under each program. The Canadian TFWP workers cover a broader range of occupations and industries compared to the H1-B program. For example, 37 percent of the TFWP workers in our data are employed in Accom-

PNP streams. Since Manitoba signed the first PNP agreement in 1996, all provinces and territories except Quebec and Nunavut have joined the program as shown in Table A.6.

[17] A key condition of the PNP is that nominees must establish a clear intention to reside in the province responsible for their nomination. PNP immigrants are protected by the *Canadian Charter of Rights and Freedoms*, which grants all permanent residents the right to free mobility between provinces. However, they can be accused of "misrepresentation" if they fail to make a good-faith effort to settle in the province that nominated them.

[18] This is called the permanent labor certification (PERM) and requires employers to commit to hiring the permanent resident at the prevailing wage for the occupation and demonstrate that no qualified domestic workers are available for the job.

modation and Food Services, while most of the workers on H1-B visas work in computer-related occupations, primarily in the "Professional, scientific, and technical services" industry category. Appendix F describes the H1-B program in more detail and discusses several of the most common pathways to PR in the United States.

3 Data and Summary Statistics

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.[19] 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.

The CEEDD is built from administrative tax records and consequently lacks information on individuals' education, hours worked, and occupation. However, for the immigrant population, this tax data is supplemented with demographic information from the IMDB for permanent residents and permit data from the TR file for temporary residents. This unique linkage makes the CEEDD particularly well-suited for studying immigration although we note that the demographic information is recorded at a single point in time—either upon entry to Canada or when PR is granted—making these demographic characteristics time-invariant. The IMDB provides information on individuals' country of birth, and following Dostie et al. (2023) we classify individuals as immigrating from "advantaged countries" if they were born in the U.S., the U.K., Australia, New Zealand, or Northern and Western Europe where most people have English as a second language, including Germany, France, the Netherlands, and the Nordic countries. To calculate an individual's time to PR, we subtract their first year in Canada (from the TR file) from the year they obtain PR (from the IMDB).

A strength of the CEEDD is the detailed information on firms' financial positions drawn from the NALMF, a feature that is uncommon in matched employer-employee databases from other countries. The main firm-level variables we analyze are revenue and value-added. Total revenue

[19]This sample period precludes us from estimating the causal effect of PR for TFWs in the International Mobility Program (IMP). Since these workers are on open permits, examining the effect of PR could serve as a falsification test. However, the IMP was introduced in Canada in 2014, and therefore it is not possible to analyze IMP workers since the CEEDD is only available up to 2019.

is readily available, and we construct value-added using the formula "Value Added = Revenue − Total Expenses + Total Payroll." A notable limitation is that the firm data are aggregated to the enterprise level (the business entity that files taxes), precluding any analysis at the more granular establishment level (the specific physical location of employment). Consequently, our study defines an individual's "employer" as the enterprise in the tax data.

Before describing our main sample restrictions, we discuss trends in the overall number of TFWs with an LMO or LMIA, excluding individuals in the Seasonal Agricultural Worker Program (SAWP) and Live-in Caregivers Program (LCP). Figure A.3a shows that the number of unique individuals with these permits increased from around 16,830 in 2004 to around 102,610 in 2014 before declining to around 56,930 in 2019. Figures A.3c and A.3d show that these individuals constituted between 0.1% to 0.5% of the total labor force and up to 20% of all temporary residents during the sample period.

3.1 Main sample

For our main analyses, we impose the following sample restrictions. The sample size after each restriction is reported in Table A.8. First, we restrict the sample to individuals whose *first* temporary permit in Canada is associated with an LMO, excluding temporary permits granted through the Seasonal Agricultural Workers Program (SAWP) or Live-in Caregivers Program (LCP).[20] Information on LMOs is only available in the TR file from 2004 onward, so this restricts our sample to the period 2004 to 2019. Second, we drop individuals whose "intended occupation" is missing since this variable is necessary for defining our cohorts. This drops individuals who never get PR in our data, since this information is only observed conditional on receiving PR in the IMDB. Therefore, we cannot use the "never treated" as a pure control group. Third, following the empirical literature which uses matched employee-employer data, we focus on the individual's "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 workers that pass the above filters to firms for which we obtain firm fixed effects from a two-way fixed effects model (for log earnings) following Abowd, Kramarz, and Margolis (1999) ("AKM"). To estimate AKM, we use the matched employer-employee dataset, but exclude firms in the education (NAICS 61), health (NAICS 62) and public (NAICS 91) sectors, as well as firms with fewer than 2 employees, less than $50,000 in annual revenue, and less than $100 in value-added per worker (in 2012 dollars). All of these choices follow Dostie et al. (2023). In addition, we restrict the sample to the connected set of *primary employers*, which is necessary for estimating

[20] As described in Section 2, the labor market test changed from the Labour Market Opinion (LMO) to the Labour Market Impact Assessment (LMIA) in 2014. However, with the exception of 2014, all our cohorts of TFWs arrived with an LMO. For the 2014 cohort, we include the TFWs who arrived with an LMIA.

AKM. This restriction removes fewer than 5% of firms. For additional details on the AKM sample and estimation, see Section E in the Online Appendix.

As a final step, we drop the first year of earnings for each TFW since these are guaranteed to be partial annual earnings, and we restrict the sample to individuals who (a) hold temporary visas for three to five consecutive years prior to PR and (b) have strictly positive earnings from their second year as a TFW until two years after PR. This balancing requirement restricts the sample to TFWs who arrive in Canada between 2004 and 2014 and transition to PR between 2007 and 2017.

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" obtained from the IMDB and declared at the time of PR. This "intended occupation" serves as a proxy for an individual's skills, since their actual, time-varying occupation is unavailable in the CEEDD. 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.

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.[21] If we could observe the day, month, and year of each employment spell, we would classify a job-to-job transition based on 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 first define a single *employment spell* as a string of consecutive years in which 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 at some point during the year, and a new employment spell with a different primary employer begins. Formally, let J_{it} be a binary variable equal to one if there is an observed job-to-job transition for individual i during 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,

[21] 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 not available once individuals obtain PR.

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. Assume that the individual does not receive earnings from any other firm during this time. 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. 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 is different from their primary employer in year $t-1$.[22] 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, J_{it} correctly classifies the job-to-job transition in this example, while the alternative variable J'_{it} does not. In our main analysis, we use J_{it} as our preferred measure of job-to-job transitions, but we also conduct robustness exercises using J'_{it} and reassuringly 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. Formally, letting Y_{it}^{obs} denote individual i's observed earnings in year t, imputed FYE earnings for individual i in year t are defined as $\widehat{Y}_{it} \equiv J_{it}(2Y_{it}^{obs}) + (1 - J_{it})Y_{it}^{obs}$.

[22] 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 event study analysis. 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.

3.5 Summary statistics

Table 1 presents summary statistics for our main variables, focusing on the sample of TFWs with temporary permits associated with LMOs and excluding workers in the SAWP and LCP. All reported monetary variables are adjusted for inflation using 2012 as the base year in the consumer price index (CPI). 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 (see Section 3.1). Column (4) presents summary statistics for TFWs who never obtain PR. We do not have demographic information for these TFWs so cannot report these statistics.

Earnings in year two after arrival to Canada tend to be similar across all four samples ranging from $53,000 in column (1) to $49,000 in column (4). Columns (1)-(3) show that, among individuals who obtain PR, all three samples tend to be similar in terms of the share who are high-skilled (60%), the share who are male (70%), the share with a bachelor's degree (45%), and the share from an advantaged country (15%). The average time-to-PR is roughly similar across those three 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). The table also shows that the distributions of initial industries are similar across Columns (1)-(3). Comparing Column (4) to Column (1) shows that individuals who never get PR are much 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. This underscores another potential challenge of using the "never treated" as a control group. Next, Table A.9 shows that the log revenue, log value added, and log number of employees for individuals' primary employer in their first year as a TFW are similar across all four samples. Finally, Figure A.4 shows the distribution of industries for TFWs before and after PR. We see that 37% of TFWs are employed in Accommodation and food services (NAICS 72) before PR, with the distribution of industries becoming much more diffuse after PR is obtained.

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 our setting, in which we study the effect of PR on the labor market outcomes of TFWs.

Our cohort definition incorporates three dimensions: occupational skill level, time-to-PR, and year of PR. This multi-dimensional approach is critical for our identification strategy. We include

occupational skill level to reflect the distinct high- and low-skilled streams within the TFWP during our sample period, as described in Section 2. Additionally, we include time-to-PR in the cohort definition as a proxy for unobserved heterogeneity, as variation in time-to-PR may reflect differences in human capital or self-selection into different PR pathways (see Section 2.2). Finally, we include the year of PR in our definition of cohort because, conditional on skill level and time-to-PR, variation in the "landing year," which is the year that they obtain PR, provides the identifying variation for our design. For expositional clarity, we suppress the dimension corresponding to occupational skill level in the mathematical notation below. With the understanding that all identification arguments apply to the full three-dimensional cohort structure, this notational simplification avoids unnecessary complexity without affecting the validity of our approach.

We denote the number of years it takes a TFW to obtain PR 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 PR. We restrict to $\mathcal{G}_1 = \{3, 4, 5\}$ and $\mathcal{G}_2 = \{2007, \ldots, 2017\}$ as described in Section 3.1. For a given observable skill group, we define a cohort $g = \{g_1, g_2\} \in \mathcal{G}$ where $\mathcal{G} \equiv \mathcal{G}_1 \times \mathcal{G}_2$. 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 $G_i = g$ with values in $\mathcal{G}$.

Let $Y_{it}(g) = Y_{it}(\{g_1, g_2\})$ be the potential outcome for individual i in year 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. With slight abuse of notation, we also define $Y_{it}(\infty)$ as individual i's potential outcome if they are untreated (do not have PR) at year t. In practice, because time-to-PR may reflect unobserved heterogeneity (as described above), we condition on g_1 and only consider counterfactual values of g_2, i.e., counterfactuals in which an individual is externally assigned a different landing year. Therefore, the set of potential outcomes for a given g_1 are $Y_{it}(\{g_1, 2007\}), \ldots, Y_{it}(\{g_1, 2017\}), Y_{it}(\infty)$. Given this setup, we can represent the observed outcome Y_{it} for $G_{1i} = g_1$ as:

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

Remark 1. *As explained in Section 3.4, we exclude each TFW's first year of earnings from the analysis sample because it always reflects partial-year earnings. Therefore, for cohort $g = \{g_1, g_2\}$, we restrict to earnings only for $g_1 - 1$ years before PR.*

4.1 Assumptions

The standard common trends assumption in difference-in-differences requires common outcome trajectories across all cohorts absent treatment. This assumption is too restrictive in our setting, as TFWs with different time-to-PR values may exhibit distinct earnings dynamics due to unobserved heterogeneity (see Section 2.2). We therefore adopt the following weaker common trends assumption, which conditions on a given time-to-PR value g_1 (and on occupational skill level, though this notation is omitted). This allows there to be differential trends among cohorts that have different skills or time-to-PR, but common trends across cohorts with the same skills and time-to-PR.

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

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

Assumption 1 (CT) says that common trends holds across all reference periods. This would be the case, for example, if $\mathbb{E}\left[Y_{it}(\infty)|G_i = g\right] = \alpha_g + \gamma_t$, so that selection into treatment is based on a time-invariant cohort fixed effect. A way to weaken this assumption would be to impose that the common trend only applies relative to a specific pre-treatment reference year, say $t = g_2 - 1$ or $t = g_2 - 2$. However, we rely on the stronger Assumption 1 (CT) because it is required for the chaining identification strategy described in the next section.

We also assume that, on average within a cohort g, the treatment effect of adopting treatment in g_2 is zero before the treatment occurs $t < g_2$. This "no anticipation" assumption rules out systematic effects of anticipated PR timing on pre-treatment earnings within cohorts.

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

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

We assess the plausibility of this assumption by examining pre-trends in our empirical specification.

4.2 Target Parameter

Our target parameter is the cohort-specific average treatment effect on the treated in a given year. For a given cohort g in calendar year t, we denote this as $\text{ATT}_t(g)$. For example, the treatment effect 4 years after obtaining PR for cohort $g = \{3, 2010\}$ is denoted $\text{ATT}_{2014}(\{3, 2010\})$. 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 $t \in [g_2 - (g_1 - 1), g_2 - 1]$.

The identification challenge is that we do not observe counterfactual earnings $\mathbb{E}[Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2]$ for cohort g after PR, i.e., for all $t \geq g_2$. Under Assumption 1 (CT) and Assumption 2 (NA), we can recover this counterfactual trajectory using a comparison cohort $g' = \{g_1, g_2'\}$ with identical time-to-PR as cohort g that is treated in a later year g_2' with $g_2' > t \geq g_2$, as long as this comparison cohort is observed before PR in both the target year t and a reference period s with $s < g_2$. This yields the standard difference-in-differences estimand:

$$\text{ATT}_t(g) = \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g] - \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g'] \tag{5}$$

Appendix C provides the formal derivation.

The "chaining" approach to identifying long-run treatment effects

Due to the limited pre-treatment observation window (Remark 1), there may not exist a valid comparison cohort that is both untreated at the target year t and observed in the reference period s. Specifically, when the gap between these periods is at least $g_1 - 1$ years ($t - s \geq g_1 - 1$), no single later-treated cohort can span both periods, and the standard difference-in-differences estimator with a single control group cannot identify $\text{ATT}_t(g)$ for all t.[23] Following Balla-Elliott and Norwich (2025), we address this by "chaining" together observed outcomes from multiple comparison cohorts. To illustrate, consider an example with two comparison cohorts g' and g'' that are both untreated in a single intermediate period $p \in (s, t)$ such that $p > t - (g_1 - 1)$ and $p < s + g_1 - 1$. The first comparison cohort $g' = \{g_1, g_2'\}$ must have landing year $g_2' > t$ so that it is observed untreated from p to the target year t. The second comparison cohort $g'' = \{g_1, g_2''\}$ must have landing year $g_2'' \in (p, s + g_1 - 1]$ so that it is observed untreated from the reference period s to p. Crucially, both comparison cohorts are observed and untreated in the intermediate period p, which allows us to chain their common trends and construct the full counterfactual earnings trajectory from s to

[23] The reference period s is always chosen to be pre-treatment ($s < g_2$). While Assumption 1 (CT) permits using different reference periods s for different target years t, this flexibility does not resolve the fundamental constraint. For example, consider $g_1 = 4$ and $g_2 = 2010$. Take $s = 2009$. Then for $t = 2011$, $t - s = 2011 - 2009 = 2 < g_1 - 1 = 3$ and we can identify $\text{ATT}_{2011}(\{4, 2010\})$ using cohort $g' = \{4, 2012\}$ as the comparison group. But for $t = 2012$, $t - s = 2012 - 2009 = 3 \geq g_1 - 1 = 3$, we cannot identify $\mathbb{E}[Y_{2012}(\infty) | G_i = g]$ with a single cohort.

t. This approach generalizes to longer horizons by introducing additional intermediate periods and comparison cohorts.

Formally, when $t - s \geq g_1 - 1$ so that the standard DID estimand cannot be constructed, we can form the counterfactual $\mathbb{E}[Y_{it}(\infty)|G_i = g]$ using multiple comparison cohorts g' and g'':

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

The first equality invokes Assumption 1 (CT) and Assumption 2 (NA) to construct the counterfactual trend for cohort g using the outcomes of comparison cohort g'. However, $\mathbb{E}[Y_{is}|G_i = g']$ is unobserved due to cohort g' having only $g_1 - 1$ years of pre-treatment data. The second equality addresses this by decomposing the comparison cohort's trend into two observed segments: from s to p (using cohort g'') and from p to t (using cohort g'). Under Assumption 1 (CT), all components on the right-hand side are observed.

Under Assumption 1 (CT) and Assumption 2 (NA), any later-treated cohort provides the same counterfactual trend. The regression specification below pools across all available comparison cohorts, rather than relying on specific pairs, and recovers $\text{ATT}_t(g)$ under the stated assumptions.

4.3 Estimation

To introduce our empirical specification, it will be helpful to express the cohort-time-specific treatment effect $\text{ATT}_t(g)$ in terms of relative time as opposed to calendar time. We define r as the relative event time, with $r = t - g_2$ so that $\text{ATT}_t(g) = \text{ATT}_{g_2+r}(g)$. Suppressing g_2 in the notation, we can write $\text{ATT}_t(g) = \text{ATT}_r(g)$. The parameter $\text{ATT}_r(g)$ is the ATT for cohort g at relative time r. As we explain in this section, we estimate $\text{ATT}_t(g)$ for each calendar year t and cohort g, so estimating $\text{ATT}_t(g)$ and $\text{ATT}_r(g)$ is equivalent.

To estimate $\text{ATT}_r(g)$, we follow the spirit of stacking regressions to estimate DID parameters. The chaining identification strategy in Balla-Elliott and Norwich (2025) allows us to recover a larger set of treatment effect parameters than other methods, such as Callaway and Sant'Anna (2021). The stacked regression enables joint inference across all cohort-time effects. A formal proof that our regression estimand recovers the parameters of interest is provided in Appendix D.

Subsetting the data into "slices"

To estimate $\text{ATT}_r(g)$ for a given cohort $g = \{g_1, g_2\}$, 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., all 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 ($t < G_{2i}$). Each slice consists of (i, t) observations that fit one of the two criteria below:

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

This slice construction enables identification of long-run effects through chaining, provided that sequential later-treated cohorts overlap in at least one calendar year (the "connected set" condition of Balla-Elliott and Norwich (2025)). As we discuss below, this overlap condition fails at the earliest relative time for each treated cohort, which restricts the set of identifiable treatment effects.

Note that relative to Callaway and Sant'Anna (2021), we keep a 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 can be seen in Equation (6).[25]

Estimation within a slice

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

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

where we define γ_g to be cohort fixed effects and τ_s to be calendar year fixed effects.[26] The coefficients δ_{rg} are our objects of interest.[27] We set $r = -1$ as the typical reference period. This specification

[24] Callaway and Sant'Anna (2021) 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 Callaway and Sant'Anna (2021) estimates one cohort-by-(relative-)time effect parameter, whereas the chaining approach estimates all cohort-by-relative time effects for a given cohort of interest, similar to Wing, Freedman, and Hollingsworth (2024).

[26] The regression specification also includes a quadratic in normalized age, which we suppress from the equation above. See Appendix E.2 for details on age normalization.

[27] The relative event-year indicators are defined only for the treated individuals with $G_{2i} = g_2$. Consequently, we estimate treatment effect parameters δ_{rg} only for the cohort of interest. A fully saturated specification, as in the

is run among observations with the same time-to-PR value, g_1, as defined by the slice in (7).

Separate identification of the cohort fixed effects γ_g and calendar year effects τ_s requires that each calendar year in the slice includes observations from at least two different cohorts; otherwise, the cohort and year effects become collinear.[28] This constraint binds at the earliest relative time for each treated cohort: by Remark 1, cohort $g = \{g_1, g_2\}$ is first observed in calendar year $g_2 - g_1 + 1$ onward, so any later-treated cohort $g' = \{g_1,\ g_2 + 1\}$, which obtains PR one year later, is first observed in year $g_2' - g_1 + 1$. Consequently, no later-treated cohort appears in the treated cohort's first observable year, and the treatment effects at the earliest relative time are not identified.

This specification requires only a single event-time normalization (setting $r = -1$ as the reference period), in contrast to canonical two-way fixed effects (TWFE) specifications with no never-treated units that require two normalizations due to the age-period-cohort problem. In fully dynamic TWFE estimators with unit fixed effects, year effects, and relative time indicators, the relative time dummies are collinear with calendar time and cohort indicators because relative time equals calendar time minus the cohort's landing year ($r = t - g_2$). In settings without never-treated units, this collinearity necessitates dropping two event-time dummies, as discussed in Borusyak, Jaravel, and Spiess (2024). However, our approach breaks this dependency by interacting the relative-time indicators with the cohort of interest indicator ($\mathbb{1}\{G_{2i} = g_2, r = t - g_2\}$ in Equation (8)). These interacted dummies equal zero for all later-treated control cohorts (as defined in (7)) and only take non-zero values for the cohort of interest, g. This interaction effectively isolates the relative-time effects within the treated cohort, eliminating the perfect collinearity that arises in TWFE specifications. This property is shared by other heterogeneity-robust estimators such as the Sun and Abraham (2021) interaction-weighted estimator and the Borusyak, Jaravel, and Spiess (2024) imputation approach. Their estimators also achieve identification with a single normalization by interacting relative time indicators with cohort indicators. In all three methods, the interaction terms break the mechanical relationship between age, period, and cohort, allowing the separate identification of time and cohort effects without requiring a second normalization.

The specification in Equation (8) recovers $\text{ATT}_r(g)$. In order to aggregate the $\text{ATT}_r(g)$ parameters and obtain an estimate of ATT_r, the average treatment effect across cohorts at relative time r, we need to jointly estimate the variance-covariance matrix across cohorts and relative times.

interaction-weighted estimator of Sun and Abraham (2021), would include interactions between each cohort and relative time (i.e., $\mathbb{1}\{G_{2i} = g', r = t - g_2'\}$ for every cohort g' in the slice). However, by construction of the slice, later-treated cohorts contribute only pre-treatment observations, and Assumption 2 (NA) implies these coefficients equal zero. Including these interactions would not change estimates for the treated cohort. We assess this assumption by examining pre-trends for the cohort of interest.

[28] Mathematically, 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 cohort in one year, this won't be true, since the cohort and year dummies will be collinear, reducing the rank.

Stacking and aggregation

After iterating over all cohorts and creating the slices as defined in (7), we append them into one "stacked" dataset, where some (i, t) observations from the original dataset will be duplicated if they are used as control observations for different treated cohorts. This stacking procedure and estimation of Equation (8) allows us to obtain the joint variance-covariance matrix for $\{\text{ATT}_r(g)\}_{r,g}$, all cohort-by-relative time estimates, in a single regression.

We aggregate the parameters across cohorts in order to present an event study of treatment effects across relative time. Following the interaction-weighted estimator of Sun and Abraham (2021), the aggregation below weights the estimates by each cohort's share of observations at the given relative time.

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

5 Descriptive Evidence

As a first attempt at investigating whether TFWs earn less than permanent residents, we estimate a Mincer regression using the 2016 Canadian Census. An advantage of the Census is that it provides detailed information on education, language ability, and current occupation. We restrict the sample to individuals aged 18 to 64 who are employed full time and follow as closely as possible the same set of sample restrictions as our main analysis, excluding students, live-in caregivers (NOC 43-44), and individuals working in the agriculture (NAICS 11), education (NAICS 61), health (NAICS 62), and public (NAICS 91) sectors. Table A.10 presents summary statistics for the sample. TFWs tend to be younger than PRs (65.7 percent are under age 34, compared to 22.0 percent) and are more likely to hold a bachelor's degree or higher (53.2 percent versus 38.7 percent). TFWs are also more likely to work in Accommodation and Food Services or Professional, Scientific, and Technical Services, but less likely to be employed in Manufacturing compared to PRs.

We use Ordinary Least Squares (OLS) to estimate regressions of the form:

$$Y_i = \alpha + \beta_1 TFW_i + \beta_2 PR_i + \mathbf{X}_i'\gamma + \varepsilon_i, \tag{10}$$

where Y_i is log earnings for individual i, TFW_i is an indicator for whether individual i is a temporary foreign worker, PR_i is an indicator for whether individual i was ever a permanent resident, and the reference category is native-born individuals.[29] The vector $\mathbf{X}_i'$ includes age categories, gender,

[29] Note that the "permanent resident" category includes immigrants who were previously permanent residents and have obtained citizenship. Note that we also pool all TFWs, including those with open and closed work permits, since we cannot differentiate between them in the Census.

an indicator for a bachelor's degree or higher, indicators for whether English or French are spoken at home, and fixed effects for industry and occupation.

Table 2 reports regression estimates for a variety of specifications. Column (1) presents the raw pay gaps and shows that TFWs earn 43.1 percent less and PRs earn 11.5 percent less than native-born workers. Adding baseline controls for age, education, gender, and language in Column (2) leaves the TFW gap relatively unchanged but increases the PR gap to 0.18. The gaps are slightly reduced when we add industry fixed effects (Column (3)), occupation fixed effects (Column (4)), and both (Column (5)). Overall, this analysis suggests that TFWs earn less than permanent residents.

To further investigate the sources of the TFW pay penalty, we turn to a descriptive analysis documenting the nature of selection of firms and workers into the TFWP. We use the pattern of selection as a moment to match when we calibrate our model in Section 8. To characterize worker and firm types, we estimate a two-way fixed effects (AKM) model of log earnings (see Section E for details). For firms that hire at least one TFW during our sample period, we classify them based on their TFW employment share, which is calculated as the average (across all years available) of the annual fraction of each firm's workforce composed of TFWs. Figure 1a reports the distribution of firm effects for above-median and below-median TFW firms. The results indicate that firms with higher TFW shares tend to have lower firm effects, implying negative selection of firms into the TFWP.[30] Figure 1b reports results based on the average of worker effects (across all years available) for the same set of firms and shows that above-median TFW firms tend to employ individuals with lower worker effects. We also report results from a separate worker-level comparison focusing specifically on TFWs. Figure A.5b compares the distribution of worker effects for TFWs with that of other workers, including native-born individuals and permanent residents who were never TFWs. Worker effects are generally lower for "ever TFWs"—individuals observed as TFWs at some point in our data—indicating negative worker selection into the TFWP.[31]

Having established that TFW-intensive firms are more likely to pay lower wages, we next examine whether this pattern reflects lower productivity or monopsony power. The intuition for our test comes from Beauregard et al. (2025) who argue that under certain models of wage setting, the firm fixed effect is equal to match surplus scaled by the worker's rent share. Thus, comparing the firm effects of TFW-firms to non-TFW-firms conditional on productivity is informative about whether the former have more monopsony power. We measure firm productivity using net value-

[30] Figure A.5a shows a similar pattern when we compute the cross-sectional distribution at the individual level of average firm effects of each individual's primary employer (excluding post-PR years for TFWs who obtain PR) and compare it with the same individual-level distribution for the rest of the population (native-born workers and PRs who were never TFWs).

[31] We also compare the worker effects and average firm effects of TFWs who never obtain PR with those who do. Figure A.6 shows that the distributions of both worker effects and average firm effects are broadly similar across these two groups.

added per worker—computed as the firm's average value added per worker across all available years, winsorized at the 95th percentile with values below the 5th percentile set to zero—and examine its relationship with the firm pay premia from the AKM model. Figure 2a shows a clear positive association between the firm pay premia and net value added per worker, with a slope of roughly 0.13. Figure 2b splits firms by whether their TFW employment share is above or below the median and shows that, conditional on net value added per worker, high-intensive TFW firms have firm effects that are systematically lower than low-intensive TFW firms.

As a last step, we examine the sorting pattern of TFWs in the labor market. Given that TFWs can climb the job ladder after PR, it follows that the nature of sorting may also vary. Figure A.7a and Figure A.7b examine sorting on the basis of worker and firm effects before and after PR, respectively. Each figure plots the distribution of firm effect quintiles by worker effect quintiles. Figure A.7c compares the distribution of firm effects by worker-effect quintile between TFWs (Panel a) and PRs (Panel b) and shows that sorting is stronger after PR. Thus, allowing for on-the-job search leads to greater sorting and suggests an improvement in overall match efficiency. In the next section, we estimate the causal effect of PR on sorting using our research design.

6 Reduced-Form Results

In this section, we report estimates of the causal effect of PR on job mobility, earnings, and worker sorting. 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), with standard errors clustered by individual.

6.1 Job Mobility

We begin by reporting the effect of PR on job switching measured using the variable J_{it} defined in Section 3.3 (i.e., the dependent variable equals one if the individual had any job transitions during the year and zero otherwise). Figure 3a reports event-study estimates of the effect of PR on any job transition during the year. The results show a clear, immediate, and persistent increase in the job transition rate, with an estimated increase of 21.7 percentage points on average across the first three years after PR (SE = 1.0). In Figure 3b, we examine whether these moves occur within the same industry or across industries. The results show that the probability of switching industries increases by 12.4 percentage points on average over the three years after PR (SE = 1.0), indicating that a little more than half of the increase in job transitions involves moves across industries.

6.2 Earnings and Worker Sorting

Next, we report the effect of PR on log earnings. Figure 4a reports event-study estimates and shows a clear increase in earnings after PR that grows over time. Worker earnings increase by roughly 5.7 percent on average in the first three years after PR (SE = 1.0).

To investigate the role of worker sorting as a potential driver of the earnings effects, we replace log earnings on the left-hand side with firm characteristics. First, we use the estimated firm effect of each worker's primary employer. Figure 4b shows a clear and immediate increase in the firm effect following PR, averaging roughly 3.2 percentage points in the first three years (SE = 0.2).[32] This indicates that workers sort to higher-paying firms after obtaining PR and is consistent with our descriptive analysis which showed that TFWs are more likely to sort into low-paying firms relative to PRs. Dividing the estimated effect on firm pay premia by the estimated effect on log earnings indicates that sorting to high-paying firms is about 56 percent of the total earnings effect.

Next, we take advantage of the firm balance sheet data to examine the causal effect of PR on observable employer characteristics, including firm size (number of employees and total revenue), value added, revenue per worker and value added per worker. We also consider worker composition based on the estimated worker effects from the AKM model by studying the effect of PR on the average coworker effects (where the average coworker effects are calculated as the leave-one-out average of worker effects at the firm, excluding the worker effect of the individual itself). Figure 5 shows that, after PR, workers move to firms with 25.1 percent more employees (SE = 2.6) and 41.8 percent higher revenue (SE = 3.3), respectively. Additionally, workers transition to firms with 41.8 percent higher value added (SE = 3.1) and to employers with 2.9 percentage points greater average coworker fixed effects (SE = 0.3). The estimate for coworker 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). Finally, Figure 5 also shows that revenue per worker increases by 2.6 percent after PR (SE = 1.3), while value added per worker increases by 2.2 percent (SE = 1.2). These estimates are of a similar order of magnitude as the firm premium estimates, and thus align well with the evidence presented in Figure 2a which shows a strong link between the firm pay premia and value added per worker. The evidence on worker mobility combined with the evidence on earnings and worker sorting points to a simple mechanism: after PR, workers are able to freely search on the job, receive outside offers, and move to higher-paying firms, leading to higher earnings. We show in Section 8 that our search model featuring on-the-job search is consistent with these findings.

[32] 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.

6.3 Worker Heterogeneity

We now explore heterogeneity in the effects of PR on our main outcomes across baseline worker characteristics, including gender, age, country of origin, and skill level. We also examine heterogeneity based on whether the TFW stayed at their firm after receiving PR ("stayer") or moved to a new firm ("mover"). From a pay equity standpoint, it may be of independent interest to understand how the effects of PR vary for certain subgroups, such as disadvantaged individuals. To estimate the heterogeneous effects of PR, we split the sample into mutually exclusive subgroups defined by these variables (e.g., separate samples for male or female) and estimate Equation (8) for each subsample. The estimates reported below are the relative time-aggregated coefficients obtained from these separate regressions.

We begin by investigating heterogeneity by gender. Figure 6 shows that the effects of PR on job and industry transitions, earnings, and firm pay premia are broadly similar for male and female workers. On average in the first three years after PR, the probability of switching jobs increases by 23.8 percentage points (SE = 2.2) for female workers, very similar to the effect of 21.0 percentage points (SE = 1.2) for male workers, and the probability of switching industries increases by 13.5 percentage points (SE = 1.5) for female workers, similar to the effect of 11.9 percentage points (SE = 0.8) for male workers. For earnings, the average effects are 9.2 percent (SE = 2.7) for female workers and 3.5 percent (SE = 1.2) for male workers, with firm pay premia increasing by 2.2 percentage points (SE = 0.4) for female workers and 3.4 percentage points (SE = 0.2) for male workers. Appendix Figure A.8 indicates that both male workers and female workers move to firms with more employees or higher revenue after PR, with larger effects for female workers. In contrast, male workers seem to move to firms with higher value added per worker relative to females and the effects on average coworker effects are very similar between the two groups.

We next investigate differences in the effects of PR by age. Figure 7 reveals similar job switching probabilities across groups: 23.3 percentage points (SE = 1.5) for younger workers and 20.2 percentage points (SE = 1.5) for older workers, with industry switching effects of 12.8 percentage points (SE = 1.0) and 11.9 percentage points (SE = 1.0), respectively. Despite these similarities in job and industry transitions, we find a large effect on earnings of 9.0 percent (SE = 1.7) for younger workers compared to a smaller effect of 1.5 percent (SE = 1.5) for older workers. The effects on firm pay premia are only slightly higher for younger workers (3.5 percentage points with a SE of 0.3 for younger workers and 2.7 percentage points with a SE of 0.3 for older workers). In addition, Appendix Figure A.9 shows that following PR, younger workers are more likely to move to larger firms (as measured by the number of employees or total revenue), while the effects on average coworker fixed effects and value added per worker across age groups are similar.

Next, we examine differences in the effects by country of origin, since heterogeneity across source

countries may reflect variations in workers' outside options and influence their earnings trajectories. Following Dostie et al. (2023), we categorize countries into two groups: "advantaged countries" (U.S., UK, Australia, New Zealand, and parts of Northern or Western Europe where most people have English as a second language) and "rest of world." Figure 8 shows that the effects of PR on job and industry transitions, earnings, and firm pay premia are concentrated among TFWs from rest-of-world countries. For TFWs from rest-of-world countries, after PR the probability of switching jobs increases by 23.5 percentage points (SE = 1.2) and the probability of switching industries increases by 13.8 percentage points (SE = 0.8). These effects are larger than the effects for TFWs from advantaged countries: 12.7 percentage points (SE = 2.5) for job transitions and 5.2 percentage points (SE = 1.8) for industry transitions. Moreover, the earnings and firm-pay-premia effects are concentrated among rest-of-world TFWs, who experience an increase of 8.1 percent (SE = 1.2) in earnings and 3.6 percentage points (SE = 0.2) in firm pay premia, relative to a decrease of 4.1 percent (SE = 2.6) in earnings and an increase of 1.0 percentage point (SE = 0.5) in firm pay premia for TFWs from advantaged countries. These results are consistent with Dostie et al. (2023), who find that permanent residents from rest-of-world countries experience faster earnings growth over time relative to those from advantaged countries, in part due to greater sorting to high-wage firms. Appendix Figure A.10 further shows rest-of-world TFWs are more likely to sort to firms with more employees or firms with greater coworker effects, whereas workers from advantaged countries tend to move to firms with higher value added per worker after PR.

As described in Section 2, the TFWP historically had two pathways, one for low-skilled workers and one for high-skilled workers. In Figure 9, we report results that compare the effects of PR for these two skill groups, using the occupational skill level at the time of PR to categorize the workers (see Section 3.2). Figures 9a and 9b show relatively larger estimated effects of PR on job and industry transitions for low-skilled workers. The effects on job transitions are on average equal to 25.6 percentage points (SE = 1.9) for low-skilled workers, compared to 19.1 percentage points (SE = 1.2) for high-skilled workers, and the effects on industry transitions are on average equal to 15.2 percentage points for low-skilled workers (SE = 1.3), compared to 10.5 percentage points (SE = 0.7) for high-skilled workers. Similarly, Figure 9c shows evidence of significantly larger earnings gains for low-skilled workers, with an average effect over the first three years of 12.0 percent (SE = 2.0), compared to 1.6 percent (SE = 1.3) for high-skilled workers. Furthermore, Figure 9d shows a slightly larger increase in firm pay premia for low-skill workers compared to high-skill workers, with an estimated increase of 3.9 percentage points (SE = 0.3) compared to 2.7 percentage points (SE = 0.2). Appendix Figure A.11 reports effects on the other 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 effect of PR on average coworker fixed effects is larger for low-skill workers. The effect on value added per worker is very similar across the two subsamples.

We complement the high-skill/low-skill TFW comparison by examining heterogeneity according to an alternative measure of skill based on the estimated worker effects for TFWs from the AKM model (Section E). We classify TFWs as high-skilled or low-skilled based on whether their worker effect exceeds the median worker effect in the sample, and we estimate the effects of PR for each subgroup. Similar to our results using our baseline measure of skill, Figure 10 shows larger effects of PR for low-skilled TFWs based on the estimated worker effects. This group of workers experiences a larger effect of PR on job transitions (27.5 percentage points with a SE of 1.7 compared to 15.6 percentage points with a SE of 1.3), industry switching (17.1 percentage points with a SE of 1.1 compared to 8.4 percentage points with a SE of 0.9), earnings (9.5 percent with a SE of 1.9 compared to 1.0 percent with a SE of 1.4), and firm pay premia (4.2 percentage points with a SE of 0.3 compared to 2.2 percentage points with a SE of 0.3). Appendix Figure A.12 shows that the effects of PR on employer size, revenue, value added, and average coworker fixed effects are also always significantly larger for below-median workers, although the effect on value added per worker is concentrated among the above-median workers.

Next, we compare the effects of PR for the subsample of "stayers" who do not change firms between the year of PR until 2 years after PR (i.e., $t = 0$ to $t = 2$, inclusive) to all other workers who changed employers during this period. Figure 11 shows that the estimated positive effect of PR on earnings is entirely driven by workers who change jobs, with no evidence of any positive effect of PR on earnings in the subset of workers who are "stayers." We see average earnings increase by 10.6 percent (SE = 1.5) for the roughly 60 percent of workers who switch jobs in the first three years after PR, compared to a 4.9 percent *decrease* in earnings (SE = 1.4) for stayers. We also split the sample of switchers, i.e., those who change jobs between the year of PR until 2 years after PR, into those that change industries and those that do not. We refer to the former subgroup as "industry switchers" and the latter subgroup as "industry stayers." Figure 12 shows that the effects of PR on earnings and firm pay premia are concentrated in the industry switchers subsample. Earnings increase by 15.9 percent (SE = 1.9) for industry switchers compared to 1.6 percent (SE = 2.3) for industry stayers, and the firm pay premium increases by 7.1 percentage points (SE = 0.4) for industry switchers compared to 0.3 percentage points (SE = 0.4) for industry stayers. Moreover, Appendix Figure A.15 shows that the effects of PR on employer size, revenue, and value added are concentrated among the industry switchers subsample, although the effects on value added per worker and revenue per worker are concentrated in the industry stayers subsample.

Our final heterogeneity analysis examines the effects of PR by workers' time to PR. Appendix Figure A.13 shows larger effects on the probability of job and industry switching for workers who transition to PR within 3 years compared to those who take 4 or 5 years, although the effects on earnings and firm pay premia are very similar between these two groups. In addition, Appendix Figure A.14 shows that workers who take 4 or 5 years to PR tend to move to larger firms—by

number of employees or revenue—and to firms with higher value added, whereas workers who transition in 3 years tend to move to firms with greater value added per worker.

6.4 Robustness Tests

In this section, we consider the robustness of our main event-study results to alternative measures of job transitions, earnings, and firm pay premia. We also consider the sensitivity of our estimates to sample restrictions due to a potentially confounding reform to the TFW program, different controls for age, and using a standard two-way fixed effects (TWFE) estimator.

We begin by considering different measures of job transitions and earnings. Recall that our primary earnings measure is the full-year-equivalent (FYE) measure described in Section 3.4, defined as earnings from a worker's *primary employer*, doubled in years with a job-to-job transition. Appendix Figure A.16 shows that using total earnings from all employers in a given year yields very similar results, even though total earnings is an imperfect proxy for FYE earnings because it combines partial-year earnings from both the old and new employer in job-transition years. Additionally, Appendix Figure A.17 shows the effect of PR on total earnings is similar to the effect for the FYE measure across the male, female, low-skilled, and high-skilled subgroups. Moreover, our main measure of job-to-job transitions, J_{it} (defined in Section 3.3), equals one in year t if a job spell ends and another begins in that year and zero otherwise. Appendix Figure A.18 shows that the effect of PR on job transitions is similar when using an alternative measure that equals one if the individual's *primary employer* is different in year t compared to year $t-1$ and zero otherwise.

Next, the firm effect we estimate using AKM assumes that pay policies at a workplace are similar for TFWs and native workers. This assumption is consistent with the evidence in Dostie et al. (2023). Nevertheless, we evaluate the robustness of our estimates by estimating our model with an *immigrant* firm pay premium as the dependent variable. The *immigrant* firm pay premium is estimated following the approach in Dostie et al. (2023) and applying the AKM model described in Appendix E.[33] Appendix Figure A.21 shows that the effects for the immigrant firm pay premium are slightly higher but broadly similar to the baseline results for the firm pay premium obtained from estimating the AKM model with the full sample. Appendix Figure A.22 shows that the results for the immigrant firm pay premium are also similar to the results for the baseline firm pay premium for various subgroups (male vs female and low-skilled vs high-skilled).

Next, we consider sample restrictions and a different functional form for age in our estimating equation. As noted in Section 3.1, our main analysis sample includes TFWs who arrived in Canada between 2004 and 2014. However, a major reform of the TFWP was introduced in 2014

[33]We restrict the sample to individuals who obtain PR and keep only their post-PR individual-year observations. This restriction slightly changes the connected set requirement requiring a connected set of immigrants. All other sample restrictions prior to the estimation of the immigrant firm effect follow Section 3.1.

(see Section 2). To assess the robustness of our results to this reform, we estimate our event study excluding the 2014 arrival cohort. Appendix Figures A.19 (worker mobility, earnings, firm pay premia) and A.20 (other employer characteristics) show that the results remain very similar when the 2014 arrival cohort is excluded from the sample. Turning to age controls, our main specification includes a quadratic function in age. To assess the robustness of our estimates to this functional form assumption, we re-estimate the event studies using (i) fixed effects for age categories (25–34, 35–44, 45–54, and 55+) or (ii) fixed effects for each single-year age. Appendix Figure A.23 (worker mobility, earnings, firm pay premia) and Appendix Figure A.24 (other employer characteristics) show that the results are very similar compared to our baseline specification.

Lastly, our main results are based on an identification strategy and estimation approach that combines estimates across cohorts defined based on their observed occupational skill level and time-to-PR. This aggregation approach addresses the recent critiques of standard two-way fixed effects models when there is a staggered treatment and treatment effects are heterogeneous. As an alternative approach, we estimate a two-way fixed effects model with fixed effects for year of PR and current year (while also controlling for observable skill level and time-to-PR). Appendix Figure A.25 reports results for worker mobility, earnings, and firm pay premia, while Appendix Figure A.26 reports estimates for other employer characteristics. We find very similar results across all our main outcomes using this alternative estimation approach that is less robust to arbitrary patterns of treatment effect heterogeneity.

Taken together, our reduced-form results suggest that, following PR, there are sharp increases in job transitions and increases in earnings and firm pay premia, which are concentrated among low-skill workers and workers from less-advantaged countries. In the next section, we develop a search-and-matching model that we use to guide and interpret these reduced-form effects, along with the selection patterns documented in Section 5.

7 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).

7.1 Model Setup: Heterogeneous Workers and Firms

Workers

We assume an infinitely-lived population of individuals, divided into domestics and immigrants, with a unit mass of each group. We define $x \in [\underline{x}, \overline{x}]$ as worker ability, and we define the abil-

ity distributions for domestics and TFWs in the full population as $l(x)$ and $l^{\text{tfw}}(x)$, respectively. In our counterfactual policy simulations, when TFWs are exogenously granted PR, they become observationally equivalent to domestic workers (conditional on x).

We define $u(x)$ 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.[34] $U^{\text{tfw}} \equiv \int u^{\text{tfw}}(x)dx$ is defined as the total TFW unemployed population.

We assume the markets for domestics and TFWs are segmented: firms choose whether to search in the domestic or TFW market, and workers do not move between markets. In our counterfactual simulations, we exogenously grant employed TFWs PR while keeping their current match fixed. After the shock, these workers are observationally equivalent to domestics of the same type: they engage in on-the-job search and can receive outside offers (see Appendix 8), matching the institutional setting we study.

A distinctive feature of this search-and-matching framework is a novel congestion externality that arises from the marginal firm's hiring decision. When a firm applies for a labor market assessment, it effectively removes a potential vacancy from the domestic labor market, reducing job-finding rates for unemployed and employed domestic workers. This congestion benefits other firms by reducing competition for workers but imposes negative externalities on domestic workers through reduced outside options. We formalize this externality and its welfare implications in Sections 7.2 and 7.8.

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 domestic workers can voluntarily leave them through on-the-job search. There is also an exogenous separation rate given by ξ for domestics and ξ^{tfw} for TFWs. 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. The number of standard type-y job postings is given by $v(y)$ and the total number of vacancies is defined as $V \equiv \int v(y)dy$. Second, there are TFW vacancies, which are posted only if a labor market assessment 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

[34] 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.

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 $h(x, y)$ 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

$$\int (h(x, y) + h^{\text{tfw}}(x, y))dx + v(y) + a(y) = n(y) \tag{11}$$

Equation (11) 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. The distribution of matches $h(x, y)$ and $h^{\text{tfw}}(x, y)$ reflects endogenous worker-firm sorting driven by production complementarities in $f(x, y)$, whereby higher-ability workers sort into higher-productivity firms.

7.2 Meetings and Match Formation

Meeting Technology

We assume that all meetings between jobs and potential workers occur randomly, with separate matching functions for domestic and TFW markets. For domestics, we define E as the number of employed workers and let s denote the relative search intensity for employed workers relative to unemployed workers (normalizing search intensity for domestic unemployed workers to 1). The aggregate number of meetings between domestic searchers and vacancies is given by $M(U+sE, V)$, which is increasing in both arguments and exhibits constant returns to scale. We define $\kappa \equiv \frac{M(U+sE,V)}{[U+sE]V}$, which indexes the meeting efficiency per matchable pair (one vacancy and one effective searcher). From the worker's perspective, unemployed and employed domestic workers meet a vacancy of type y at rates $\frac{M}{U+sE}\frac{v(y)}{V} = \kappa v(y)$ and $s\frac{M}{U+sE}\frac{v(y)}{V} = s\kappa v(y)$, respectively. From the firm's perspective, a vacancy meets an unemployed worker x at rate $\kappa u(x)$ and an employed worker x currently employed at job y at rate $s\kappa h(x, y)$.

For TFWs, meetings occur only if a firm's labor market assessment application is successful, in which case the firm posts a vacancy and meets a potential TFW unemployed worker at random.

The aggregate number of meetings between firms (whose applications were successful) and potential TFWs is given by $M^{\text{tfw}}(U^{\text{tfw}}, V^{\text{tfw}})$, with $\kappa^{\text{tfw}} \equiv \frac{M^{\text{tfw}}(U^{\text{tfw}}, V^{\text{tfw}})}{U^{\text{tfw}} V^{\text{tfw}}}$. Since TFWs cannot search on the job, a successful application of type y meets a potential TFW worker x at rate $\kappa^{\text{tfw}} u^{\text{tfw}}(x)$. From the worker's perspective, the rate at which a potential TFW x meets a successful type y application is $\kappa^{\text{tfw}} v^{\text{tfw}}(y)$.

Value Functions and Match Surplus

Let $W_0(x)$ be the present value of unemployment for an x worker, which includes the flow value of unemployment $b(x)$ plus the option value of matching with a firm. Similarly, let $W_0^{\text{tfw}}(x)$ be the present value of unemployment for a TFW-x worker, which includes the flow value $b^{\text{tfw}}(x)$ plus the option value of matching with a TFW vacancy. Let $\Pi_0(y)$ be the expected value to a job of posting a vacancy in the domestic market, inclusive of the posting cost c, 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:

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

Although $\Pi_1(x, y)$ and $W_1(x, y)$ (and their TFW counterparts) each depend on the wage w, the surplus $S(x, y)$ does not: the wage only determines how surplus is divided between worker and firm.

The firm's outside option $\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$ reflects the endogenous choice between posting a vacancy in the domestic or TFW market, a key institutional feature of our setting. This choice depends on the relative payoff of a match, net of vacancy costs, meeting rates, and expected surplus. Because firms' entry decisions collectively determine V in the matching function $M(U + sE, V)$, these choices shape equilibrium meeting rates, wages, and outside options for domestic workers. We examine the efficiency implications in Section 7.8.

7.3 Wages

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

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

Renegotiation can happen if the worker gets an outside offer (in the case of a domestic worker). In our counterfactual simulations, renegotiation also occurs when TFWs are exogenously granted PR.

Outside Offers

As in Lise, Meghir, and Robin (2016), we allow for domestic employed workers to receive outside offers, but not TFWs, which matches our institutional setting. With current match surplus of $S(x, y)$, let y' denote the alternate job from which the domestic worker receives an outside offer 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: $S(x, y) > S(x, y') > W_1(w, x, y) - W_0(x)$

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, $W_1(w, x, y) - W_0(x) < S(x, y') < S(x, y)$, 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: $W_1(w, x, y) - W_0(x) \geq S(x, y')$

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.

7.4 Bellman Equations for Value Functions

Unemployed Workers

The value function for unemployed domestics, who receive flow value $b(x)$ from unemployment benefits and non-market activities, can be written as:

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

where $a^+ \equiv \max\{a, 0\}$, following Lise, Meghir, and Robin (2016).

Similarly, the value function for unemployed TFWs, who receive flow value $b^{\text{tfw}}(x)$, 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:

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

where c is the per-period cost of keeping a domestic vacancy open. 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}, the per-period cost of keeping a TFW vacancy open. 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 $\Pi_0(y)$, selecting the labor market with higher expected profits. These expressions formalize the congestion externality described above. The firm's choice between domestic and TFW hiring depends solely on private payoffs, $\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$, yet this decision imposes externalities on domestic workers by altering the distribution of available vacancies and thus equilibrium meeting rates, wages, and outside options.

Employed Workers

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

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

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 in a match (x, y) working at wage rate $w = \phi_0^{\text{tfw}}(x, y)$, this is:

$$[r + \xi^{\text{tfw}}][W_1^{\text{tfw}}(\phi_0^{\text{tfw}}(x, y), x, y) - W_0^{\text{tfw}}(x)] = \phi_0^{\text{tfw}}(x, y) - b^{\text{tfw}}(x) - \kappa^{\text{tfw}}\beta \int [S^{\text{tfw}}(x, y')]^+ v^{\text{tfw}}(y')dy'$$

The right-hand side term is the net flow value of employment.

Match output and joint surplus

In an (x, y) match, flow output is given by $f(x, y)$, which depends on worker type and firm productivity but not on immigration status.

First, consider the joint surplus for 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 H.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 worker depends on p through $S^{\text{tfw}}(x, y)$.

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

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

7.5 Steady-State Equilibrium

We restrict attention to stationary equilibrium in which all distributions are time-invariant. In a stationary equilibrium, outflows equal inflows separately for domestics and TFWs. Thus, for all (x, y) we have the following two expressions. For domestics, we have:

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

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.

For TFWs, we have the following expression:

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

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.

7.6 Free-entry condition

Following Lise, Meghir, and Robin (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.

7.7 Wage Renegotiation at PR and the Backloading Effect

In our model simulations and counterfactual experiments (described in Section 8), selected TFWs are exogenously granted PR. At the instant of PR, the worker's ability x and firm type y remain unchanged and the individual continues in their current match. However, the worker gains the ability to search on the job, which we model as the worker entering the domestic labor market. As a result, the worker's present value of unemployment updates from $W_0^{\text{tfw}}(x)$ to $W_0(x)$. The present value of the wage contract updates from $W_1^{\text{tfw}}(\phi_0^{\text{tfw}}, x, y)$ to $W_1(\phi_0^{\text{tfw}}, x, y)$, where the wage $w = \phi_0^{\text{tfw}}(x, y)$ was set when the worker was hired out of unemployment. The firm's expected profit updates from $\Pi_1^{\text{tfw}}(\phi_0^{\text{tfw}}, x, y)$ to $\Pi_1(\phi_0^{\text{tfw}}, x, y)$ because the expected duration of the match changes:

the exogenous separation rate changes from ξ^{tfw} to ξ and the worker can leave through outside offers. Accordingly, the relevant match surplus updates from the TFW surplus $S^{\text{tfw}}(x, y)$ to the domestic surplus $S(x, y)$. Appendix G.1 provides more detail on the change in match surplus from $S^{\text{tfw}}(x, y)$ to $S(x, y)$ at the time of PR.

We assume Nash bargaining over the updated surplus $S(x, y)$, which yields a new wage $w = \phi_0(x, y)$ that delivers the worker their β share of surplus, as in Section 7.3. We show in Appendix G.2 that this renegotiation is incentive-compatible for firms, given their outside option of posting a new vacancy. In on-the-job search models, expected wage growth from potential outside offers creates an option value for employed workers. Firms capture part of this value through bargaining, which results in lower initial wages, leading to a backloading effect. TFWs cannot search on the job, which eliminates the competitive bidding that produces wage growth. Consequently, wages for employed TFWs remain constant at $\phi_0^{\text{tfw}}(x, y)$ for a fixed match (x, y). When a TFW receives PR, this backloading mechanism becomes operative.

In general, on-the-job search increases expected wage growth through two channels. First, the worker may receive an outside offer that improves their bargaining position but does not justify switching firms. In this case, wages are renegotiated upward while the match remains fixed, as in Case 2 in Section 7.3. Second, the worker may climb the job ladder by moving to a higher productivity firm, as in Case 1 in Section 7.3. However, for TFWs who obtain PR, wage growth from on-the-job search occurs only through the job-ladder mechanism. In our calibrated model (Section 8), we show that the productivity y of firms entering the TFW market is strictly dominated by the productivity y' of firms entering the domestic market (i.e., $y < y'$ for all TFW-hiring firms y and domestic-hiring firms y'). We find that TFWs who are granted PR always move to the poaching firm y' upon receiving their first outside offer in the domestic labor market.

The magnitude of any wage change at PR depends on TFW wages $\phi_0^{\text{tfw}}(x, y)$, which in turn depends on the flow value of TFW unemployment b^{tfw}. If $b^{\text{tfw}} = b$, then the renegotiated wage $\phi_0(x, y)$ at the time of PR would be lower due to backloading. In our calibration (Section 8), we set $b^{\text{tfw}} < b$ to exactly offset this downward pressure, so renegotiation at PR produces no wage change. Combined with the market segmentation described above, which implies that stayers are those who have not yet received an outside offer, all increases in earnings are driven by job changers, consistent with our reduced-form results. In simulations below, we also consider scenarios where the distribution of x shifts exogenously when TFWs obtain PR. This may reflect workers reallocating to jobs that better use their existing human capital. As discussed in Section 8, this additional channel is necessary to jointly match our reduced-form results on earnings and firm effects.

7.8 Welfare

Following Lise, Meghir, and Robin (2016), we define social welfare as the sum of match output, flow value from unemployment, and vacancy costs across both market segments:

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

where W and W^{tfw} denote welfare in the domestic and TFW market segments, respectively. In each expression, the three terms represent aggregate match output, aggregate flow value of unemployment, and total vacancy costs.

Since match output can be decomposed into worker wages and firm flow profits, we can express welfare in these equivalent terms. Let $\tilde{w}(x,y)$ denote the average wage among domestic workers in (x,y) matches in steady state, which reflects the distribution of wages arising from heterogeneous worker histories (e.g., arrival from unemployment versus poaching versus renegotiation).

$$W = \underbrace{\int \tilde{w}(x,y)h(x,y)dxdy + \int b(x)u(x)dx}_{\text{Flow value to domestic workers}} + \underbrace{\int \left[f(x,y) - \tilde{w}(x,y)\right] h(x,y)dxdy - cV}_{\text{Firm flow profits (domestic segment)}}$$

For TFWs, wages are deterministic conditional on the match, since TFWs cannot search on the job: all workers in an (x,y) match earn $w = \phi_0^{\text{tfw}}(x,y)$.

$$W^{\text{tfw}} = \underbrace{\int \phi_0^{\text{tfw}}(x,y)h^{\text{tfw}}(x,y)dxdy + \int b^{\text{tfw}}(x)u^{\text{tfw}}(x)dx}_{\text{Flow value to TFWs}} + \underbrace{\int \left[f(x,y) - \phi_0^{\text{tfw}}(x,y)\right] h^{\text{tfw}}(x,y)dxdy - c^{\text{tfw}}(V^{\text{tfw}}/p)}_{\text{Firm flow profits (TFW segment)}}$$

Total social welfare is the sum: $W + W^{\text{tfw}}$.

Recently, Fukui and Mukoyama (2025) showed that even when the Hosios condition holds, the equilibrium can be inefficient in the presence of on-the-job search. This inefficiency stems from two externalities. First, a "worker-stealing" externality arises because poaching firms appropriate surplus created by previous employers and ignore the loss from destroying incumbent matches. Second, match formation generates a congestion externality because the private value of a match, determined under wage bargaining, fails to internalize the change in congestion when workers switch from searching off the job as unemployed to searching on the job as employed.[35] Consistent with

[35] Fukui and Mukoyama (2025) demonstrate that even when the Hosios condition and a sequential-auction wage mechanism resolve the investment margin's "worker-stealing" externality, the congestion externality remains, so

this mechanism, in the domestic labor market of our model, where employed workers search on the job, the decentralized equilibrium overvalues match surplus relative to the planner. On-the-job search raises the private value of a domestic vacancy through the prospect of poaching employed workers, who may subsequently receive outside offers and advance along the job ladder. By contrast, the TFW market does not feature on-the-job search and thus does not generate these on-the-job search-related inefficiencies.

Our segmented domestic–TFW structure introduces an additional source of inefficiency: a congestion externality operating across market segments. When a firm chooses between posting a domestic vacancy or applying for a TFW permit, it does so based solely on private returns $\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$. However, because domestic meetings are governed by the matching function $M(U + sE, V)$, this decision affects congestion faced by all domestic searchers. The externality operates through two channels. First, when a firm chooses to enter the TFW market instead of posting a domestic vacancy, it reduces V, lowering the meeting rate for unemployed and employed domestic workers. Second, reduced meeting rates diminish outside options for employed domestic workers, depressing wages and match surplus through the mechanisms in Section 7.4. Because firms do not internalize these cross-market spillovers, the decentralized equilibrium generally differs from the social optimum.

8 Model Calibration and Counterfactual Analysis

8.1 Calibration Approach

We calibrate the model by searching for the combination of parameters that allow us to quantitatively match our main reduced-form results on job transitions, earnings, and firm pay premia (Section 6). 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 Cobb-Douglas meeting function (i.e., $M = \eta(U + s(1-U))^{1/2}V^{1/2}$). We choose a beta distribution for worker and firm heterogeneity, while allowing for separate distributions for TFWs and domestic workers. For expositional clarity, we discuss two groups of parameters: "initial parameters" which we calibrate using sample moments in the data and external values chosen from the literature, and "additional parameters" which we calibrate by matching our reduced-form results.

Panel A of Table 3 summarizes the calibration approach for each initial parameter. We set worker bargaining power to $\beta = 0.5$ following Shi (2023), which is consistent with the worker share of rents of 49 percent reported in Lamadon, Mogstad, and Setzler (2022). We choose $\rho = 0$ so that the production function is Cobb-Douglas, following Berger, Herkenhoff, and Mongey (2022)

the decentralized equilibrium in a job-ladder model fails to achieve the efficient outcome.

and Lamadon, Mogstad, and Setzler (2022). We set the exogenous separation rates to $\xi^{\text{tfw}} = 0.021$ and $\xi = 0.011$ to match the four-year average job tenure for both TFWs and domestic workers, respectively.[36] We set the discount rate $r = 0.05$, following Shi (2023) and Lise, Meghir, and Robin (2016). We choose the parameters of the beta distribution that govern worker heterogeneity to match the domestic-TFW wage gap reported in the Mincer wage regression above.[37] The distribution of firm heterogeneity is set arbitrarily to be Beta$(10, 10)$ as a normalization, and we calibrate the production function parameter α to match the reduced-form effect of PR on firm pay premia, as discussed below. We set the probability a TFW application is accepted to $p = 0.69$ to match the average application acceptance rate during our sample period (Human Resources and Skills Development Canada, 2012). The remaining parameters in Panel A of Table 3 are the matching efficiency and vacancy cost parameters (η, η^{tfw}, c, and c^{tfw}). The meeting function parameters η, η^{tfw} are chosen so that meeting efficiency is equal to $\kappa = 0.22$ and $\kappa^{\text{tfw}} = 0.17$, which leads to $\eta = 0.065$, $\eta^{\text{tfw}} = 0.06$. The vacancy-posting costs are calibrated to one month of the average annual domestic wage, with a 15 percent premium applied in the TFW segment to capture the extra costs generated by the TFW application process (resulting in $c = 0.175$ and $c^{\text{tfw}} = 0.14$). Note that the expected cost to a firm of a TFW vacancy is the application cost, given by (c^{tfw}/p), is 15 percent larger than the vacancy cost in the domestic market, c.

After choosing our initial parameters in the calibration, there are four remaining parameters in the model (b, b^{tfw}, s, and α). We calibrate these parameters by simulating our model to match the reduced-form effect of PR on job transitions, earnings, and firm pay premia, and we report the results in Panel B of Table 3. First, we set the value of unemployment to $b = 0.37$ in the domestic market so that it is equal to 50 percent of the value of the wage at the lowest productivity firm. As described in Section 7, the model generates a "backloading effect" where wages *decrease* when TFWs obtain PR. To offset this decrease, we set $b^{\text{tfw}} = 0.19$ so that wages do not change for workers who stay at the same firm when they receive PR. This causes the increase in average wages resulting from PR to be entirely driven by the subset of workers who change jobs after PR, in line with our reduced-form results.

Next, we set the on-the-job search parameter to $s = 0.29$ to match the effect of PR on job transitions. Intuitively, s determines the additional search that happens immediately after TFWs obtain PR since they cannot search on the job. Lastly, we calibrate the production function parameter to $\alpha = 0.91$ to match the estimated effect of PR on firm pay premia. To implement this, we

[36] The reason why ξ is lower than ξ^{tfw} is because domestic workers can leave their jobs either through exogenous separations or through on-the-job search. Technically, we calibrate ξ so that the average job tenure in the domestic market is the same as the average job tenure in the TFW market given the other model parameters (including the on-the-job search parameter, described below).

[37] Specifically, we choose the two parameters of each beta distribution so that the mean wage of TFWs is normalized to one, the difference in the mean wages between TFWs and domestic workers matches the 0.31 log wage gap estimated in the Mincer wage regression, and the ratio of the standard deviation to the mean wage in each group is equal to 0.7 following Dostie et al. (2023).

first estimate an AKM regression on data simulated from our model and recover the "firm effects" analogous to the estimated firm fixed effects in the matched employee-employer data.[38] We find a very high correlation (greater than 0.9 in both labor market segments) between the (estimated) firm fixed effects and the (true) firm types y. Moreover, the R-squared of the AKM regression is greater than 0.9 in both labor market segments, and we also find a monotonic relationship between the firm effects and the firm types (see Appendix Figure A.27).[39] Next, using these AKM firm effects along with an event study, we estimate the causal effect of PR, similar to our reduced-form analysis. The equilibrium in our calibrated model results in perfect negative selection into the TFW market, with firm types $y \leq y^*$ selecting into the TFW market segment and firm types $y \geq y^*$ selecting into the domestic market segment (matching the empirical pattern of negative firm selection reported in Figure 1).[40] Since TFWs in the model move from lower to higher productivity firms when they obtain PR, choosing higher values of α leads to a greater difference in the mean firm effects for TFWs before versus after PR. Thus, we can choose α so that the simulated effect of PR on firm pay premia matches our reduced-form estimate.

8.2 Model Fit and Extension to Allow for Change in x at PR ($\Delta x > 0$)

We use simulated data from the model to construct figures analogous to our reduced-form event study estimates. In Figure 13, we plot the simulated effects of randomly giving TFWs PR on job switching and firm pay premia (which are directly targeted in the calibration) and earnings (which is not directly targeted). Figure 13a shows that the calibrated model matches the increase in job transitions, while Figures 13b and 13c show that the calibrated model matches the increase in firm pay premia but somewhat understates the increase in earnings. The main reason that the calibrated model under-predicts the increase in earnings is that the AKM model is a good approximation to the simulated data, which means that we would expect to see similar changes in earnings and firm premia after PR (since any change in earnings from a job transition will on average be very close to the difference in the pay premia between the old and new employer). Since the change in the firm pay premia in our reduced-form results is less than the change in earnings (see Figure 4b), we under-predict the increase in earnings when choosing α to match the reduced-form effect of PR on

[38] Appendix I provides additional details on the simulation approach we use for the model calibrations.

[39] While the previous literature includes examples where the AKM firm effects can be misleading proxies for underlying firm productivity (see, e.g., Eeckhout and Kircher, 2011), we do not find that this is the case in our calibrations. This comes from our baseline assumptions of $\beta = 0.5$ and $\rho = 0$. With these assumptions, we find in our simulations that the log hiring wage is approximately linear in the worker effect and firm effect.

[40] Computationally, we solve for the threshold y^* where the firms with this productivity are indifferent between searching for a TFW or a domestic worker. Since there are a discrete number of different firm types in the simulation, we solve for the labor market equilibrium by calculating the share of the $y = y^*$ firms making each choice in a way that preserves the indifference for all of the $y = y^*$ firms in each segmented market in equilibrium. Appendix Figure A.28 plots the simulated $\Pi_0(y)$ and $\Pi_0^{\text{tfw}}(y)$ functions and shows that both functions are increasing in y and intersect at y^*.

the firm pay premia.

One way to rationalize our reduced-form results on earnings is to allow the distribution of x for TFWs to exogenously increase after PR. One interpretation of this follows from the prevalence of job transitions into different industries after PR along with the increase in firm pay premia that we observe in our reduced-form results (see Figures 3a and 12). This implies that obtaining PR allows TFWs to sort into new jobs in sectors that may better utilize their existing human capital (rather than interpreting the change in x as suggesting that PR literally increases human capital). Following this logic, we search for a value for the parameter Δx which is the share of the gap in the distribution between TFW and domestic worker ability that must close at PR in order for us to match our reduced-form results on earnings, and we find that $\Delta x = 0.097$ (i.e., PR closes about 10 percent of the gap in ability in order to match the effect of PR on earnings). With this parameter, we can effectively "scale up" any increase in earnings (above what is predicted by the change in the firm pay premium alone), and Figure 14 shows that we are able to match all of our main reduced-form results very closely.

8.3 Simulating the Long-run Effects of PR

Using our calibrated model, we can simulate the long-run effects of PR. Figure 14 shows the effect of PR on job switching, firm pay premia, and earnings, where the event-study window is extended from 3 years to 15 years. The results show persistent increases in job switching, firm pay premia, and earnings which attenuate over time as the former TFWs gradually approach their new steady-state earnings in the domestic labor market. Quantitatively, we find that the 15-year effect of PR is about 50 percent larger for earnings and firm pay premia as compared to the estimated three-year effects in our reduced-form analysis. These results imply that the earnings gains for former TFWs emerge fairly quickly after PR and continue to grow as the former TFWs continue to search for high-wage jobs and climb the job ladder.

8.4 Counterfactual Analyses

Counterfactual: Increasing Expected Cost of TFW Vacancy by 25 Percent

Our first policy counterfactual increases the expected cost of a TFW vacancy by 25 percent. We implement this policy 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 4. Since the expected cost of a TFW vacancy increases, firms leave the TFW market segment and switch to hiring workers in the domestic market segment. This reduces output in the TFW segment and increases it in the domestic segment. The increase in output in the domestic market does not fully offset the decrease in the TFW market, leading to an overall reduction in output. Firm profits

decrease in both segments: directly in the TFW segment due to the increase in vacancy costs, and indirectly in the domestic segment because of the increased entry of firm switching into the domestic segment. However, there is an increase in domestic wages, resulting from the increased entry of firms into the domestic market segment, and this increase is largest for the below-median wage domestic workers. This shows the key economic trade-off of increasing the expected cost of a TFW vacancy: domestic workers may benefit in terms of higher wages (especially low-wage workers), but firm profits are reduced. In addition, TFW wages decrease by much more than domestic worker wages increase. If we assign zero weight on TFWs in the social welfare function, then there is a slight increase in social welfare if profits and domestic wages are weighted equally by the social planner, as the increase in domestic worker wage bill is slightly larger than the decrease in firm profits.[41]

Counterfactual: Switching to Open Visas for TFWs

In our second counterfactual scenario, we allow all TFWs to switch jobs freely, as if they held open visas. This is equivalent to giving all TFWs PR. We implement this by "merging" the TFW and domestic labor markets into one labor market and solving for the new steady-state equilibrium in the combined labor market. In this counterfactual, TFWs are treated the same as domestics (conditional on their worker type, x).

The results are summarized in Table 5. We find that allowing TFWs to change jobs results in an increase in TFW wages that is fairly similar in magnitude to the simulated long-run effect of PR reported above, which implies that the general equilibrium forces in this counterfactual do not substantially change the direct effect of PR for the TFWs. We also find increases in both average wages and social welfare, but there is a reduction in domestic wages (especially wages for low-wage domestic workers) and a very small reduction in firm profits. There is an increase in worker-firm sorting in this scenario, which reflects a reduction in search frictions. This partly explains the increase in overall social welfare: once the market is integrated, high-ability TFWs can match with high-productivity firms, whereas under segmentation, they could only search among vacancies posted by low-productivity TFW firms. However, alongside this overall increase in welfare, domestic workers experience greater competition for jobs, which leads to a reduction in their wages. The decline in wages is most pronounced for low-wage workers, since this group faces greater competition from the TFWs that have a lower average ability distribution. It is worth highlighting

[41]Table 4 also reports the correlation between worker and firm productivity in both segments of the labor market (before and after the change in the expected cost of a TFW vacancy). We calculate this correlation as the $h(x, y)$-weighted correlation between the true values of x and y. We find zero correlation in the TFW market segment and a positive correlation in the domestic market segment, which is consistent with the increase in worker-firm sorting after PR that we estimate in the reduced-form analysis (see Figure 4b). The zero correlation in the TFW market segment comes from the fact that at our chosen parameters, $S(x, y)$ is everywhere positive, and there is no on-the-job search and random matching between (unemployed) workers and firms. The table also shows that there is a negligible change in worker-firm sorting in both markets after the change in expected cost of a TFW vacancy; that is, the counterfactual policy leads to the same worker-firm sorting after PR.

that these results are based on the version of the calibrated model where $\Delta x = 0.097 > 0$. If we instead assume $\Delta x = 0$, the resulting welfare effects are smaller, firm profits decline by more, and domestic workers are less negatively affected (see Appendix Table A.13).

8.5 Discussion

We conclude this section by discussing several important limitations of the model calibrations. First, the model calibrations are highly stylized, and the results are naturally sensitive to specific parameters. In the Appendix, we show sensitivity to higher and lower values of worker bargaining power, and we find broadly similar results of increasing the expected cost of a TFW vacancy on output, wages, profits, and welfare (see Appendix Tables A.14 and A.15).[42] The model therefore appears to be a promising foundation for policy analysis, and we view the counterfactuals as an initial step towards structurally evaluating different visa policies for TFWs.

Second, we assumed a unit mass of domestic workers and TFWs. On the surface, this is at odds with TFWs representing a small share of the overall labor market in Canada (between 0.1 and 0.5 percent of all employment). Our interpretation of the model is that it is informative about the labor market consequences for the domestic workers who search for similar jobs as TFWs. It is straightforward to extend the model to allow for different population sizes.

Third, our search-and-matching model abstracts from a number of other ways that temporary immigrants can affect the labor market, perhaps most importantly through the effects of temporary immigrants on entrepreneurship and innovation (see, e.g., Kerr and Lincoln, 2010 and Hunt and Gauthier-Loiselle, 2010).[43] Our results speak to the trade-off between firm profits, wages for TFWs, and the wages for domestic workers competing for the same set of jobs. Importantly, we assume that increases in temporary immigrants (through, say, a reduction in TFW application costs) do not directly affect the distribution of firm productivity.

9 Conclusion

This paper provides new evidence on the labor market return to permanent residency (PR) using administrative data linking temporary and permanent visa records to matched employer-employee data in Canada. We find that obtaining PR has substantial and persistent effects on immigrants' labor market outcomes. Specifically, PR increases the probability of job-to-job transitions by approximately 21.7 percentage points, increases earnings by 5.7 percent, and leads to higher-quality

[42] If we choose $\beta = 0.3$ instead of $\beta = 0.5$, we find a non-monotonic relationship between the estimated firm fixed effects and true firm productivity, and we find that the simulated effect of PR on earnings does not match the reduced-form results as closely as when we choose $\beta = 0.5$. For this reason, we prefer $\beta = 0.5$ in our baseline calibrations.

[43] In the U.S., for example, the H1-B temporary visa program has been used by many innovative leaders in the technology sector including Jensen Huang (at NVIDIA), Sundar Pichai (at Google), and Satya Nadella (at Microsoft).

jobs as measured by firm-specific pay premia. These effects emerge immediately after PR and persist for at least several years.

To interpret this reduced-form evidence, we develop a search-and-matching model with heterogeneous workers and firms that allows for differential job mobility between TFWs and domestic workers. The model incorporates important institutional features of the Temporary Foreign Worker Program (TFWP), such as the application cost necessary for firms to hire TFWs and job mobility restrictions (i.e., closed visas) for TFWs. 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 TFWs lower earnings and reduce job quality (for the TFWs themselves). When these restrictions are lifted through PR, immigrants can search broadly and move to higher-productivity, better-paying jobs. We show that the model's predictions align closely with our empirical results.

Returning to Senator Sanders' op-ed quoted in the Introduction, we think it is interesting to contrast his claim that temporary visas are "disastrous for American workers" with our counterfactual simulations that show the effects of "opening up" visas on domestic worker wages. Holding the total amount (and composition) of temporary immigration constant, our results suggest that the closed visas are in fact better for domestic workers who compete for the same jobs as temporary immigrants. Intuitively, creating a segmented labor market for temporary workers softens the competition for jobs in the domestic labor market, which benefits domestic workers at the expense of the wages of temporary workers. Of course, these results do not imply that expanding the supply of TFWs in the labor market would be beneficial for domestic workers, only that holding the total amount of immigration constant, closed visas benefit domestic workers more than open visas.

We conclude by briefly discussing several extensions that we believe are useful to explore in future work. One potential additional benefit of the TFW program that we do not capture in our model is that the government is essentially delegating to firms the "screening" of temporary immigrants, and private firms may have stronger economic incentives than the government to efficiently screen immigrants based on their productivity (especially in cases where the firms end up recruiting workers who cannot easily change jobs because of mobility restrictions associated with temporary visas). This is reminiscent of research in public economics which argues that firms can outperform governments in screening when it comes to choosing price plans and tax tables (Luttmer & Zeckhauser, 2008). Another natural theoretical extension is to give a more rigorous micro-foundation for our "Δx" parameter that is necessary to jointly match the effects of PR on firm pay premia and earnings. One promising approach may be extending the model to allow for horizontal differentiation of firms alongside worker comparative advantage across different industries. Lastly, we used a search-and-matching model to simulate changes in domestic worker wages and firm profits in response to alternative TFW policies. Future work could estimate these changes

directly using historical changes in TFW policies and the administrative data we have used in this paper.

In summary, our findings demonstrate how institutional factors—particularly work permit restrictions—contribute to earnings differentials between TFWs and domestic workers. We conclude that the speed and ease with which temporary workers obtain PR significantly affects their ability to find high-quality jobs and leads to meaningful spillover effects onto firm profits and the job opportunities of domestic workers.

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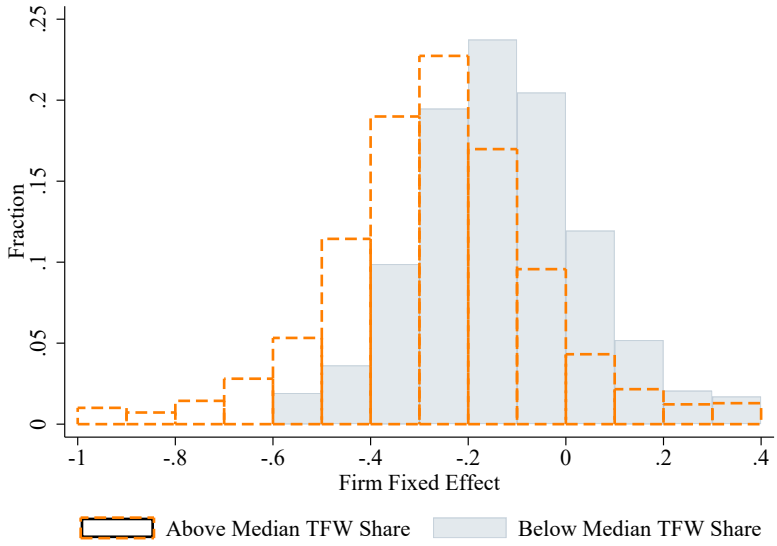
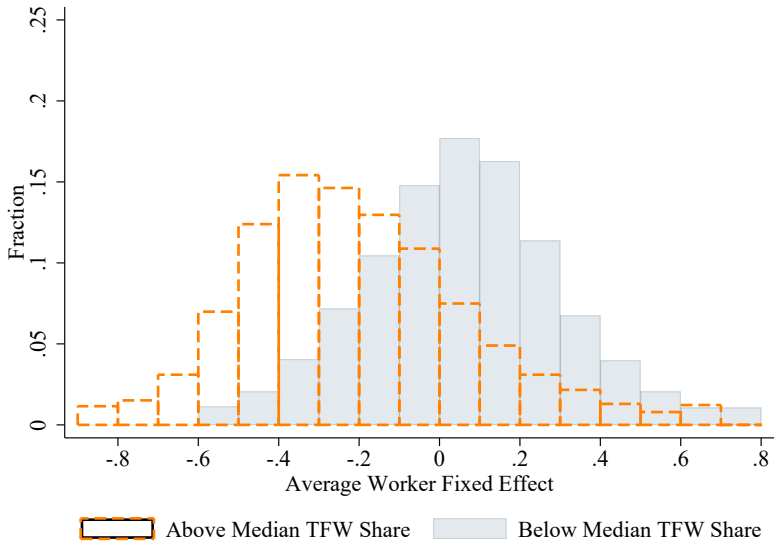
Figure 1: Firm Selection into the TFW Program: Distribution of Firm and Average Worker Effects by TFW Employment Share for Firms that Hire TFWs

(a) Firm Effect



(b) Average Worker Effect of Employees

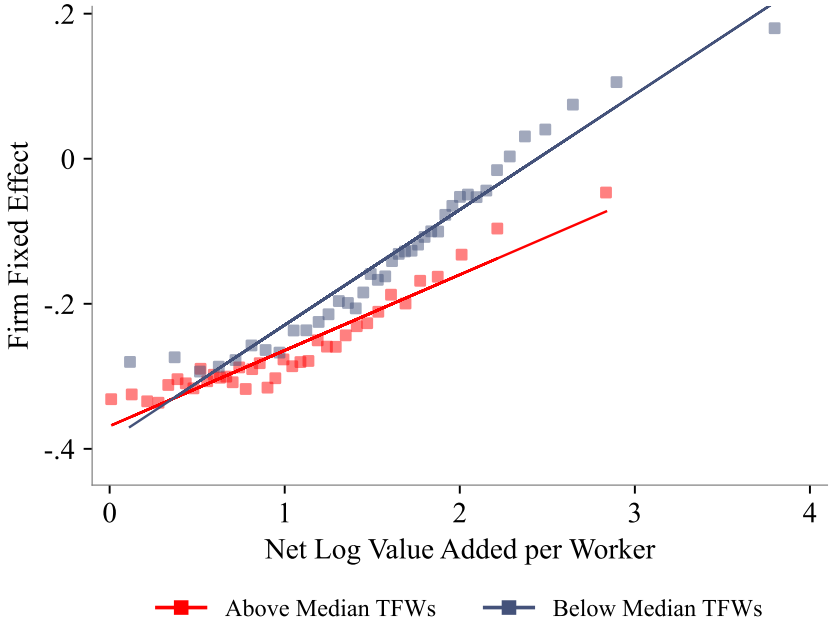


Notes: This figure shows the distribution of firm effects and average worker effects for firms that hired at least one TFW during the sample period, comparing firms with above-median versus below-median TFW employment share. The TFW employment share is calculated for each firm as the average, across all observed years, of the annual fraction of its workforce composed of TFWs. The worker and firm fixed effects were estimated using a two-way fixed effect (AKM) model of log earnings (see Appendix E). The average worker effect for each firm is calculated across employees in all observed years. Panel (a) shows the distribution of firm effects, while Panel (b) shows the distribution of average worker effects. Orange bars represent firms with above-median TFW employment shares; navy bars represent firms with below-median TFW employment shares. *Source:* Authors' calculations using the CEEDD.

Figure 2: Firm Fixed Effect versus Value Added per Worker

(a) Full Sample

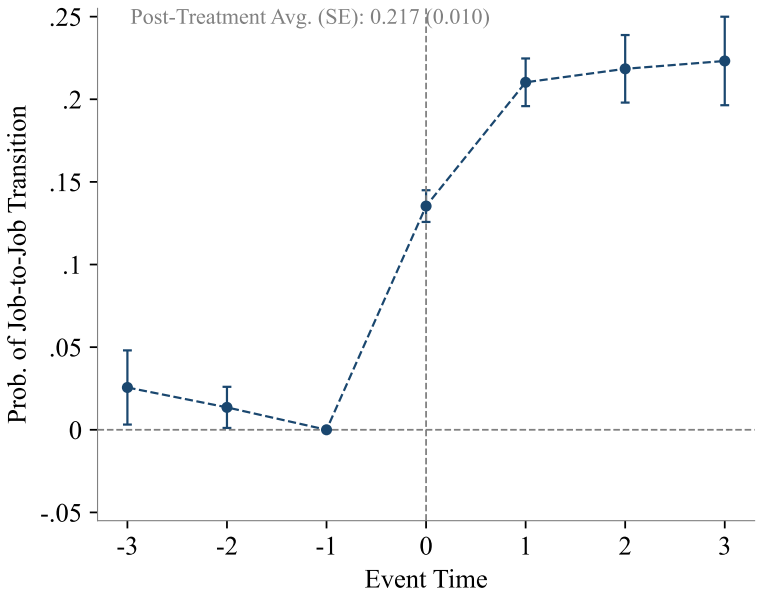
(b) By Median of TFWs share



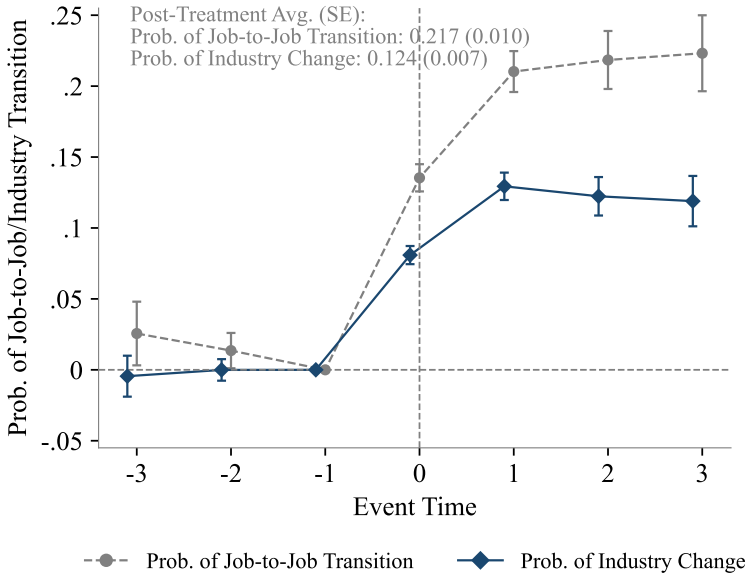
Notes: This figure presents the bin scatter plots of firm fixed effects versus net log value added per worker. The firm fixed effects are obtained from a two-way fixed effects (AKM) model of log earnings (see Section E). Panel (a) contains the full sample of firms used to estimate the AKM model. Panel (b) contains firms that hire at least one TFW during the sample period. The TFW share for each firm is calculated as the average, across all observed years, of the annual fraction of its workforce composed of TFWs. Firms with a TFW share above the median are classified as "Above Median TFWs," and those below the median as "Below Median TFWs." Value added is calculated as Total Revenue minus Total Expenses plus Total Payroll (in 2012 dollars). Net log value added per worker is calculated as $\max\{0, \log(VAPW) - \tau\}$, where $VAPW$ is the firm's average value added per worker (averaged across all observed years) and τ is the 5th percentile of $\log VAPW$ across firms. The data on $\log VAPW$ was winsorized at the 95% percentile before constructing the figure. *Source:* Authors' calculations using the CEEDD (Firm-level financial information is obtained from the NALMF).

Figure 3: Worker Mobility Outcomes

(a) Probability of Job-to-Job Transition



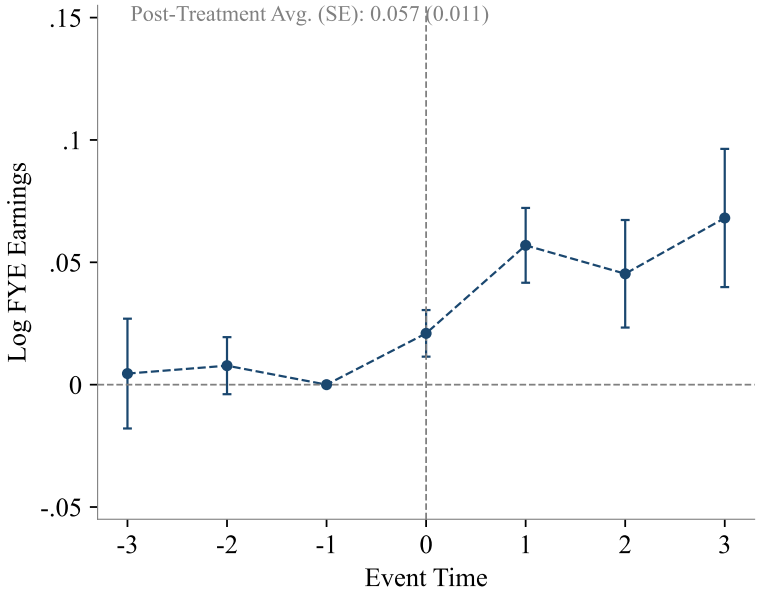
(b) Probability of Industry Change



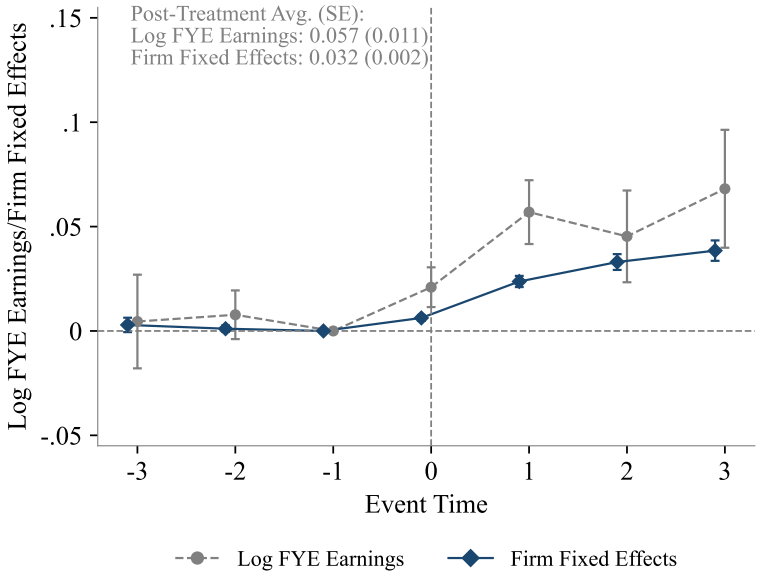
Notes: This figure shows event study estimates for worker mobility outcomes. Event time 0 represents the year of obtaining permanent residency. Panel (a) shows the probability of job-to-job transitions. Panel (b) shows the probability of changing industries. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 4: Earnings and Firm Pay Premia

(a) Log Full-Year Equivalent Earnings

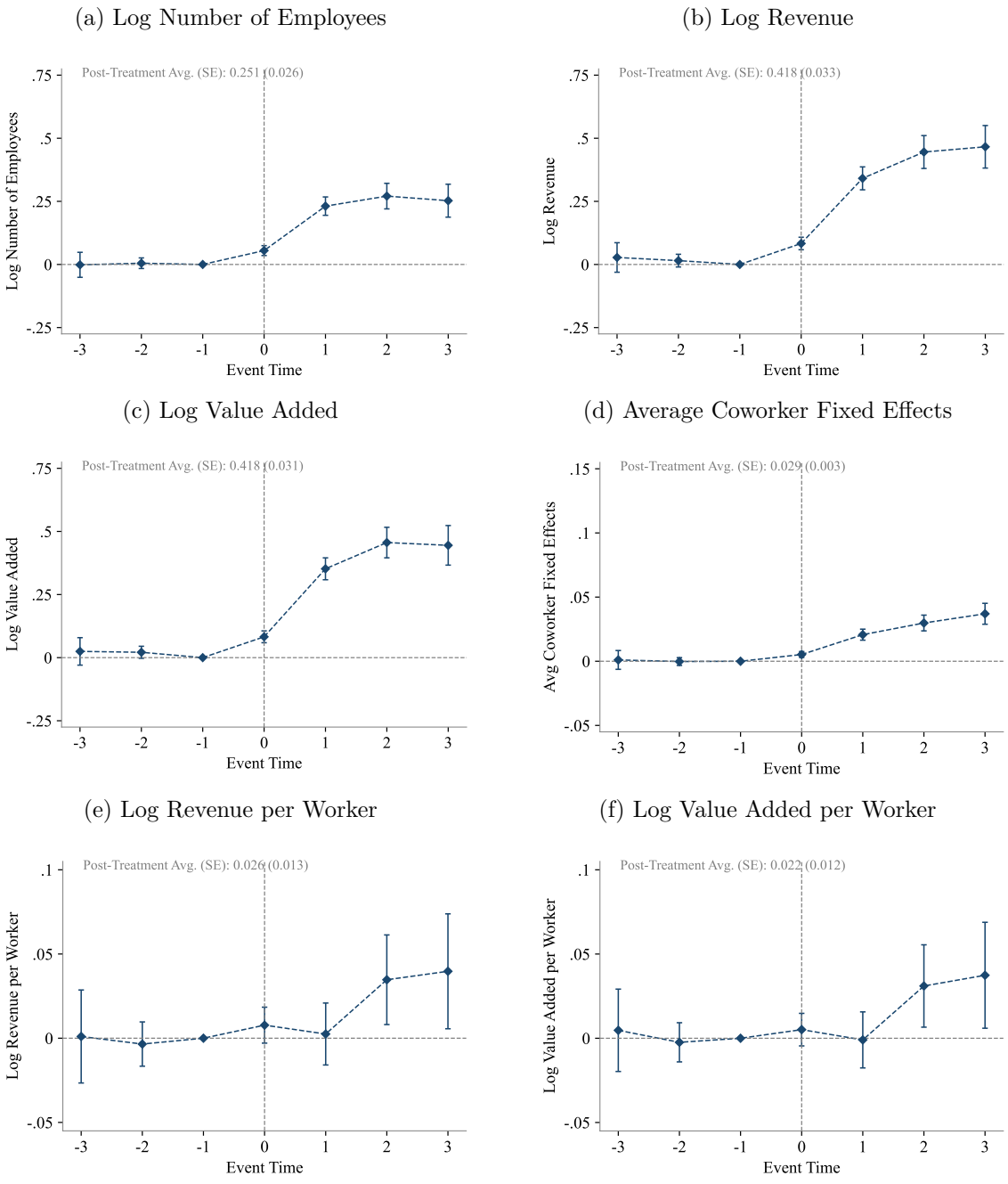


(b) Firm Fixed Effect



Notes: This figure shows event study estimates for log earnings and firm pay premia. Event time 0 represents the year of obtaining permanent residency. Panel (a) shows changes in log full-year equivalent earnings. Panel (b) shows changes in firm fixed effects of the worker's employer, where the firm fixed effects are estimated from an AKM model (see Appendix E). Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

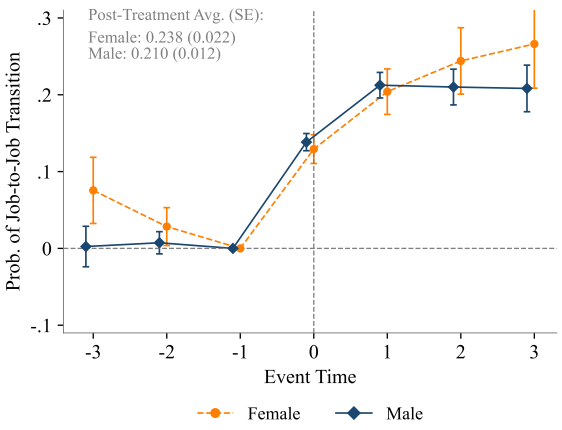
Figure 5: Other Firm Characteristics



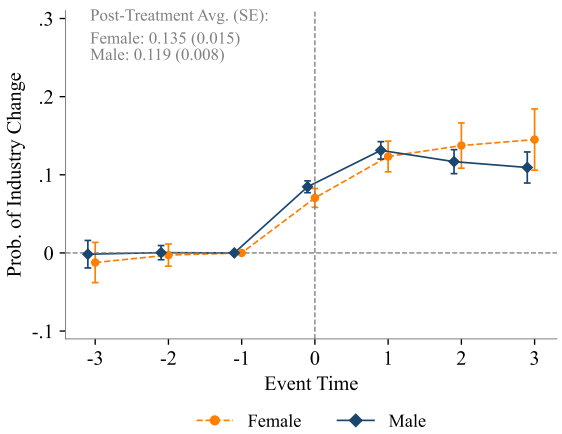
Notes: This figure shows event study estimates for firm characteristics of each individual's employer. The worker effects are estimated from an AKM model (see Appendix E). Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added, where value added is calculated as Total Revenue minus Total Expenses plus Total Payroll. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 6: Main Labor Market Outcomes by Gender

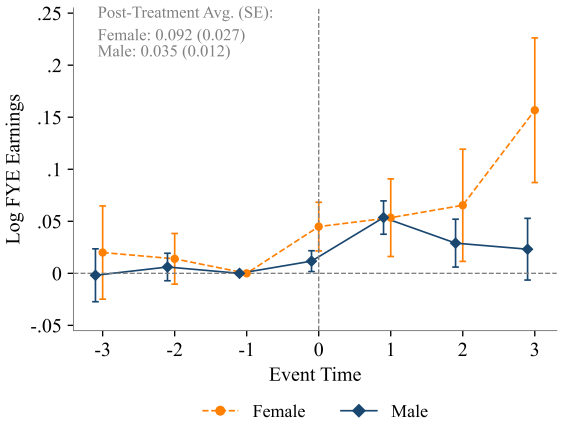
(a) Probability of Job-to-Job Transition



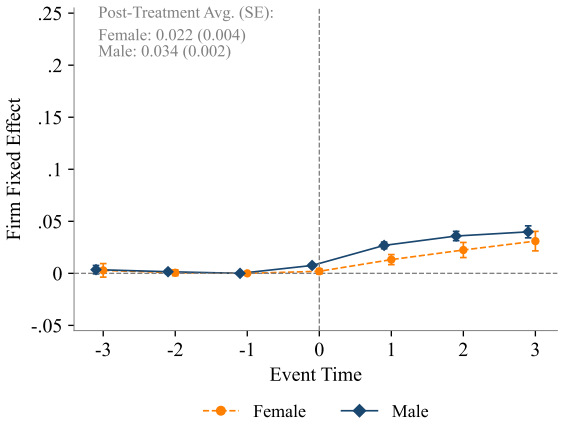
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings



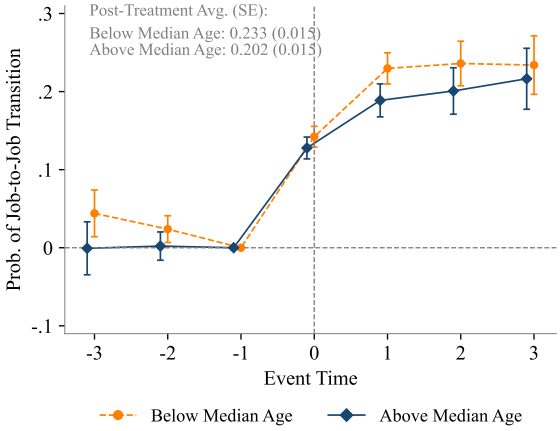
(d) Firm Fixed Effect



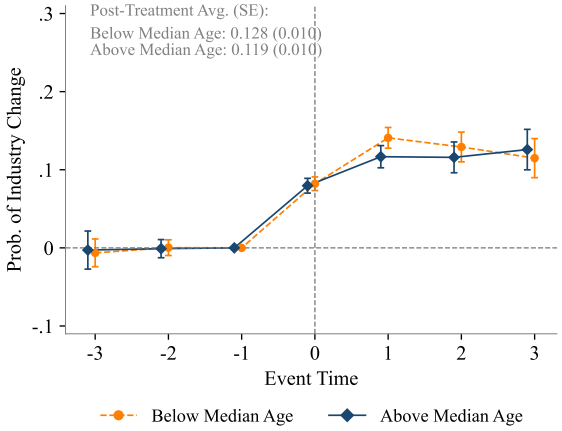
Notes: This figure shows event study estimates for job mobility, earnings, and firm pay premia, separately by gender. Event time 0 represents the year of obtaining permanent residency. Orange lines represent women; navy lines represent men. Panel (a) shows job-to-job transition probability. Panel (b) shows industry change probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects for the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 7: Main Labor Market Outcomes by Age

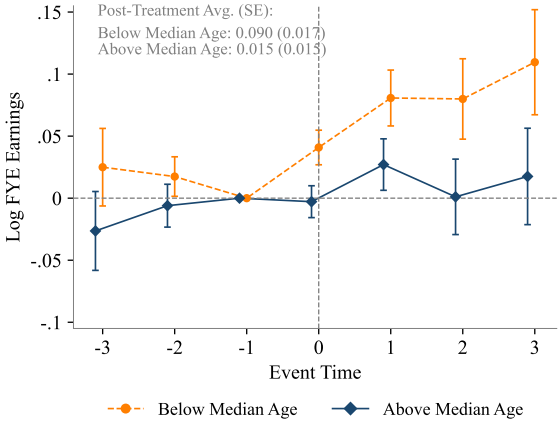
(a) Probability of Job-to-Job Transition



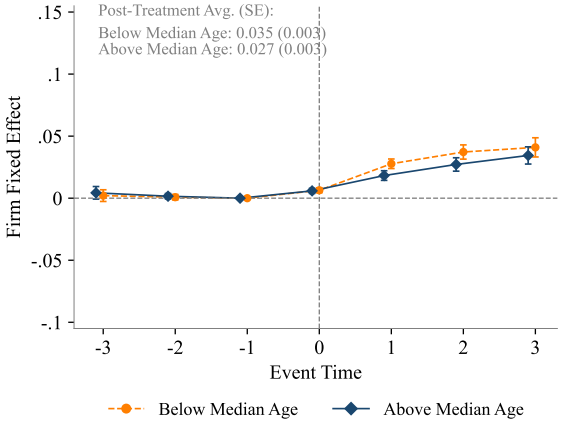
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings

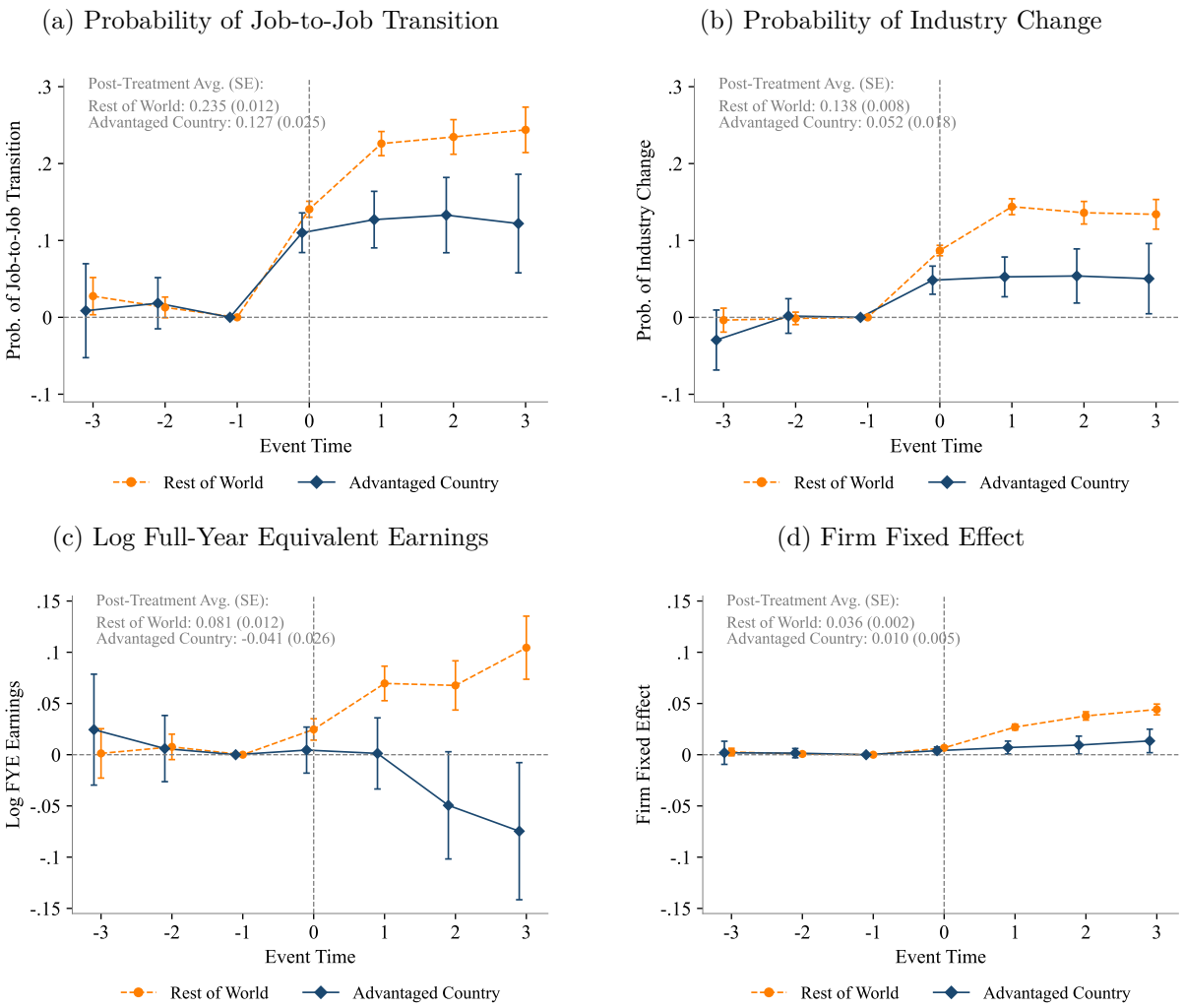


(d) Firm Fixed Effect



Notes: This figure shows event study estimates for the main labor market outcomes separately by age, where the observations are classified into below- vs above-median initial age (33 years old). Orange lines represent workers below median age; navy lines represent workers above median age. Panel (a) shows job-to-job transition probability. Panel (b) shows industry change probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

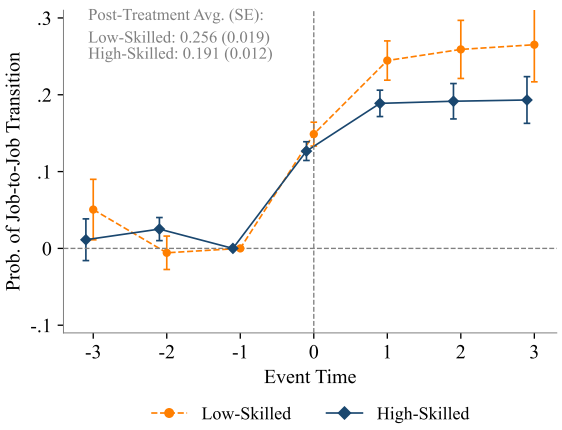
Figure 8: Main Labor Market Outcomes by Country of Origin



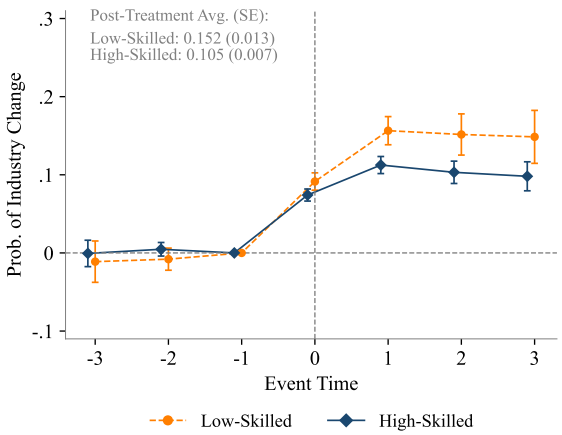
Notes: This figure shows event study estimates for the main labor market outcomes separately by origin country, where the classification into advantaged vs rest-of-world countries follows Dostie et al. (2023). The list of "advantaged countries" includes the U.S., the U.K., Australia, New Zealand, and countries in Northern/Western Europe where most people have English as a second language, including Germany, France, the Netherlands, and the Nordic countries. Orange lines represent workers from rest-of-world countries; navy lines represent workers from advantaged countries. Panel (a) shows job-to-job transition probability. Panel (b) shows industry change probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 9: Main Labor Market Outcomes by Skill Level

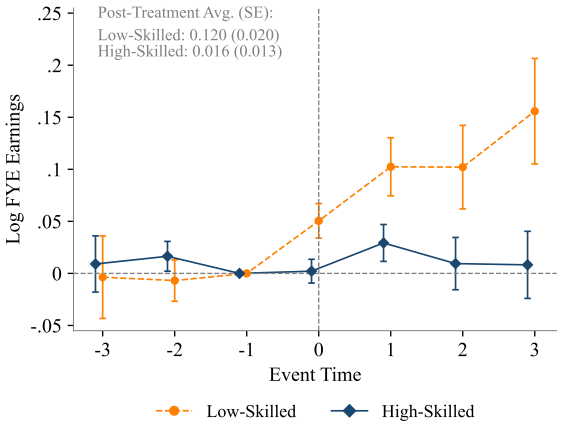
(a) Probability of Job-to-Job Transition



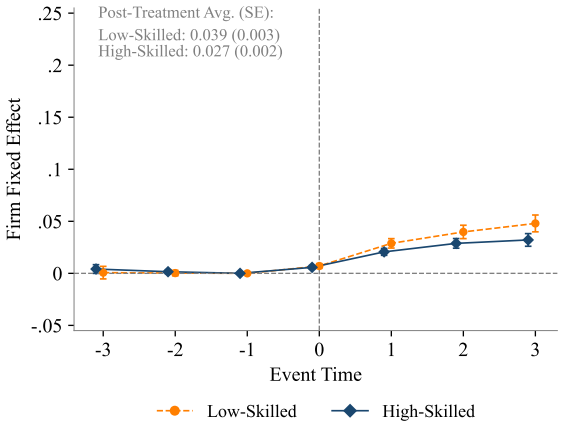
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings



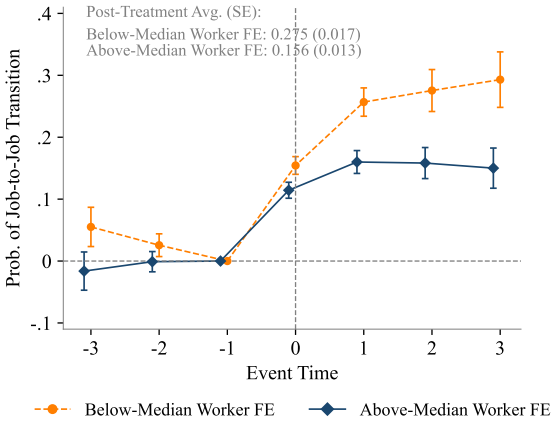
(d) Firm Fixed Effect



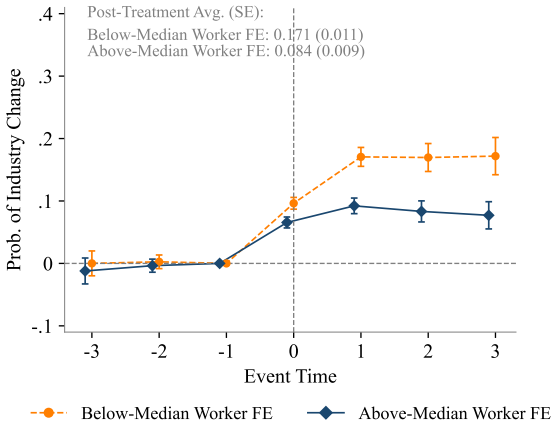
Notes: This figure shows event study estimates separately by skill level. Event time 0 represents the year of obtaining permanent residency. The classification into low and high skilled workers uses the occupational skill level at the time of permanent residency (see Section 3.2). Panel (a) shows job-to-job transition probability. Panel (b) shows industry change probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects for the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 10: Main Labor Market Outcomes by AKM Worker Fixed Effect

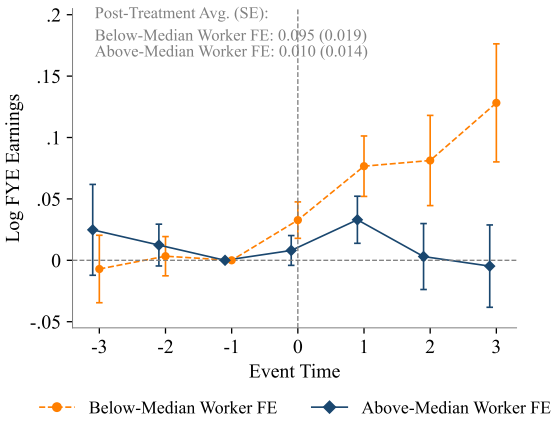
(a) Probability of Job-to-Job Transition



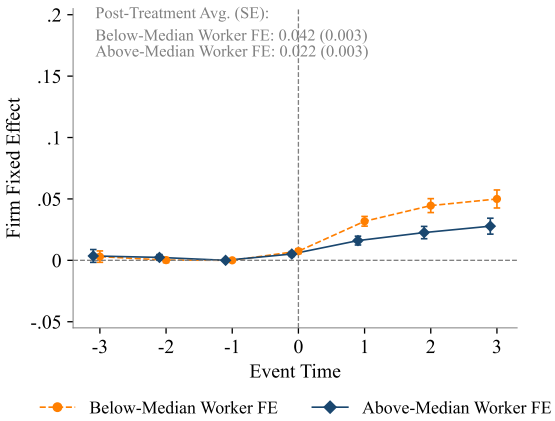
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings

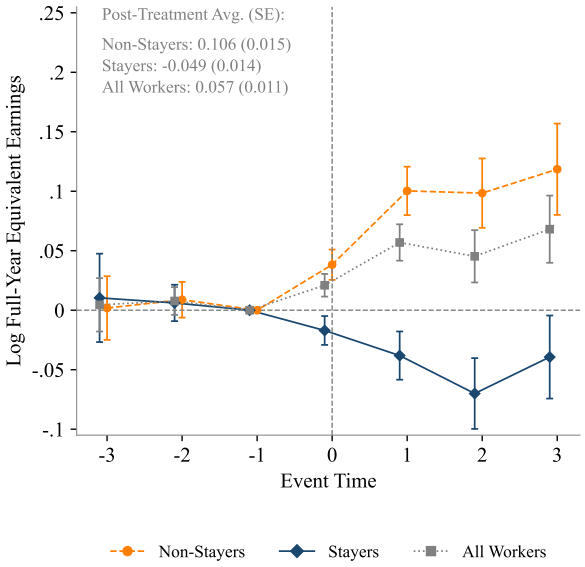


(d) Firm Fixed Effect



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 E). Orange lines represent workers with below-median worker fixed effects; navy lines represent workers with above-median worker fixed effects. Panel (a) shows job-to-job transition probability. Panel (b) shows industry change probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects for the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

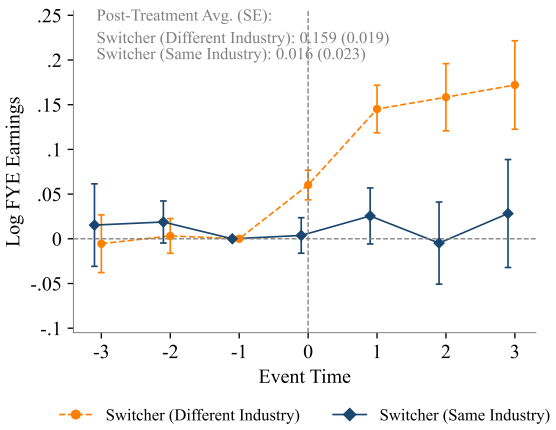
Figure 11: Earnings by Job Mobility Status



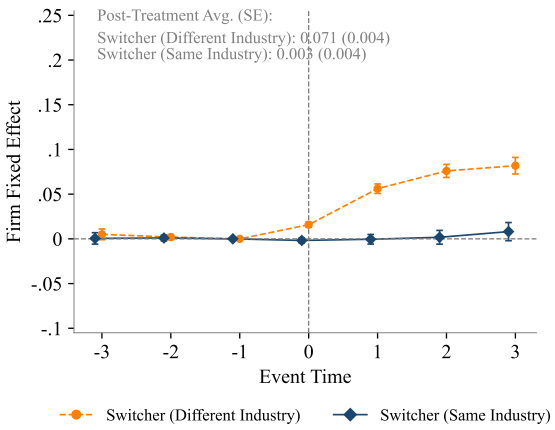
Notes: This figure shows event study estimates for log full-year equivalent earnings, comparing workers who stay with their pre-event employers through event time 0, 1, and 2 (stayers) versus those who change employers at least once during this period (non-stayers). Event time 0 represents the year of obtaining permanent residency. Orange lines represent non-stayers; navy lines represent stayers. The gray dashed line shows the baseline earnings effect for all workers from Figure 4a. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 12: Earnings and Firm Pay Premia by Industry-Transition Status

(a) Log Full-Year Equivalent Earnings

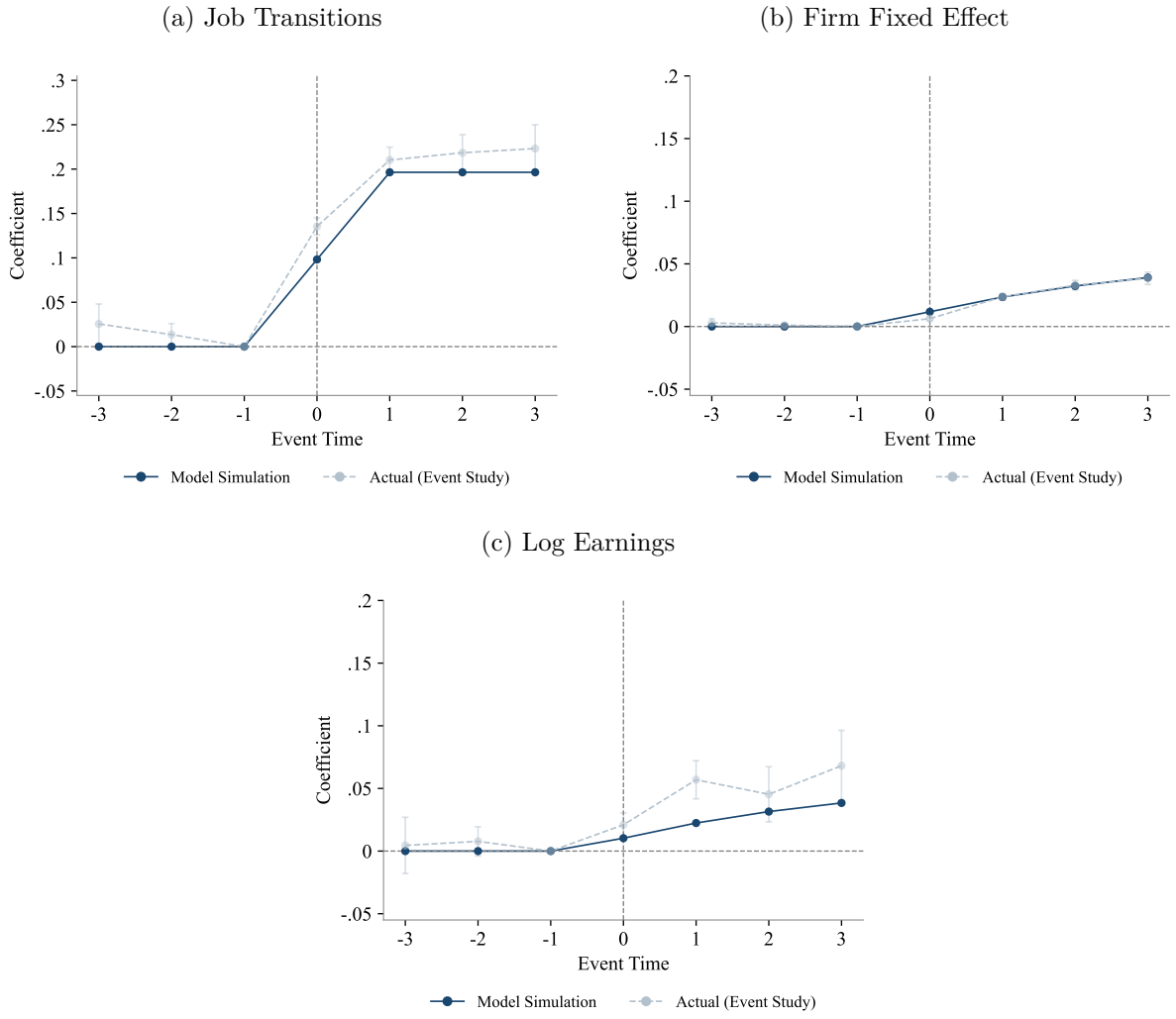


(b) Firm Fixed Effect



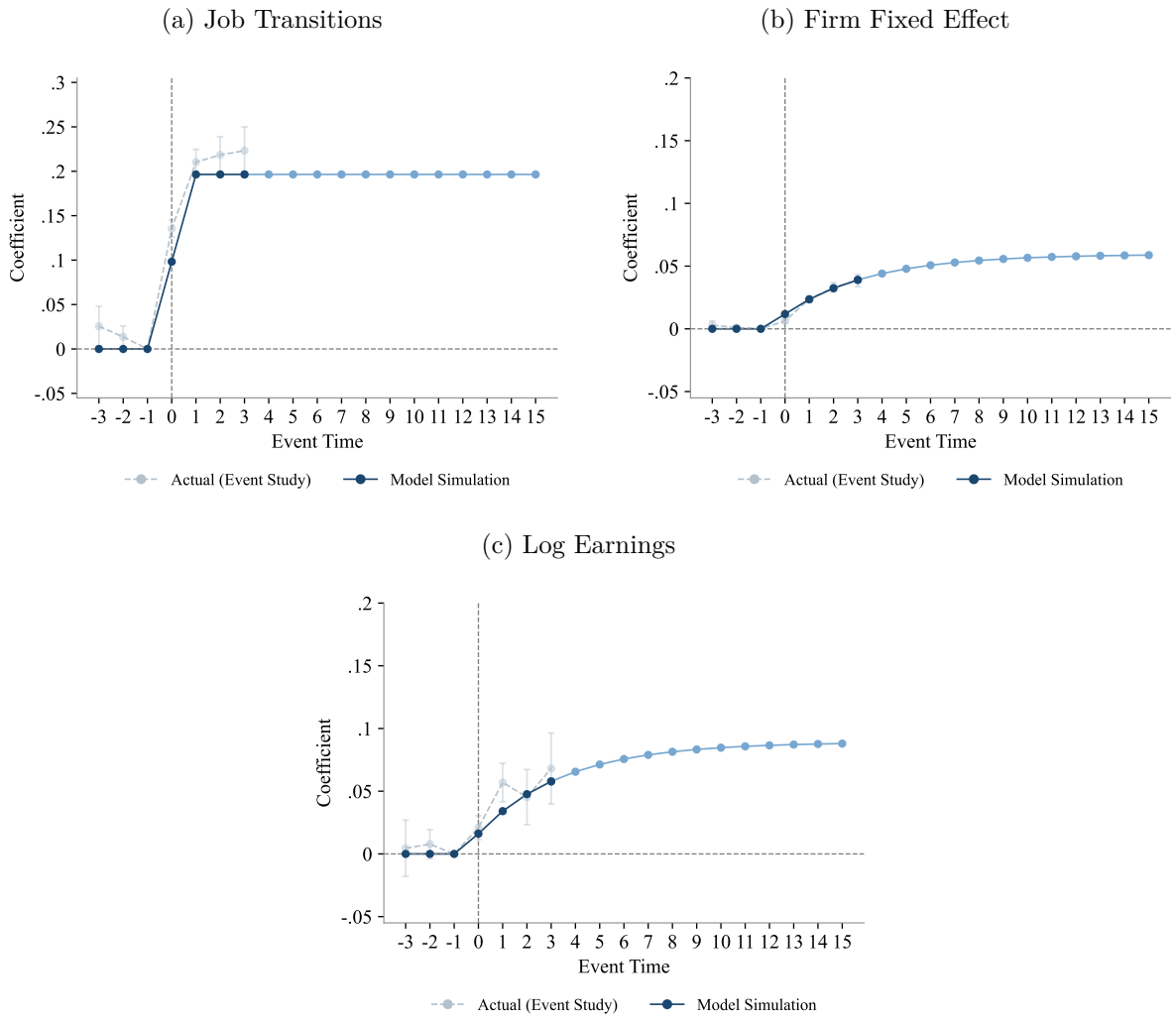
Notes: This figure shows event study estimates for the main labor market outcomes separately by industry-transition status of all workers who change jobs at least once through event time 0, 1, or 2. Event time 0 represents the year of obtaining permanent residency. Orange lines represent workers who switched industry; navy lines represent workers who stayed in the same industry. Panel (a) shows log full-year equivalent earnings. Panel (b) shows firm fixed effects of the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure 13: Model Simulations: Baseline Scenario



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 20%. 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 14: Model Simulations: Longer-Run Effects of PR with $\Delta x > 0$



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 20%. 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.

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	–
Unique individuals (rounded)	113,000	60,000	25,000	107,000
Earnings				
Total 2nd-year earnings (2012$)	53,000	51,000	51,000	49,000
Demographics				
High skilled	0.63	0.61	0.59	–
Male	0.70	0.69	0.74	–
Bachelor's degree	0.43	0.45	0.43	–
Advantaged country	0.17	0.16	0.14	–
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	–
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
Food Manufacturing (31)	0.05	0.05	0.07	0.06
Metal 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

Notes: This table presents summary statistics for the sample of TFWs defined in Section 3. Column 1 includes TFWs who eventually receive PR. Column 2 restricts to TFWs who take 3–5 years to receive PR. Column 3 further limits to the main sample that is described in Section 3.1. Column 4 represents workers who never obtain PR, defined as those for whom no year of PR is recorded in the IMDB. The "advantaged countries" include the U.S., UK, Australia, New Zealand, and Northern/Western Europe. The classification into low and high skilled workers uses the intended occupation in the IMDB recorded at the time of PR (Section 3.2). Industry codes in parentheses refer to 2-digit NAICS classifications. The industries shown are the top 9 initial industries for TFWs, with the 10th category aggregating all other industries. *Source:* Authors' calculations using the CEEDD (Demographic variables are obtained from the IMDB, while Earnings and Initial Industry variables are obtained from the T4 database).

Table 2: Mincer-style Regressions for Log Earnings using the 2016 Canadian Census Data

	Baseline Specification		Additional Fixed Effects		
	(1)	(2)	(3)	(4)	(5)
	No controls	With controls	Industry FE	Occupation FE	Ind and Occ FE
Temporary resident	-0.431	-0.394	-0.332	-0.349	-0.306
	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)
Permanent resident	-0.115	-0.180	-0.164	-0.163	-0.153
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
25-34 years		0.517	0.460	0.448	0.413
		(0.009)	(0.009)	(0.009)	(0.009)
35-44 years		0.795	0.716	0.693	0.639
		(0.009)	(0.009)	(0.009)	(0.009)
45-54 years		0.884	0.801	0.783	0.723
		(0.009)	(0.009)	(0.009)	(0.009)
55-64 years		0.785	0.703	0.692	0.634
		(0.010)	(0.010)	(0.010)	(0.010)
Bachelor's degree +		0.442	0.355	0.315	0.260
		(0.006)	(0.006)	(0.006)	(0.006)
Female		-0.319	-0.301	-0.274	-0.268
		(0.004)	(0.005)	(0.005)	(0.005)
English		0.280	0.250	0.245	0.223
		(0.008)	(0.008)	(0.008)	(0.008)
French		0.097	0.065	0.069	0.047
		(0.009)	(0.009)	(0.009)	(0.009)
N	224,061	224,061	224,061	224,061	224,061
Fixed effects	None	None	Industry	Occupation	Both

Notes: This table reports results from the estimation of Mincer-style regressions using the Canadian 2016 Census (see Section 5). The sample is restricted to full-time workers aged 18 to 64 who were not students during the nine-month period between September 2015 and May 10, 2016. Individuals working in agriculture (NAICS 11), education (NAICS 61), health (NAICS 62), and public (NAICS 91) sectors are excluded, and we also exclude live-in caregivers by removing individuals working in NOC 43-44. Column (1) estimates a simple regression of log earnings on TR_i and PR_i without controls. Column (2) adds the baseline controls. Columns (3)-(5) include fixed effects: column (3) includes industry fixed effects, column (4) includes occupation fixed effects, and column (5) includes both industry and occupation fixed effects. Robust standard errors are in parentheses.

Table 3: Calibrated Parameters for Counterfactual Simulations

	TFW market segment	Domestic workers market segment	Description
Panel A: Initially Calibrated Parameters			
Worker bargaining parameter, β	0.5	0.5	Follows Shi (2023); consistent with 49% worker share of rents in Lamadon, Mogstad, and Setzler (2022).
Complementarity parameter, ρ	0	0	Assumes Cobb-Douglas production function.
Job separation rate, ξ	0.021	0.011	Chosen to match average job tenure of four years in both segments; lower domestic value reflects OJS and poaching.
Discount rate, r	0.05	0.05	Follows Lise, Meghir, and Robin (2016) and Shi (2023).
Worker ability parameters, (a_x, b_x)			Chosen to match the domestic–TFW wage gap of 0.31
a_x (or a_x^{tfw})	1.2	1.15	from Mincer regression and ratio of std dev to mean
b_x (or b_x^{tfw})	3.2	2.05	wage in each group of 0.7 to match Dostie et al. (2023)
Firm productivity parameters, (a_y, b_y)			Chosen arbitrarily as normalizations because we choose
a_y	10	10	α to determine the effect of PR on AKM firm effects
b_y	10	10	
Matching parameter, η (or η^{tfw})	0.06	0.065	Chosen to target $\kappa = 0.22$ and $\kappa^{\text{tfw}} = 0.17$.
Vacancy cost (domestic), c	—	0.175	Chosen to be one month of average earnings in domestic market.
Application cost, c^{tfw}	0.14	—	Chosen so that expected cost of vacancy is 15 percent larger than in the domestic market.
Probability TFW application accepted	0.69	—	Average TFW application acceptance rate reported in Human Resources and Skills Development Canada (2012).
Panel B: Calibrated Parameters Targeted to Reduced-Form Results			
Value of unemployment, b	0.19	0.37	Domestic b makes unemployment worth 50% of wage at lowest-productivity firm; TFW b chosen so PR induces no wage effect.
On-the-job search parameter, s	0	0.29	No on-the-job search in TFW market; domestic s fits PR effect on job transition rates.
Share parameter in CES production function, α	0.91	0.91	Chosen to match estimated effect of PR on AKM firm fixed effects.
Change in worker ability after PR, Δx	—	0.097	Chosen to match PR effect on earnings given other parameters; this parameter can be interpreted as the share of TFW-domestic ability gap closed after PR.

Notes: This table summarizes the calibrated parameters in our model simulation.

Table 4: Counterfactual Analysis Increasing Expected Cost of TFW Vacancy

	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Increase expected cost for TFW vacancy	% change relative to DE
Panel A: Market-level outcomes			
TFW market segment:			
Output (market production)	1.066	1.024	-3.94%
Wage bill	0.720	0.680	-5.57%
Firm profits	0.279	0.272	-2.44%
$Corr(x, y)$	0.000	0.000	
Market tightness (V/U)	1.198	0.876	-26.91%
Domestic workers market segment:			
Output (market production)	1.460	1.462	0.14%
Wage bill	1.067	1.071	0.37%
Firm profits	0.335	0.332	-0.97%
$Corr(x, y)$	0.131	0.131	
Market tightness (V/U)	1.566	1.606	2.53%
Combined market:			
Output (market production)	2.526	2.486	-1.58%
Wage bill	1.787	1.751	-2.03%
Firm profits	0.614	0.604	-1.64%
Panel B: Average wages			
Average wages, TFWs			
TFWs, all	0.950	0.934	-1.65%
TFWs, below-median wages	0.424	0.419	-1.29%
TFWs, above-median wages	1.476	1.450	-1.75%
Average wages, domestic workers			
Domestic workers, all	1.354	1.358	0.24%
Domestic workers, below-median wages	0.647	0.650	0.46%
Domestic workers, above-median wages	2.062	2.065	0.17%
Average wages, all workers	1.156	1.154	-0.14%
Panel C: Social welfare			
Social welfare in TFW market segment	1.058	1.020	-3.54%
Social welfare in domestic workers market segment	1.510	1.510	0.02%
Total social welfare	2.568	2.531	-1.44%

Notes: This table presents results from our counterfactual scenario where we increase the expected cost of a temporary foreign worker (TFW) application by 25%, which reduces the probability of application acceptance in our calibrated model. This reduction 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. Fewer firms enter the TFW segmented market, which decreases output in this segment by 3.94% while increasing output in the domestic segment by 0.14%. Firm profits decreases by 2.44% in the TFW segment and 0.97% in the domestic segment due to the increase in expected cost of a vacancy. The reduction in output reduces social welfare by 3.54% when the planner values wages and profits equally.

Table 5: Counterfactual Analysis Converting All TFWs to Permanent Residents

		Converting All TFWs to PR	
	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Change TFW x distribution to match earnings effects of PR	% change relative to DE
Panel A: Market-level outcomes			
Combined market:			
Output (market production)	2.526	2.593	2.65%
Wage bill	1.787	1.894	5.95%
Firm profits	0.614	0.614	-0.03%
$Corr(x, y)$		0.153	
Market tightness (V/U)		1.174	
Panel B: Average wages			
Average wages, TFWs			
TFWs, all	0.950	1.066	12.26%
TFWs, below-median wages	0.424	0.469	10.48%
TFWs, above-median wages	1.476	1.664	12.76%
Average wages, domestic workers			
Domestic workers, all	1.354	1.324	-2.24%
Domestic workers, below-median wages	0.647	0.620	-4.22%
Domestic workers, above-median wages	2.062	2.028	-1.62%
Average wages, all workers	1.156	1.196	3.43%
Panel C: Social welfare			
Social welfare in TFW market segment	1.058		
Social welfare in domestic workers market segment	1.510		
Total social welfare	2.568	2.700	5.14%

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. This table 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 3.4% and social welfare of 5.1%.

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

A The Reforms to the Temporary Foreign Worker Program in Canada in 2014

In 2014, the TFWP was split into two distinct programs: the umbrella term "TFWP," which previously regulated a broad set of TFWs, became known as the program that solely regulated TFWs with closed worker permits. A second program, known as the International Mobility Program (IMP), was implemented to regulate TFWs with open work permits (Employment and Social Development Canada, 2015).[44]

An important change in 2014 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, 2022). 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 (Employment and Social Development Canada, 2015). Employers are also required to attest that hiring the TFW would not result in job losses for domestic workers at worksites employing TFWs. Appendix L.3 shows an example LMIA application 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 (Employment and Social Development Canada, 2015). In 2017, the government also introduced the Global Talent Stream (GTS), specifically designed to facilitate the hiring of highly skilled TFWs required to meet a "unique and specialized condition" and alleviate labor shortages for high-skilled occupations (Kachulis and Pérez-Leclerc, 2020).

There were several other significant reforms to the TFWP in 2014. The application fee increased from $275 to $1,000 per position requested.[45] The federal government implemented safeguards to protect TFWs, especially those in the low-wage stream, such as more frequent inspections to verify employer compliance (Employment and Social Development Canada, 2015).[46] In addition, the federal government introduced a cap limiting the proportion of low-wage temporary foreign

[44] The IMP workers have "open work permits," meaning that they can switch employers without obtaining a new visa. These workers are considered "LMIA-exempt."

[45] Charging TFWs for the application fee or other recruiting costs is illegal (Government of Canada, 2025c).

[46] For TFWs in the low-wage stream, employers have additional obligations. For example, the most recent requirements mandate that the employer provide private health insurance when provincial coverage does not apply, protect workers from workplace hazards, and ensure that suitable housing is available for the TFWs (Government of Canada, 2025c). In general, employers using the TFWP are not required to provide or secure housing for the TFWs (only ensure it is available). Employers in the Seasonal Agricultural Worker Program (SAWP) and the Live-in Caregiver Program (LCP) must provide housing for the foreign workers, and we exclude the SAWP and LCP from our analysis.

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 (Employment and Social Development Canada, 2015). Furthermore, the maximum duration for a low-wage permit was reduced to one year in 2014, and a 3-year cap was introduced for high-wage permits (see Table A.2). The "four-in, four-out" rule remained until 2016, at which point it was repealed, allowing TFWs to renew their work permits even after 4 years of cumulative duration in Canada.

B The Express Entry System

In 2015, Canada introduced *Express Entry (EE)* to centralize the application process for its federal high-skilled worker programs. Crucially, EE is an application management system, not a standalone immigration pathway. Applicants must first meet the minimum eligibility requirements of the FSWP, FSTP, or CEC to enter the EE pool, where they receive a Comprehensive Ranking System (CRS) score. EE mandates that individuals apply to certain programs in a specific order, such as the CEC before the FSWP, if eligible for both. Applicants in the EE pool with CRS scores above a minimum threshold are invited to apply for PR. Table A.11 shows the typical minimum thresholds, which change roughly every two weeks and tend to be between 450–500. Table A.12 illustrates how CRS points were awarded in 2015, showing that at most 150 points were awarded for education, 160 for language proficiency, and 80 for Canadian work experience.

In addition, some PNP streams are *EE-aligned*: individuals who apply to the FSWP, FTSP, or CEC through EE are eligible to receive an additional 600 additional CRS points if they also meet the program requirements of an *EE-aligned* PNP stream and therefore obtain a provincial nomination. For high-skilled workers, EE accelerates processing times and prioritizes candidates with high CRS scores, especially for those with Canadian work experience. Note that there are many PNP streams that are independent of the EE system; these are called *not* EE-aligned.

With the creation of Express Entry in 2015, the government formally introduced the "dual intent" LMIA, which replaced the former Arranged Employment Opinion (AEO) (BC Chamber of Commerce, 2016).[47] The dual intent LMIA is not a distinct pathway to PR; it is a process that integrates the LMIA into the EE system. A dual intent LMIA allows an employer to use a single application to support a foreign national's temporary work permit and, concurrently, their bid for permanent residence. TFWs who use the dual intent LMIA must still apply through one of the federal skilled programs—i.e., the FSWP, CEC, or FSTP—but the LMIA awards applicants with additional points that increases the probability of a successful application to PR (Government of Canada, 2025a). When Express Entry was first introduced, a job offer supported by an LMIA resulted in an additional 600 points, virtually guaranteeing that the TFW would receive an invitation to apply to PR at a time when the minimum CRS for an invitation to apply for PR was around 450 (Immigration, Refugees and Citizenship Canada, 2016b). In 2016, the number of points awarded for a permanent job offer was reduced to 50 for most high-skilled occupations (and 200 for the highest management roles) (Immigration, Refugees and Citizenship Canada, 2016a).

[47] The purpose of the AEO was to formally verify that the applicant had a prearranged job offer.

C Derivation of the Difference-in-Differences Estimand

This appendix section provides the formal derivation establishing that Assumption 1 (CT) and Assumption 2 (NA) identify the cohort average treatment effect on the treated, $\text{ATT}_t(g)$, using a standard difference-in-differences estimand.

Recall that our target parameter is defined as:

$$\text{ATT}_t(g) \equiv \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2] \tag{12}$$

The identification challenge arises because we observe the treated potential outcome $\mathbb{E}[Y_{it}(g) \mid G_{1i} = g_1, G_{2i} = g_2]$ for $t \geq g_2$, but the counterfactual $\mathbb{E}[Y_{it}(\infty) \mid G_{1i} = g_1, G_{2i} = g_2]$ is unobserved in the post-treatment periods. We recover this counterfactual through a comparison with a not-yet-treated cohort $g' = \{g_1, g_2'\}$ that shares the same time-to-PR (g_1) but obtains PR later ($g_2' > t \geq g_2$), and is observed in both the baseline period $s < g_2$ and the post-treatment periods $t \geq g_2$.

The derivation proceeds as follows:

$$\begin{aligned}
\text{ATT}_t(g) &= \mathbb{E}[Y_{it}(g) - Y_{it}(\infty) \mid G_i = g] \\
&= \mathbb{E}[Y_{it}(g) \mid G_i = g] - \mathbb{E}[Y_{it}(\infty) \mid G_i = g] \\
&= \mathbb{E}[Y_{it}(g) \mid G_i = g] - (\mathbb{E}[Y_{is}(\infty) \mid G_i = g] + \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g]) \\
&= \mathbb{E}[Y_{it}(g) \mid G_i = g] - \big(\mathbb{E}[Y_{is}(\infty) \mid G_i = g] + \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g']\big) \\
&= \mathbb{E}[Y_{it}(g) - Y_{is}(\infty) \mid G_i = g] - \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g'] \\
&= \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g] - \mathbb{E}[Y_{it} - Y_{is} \mid G_i = g']
\end{aligned} \tag{13}$$

The first equality restates the definition. The second step applies the linearity of the expectations operator. The third step adds and subtracts $\mathbb{E}[Y_{is}(\infty)|G_i = g]$, decomposing the unobserved counterfactual into an observed baseline component and an unobserved trend component. The fourth step invokes Assumption 1 (CT) to equate never-treated trajectories across cohort g and cohort g':

$$\mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g] = \mathbb{E}[Y_{it}(\infty) - Y_{is}(\infty) \mid G_i = g'] \tag{14}$$

The fifth step in Equation (13) consolidates terms. The final step applies Assumption 2 (NA), which allows substitution of realized outcomes for potential outcomes in periods where units are not yet treated. Specifically, for cohort g, $Y_{is} = Y_{is}(\infty)$ since $s < g_2$, and for cohort g', both $Y_{is} = Y_{is}(\infty)$ and $Y_{it} = Y_{it}(\infty)$ since $s, t < g_2'$.

This yields the standard difference-in-differences estimand, comparing the change in outcomes for the treated cohort against the change in outcomes for a not-yet-treated comparison cohort.

D 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):

$$Y_{it} = \sum_{g_2} \gamma_g \mathbb{1}\{G_{2i} = g_2\} + \sum_{s} \tau_s \mathbb{1}\{t = s\} + \sum_{g_2} \sum_{r \neq -1} \delta_{rg} \mathbb{1}\{G_{2i} = g_2, r = t - g_2\} \tag{15}$$

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 (15) for a given individual with either $t \geq G_{2i}$ (treated individuals) and $t < G_{2i}$ (not-yet-treated individuals):

$$Y_{it} = \begin{cases} \gamma_g + \tau_t & \text{for } t < G_{2i} \\ \gamma_g + \tau_t + \delta_{rg_2} & \text{for } t \geq G_{2i} \end{cases} \tag{16}$$

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:

$$\begin{aligned} \mathbb{E}[Y_{it}(\infty)|G_i = g] =& \mathbb{E}[Y_{is}|G_i = g] \\ &+ (\mathbb{E}[Y_{it}|G_i = g'] - \mathbb{E}[Y_{ip}|G_i = g']) - (\mathbb{E}[Y_{ip}|G_i = g''] - \mathbb{E}[Y_{is}|G_i = g'']) \\ =& \gamma_g + \tau_s \\ &+ (\gamma_{g'} + \tau_t) - (\gamma_{g'} + \tau_p) + (\gamma_{g''} + \tau_p) - (\gamma_{g''} + \tau_s) \\ =& \gamma_g + \tau_t \end{aligned} \tag{17}$$

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:

$$\mathbb{E}[Y_{it}(g) \mid G_i = g] = \gamma_g + \tau_t + \delta_{rg_2} \tag{18}$$

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

Equation (17) and (18):

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

E Estimating firm pay premiums using the AKM model

E.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.[48]

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.[49] 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.[50] Thus, firms that are not in the connected set are excluded.

[48] 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).

[49] 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).

[50] 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.

E.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 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:

$$y_{it} = \alpha_i + \psi_{\mathbf{j}(i,t)} + X'_{it}\beta + \varepsilon_{it}, \tag{19}$$

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.[51] 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.

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

F 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.

F.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, 2025k) 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).[52]

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, 2025q). 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 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

[52] 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.

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.

F.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, 2025i) 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, ensure that hiring an H-1B worker will not worsen the working conditions of U.S. workers, confirm that there is no strike or lockout in the occupation, and inform their current employees that an H-1B petition is being filed. 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, 2025h) - though there are *many* exemptions and waivers that allow the number granted each year to be much higher[53]. 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, 2025l) 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.

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

The TN (Canadian/Mexican professionals), H-2A (U.S. Citizenship and Immigration Services, 2025j) (agricultural workers), and P-series (U.S. Citizenship and Immigration Services, 2025m,

[53] 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)

2025n) (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, 2025o, 2025p). 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.

G Transition to permanent residency

This appendix characterizes the counterfactual policy simulation in which employed TFWs are exogenously granted permanent residency. This transition does not occur in the baseline model, where the two labor markets remain segmented. In the counterfactual analysis, we transition employed TFWs to the domestic market while keeping their current match fixed. We describe how the match surplus changes upon receiving PR and show that wage renegotiation over this new surplus is incentive compatible for the firm.

G.1 Changes to match surplus

Worker's present value of unemployment and wage contract

When a TFW worker of type x employed at a firm of type y obtains permanent residency, the surplus of the match instantaneously updates from $S^{\text{tfw}}(x,y)$ to $S(x,y)$. We will show in this section why this is the case.

The present value of unemployment for a TFW worker is $W_0^{\text{tfw}}(x)$. When they become a PR, they are now eligible to be hired by domestic firms either through poaching or if their current match dissolves. In addition, they are eligible for domestic unemployment benefits $b(x)$. Thus, the present value of unemployment for the TFW who obtains PR changes from $W_0^{\text{tfw}}(x)$ to $W_0(x)$.

The TFW's initial wage from unemployment was $w = \phi_0^{\text{tfw}}(x,y)$ as described in Section 7.3. The present value of the job with wage $\phi_0^{\text{tfw}}(x,y)$ at firm type y changes from $W_1^{\text{tfw}}(\phi_0^{\text{tfw}}(x,y),x,y)$ to $W_1(\phi_0^{\text{tfw}}(x,y),x,y)$. This happens since the PR can now search on the job for better offers. Note that this is the present value at the old wage; we have not allowed for renegotiation, since we do not yet know the updated surplus that the worker and firm will renegotiate over.

We would be tempted to replace $W_1(\phi_0^{\text{tfw}}(x,y),x,y) - W_0(x)$ for this new PR with $\beta S(x,y)$ as in Section 7.3, but the wage $\phi_0^{\text{tfw}}(x,y)$ is not the same as the one for domestic workers being hired out of unemployment, $\phi_0(x,y)$. That is because the worker was hired from TFW-unemployment, not domestic unemployment. Their wage was set by Nash bargaining over the surplus when they were hired, $S^{\text{tfw}}(x,y)$.

Joint match value

In Section 7.4, we defined $P(x,y)$ as the value of joint production of a (x,y) match. The analogous value for a match between a firm and a TFW is $P^{\text{tfw}}(x,y)$, and this value differs since the worker's outside options depend on whether they are a TFW or domestic. When a TFW of type x gets PR, they are observationally equivalent to a domestic of type x, and as such the joint production of the match updates from $P^{\text{tfw}}(x,y)$ to $P(x,y)$.

We therefore have two equations for domestic surplus, one using present values of the match and the other using P:

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

Setting the two equations equal and re-arranging gives the following relationship, that the value of joint production is equal to the firm and worker's value from the match. Note that the value does not depend on w.

$$P(x,y) = \Pi_1(w,x,y) + W_1(w,x,y)$$

This relationship is necessary for us to understand what happens to the firm's present value of the match, Π_1^{tfw}, when the worker obtains PR, which we discuss in the next part.

Firm present value of the match

From the last two parts, we know that $P(x,y) = \Pi_1(w,x,y) + W_1(w,x,y)$ and that the worker's present value of their existing wage contract is $W_1(\phi_0^{\text{tfw}}, x, y)$. Therefore, for consistency and by definition of the joint value, the firm's present value of the match must be $\Pi_1(\phi_0^{\text{tfw}}, x, y)$.

Note that the wage is still $w = \phi_0^{\text{tfw}}(x,y)$.

New match surplus

Denote the match surplus for the firm and worker who just received PR as $S^{\text{PR}}(x,y)$. We have shown that TFW-superscript denoted values $W_0^{\text{tfw}}(x)$, W_1^{tfw}, and Π_1^{tfw} have updated to their domestic counterparts $W_0(x)$, W_1, and Π_1, holding the wage fixed at $w = \phi_0^{\text{tfw}}$. We therefore have the following surplus value:

$$S^{\text{PR}}(x,y) \equiv \Pi_1(\phi_0^{\text{tfw}}, x, y) + W_1(\phi_0^{\text{tfw}}, x, y) - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} - W_0(x)$$

This right-hand side is similar to domestic surplus as defined in Section 7.2, just with a different wage dividing the surplus among firm and worker. Since the surplus does not depend on the wage, we have $S^{\text{PR}}(x,y) = S(x,y)$.

To further demonstrate that this relationship is wage-invariant, we plug in for $P(x,y) = \Pi_1(\phi^{\text{tfw}}, x, y) + W_1(\phi^{\text{tfw}}, x, y)$:

$$S^{\text{PR}}(x,y) = P(x,y) - \max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\} - W_0(x)$$

The right-hand side of this equation is exactly the domestic surplus as defined in Section 7.4. Therefore $S^{\text{PR}}(x,y) = S(x,y)$ and the surplus of the match for a TFW who has just received PR and no outside offers is $S(x,y)$. This surplus does not depend on the wage, since the wage divides the surplus between firm and worker. It will be the surplus that the worker and firm bargain over.

G.2 Renegotiation is incentive-compatible for the firm

The surplus of the match before the worker obtains PR is $S^{\text{tfw}}(x,y)$ with the worker earning $w = \phi_0^{\text{tfw}}(x,y)$ as in Section 7.3. As established in Appendix G.1, when the worker gets PR, the surplus updates to $S(x,y)$.

Given the firm's bargaining power, $1-\beta$ share of the surplus, it has two options:

- Accept $1-\beta$ share of the updated surplus $S(x,y)$, which would be the same as hiring the worker out of domestic unemployment. The firm's present value of the match continuation under renegotiation is $\Pi_1(\phi_0(x,y),x,y)$.
- Dissolve the match and re-enter either the TFW or domestic market, with present value $\max\{\Pi_0(y),\Pi_0^{\text{tfw}}(y)\}$.

From Section 7.4, the firm's continuation value of the match is:

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

We also know that the firm's outside option is $\max\{\Pi_0(y),\Pi_0^{\text{tfw}}(y)\}$, which is embedded in the present value of the firm's profits from continuing the match. So long as $(1-\beta)S(x,y)\geq 0$, the firm will weakly prefer staying in the match.

Therefore, renegotiation is incentive-compatible if $S(x,y)\geq 0$. The firm will prefer to dissolve the match anytime $S(x,y)<0$.

H Model Proofs

H.1 Value function for employed TFWs (see Section 7.4)

$$r[W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)] = \left(\underbrace{w - b^{\text{tfw}}(x) - \kappa^{\text{tfw}}\beta \int [S^{\text{tfw}}(x,y')]^+ v(y')dy'}_{\text{flow value of } W_1^{\text{tfw}} - W_0^{\text{tfw}}} \right)$$
$$+\xi^{\text{tfw}} \left(\underbrace{W_0^{\text{tfw}}(x) - W_0^{\text{tfw}}(x)}_{\text{relative pay-off if the job is destroyed}} - (W_1^{\text{tfw}}(w,x,y) - W_0^{\text{tfw}}(x)) \right)$$

Re-arranging, this becomes the same expression as previously:

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

H.2 Equations for the match surplus (See Section 7.4)

H.2.1 Domestic workers

This follows the derivation in Appendix A of Lise, Meghir, and Robin (2016) with two modifications. First, $\max\{\Pi_0(y), \Pi_0^{\text{tfw}}(y)\}$ is the firm's outside option. Second, we abstract from productivity shocks (denoted δ in their model, which allow firm types to transition over time):

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

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

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:

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

Substituting in the expression for $\Pi_0(y)$ and $\Pi_0^{\text{tfw}}(y)$, we obtain a simplified expression:

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

H.2.2 TFWs

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

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

Following Section H.2.1, we obtain:

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

Substituting in the expression for $\Pi_0(y)$ and $\Pi_0^{\text{tfw}}(y)$, we obtain a simplified expression:

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

I Model Simulation Details

This section describes how we simulate and solve the search-and-matching model described in the main text. To summarize our simulation approach, we first discretize the beta distributions for worker and firm heterogeneity, and we then solve for the steady-state equilibrium of the model using an iterative algorithm to calculate the fixed point solutions to the Bellman equations for $S(x,y)$ and $h(x,y)$ (see Section 7.4) and the equations that define V, N, and κ in terms of the other model parameters (and $S(x,y)$ and $h(x,y)$). Lastly, we solve for the endogenous threshold y^* that determines which firms self-select into the TFW and domestic market segments.

I.1 Worker and firm heterogeneity

We assume a Beta distribution for firm heterogeneity and worker heterogeneity (with a separate distribution TFWs and domestic workers). We approximate the continuous Beta distribution using 20 discrete types, equally spaced along the unit interval so that the vector of values is given by $(0.025, 0.075, ..., 0.925, 0.975)$. The probability mass for each type is given by the integral of the Beta distribution across each interval (e.g., the mass for $x = 0.025$ type is the integral of Beta distribution between 0 and 0.05).

I.2 Iterative algorithm

TFW market

We solve for equilibrium in TFW market by first taking as given the set of firms that have decided to search in the TFW market. That is, we take a candidate threshold y^* and assign all firms with $y < y^*$ to search in the TFW market and a share σ of $y = y^*$ firms to search in TFW market.

Given this set of firms, we then solve for the market equilibrium following similar iterative algorithm described in Appendix B of Lise, Meghir, and Robin (2016). Specifically, we follow the following steps:

1. Initialize value of N and κ^{tfw} as well as initial values of $S^{\text{tfw}}(x,y)$ and $h^{\text{tfw}}(x,y)$; note that $S^{\text{tfw}}(x,y)$ and $h^{\text{tfw}}(x,y)$ are 20-by-20 matrices given the discrete heterogeneity.

2. Given these values, we then calculate U^{tfw} from $h^{\text{tfw}}(x,y)$, calculate V^{tfw} as $V^{\text{tfw}} = (\kappa^{\text{tfw}}/\eta^{\text{tfw}})^{-2}/(U^{\text{tfw}})$, and calculate N^{tfw} as $N^{\text{tfw}} = V^{\text{tfw}}/p + 1 - U^{\text{tfw}}$.

3. Update values of $S^{\text{tfw}}(x,y)$ and $h^{\text{tfw}}(x,y)$ based on Bellman equations (given the values of κ^{tfw}, U^{tfw}, V^{tfw}, and N^{tfw}).

4. Update value of kappa given new values of $S^{\text{tfw}}(x,y)$ and $h^{\text{tfw}}(x,y)$ in direction towards satisfying the free-entry condition

5. Repeat steps (2.) through (4.) until the free-entry condition and all fixed-point conditions are satisfied

Domestic market

Using the same threshold y^* used in solving for the TFW market equilibrium, we calculate the set of firms in the domestic market, which is all firms with $y > y^*$ and a share $(1-\sigma)$ of firms with $y = y^*$. Intuitively, we calculate N^{tfw} using the free-entry to solve for the equilibrium in the TFW market, and we the adjust σ to solve for the equilibrium between the TFW market and domestic market by solving for parameters that give $\Pi_0^{\text{tfw}}(y^*) = \Pi_0(y^*)$. Given the value of N^{tfw} calculated in the TFW market above, we fix the value of the number of firms in the domestic market, N, so that the total number of firms across both market segments is consistent with the Beta distribution of firms. Specifically, we define λ as the share of the discretized Beta distribution accounted for by the TFW firms, which is the sum of all firms with $y < y^*$ plus σ times the share of firms with $y = y^*$. Given this definition, we set $N = N^{\text{tfw}} * (1-\lambda)/\lambda$. Using this value of N, we use the following algorithm:

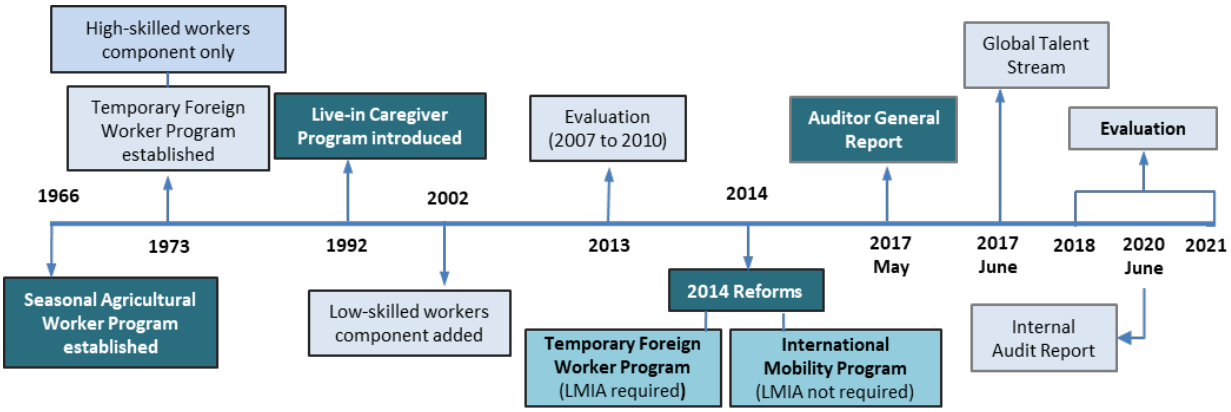
1. Initialize value of κ as well as initial values of $S(x,y)$ and $h(x,y)$.
2. Given these values, we then calculate U from $h(x,y)$ and calculate V as $V = (\kappa/\eta)^{-2}/(U + s(1-U))$ (and we do not update N since that is taken as fixed).
3. Update values of $S(x,y)$ and $h(x,y)$ based on Bellman equations (given the values of κ, U, V, and N).
4. Repeat steps (2.) and (3.) until all fixed-point conditions are satisfied.

Full labor market equilibrium

After solving the iterative algorithm above in the TFW market and the domestic market, we then compare the simulated $\Pi_0^{\text{tfw}}(y^*)$ and $\Pi_0(y^*)$ values, and we adjust the σ parameter in the direction of bringing the two values closer together (e.g., if $\Pi_0^{\text{tfw}}(y^*) > \Pi_0(y^*)$, then we increase σ so that there are fewer firms in the domestic market). We then repeat the iterative algorithm in each market again, and we continue to adjust σ until $\Pi_0^{\text{tfw}}(y^*) = \Pi_0(y^*)$. If this algorithm does not converge, we then try different values of y^* until we find convergence. In all of our simulations, we have always found a unique value of y^* given the other calibrated parameters.

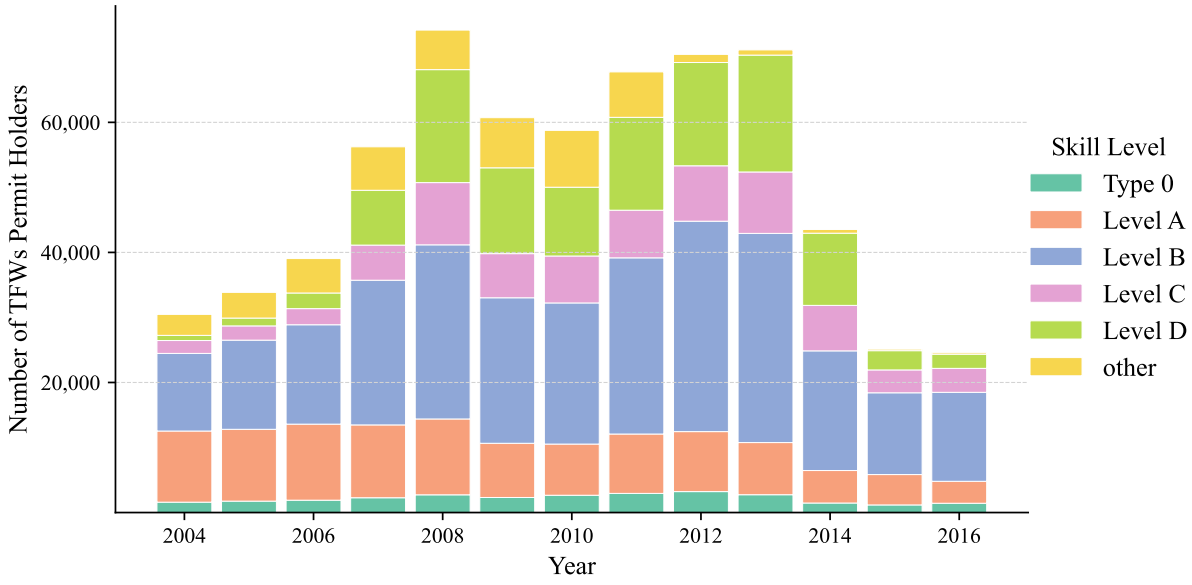
J Appendix Figures

Figure A.1: 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. Note that although the figure includes changes to the Seasonal Agricultural Worker Program (SAWP) and Live-in Caregiver Program (LCP), our analysis focuses on workers with a Labour Market Opinion (LMO) *excluding* the SAWP and LCP (see Section 3). *Source:* Figure 2 in Employment and Social Development Canada (2021).

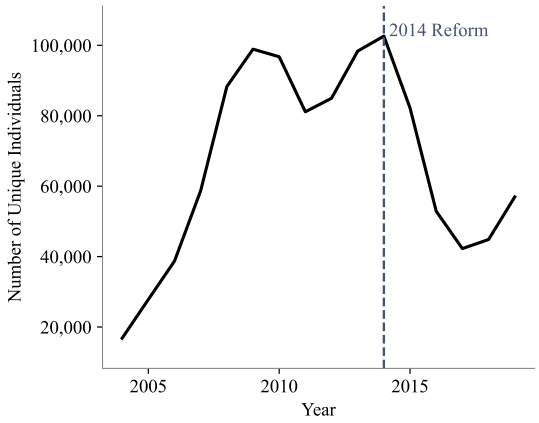
Figure A.2: Number of TFWs with LMIA by Skill Level, 2004–2016



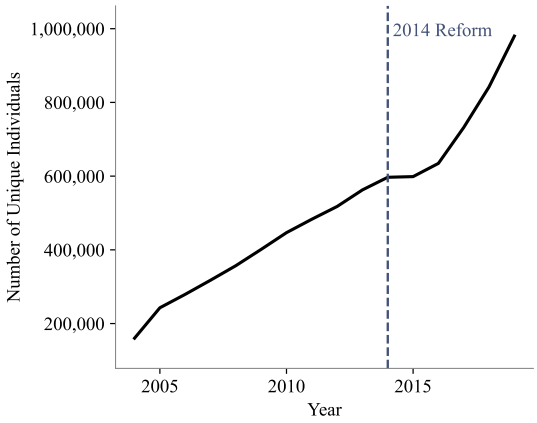
Notes: This figure shows the distribution TFWs with an LMO by their skill types, using NOC 2016 codes. Skill Type 0: management job, e.g., restaurant managers, mine managers, shore captains (fishing); Skill Level A: professional jobs that usually call for a degree from a university, e.g., doctors, dentists, architects; Skill Level B: technical jobs and skilled trades that usually call for a college diploma or training as an apprentice, e.g., chefs, plumbers, electricians; Skill Level C: intermediate jobs that usually call for high school and/or job-specific training, e.g., industrial butchers, long-haul truck drivers, food and beverage servers; Skill Level D: labor jobs that usually give on-the-job training, e.g., fruit pickers, cleaning staff, oil field workers. For more detailed information on the top occupations of TFWs using NOC 2016 codes, see Table A.1. *Source:* Authors' calculations using data from Immigration, Refugees and Citizenship Canada (2017b).

Figure A.3: Temporary Foreign Workers (TFWs) with an LMO/LMIA in Canada, 2004–2019

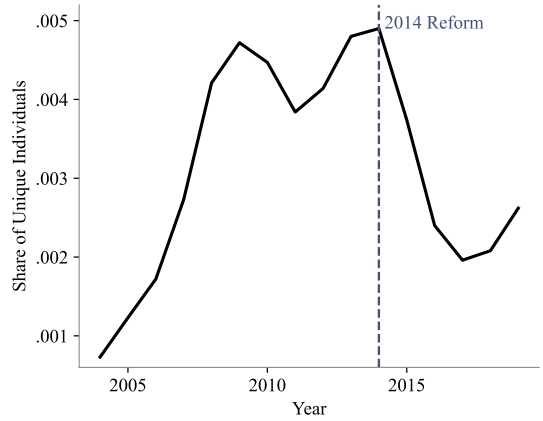
(a) Number of Unique LMO/LMIA Holders (Non-SAWP/LCP)



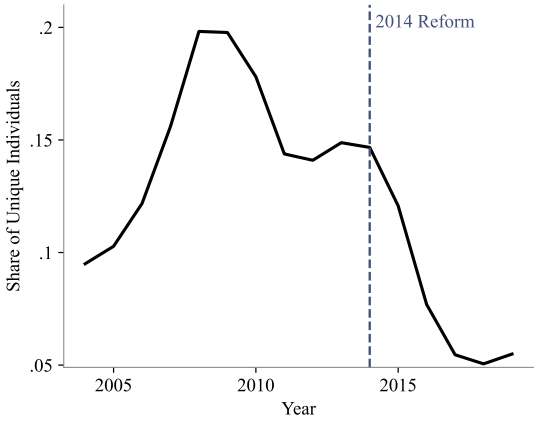
(b) Number of Other Temporary Residents (All Temporary Residents not in Panel a)



(c) Share of Total Employment: LMO/LMIA Holders (Non-SAWP/LCP)



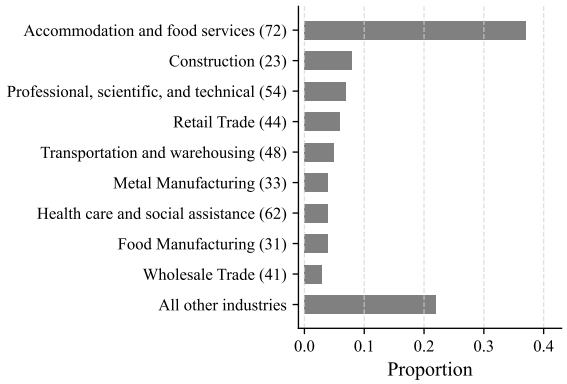
(d) Share of All Temporary Residents: LMO/LMIA Holders (Non-SAWP/LCP)



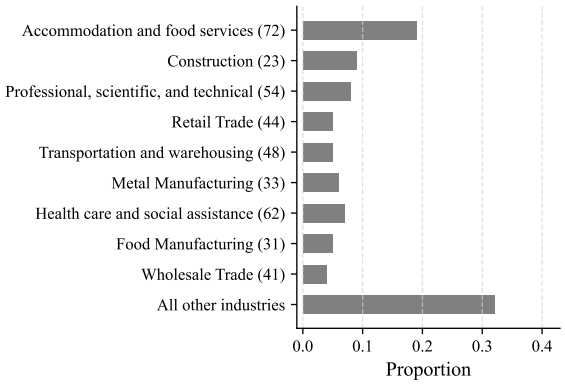
Notes: This figure presents data on temporary residents with a Labour Market Opinion (LMO) or Labour Market Impact Assessment (LMIA) (the LMIA replaced the LMO in 2014). Panel (a) plots the number of LMO/LMIA holders, excluding those in the Seasonal Agricultural Worker Program (SAWP) and Live-in Caregiver Program (LCP). Panel (b) plots the number of all other temporary residents. Panel (c) calculates the share of all employees (individuals with positive T4 earnings) who are non-SAWP and non-LCP LMO/LMIA holders. Finally, Panel (d) shows the group in Panel as a share of all temporary residents (the population in Panel a divided by the sum of the populations in Panels a and b). *Source:* Authors' calculations using the CEEDD.

Figure A.4: Distribution of Industries Before and After Permanent Residency

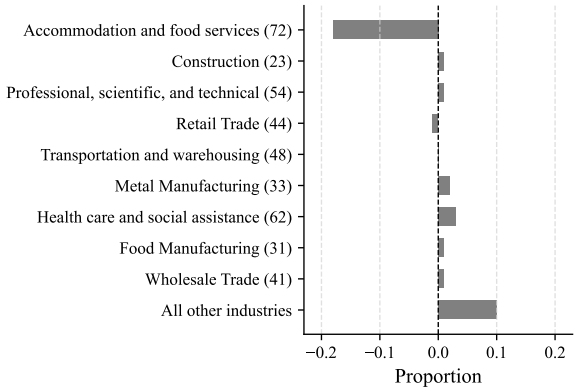
(a) Before PR



(b) After PR



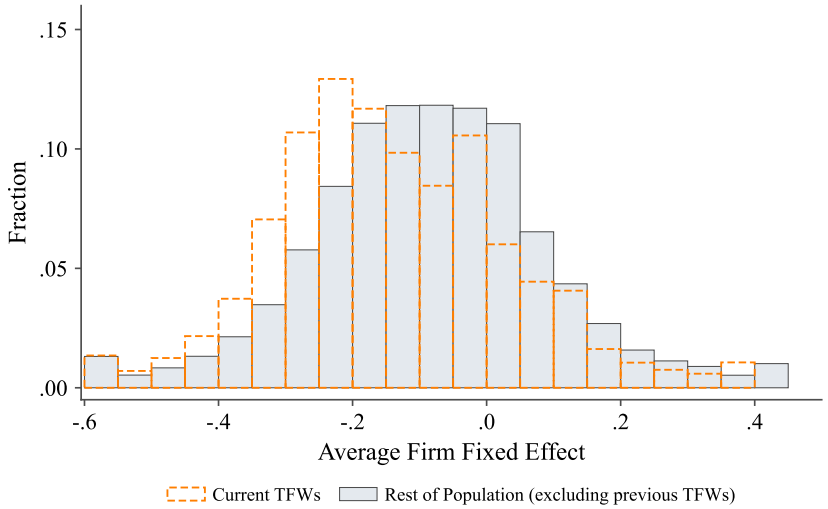
(c) Differences: Prop. after PR − Prop. before PR



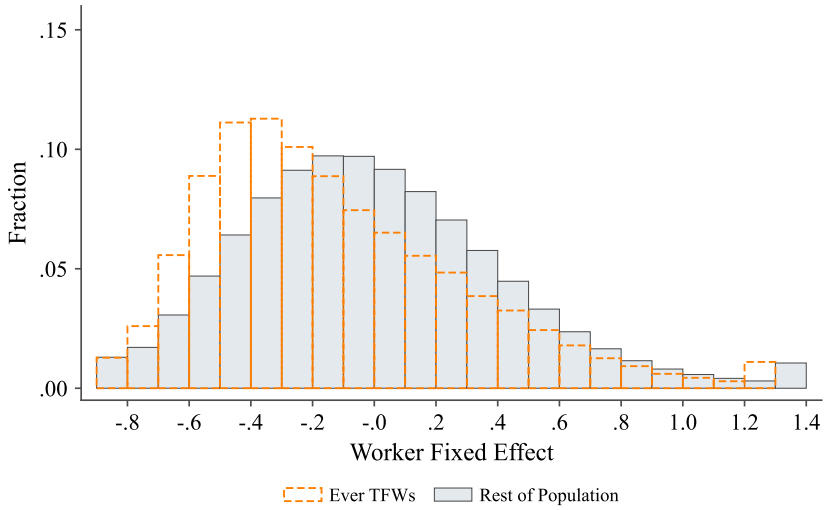
Notes: This figure shows the share of TFWs in each industry before and after permanent residency. The codes in parentheses are 2-digit NAICS codes. Industries are ranked in descending order according to the proportion of TFWs in their initial year in each industry; the figure shows the top nine industries, with the tenth category aggregating all others. Panel (a) shows the distribution before PR. Panel (b) shows the distribution after PR. Panel (c) takes the differences by subtracting the proportion before PR from after PR for each industry. *Source:* Authors' calculations using the CEEDD.

Figure A.5: Worker Selection into the TFWP: Distribution of Average Firm Effects and Worker Effects for TFWs vs. Rest of Population

(a) Average Firm Effect of Primary Employer



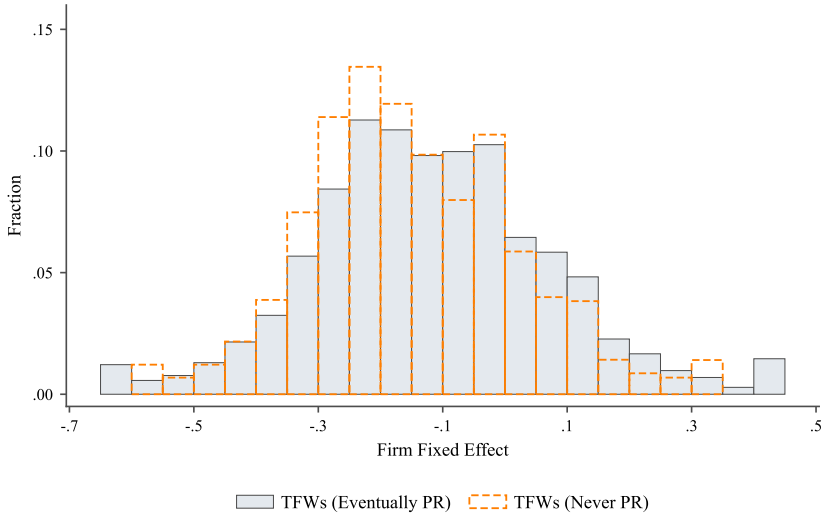
(b) Worker Effect



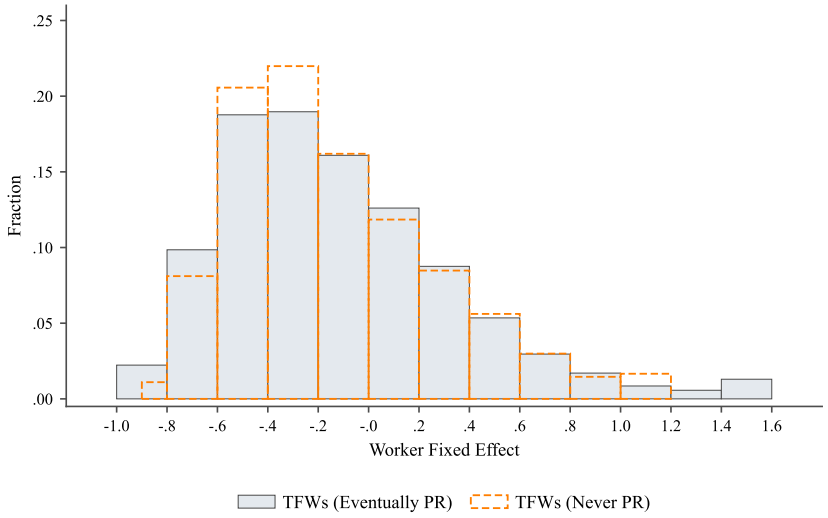
Notes: This figure compares the distribution of average firm effects and worker effects for TFWs compared to rest of population (native-born individuals and other permanent residents who were never TFWs). The worker effects and firm effects were estimated using a two-way fixed effects (AKM) model of log earnings (see Appendix E). Panel (a) shows the distribution of average firm fixed effects, calculated for TFWs over all years in which they have a valid temporary permit (excluding any post-PR observations), and for all other individuals over all of their observed years. Orange dashed bars represent current TFWs; navy solid bars represent the rest of the population excluding previous TFWs. Panel (b) shows the distribution of worker effects for "ever TFWs," defined as individuals who were TFWs at some point during the sample period, compared to the rest of the population. Note that we focus on ever TFWs for panel (b) because the worker effects do not change over time (i.e., for TFWs that obtain PR, the worker effects are the same before and after PR). Orange dashed bars represent ever TFWs; navy solid bars represent the rest of the population.

Figure A.6: Distribution of Worker and Firm Fixed Effect between Never PR and Eventually PR

(a) Firm Fixed Effect



(b) Worker Fixed Effect



Notes: This figure compares the distribution of worker effects and average firm effects of the employer between TFWs who never get PR and TFWs who eventually get PR. Workers are classified as eventually obtaining PR if they have a recorded year of PR in the IMDB; those without a recorded year are classified as never obtaining PR. The worker effects and firm effects were estimated using an AKM model (see Appendix E). Panel (a) shows the distribution of average firm fixed effects for the TFWs' employers. Panel (b) shows the distribution of worker fixed effects. Orange dashed bars represent TFWs who never get PR; navy solid bars represent TFWs who eventually get PR. *Source:* Authors' calculations using the CEEDD.

Figure A.7: Worker Sorting Before and After PR: AKM Firm Fixed Effects by Quintiles of Worker Fixed Effects

(a) Before PR

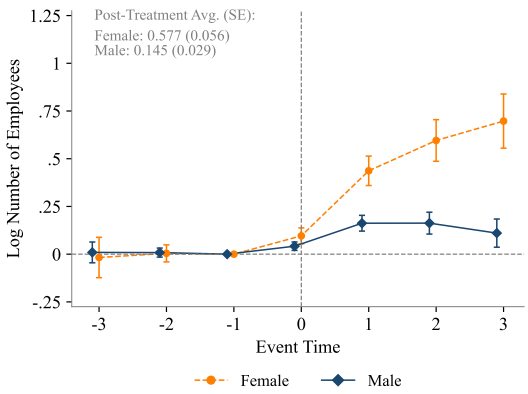
(b) After PR

(c) Differences: Prop. after PR − Prop. before PR

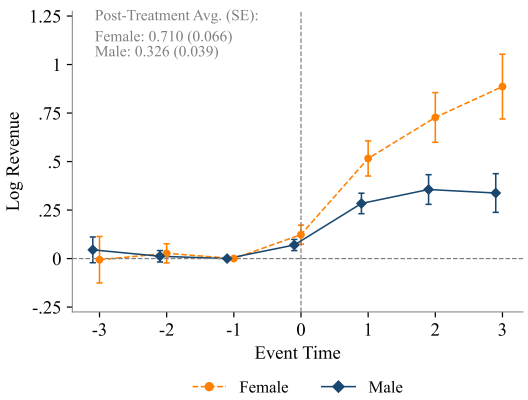
Notes: This figure shows the distribution of firm fixed effects by quintiles of worker fixed effects of TFWs from an AKM regression (see Section E) before and after obtaining permanent residency. Panel (a) shows the distribution before PR. Panel (b) shows the distribution after PR. Panel (c) takes the differences by subtracting the proportion before PR from the proportion after PR for each worker FE quintile. *Source:* Authors' calculations using the CEEDD.

Figure A.8: Firm Characteristics by Gender

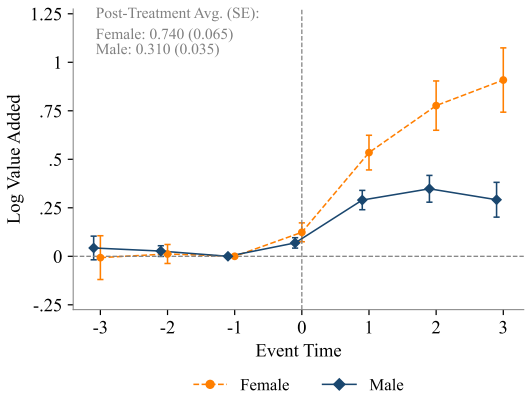
(a) Log Number of Employees



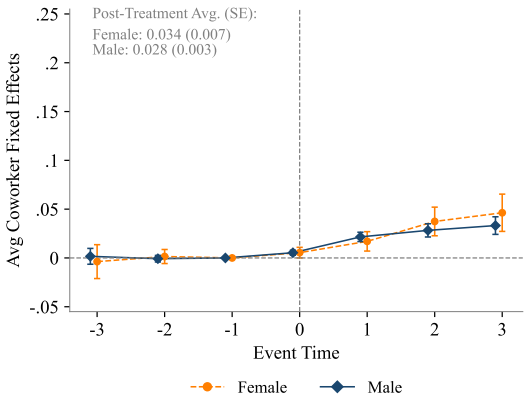
(b) Log Revenue



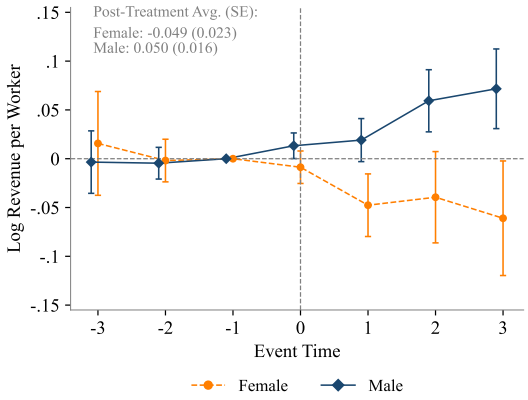
(c) Log Value Added



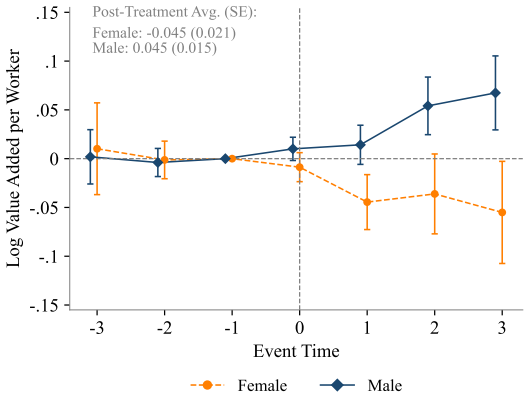
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker



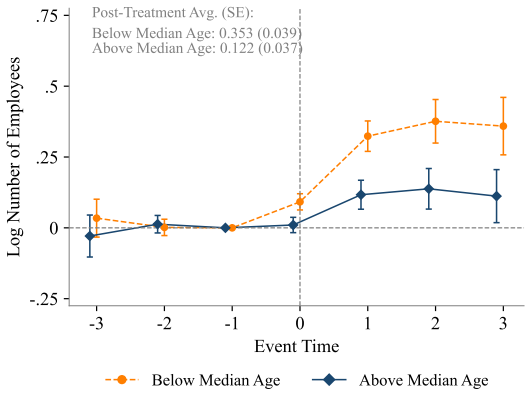
(f) Log Value Added per Worker



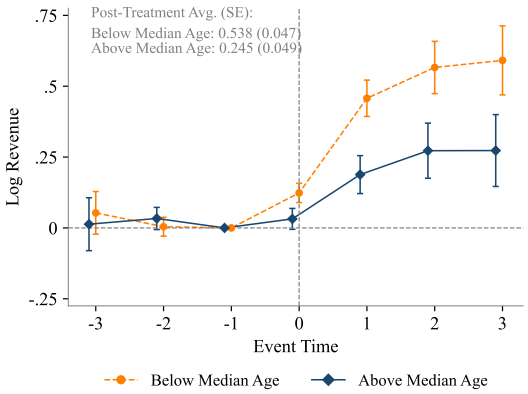
Notes: This figure shows event study estimates for firm characteristics of each individual's employer, where the event studies are estimated separately by gender. Event time 0 represents the year of obtaining permanent residency. The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent women; navy lines represent men. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.9: Firm Characteristics by Age

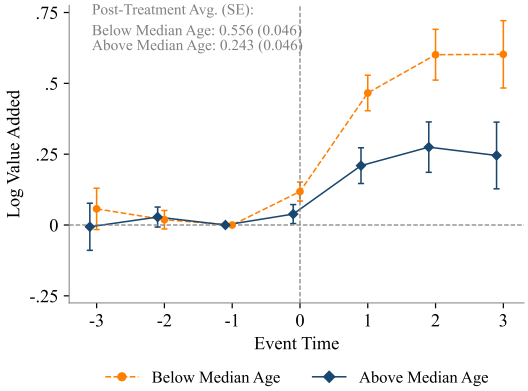
(a) Log Number of Employees



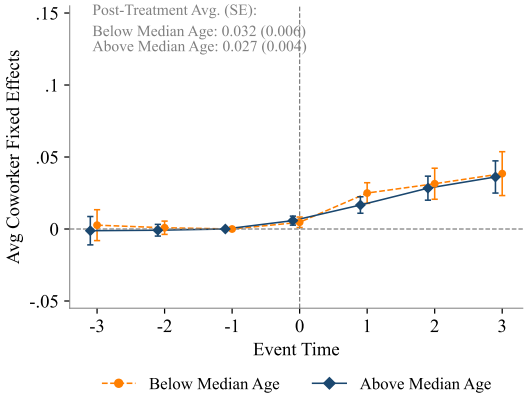
(b) Log Revenue



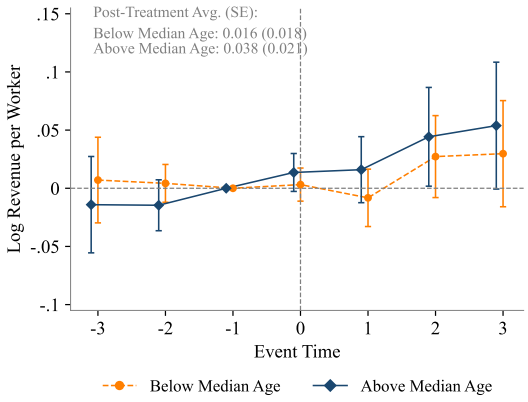
(c) Log Value Added



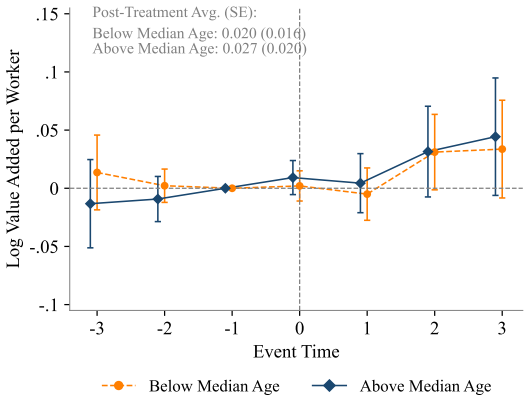
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker



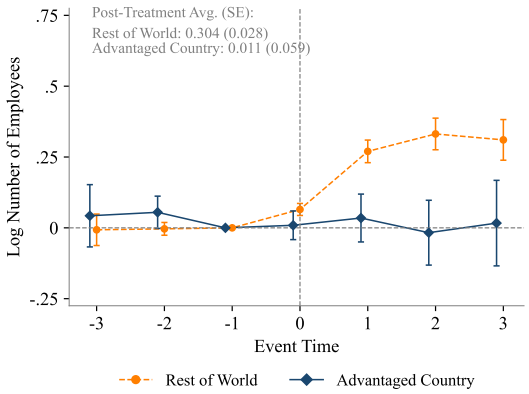
(f) Log Value Added per Worker



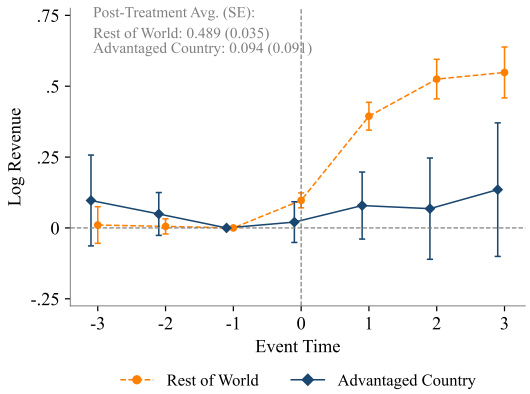
Notes: This figure shows event study estimates for firm characteristics of each individual's employer, where the observations are classified into below- vs above-median initial age (33 years old). The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent workers below median age; navy lines represent workers above median age. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added, where value added is calculated as total revenue minus total expenses plus total payroll. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.10: Firm Characteristics by Country of Origin

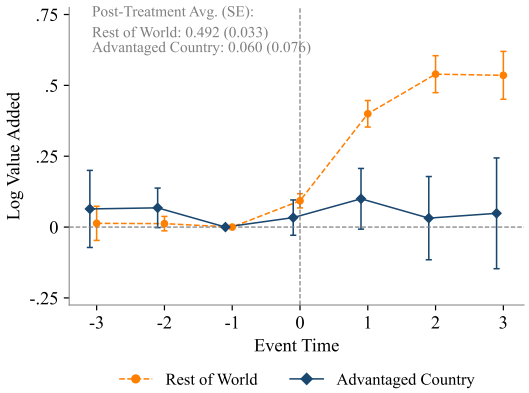
(a) Log Number of Employees



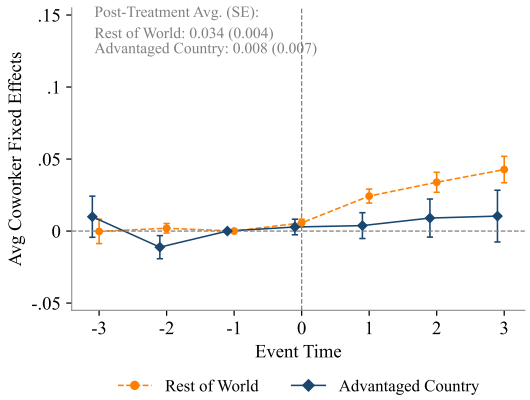
(b) Log Revenue



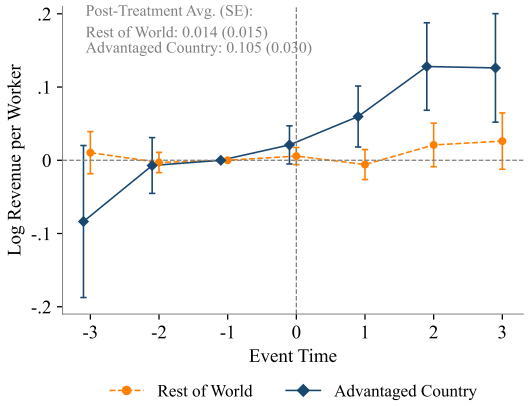
(c) Log Value Added



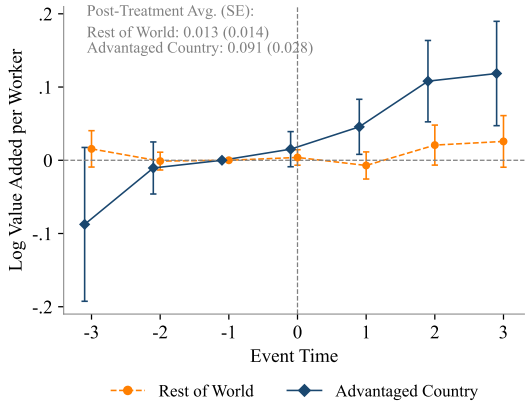
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker



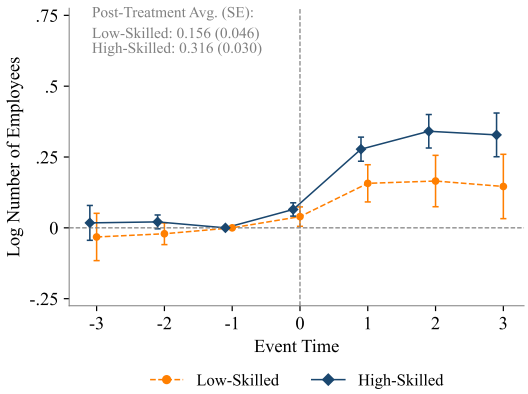
(f) Log Value Added per Worker



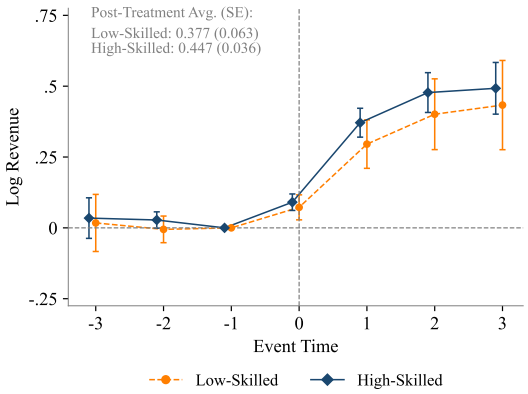
Notes: This figure shows event study estimates for firm characteristics of each worker's employer. The event studies are estimated separately by origin country, where the classification into advantaged vs rest-of-world countries follows Dostie et al. (2023). The list of "advantaged countries" includes the U.S., the U.K., Australia, New Zealand, and countries in Northern/Western Europe where most people have English as a second language, including Germany, France, the Netherlands, and the Nordic countries. The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent workers from rest-of-world countries; navy lines represent workers from advantaged countries. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.11: Firm Characteristics by Skill Level

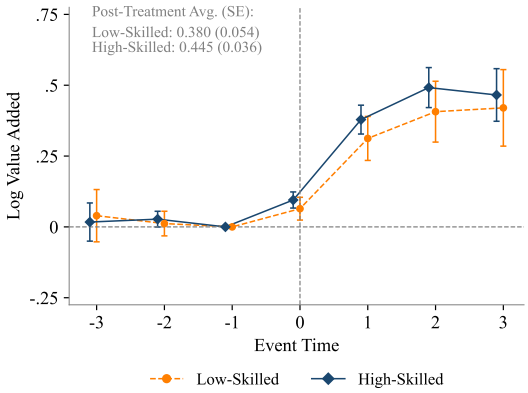
(a) Log Number of Employees



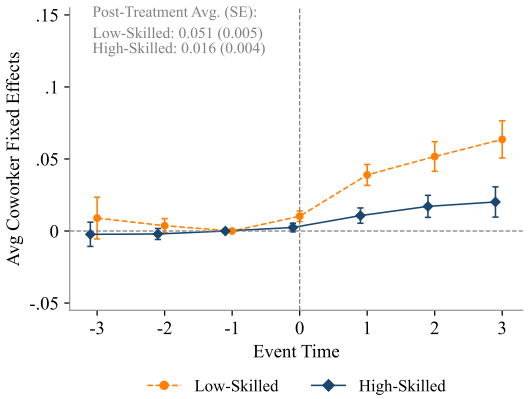
(b) Log Revenue



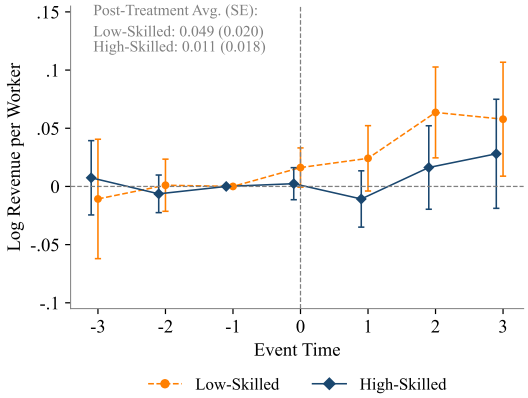
(c) Log Value Added



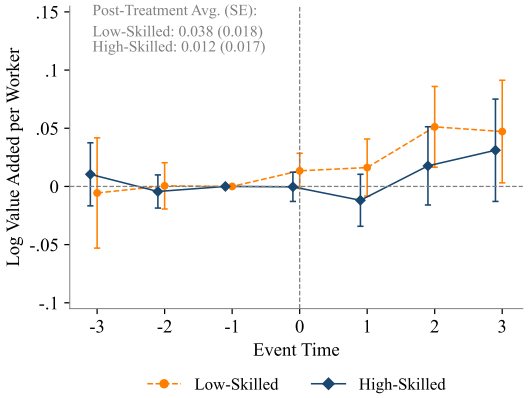
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker



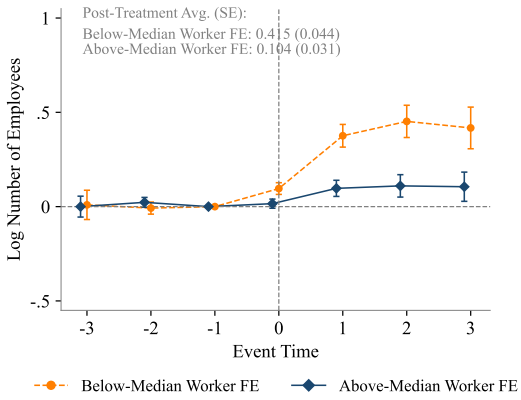
(f) Log Value Added per Worker



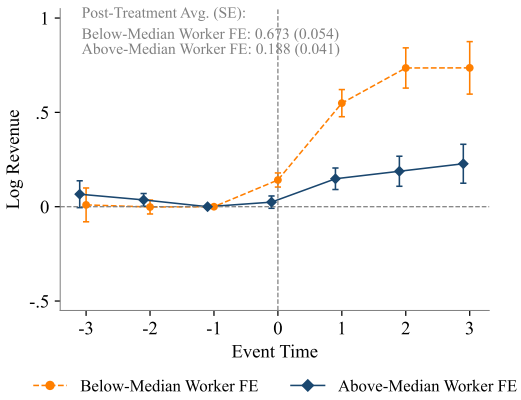
Notes: This figure shows event study estimates for firm characteristics of each worker's employer, where the event studies are estimated separately by skill level. Event time 0 represents the year of obtaining permanent residency. The skill level classification is obtained from the worker's occupational skill level in the IMDB at the time of permanent residency (see Section 3.2). The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent low-skilled workers; navy lines represent high-skilled workers. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.12: Firm Characteristics by AKM Worker Fixed Effect

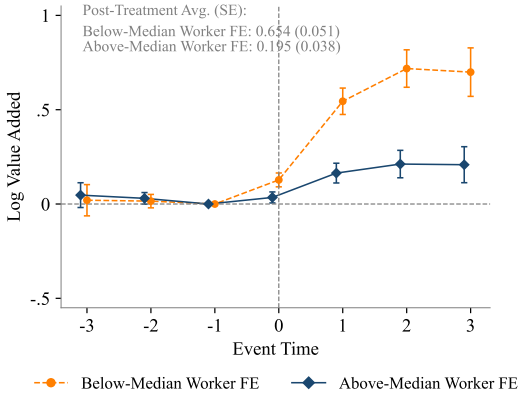
(a) Log Number of Employees



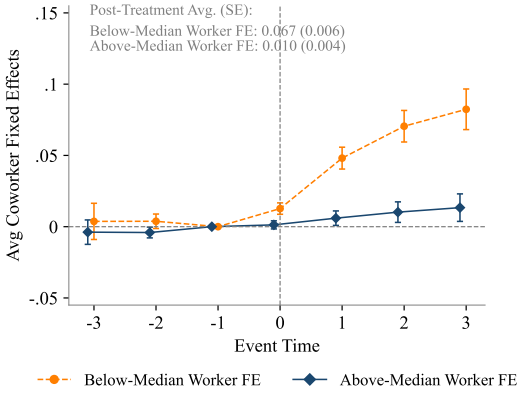
(b) Log Revenue



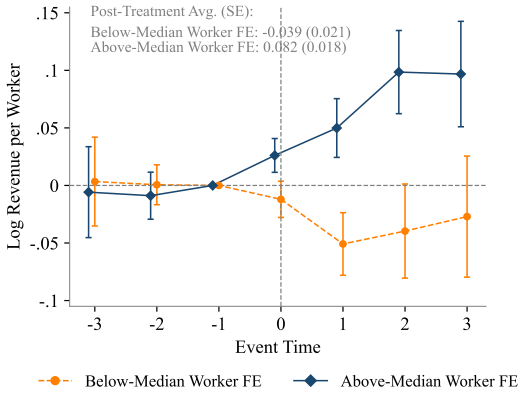
(c) Log Value Added



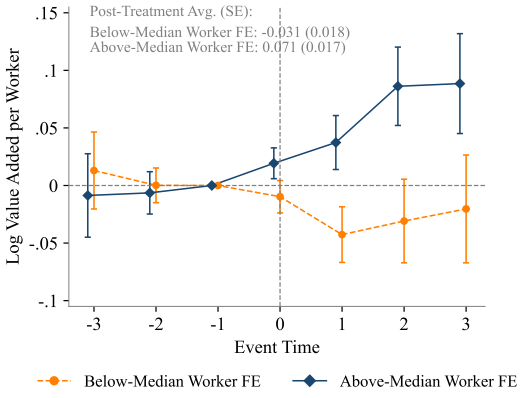
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker



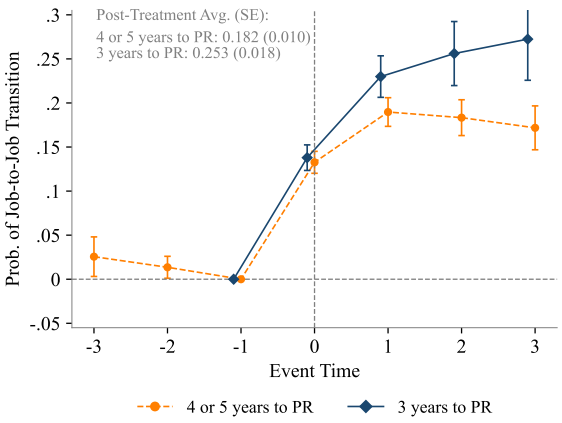
(f) Log Value Added per Worker



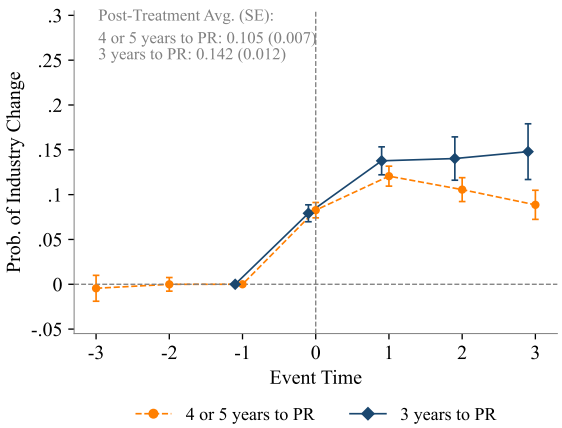
Notes: This figure shows event study estimates for firm characteristics of each worker's employer, where the event studies are estimated separately by above- and below-median worker fixed effects. Event time 0 represents the year of obtaining permanent residency. The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent workers with below-median worker fixed effects; navy lines represent workers with above-median worker fixed effects. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added. Panel (d) shows the average fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.13: Main Labor Market Outcomes by Time to PR

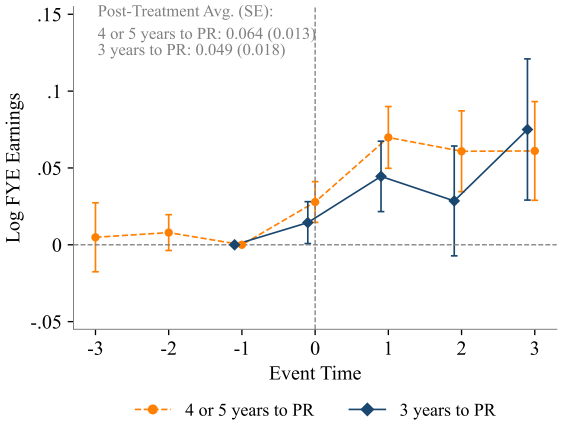
(a) Probability of Job-to-Job Transition



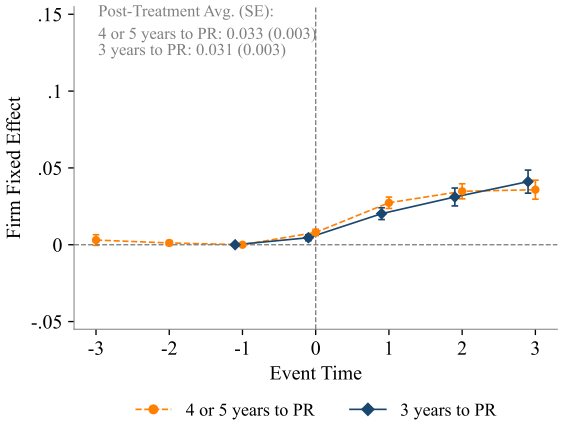
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings



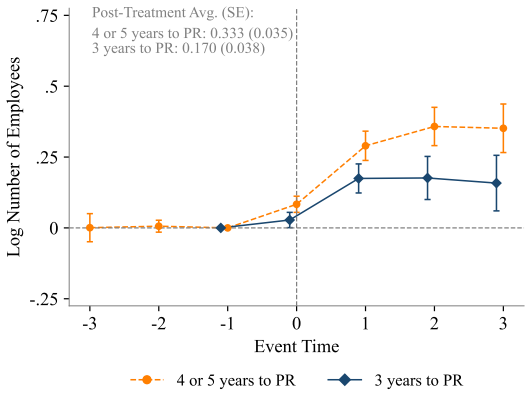
(d) Firm Fixed Effect



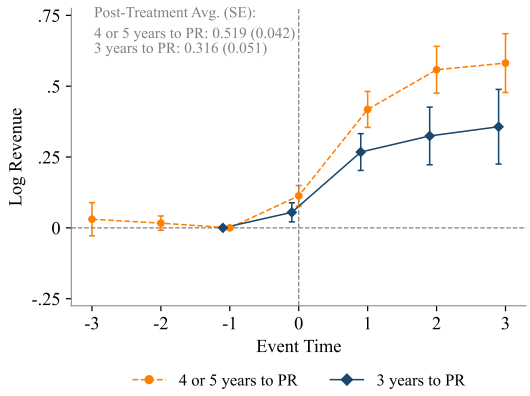
Notes: This figure shows event study estimates for the main labor market outcomes separately by time to PR, where the sample is split into TFWs who obtain PR in three years vs. four or five years. Orange lines represent four or five years to PR; navy lines represent three years to PR. Panel (a) shows job-to-job transition probability. Panel (b) shows industry transition probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.14: Firm Characteristics by Time to PR

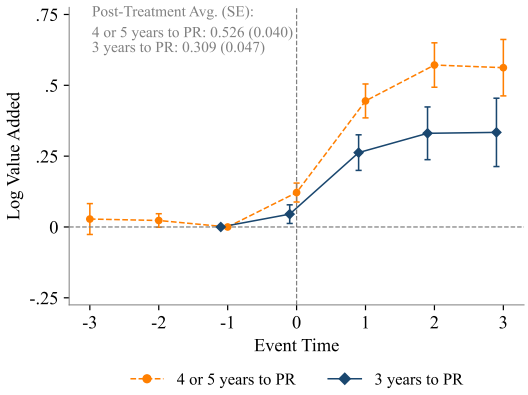
(a) Log Number of Employees



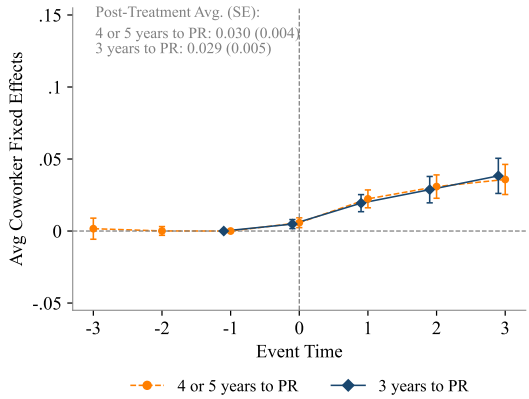
(b) Log Revenue



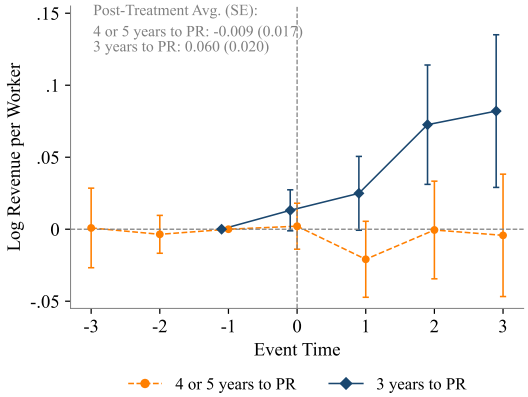
(c) Log Value Added



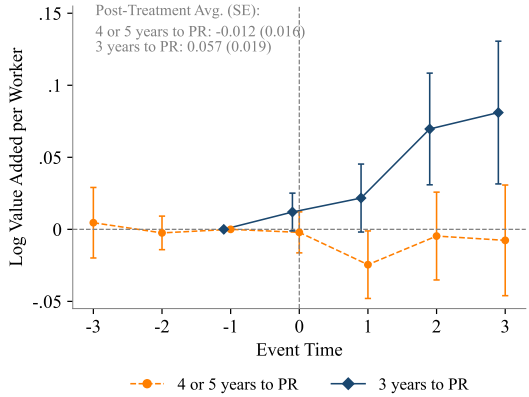
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker

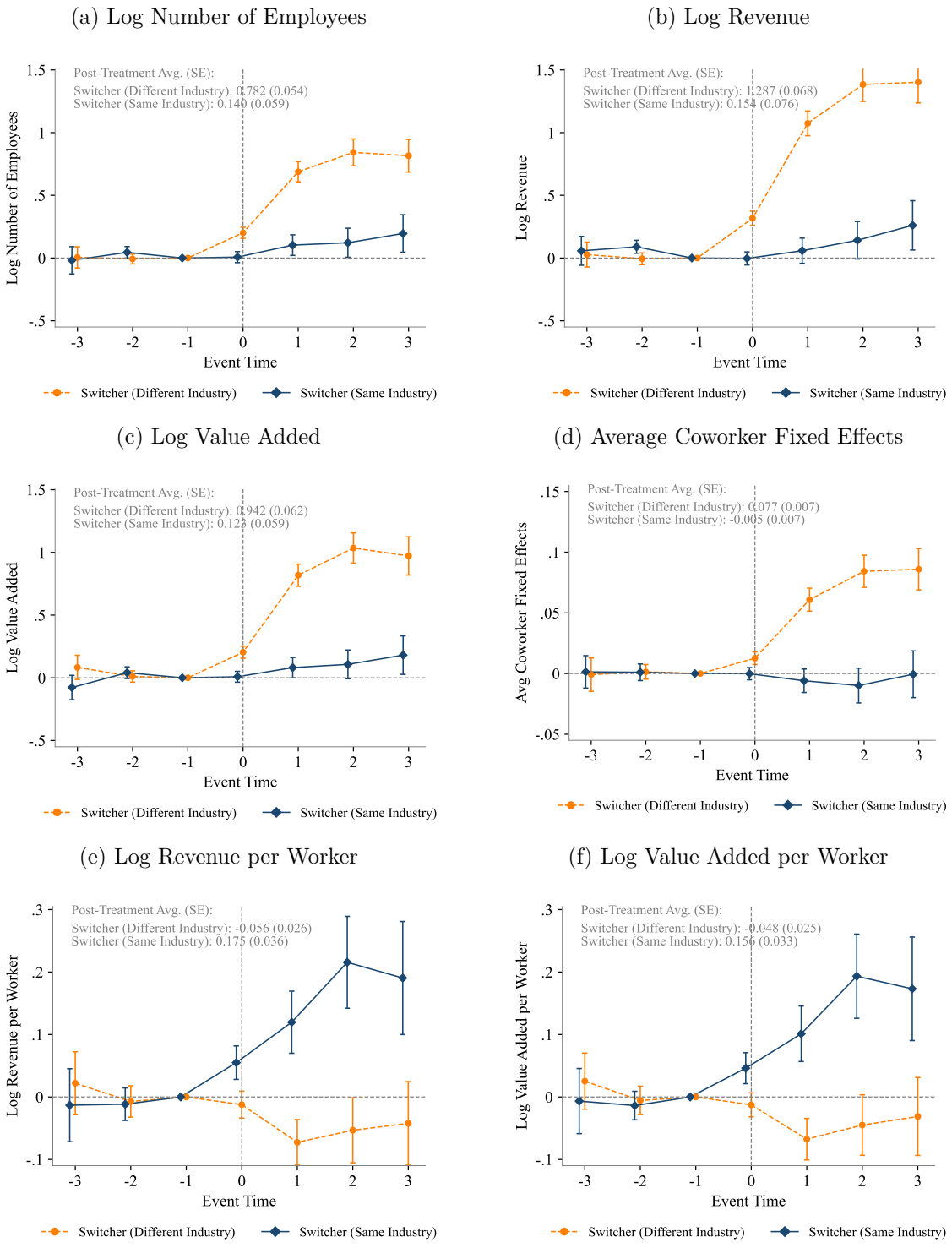


(f) Log Value Added per Worker



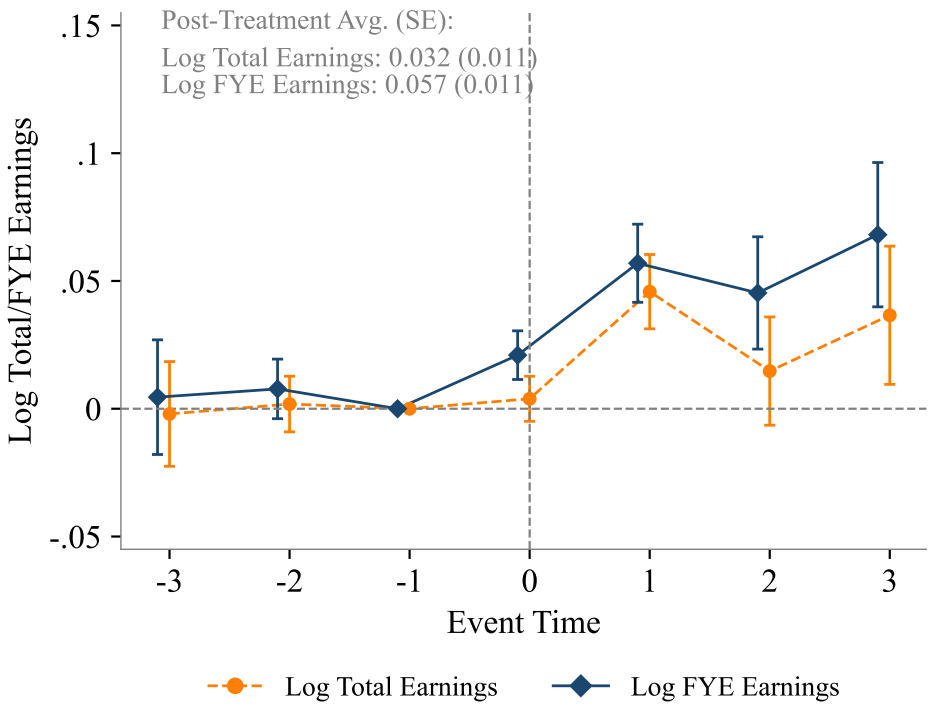
Notes: This figure shows event study estimates for firm characteristics of each worker's employer, where the sample is split into TFWs who obtain PR in three years vs. four or five years. The worker effects are estimated from an AKM model (see Appendix E). Orange lines represent four or five years to PR; navy lines represent three years to PR. Panel (a) shows log firm size (number of employees). Panel (b) shows log firm revenue. Panel (c) shows log value added, where value added is calculated as total revenue minus total expenses plus total payroll. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.15: Firm Characteristics by Industry-Transition Status



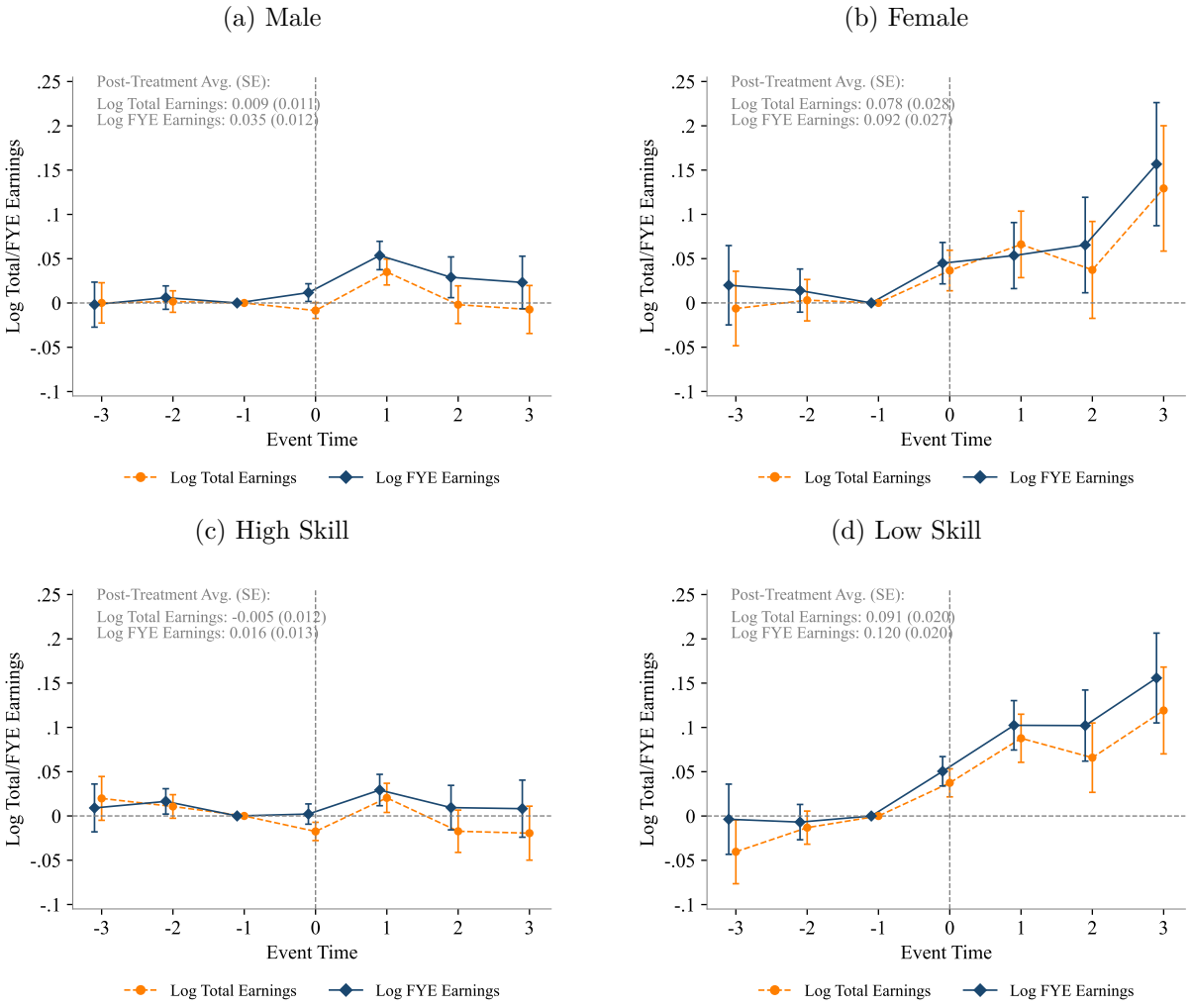
Notes: This figure shows event study estimates for firm characteristics of each worker's employer, where the event studies are estimated separately by industry-transition status for workers who change jobs at least once through event time 0, 1, or 2. Event time 0 represents the year of obtaining permanent residency. Orange lines represent workers who switched industry; navy lines represent workers who stayed in the same industry. Panel (a) shows log firm size (number of employees). Panel (b) shows log firm revenue. Panel (c) shows log value added, where value added is calculated as total revenue minus total expenses plus total payroll. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.16: Log Total Earnings and FYE Earnings



Notes: The figure compares the event study estimates for log full-year equivalent (FYE) earnings and total earnings. FYE earnings are calculated by doubling earnings from the *primary* employer in any year with a job-to-job transition, while total earnings are calculated as the sum of all earnings from an individual's employers in a given year. Event time 0 is the year of permanent residency. The orange line represents the log total earnings and navy line represents the log FYE earnings. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

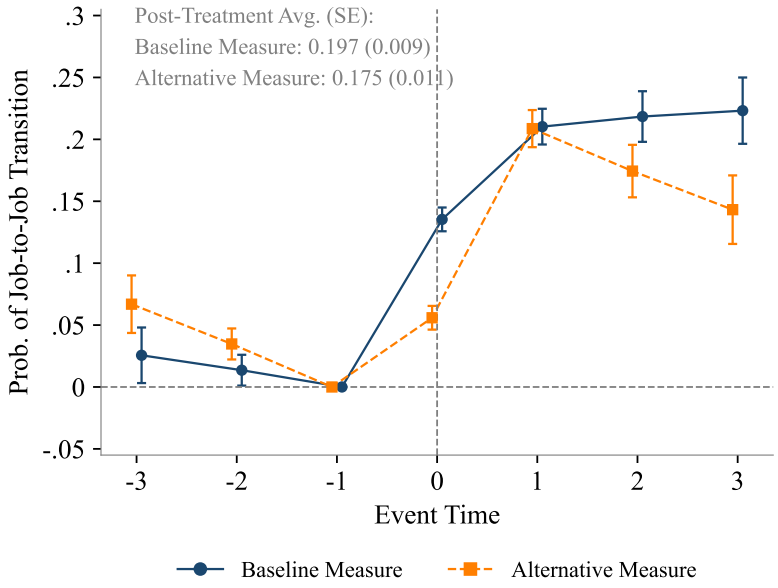
Figure A.17: Log Total Earnings and FYE Earnings by Gender and Skills



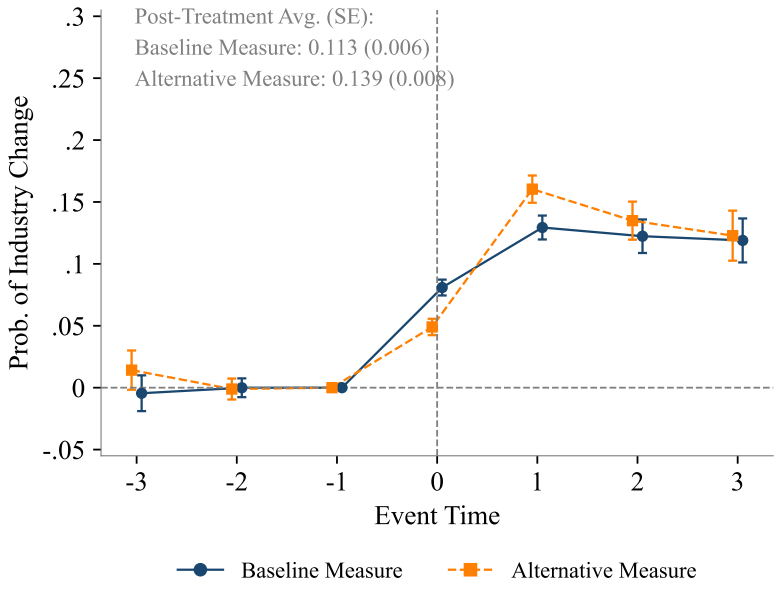
Notes: The figure compares the event study estimates for log full-year equivalent (FYE) earnings and total earnings, separately by gender and skill level. FYE earnings are calculated by doubling earnings from the *primary* employer in any year with a job-to-job transition, while total earnings are calculated as the sum of all earnings from an individual's employers in a given year. The skill classification is obtained using the occupational skill level in the IMDB (see Section 3.2). Event time 0 is the year of permanent residency. Panel (a) shows the results when the sample is restricted to males only. The orange line represents the log total earnings and navy line represents the log FYE earnings. Panel (b) shows the results when the sample is restricted to females only. Panel (c) shows the results when the sample is restricted to high-skill workers only. Panel (d) shows the results when the sample is restricted to low-skill workers only. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.18: Baseline vs. Alternate Definitions of Job and Industry Transitions

(a) Probability of Job-to-Job Transition



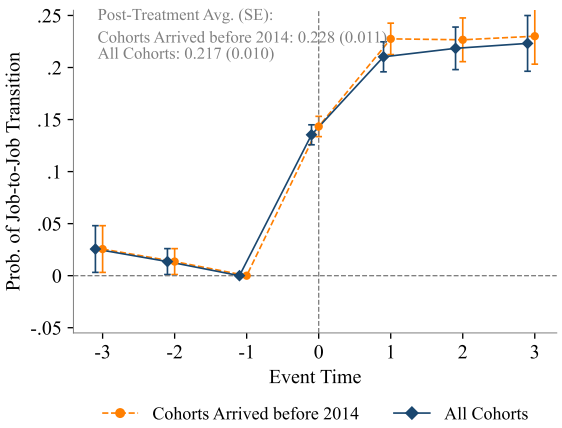
(b) Probability of Industry Change



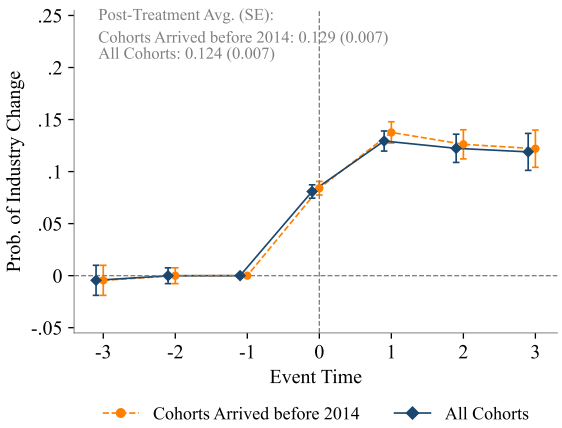
Notes: This figure compares the event study estimates for different measures of job-to-job transitions. The baseline measure of job-to-job transition occurs when an employment spell with one primary employer ends, and a new employment spell with a different primary employer begins; an employment spell is defined as a consecutive series of years where an individual receives strictly positive earnings from the same employer. The baseline industry transition is calculated as a change in industry in the same year as a baseline job-to-job transition. The alternative measure of job-to-job transition is defined by a change in the primary employer ID from one year to the next. The alternative industry transition is defined by a change in industry in the same year as an alternative job-to-job transition. See section 3.3 for more details. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.19: Main Labor Market Outcomes Excluding the 2014 Cohort

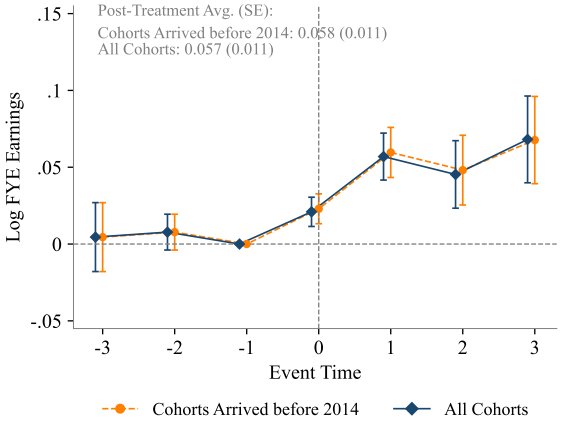
(a) Probability of Job-to-Job Transition



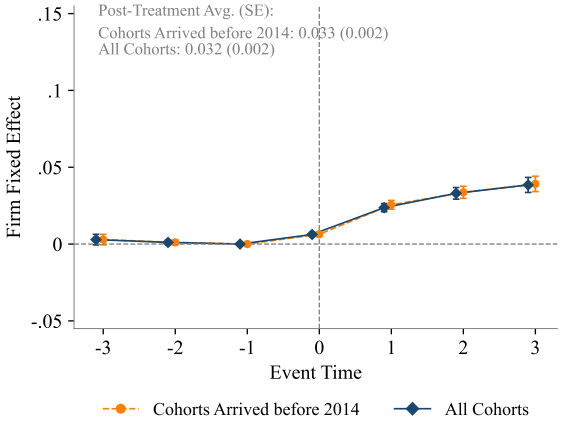
(b) Probability of Industry Change



(c) Log Full-Year Equivalent Earnings



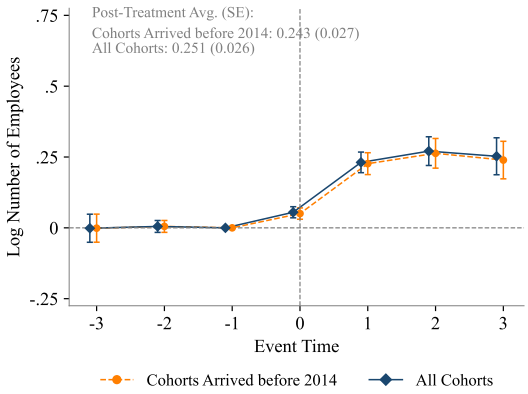
(d) Firm Fixed Effect



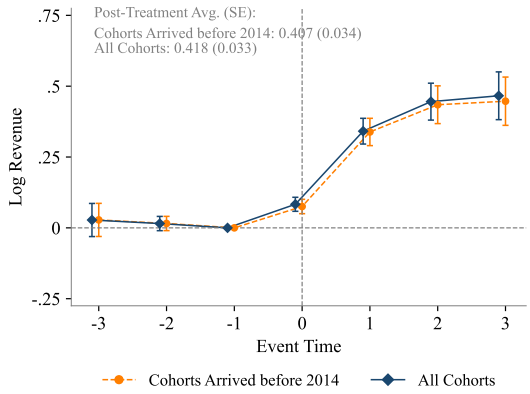
Notes: This figure shows event study estimates for the main labor market outcomes after excluding the last cohort in our analysis sample which arrived in 2014. Orange lines represent the event study estimates after the 2014 cohort is excluded; navy lines represent the main estimates with all cohorts. Panel (a) shows job-to-job transition probability. Panel (b) shows industry transition probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the worker's employer. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.20: Firm Characteristics Excluding the 2014 Cohort

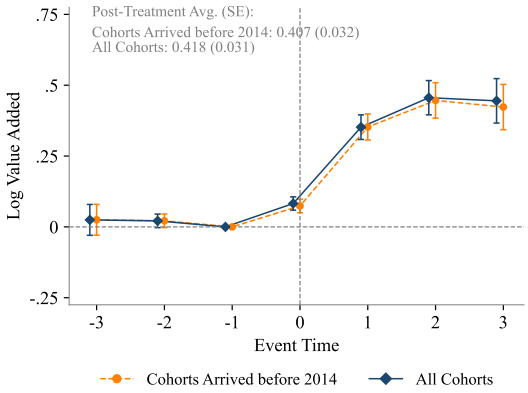
(a) Log Number of Employees



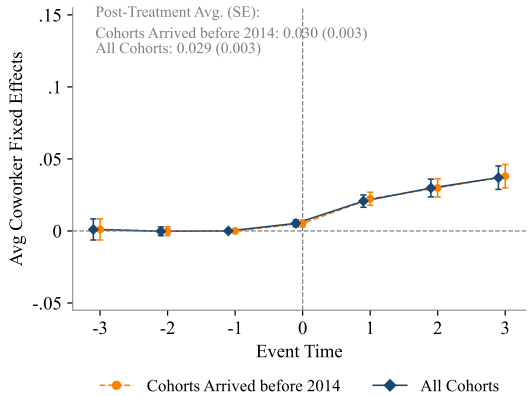
(b) Log Revenue



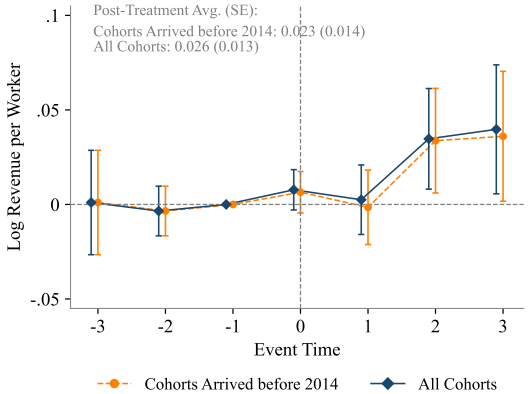
(c) Log Value Added



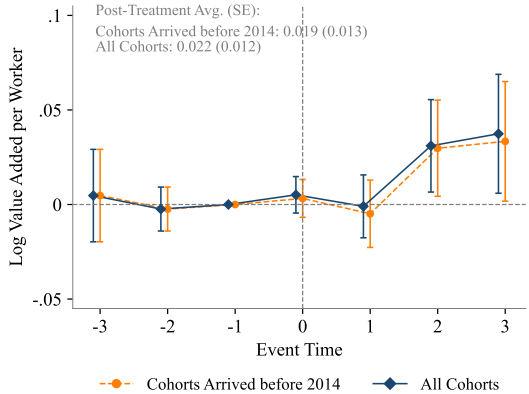
(d) Average Coworker Fixed Effects



(e) Log Revenue per Worker

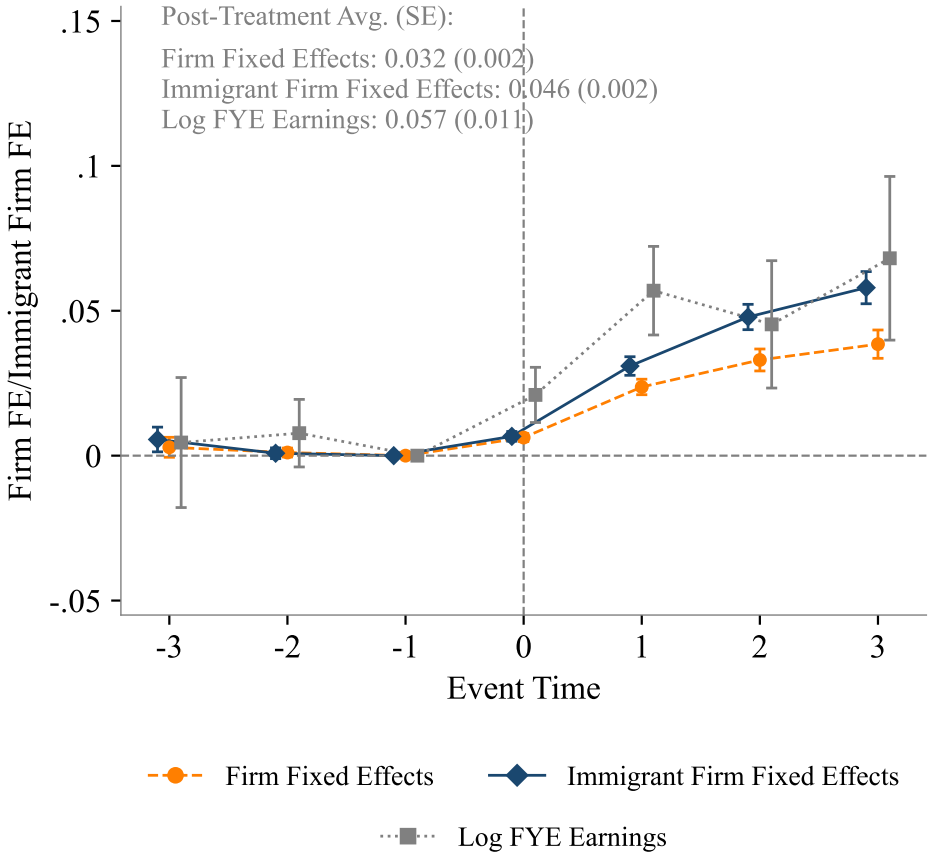


(f) Log Value Added per Worker



Notes: This figure shows event study estimates for firm characteristics after excluding the last cohort in our analysis sample which arrived in 2014. Orange lines represent the event study estimates after the 2014 cohort is excluded; navy lines represent the main estimates with all cohorts. Panel (a) shows log number of employees. Panel (b) shows log firm revenue. Panel (c) shows log value added, where value added is calculated as total revenue minus total expenses plus total payroll. Panel (d) shows the average worker fixed effects of coworkers (leave-one-out mean). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

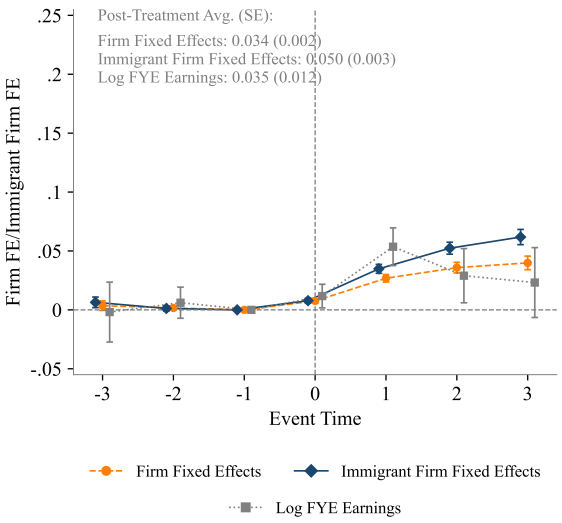
Figure A.21: Immigrant Firm Fixed Effect



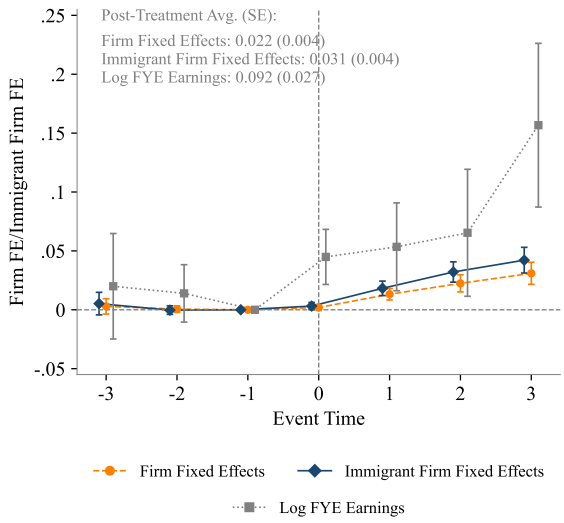
Notes: The figure compares the event study estimates for the firm fixed effects from an AKM model estimated with the full population (see Section E) to event study estimates for the *immigrant* firm fixed effects estimated by restricting the sample to permanent residents before estimating AKM. Event time 0 is the year of permanent residency. The orange line represents the firm fixed effects, the navy line represents the *immigrant* firm fixed effects, and the gray line represents the FYE earnings. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.22: Immigrant Firm Fixed Effect by Gender and Skill

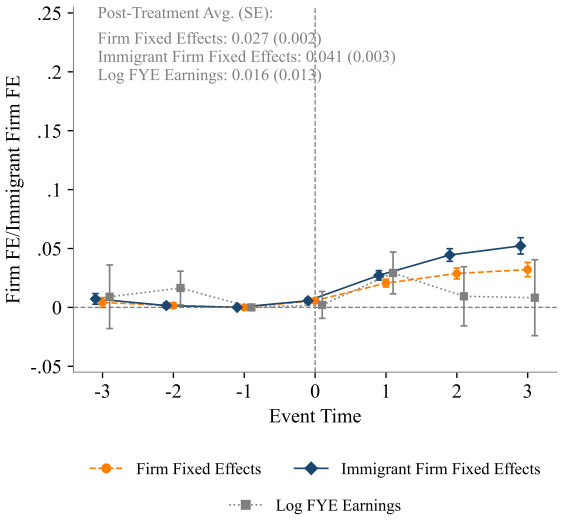
(a) Male



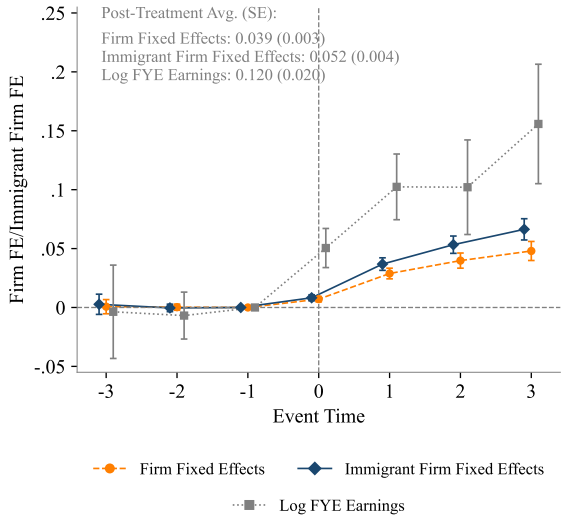
(b) Female



(c) High Skill



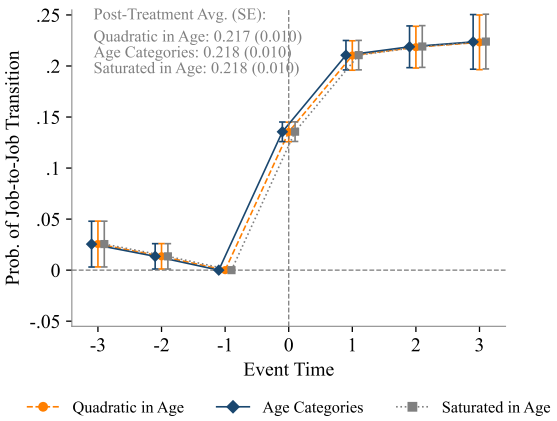
(d) Low Skill



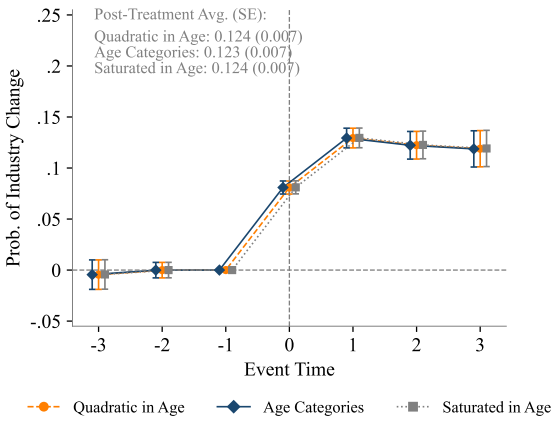
Notes: The figure compares the event study estimates for the firm fixed effects from an AKM model estimated with the full population (see Section E) to event study estimates for the *immigrant* firm fixed effects estimated by restricting the sample to permanent residents before estimating AKM, separately by gender and skill. Event time 0 is the year of permanent residency. Panel (a) shows the results when the sample is restricted to males only. The orange line represents the firm fixed effects, navy line represents the immigrant firm fixed effects, and the gray line represents the FYE earnings. Panel (b) shows the results when the sample is restricted to females only. Panel (c) shows the results when the sample is restricted to high-skill workers only. Panel (d) shows the results when the sample is restricted to low-skill workers only. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.23: Age Control Comparison: Main Labor Market Outcomes

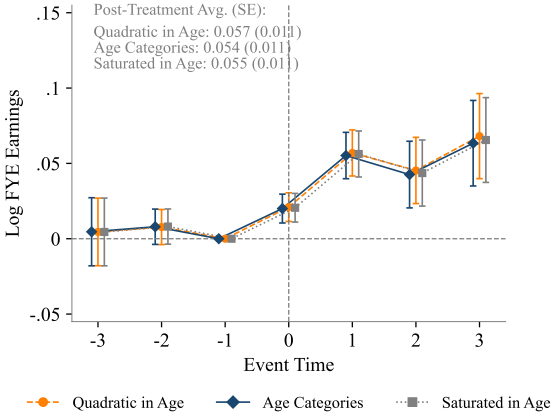
(a) Prob. of Job-to-Job Transition



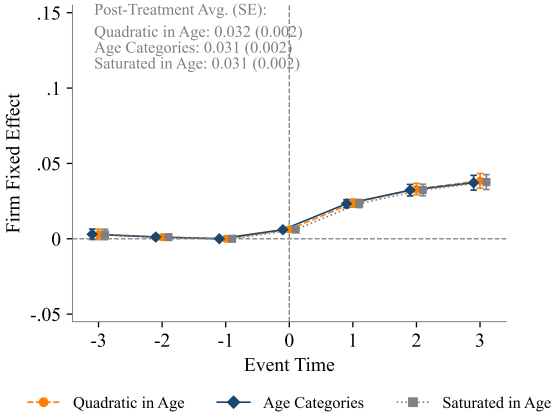
(b) Prob. of Industry Change



(c) Log FYE Earnings



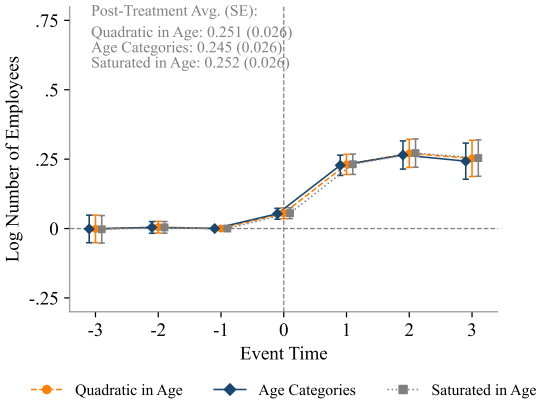
(d) Firm Fixed Effect



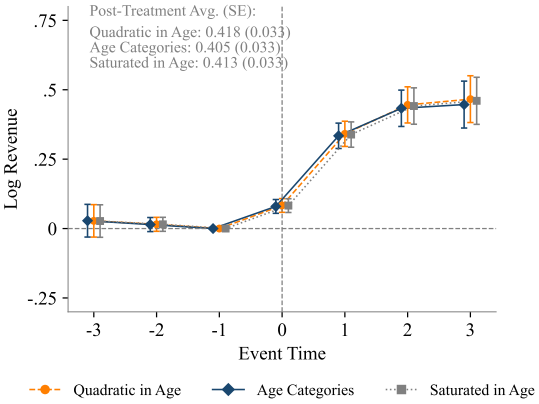
Notes: This figure compares event study estimates for the main labor market outcomes with different age controls. The orange line represents estimates using the baseline quadratic polynomial in age, the navy line represents estimates using the fixed effects for age categories (25–34, 35–44, 45–54, and 55+), and the gray line represents estimates using fixed effects for each age. Panel (a) shows probability of job-to-job transition. Panel (b) shows industry transition probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the individual's employer. Event time 0 is the year of permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.24: Age Control Comparison: Firm Characteristics

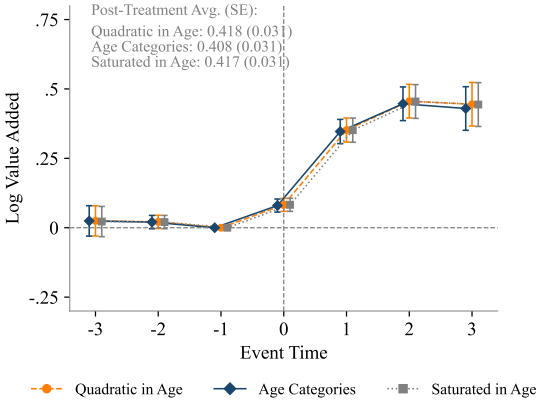
(a) Log Number of Employees



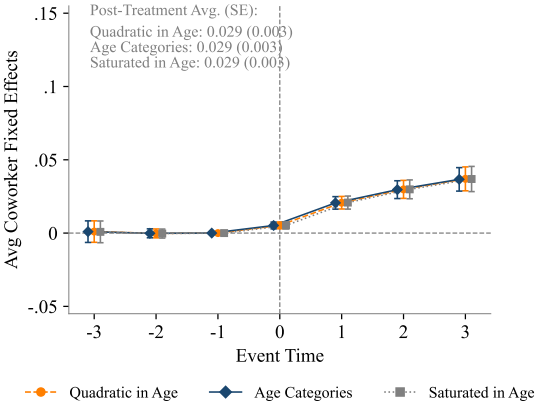
(b) Log Revenue



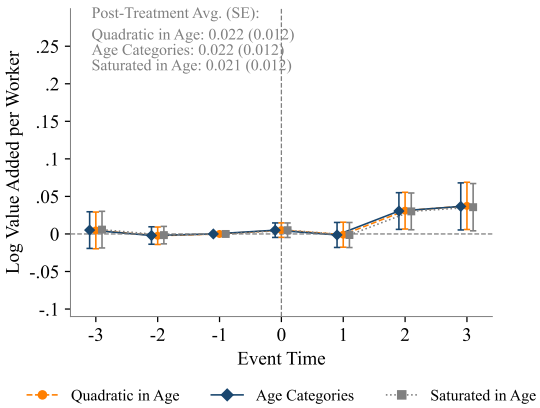
(c) Log Value Added



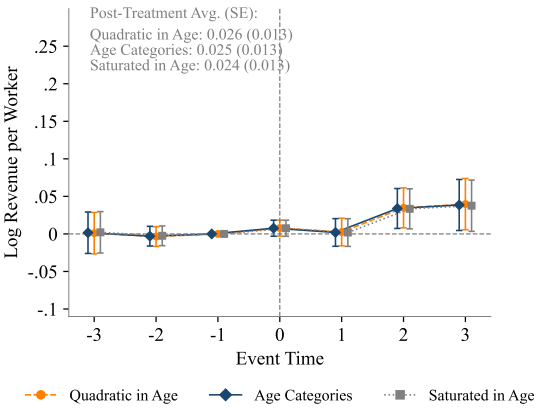
(d) Avg Coworker Fixed Effects



(e) Log Value Added per Worker



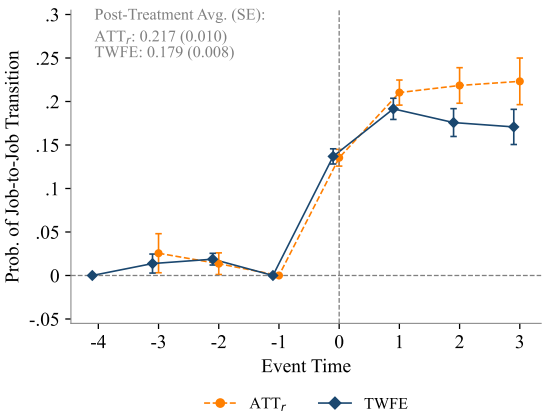
(f) Log Revenue per Worker



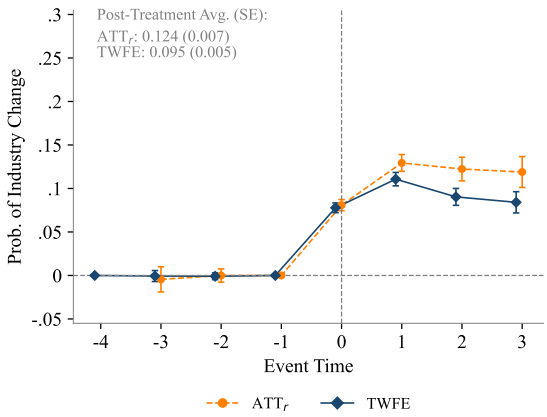
Notes: This figure compares event study estimates for the other employer characteristics with different age controls. The orange line represents estimates using the baseline quadratic polynomial in age, the navy line represents estimates using the fixed effects for age categories (25–34, 35–44, 45–54, and 55+), and the gray line represents estimates using fixed effects for each age. Panel (a) shows log number of employees. Panel (b) shows log revenue. Panel (c) shows log value added. Panel (d) shows average coworker fixed effects. Panel (e) shows the log value added per worker. Panel (f) shows the log revenue per worker. Event time 0 is the year of permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.25: TWFE: Main Labor Market Outcomes

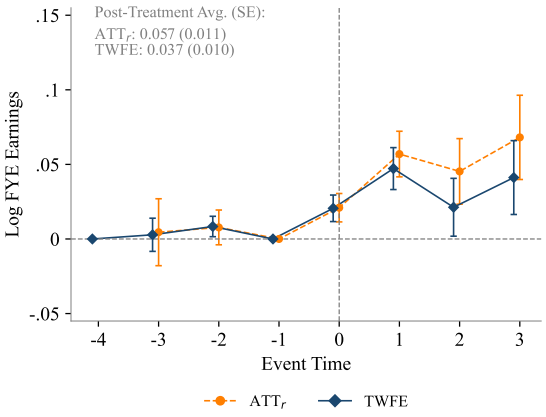
(a) Prob. of Job-to-Job Transition



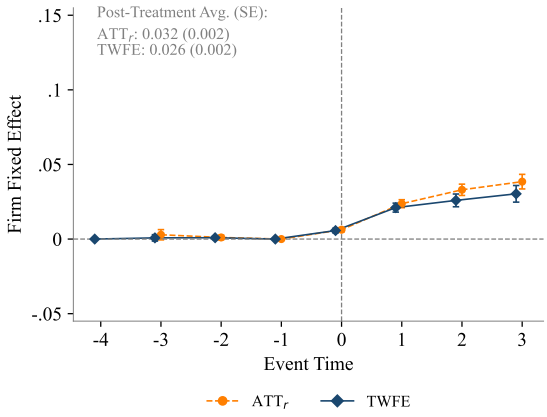
(b) Prob. of Industry Change



(c) Log FYE Earnings



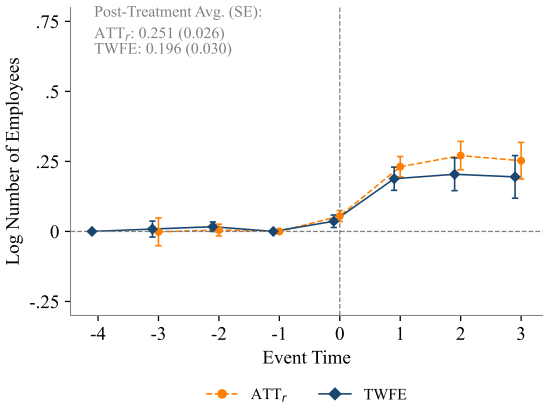
(d) Firm Fixed Effect



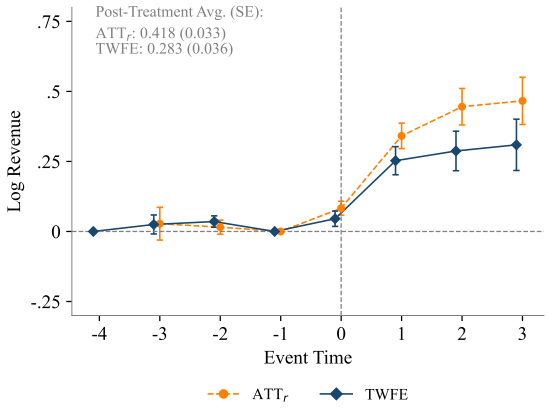
Notes: This figure compares event study estimates for the main labor market outcomes between the CCDID estimates and a two-way fixed effects (TWFE) model with -1 and -4 as reference periods (see Section 6.4). Orange lines represent CCDID estimates and navy lines represent estimates from TWFE. Panel (a) shows probability of job-to-job transition. Panel (b) shows industry transition probability. Panel (c) shows log full-year equivalent earnings. Panel (d) shows firm fixed effects of the individual's employer. Event time 0 is the year of permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.26: TWFE: Firm Characteristics

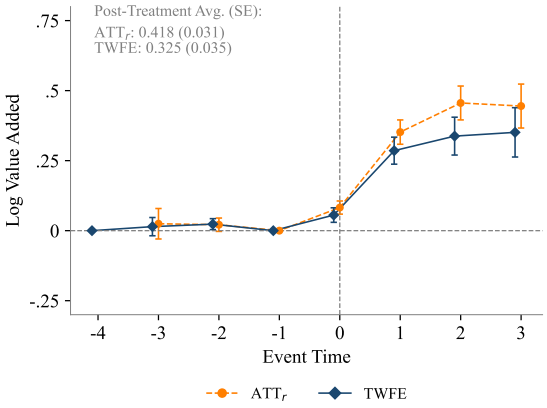
(a) Log Number of Employees



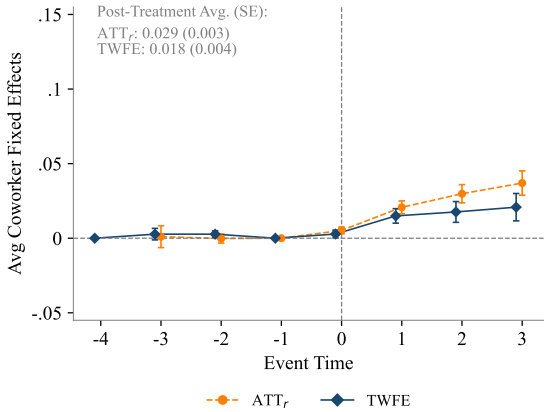
(b) Log Revenue



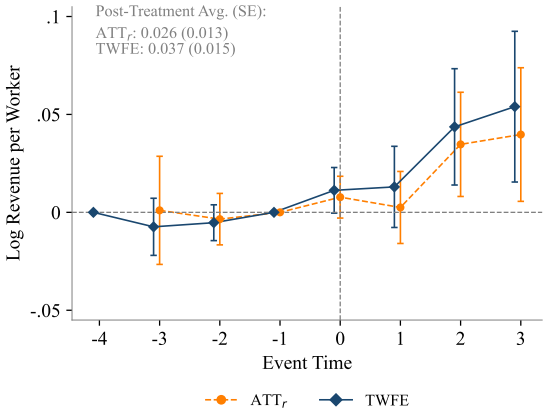
(c) Log Value Added



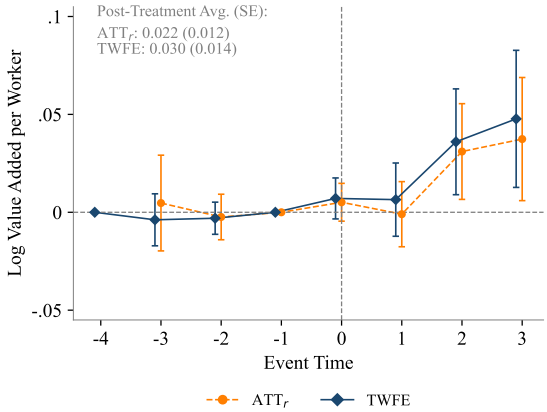
(d) Avg Coworker Fixed Effects



(e) Log Revenue per Worker



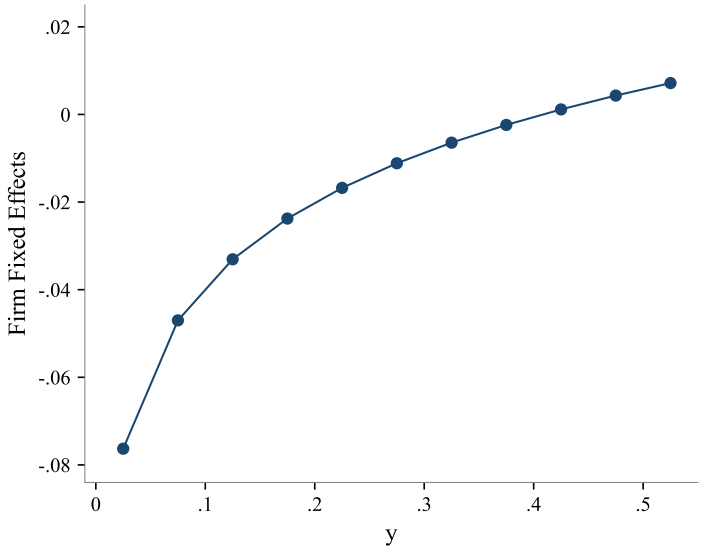
(f) Log Value Added per Worker



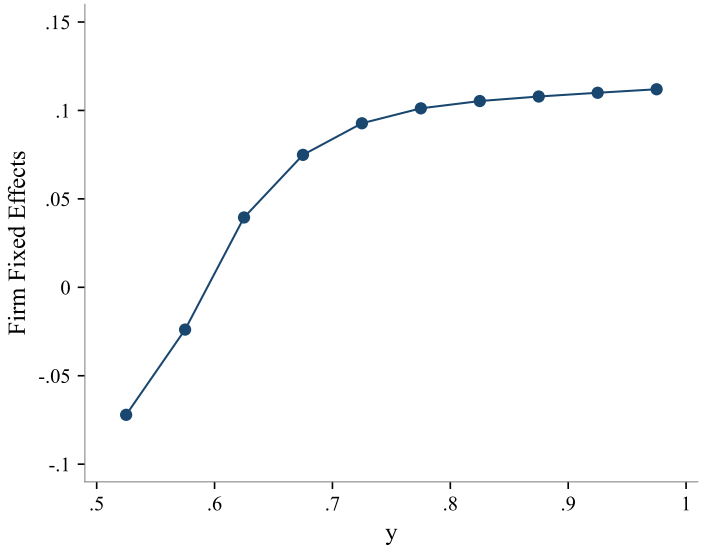
Notes: This figure compares event study estimates for firm characteristics between the CCDID estimates and a two-way fixed effects (TFWE) model with -1 and -4 as reference periods (see Section 6.4). Orange lines represent CCDID estimates and navy lines represent estimates from TWFE. Panel (a) shows log number of employees. Panel (b) shows log revenue. Panel (c) shows log value added. Panel (d) shows average coworker fixed effects (AKM estimates; see Appendix E). Panel (e) shows log revenue per worker. Panel (f) shows log value added per worker. Event time 0 is the year of permanent residency. Standard errors are clustered at the individual level. 95% confidence intervals are shown. *Source:* Authors' calculations using the CEEDD.

Figure A.27: Monotonic Relationship between AKM Firm Effects and True Firm Type

(a) AKM Firm Effects versus True Firm Type, TFW market

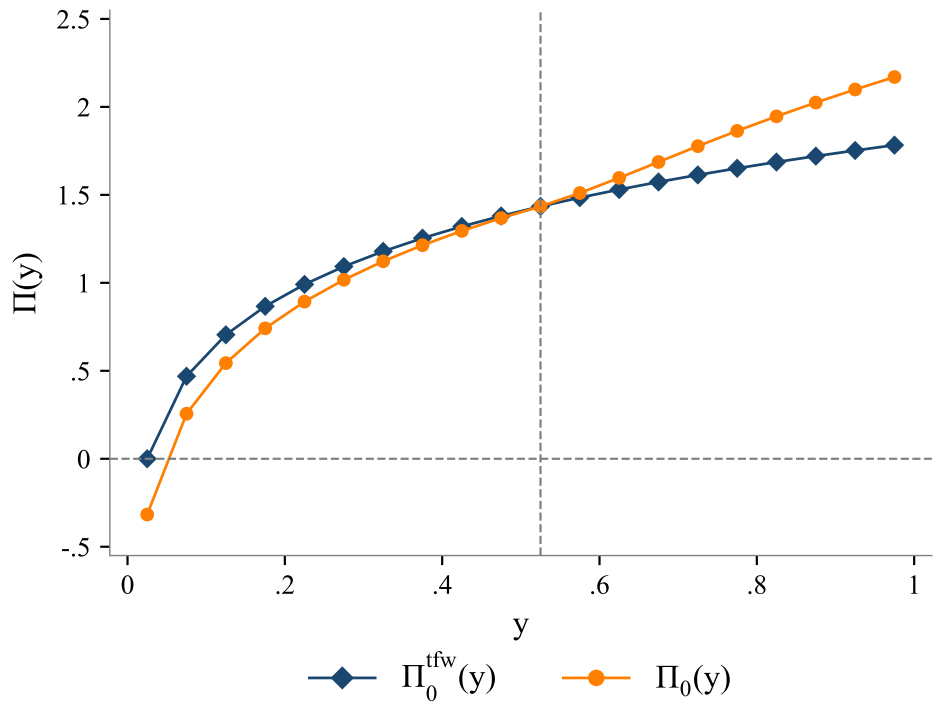


(b) AKM Firm Effects versus True Firm Type, domestic market



Notes: This figure reports the show the monotonic relationship between the true firm type, y, and the average estimated AKM firm fixed effect within each firm type in the TFW market (Panel A) and the domestic market (Panel B). See Section 8 for more details.

Figure A.28: Simulated $\Pi_0(y)$ and $\Pi_0^{\text{tfw}}(y)$ Functions



Notes: This figure plots the simulated $\Pi_0(y)$ and $\Pi_0^{\text{tfw}}(y)$ functions. The $\Pi_0^{\text{tfw}}(y)$ function starts at zero because the free-entry condition pins down the profits for the lowest productivity firm. The $\Pi_0(y)$ increases more steeply and intersects at a single point which is the equilibrium value of y y^* where the firms at that productivity level are indifferent between choosing a vacancy in the TFW segment or the domestic market segment. We numerically solve for the share of $y = y^*$ firms so that $\Pi_0(y^*) = \Pi_0^{\text{tfw}}(y^*)$ and we find that 3.3 percent of the $y = y^*$ firms choose the TFW market. We re-calculate this share in response to a counterfactual policy change when we re-solve the new equilibrium in both labor market segments. See Section 8 for more details.

K Appendix Tables

Table A.1: Percentage of Temporary Foreign Workers (TFWs) in each Occupation (2-, 3-, and 4-digit NOC)

Occupation Name	**% TFWs**
(a) 2-digit NOC	
67 — Service support and other service occupations, n.e.c.	5.85%
63 — Service supervisors and specialized service occupations	5.47%
51 — Professional occupations in art and culture	5.03%
72 — Industrial, electrical and construction trades	4.66%
52 — Technical occupations in art, culture, recreation and sport	4.63%
22 — Technical occupations in natural and applied sciences	2.77%
21 — Professional occupations in natural and applied sciences	2.47%
75 — Transport and heavy equipment operation and related maintenance occupations	1.91%
94 — Processing and manufacturing machine operators and related production workers	1.36%
96 — Labourers in processing, manufacturing and utilities	1.33%
73 — Maintenance and equipment operation trades	1.28%
65 — Service representatives and other customer and personal services occupations	1.14%
76 — Trades helpers, construction labourers and related occupations	0.70%
66 — Sales support occupations	0.62%
06 — Middle management occupations in retail and wholesale trade and customer services	0.57%
11 — Professional occupations in business and finance	0.54%
62 — Retail sales supervisors and specialized sales occupations	0.50%
01 — Specialized middle management operations	0.49%
12 — Administrative and financial supervisors and administrative occupations	0.43%
86 — Harvesting, landscaping and natural resources labourers	0.41%
Other Occupations	**57.83%**

Note: This table presents the top occupations in the Temporary Foreign Worker Program (TFWP) from 2004 to 2016, using 2-, 3-, and 4-digit National Occupation Classification (NOC) codes. Data restricts to workers with a Labour Market Opinion (LMO) or Labour Market Impact Assessment (LMIA) and excludes live-in caregivers and workers in the agriculture, public, education, and health sectors. *Source:* Immigration, Refugees and Citizenship Canada (2017b).

(continued)

Occupation Name	% TFWs
(b) 3-digit NOC	
513 — Creative and performing artists	4.83%
671 — Food counter attendants, kitchen helpers and related support	4.08%
632 — Chefs and cooks	3.30%
631 — Service supervisors	1.65%
523 — Announcers and other performers, n.e.c.	1.44%
673 — Other service support and related occupations, n.e.c.	1.41%
751 — Transport & heavy equipment operation and related	1.37%
961 — Labourers in processing, manufacturing and utilities	1.33%
525 — Athletes, coaches, referees and related occupations	1.23%
217 — Computer and information systems professionals	1.19%
522 — Photographers, graphic arts technicians, motion pictures & broadcasting techs	1.18%
946 — Other machine operators in processing/manufacturing	1.13%
723 — Machinists and related occupations	1.07%
224 — Technical occupations in electronics and electrical engineering	0.87%
728 — Masonry and plastering trades	0.87%
727 — Other construction trades	0.78%
524 — Artisans and craftspersons	0.77%
729 — Other installers, repairers and servicers	0.70%
761 — Trades helpers and labourers	0.68%
223 — Technical occupations in civil, mechanical and industrial engineering	0.65%
Other Occupations	**69.47%**

Note: This table presents the top occupations in the Temporary Foreign Worker Program (TFWP) from 2004 to 2016, using 2-, 3-, and 4-digit National Occupation Classification (NOC) codes. Data restricts to workers with a Labour Market Opinion (LMO) or Labour Market Impact Assessment (LMIA) and excludes live-in caregivers and workers in the agriculture, public, education, and health sectors. *Source:* Immigration, Refugees and Citizenship Canada (2017b).

(continued)

Occupation Name	% TFWs
(c) 4-digit NOC	
6711 — Food counter attendants, kitchen helpers and related support occupations	4.08%
6322 — Cooks	2.88%
5133 — Musicians and singers	2.11%
6311 — Food service supervisors	1.39%
5135 — Actors and comedians	1.32%
7511 — Transport truck drivers	1.21%
6731 — Light duty cleaners	1.15%
5131 — Producers, directors, choreographers and related occupations	1.06%
5254 — Program leaders and instructors in recreation, sport and fitness	1.02%
5232 — Other performers, n.e.c.	0.90%
9617 — Labourers in food, beverage and associated products processing	0.75%
7271 — Carpenters	0.64%
7611 — Construction trades helpers and labourers	0.61%
6513 — Food and beverage servers	0.59%
5241 — Graphic designers and illustrators	0.58%
9463 — Fish and seafood plant workers	0.56%
2174 — Computer programmers and interactive media developers	0.56%
9462 — Industrial butchers and meat cutters, poultry preparers and related workers	0.54%
5231 — Announcers and other broadcasters	0.53%
5226 — Other technical and coordinating occupations in motion pictures, broadcasting and the performing arts	0.50%
Other Occupations	**77.03%**

Note: This table presents the top occupations in the Temporary Foreign Worker Program (TFWP) from 2004 to 2016, using 2-, 3-, and 4-digit National Occupation Classification (NOC) codes. Data restricts to workers with a Labour Market Opinion (LMO) or Labour Market Impact Assessment (LMIA) and excludes live-in caregivers and workers in the agriculture, public, education, and health sectors. *Source:* Immigration, Refugees and Citizenship Canada (2017b).

Table A.2: Maximum Duration of a Single Closed Work Permit under the Temporary Foreign Worker Program

Program Type	**Skill/Wage Stream**	**Maximum Duration**	**Period**
Labour Market Opinion (LMO)			
LMO	Low-skill	12 months	2002–2007
LMO	Low-skill	24 months	2007–2014
LMO	High-skill	No precise limit	2002–2014
Labour Market Impact Assessment (LMIA)			
LMIA	Low-wage	12 months	2014–2022
LMIA	Low-wage	24 months	2022–2024
LMIA	Low-wage	12 months	2024–present
LMIA	High-wage	36 months	2014–present

Notes: Summary of maximum durations for a single closed work permit under Canada's Temporary Foreign Worker Program (TFWP). Workers must renew their permit, obtain a new permit, or transition to PR to remain in Canada longer than these maximum durations. The table differentiates between the LMO (pre-2014) and LMIA (post-2014) closed work permit. Note that the "four-in, four-out" rule imposed a maximum cumulative duration of four years—across all *successive* permits—from 2011 to 2016. *Sources:* Citizenship and Immigration Canada (2006), Government of Canada (2007, 2011), The CanadaVisa Team (2016), Singer (2021), Employment and Social Development Canada (2023), and Government of Canada (2024, 2025b).

Table A.3: Federal Skilled Worker Program (FSWP) Selection Factors (2010)

Factor	**Maximum Points**	**Details**
Education	25	Points awarded based on level of education (degree/diploma etc.).
Language Skills	24	Total points for proficiency in English and/or French (first + second language).
Work Experience	21	Skilled work experience in past 10 years (up to 21 pts for 4+ years).
Age	10	Maximum 10 points for ages 21–49; fewer points outside that range.
Arranged Employment	10	Points for valid job offer in Canada.
Adaptability	10	Points for arranged employment (5 pts), one year full-time authorized work in Canada (5 pts), and other factors
Pass mark threshold	67	Minimum number of points required to be eligible under FSWP.

Notes: This table shows the selection grid for the Federal Skilled Worker Program in 2010. Applicants need at least 67/100 points to be eligible. *Source:* Citizenship and Immigration Canada (2010)

Table A.4: Summary of Maximum Points by Category — Quebec Skilled Worker Program (2013–2014)

Category	**Maximum Points**
Education	26
Work Experience	8
Age	16
Language Proficiency	22
Stay & Family in Québec	8
Spouse/Partner Characteristics	17
Valid Job Offer	14
Children	8
Financial Self-Sufficiency	*Eliminatory*[*]

[*] "Eliminatory" means that this requirement must be satisfied in order for the application to be considered; no points are awarded for it, but failure to meet it results in ineligibility.
Source: Ministère de l'Immigration, de la Diversité et de l'Inclusion (Québec), 2014

Table A.5: Examples of PNP Streams for TFWs

Province	Program Name	Brief Description
— Streams Requiring a Job Offer —		
Ontario	Employer Job Offer: Foreign Worker Stream	For skilled foreign workers (NOC TEER 0, 1, 2, or 3) who have a valid job offer from an Ontario employer (Government of Ontario, 2025a).
British Columbia	Skills Immigration - Skilled Worker	Targets skilled workers (NOC TEER 0, 1, 2, or 3) with a job offer from a B.C. employer and several years of related work experience (Government of British Columbia, 2025b).
British Columbia	Skills Immigration - Entry Level and Semi-Skilled	For workers in tourism/hospitality or food processing with a job offer and who have been working for their B.C. employer (Government of British Columbia, 2025a).
Alberta	Alberta Opportunity Stream	For temporary foreign workers already working full-time in Alberta in an eligible occupation. Requires a valid work permit and a job offer from their current Alberta employer (Government of Alberta, 2025b).
Saskatchewan	Skilled Worker with Existing Work Permit	For skilled workers who have been working in Saskatchewan for at least six months on a valid work permit and have a permanent, full-time job offer from their employer (Government of Saskatchewan, 2025b).
Manitoba	Skilled Worker in Manitoba Stream	For qualified temporary foreign workers and international student graduates who are currently working in Manitoba and have been offered a permanent, full-time job (Government of Manitoba, 2025b).
Nova Scotia	Skilled Worker Stream	The applicant must have a full-time, permanent job offer from a Nova Scotia employer (Nova Scotia Office of Immigration, 2025c).

Table A.5 – continued from previous page

Province	Program Name	Brief Description
New Brunswick	Skilled Worker Stream - New Brunswick Experience	For individuals who have received a full-time, permanent job offer from a New Brunswick employer. The applicant must have been living in New Brunswick and working full-time for at least six months for the same eligible employer who is supporting the application (Government of New Brunswick, 2025).
Prince Edward	Skilled Worker in PEI Stream	Requires a full-time, non-seasonal job offer from a PEI employer in a TEER 0, 1, 2, or 3 occupation, and applicants must have at least two years of full-time work experience in the past five years (Government of Prince Edward Island, 2025).
Newfoundland	Skilled Worker Category	For individuals with a guaranteed job offer from an eligible Newfoundland and Labrador employer (Government of Newfoundland and Labrador, 2025).
— ***Human Capital Streams*** —		
Ontario	OINP Human Capital Priorities Stream	(Express Entry-aligned) For candidates who have applied to the FSWP or CEC and are in the EE pool. Applicants must have specific skills or work experience (Government of Ontario, 2025b).
Saskatchewan	SINP International Skilled Worker: Occupation In-Demand	(Not Express Entry) Uses a points grid. Invites candidates with at least one year of work experience in an occupation on Saskatchewan's in-demand list. Canadian experience adds points (Government of Saskatchewan, 2025a).
Alberta	Alberta Express Entry Stream	(Express Entry-aligned) For candidates whose primary occupation is in-demand in Alberta and who have applied to the FSWP, CEC, or FSTP and are in the EE pool (Government of Alberta, 2025a).

Table A.5 – continued from previous page

Province	Program Name	Brief Description
Nova Scotia	Labour Market Priorities Stream	(Express Entry-aligned) selects candidates in the federal Express Entry system who meet provincial labor market needs to apply for nomination (Nova Scotia Office of Immigration, 2025a).
Nova Scotia	Occupations In Demand Stream	(Not Express Entry) Targets specific TEER category 3, 4 or 5 occupations of the National Occupational Classification that are in high labor market demand in Nova Scotia (Nova Scotia Office of Immigration, 2025b)
Manitoba	Skilled Worker Overseas Stream (Manitoba Experience Pathway)	(Not Express Entry) Uses a points grid to assess applicants based on language proficiency, age, work experience, education, and adaptability. Requires the applicant to have an established connection to Manitoba, such as 6+ months of previous work experience in the province (Government of Manitoba, 2025a).

Table A.6: Provincial Nominee Program Timeline by Province/Territory

Province/Territory	Date of First Signed PNP Agreement	Start of PNP
Newfoundland and Labrador	September 1, 1999	1999
New Brunswick	February 22, 1999	1999
Manitoba	October 22, 1996	1999
Prince Edward Island	March 29, 2001	2001
Saskatchewan	March 16, 1998	2001
British Columbia	April 19, 1998	2001
Alberta	March, 2002	2002
Yukon	April, 2001	2002
Nova Scotia	August 27, 2002	2003
Ontario	November 21, 2005	2007
Northwest Territories	August, 2009	2009

Source: Citizenship and Immigration Canada, 2011.

Table A.7: Pathways to Permanent Residency, Overall and by Skill Group

	Get PR (Never = 0)								
	All			High skill			Low skill		
	All	3 ≤T2PR≤ 5	Analysis	All	3 ≤T2PR≤ 5	Analysis	All	3 ≤T2PR≤ 5	Analysis
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample Composition									
3 ≤Time-to-PR ≤ 5	0.53	1.00	1.00	0.51	1.00	1.00	0.56	1.00	1.00
Analysis sample	0.22	0.42	1.00	0.21	0.41	1.00	0.24	0.44	1.00
Pathway									
PNP	0.52	0.54	0.57	0.46	0.46	0.42	0.61	0.66	0.78
Family class	0.11	0.11	0.07	–	–	–	0.26	0.24	0.15
Skilled programs	0.36	0.35	0.36	0.52	0.52	0.56	0.09	0.08	0.07
Other	0.01	0.01	0.00	–	–	–	0.04	0.02	0.01

Notes: This Table presents summary statistics for the sample of Temporary Foreign Workers (TFWs) defined in Section 3, restricting the sample to TFWs that eventually get PR. The statistics are reported for TFWs' pathways to PR, as described in Section 2.2. Column (1) includes TFWs who eventually receive PR. Column (2) restricts to TFWs who take 3–5 years to receive PR. Column (3) further limits to the main sample that is described in Section 3.1. Columns (4), (5), and (6) include the full sample, sample of TFWs who take 3–5 years to receive PR, and main analysis sample, respectively, while also restricting to TFWs who are high-skilled. Columns (7), (8), and (9) include the full sample, sample of TFWs who take 3–5 years to receive PR, and main analysis sample, respectively, while also restricting to TFWs who are low-skilled. The classification into low and high skilled workers uses the intended occupation in the IMDB recorded at the time of PR. "PNP" refers to the Provincial Nominee Program. The Skilled Programs include the Federal Skilled Workers Program (FSWP), Canadian Experience Class (CEC), Federal Skilled Trades Program (FSTP), and the Quebec Skilled Workers Program (QSWP). Separate statistics for the Family Class and Other are excluded from Columns (4), (5), and (6) because they did not pass Statistics Canada's rule for vetting disclosure (due to small sample sizes); these suppressed categories jointly account for the residual share. *Source:* Authors' calculations using the CEEDD (Demographic variables and information on PR pathways are obtained from the IMDB).

Table A.8: Sample Restrictions

Restriction Step	**Observations**	**Unique Individuals**
First permit LMIA/LMO (excluding SAWP and LCP)	—	234,000
In T1PMF or T4ROE (primary jobs only) with positive earnings	1,265,000	220,000
Removed individuals with earnings before first LMIA	1,252,000	218,000
Individuals who eventually get PR	975,000	112,000
Non-missing occupational skill level	965,000	111,000
Non-missing primary employer firm fixed effect	726,000	95,000
Time to PR ≥ 3 and Time to PR ≤ 5 (years)	392,000	51,000
Drop initial year	340,000	51,000
$-5 \leq$ Event Time ≤ 5	302,000	51,000
Balanced panel on time to PR for Event Time ≤ 2	191,000	25,000

Notes: This table details the sequential application of sample restrictions, showing the remaining number of observations and unique individuals at each step. Observations and unique individuals are rounded to comply with Statistics Canada guidelines for intermediate output. Precise numbers are available upon publication. "PR" refers to Permanent Residency. "LMIA" refers to Labour Market Impact Assessment and "LMO" refers to Labour Market Opinion. The LMIA replaced the LMO in 2014, and both refer to closed work permits in the Temporary Foreign Worker Program (TFWP) (see Section 3). SAWP refers to the Seasonal Agricultural Workers Program, and LCP refers to the Live-in Caregiver Program. Event Time is defined as "Year of PR − Year". Information on the date of PR and occupational skill level comes from the Longitudinal Immigration Database (IMDB), and earnings variables come from the T4 database. *Source:* Authors' calculations using the CEEDD.

Table A.9: Initial Characteristics of Employers

	Get PR (Never = 0)			Never Get PR = 1
	All	$3 \leq$ T2PR ≤ 5	Analysis Sample	All
	(1)	(2)	(3)	(4)
Sample Composition				
$3 \leq$Time-to-PR ≤ 5	0.53	1.00	1.00	–
Analysis sample	0.22	0.42	1.00	0.00
Firm Characteristics				
Log value added	15.47	15.36	15.64	15.50
Log revenue	16.36	16.25	16.64	16.48
Log firm size (employees)	4.86	4.80	4.93	4.65

Notes: This Table presents summary statistics for the sample of Temporary Foreign Workers (TFWs) defined in Section 3. The statistics are reported for the employer in the first year as a TFW. Column (1) includes TFWs who eventually receive PR. Column (2) restricts to TFWs who take 3–5 years to receive PR. Column (3) further limits to the main sample that is described in Section 3.1. Column (4) represents workers who never obtain PR, defined as those for whom no year of PR is recorded in the IMDB. The classification into low and high skilled workers uses the intended occupation in the IMDB recorded at the time of PR. Value added is calculated as Total Revenue minus Total Expenses plus Total Payroll. All monetary variables are reported in 2012 Canadian dollars. *Source:* Authors' calculations using the CEEDD (Demographic variables are obtained from the IMDB and Firm characteristics are obtained from the NALMF).

Table A.10: Summary Statistics by Immigration Status in the 2016 Canadian Census, Full-time Aged 16-64 Workers Only

	Native-born	Ever PR	TFWs
Demographics			
Female	0.357	0.388	0.352
Age 18–24 years	0.081	0.024	0.097
Age 25–34 years	0.241	0.196	0.560
Age 35–44 years	0.228	0.269	0.220
Age 45–54 years	0.254	0.310	0.101
Age 55–64 years	0.196	0.201	0.022
Bachelor's degree or higher	0.185	0.387	0.532
Household size	2.878	3.553	2.955
Married/common law	0.643	0.764	0.590
Employment and Income			
Log Earnings (2012 dollars)	10.63	10.52	10.20
Industry Breakdown			
Professional, scientific & technical services	0.092	0.118	0.161
Wholesale trade	0.063	0.057	0.039
Manufacturing	0.151	0.181	0.103
Accommodation and food services	0.057	0.089	0.173
Transportation and warehousing	0.071	0.072	0.043
Retail trade	0.138	0.114	0.113
Construction	0.124	0.067	0.065
Finance, insurance and management	0.067	0.086	0.063
Admin, support, waste mgmt services	0.050	0.057	0.056
Industry missing	0.021	0.043	0.041
Other	0.166	0.117	0.142
N	166,704	54,758	2,599

Notes: This table presents summary statistics for the working-age population (18-64 years) by immigration status in the 2016 Canadian Census (Public Use Microdata File). The analysis sample excludes those working in agriculture, health, education, and public sectors; we also exclude those categorized as care providers based on NOC 2016 categorization; we also exclude those who were students during the nine-month period between September 2015 and May 10, 2016. "Temporary residents" include temporary foreign workers (TFWs), international students, and refugee claimants. All values except earnings, household size and sample size are proportions. "Earnings" refers to gross wages and salaries before deductions for such items as income taxes, pension plan contributions and employment insurance premiums during the reference period (conditional on positive earnings). Unconditional earnings include zero earners (missing earnings set to zero). Net capital gains are reported annually. Industry breakdown shows the proportion of workers in each sector identified by NAICS codes. "Industry missing" includes individuals with industry coded as 'not available' or 'not applicable'. The "Other" category 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. *Source:* Authors' calculations using the 2016 Canadian Census (Public Use Microdata File).

Table A.11: Express Entry Invitation Rounds — 2016 (Rounds 24–57)

Round	Date	CRS Cutoff
24	Jan. 6, 2016	461
25	Jan. 13, 2016	453
26	Jan. 28, 2016	457
27	Feb. 10, 2016	459
28	Feb. 24, 2016	453
29	Mar. 9, 2016	473
30	Mar. 23, 2016	470
31	Apr. 6, 2016	470
32	Apr. 20, 2016	468
33	May 6, 2016	534
34	May 18, 2016	484
35	June 1, 2016	483
36	June 15, 2016	488
37	June 29, 2016	482
38	July 13, 2016	482
39	July 27, 2016	488
40	Aug. 10, 2016	490
41	Aug. 24, 2016	538
42	Sept. 7, 2016	491
43	Sept. 21, 2016	483
44	Oct. 12, 2016	484
45	Oct. 19, 2016	475
46	Nov. 2, 2016	472
47	Nov. 16, 2016	470
48	Nov. 30, 2016	786
49	Dec. 16, 2016	497
50	Dec. 22, 2016	475

"CRS" refers to the Comprehensive Ranking Score, determined by human capital factors (education, experience, age, language ability) and additional points for arranged employment or a provincial nomination.

Candidates with CRS scores above the cutoff in each round receive an invitation to apply (ITA) for permanent residence.

Source: Immigration, Refugees and Citizenship Canada (2017a)

Table A.12: Comprehensive Ranking System (CRS) Components and Maximum Points — 2015 Structure

Component and Subcategory	Maximum Points
A. Core / Human Capital Factors	
Age (20–29 = maximum)	110 (single) / 100 (with spouse)
Level of education	150 / 140
First official language proficiency (CLB 9+)	160 / 150
Canadian work experience	80 / 70
Subtotal A: Core human capital factors	**500 / 460**
B. Spouse or Common-law Partner Factors	
Spouse's level of education	10
Spouse's first official language proficiency	20
Spouse's Canadian work experience	10
Subtotal B: Spouse factors	**40**
C. Skill Transferability Factors	
Education + Language Proficiency	50
Education + Canadian Work Experience	50
Foreign Work Experience + Language Proficiency	50
Foreign Work Experience + Canadian Work Experience	50
Certificate of Qualification (trades) + Language Proficiency	50
Subtotal C: Skill transferability (overall cap)	**100**
D. Additional Points	
Provincial nomination	600
Valid job offer with a Labour Market Impact Assessment (LMIA)	600
Subtotal D: Additional points (overall cap)	**600**
Total possible CRS score	**1,200**

Notes: Figures reflect the Comprehensive Ranking System (CRS) structure for Express Entry as introduced in 2015. Applicants are ranked out of 1,200 points, combining human-capital, skill-transferability, and additional factors. Category A is capped at 500 points, Category B is capped at 40 points, Category C is capped at 100 points, and Category D is capped at 600 points. *Source:* Immigration, Refugees and Citizenship Canada (2016c)

Table A.13: Counterfactual Analysis Converting All TFWs to Permanent Residents

		Converting All TFWs to PR	
	Decentralized equilibrium (DE) with segmented labor markets	Scenario: No change in TFW x distribution after PR	% change relative to DE
Panel A: Market-level outcomes			
Combined market:			
Output (market production)	2.526	2.559	1.30%
Wage bill	1.787	1.867	4.47%
Firm profits	0.614	0.607	-1.11%
$Corr(x, y)$		0.153	
Average "markdown" $w/f(x, y)$		0.677	
Market tightness (V/U)		1.158	
Panel B: Average wages			
Average wages, TFWs			
TFWs, all	0.950	1.034	8.83%
TFWs, below-median wages	0.424	0.470	10.84%
TFWs, above-median wages	1.476	1.597	8.23%
Average wages, domestic workers			
Domestic workers, all	1.354	1.336	-1.35%
Domestic workers, below-median wages	0.647	0.630	-2.61%
Domestic workers, above-median wages	2.062	2.042	-0.95%
Average wages, all workers	1.156	1.180	2.09%
Panel C: Social welfare			
Social welfare in TFW market segment	1.058		
Social welfare in domestic workers market segment	1.510		
Total social welfare	2.568	2.665	3.80%

Notes: This table presents results from our counterfactual scenario where all temporary foreign workers (TFWs) obtain permanent residency (PR). 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 keep the TFW distribution constant. We find that "shutting down" the segmented labor market results in an increase in average wages of 2.1% and social welfare of 3.8%. In Table 5, we change the TFW distribution to match our reduced-form results, and we find that social welfare increases by 5.1% while average wages increase by 3.4%.

Table A.14: Counterfactual Analysis Increasing Expected Cost of TFW Vacancy ($\beta = 0.3$)

	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Increase expected cost for TFW vacancy	% change relative to DE
Panel A: Market-level outcomes			
TFW market segment:			
Output (market production)	1.151	1.118	-2.88%
Wage bill	0.667	0.627	-5.95%
Firm profits	0.371	0.371	-0.08%
$Corr(x, y)$	0.000	0.000	
Market tightness (V/U)	3.114	2.250	-27.73%
Domestic workers market segment:			
Output (market production)	1.521	1.523	0.10%
Wage bill	0.976	0.978	0.21%
Firm profits	0.438	0.436	-0.50%
$Corr(x, y)$	0.139	0.139	
Market tightness (V/U)	3.572	3.626	1.51%
Combined market:			
Output (market production)	2.672	2.640	-1.19%
Wage bill	1.643	1.605	-2.29%
Firm profits	0.809	0.806	-0.31%
Panel B: Average wages			
Average wages, TFWs			
TFWs, all	0.799	0.773	-3.23%
TFWs, below-median wages	0.356	0.345	-3.06%
TFWs, above-median wages	1.242	1.201	-3.28%
Average wages, domestic workers			
Domestic workers, all	1.179	1.180	0.14%
Domestic workers, below-median wages	0.559	0.561	0.27%
Domestic workers, above-median wages	1.798	1.800	0.12%
Average wages, all workers	0.988	0.979	-0.93%
Panel C: Social welfare			
Social welfare in TFW market segment	1.084	1.053	-2.84%
Social welfare in domestic workers market segment	1.509	1.508	-0.04%
Total social welfare	2.593	2.561	-1.21%

Notes: This table presents results from our counterfactual scenario where we set $\beta = 0.3$ and increase the expected cost of a temporary foreign worker (TFW) application by 25%, which reduces the probability of application acceptance in our calibrated model. This reduction 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. Relative to the decentralized equilibrium, fewer firms enter the TFW segment, which decreases output in this segment by 2.88% while increasing output in the domestic segment by 0.10%. Firm profits decreases by 0.08% in the TFW segment and 0.5% in the domestic segment due to the increase in the expected cost of a vacancy. The reduction in output reduces social welfare by 1.21% when the planner values wages and profits equally.

Table A.15: Counterfactual Analysis Increasing Expected Cost of TFW Vacancy ($\beta = 0.7$)

	Decentralized equilibrium (DE) with segmented labor markets	Scenario: Increase expected cost for TFW vacancy	% change relative to DE
Panel A: Market-level outcomes			
TFW market segment:			
Output (market production)	0.928	0.877	-5.49%
Wage bill	0.733	0.687	-6.23%
Firm profits	0.157	0.150	-4.33%
$Corr(x, y)$	0.000	0.000	
Market tightness (V/U)	0.509	0.368	-27.63%
Domestic workers market segment:			
Output (market production)	1.367	1.372	0.33%
Wage bill	1.137	1.144	0.61%
Firm profits	0.198	0.196	-1.31%
$Corr(x, y)$	0.099	0.099	
Market tightness (V/U)	0.706	0.721	2.13%
Combined market:			
Output (market production)	2.295	2.248	-2.02%
Wage bill	1.870	1.831	-2.08%
Firm profits	0.355	0.346	-2.64%
Panel B: Average wages			
Average wages, TFWs			
TFWs, all	1.093	1.084	-0.82%
TFWs, below-median wages	0.489	0.486	-0.62%
TFWs, above-median wages	1.697	1.682	-0.92%
Average wages, domestic workers			
Domestic workers, all	1.533	1.537	0.21%
Domestic workers, below-median wages	0.728	0.731	0.34%
Domestic workers, above-median wages	2.338	2.342	0.17%
Average wages, all workers	1.324	1.328	0.32%
Panel C: Social welfare			
Social welfare in TFW market segment	0.963	0.920	-4.51%
Social welfare in domestic workers market segment	1.472	1.474	0.19%
Total social welfare	2.435	2.394	-1.67%

Notes: This table reports results from our counterfactual in which we set $\beta = 0.7$ and increase the expected cost of a temporary foreign worker (TFW) application by 25%, which reduces the probability of application acceptance in our calibrated model. This reduction 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. Relative to the decentralized equilibrium, fewer firms enter the TFW segment, which decreases output in this segment by 5.49% while increasing output in the domestic segment by 0.33%. Firm profits decreases by 4.33% in the TFW segment and 1.31% in the domestic segment due to the increase in the expected cost of a vacancy. The reduction in output reduces social welfare by 1.67% when the planner values wages and profits equally.

L Sample Labour Market Opinion (LMO)

These appendices include sample PDF forms for the Labour 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/).

L.1 Sample LMO for a low-skilled stream

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

L.2 Sample LMO for a high-skilled stream

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

L.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.

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