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AND CHANGING COHORT QUALITY IN CANADA

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ABSTRACT

Immigrant integration is a central issue in policy debates, with wage assimilation serving as a key indicator of immigrants' economic success. Using matched employer–employee data from Canada, we study how access to higher-paying firms affects the economic assimilation of immigrants. Immigrants are disproportionately concentrated in lower-paying firms, accounting for much of the observed inequality. Nearly half of this sorting occurs across industries, and both firm- and industry-level wage gaps stagnate after eight years, suggesting that further assimilation reflects human capital accumulation rather than improved firm access. Importantly, these disparities persist after controlling for estimates of worker skill, indicating barriers to high-paying firms rather than differences in human capital. The analysis further shows that Canada's post-2015 immigration policy reforms significantly improved immigrant outcomes: the initial wage gap narrowed by 25–35%, with roughly half of the improvement attributable to better allocation into higher-paying firms. Taken together, the findings highlight the critical role of firm sorting and its interaction with immigration policy in shaping the economic integration of immigrants.

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1 Introduction

The debate surrounding immigration policy often centers on whether immigrants successfully integrate economically and culturally within the host country. One measure of economic integration that has drawn the attention of economists surrounds the evolution of immigrants' wages over time relative to those of natives. Since [Chiswick \(1978\)](#) and [Borjas \(1985\)](#), much research has focused on two specific aspects of immigrant wage assimilation: the initial immigrant-native wage gap that is considered a proxy for the 'quality' of immigrants and how this wage gap evolves as immigrants spend time in the host country. The wages of immigrant workers relative to comparable natives are viewed as an important measure of the success of these workers in integrating into the host economy.

Understanding the dynamics of the immigrant-native wage gap after arrival and the economic mechanisms that shape it is needed to introduce effective policies to help integrate immigrant workers. However, much of the existing evidence on wage assimilation is based on data that do not contain information on the firms where workers are employed. This is concerning since a growing literature documents that firms can differ substantially in their wage-setting policies (e.g., [Card *et al.* \(2013\)](#); [Song *et al.* \(2019\)](#)), and recent work has found that differences in sorting between firms can explain a sizable share of the immigrant-native wage gap ([Dostie *et al.* \(2023\)](#); [Arellano-Bover and San \(2023\)](#)), suggesting a substantial role for firms in shaping immigrant integration.

The incorporation of firm-level data into the study of immigrant wage assimilation brings to the forefront several policy-relevant questions. First, we ask whether immigrant-native gaps in firm pay evolve as immigrants spend more time in the host economy, and how important reallocation into higher paying firms for explaining dynamic wage assimilation patterns? To answer this question, we employ a modified version of [Abowd *et al.* \(1999\)](#), hereafter AKM, which is a statistical model that decomposes the variation in wages conditional on both worker and firm characteristics. We use Canadian matched employer-employee data to obtain estimates of the contribution of both firm pay premia and worker human capital to wages. We then carefully document the role these two components play in shaping the evolution of the immigrant-native earnings gap as immigrants spend time in the host economy. Consistent with earlier research using Canadian data (see e.g., [Aydemir and Skuterud \(2008\)](#), [Dostie *et al.* \(2023\)](#)), we find that immigrants are initially employed at substantially lower paying firms, accounting for 8.5 of the initial 42 log-point gap in annual earnings (about one-fifth). However, we find that this aggregate statistic masks important dynamics over the immigrant's time in Canada. Relative to the component of the wage gap that captures differences in human capital, the gap in firm pay premia narrows far more slowly and plateaus approximately eight years after landing. The limited ability of immigrants to transition

into higher-paying firms thus represents a persistent barrier to wage assimilation.

Second, we ask whether this observed between-firm sorting gap reflects a within- or between-industry phenomenon. To address this question, we apply the methodology of [Card *et al.* \(2024\)](#) to estimate “industry pay premia”, which capture systematic wage differences across broad (2-digit NAICS) industries. Using this approach, we decompose the immigrant–native sorting gap into within- and between-industry components. We find that roughly half of the gap is explained by immigrants’ disproportionate concentration in lower-paying industries. Moreover, as with firm-level pay premia, the industry pay gap closes only modestly and stagnates after the early years in the host labor market. This persistence suggests that institutional features of industries—such as professional associations, licensing regimes, and credentialing requirements—may act as barriers to immigrant mobility into higher-paying industries.

Third, we ask whether differences in firm and industry sorting can be explained by skill-based sorting. After all, if immigrants land in a new country with lower unobserved human capital than observably similar native workers, then these stark differences in firm and industry sorting may simply reflect immigrants with lower human capital optimally sorting into lower paying firms in the same way as a (same-ability) native worker. To address this question, we extend the AKM framework to condition not only on observable characteristics but also on estimated worker ability. We find that accounting for unobserved ability explains less than 10% of the firm pay gap. This indicates that the majority of the observed disparities reflect non–human capital barriers to immigrant access to higher-paying firms and industries.

We next ask whether these patterns differ across immigrant subgroups. To do so, we merge detailed information on immigrant workers at the time of landing with their administrative tax records. This allows us to construct immigrant subgroups on the basis of channel of entry, age at landing, language fluency and education attainment. We find substantial heterogeneity across subgroups in both initial earnings gap and subsequent earnings assimilation and firm types.¹ Immigrants who arrive with English proficiency, a university degree, or who entered through one of Canada’s economic channels (as opposed to family, humanitarian or refugee channels) tend to experience full assimilation in terms of both earnings and firm pay within 15 - 20 years. In contrast, immigrants who land without these characteristics not only have much larger gaps in initial earnings (over 1.5 x) and firm pay premia (over 2 x), they also have drastically lower rates of assimilation. For example, economic immigrants experience growth in earnings and firm pay roughly twice that of family migrants and refugees.

Finally, we ask how wage assimilation and firm sorting have evolved across immigrant entry co-

¹We do not investigate heterogeneity across provinces since [Dostie *et al.* \(2022\)](#) report a surprising degree of similarity across the three provinces they investigate in the way in which firms contribute to the immigrant–native earnings gap.

horts to shed light on how immigrant admission policies affect the allocation of new immigrants across firms. We focus on the 2015 reforms to Canada’s immigration selection system. To investigate this, we compare the outcomes of immigrants admitted before and after the introduction of Express Entry, which shifted selection criteria away from job offers and toward human capital factors such as language proficiency and education. The results show that the post-2015 cohorts experienced substantially stronger initial labor market integration: their entry earnings gaps were 25–35% smaller than those of earlier cohorts. Importantly, nearly half of these gains were driven by improved allocation into higher-paying firms, with firm pay gaps for the post-2015 cohort only about half as large as for pre-2016 arrivals. These findings demonstrate that policy reforms emphasizing human capital selection not only improved early earnings outcomes but also facilitated better access to high-paying firms, thereby reshaping the trajectory of immigrant assimilation.

Overall, this paper highlights the central role of firm sorting and its interaction with immigration policy in shaping immigrant economic integration. Our wage decomposition and heterogeneity analyses suggest that immigrant integration programs should prioritize family migrants and refugees with limited language proficiency. They also highlight that structural barriers that restrict access to higher-paying firms and sectors beyond equipping them with general skills. Finally, our cohort level result emphasize the importance of designing immigrant selection systems such as the point based framework to promote both early labor market success and long-term firm access. More broadly, these findings have implications for policy tools such as sectoral wage floors and pay-transparency regulations, which can complement integration programs by reducing within-industry wage disparities and supporting equitable access to higher-paying employment opportunities.

Our study contributes to a long literature trying to understand immigrant wage assimilation; for recent work on this topic see [Bowlus *et al.* \(2016\)](#), [Rho and Sanders \(2021\)](#), [Adda *et al.* \(2022\)](#), and [Battisti *et al.* \(2022\)](#). However, many studies either abstract from the role of individual firms in setting pay or overlook the influence of the firm “ladder” on shaping the immigrant–native wage gap. By focusing explicitly on the role of sorting across firms and industries, our study complements a large body of literature that considers the role of occupational upgrading for immigrant assimilation ([Green \(1999\)](#); [Abramitzky *et al.* \(2014\)](#); [Imai *et al.* \(2019\)](#); [Lessem and Sanders \(2020\)](#)), highlighting that the types of jobs that immigrants have access to are critical for their economic success.

Our work is most closely related to [Dostie *et al.* \(2023\)](#) and [Arellano-Bover and San \(2023\)](#). [Dostie *et al.* \(2023\)](#) apply the switcher design of [Card *et al.* \(2016\)](#) and conclude that firm pay policies account for roughly 20 percent of immigrant-native wage inequality in Canada. Their focus, however, is primarily on the static wage gap, whereas we focus on the dynamics of wage inequality

as immigrants spend time in the host labour market. [Arellano-Bover and San \(2023\)](#) use a similar empirical framework in the context of Israel to study the mass migration of former Soviet Union Jews to Israel in the 1990s, documenting dynamic assimilation and sorting across firms. [Damas de Matos \(2017\)](#) uses a similar empirical set-up and documents the importance of job-mobility for immigrant wage assimilation in Portugal.² Importantly, none of these studies consider to what extent differences in sorting occur within versus between industries, nor do they analyze how sorting contributes to outcomes across immigrant cohorts. In contrast, we show that nearly half of the observed sorting differences arise from immigrants’ concentration in lower-paying industries and exploit Canada’s rich immigration history and recent admission policy reforms to examine cohort variation.³ We find that immigrants admitted after Canada’s 2015 policy reforms earned substantially higher wages and were employed at significantly higher-paying firms.

This paper is organized as follows. Section 3 describes the Canadian data and describes key features of immigration policy during the sample period. Section 2 presents the empirical framework, including our decomposition of the immigrant–native wage gap and our approach to estimating assimilation. Section 4 reports and discusses the empirical findings. Section 5 concludes with a summary and implications for policy makers.

2 Empirical Set-up

2.1 An Empirical Wage Model

Our framework builds on the statistical model of [Abowd *et al.* \(1999\)](#) (AKM). Let w_{it} be the log wage of worker i at time t . Define $J(i, t)$ as the firm of worker i at time t , and $Y(i, t)$ as the number of years since landing for immigrant workers. We estimate the following wage equation

$$w_{it} = a_i + \underbrace{X_{it}\beta + \gamma_{Y(i,t)}}_{\equiv \alpha_{it}} + \psi_{J(i,t)} + r_{it} \quad (1)$$

²Portugal’s labor market differs sharply from Canada’s. As [Lehrer *et al.* \(2025\)](#) note, Portugal experienced virtually no immigration until the early 2000s, after which substantial immigration waves occurred. This pattern allows them to document how firms’ individual-level exposure to immigrants shaped immigrant remuneration. Differences across cohorts in entry wages are thus interpreted as evidence that increased employer exposure to immigrant groups significantly contributed to wage convergence between immigrants and natives since 2000. Another key distinction, highlighted by [Alam *et al.* \(2023\)](#), is that the majority of Portuguese workers are covered by collective bargaining agreements that establish industry-wide, job-title-specific wage floors. Although [Card *et al.* \(2016\)](#) emphasize that firms retain flexibility to add “wage cushions” above these floors, one would expect substantially less within-industry wage variation in Portugal compared to Canada.

³This also ties our study to the literature that examines how immigrant cohorts vary over time; see [Borjas \(2015\)](#), [Warman and Worswick \(2015\)](#), and [Albert *et al.* \(2021\)](#), among others.

where a_i denotes the individual worker fixed effect and ψ_j the firm-specific pay premium. The vector X_{it} includes year fixed effects and a cubic in age, allowing for the possibility that worker ability may grow with time in the labour force.⁴ We also include unrestricted years-since-landing fixed effects for immigrants γ_y , which are by construction zero for all natives. This variable allows us to account for the well-documented pattern that immigrants often enter the host labor market with lower measured human capital but experience faster subsequent human capital accumulation.

The firm fixed effect ψ_j captures the extent to which a firm pays systematically more or less than others, holding the worker characteristics constant. Differences in firm pay premia between immigrants and natives therefore reveal how much of immigrant wage inequality and assimilation is driven by sorting across firms rather than differences in worker attributes. [Lachowska et al. \(2023\)](#) provide evidence that AKM firm effects are highly persistent over long-time horizons, making it unlikely that assuming time-invariant firm effects introduces substantial misspecification. Throughout the analysis, we will loosely refer to $\alpha_{it} \equiv a_i + X_{it}\beta + \gamma_{Y(i,t)}$ as worker human capital. However, we acknowledge that this is a coarse measure: in practice, it bundles all individual-specific traits that affect wages across firms, including bargaining ability or outside options.

Equation (1) can be theoretically motivated by search and matching models (e.g., [Cahuc et al. \(2006\)](#), [Morchio and Moser \(2024\)](#)), static monopsony models ([Card et al. \(2018\)](#)), and firm wage posting models ([Chan et al. \(2020\)](#)). Although the AKM framework places strong assumptions on the wage determination process—such as wages being additively separable in worker and firm types and worker mobility being exogenous with respect to the error term—variants of this wage model have been used and defended extensively in the labour economics literature as a parsimonious way to describe workers wages. In addition, the literature has found that earnings patterns across a range of countries, including Canada, are consistent with the key identifying assumptions (e.g., see [Card et al. \(2013\)](#), [Card et al. \(2016\)](#), [Song et al. \(2019\)](#), [Gerard et al. \(2021\)](#), [Di Addario et al. \(2023\)](#), [Dostie et al. \(2023\)](#) and [Morchio and Moser \(2024\)](#)).⁵

⁴We are unable to include years of education within our set of worker covariates because it is not observed in our data that is built from income tax records. In our empirical analysis, we will restrict our sample to workers older than 25 and education is implicitly treated as time-invariant and absorbed into the worker fixed effect. This sample restriction was chosen to reduce potential concerns from maintaining the assumption that education is time-invariant for most workers.

⁵As pointed out by [Andrews et al. \(2008\)](#), there will also be estimation error in both the person and firm effects which can generate a downward bias in the covariance between the estimated firm and person effects and an upward bias in the estimated variance of firm effects. The extent of this bias has been demonstrated across a wide range of countries ([Bonhomme et al. \(2022\)](#)). Despite this, the fixed effect estimates for worker and firm levels are unbiased under the identifying assumptions. Since our interest in using this wage model is on first-order moments, we do not engage in formal corrections to remedy these biases, such as the procedure proposed in [Kline et al. \(2020\)](#). Moreover, recent studies suggest that due to the length of our sample period with the BEAM data, these biases are likely to be quite small (see [Gerard et al. \(2021\)](#) and [Lachowska et al. \(2023\)](#)).

An advantage of this empirical framework is that it does not place restrictions on the joint distribution of worker and firm effects. Workers may sort to firms based on any function of their own unobserved skills and firm pay premia, allowing us to be agnostic about the micro-foundations of sorting differentials between immigrants and natives. In contemporaneous work, [Rawling \(2025\)](#) uses other information on labor market dynamics and ethnic sorting patterns to estimate a structural model that micro-founds sorting differentials between immigrants and natives, showing that referral networks, job search barriers, job instability, and skill differences all contribute. In contrast, our study adopts a non-structural approach to draw policy-relevant inferences about immigrant sorting.

We implicitly restrict firms to offer the same pay premium to both immigrant and native workers. Although it is possible that firms pay immigrants and natives differently within a firm, prior research that estimates worker group specific wage profiles suggests that within-firm pay within-firm pay differentials explain only a small portion of overall wage gaps (e.g., see [Dostie et al. \(2023\)](#) and [Card et al. \(2016\)](#)). Moreover, since identification of the firm effects in equation (1) comes only from workers moving between firms (see [Abowd et al. \(1999\)](#)), estimating separate firm effects for each worker group leads to noisier estimates and limits our sample size to larger firms actively hiring both immigrant and native workers. By assuming a single pay premium, we can retain a more representative sample and obtain more precise estimates. Importantly, because our primary focus is on the importance of sorting *between* firms rather than pay *within* firms, this simplification does not affect our findings.

With estimates of firm pay-premia in hand ($\hat{\psi}_j$), we adopt the framework of [Card et al. \(2024\)](#) to estimate industry pay-premia.⁶ Denote industries by $k \in \{1, \dots, \mathcal{K}\}$, and let $K(j)$ be the industry of firm j . We define

$$\hat{\delta}_k \equiv \frac{\sum_j N_j \hat{\psi}_j}{\sum_j N_j} \quad (2)$$

$$\hat{h}_j \equiv \hat{\psi}_j - \hat{\delta}_{K(j)}. \quad (3)$$

where N_j is total employment at firm j . Here, $\hat{\delta}_k$ are the employment-weighted averages of firm premiums across all firms in industry k . We refer to this as the “industry pay premia” as this is

⁶In an influential paper, [Krueger and Summers \(1988\)](#) showed that wages of workers with similar characteristics varied across industries in multiple datasets collected at different points in time. These industry wage premiums were estimated from between-industry job movers holding worker characteristics constant, thereby ruling out potential sorting of workers to high-paying industries based on their unobserved skills. We instead follow the methodology of [Card et al. \(2024\)](#) who demonstrate that alternative methods to estimate industry pay premia are biased. For example, cross-sectional estimates of industry differentials tend to overstate the pay premiums due to neglecting to account for unobserved worker skills, and estimates of industry pay premia based on industry movers generally understate the true premiums, since they do not allow for differences in firm pay premia within industries.

extent to which an industry is higher paying for any given worker. The second term, $\hat{h}_j$ yields firm j 's hierarchical pay position within their industry.

Intuitively, a firm could be lower-paying because, for example, it is lower productivity relative to other firms in their industry. This would be reflected by a low h_j . But it could also be lower-paying because that firm resides in a low-productivity industry, in which case the firm may even have a high value of h_j and yet still have a low value of ψ_j . Whether differences in immigrant sorting are a between-industry versus a within-industry phenomenon is informative for crafting effective immigrant integration programs, as it helps illuminate the dimensions along which immigrants face barriers to the labor market.

2.2 Estimating Immigrant Assimilation

The main goal of this paper is to use our estimates from equations (1)-(3) to understand the role each explanatory component plays in the assimilation process. To this end, we run the following regression to look at how gaps between immigrants and native converge for some outcome variable z_{it} ,

$$z_{it} = \theta_1^z Imm_i + \sum_{y=2}^{20} \theta_y^z \cdot \mathbb{I}\{Y_{it} = y\} + X_{it}\beta^z + \epsilon_{it}^z \quad (4)$$

where Imm_i is an indicator variable equal to one for immigrants and zero for natives, Y_{it} the number of years since landing for immigrants, and X_{it} contains fixed effects in age, sex, province and year. Outcomes will include log wages w_{it} and our estimates of ability $\hat{\alpha}_{it}$, firm pay premia $\hat{\psi}_{J(i,t)}$, industry pay premia $\hat{\delta}_{K(J(i,t))}$, and within industry pay premia $\hat{h}_{J(i,t)}$.

Equation (4) treats the BEAM data as a single cross-section in the sense that we estimate the wage gap conditional on years-since-landing without taking into account that the composition of immigrant workers changes both across different cohorts and across time within cohorts. The immigrant wage assimilation literature has extensively documented that such factors can lead to misleading estimates of wage assimilation due, for example, to changes in cohort quality, selective return migration, or selective delayed entry to the labour market; see [Borjas \(1985\)](#), [Duleep \(2015\)](#) and [Rho and Sanders \(2021\)](#), among others.

To address these concerns, we additionally run a modified version of equation 4 that exploits the panel nature of the data

$$z_{it} = \tilde{\theta}_{1i}^z + \sum_{y=2}^{20} \tilde{\theta}_y^z \cdot \mathbb{I}\{Y_{it} = y\} + X_{it}\tilde{\beta}^z + \tilde{\epsilon}_{it}^z. \quad (5)$$

The only difference from equation (5) relative to equation (4) is that instead of a common fixed effect for all immigrants θ_1^z , we now include a separate fixed effect for each immigrant worker $\tilde{\theta}_{1i}^z$. The resulting assimilation estimates $\tilde{\theta}_y^z$ thus only capture the *within-worker* wage growth of immigrants relative to natives, mitigating concerns over compositional biases identified in the literature.⁷

We refer to equation (4) as our cross-sectional (CS) specification and equation (5) as our fixed effect (FE) specification. Under the FE specification, the *level* of wage inequality is no longer identified, since we estimate a separate constant for each immigrant worker. We therefore set the level of the wage assimilation profile estimated from the FE specification such that the wage gap in years-since-landing bin $y = 10$ is equal in both specifications. We find that the assimilation estimates from the CS and FE specifications are nearly identical (see Figure A.1 in the appendix), indicating that the compositional changes mentioned above are not a first-order concern in the Canadian data. Given that the FE specification requires a normalization that is not always comparable across different subgroups of immigrants, we elect to present our CS estimates in the main text unless explicitly stated.

3 Data

We use data from Statistics Canada’s Business-Employee Analytical Microdata (BEAM). The BEAM is matched employer-employee data derived from administrative tax records covering the

⁷Although estimates from equation (5) will reduce the impact of compositional biases on the estimates relative to equation (4), self-selection will of course still play a role in our assimilation estimates. For example, immigrants who choose to return-migrate may be workers who experienced low earnings growth in their initial years. In this case, the estimated assimilation profiles from equation (5) would capture the average wage growth of all immigrants in the initial years, but exclude those who return-migrate in later years. We do not view this as problematic, and believe this is the most reasonable understanding of what an “average” assimilation profile is. Moreover, according to Statistics Canada’s Longitudinal Immigration Database, the five-year retention rates of immigrants to Canada in the Federal Skilled Worker program who arrived in 2005, 2010 and 2015 are respectively 91.2% 90.6% and 92.1%. Economic immigrants of all streams and Family-Sponsored Immigrants tend to remain in Canada for at least five years, with minor variation across admission categories and years. The rates are lower for refugees, but their retention rates have grown in recent years. As such, we suggest that the biases induced by level shifts in worker mean wages due, for example, to changing immigrant quality over time, are the primary concern for obtaining informative estimates of immigrant assimilation, and it is this concern that equation (5) directly addresses.

universe of workers and firms in Canada from 2001 to 2019.⁸⁹

These tax records are then linked to Canada’s Longitudinal Immigration Database (IMDB) which allows us to identify immigrant workers in the tax records and observe detailed characteristics at the time of landing, such as landing date, permanent resident (PR) status, entry channel, education, intended occupation, and language proficiency.¹⁰ We define immigrants as PRs who landed in Canada at age 16 or older, following [Adda *et al.* \(2022\)](#). Workers who landed before age 16 are classified as natives for the analysis, as they would have had exposure to Canadian institutions before entering the labour market. Temporary immigrants are excluded from the analysis due to their potential labour market restrictions, including limits on hours worked and job mobility. Since temporary workers comprise only about 10% of immigrant observations in our sample, this does not pose a significant limitation to our analysis. Many temporary workers transition to PR status, and we include these workers if/when they become PRs. Specifically, we include immigrant workers in our data starting with their first full tax year as a PR.

We restrict our analysis to workers aged 25-60 at their main employer and use total annual T4 income (deflated to 2015 Canadian dollars) as the measure of earnings. Consistent with previous research using administrative tax data without information on hours worked (e.g., [Card *et al.* \(2013\)](#), [Song *et al.* \(2019\)](#)), we focus on workers with total annual earnings above a \$15,000 threshold. Finally, since identification of our wage model in equation (1) relies on workers moving between firms, and this is only possible within the group of interconnected firms, we restrict observations to those associated with the largest set of firms connected by worker mobility. To belong to the connected set, an employer must either hire a worker from, or lose a worker to, another employer already in the set. While this requirement could lead to a type of selection bias by only retaining larger and more connected firms in the main analysis, in practice this restriction retains about 99% of both immigrant and native observations.¹¹ In total, our sample includes 1,860,270 unique firms

⁸The BEAM is a relatively recent product developed by Statistics Canada. It is constructed from the same administrative data used to develop the Canadian Employer-Employee Dynamics Database (CEEDD) that was employed in, e.g. [Dostie *et al.* \(2023\)](#), but contains only a preselected subset of variables. For each worker, the BEAM provides data on annual earnings from each employer (T4 slip) along with demographic details such as age, gender, marital status, and province of residence. Although the BEAM also provides detailed administrative information on each employer, we only need the employer identifier and their 2-digit NAICS industry for our purposes. For workers employed by multiple firms in a given year, we assign their primary employer as the firm with the highest T4 earnings in that year. While the BEAM data has many attributes, it does not contain data on hours or job amenities such as workplace pension plans or dental insurance, so we cannot examine total compensation as an outcome.

⁹Amenities such as workplace pension plans though have declined across cohorts as documented in [Lehrer *et al.* \(2023\)](#)

¹⁰Language proficiency is a self-reported indicator variable given at the time of landing. We do not observe how language proficiency evolves over the assimilation process. More detailed information on language scores from formal testing exists for recent economic immigrants, but we do not have access to this data.

¹¹Annual mobility rates in the Canadian administrative data are about 25%, implying that about one-quarter of Canadian workers are moving to new firms in the following year ([Rawling \(2025\)](#)). Immigrants who landed less than five years ago tend to have higher mobility rates, but quickly converge to the same mobility rates as native workers.

and 161,720,000 observations; all counts are rounded to the nearest 10 for confidentiality purposes.

Table 1 presents summary statistics for our main sample. Immigrants make up 18% of the observations in our data and tend to land with a substantial earnings gap of 42 log points on average, controlling for age, year, sex and province fixed effects.¹² Since the Canadian administrative data does not contain more detailed worker demographics for native workers, such as years of education, we note that these gaps include wage and firm type differences that would naturally arise from differences in skills and education.

About 20% of the annual earnings gap is due to differences in firm pay and about 10% specifically to differences in firm pay between industries. To fix ideas, in Table (A.1) we report the composition of immigrant and native labor across 2-digit NAICS industries based on the 2021 Canadian census. We see that there are substantial differences between immigrants and natives in terms of industry composition. For example, in 2021 immigrants make up about 27% of the labour force but only about 19% of the construction sector, 20% of the education sector, and 17% of public administration. Similarly, they are over-represented in high-skill services (30-36%) and accommodations and food services (39%). It is therefore not immediately obvious that immigrants sort into low-skill sectors; immigrants are over and under-represented in both high and low-skill sectors. Nevertheless, our results show the net effect is that immigrants sort into low-paying industries more than native workers, accounting for about 10% of total wage inequality.

We also find substantial heterogeneity in these initial gaps across subgroups of immigrants. We compare immigrants (i) with and without English and/or French language proficiency (13.8% / 4.2%), (ii) with and without a university degree (9.1% / 8.9%), (iii) who landed at age younger or older than 34 (11.6% / 6.3%), and (iv) who landed via one of Canada’s economic admission channels as opposed to arriving through a family, refugee, or humanitarian channel (10.6% / 7.3%). Immigrants who arrive with language proficiency, a university degree, at age ≤ 34 , or as an economic immigrant have wage gaps more than 20 log points lower than their respective counterparts. A substantial part of these differences in earnings is due to differences in sorting across firms, with these workers having gaps in firm pay premia close to half the size as their counterparts.

The main takeaway from Table 1 is that differences in sorting across firms and industries account

They also strongly sort into firms with other co-ethnic workers, implying the distribution of immigrant labor across firms is ethnically segregated. In principle, the segregation of immigrant workers could lead to pockets of immigrant observations being disconnected from the largest connected set of firms, thereby being excluded from the analysis. We find this is not the case, with the vast majority of both immigrant and native observations being retained.

¹²Further details on the changing nature of immigration in Canada are provided in Doyle *et al.* (2025). Using 2016 Census data, we observe that in 1980, about 38% of immigrants were admitted through the economic class and 33% through family sponsorship. By 2000, these shares had shifted to 56.5% and 29.1%, respectively. In 2016, economic immigrants accounted for 50.6% and family-sponsored immigrants 24.1%. Data from the 2021 Census indicate that the share admitted through economic channels fluctuated between 52.7% and 60.5% from 2017 to 2021.

Table 1: Summary Statistics

	Sample Size	% Share	Init. Earnings Gap	Init. Firm Premia Gap	% Between Firm	Init. Industry Premia Gap	% Between Industry
All	161,720,000	100.0					
Immigrants	29,034,580	18.0	-0.42	-0.09	20.4	-0.04	9.8
<i>Characteristics at landing</i>							
Fluent		13.8	-0.39	-0.08	19.5	-0.04	10.2
Non-Fluent		4.2	-0.65	-0.16	24.5	-0.05	8.2
University Degree		9.1	-0.34	-0.06	16.5	-0.03	8.4
No University Degree		8.9	-0.54	-0.13	24.3	-0.06	11.2
Young at Land (≤ 34)		11.6	-0.32	-0.07	20.4	-0.03	9.8
Old at Land (> 34)		6.3	-0.54	-0.11	20.4	-0.05	9.7
Economic Channel		10.6	-0.35	-0.07	18.4	-0.04	9.9
Non-Economic Channel		7.3	-0.56	-0.13	23.3	-0.05	9.7

Notes: This table reports summary statistics for our main sample. Data is from Canada's BEAM, and includes Canadian citizens and permanent residents aged 25-60 from 2001-2019. We restrict to the largest connected set of main employers. Initial earnings gap refers to the difference in log annual earnings between immigrants and natives in the immigrants first full tax year. All differences are estimated using equation (4) and are conditional on age, sex, province and year.

for a substantial share of immigrant-native wage inequality for all types of immigrants. In the next section, we explore how these gaps evolve as immigrants spend time in the host economy and how these gaps vary across cohorts.

4 Empirical Results

4.1 Immigrant-Native Differences in Firm and Industry Sorting

Figure (1) presents estimates of the assimilation of immigrants in log annual earnings (w_{it}), decomposing them into firm pay premia ($\hat{\psi}_{J(i,t)}$) and worker pay premia ($\hat{\alpha}_{it}$), where we loosely interpret the latter as human capital. Specifically, on the x-axis is the number of full years since the immigrant obtained PR status, and on the y-axis we plot estimates of θ_1^z for the first year and $\theta_1^z + \theta_y^z$ for years $y \in \{2, \dots, 20\}$ from equation (4).¹³

The solid line with circle markers in Figure (1) presents assimilation estimates for log annual earnings and shows that, on average, new immigrants in Canada face a substantial earnings gap of approximately 42 log points relative to comparable native workers. As time in the country increases, this gap narrows sharply and closes by roughly two-thirds (to 16 log points) after 20 years, consistent with existing evidence on immigrant assimilation in Canada (e.g., [Warman and Worswick \(2015\)](#)).

¹³Given the sample size in our analysis, we do not report confidence intervals throughout the analysis since the standard errors are very small. Similarly, we do not report the difference in residuals as it tends to be close to zero for each year since landing bin within each figure.

The novel findings in Figure (1) correspond to our assimilation estimates when the outcome is either the estimated firm pay premia ($\hat{\psi}_j$, black line with square markers) or worker human capital ($\hat{\alpha}_{it}$, gray line with diamond markers) from equation (1). Given the coarseness of our human capital measure noted earlier given the limitations of the BEAM data, our estimate of human capital may also be downward biased due to classical measurement error, so these results should be viewed as a lower bound. Consistent with Dostie *et al.* (2023), firm sorting accounts for roughly one fifth of the initial earnings gap.¹⁴ However, we find that this aggregate statistic conceals important dynamics: assimilation in firm pay premia is significantly slower than assimilation in human capital. Specifically, worker pay premia accounts for about one-third of its initial gap 20 years after landing, whereas the firm pay gap declines to only 44% of its initial size by that same point in time. Notably, convergence in firm pay premia stagnates after eight years, despite continued overall earnings convergence. The divergent trajectories of firm and worker pay premia indicate that the latter is primarily responsible for wage convergence in the latter stages of immigrants’ careers in Canada. At the same time, persistent barriers to accessing higher-paying firms may continue to constrain upward mobility, even as workers’ skills develop.

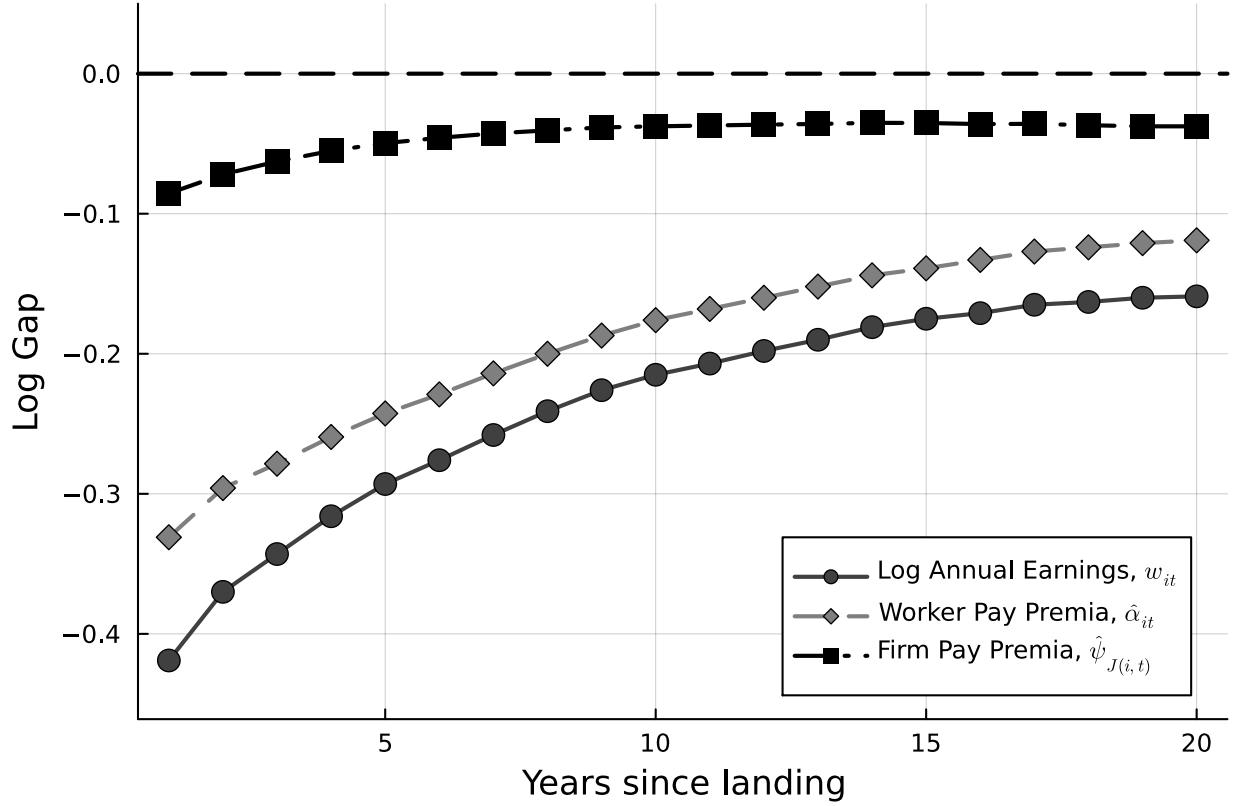
Next, we examine whether differences in firm sorting are driven by industrial composition to shed light on whether there are institutional barriers to entry facing immigrants to Canada.¹⁵ Having replicated the importance of significant between-firm component of the immigrant native wage gap that Dostie *et al.* (2022) earlier reported, we now try to understand at which level of the labour market structure these changes are taking place. We decompose the between-firm component into two different channels: between-industry and within-industry. We begin by using equation (2) to construct the “industry pay premia”, which is the employment-weighted average firm pay premia for each 2-digit NAICS industry. The industry pay premia are a measure of whether an industry is composed of predominantly high- or low-paying firms. Next, we construct a “within-industry pay premia” by taking the difference between the individual firm pay premia and industry pay premia, as shown in equation (3). The within-industry pay premia thus reflects a firm’s hierarchical position within its industry.

Figure (2) presents cross-sectional assimilation estimates (equation 4) where the outcome variables include the firm pay premia (black line with square markers, identical to Figure 1), industry pay premia ($\hat{\delta}_{K(J(i,t))}$, red line with triangle markers), and within-industry pay premia ($\hat{h}_{J(i,t)}$, blue line with circle markers). Together, the gaps in industry pay premia and within-industry pay premia are

¹⁴Unlike Dostie *et al.* (2023), we do not restrict ourselves to the dual-connected set, which excludes smaller firms. Furthermore, we also analyze a longer period (2001–2019) relative to Dostie *et al.* (2023) who analyze the changes in relative earnings from 2005 to 2013 for the 2000–2004 arrival cohort.

¹⁵We formally examine alternative explanations such as if differences in sorting across firms and industries can be due to differences in skill, not just barriers, in Section 4.2. We are unable to investigate whether certain industries are viewed as being more attractive by immigrants.

Figure 1: The Role of Firms in Shaping Immigrant Wage Assimilation



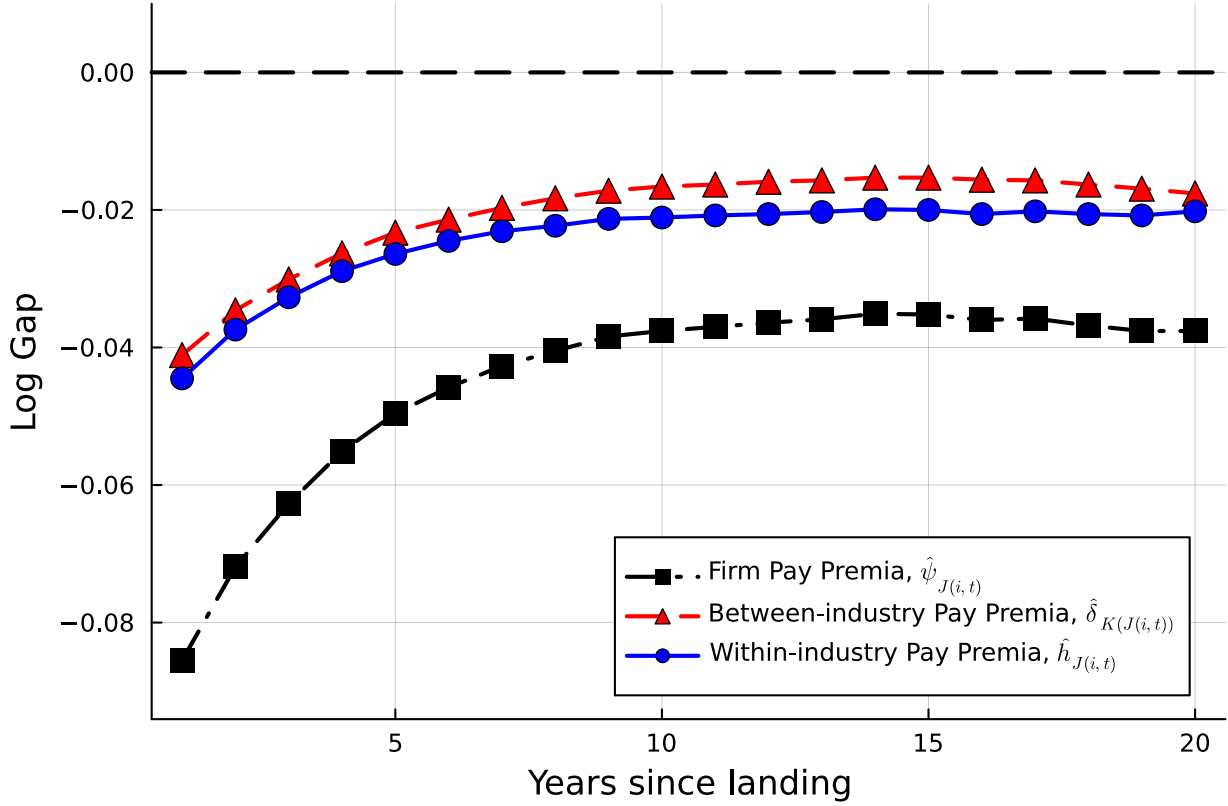
Note: This figure records gaps in log outcomes between immigrants and natives estimated from equation (4) using Canadian data (BEAM) from 2001-2019. Coefficients record baseline estimates where log gaps between immigrants and natives are conditional on age, sex, province, and year fixed effects.

obtained from a statistical decomposition of the total firm pay premia, and inform to what extent the differences in sorting across firms is a within- versus between-industry phenomenon.

We observe that the between and within industry curves nearly lie on top of each other, indicating that between-industry differences in pay premia explain roughly half of the firm pay premia gap. This substantial gap in sorting across broad industry categories highlights key differences in the types of jobs available to immigrants. As with the results for firm-level sorting, industry sorting appears to stagnate eight years after landing, indicating persistent hindrances to immigrants accessing jobs in higher paying industries. Reassuringly, these results are nearly identical under the CS or FE specification (see Figure A.1 in the appendix), ensuring that these results are not driven by compositional changes such as selective out-migration or changing cohort quality over time.

Policies addressing inter-industry wage differences typically emphasize two concerns: the potential misallocation of labor if workers pursue wage premiums rather than productivity matches, and inequality if certain groups are concentrated in low-wage industries. Our findings, however,

Figure 2: The Role of Industries in Shaping Immigrant Wage Assimilation



Note: This figure records gaps in log outcomes between immigrants and natives estimated from equation (4) using Canadian data (BEAM) from 2001-2019. Coefficients record baseline estimates where log gaps between immigrants and natives are conditional on age, sex, province, and year fixed effects.

highlight substantial intra-industry wage differentials, which can arise from employer monopsony power, discrimination, or unequal access to higher-paying firms. For example, within the retail trade industry, it is well documented that Costco offers substantially higher wages and benefits than Walmart for equivalent roles (e.g., cashier, stock clerk). Our results suggest that immigrants are more likely to be employed at the lower-paying firms, illustrating that these disparities largely reflect firm-level strategic choices. Policy responses could therefore extend beyond sector-level interventions to include sectoral wage floors defined by job title (see [Alam et al. \(2023\)](#) for evidence from Portugal) and enhanced pay transparency policies, enabling workers to use disclosure as leverage in negotiations with low-paying employers.

These results also highlight the importance of nuance in the design of targeted labour market integration policies. That immigrants persistently allocate to lower-paying industries and lower-paying firms within industries suggests that immigrants face allocational barriers that are multi-faceted and correlated with firm productivity. If such barriers drive these patterns, broad credential

recognition programs or language training may be insufficient to properly integrate immigrant workers—re-skilling initiatives may need to be directed toward the needs of higher productivity firms and sectors. Moreover, [Oreopoulos \(2011\)](#) demonstrate through an audit study that discrimination in firm hiring practices is pervasive in Canada. If such discrimination is what keeps immigrants in low-wage firms within industries, then strengthening anti-discrimination enforcement, ensuring transparency in hiring practices, and supporting job mobility could reduce such disparities. Partnerships between government and industries facing labor shortages could also be designed to prioritize “fast-track” immigration pathways into firms with demonstrated wage advantages, thereby supporting stronger long-term earnings trajectories. Implementing such policies requires ongoing dialogue between government and industry to identify and address the barriers to immigrant employment.

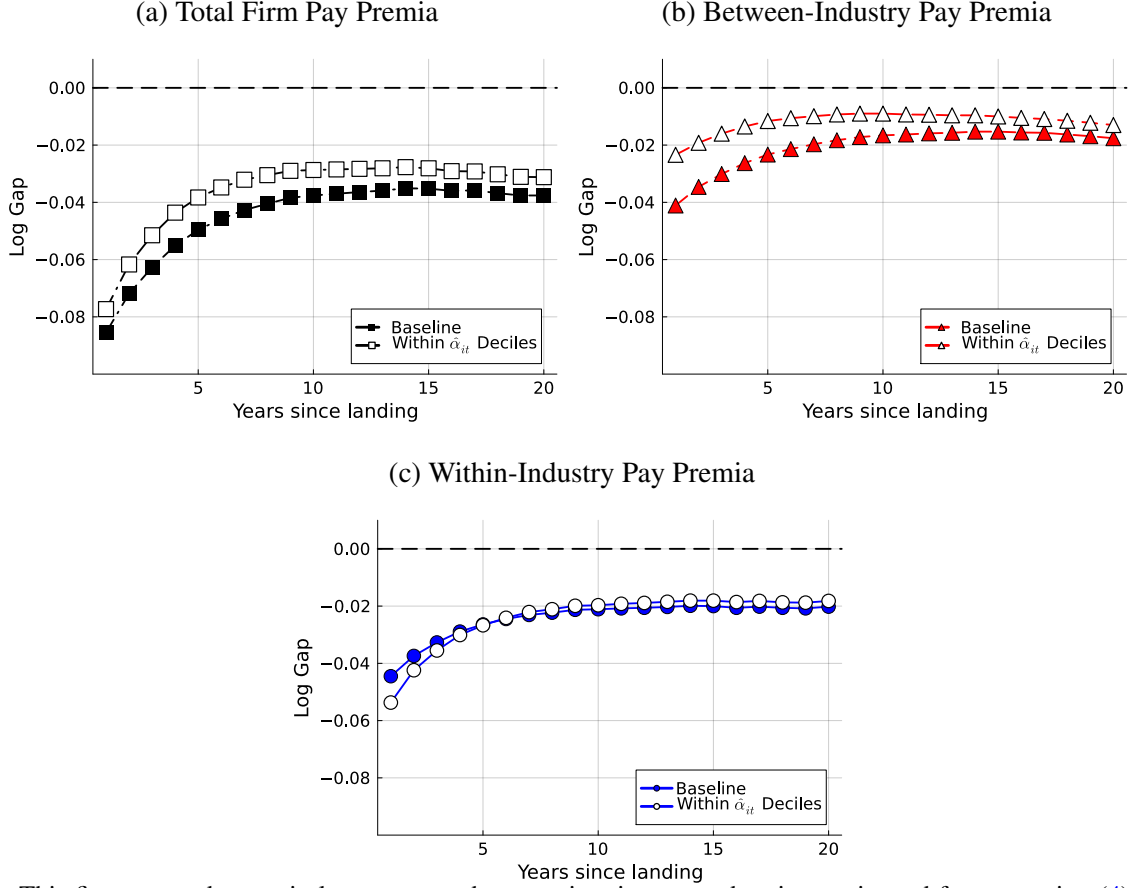
4.2 Skill-based Sorting

From a policy and productivity perspective, it is important to understand to what extent the sorting differentials documented above reflect a uniquely immigrant phenomenon or merely differences in the distribution of worker characteristics between immigrants and natives. While our earlier comparisons condition on observable worker characteristics (age, sex, year, and province of residence) positive assortative matching where workers with high unobserved skills sort into high-wage firms (and vice versa), then this could imply that immigrants are sorted similarly to natives *conditional on ability*.¹⁶ In this case, there is no obvious inefficiency. If, on the other hand, there are large gaps in firm pay premia between immigrants and natives with the *same* levels of human capital, these gaps in firm pay premia could indicate misallocation and barriers to efficient sorting of immigrant labour.

To understand if our results are driven by unobserved individual-specific skills, we augment the specification of equation (4) to include indicator variables for deciles in $\hat{\alpha}_{it}$ and re-estimate assimilation in the total firm pay premia ($\hat{\psi}_j$), between-industry pay premia ($\hat{\delta}_k$), and within-industry pay premia ($\hat{h}_j$). The goal here is to assess whether immigrant workers are sorted differently compared to native workers with similar estimates of unobserved human capital. While $\hat{\alpha}_{it}$ is an imperfect proxy for a worker’s skills, it reflects the extent to which these skills are systematically rewarded across firms through higher pay. Consequently, comparing immigrants and natives with similar estimates of $\hat{\alpha}_{it}$ provides a meaningful comparison of workers with broadly similar levels of unobserved human capital. We plot the results separately for each outcome variable in Figure (3), where solid markers refer to our baseline estimates and hollow markers refer to estimates where

¹⁶While our wage model is silent about the sources of such positive assortative matching, this type of sorting would arise naturally from either production complementarities or minimum skill requirements.

Figure 3: Assimilation in Firm Pay Premia Controlling for Nonlinearities in Worker Ability



Note: This figure records gaps in log outcomes between immigrants and natives estimated from equation (4) using Canadian data (BEAM) from 2001-2019. Coefficients with solid markers record baseline estimates where log gaps between immigrants and natives are conditional on age, sex, province, and year fixed effects. Coefficients with hollow markers additionally condition on fixed effects in α_{it} deciles.

we condition on $\hat{\alpha}_{it}$ deciles.

Remarkably, we find that the vast majority of the gap in sorting across firms cannot be explained by conditioning on worker pay premia. Figure (3a) shows that 7.7 of the initial 8.5 log-point gap in firm pay premia (i.e., 90%) occurs within α_{it} deciles. Similarly, the assimilation estimates for $\hat{h}_j$, largely overlap. While we do find that differences in workers $\hat{\alpha}_{it}$ explain some of the initial gap in sorting between industries, the wage trajectory is much flatter, so the gap 20 years after landing is practically identical.

This finding is consistent with the evidence from Figure (1) where we observed that the effect of firm pay premia on wages between immigrants and natives stagnates roughly eight years after landing, even though worker pay premia continues to increase. Taken together, the evidence in Figure (3) suggests that a skill-based sorting mechanism has limited explanatory power and that

there are other (non-human capital related) barriers driving differences in sorting.

4.3 Sorting and Immigrant Heterogeneity

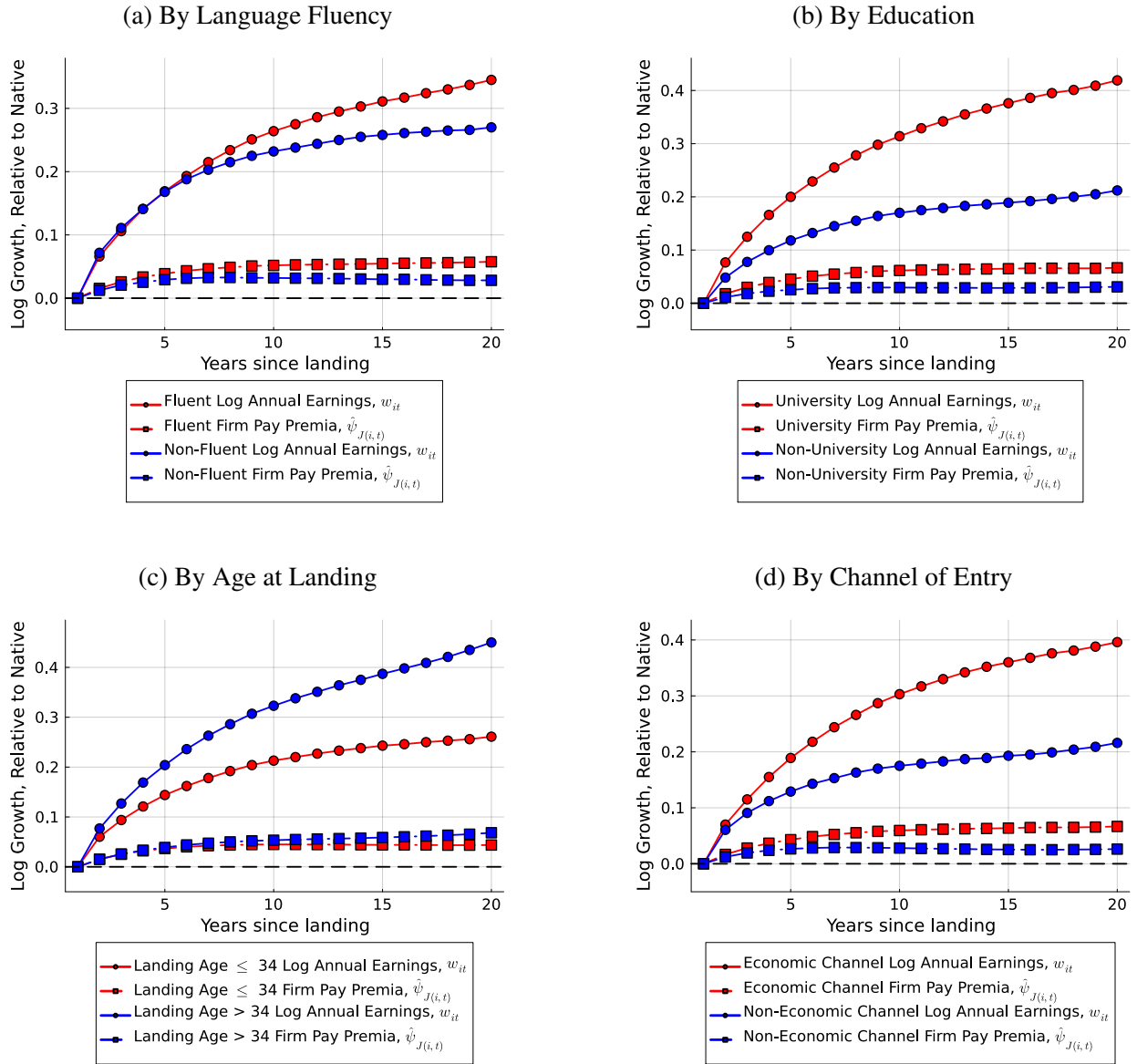
Economists have postulated several explanations for the immigrant-native pay gap, including differences in fluency as proxied by either language skills (Chiswick and Miller (1995)) or literacy (Ferrer *et al.* (2006)), schooling (Fortin *et al.* (2016)), and age at immigration (Schaafsma and Sweetman (2001); Kerr *et al.* (2024)). In this subsection, we analyze within-worker wage growth relative to comparable natives following our FE assimilation specification in equation (5), allowing assimilation coefficients to differ by the four categories introduced in Table (1)—language fluency at landing, education at landing, age at landing, and entry class. This approach opens a richer avenue for understanding how firms influence the dynamics of immigrant wages in Canada since we can assess whether barriers to high paying firms and industries are concentrated among certain immigrant subgroups. The results of each subgroup analysis are presented in the panels of Figure (4).

The upper left panel of Figure (4) considers the immigrant’s language fluency at the time of landing. We observe that wage gains begin to bifurcate between these subgroups at approximately seven years after landing, with fluent immigrants experiencing more rapid wage assimilation than non-fluent. Fluent immigrants also have higher growth in firm pay premia, but for both groups there are few changes beyond 8 years after landing. Given that fluent immigrants have initial firm pay gaps of 8 log points, Figure (4) suggests that such immigrants (almost) fully catch up to the native average by 20 years in Canada. In contrast, non-fluent immigrants only close about 4 of the initial 16 log point gap.

In the top right panel, we compare immigrants based on whether they had a university degree at entry. We find that more educated immigrants have a wage and firm type assimilation profile about twice as steep as those landing without a degree. By 20 years in Canada, educated immigrants more than close the initial gap in wage and firm pay, whereas less educated immigrants continue to earn significantly lower wages and only close about 4 out of the 13 log point gap in firm pay. However, we note that our inability to control for native education makes this comparison difficult to interpret.

In the bottom left panel of Figure (4), we report results by age at landing. We observe a steeper gradient in wages for those who immigrated to Canada after the age of 34 versus those who arrived younger, which is likely in part due to older workers landing with larger initial gaps relative to natives of the same age (Table 1); older natives have typically established their careers and therefore experience low wage growth, leaving more room for immigrant convergence. Interestingly,

Figure 4: Assimilation in Firm Pay Premia, By Immigrant Landing Characteristics



Note: This figure records gaps in log outcomes between immigrants and natives estimated from equation (4) using Canadian data (BEAM) from 2001-2019. Coefficients record within-worker wage growth of immigrants relative to natives conditional on age, sex, province, and year fixed effects.

we do not observe large differences in the dynamics of firm pay premia between older and younger arrivals, indicating that growth in the skills of older immigrants does not proportionally translate to moving into better paying firms.

Last, we find large differences between immigrants who arrive through the economic channel versus other categories in terms of both wage and firm premia assimilation, with economic immigrants having wage and firm pay growth about twice as fast as non-economic immigrants. In unreported results, we again find that about half of these firm component dynamics are driven by sorting between industries.

The differences in sorting and wage assimilation across subgroups has important policy implications. Immigrants entering Canada as an economic immigrant or who land with English proficiency or a university degree not only experience lower initial wage and sorting gaps at entry but appear to navigate the labour market much better after arrival. This finding reinforces the importance of Canada's immigrant selection criteria and the value of screening immigrants with favourable pre-landing metrics of human capital. But more importantly, this analysis also highlights where immigrant integration efforts should focus: non-fluent and non-economic immigrants, such as family members and refugees, are the ones who struggle the most in the labor market, and therefore it is these workers who should be the target sub-population for integration programs.¹⁷ Moreover, while the earnings of these immigrant subgroups continues to grow over time, the inability to access higher-paying firms appears to impose a ceiling to this wage growth, with these workers experiencing no upward mobility in firm pay after five years in Canada. While our analysis remains descriptive and does not delve into the underlying mechanisms driving this pattern, it is clear that designing effective integration programs will involve first understanding the barriers these workers face to finding employment, especially in high paying jobs.

4.4 Sorting and Changes in Cohort Quality

A common debate in Canada and many other Western nations over the last three decades centers around the optimal method of selecting immigrants (e.g., see [Papademetriou and Sumption \(2011\)](#)). Changes to both Canada's immigration policies (demand) and the types of immigrants applying for Canadian permanent residency (supply) over the last number of decades has unsurprisingly led to demographic changes in Canada's immigrant population that has affected their relative economic success (see [Warman and Worswick \(2015\)](#) and [Edo et al. \(2020\)](#)). In this sub-

¹⁷Language proficiency will correlate with other immigrant characteristics, such as the immigrant's source country, implying that the poor labor market outcomes among the non-fluent may also reflect labor market effects other than language proficiency in isolation, such as discrimination. Integration policies may therefore want to target immigrants from linguistically distant source countries more broadly.

section, we compare successive immigrant cohorts to assess how immigrant sorting across firms has changed over time, assess how these changes contribute to the observed changes in earnings across cohorts, and offer some suggestive evidence for how Canadian policy has influenced these outcomes.

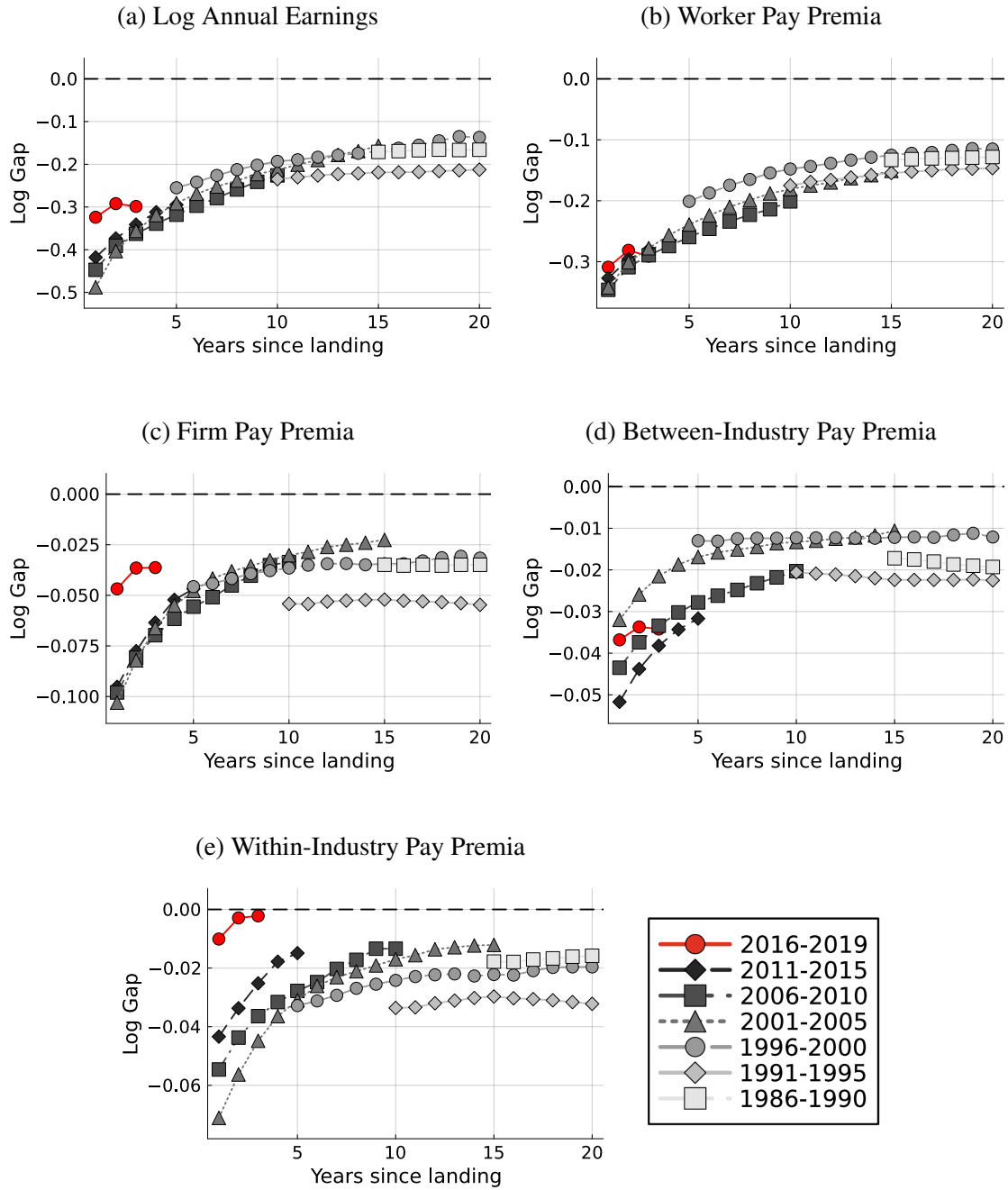
This analysis relaxes the implicit assumption that the coefficients in equation (4) are constant across immigrant cohorts by re-estimating separate assimilation profiles for seven year-of-arrival intervals, starting from 1986 to the end of our sample in 2019. The choice of which intervals to use is arbitrary but is unlikely to affect the long-term trends that we emphasize; absent a better rule, we look at 5-year intervals that align with the Canadian census. While there have been many empirical studies documenting how immigrant earnings have changed across cohorts in recent decades (e.g., see [Aydemir and Skuterud \(2005\)](#), [Green and Worswick \(2010\)](#), [Warman and Worswick \(2015\)](#) and [Hou and Picot \(2016\)](#)), understanding the role of sorting in this phenomenon has been left largely unexplored. The panels of Figure (5) provide us with these insights, where we present the decomposed earnings and sorting gaps from Figures (1) and (2) separately for each cohort.

In each panel of Figure (5), we generally observe that the changes in outcomes across cohorts appear small. The most notable exception is the post-2015 cohort, which experienced approximately 30% smaller initial wage gaps, about half of which is due to improved sorting across firms.¹⁸ This dramatic improvement in firm allocation is consistent with some of the reasoning behind the 2016 changes to the point system. Under the 2015 point system, workers were granted 600 out of a maximum 1200 points for obtaining a valid job offer. This encouraged workers to obtain *any* job offer, as doing so would nearly guarantee entrance. In 2016, the points awarded for valid job offers was reduced to only 50 for most jobs and a larger emphasis was placed on observable metrics of human capital, such as education and language proficiency. Interestingly, this improved allocation of immigrants into higher-paying firms was largely a within-industry phenomenon, with the within-industry gap almost completely closing and the between-industry gap remaining almost the same.

The 2014 amendments to the Immigration and Refugee Protection Act introduced Express Entry on January 1, 2015, establishing a points-based, demand-driven selection mechanism. Unlike the pre-2015 “first-come, first-served” system, Express Entry ranked candidates in a pool using the

¹⁸Note that the apparent lack of wage growth for the 2016-2019 cohort should not be interpreted as poor post-landing performance. For all cohorts other than the 2016-2019 cohort, we restrict attention to where all landing years in the cohort are present. For example, when investigating the 2011-2015 cohort, we only plot five years after landing to limit the extent to which the wage gap trajectory is driven by changes in worker composition. We are unable to make this restriction with the 2016-2019 cohort given the short window for which data is presently available. In particular, the first data point contains all landing years, whereas the third point contains only those who landed in 2016. We find that the within-worker wage growth is just as high or stronger for this cohort than those preceding, indicating that this flatter wage gap profile is likely due to compositional changes across the different landing years.

Figure 5: Comparing Assimilation Across Cohorts



Note: This figure records gaps in log outcomes between immigrants and natives estimated from equation (4) using Canadian data (BEAM) from 2001-2019. Coefficients estimates where log gaps between immigrants and natives are conditional on age, sex, province, and year fixed effects.

Comprehensive Ranking System (CRS), prioritizing human capital factors such as age, education, language proficiency and Canadian work experience. Data from a 2020 IRCC report show that compositional shifts in the immigrant population closely reflected these deliberate policy objectives: maximizing long-term economic integration, improving early labor market outcomes, and aligning permanent immigration more closely with temporary migration pathways. As a result, selection shifted away from older, less educated, and non-English/French-speaking applicants toward younger, highly educated, and Canadian-experienced candidates. This in turn reshaped the occupational structure of new immigrants, concentrating admissions in higher-skilled, professional, and knowledge-intensive jobs, particularly in information technology, engineering, finance, and business services. These shifts, which [Crossman *et al.* \(2021\)](#) characterize as a success, should be considered when interpreting the results of the 2016–2019 cohort relative to earlier cohorts. A more formal comparison of the pre- and post-reform cohorts is left for future research.

Examining the remaining cohorts in the panels of Figure (5), the most notable outlier is the 1991–1995 cohort which experienced lower earnings in years 10–20, in large part from allocating into lower-paying firms. We also observe a general trend to declining gaps in within-industry pay premia across cohorts but increasing gaps in between industry premia. This suggests that barriers to upward within-industry job mobility have declined, whereas access to higher paying industries has worsened across successive cohorts. Prior work did not have access to firm data preventing the consideration of industry premia (see e.g., [Aydemir and Skuterud \(2005\)](#)) and suggests an alternative explanation for wage gaps based on their analyses of five Canadian Censuses, which is that there was a deterioration in the returns to foreign labour market experience across arrival cohorts until the mid-2000s. In our empirical specifications in this subsection, we are flexible in how the effects of experience and other covariates are allowed to vary across arrival cohorts and still find evidence of between-industry and within-industry sorting effects.¹⁹

Last, we observe a general trend of declining worker pay premia, with a small reversal for the most recent 2016–2019 cohort, leading to a similar pattern in log annual earnings across years since landing. This likely reflects general declines in immigrant skill over time. However, we note that, unlike most of the literature on changing cohort quality, we are not able to condition on education since education is not collected for native workers in the BEAM data. Our observed trends in worker premia reflect the combination of increasing average immigrant education and decreasing returns to that education (see [Warman and Worswick \(2015\)](#)).

Overall, the trends in these graphs demonstrate how changes in observed earnings gaps across cohorts can be driven by changes in the allocation of immigrant workers across firms. These trends

¹⁹[Aydemir and Skuterud \(2005\)](#) also point out declines emerged in part due to changes in the region of origin of more recent immigrant cohorts in their study.

also suggest an important role for immigrant selection policy in influencing these outcomes—the 2015-2016 policy reforms not only selected immigrant workers with better skills, they also selected workers who were able to secure jobs in higher paying firms.

5 Conclusion and Implications for Immigrant Policy

This study examines how the allocation of immigrants across firms affects immigrant wage assimilation in Canada, using matched employer-employee data and a modified version of the canonical [Abowd *et al.* \(1999\)](#) framework. We find that immigrants initially sort into lower-paying firms, explaining about one-fifth (8.5 log points) of the initial 42 log-point wage gap relative to native workers. Moreover, while human capital differences between immigrants and natives appear to diminish over time, firm pay premia gaps remain persistent, stagnating after eight years. These gaps are not explained by differences in worker ability, as controlling for worker wage fixed effects explains less than 10% of the firm pay gap. These results suggest that immigrants face labour market barriers that limit their access to higher-paying firms, posing a significant barrier to wage assimilation.

Such barriers could arise from decisions of individual firms, such as discriminatory hiring practices ([Oreopoulos \(2011\)](#)). However, they could also arise from “bureaucratic discrimination”, a term used in sociology, political science and public administration literature to describe situations in which government officials systematically facilitate access to public services for some groups while creating obstacles for others. In the immigration context, the process for obtaining formal recognition of foreign credentials can be lengthy, expensive, and nontransparent, and some have argued this undue burden on newcomers exacerbates immigrant-native inequality ([Guo \(2009\)](#)). While it is not the goal of our paper to identify the microeconomic sources of immigrant-native wage and sorting differentials, it emphasizes that this is an important area for future research.

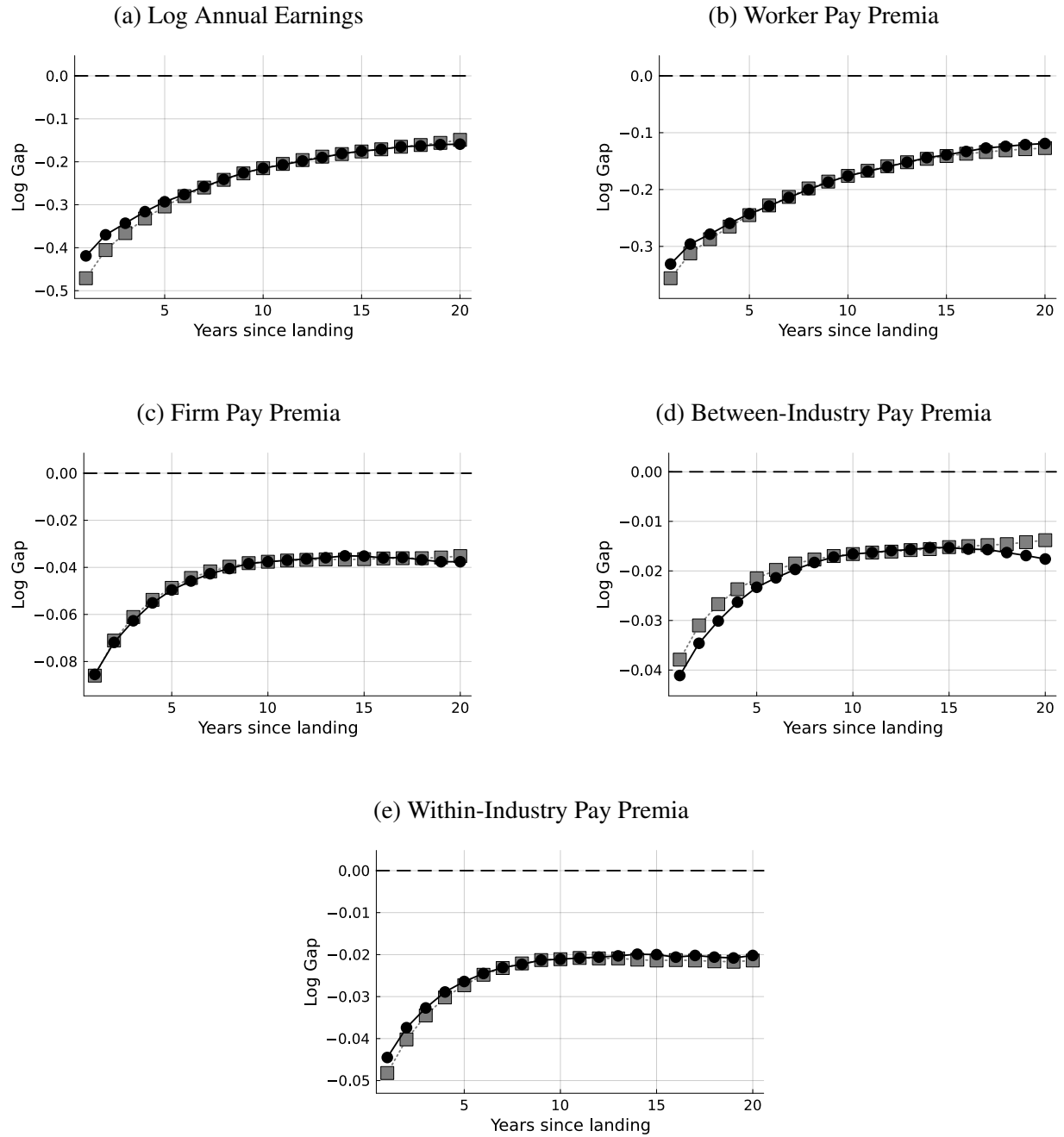
We also find that nearly half of the observed firm sorting disparities occur across broad (2-digit NAICS) industry categories. As with sorting across firms, immigrants tend to move into higher paying industries in their first years after arrival, but this assimilation stagnates after 8 years. We find that this pattern is not driven by language barriers, as immigrants with English proficiency have similar gaps in industry pay as those without. Interestingly, economic immigrants, who are positively selected on human capital metrics, sort into lower-paying industries just as much as those arriving through family or refugee channels. The consistency of these industry-driven gaps across immigrant subgroups suggests that structural barriers including occupational licensing or slow foreign credential recognition, rather than skill deficits, restrict mobility into higher-paying sectors.

At the subgroup level, economic and fluent immigrants experience substantially smaller initial wage and firm-sorting gaps and navigate the labor market more effectively post-arrival, with wage and firm pay growth nearly twice as fast as non-economic and non-fluent immigrants. By contrast, non-economic and non-fluent immigrants show minimal upward mobility in firm pay after five years, closing only about 25% of the initial gap after 20 years. These subgroup differences highlight two policy implications (i) integration programs should focus on family migrants and refugees with limited English proficiency, who face the greatest labor market challenges; (ii) effective integration programs must address the structural barriers that impede access to higher-paying jobs, equipping immigrants with the skills and resources necessary to overcome them.

Finally, examining differences across immigrant cohorts from 1986 to 2019, we find that post-2016 immigration policy changes, which prioritized human capital over job offers, are associated with improved immigrant outcomes. New arrivals under this system experienced a 25–35% smaller initial wage gap relative to earlier cohorts, with nearly half of these gains attributable to improved sorting into higher-paying firms. Collectively, these findings underscore the critical role of firm sorting and its interaction with immigration policy in shaping the economic integration of immigrants.

A Appendix

Figure A.1: Comparing Fixed-effect and Cross-sectional Assimilation Specifications



Note: This figure records gaps in log outcomes between immigrants and natives using Canadian data (BEAM) from 2001-2019. Black lines with circle markers report coefficients estimated from equation (4). Gray lines with square markers report coefficients estimated from equation (5). All gaps between immigrants and natives are conditional on age, sex, province, and year fixed effects. Note that one coefficient from equation (5) is not identified, we have normalized it such that the gap at 10 years after landing is equal in both specifications.

Table A.1: Composition of native and immigrant labour across 2-digit NAICS industries

	Native		Immigrant	
	Total	% of total	Total	% of industry total
11 Agriculture, forestry, fishing and hunting	130705	1.5%	24020	0.7%
21 Mining, quarrying, and oil and gas extraction	160485	1.9%	24615	0.8%
22 Utilities	109140	1.3%	23760	0.7%
23 Construction	674075	7.8%	153045	4.7%
31-33 Manufacturing	782650	9.0%	380005	11.7%
41 Wholesale trade	325685	3.8%	127525	3.9%
44-45 Retail trade	816460	9.4%	300435	9.3%
48-49 Transportation and warehousing	419140	4.8%	190465	5.9%
51 Information and cultural industries	201405	2.3%	84350	2.6%
52 Finance and insurance	411220	4.7%	224705	6.9%
53 Real estate and rental and leasing	106580	1.2%	48480	1.5%
54 Professional, scientific and technical services	588280	6.8%	323755	10.0%
55 Management of companies and enterprises	23710	0.3%	12810	0.4%
56 Administrative and support, waste management and remediation services	265555	3.1%	134075	4.1%
61 Educational services	885875	10.2%	222105	6.9%
62 Health care and social assistance	1264230	14.6%	504075	15.6%
71 Arts, entertainment and recreation	101015	1.2%	19405	0.6%
72 Accommodation and food services	239630	2.8%	156015	4.8%
81 Other services (except public administration)	291610	3.4%	106405	3.3%
91 Public administration	870375	10.0%	179425	5.5%
Total - Industry - Groups - North American Industry Classification System (NAICS) 2017	8667850	100.0%	3239500	100.0%

Note: Counts from the 2021 Canadian Census. Observations include all employees aged 25-64. Statistics Canada. Table 98-10-0600-01.

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