The Cultural Origin of Gender Gaps in Pay and Mobility: Evidence from Canada *

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Abstract

This paper studies the role of cultural norms, specifically those regarding gendered roles in employment, in explaining the gender gap in pay using a unique matched employer-employee dataset linked with immigration records in Canada. To separate the effects of culture from markets and institutions, we investigate how inherited gender norms among immigrants shape their labor market outcomes in the host country. We find that improvements in gender norms are strongly associated with a smaller gender gap in pay and mobility, even with a broad set of interacted fixed effects between firms and workers, suggesting that the findings are unlikely due to discrimination by firms or sorting by workers. Education, occupational sorting, and child penalties do not fully explain this link. We propose a new mechanism wherein gender norms influence the gap in how women and men find job opportunities through their social networks, leading to disparities in both wages and mobility. Distinctive from prevailing discussions on norms, our results highlight that even if women do not internalize these norms, they can still face similarly disadvantaged outcomes.

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1 INTRODUCTION

With the reversal of the gender gap in education, traditional explanations for the gender pay gap that focus on worker qualifications have become less relevant(Goldin et al., 2006; Bertrand, 2011; Blau and Kahn, 2017).[1] As a result, recent research has turned to exploring gender differences in noncognitive factors—such as psychological attributes, preferences, and personality—to explain what economists refer to as the residual gender wage gap (Heckman and Kautz, 2012).[2] In this space, several nonexclusive mechanisms have been proposed to rationalize the persistence of a gender gap in wages, such as gender differences in time flexibility (Bertrand et al., 2010; Goldin, 2014), in willingness to commute (Le Barbanchon et al., 2021) and the child penalty (Adda et al., 2017; Kleven et al., 2019). Our study contributes to this emerging literature by examining a less explored but important aspect: how cultural norms, particularly those related to gender roles in the workplace, shape workers' behaviors and outcomes.

In considering the role of gender norms, we focus on the network effect and propose that gender norms can lead to differences in how men and women access job opportunities within their social circles. Women who adhere to more conservative gender norms may socialize less, limiting their chances of learning about job openings. Similarly, if individuals in a woman's social network hold conservative gender norms, they may be less likely to discuss career-related topics, such as job opportunities or the prevailing market wages, with her. Consequently, even women who do not internalize these norms and actively engage socially may still face limited job prospects. This disparity in access to outside options can then translate into a gender gap in pay (Beaudry et al., 2012; Caldwell and Danieli, 2024).

To isolate the effects of culture from those of markets and institutions, we build on the literature on inherited norms among immigrants and examine how inherited gender norms influence labor market outcomes of immigrant workers in Canada, the host country. Canada offers an ideal setting for this strategy. The country has immigrants from over 150 countries of origin, providing substan-

[1] This does not diminish the importance of traditional economic factors but a significant portion of the gap remains unexplained by these factors alone.

[2] The residual gender wage gap is the portion of the wage gap that persists after accounting for differences in measurable qualifications.

tial variation in workers' cultural heritage. Moreover, as the first nation to adopt a multiculturalism policy in 1971, Canada actively encourages immigrants to preserve their cultural identities, allowing our measure of gender norms based on workers' home countries to adequately capture their gender attitudes.

We begin by identifying all qualified workers in the Canadian Employer-Employee Dynamic Database (CEEDD) from 2001 to 2017. The CEEDD provides detailed information on annual labor earnings, employee characteristics, and firm attributes of all Canadian firms and their workers. We then link the CEEDD with the Longitudinal Immigration Database (IMDB), which contains administrative records of all immigrants admitted to Canada since 1980. The dataset allows us to precisely observe the cultural backgrounds of immigrant workers[3] and control for a wide range of characteristics, including employees' demographics, firms' location, industry affiliation, life cycle, and financial variables.

We then follow the epidemiological approach (Fernández, 2011) to measure inherited gender norms of the immigrant workers, using survey data from the World Values Survey (WVS).[4] Recognizing that changes in gender norms are primarily driven by shifts in population composition rather than changes within cohorts, we construct a gender norm measure that varies by both country and year of birth cohort. Specifically, it is defined as the percentage of respondents born around a particular year in a specific country who disagree with the statement: *"When jobs are scare, men should have more of a right to a job than women?"*

Leveraging the richness of our data, we utilize a variety of fixed effects to identify the impact of gender norms on the gender gap in pay (GGP). Our baseline specification includes firm fixed effects, as well as fixed effects for worker's gender-by-home country, gender-by-year of birth, and gender-by-age. The gender-by-home country fixed effects control for all time-invariant characteristics of home countries that could be correlated with both gender norms and the GGP,[5] while the gender-by-year of birth and gender-by-age fixed effects account for confounding cohort and

[3]Identifying workers' cultural heritage using their countries of origin on record helps avoid the issue of measurement errors that often arise when inferring cultural origins from a person's name, as commonly done in prior studies.

[4]The WVS is a globally representative comparative social survey conducted in over 100 countries every five years since 1990.

[5]For example, developed countries often exhibit more progressive gender norms and have higher-skilled workers who might select into jobs with larger pay gaps (Goldin, 2014).

life cycle attributes.[6] We further augment the baseline specification by controlling for firm-specific gender gap through firm-by-gender fixed effects. We also account for firm-specific impact of home country, birth cohort, and life cycle on the gender pay gap by interacting these fixed effects with firm dummies. Together, these fixed effects effectively control for the distribution of employment across firms, which remains an important part of the overall gender wage differences (Card et al., 2016; Duchin et al., 2021; Adams and Lowry, 2022).

We find that across these different specifications, improvements in gender norms across cohorts of immigrants from the same country of origin significantly contributes to narrowing the GGP. In the most stringent specification, a one standard deviation increase in the gender norms measure is associated with 12% reduction in the pay gap. It is important to note that these estimates incorporate a wide range of interacted fixed effects at the firm level, ensuring that the findings are not driven by gender-based selection into firms or firm-specific discrimination based on home country, gender, birth cohort, or age. In other words, the observed impact of workers' gender norms on the pay gap is likely due to workers' behaviors rather than firms' responses.

Our findings remain robust after accounting for several potential alternative explanations. First, we introduce refined controls for occupation and education effects (Levanon et al., 2009; Goldin, 2014), including fixed effects for institutions attended, major-by-industry (as a proxy for occupation), and their interactions with gender. Second, we control for other macroeconomic characteristics and cultural values of the immigrants' home countries that may vary across birth cohorts. These include measures of economic development and skill levels such as GDP per capita, GDP per capita growth, and average education attainment, as well as culturally relevant factors known to influence economic outcomes such as work ethic or risk preferences. Third, we account for the child penalty by incorporating variables such as the number of children and their ages (Lundborg et al., 2017; Kleven et al., 2019; Cortés and Pan, 2023; Simintzi et al., 2024).

Additionally, to complement our main findings, we explore how the effects of gender norms vary with worker characteristics. Our analysis reveals that gender norms have a more pronounced impact among workers with lower pay and intermediate education levels. We also observe a weaker

[6] This adjustment is essential as older workers tend to hold less progressive gender norms and experience a widening gender pay gap over their careers due to the glass ceiling effect.

effects of gender norms for women with greater housework burdens, such as married women, those with more children, or those with smaller children.[7] On the firm dimension, we investigate the differential effects of gender norms across different firm sizes and sectors. We find that gender norms have a stronger influence in larger firms and in the finance and consulting sectors. This suggests that gender norms play a more prominent role in "greedy professions" like finance and consulting, where pay gaps are typically wider and converge more slowly compared to other sectors (Bertrand et al., 2010; Lagaras et al., 2022). Collectively, these analyses add to our understanding of how cultural norms shape the gender pay gap and identify where in the distribution gender norms have the most significant impact.

In the second part, we focus on understanding the mechanism driving the observed relationship between gender norms and the GGP. Previous analyses indicate that gender norms continue to have a significant effect even after accounting for occupational choices and the child penalty. Given these results, we explore a new mechanism: the availability of outside options. This is motivated by a large literature in labor economics on search and matching models which generally suggest that what matters to pay is the rate at which new outside options arise (Beaudry et al., 2012; Caldwell and Danieli, 2024).[8]

To explore this mechanism, we first examine job mobility as an indicator of outside option availability. Following a similar approach to our analysis of the GGP, we estimate the effects of gender norms on the gender gap in mobility, using mobility measures such as transitioning to a new firm, moving to a higher-paying firm, or joining a firm with a lower GGP. The results show that more progressive gender norms are associated with a reduced gender gap in both job mobility and "upmoves", suggesting that the availability of outside options is a plausible mechanism through which gender norms influence the GGP.

Next, we perform a mediation analysis to connect the mobility results to the GGP. We estimate each worker's expected likelihood of moving (a proxy for their outside options) based on the previous analysis and include this "*Expected Move*" as an additional control in our baseline GGP

[7] To the extent that these workers' socialization opportunities are limited by housework responsibilities, these findings highlight the important role of network effects in explaining the pay gap.

[8] For instance, Caldwell and Danieli (2024) demonstrate that differences in outside options lead to disparities in compensation, even for equally productive workers, as firms set pay to match the outside options to retain workers.

regression. The results show that while the effect of gender norms on the gender pay gap remains significant, its magnitude is reduced by half, confirming that the availability of outside options is a significant factor in explaining the impact of gender norms on the GGP.

Drawing on an extensive literature showing that workers often find job opportunities through their social networks (Rees, 1966; Ioannides and Loury, 2004; Pallais and Sands, 2016; Caldwell and Harmon, 2019), we then focus on the interaction between gender norms and network effects in shaping a worker's outside options. Network theory posits that the number of weak ties—connections with less frequent interaction—is a key determinant of access to job opportunities (Granovetter, 1973) as they provide access to information from distant networks that might not be available within closer ones. For example, ethnic and alumni networks can offer unique job information distinct from professional networks, where everyone likely has the same information on job vacancies. In this context, gender norms can amplify network effects in several ways: women from countries with more progressive gender norms may build larger networks or, even with similar network sizes, may be more active within their networks, increasing their chances of learning about job openings.

Guided by this theory, we construct two measures of network size: one for ethnic networks (individuals from the same home country and age group) and another for alumni networks (graduates from the same institutions). The results confirm the positive effects of network size on both workers' mobility and earnings. Importantly, these beneficial effects are more pronounced for women from cultures with more progressive gender norms. This suggests that favorable gender norms enable women to better leverage their networks to access outside options and improve their pay. While we remain agnostic about the exact channel through which gender norms elevate network effects, the importance of gender norms remains clear.

Finally, we go beyond individual norms and construct a measure of the gender norms within workers' networks. By weighting gender norm metrics according to each worker's specific network, we capture the impact of network-level gender norms rather than individual beliefs. If a woman's social network adheres to conservative gender norms, they may be less inclined to share career-related information with her, limiting her access to job opportunities. This is important because it

suggests that even if a woman does not internalize these norms and actively participates in social activities, she may still be disadvantaged due to the norms prevailing in her network. This also highlights a crucial aspect of norms: they not only influence individual choices but also shape the broader environment within which individuals operate.

Related Literature. Our paper contributes to several strands of literature. First, it directly engages with the literature on the gender gap in labor market outcomes, particularly those related to the influence of norms and culture. Previous studies such as those by Fortin (2005); Fernández and Fogli (2009); Blau et al. (2011); Boelmann et al. (2021); Charles et al. (2022), among others, have highlighted the important role of cultural norms on female labor supply. Our paper expands this line of research by studying a new and important outcome: the wage gap. Our paper also improves on this literature in terms of empirical analysis. Many of the aforementioned papers employ a cross-country analysis which can be susceptible to reverse causality and difficulty in isolating the effect of culture from that of other factors such as legal origins (Glaeser and Shleifer, 2002; Porta et al., 2008), quality of institutions (Acemoglu et al., 2001) or geography (Sachs, 2003). By focusing on inherited norms measured by home countries at the time of birth, we sidestep concerns about reverse causality. And by examining workers' outcomes in the host country, we can hold fixed all other macroeconomic features and focus on variations in cultural values only.

Other papers within this literature explore the effects of gender identity norms on intermediate outcomes that could influence the gender pay gap. For instance, building on the theoretical framework of Akerlof and Kranton (2000), Bertrand et al. (2015) investigated relative income within households and showed that when the wife's potential income is projected to exceed her husband's, she often makes career sacrifices to conform to gender identity norms, such as being less likely to participate in the labor force or earning less than predicted income. Similarly, Jayachandran et al. (2023) found that the gender gap in returns to mobility for couples, using data from Germany and Sweden, aligns with a gender norm that prioritizes men's career advancement rather than differential earning potentials. On a related note, Kleven (2024) documented that child penalties in the US are strongly linked to geographical variations in gender norms, with states experiencing greater increases in gender progressivity showing larger declines in penalties. In this space, different from

previous studies, our paper directly connects gender norms to the gender pay gap and contributes evidence on a novel channel: the network effect. By examining this previously unexplored linkage, we offer new insights into the mechanisms underlying gender disparities in wages.

Our results suggest that achieving gender equity may involve challenges beyond the direct control of firms (Bennedsen et al., 2022), highlighting the need for broader societal changes. Specifically, policies designed to reduce search friction in the labor market and improve gender norms can help address the gender pay gap. Our analysis, which utilizes variations in gender norms across different cohorts, indicates that gender norms *do* evolve over time,[9] and that such changes can translate into improved outcomes. These policies can be especially important in industries and occupations where gender norms play a more significant role, such as in finance and consulting. More broadly, our paper adds to the rich body of research on how cultural factors influence economic outcomes (Guiso et al., 2006).

The findings regarding the gender gap in job mobility also carry significant implications for the field of macro labor economics. A central element in many search and matching models is the probability of new matches, even for on-the-job workers who actively seek new opportunities. This probability not only impacts their wages but also other macroeconomic variables. This implies that our results on gender differences in mobility can be valuable for the whole class of such models, particularly those that study the job ladder (Postel-Vinay and Robin, 2002; Haltiwanger et al., 2018), wage dispersion (Hornstein et al., 2011), mismatch (Hagedorn et al., 2017; Lise and Robin, 2017), and wage cyclicality for job switchers (Gertler et al., 2020).

Finally, our paper contributes to the literature on information diffusion through social networks, pioneered by Foster and Rosenzweig (1995) and Conley and Udry (2010). Specifically, the findings regarding the interaction between norms and network transmission shed new lights on how information related to employment, such as job referrals, is disseminated (Beaman and Magruder, 2012; Pallais and Sands, 2016). In this space, our results introduce social norms as a key factor that determines both what information is shared and how it is transmitted through social networks.

[9] In contrast to persistent norm frameworks, as seen in the work of Alesina et al. (2013)

2 DATA AND SAMPLING

Matched Employer-Employee Data. The primary data source is the Canadian Employer-Employee Dynamic Database (CEEDD), an administrative dataset maintained by Statistics Canada. The CEEDD is a matched employer-employee dataset that covers the entire population of Canadian employees and their employers. Compiled from tax records, the CEEDD includes detailed annual labor earnings for each employee, along with key characteristics such as age, gender, and family composition. For firms, it provides financial information, including revenue, assets, firm age, industry classification, and location.

Immigration Data. CEEDD is linked to the Longitudinal Immigration Database (IMDB), which contains administrative data for all immigrants admitted to Canada since 1980. Key to our analysis, the IMDB provides information on immigrants' education, skill level, country of birth, citizenship, and landing date.

Education Data. We further link the CEEDD with the Post-Secondary Student Information System (PSIS) database to obtain education data for non-immigrant employees. The PSIS includes detailed records of programs and courses completed by graduates from all Canadian public and private post-secondary institutions. As administrative data is collected through a mandatory national survey, the PSIS ensures high data quality with a repeated cross-sectional design.[10]

Sampling. The sample includes all qualified workers in the CEEDD from 2001 to 2017, restricted to firms that are at least two years old to ensure that employees can work a full year in each firm-year. Additionally, we only include firms that have employed at least one immigrant worker during the sample period.

Since details regarding the number of hours or weeks worked are not available in the CEEDD, we limit our analysis to employees who are significantly engaged in the workforce, following estab-

[10] There is no sampling, and survey participation is mandatory.

lished standards in prior literature (Card et al., 2013; Song et al., 2019).[11] As a result, our sample only includes employees aged 20 to 60 whose annual earnings exceed the minimum wage for one-quarter of full-time employment across all provinces in that year. We assign all employees who received labor earnings from the same business number in a given year to that firm. For employees with multiple jobs in the same year, we link them to the firm that provided their largest source of earnings for that year. Consistent with Song et al. (2019), we exclude firms in the government and educational sectors from our analysis.

Gender Norms Measure. We adopt the epidemiological approach to measure gender norms among foreign-born immigrants to Canada, as outlined by Fernández (2011). Specifically, we utilize survey data from the World Values Survey (WVS), a representative comparative social survey conducted globally in more than 100 countries every 5 years since 1990. This dataset allows us to assess the gender norms prevalent in immigrants' home countries. In line with existing literature, we identify all relevant questions in the WVS that pertain to the roles of men and women both within and outside the family.[12]

We then construct our main gender norms measure based on answers to the survey question *"Do you agree or disagree with the following statement: when jobs are scare, men should have more of a right to a job then women?"*. We focus on this question for two key reasons. First, it directly addresses the aspect of gender norms most relevant to our study of job search behaviors and their impact on gender pay gaps. Second, this question has the broadest coverage, having been asked in 6 out of the 7 waves of the WVS, making it the most reliable for constructing a within-country measure of gender norms that varies by birth cohorts. As explained below, this is important as gender norms generally show more substantial changes across generations than within cohorts. Additionally, we demonstrate that our main findings are robust to using alternative gender norms measures derived from other questions in the WVS.

The WVS spans three decades from the 1990's to the 2020's, allowing us to observe the evolution of gender norms across countries over time. Consistent with the rise in gender progressivity

[11] For example, in 2001, the threshold, calculated as 13 weeks of 40 hours at $5.60 per hour, is $2,912.
[12] Appendix C.1 provides the full list of questions.

across the globe, most countries have witnessed an increase in the proportion of respondents who disagree with the statement "*When jobs are scare, men should have more of a right to a job then women?*" over time, as illustrated in Figure 1 and Figure 2. However, a closer examination reveals that this aggregate improvement is primarily driven by compositional changes rather than within-cohort shifts.[13] This suggests that while younger generations generally hold more gender-progressive views than older ones, individuals from the same birth cohort do not exhibit significant changes in their attitudes over time. This data feature then motivates us to construct a gender norms measure that varies by both country and year of birth $Norms_{cb}$, computed as the share of respondents in country c born "around" year b who disagree with the aforementioned statement.[14]

This approach to measuring gender norms offers two key advantages. First, given the discussed across-cohort variation in gender norms, taking into account not only home countries but also birth years provides us with a more precise measure of immigrants' gender attitudes. As a validation exercise, we demonstrate that this gender norms measure is indeed highly correlated with country-birth cohort-specific female labor force participation rate, aligned with findings from Ashraf et al. (2022).

Second, as Figure 1 shows, there appears a significant within-country variations in our measure of gender norms across different birth cohorts. For instance, in Australia, the proportion of respondents disagreeing with the WVS statement increased from 20%-40% for the 1940 birth cohort to over 80% for the 1980 birth cohort. These variations allow us to control for home country-specific (time invariant) effects in all of our main specifications, thereby ruling out a host of alternative explanations, as discussed in detail in Section 3. It should also be noted from Figure 2 that while younger cohorts generally exhibit better gender norms in most countries, the rate of progress varies considerably. For example, Hong Kong experienced a substantial increase in the

[13] To assess the relative importance of these two channels, we regress responses to the gender norms question on two sets of fixed effects, country-by-birth cohort (or year of birth) and country-by-survey wave. Appendix Table D.1 shows that across different specifications, the set of country-by-birth cohort fixed effects explains between 15% to 24% of the variation in respondents' gender norms, while the set of country-by-survey wave fixed effects explains only between 0.5% to 6% of such variation.

[14] Intuitively, one would compute $Norms_{cb}$ as the share of respondents in country c born in (instead of around) year b who disagree with the aforementioned statement. However, in most cases, each of those cells will contain two few respondents for us to obtain reliable averages. As a result, we also include same-country respondents born around year b in our computation, yet attributing higher weights to those born closer to year b. In addition, the specific weight kernel and bandwidth are picked to minimize the mean squared error between predicted $Norms_{cb}$ and actual responses. See Appendix C.1 for further details.

norm measure, from 30% in the 1940s to 64% in the 2000s, whereas the Philippines saw a more modest improvement from 18% to 21% during the same period. Some countries, like Vietnam or the United States, did not experience any progress, while others, such as India and Pakistan, even regressed. This meaningful variation in immigrants' gender norms then allows us to further partial out cohort-specific effects.

3 Gender Norms and GGP

3.1 Empirical Methodology

Baseline specification. To examine the relationship between workers' gender norms and the gender gap in pay (GGP), we begin with the specification outlined in Equation 1. Each observation represents a worker i in year t, and f further denotes the corresponding employing firm. The main outcome variable is the natural logarithm of worker i's total wages in year t. The main explanatory variation is the interaction between worker i's gender Fem_i and their gender norms $Norms_{c_i b_i}$, measured based on their home country c_i and year of birth b_i as described in Section 2.

$$\begin{aligned} lnW_{ift} = \beta_1 Fem_i \times Norms_{c_i b_i} + \mathbf{X}_{it}\beta_X^{'} + \mathbf{Z}_{ft}\beta_Z^{'} \\ +\theta_f + \gamma_{Fem_i c_i} + \omega_{Fem_i b_i} + \kappa_{Fem_i a_i} + \varepsilon_{ift} \end{aligned} \tag{1}$$

The specification controls for worker's characteristics $\mathbf{X}_{it}$, such as a third order polynomial of age[15], gender norms, marital status $\times$ gender[16], immigrant indicator, a second order polynomial of tenure in the firm[17], and time since immigration [18]. It also incorporates other controls for education and occupation such as educational attainment, school fixed effects, and major-by-industry fixed effects. Additionally, we control for firm's characteristics $\mathbf{Z}_{ft}$, including a third order polynomial of firm's age, ln(employment), ln(K/L ratio), province-by-year fixed effects, industry-by-year fixed effects), and a full set of firm fixed effects θ_f, which accounts for firm-specific pay level. Standard errors are

[15] To account for non-linear effects of life cycles on one's career
[16] To account for differential effects of marriage on a worker's career between men and women
[17] Similarly to age, this is to account for non-linear effects of tenure on one's career outcomes
[18] We also include a dummy indicating whether this variable is missing

double clustered by firm and worker's home country-by-year of birth, the latter being the source of variation in treatment following Abadie et al. (2023).

The specification also employs a variety of fixed effects to identify the effect of gender norms on the gender pay gap. The first one is a full set of worker's gender-by-home country fixed effects $\gamma_{Fem_i c_i}$, which controls for all home country time-invariant characteristics that correlate with both gender norms and the gender pay gap. An example of such characteristics is that developed countries tend to have both better gender norms and higher skilled workers, who are also more likely to select into jobs with larger gender pay gap (e.g., "greedy" jobs). Analogously, the sets of worker's gender-by-year of birth fixed effects $\omega_{Fem_i b_i}$ and worker's gender-by-age fixed effects $\kappa_{Fem_i a_i}$ absorb all cohort and life cycle characteristics that also correlate with both gender norms and the gender pay gap. This is important as we know that older workers on average have less progressive gender norms, at the same time, the gender pay gap also widens over workers' life cycle due to the glass ceiling effect (Bertrand, 2018).

The coefficient of interest β_1 represents the relationship between workers' gender norms and the difference in the wages of male and female workers of the same firm, i.e., the within-firm gender pay gap that is not driven by selection into firm. With the inclusion of worker's gender-by-home country, worker's gender-by-year of birth, and worker's gender-by-age fixed effects, β_1 is identified from variation in gender norms within the same home country by birth cohort, which variation is heterogeneous across countries. This then allows us to separate out the effect of gender norms on the gender pay gap from that of the home country (including gender-specific discrimination towards immigrants from different home countries), birth cohort, or life cycle

Augmented specifications. We further augment the above baseline specification in two ways. First, we additionally control for firm-specific gender gap by interacting the set of firm fixed effects with worker's gender:

$$\begin{aligned} lnW_{ift} = \beta_2 Fem_i \times Norms_{c_i b_i} + \mathbf{X}_{it}\beta_X^{'} + \mathbf{Z}_{ft}\beta_Z^{'} \\ +\theta_{Fem_i f} + \gamma_{Fem_i c_i} + \omega_{Fem_i b_i} + \kappa_{Fem_i a_i} + \varepsilon_{ift} \end{aligned} \tag{2}$$

Second, we consider firm-specific effects of home country, birth cohort, or life cycle on the pay gap. For this, we interact the relevant set of fixed effects with firm dummies. This firm-saturated specification allows us to account for firm-gender-specific discrimination towards immigrants from different home countries, as well as towards workers of different birth cohorts and ages. That is, any remaining effect of workers' gender norms on the corresponding gender pay gap captured by β_3 likely stems from workers' behaviors instead of firms'.

$$\begin{aligned} lnW_{ift} = \beta_3 Fem_i \times Norms_{c_i b_i} + \mathbf{X}_{it}\beta_X^{'} + \mathbf{Z}_{ft}\beta_Z^{'} \\ +\gamma_{Fem_i c_i f} + \omega_{Fem_i b_i f} + \kappa_{Fem_i a_i f} + \varepsilon_{ift} \end{aligned} \tag{3}$$

3.2 Baseline Results

To better understand the effects of gender norms on the pay gap, we estimate these specifications with different combination of fixed effects and present the findings in Table 1. Column (1) establishes the baseline level of the GGP after accounting for qualifications in our sample which stands at 24%. This is within the range of estimates in Olivetti and Petrongolo (2016) which shows 19% to 25% for Canada over the same period as our study. Column (2) introduces gender norms and show negative coefficients on $Fem_i \times Norms_{c_i b_i}$ when gender-by-home country fixed effects $\gamma_{Fem_i c_i}$ are not included. However, the sign switches to positive in Column (3) when these fixed effects are included, indicating a negative selection of individuals from countries with more progressive gender norms into jobs characterized by higher pay gaps. Specifically, developed countries tend to have both better gender norms and higher skilled workers, who are also more likely to select into high-earning occupations which tend to have larger gender pay gap (Goldin, 2014). This underscores the importance of accounting for such effects to avoid erroneous conclusions regarding the impact of gender norms on the GGP.

Column (4) presents results for the full baseline specification (Equation 1). The coefficient on $Fem_i \times Norms_{c_i b_i}$ is significant and positive, indicating that better gender norms are associated with a narrowing of the pay gap. Furthermore, compared to Column (3), controlling for year of birth (yob) and age-specific GGP in Column (4) reduces the coefficient of interest. This reduction

arises because these fixed effects absorb the part of the GGP that is driven by the correlation between cohort and life cycle characteristics with both gender norms and the gender pay gap. That is older workers, on average, hold less progressive gender norms and simultaneously experience wider GGP due to the glass ceiling effect—the phenomenon where the gender pay gap widens with age and/or work experience. We also want to highlight that all these estimates are within-firm, indicating that the observed effects of gender norms are not driven by selection into firm.

Column (5) present the regression estimates of Equation 2 with gender-by-firm fixed effects to account for within-firm gender discrimination and sorting into firms by gender. In column (6), we further include interacted fixed effects by firm-country of origin, firm-birth cohort, and firm-worker's age, to address potential firm-specific discrimination by age, cohort, and country of origin. Together, these fixed effects allow us to control for distribution of employment across firms which continued to be an important part of the overall gender wage differences (Card et al., 2016; Webber, 2016). In other words, the observed impact of workers' gender norms on the pay gap is likely due to workers' behaviors rather than firms' responses.

In terms of economic magnitudes, results indicate that gender norms significantly contribute to narrowing the GGP, with one standard deviation increase in gender norms measures is associated with 1.7 to 14 percentage points reduction in the GGP, depending on the model specifications. In the most rigorous model, which includes the full set of firm interaction fixed effects, the reduction is 2.8 percentage point, corresponding to 12% of the baseline gap. Together, these results indicate that the effects of gender norms on the GGP remain significant and positive in all of these highly demanding specifications.

Occupation. Occupation has consistently been a significant factor contributing to the GGP, through both between and within occupation. Extensive literature shows that men and women often sort into different occupations with varying pay levels, and this occupational segregation continues to explain a significant part of the GGP (Levanon et al., 2009; Blau and Kahn, 2017). Gender norms can influence or correlate with other characteristics that lead to such occupational choices. For example, countries with less equal gender norms may put a stronger emphasis on maintaining tra-

ditional gender identities, which often requires women to adopt more conservative societal roles. Consequently, women from these countries may be more likely to choose less demanding or part-time jobs that offer lower pay compared to men with similar qualifications (Bertrand et al., 2015). Similarly, evidence suggests that a significant portion of the current earnings gap is due to differences in earnings within occupations, and there are substantial variations in the GGP across different occupations (Goldin, 2014). Gender norms may also correlate with factors that lead women to make occupational choices resulting in higher levels of GGP.

A limitation of our data is that we do not directly observe workers' specific occupations. Instead, we use a major-by-industry classification as a proxy for occupation, which we believe is a reasonably accurate representation. We extract specific program names from the PSIS database and classify them into 21 categories, based on the classification systems used by the Bureau of Labor Statistics and the Census, to identify a worker's major.[19] We use NAICS codes at the 2-digit level for industry classification, resulting in approximately 420 major-by-industry groups as proxy for occupation.

Our baseline analyses in columns (1) to (4) include major-by-industry fixed effects, allowing us to compare the effects of gender norms on men's and women's earnings within the same occupation. This approach controls for selection into different occupations which may have varying pay levels. We also incorporate school fixed effects to account for differences in education quality that are not captured by education levels. In columns (5) and (6), we extend the model by adding major-by-industry interacted with gender fixed effects, allowing us to flexibly control for differential effects of occupation by gender on pay. The results in Table 1 demonstrate that the impact of gender norms remains significant across all model specifications. This suggests that the effects of gender norms documented in our baseline are not solely driven by occupational segregation by sex. Moreover, the evidence that women with more progressive gender norms achieve greater pay parity with men within the same occupation highlights the potential of gender norms to reduce the within-occupation gender pay gap, which, according to (Goldin, 2014), is one of the final barriers to gender equality.

[19] Details on the classification can be found in Appendix B.3

Other Characteristics of Home Countries. As our measure of gender norms is at the country level, we incorporate and control for additional characteristics of the workers' home countries that might influence labor market outcomes and vary across birth cohorts. Note that time-varying, country-specific factors affecting labor market outcomes, such as trade with Canada, are already accounted for by the (time)-country-gender fixed effects. Here, we focus on variations by age cohorts and examine two sets of characteristics that could plausibly impact pay levels.

The first set includes macroeconomic indicators reflecting the countries' economic development and skill levels: GDP per capita, GDP per capita growth, and average education attainment (measured by average years of schooling). Drawing on a growing literature showing the persistent effects of initial market conditions on labor market outcomes for young adults (Wachter, 2020), we construct these variables during the workers' formative years (ages 18-25).

The second set focuses on cultural values that have been shown to influence economic outcomes by the existing literature, such as risk preference, and work ethic. Measures for these other cultural values are computed by birth cohorts using survey data from the WVS, similar to the gender norms measure. Specifically, Risk Preference is measured as the average of responses to *"Adventure and taking risks are important to this person; to have an exciting life"* on a Likert scale from 1 being *"Not at all like me"* to 6 being *"Very much like me"*. Work Ethic is measured as the average of choices on a Likert scale from 1 being *"In the long run, hard work usually brings a better life"* to 10 being *"Hard work doesn't generally bring success – it's more of a matter of luck and connections"*.

We analyze these additional variables both separately and jointly using the baseline specification, which includes the full set of firm fixed effects and interacted gender fixed effects (Equation 1). The results presented in Table 2 demonstrate that the positive and significant effects of gender norms on the gender pay gap remain robust even after accounting for these variables.

The Child Penalty Another factor that has garnered extensive attention in discussions about the gender gap is the child penalty—the impact of parenthood on women's labor market outcomes relative to men's. Numerous papers indicate that child penalties can explain a substantial portion of the remaining GGP in developed countries (Lundborg et al., 2017; Kleven et al., 2019; Cortés

et al., 2023). While our gender norms measure primarily focuses on employment, it is likely closely related to other cultural norms that influence household decisions, such as the division of non-market work or child-rearing responsibilities. In this context, the effects of gender norms that we observe can be a manifestation of the child penalty. Therefore, it is crucial that we control for this factor to better understand the sources of the effects of gender norms.

Using tax records from the CEEDD, we can map out workers' family compositions to examine factors relevant to the child penalty, such as the number of children and their ages. Our analysis controls for both the number of children and the timing of the first childbirth relative to the worker's career trajectory, following prior literature that identifies the first child as having the most significant impact. To capture the non-linear effects of childbirth, we categorize the *Age of First Child* variable into six groups: 1 year, 2 years, 3 years, 4–7 years, more than 7 years, and no children (used as the reference group).

We control for these variables using various model specifications. In column (1) of Table 3, we include the variables directly. Column (2) introduces interactions with a gender dummy, allowing us to account for gender-specific differences in the child penalty. In column (3), we further interact these variables with gender and marital status, acknowledging that childcare responsibilities can differ substantially between single mothers and married women with spousal support. In column (4), we add gender interactions with education and occupation fixed effects to account for potential variations in child penalty impacts across different educational backgrounds and occupations. Results show that the effects of gender norms on the GGP remain robust across these different specifications. While we do not dismiss the possibility that gender norms may operate through child-rearing decisions, our results suggest that the effects of gender norms on the GGP extend beyond the child penalty (if any).

In columns (5) and (6), we further investigate how the effects of gender norms on the pay gap vary depending on workers' housework responsibilities. The findings suggest that the impact of gender norms is weaker for women with greater housework burdens, such as married women, those with more children, or those with small children. These results are consistent with the network effect mechanism that we explore below, which posits that housework responsibilities

can constrain women's ability to leverage their social networks for job opportunities. As a result, women in such circumstances may derive fewer benefits from improvements in gender norms.

Together, these additional analyses indicate that the effects of gender norms on reducing the GGP are not merely a reflection of known factors such as occupational choices or the child penalty. This suggests that there are new and unexplored aspects of how gender norms influence workers' behaviors, which we will investigate further.

3.3 Heterogeneity Analysis

To gain a deeper understanding of the relationship between gender norms and the GGP, we investigate how the effects of gender norms vary across different worker and firm characteristics. Drawing on the literature around the glass ceiling, we first explore how gender norms influence workers at different pay levels. The results in Table 4 indicate that the effects of gender norms are more pronounced among lower-income workers, with the most significant impact observed for those earning below the 25th percentile. As we move up the pay distribution, the effect of gender norms gradually diminishes and becomes statistically insignificant for workers above the 75th percentile. This suggests that gender norms play a more substantial role in shaping the earnings of lower-paid workers, while higher-paid workers may be less affected by these norms.

Next, we examine how the effects of gender norms vary across education levels. The findings in column (5) show a non-linear relationship, with workers holding intermediate levels of education (e.g., bachelor's or master's degrees) benefiting more from improvements in gender norms compared to those at the extremes of the education spectrum (those with no degree or those with a PhD). This suggests that workers with moderate education levels are particularly sensitive to changes in gender norms, possibly due to their positioning in the labor market, where they may have more opportunities for upward mobility than those with very low or very high education levels.

We also explore the impact of firm size on the relationship between gender norms and the GGP. The results indicate that the effects of gender norms are stronger in larger firms. This is

likely because larger firms tend to have more workers in the lower pay and education brackets, where gender norms have a more significant influence on earnings. Furthermore, in unreported results, we observe that the effects of gender norms are more pronounced in "greedy" industries and occupations, such as finance and consulting. This finding has important policy implications, as the GGP in these sectors tends to be larger and more resistant to convergence over time (Lagaras et al., 2022).

Overall, these analyses suggest that the effects of gender norms on the GGP are most prominent among workers in the lower segments of the labor market—those with lower pay levels and intermediate education. Taken together, they improve our understanding of how cultural norms influence the GGP and how various contextual factors may moderate these effects.

4 Mechanism: Mobility and Networks

In this part, we focus on understanding the mechanism underlying the observed relationship between gender norms and the gender pay gap. Our robustness results indicate that gender norms continue to have a significant effect even after accounting for occupational choices and the child penalty. As a result, we turn our attention to a new mechanism: the availability of outside options.

This is motivated by a large literature in labor economics on search and matching models with on-the-job search. These models generally suggest that what matters to pay is the rate at which new outside options become available (Beaudry et al., 2012; Caldwell and Danieli, 2024). For instance, Caldwell and Danieli (2024) demonstrate that in theory, differences in outside options can lead to differences in compensation, even for equally productive workers as firms try to match the outside options to retain the worker. They then develop an index of outside options based on the cross-sectional concentration of similar workers across various jobs and show that this index can account for a significant portion of the gender wage gap in Germany.

4.1 Gender Gap in Mobility

To explore this hypothesis, we first examine the Gender Gap in Job Mobility (GGM) as a proxy for the availability of outside options. We adopt a similar approach to that used for examining the GGP to estimate the impact of gender norms on GGM, with the dependent variable now representing measures of mobility.

The first mobility measure, *AnyMove*, indicates whether an individual transitions to a new firm in the subsequent period. A worker is classified as having changed jobs (i.e., experiencing a *move*) in year t if the following conditions are met: (1) the primary employer in year t differs from the primary employer in year $t-1$; (2) the primary employer is non-missing in both years.

The second measure, *UpMove_Pay*, captures upward mobility to a firm offering a higher firm-specific pay premium. Following Card et al. (2016), we use the AKM model to decompose wages into worker and firm components and rank firms based on the estimated fixed effects. Higher firm fixed effects represent firms that pay higher wage premiums, controlling for worker characteristics and time factors. A worker experiences an upward move if their primary employer in year t ranks higher than in year $t-1$.

The third measure, *UpMove_GGP*, considers transitions to firms with a lower firm-specific GGP. Using the AKM model, we decompose the GGP into worker and firm components and rank firms by their gender-specific pay premiums. Higher firm fixed effects indicate firms with larger pay gaps. An upward move in this context occurs if a worker's primary employer in year t ranks lower in the firm-specific GGP than their employer in year $t-1$.

The results presented in Table 5 reveal a positive relationship between favorable gender norms and the likelihood of both overall mobility and upward mobility. This positive association holds consistently across various model specifications, even when we account for characteristics of the workers' home country. These robust findings indicate that favorable gender norms not only encourage greater job transitions but also facilitate upward movements to better-paying firms or those with more equitable pay structures by gender. This evidence aligns with the hypothesis that the availability of outside options is an important mechanism through which gender norms influence

the GGP.

4.2 Mediation Analysis

In the next step, to link the mobility results to the GGP, we conduct a mediation analysis following the methodologies outlined in existing literature (Heckman and Pinto, 2015; VanderWeele, 2016; Card et al., 2016). First, we estimate the likelihood that a particular worker will move in the next period using results from the analysis in Section 4.1, as a proxy for the worker's movability or outside options. We then incorporate this *'Expected Move'* as a control in the baseline regression on GGP. The rationale is that if the effects of gender norms on GGP operate through the outside options channel, we would expect the impact of gender norms to shrink or disappear after controlling for these options through this variable.

The results, reported in Table 6, confirm this hypothesis: while the effects of gender norms on the GGP remains significant, its magnitude is reduced by half when we include a control for outside options. This holds true regardless of the definition of move used. While the effects of gender norms are not fully mediated through this channel, the findings demonstrate that availability of outside options plays an important role in explaining the relationship between gender norms and the GGP.

4.3 Networks

When thinking about how gender norms can affect a worker's access to outside options, we highlight the role of social networks. A substantial body of literature indicating that workers often learn about job opportunities through their social networks (Ioannides and Loury, 2004; Pallais and Sands, 2016; Caldwell and Harmon, 2019). Network theory then posits that the arrival of outside options often depends on a person's weak ties—connections with less frequent interaction. This is because weak ties serve as bridges, providing access to distant networks and offering information that individuals might not obtain within closer ones. (Granovetter, 1973). For instance, ethnic and alumni networks, rather than professional networks, can be valuable sources of weak ties for job opportunities. Unlike professional networks, where members often have similar infor-

mation about job vacancies, ethnic and alumni networks connect individuals to diverse sources of information. This dynamic, known as low network closure, reflects the openness of a network to outside information flows (Karlan et al., 2009). The size of such low-closure networks (e.g., ethnic or alumni networks) indicates the number of weak ties an individual can leverage.

Within this framework, gender norms can enhance the effects of networks in several ways. Women from countries with less conservative gender norms may be more likely to engage in social activities, enabling them to build larger networks. Additionally, even with a constant network size, women who are more active within their networks may have greater opportunities to learn about job openings, further increasing their access to outside options.

Building on this theory, we construct measures of network size for two key types of networks: (1) Ethnic Networks, comprising individuals from the worker's home country who share the same major-by-industry (occupation) and are within the same age group; and (2) Alumni Networks, consisting of individuals who graduated in the same year, from the same major, and attended the same university as the worker. We then include these measures of network size in the regressions on earnings and mobility. The results reported in Table 7 first confirm the positive effects of network size on both worker's mobility and earnings. Importantly, these beneficial effects are more pronounced for women from cultures with more progressive gender norms. This suggests that favorable gender norms enable women to better leverage their networks to access outside options and improve their pay. While we remain agnostic about the exact channel through which gender norms elevate network effects, the importance of gender norms remains clear.

In studying network effects, we also consider the possibility that workers' access to job opportunities can be influenced by the norms of the networks. That is, if people in a woman's social network adhere to conservative gender norms, they may be less inclined to share news about job opportunities with women. For instance, in countries with stricter gender norms, social events are often segregated by gender. Within these segregated gatherings, gender norms also influence the topics of discussion. All these differences in socialization can create disparities in access to job opportunities between men and women.

As such, our next step is to construct a new measure of the gender norms within workers'

networks, rather than focusing solely on the workers themselves. This involves weighting gender norms metrics by the unique networks of each worker. Incorporating these network-based norms measures allows us to capture the influence of gender norms through external network effects rather than just the individual's internal beliefs. This is important because it suggests that even if a woman does not internalize these norms and actively participates in social activities, she may still have fewer job opportunities due to the norms prevailing in her network.

5 Conclusion

In this paper, we study the influence of cultural norms, particularly gender norms, on labor market outcomes in Canada, with a focus on the gender pay gap (GGP) and job mobility. Our investigation builds on existing literature that explores the role of noncognitive factors such as psychological attributes and cultural norms in explaining the residual gender wage gap—the remaining wage differences after accounting for qualifications. By examining inherited gender norms among immigrants within Canada's distinct multicultural setting, we bypass the impact of market and institutions to concentrate on the role of cultural norms.

Combining various data sources including the Canadian Employer-Employee Dynamic Database (CEEDD), the Longitudinal Immigration Database (IMDB) and the World Value Survey (WVS), our analysis shows that gender norms significantly impact the GGP and job mobility. Specifically, we find that a one standard deviation increase in gender norms is associated with a 12% reduction in the gender pay gap, suggesting that improving these norms can mitigate wage disparities. These estimates incorporate a variety of interacted fixed effects at the firm level, ensuring that our results are not driven by gender-based selection into firms or firm-specific discrimination based on home country, gender, birth cohort, or age. We also control for various confounding factors, including occupation, education, child penalties, and macroeconomic characteristics of immigrants' home countries.

In exploring the mechanisms through which gender norms affect the GGP, we focus on the network effect and propose that these norms can lead to differences in how men and women network

within their social circles, thereby contributing to a gender disparity in accessing job opportunities which can then translate into a gender gap in pay. Our mediation analysis indicate that while gender norms continue to have a significant impact on the GGP, this effect is notably reduced when accounting for the availability of outside job options.

Additionally, our analysis of workers' networks reveals that gender norms amplify the effects of networks on earnings and job mobility. Women with more progressive gender norms are better able to leverage their networks to access outside options and enhance their pay. Furthermore, by incorporating measures of network-based gender norms, we demonstrate that the norms within networks can significantly contribute to differences in job outcomes. This highlights that even if women do not personally adhere to conservative norms, they may still face disadvantages in accessing job opportunities. Collectively, these results support the hypothesis that outside options, shaped by interaction between gender norms and network effects, play a crucial role in explaining the gender wage gap.

Overall, our research emphasizes that improving gender norms can be a potent tool for reducing wage disparities. Policies aimed at improving gender norms may prove more effective in addressing gender inequalities than those focused solely on reducing search frictions in the labor market. Moreover, our findings have broader implications for macro labor economics, particularly in models that examine job matching, wage dispersion, and labor market dynamics.

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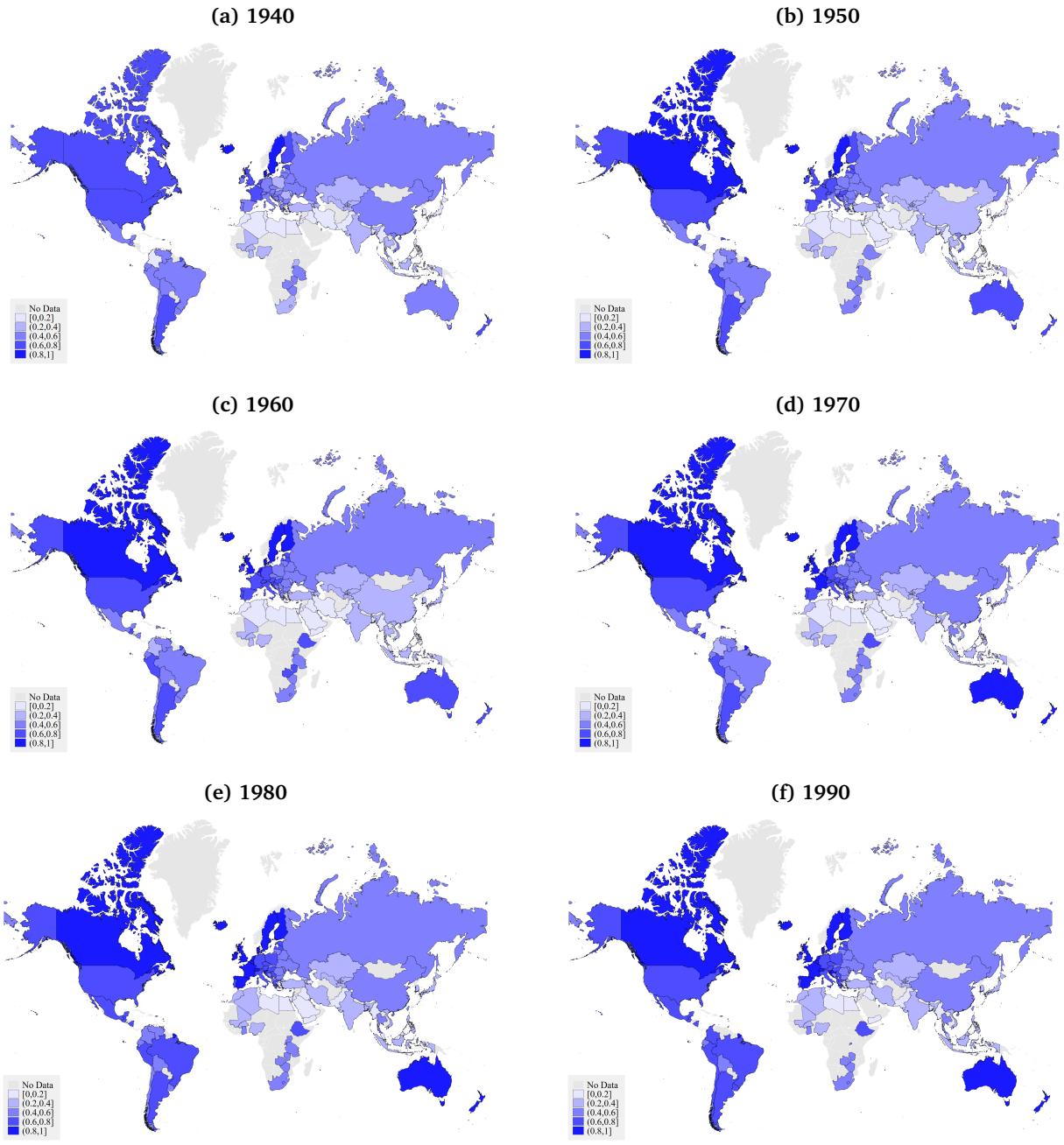
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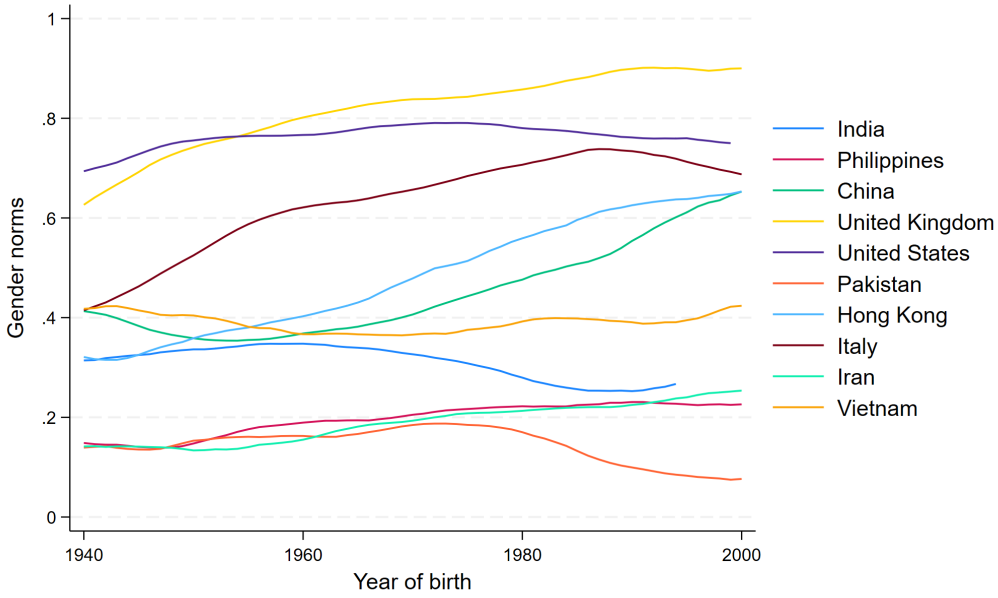
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Figure 1 – Gender Norm Heatmap by Birth Cohort



Notes: This figure presents the gender norm measures across various countries. Gray areas represent regions with no available data, while darker shades indicate greater gender equality. Panels (a) through (f) depict these measures for birth cohorts from 1940 to 1990, respectively.

Figure 2 – Gender Norm across Birth Cohorts for Selected Countries



Notes: This figure presents the gender norm measures across different birth cohorts for selected countries

Table 1 – Gender Norms and Gender Pay Gap

Dependent variable:	ln(Earnings)					
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.241***					
	[0.007]					
Gender norms		0.000	-0.075***	-0.025**	-0.024**	-0.033***
		[0.011]	[0.012]	[0.011]	[0.011]	[0.012]
Female × Gender norms		-0.036***	0.141***	0.017***	0.013**	0.028***
		[0.004]	[0.013]	[0.006]	[0.006]	[0.010]
Baseline controls	✓	✓	✓	✓	✓	✓
Province × Year FEs	✓	✓	✓	✓	✓	✓
Industry × Year FEs	✓	✓	✓	✓	✓	✓
Firm FEs	✓	✓	✓	✓		
YoB FEs	✓	✓	✓			
Country FEs		✓				
Female × Country FEs			✓	✓	✓	
Female × YoB FEs				✓	✓	
Female × Age FEs				✓	✓	
Female × Firm FEs					✓	
Female × Degree FEs					✓	
Female × School FEs					✓	
Female × Major × Industry FEs					✓	
Firm saturated FEs						✓
Adj. R-squared	0.533	0.535	0.542	0.543	0.557	0.633
Observations	48,877,600	48,853,770	48,853,770	48,853,770	48,819,585	42,275,615

Notes: This table presents the baseline results for the GGP and gender norms using different specifications, with the baseline specification (Eq.1) in column (4) and the augmented specifications in column (5) and (6). The set of control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 2 – Gender Norms and GGP: Controlling for Differences in Home Country

Dependent variable:	ln(Earnings)		
	(1)	(2)	(3)
Female × Gender norm	0.0213*	0.0192***	0.0177***
	[0.0115]	[0.0062]	[0.0065]
Female × ln(GDP per capita)	0.0102		
	[0.0065]		
Female × ln(GDP per capita growth)	0.0001		
	[0.0003]		
Female × Country's years of schooling	0.0164***		
	[0.0039]		
Female × Work ethic		0.0137***	
		[0.0027]	
Female × Risk preferences			-0.0151***
			[0.0040]
Macro factors	✓	✓	✓
Baseline controls	✓	✓	✓
Firm FEs	✓	✓	✓
Province × Year, Industry × Year FEs	✓	✓	✓
Female × Country, Female × YoB, Female × Age FEs	✓	✓	✓
Adj. R-squared	0.601	0.543	0.541
Observations	5,693,495	48,853,770	47,614,735

Notes: This table presents the baseline results of the GGP and gender norms using the baseline specification (Eq.1) while controlling for characteristics of workers' home countries. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 3 – Gender Norms and GGP: Controlling for the Child Penalty

Dependent variable:	ln[Earnings]					
	(1)	(2)	(3)	(4)	(5)	(6)
Female × Gender norms	0.0165**	0.0158**	0.0166**	0.0109*	0.0398***	0.0402***
	[0.0066]	[0.0068]	[0.0069]	[0.0065]	[0.0072]	[0.0069]
Female ×Norms ×					-0.0023***	
Family Size					[0.0006]	
Female × Norms ×					-0.0304***	-0.0295***
Married					[0.0011]	[0.0012]
Female × Norms ×						-0.0119***
Age of 1st child = 1						[0.0024]
Female × Norms ×						-0.0233***
Age of 1st child = 2						[0.0031]
Female × Norms ×						-0.0182***
Age of 1st child = 3						[0.0020]
Female × Norms ×						-0.0125***
Age of 1st child = [4,7]						[0.0025]
Female × Norms ×						-0.0014
Age of 1st child = 7+						[0.0028]
Controls						
Baseline	✓	✓	✓	✓	✓	✓
Married	✓	✓	✓	✓	✓	✓
Fem. × Married	✓	✓	✓	✓	✓	✓
Family Size	✓	✓	✓	✓	✓	✓
Fem. × Family Size		✓		✓	✓	✓
Fem. × Fam. Size × Married			✓			
Age of 1st child	✓					
Fem. × AoFC		✓		✓	✓	✓
Fem. × AoFC × Married			✓			
Firm FEs	✓	✓	✓		✓	✓
Province × Year, Industry × Year FEs	✓	✓	✓	✓	✓	✓
Fem. × Country, Fem. × YoB, Fem. ×FEs	✓	✓	✓	✓	✓	✓
Fem. × Firm FEs				✓		
Fem. × Degree, Fem. × School, Fem. × Major × Industry FEs				✓		
Adj. R-squared	0.557	0.559	0.560	0.560	0.560	0.574
Observations	37,073,160	37,073,155	37,073,150	37,073,155	37,073,155	37,036,800

Notes: This table presents the regression results of the GGP and gender norms using the baseline specifications (Eq.1) while controlling for workers' family characteristics. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4 – Heterogeneous Effects of Gender Norms on the GGP

Dependent variable:	ln(Earnings)					
Pay sample =	≤ P25	(P25,P50]	(P50,P75]	> P75	Entire Sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Female × Gender norms	0.0082***	0.0069***	0.0037*	0.0095	0.0015	0.0096
	[0.0029]	[0.0016]	[0.0022]	[0.0088]	[0.0077]	[0.0062]
Fem. × Gender norms ×					0.0127***	
Bachelor Degree					[0.0015]	
Fem. × Gender norms ×					0.0100***	
Master Degree					[0.0022]	
Fem. × Gender norms ×					0.0067	
PhD Degree or higher					[0.0042]	
Fem. × Gender norms ×						0.0052***
Firm Size Quartile 2						[0.0012]
Fem. × Gender norms ×						0.0073***
Firm Size Quartile 3						[0.0017]
Fem. × Gender norms ×						0.0185***
Firm Size Quartile 4						[0.0022]
Baseline controls	✓	✓	✓	✓	✓	✓
Firm FEs	✓	✓	✓	✓	✓	✓
Province × Year, Industry × Year FEs	✓	✓	✓	✓	✓	✓
Fem. × Country, Fem. × YoB, Fem. × Age FEs	✓	✓	✓	✓	✓	✓
Adj. R-squared	0.613	0.901	0.894	0.690	0.591	0.543
Observations	13,146,715	11,877,080	12,508,075	11,199,490	10,503,290	48,853,770

Notes: This table presents the regression results for the GGP and gender norms in different contexts, using the baseline specification (Eq.1). Columns (1) to (4) display results for different subsamples based on the pay levels indicated in the column headings. Columns (5) and (6) present results for the full sample. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5 – Gender Norms and Gender Gap in Mobility

Dependent variable:	Any Move	To Higher-pay	To Lower-GGP
	(1)	(2)	(3)
Female × Gender norms	+***	+*	+**
Baseline controls	✓	✓	✓
Firm FEs	✓	✓	✓
Province × Year, Industry × Year FEs	✓	✓	✓
Female × Country, Female × YoB, Female × Age FEs	✓	✓	✓

Notes: This table presents the regression results for different measures of the GGM and gender norms, using the baseline specification (Eq.1), with the dependent variable specified in the column headings. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6 – Gender Norms and Mobility: Mediation Analysis

Dependent variable:	ln(Earnings)		
Model of Expected Move:	Any Move	Higher-pay	Lower-GGP
	(1)	(2)	(3)
Female × Gender norms	+***	+***	+***
Expected Move	-***	-***	-***
Baseline controls	✓	✓	✓
Firm FEs	✓	✓	✓
Province × Year, Industry × Year FEs	✓	✓	✓
Female × Country, Female × YoB, Female × Age FEs	✓	✓	✓

Notes: This table presents the regression results for the mediation analysis of expected movability on the relationship between the GGP and gender norms, using the baseline specification (Eq.1). The dependent variable is ln(Earnings) while the *Expected Move* variable is constructed using the model specified in the column headings. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix A. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 7 – Gender Norms and Network Size

Dependent variable:	ln(Earnings)			Move Dummy	
Network measure:	Ethnic	Alumni		Ethnic	Alumni
	(1)	(2)		(3)	(4)
Ln(network size)	+	-***		+	***
Female × Ln(network size)	-***	-***		-**	-***
Female × Ln(network size) × Gender norms	+***	+***		+***	+***
Baseline controls	✓	✓		✓	✓
Firm FEs	✓	✓	✓	✓	
Province × Year, Industry × Year FEs	✓	✓	✓	✓	
Female × Country, Female × YoB, Female × Age FEs	✓	✓	✓	✓	

Notes: This table presents the regression results for the effects of gender norms and network size on the GGP and the GGM. The dependent variable is the GGP in columns (1) and (2), and the GGM in columns (3) and (4), respectively. Measures of network size are indicated in the column headings. The set of baseline control variables include worker's characteristics such as a third-order polynomial of worker's age, gender×married, degree dummies, school dummies, occupation dummies (proxied by major-by-NAICS 2-digit industry), a second-order polynomial of tenure in the firm, immigrant indicator, time since immigration, indicator for missing time since immigration and firm's characteristics such as a third-order polynomial of firm's age, ln(employment), and ln(K/L ratio). Detailed definitions of these variables are provided in Appendix. Standard errors are doubled clustered by firm and worker's home country-by-year of birth. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Appendix A Variables Definition

Variable name	Definition	Data Source
Workers		
ln(Earnings)	Natural logarithm of the worker's earning in a year.	CEEDD
Gender Norms	Measure of the worker's gender attitude based on the the worker's country of origin and birth cohort, constructed from WVS responses to the statement *"Do you agree of disagree with the following statement: when jobs are scare, men should have more of a right to job than women"*. See Appendix C.1 for details.	WVS
Age	The worker's age, centered around 40.	CEEDD
YoB	The worker's year of birth.	CEEDD
Female	Dummy variable which is set to equal 1 if the worker's gender is female and 0 otherwise.	CEEDD
Married	Dummy variable which is set to equal 1 if the worker is married and 0 otherwise.	CEEDD
Tenure	The worker's length of employment at the current employer	CEEDD
Immigrant	Dummy variable which is set to equal 1 if the worker is an immigrant and 0 otherwise.	IMDB
Time since Immigration	The worker's duration of time since their first immigration to Canada (in years).	IMDB
Missing Time since Immigration	Dummy variable which is set to equal 1 if there is no information on Time since Immigration and 0 otherwise.	IMDB
Degree	The worker's highest degree attained, represented as a categorical variable with four groups: below bachelor's degree, bachelor's degree, master's degree, and above master's degree.	IMDB, PSIS
School	The worker's institution of their highest degree.	PSIS
Major	Field of study for the worker's highest degree attained. See Appendix B.3 for details on the classification.	PSIS
Family Size	The number of children the worker has.	CEEDD
Age of 1st child	The age of the worker's first born child, represented as a categorical variable: 1, 2, 3, 4-7, >7, and having no children as the reference group.	CEEDD
GDP per capita	Average GDP per capita of the worker's country of origin during worker's formative years (18-25).	WDI

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Variable name	Definition	Data Source
GDP per capita growth	Average GDP per capita growth rate of the worker's country of origin during worker's formative years (18-25).	WDI
Educational Attainment	Average years of schooling of the worker's country of origin during worker's formative years (18-25).	Barro and Lee (2013)
Trust	Measure of the worker's generalized trust based on the worker's country of origin and birth cohort, constructed from WVS responses to the trust question *"Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?"*. See Appendix C.2 for details.	WVS
Risk Preference	Measure of the worker's risk preference based on the worker's country of origin and birth cohort, constructed from WVS responses to the statement *"Adventure and taking risks are important to this person; to have an exciting life"* on a 6-point Likert scale. See Appendix C.2 for details.	WVS
Work Ethic	Measure of the worker's view on the importance of work in life based on the worker's country of origin and birth cohort, constructed from WVS responses to the statement *"Important in life: work"* on a 4-point Likert scale. See Appendix C.2 for details.	WVS
Preference for Redistribution	Measure of the worker's preference for redistribution based on the worker's country of origin and birth cohort, constructed from WVS reponses to the question *"Some people say that people get ahead by their own hard work; others say that lucky breaks or help from other people are more important. Which do you think is most important?"* on a 10-point Likert scale. See Appendix C.2 for details.	WVS
Firms		
Firm age	The firm's age, winsorized at 50	CEEDD
ln(employment)	The natural logarithm of the number of workers employed by the firm.	CEEDD
ln(K/L ratio)	The natural logarithm of the capital-to-labor ratio calculated as Total Assets/Number of Employees.	CEEDD

Appendix B Data Description and Sample Construction

B.1 Canadian Employer-Employee Dynamic Database (CEEDD)

Our primary data source is the Canadian Employer-Employee Dynamic Database (CEEDD), maintained by Statistics Canada. The CEEDD is a comprehensive, matched employer-employee administrative dataset that integrates information from several key administrative records, covering the universe of Canadian employees and their employers based on tax filings. The dataset spans from 2001 to 2017 and includes data on annual labor earnings for each employee, linked to their respective employers. It also captures demographic details such as age, gender, and family composition. For firms, the CEEDD provides extensive financial information, including revenue, assets, firm age, industry classification, and geographical location.

The CEEDD's unique structure relies on linkable files from various administrative sources, including the T1 Personal Master File, T2 corporate tax records, T4 employment records, and the National Accounts Longitudinal Microdata File (NALMF). This allows for precise tracking of both employees and firm-level characteristics.

B.2 Longitudinal Immigration Database (IMDB)

We then link the CEEDD with the Longitudinal Immigration Database (IMDB), an administrative dataset that includes all immigrants admitted to Canada from 1980 to 2018, covering individuals from over 100 countries. The IMDB provides detailed information on immigrants, including their education, skill level, country of birth and citizenship, as well as their date of arrival. This linkage allows us to identify immigrant workers and determine their countries of origin.

B.3 Post-Secondary Student Information System Database (PSIS)

The education level of immigrants is determined based on their years of schooling and the highest degree attained from the IMDB. To obtain educational information for non-immigrant employees, we link the CEEDD with the Post-Secondary Student Information System (PSIS) database. The PSIS is a national survey conducted by Statistics Canada that collects detailed information on enrollments and graduates from Canadian public post-secondary institutions. PSIS gathers data on programs and courses offered, as well as student demographics and academic progress. The PSIS offers high-quality administrative data, as it collects information through a national survey with a repeated cross-sectional design. The survey is comprehensive, with no sampling involved, and participation is mandatory.

Major Classification. The PSIS provides detailed information about participants' programs of study, which we use to infer their major and construct a proxy for their occupation. To begin, we created a classification system for majors based on the Field of Degree categories from the Bureau of Labor Statistics' Occupational Outlook Handbook and the Census' Field of Degree Code List. Our final classification includes 21 fields of degree (FOD): Agriculture, Architecture, Biology, Economics and Business, Communications, Computer and Information Technology, Construction and Transportation, Liberal Arts, Education, Engineering, Language, Fine and Performing Arts, Social Science, Healthcare, Law and Legal Studies, Mathematics, Natural Resources, Philosophy and Religion, Physical Science, Psychology, and Other.

The PSIS dataset includes over 90,000 unique program names, some of which are linked to specific major codes. Our classification process involved three steps:

1. Mapping major codes: We identified all major codes with at least 50 occurrences and manually mapped them to our FOD list. In this step, we treated the major code as the primary source of information and the program name as supplementary, as major codes are more consistent across different program names which can vary due to abbreviation or naming convention.
2. Word stems analysis: Using the program name-to-FOD mapping from the first step, we identified the most uniquely common word stems for each FOD. This list was manually cleaned and used to classify programs that lacked an assigned major code in the first step.
3. Training a model for edge cases: For programs that could not be classified in the previous steps (typically due to abbreviations or unusual names), we trained ChatGPT using a set of 1,000 manually classified programs to categorize these remaining cases.

Through this multi-step approach, we successfully classified over 76,000 program names, covering nearly 90% of the PSIS sample, with the 14,000 unclassified programs being mostly low-frequency entries within the dataset.

B.4 Sample Construction

We restrict our sample to firms that have been in operation for at least two years to ensure that employees can be observed working a full year within each firm-year in the sample. Additionally, we limit the analysis to firms employing at least one immigrant worker and having a minimum of five employees.

The CEEDD does not include data on the number of hours or weeks worked by employees. To address this, we follow the approach of prior literature (e.g., Card et al. (2013); Song et al. (2019)),

which excludes individuals with weak labor market attachment. Specifically, our sample includes employees aged 20 to 60 whose annual earnings surpass the minimum wage for one-quarter of full-time employment in a given year. For example, in 2001, the threshold was set at $2,912, calculated based on 13 weeks of full-time work (40 hours per week) at $5.60 per hour.

Following Song et al. (2019), we assign employees to the firm associated with their primary source of labor earnings (i.e., the business number with the largest earnings) in a given year, when they held multiple jobs. We exclude firms operating in the government and educational sectors, as per Song et al. (2019).

Appendix C Gender Norms and Other Cultural Traits Measures

C.1 Gender Norms Measures

World Value Survey questions on gender attitude. In line with existing literature, we identify all relevant questions in the WVS that pertain to the roles of men and women both within and outside the family. These questions, which have varying coverage across the different WVS waves, ask if the respondent agree (coded as 0 for being less progressive for Q1 to Q7) or disagree (coded as 1 for being more progressive for Q1 to Q7) with the each of the following statements:

- Q1: *"When jobs are scare, men should have more of a right to job than women"* (asked in WVS waves 2 to 7),
- Q2: *"On the whole, men make better political leaders than women do"* (waves 3 to 7),
- Q3: "A university education is more important for a boy than for a girl" (waves 3 to 7),
- Q4: *"When a mother works for pay, the children suffer"* (waves 2, 6, and 7),
- Q5: Having a job is the best way for a woman to be an independent person (waves 2 and 6),
- Q6: *"If a woman earns more money than her husband, it's almost certain to cause problems"* (waves 3, 6, and 7),
- Q7: *"On the whole, men make better business executives than women do"* (waves 5 to 7),
- Q8: *"Women have the same rights as men"* (waves 5 to 7, using a 10-point Likert scale).

We base our main gender norms measure on answers to the first question *"Do you agree or disagree with the following statement: when jobs are scare, men should have more of a right to a job then women?"* for two reasons. First, it directly addresses the aspect of gender norms most relevant to our study of job search behaviors and their impact on gender pay gaps. Second, this question has the broadest coverage, having been asked in 6 out of the 7 waves of the WVS, making it the most reliable for constructing a within-country measure of gender norms that varies by birth cohorts. In addition, we show that our main results are robust to using alternative gender norms measures based on other WVS questions on gender attitude listed above.

Sources of improvement in gender attitude overtime. To assess the drivers of the rise in gender progressivity across the globe between the 1990's and the 2020's, for each gender attitude question, we regress a respondent's answer on two sets of fixed effects, one corresponds to the respondent's

year or decade of birth interacted with the respondent's country, and the other corresponds to the year of the survey interacted with the respondent's country. We then compare the explanatory powers of these two set of fixed effects to understand the importance of compositional changes relative to that of within-cohort shifts in gender attitude. Appendix Table D.1 shows that across different specifications, the set of country-by-birth cohort fixed effects explains between 15% to 24% of the variation in respondents' gender norms, while the set of country-by-survey wave fixed effects explains only between 0.5% to 6% of such variation. That is, the observed improvement in aggregate gender attitude over time is driven primarily by compositional changes (i.e., younger generations generally hold more gender-progressive views than older ones), while there is little evidence of within-cohort shifts (i.e., individuals from the same birth cohort exhibit little changes in their gender views over time). Therefore, we choose to focus our measure of gender norms on variations by country and year of birth.

Country-by-year of birth gender norms measures. For each gender attitude question, we compute the corresponding country-by-year of birth gender norms measure $Norms_{cb}$ using the responses of respondents in country c born "around" year b, as in many cases there are too few respondents in country c born exactly in year b. Specifically, $Norm_{cb}$ is the weighted share of respondents in country c born between years $b-w$ and $b+w$ who disagree with the corresponding statement, using triangular kernel weights aound b with bandwidth w that attribute higher weights to those born closer to year b. In mathematical terms,

$$Norms_{cb} = \sum_i 1_{c_i=c} \times \min\{0, 1 - \frac{|b_i - b|}{w}\} \times Disagree_i$$

where i is a WVS respondent, $1_{c_i=c}$ indicates if i is in country c, $\min\{0, 1 - \frac{|b_i-b|}{w}\}$ is the triangular kernel weight around b based on i's year of birth b_i and bandwidth w, and $Disagree_i$ indicates if i disagrees with the corresponding statement.

We use cross validation to pick the optimal bandwidth w as the integer that minimizes the sum squared errors between predicted $Norms_{c_i b_i}$ and $Disagree_i$. (Note that the triangular kernel is also chosen as the best performer among triangular, rectangular, and Epanechnikov kernels.) For our main gender norms measures, w is the same for all countries and years of birth for each gender norm measure. Specifically, the optimal bandwidth w chosen for the our main gender norms measure based on responses the statement *"When jobs ae scare, men should have more of a right to job than women"* is 12. We also compute alternative gender norms measures using country-specific optimal bandwidths, as well as gender-specific gender norms measures separately for male and female workers based on responses of respectively male and female respondents. Our main results are robust to using these alternative gender norms measures.

C.2 Other Cultural Trait Measures

We consider a range of other cultural traits besides gender attitude that have been shown to matter to economic outcomes. These traits include risk preference (e.g., Kihlstrom and Laffont (1979); Pan et al. (2017)) and work ethic (e.g., Becker and Woessmann (2009); Spenkuch (2017)). Similar to gender norms measures, we construct country-by-year of birth measures of these cultural traits using responses to the corresponding WVS questions and the procedure as described above.

Risk preference. Risk preference is fundamental to economic decisions and outcomes. We measure risk preference using responses to the WVS question *"Adventure and taking risks are important to this person; to have an exciting life,"* asked in waves 5 and 6 using a 6-point Likert scale, with larger responses indicating stronger risk preference.

Work ethic. Protestant work ethic, which promotes the intrinsic value of work (Weber, 1904, 1905), has been shown to influence individual's choices of incentive contract and total work hours (e.g., Becker and Woessmann (2009); Spenkuch (2017)). We measure work ethic using responses to the WVS question *"Important in life: work,"* asked in waves 2 to 7 using a 4-point Likert scale, with larger responses indicating stronger importance placed on work.

Appendix D Appendix Figures and Tables

Table D.1 – Explanatory Power of Survey Time and Birth Cohort on Gender Norms Measures

Panel A: Without Data Weights

	Year of Birth			Decade of Birth		
	R^2	R^2_{cyob}	R^2_{cwave}	R^2	R^2_{cyob}	R^2_{cwave}
Q1	0.2030	0.2387	0.1427	0.2514	0.1262	0.1658
Q2	0.1808	0.2666	0.1201	0.2142	0.1221	0.1776
Q3	0.0050	0.0022	0.0003	0.0005	0.0000	0.0003
Q4	0.1642	0.1964	0.0988	0.2130	0.0692	0.1127
Q5	0.1459	0.2294	0.0859	0.1809	0.0686	0.1318
Q6	0.0050	0.0023	0.0003	0.0006	0.0000	0.0003
Q7	0.1993	0.1706	0.0002	0.1631	0.1384	0.0002
Q8	0.1411	0.1313	0.0006	0.0996	0.0898	0.0006

Panel B: With Data Weights

	Year of Birth			Decade of Birth		
	R^2	R^2_{cyob}	R^2_{cwave}	R^2	R^2_{cyob}	R^2_{cwave}
Q1	0.2030	0.2387	0.1427	0.2514	0.1262	0.1658
Q2	0.1808	0.2666	0.1201	0.2142	0.1221	0.1776
Q3	0.0050	0.0022	0.0003	0.0005	0.0000	0.0003
Q4	0.1642	0.1964	0.0988	0.2130	0.0692	0.1127
Q5	0.1459	0.2294	0.0859	0.1809	0.0686	0.1318
Q6	0.0050	0.0023	0.0003	0.0006	0.0000	0.0003
Q7	0.1993	0.1706	0.0002	0.1631	0.1384	0.0002
Q8	0.1411	0.1313	0.0006	0.0996	0.0898	0.0006

Notes: This table presents the results of fixed effects regressions analyzing the variation in gender values across countries and survey waves. The dependent variable is the gender value, while the independent variables are country x birth cohort fixed effects and country x survey wave fixed effects. Panel A reports the results using no data weights, while Panel B uses data weights. In columns (1) to (3), birth cohort is defined at the year level. In columns (4) to (6), birth cohort is aggregated by decade. The R-squared values indicate the proportion of variation in gender values explained by the combined set of country x birth cohort and country x survey wave fixed effects. The partial R-squared values show the proportion of variation explained by each set of fixed effects alone.