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The Impact of Changes in Labor Market Conditions on Women Hired into Leadership Roles

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ABSTRACT[3]

The underrepresentation of women in leadership roles within the global workforce is a persistent issue. This paper examines the impact of labor market slack, characterized by fewer job postings amidst a larger pool of job seekers, on the share of women hired into leadership positions. We explore variations in this relationship across several countries and industries. Our findings reveal that overall, when labor conditions worsen, a smaller share of new hires into leadership are women, with an elasticity of around 0.02. We find this is primarily driven by industries within countries with fewer than 50% of women in the workforce at the start of our data. Importantly, it is not driven by labor supply, as the share of leadership applicants who are women does not decrease with worse labor markets. We also find recent setbacks in the share of new leadership hires who are women can be attributed to economic downturns based on our model, the upward progress in women's representation in leadership hires remains intact, even in male-dominated industries.

Keywords: unemployment, human capital, signaling, labor, skills
JEL classifications: J24, J64, J28, I2

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Women are consistently underrepresented in leadership positions in the workforce (Carli & Eagly, 2011; Lara et al., 2023; Lyness & Grotto, 2018). This is globally true and represents an important and continual source of inequity. This disparity can lead to wider income gaps between men and women, women having less say in business decisions made that impact workers and customers (including hiring practices and HR policies), inefficiencies by not tapping into the full pool of workers, and decreased representation of women leading to less effective product and service decisions that may not serve female customers and clients as well as male (Deller et al., 2017; Lyness & Grotto, 2018).

While women have historically been disadvantaged in terms of hiring into leadership positions, they may be even more so during economic downturns. Research has shown that historically and systematically marginalized (HSMs) workers—women, people from underrepresented groups, lower income workers—are most impacted by recessions across several labor and health outcomes (Couch et al., 2018; Freeman et al., 1973; Jain & Sloane, 1983; Rubery & Rafferty, 2013). Similarly, there is compelling evidence to suggest that these groups benefit disproportionately during periods of economic expansions (Couch & Fairlie, 2010). This highlights a clear correlation between labor market tightness and the labor outcomes of disadvantaged workers, such as women, minorities, and individuals with lower levels of education, in comparison to other workers.

Using global data from LinkedIn, the largest professional networking site, this paper examines three key research questions:

1. How do changes in labor market conditions affect the share of women being hired into leadership positions?
2. To what extent is there heterogeneity in the impact of changes in labor market conditions on the share of women hired into leadership across industries, countries, and baseline share of women represented in the industry within the country?

3. What is the time trend in hiring of women into leadership once we account for changes in labor market conditions?
    a. What has been the overall trend over the past three years?
    b. Can the decline in the hiring of women into leadership roles in 2023 be attributed by increased slack in the labor market?
4. Are observed relationships in research question 1 driven by labor supply or demand? How do changes in labor market conditions affect the share of women applying for leadership positions?

We leverage hundreds of millions of LinkedIn profiles from 2020 through 2023 across several countries and industries to explore this question.

1.1. Related Literature

There are two related branches of research related to the goals of this paper. The first related branch examines the potential reasons broadly for women being unrepresented in leadership positions in the workforce. The second branch examines the relationship between macroeconomic conditions—such as recessions—and the labor outcomes of HSM populations, such as women and members of racial and ethnic minority groups. It is clear that women are underrepresented in leadership positions in the workforce, and there are costs to this disparity (Lennon, 2012; Lyness & Grotto, 2018; Terjesen et al., 2009). While women have substantially better representation in leadership positions than decades ago, there is mixed evidence regarding improvements in representation over the last decade (Chin et al., 2018; Lara et al., 2023). There are several reasons for this disparity. One potential reason is leadership practices are rooted in patriarchal stereotypes (Painter-Morland & Deslandes, 2014), or other biases towards women in leadership positions (e.g., women's work is more likely to be hobbies or more secondary to their activities at home) (Lennon, 2012). In a 2018 Pew survey, 54% of US survey respondents reported believing that gender discrimination is a major reason why there are not more women in top executive business positions, with 60% reporting a belief that a key reason for this is that women need to do more to prove themselves than men (Horowitz et al., 2018). Having more women in leadership increases firm performance

for firms focused on innovation (Dezsö & Ross, 2012). Policies are flexible work and leave may also unfairly penalize women if they bear a higher burden of care of dependents.

Representation also varies significantly among different industries and countries (Baird et al., 2023; Lara et al., 2023). Therefore, we also are interested in exploring the extent to which certain industries and countries exhibit a more pronounced relationship between labor market conditions and the hiring of women into leadership positions.

For the second branch of related research, while there are different hypotheses for the reasons why, there is relative consensus that vulnerable populations have disproportionately better outcomes in strong labor markets and disproportionately worse outcomes in weak labor markets (Couch et al., 2018; Freeman et al., 1973; Jain & Sloane, 1983; Rubery & Rafferty, 2013). However, this does not always include women (Hoynes et al., 2012), even when it includes minorities and lower education workers.

Jain & Sloane (1983) frame the evidence primarily in group differences in experience and human capital—a last in, first out narrative where women are the last ones hired in (due to them facing sets of barriers slowing their hiring), and thus are first out when conditions worsen (Freeman et al., 1973)—as well as reinforcing negative feedback loops from discrimination of any type. Later evidence for Black workers in the U.S. however found a 'first out, first in' dynamic wherein Black workers are the first ones hired when labor conditions improve, but the first ones laid off when labor conditions worsen (Couch & Fairlie, 2010). This first out, first in mechanism results in disadvantaged workers benefiting more during economic expansion but suffer more during economic contraction. Women may have lower experience for example due to exit from the labor force and from lower past opportunities for employment and leadership. On the other hand, as labor markets become tighter and firms struggle to find candidates who fulfill all criteria for open positions, they may choose to relax their hiring standards, opting for candidates from non-traditional backgrounds and lower experience. Considering the dynamic nature of worker demand and its responsiveness to shifts in labor market conditions, it becomes more probable that women will be considered for leadership roles during periods of tight labor market conditions. Rubery & Rafferty (2013) further posit the role of gender segregation in the underlying dynamics, with woman potentially

working occupations more vulnerable to shifts in the economy, as well as the view of disadvantaged workers as more flexible sources of labor throughout the business cycle (Couch et al., 2018). Additionally, Flamini et al. (2023) find monetary policy shocks help narrow the gender employment gap across several countries, and that this relationship is strongest during times of economic expansion, consistent with the underlying hypothesis again of women making the most gains in the labor market during expansionary periods.

1.2. Conceptual Framework

In this paper, we bridge the two previously discussed related branches of research to explore how changes in labor market conditions affect the share of women hired into leadership positions. By examining new hires, we can explore an outcome that is more likely to respond to shifts in macroeconomic conditions (e.g., the flow of women in leadership positions in the labor market, as opposed to the stock, or overall average). It is important to note that due to data limitations, we do not explore the specific mechanisms through which these changes occur. We presume that any of the mechanisms discussed—such as discrimination, flexible employment, lower attachment to the labor market, or variations in experience levels re-entrenched over business cycles due to firms' willingness to hire non-traditional job seekers, etc.—may be the underlying impact. Exploring specific mechanisms is beyond the scope of this study, as we estimate and derive identifying variations across countries and industries, each likely to have unique mechanisms at play. Bishop (2022) contains a thorough review of this literature and exploration of hypotheses for this observed disparity.

Nonetheless, the key hypothesis is that the share of women hired into leadership roles increases during strong labor markets and decreases during weak labor market phases. This occurs because women applicants may be regarded as lower-priority candidates, whether due to explicit discriminatory factors, or because they may not possess the same level of prior experience and skill alignment, or because of differences in how women present themselves as job candidates or how aggressively they search and apply for different jobs. Thus, when labor markets are tight and candidates are hard to

find, employers are willing to consider lower priority candidates, and when labor markets are slack, firms are choosier and select higher priority candidates.

3. Methods

3.1. Data and Context

As the largest professional networking platform designed to connect individuals for business and career-related purposes, we use data from public LinkedIn profiles and LinkedIn job search activity to evaluate the impact of changes in labor conditions on the hiring of women into leadership positions. LinkedIn's platform allows users to create personal profiles that serve as virtual resumes, showcasing their professional background, skills, and experiences. LinkedIn is widely used for job searching, recruiting, professional networking, and knowledge sharing within various industries and fields.

We acknowledge that gender exists on a spectrum rather than as a binary construct. Due to constraints in available data, this paper focuses its analysis on the traditional binary categorizations of "man" and "woman". In cases where self-identification was not explicit, gender was inferred by employing an established methodology developed by LinkedIn, examining the pronouns used on members' LinkedIn profiles as well as leveraging gender patterns of first names. Members whose gender could not be reliably determined as either "man" or "woman" were not included in this analysis.

The analysis is based on two key metrics: the share of women hired into leadership roles in a given month, and LinkedIn's measure of labor market tightness (LMT). For both measures, we calculate them at the country-by-industry-by-month level, our unit of observation. The share of women hired into leadership roles is measured by calculating the share of women out of all the members who started a new occupation that month within that country and industry with a title that can be attributed to a seniority of Director, VP, Partner, or C-Suite, for each given month. LinkedIn's Labor Market Tightness metric is calculated as the number of active job openings posted directly on LinkedIn divided by the total number of active applicants (Ghayad, 2022). We measure active job openings as the stock of open job positions on the last business day of the

month. Active applicants are members who submit at least one application to a job opening in each month and country and industry. The Labor Market Tightness (LMT) metric encompasses all individuals in each country and industry who submit at least one job application within a particular industry, irrespective of their current industry affiliation.

To address research question 4, we use instead the share of leadership applicants who are women (instead of leadership hires). An application is counted when a member either completes the application process on the LinkedIn platform, or clicks the "Apply" button that redirects to an application form outside the platform. This allows us to explore the extent to which any observed equilibrium outcomes (hires) are driven by labor supply (applicants).

Table 1 presents the averages and standard deviations for these two key metrics. We evaluate data from the following countries: Australia, Brazil, Canada, France, Germany, India, Ireland, Italy, Mexico, Netherlands, Singapore, United States, United Kingdom. These countries were chosen due to them having the largest amount of available data of which the metrics are estimated, as well as sufficiently strong gender classifications. Appendix Table A.2 and Table A.3 provide a by country and by industry version of the same summary statistics. For LMT, we find that from January 2020 through June 2023, the average LMT was 1.83, meaning there were 1.8 job postings for every one applicant, suggesting a relatively strong labor market. However, this is not true in months, countries, and industries, as suggested by a large standard deviation (2.75) and the 25th percentile at 0.43 (around twice as many job applicants as job postings). The presence of outliers (with a maximum of 28.51) is another reason why we also examine the log model. It also makes the choice of which direction the ratio is taken innocuous—for example, a change from 1 (equal applicants and job postings) to 0.5 (2 applicants per post) is half the size as the change from 1 to 2 (2 posts per applicant) in levels, but is identical in logs.

Table 1: Input data summary statistics.

	LMT		Share of women in leadership hires		Share of women in leadership applications	
	Level	Log	Level	Log	Level	Log
Mean	1.83	-0.10	0.35	-1.10	0.30	-1.25
Standard Deviation	2.75	1.23	0.10	0.33	0.08	0.27
Minimum	0.02	-3.87	0.04	-3.16	0.09	-2.36
25th percentile	0.43	-0.84	0.28	-1.29	0.24	-1.42
Median (50th percentile)	0.97	0.03	0.35	-1.06	0.29	-1.23
75th percentile	1.93	0.66	0.42	-0.88	0.35	-1.05
Maximum	28.51	3.35	0.66	-0.42	0.61	-0.49

Note: LMT=labor market tightness.

In terms of the share of women in leadership hires, we find a mean of 0.35 (35% of new hires in that month and industry and country were women). The standard deviation here is tighter relative to the mean at 0.1 than we see in LMT. This is reflected in the relatively narrow interquartile range, from 28% women to 42% women.

The share of women in leadership job applications is similar, although slightly lower. It is important to note that while the sample of industry and country combinations is the same for all three metrics, the user base that engages in each of the measured outcomes is not necessarily the same. Thus, we cannot infer from the metrics above the likelihood of women getting hired conditional on applying.

The country-industry level leadership hiring and applications time series are at times sparse, so for the sake of data quality we only consider country-by-industry time series which have at least an average of 50 women leadership hires and applications each month, and for which we have a contiguous series for the past 24 months. Refer to Appendix Table A.1 for the resulting country-by-industry combinations. At times, we also estimate the metrics at the overall country level (combining all industries), to reveal emerging trends at the country level. In these cases, we sum the postings, applications,

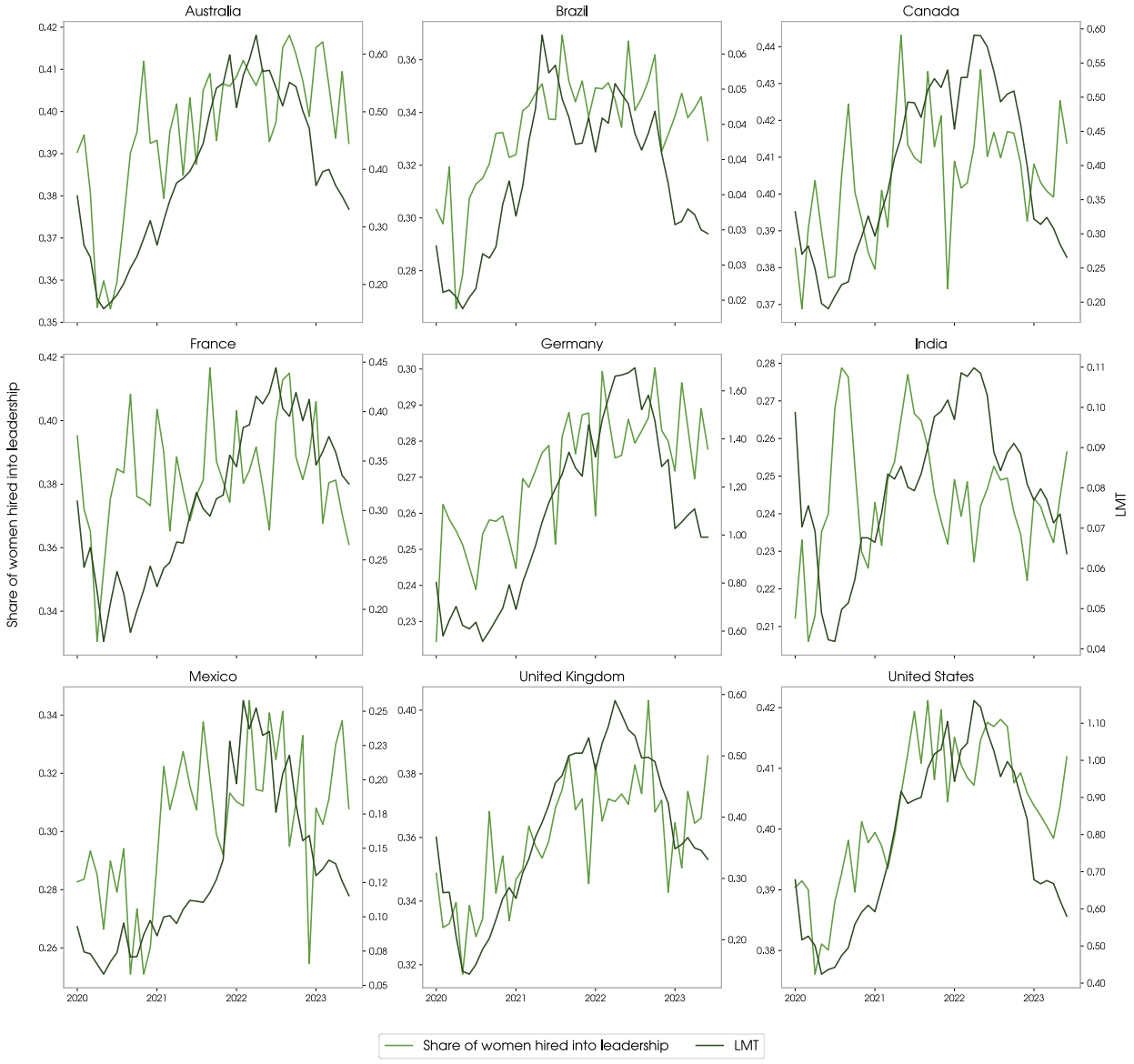
and hires data across all industries, and calculate the metrics ratios at the aggregated level.

Figure 1 shows the unadjusted time trends depicting the share of women hired into leadership roles alongside the LMT data at the country-level over time. These charts reveal some preliminary indications of an upward trend up until 2022, followed by a subsequent decline. This trend in labor conditions during the post-pandemic rebound and subsequent cooling has been previously documented (Bureau of Labor Statistics, 2023; LinkedIn Economic Graph, 2023). While LMT dipped, nearly returning to 2020 levels, the drop in the share of women hired into leadership roles is not as stark but still observable in all countries but Australia. This is suggestive of a positive correlation between the two.

Examining one of the countries, the United States, Figure 2 shows LMT and the share of women hired into leadership trends by industry group. The two metrics visually move together in some industries like Financial Services and Technology, Information, and Media. In some other industries, like in Government Administration, their relationship does not appear to bear the same positive relationship.

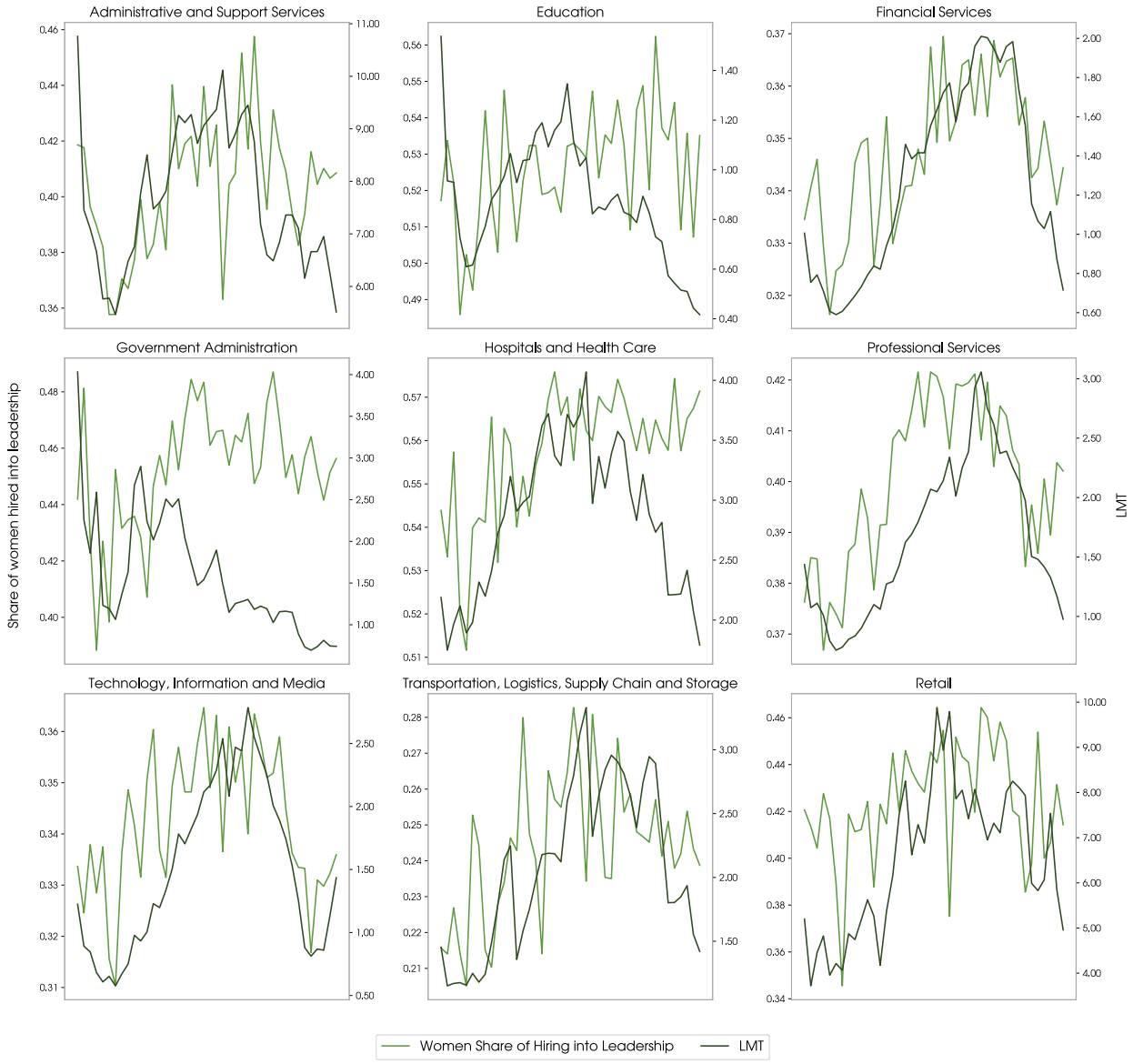
Appendix Figure A.1 and Figure A.2 show the trend of the share of women who apply to leadership positions, alongside the LMT data, at an aggregated country level and at the industry level for the United States. Unlike the hiring share and LMT, the application share has been visually increasing since 2020 for all the countries and industries considered, albeit with seasonal variation, suggesting an unlikely positive correlation with the other metrics.

Figure 1: Share of Women Hired into Leadership vs LMT by Country.



Note: LMT=labor market tightness

Figure 2: Share of Women Hired into Leadership vs LMT in the United States by Industry Group.



Note: LMT=labor market tightness.

3.2 Empirical Strategy

We first explain the research methodology used to address research question 1, the overall impact of changes in labor market conditions on the hiring of women into leadership positions. The first model we consider is the unconditional model. This has no control variables and offers a useful baseline to compare once we control for other factors.

Equation 1 presents this model. w_{ict} is the outcome of interest. For the sake of presentation, we discuss it in terms of our primary dependent variable, the equilibrium outcome of the share of new leadership hires who are women in industry i in country c and month/year t. The same models are used when we look at the labor supply-based dependent variable, the share of leadership applicants who are women. LMT_{ict} is the labor market tightness in industry i, country c, and month/year t. β is the key outcome of interest and represents the relationship between a unit change in LMT and the share of women hired into leadership. A positive coefficient for β represents a pro-cyclical relationship wherein women have increased representation among new leadership hires in strong labor markets but lower representation during weak labor market conditions, such as during recessions.

$$w_{ict} = \alpha + \beta LMT_{ict} + \varepsilon_{ict} \quad (1)$$

Note that for all models, we test both using levels and using logs. We generally prefer the log-log model, as β is then interpretable as an elasticity, and because LMT_{ict} is a ratio, for which movement in the variable is better captured in a log form. While equation 1 is a useful benchmark, it suffers from potential biases. For example, there are likely omitted variable biases. Some industries may have higher propensity to hire women while consistently be stronger in terms of labor market tightness, which would lead to an overestimate of β. This may be the case for example if an industry that is more likely to hire women and men equally have other practices related to higher productivity and the accompanying demand for talent. It could be the case that most of the variation in the variables is across industries. Say for example that industry A always has higher share of women in leadership and tends to have healthier labor markets, but that in reality these are due to other unrelated factors due to systematic differences between industries. This would induce a perceived relationship between LMT and the share hired into leadership without further controlling for these factors. Additionally, if there is an upwards trajectory over these years in women hired into leadership overall (unrelated to the labor market conditions) and most of our data frame was during expansionary

economic conditions, we may attribute the upward trajectory to the market conditions. Another bias may arise if women on average have lower work experience, and work experience is positively correlated with LMT as well as w, this can create biases.

To address these potential sources of bias, we estimate the model using a two-way fixed effects model. Conceptually, we identify β by variation within industry by country levels (thus, holding constant time-invariant differences for industry/country combinations) while also accounting for month-by-month fixed effects estimated across industries to account for common time trends and trajectories. Equation 2 presents this specification, which is the primary specification used in this paper.

$$w_{ict} = \alpha + \beta LMT_{ict} + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (2)$$

Here, ψ_{ic} represents industry-by-country fixed effects, and ϕ_t represents year-by-month fixed effects. Now, the identification of β is based on within-country/industry shifts in LMT while using all country/industries' trends to identify the baseline time-trend represented by ϕ_t.

The two-way fixed effects model is dependent on a strong timing assumption—that shifts in labor market conditions impact hiring of women into leadership in the same month. These strong timing assumptions, if violated, can lead to other biases. The assumption made is that the share of women hired into leadership shifts in the same month as LMT does. If there is a time lag between which firms observe shifts in LMT, allocate headcount, do interviews, make a hiring decision, and wait for the hire hires to start, this would create biases, likely attenuating our estimates towards zero. Thus, we explore different versions of equation 2 which change the timing assumption, as show in equation 3.

$$w_{ict} = \alpha + \beta LMT_{ict-s} + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (3)$$

We test the time shift for $s = 0$ through 11 and compare the estimates on β from each model. As an alternative to this specification, we also test models that do not use time fixed effects (which impose the strong timing assumption), but instead use a linear

time ($\delta\ \tilde{t}$) trend plus seasonal (monthly) fixed effects (μ_t), as shown in equation 4. Here, $\tilde{t} = t - t_0$ represents the number of years in fractions since January 2020 (the start of our data), and μ_t are monthly fixed effects (such as January, February, etc., and *not* a specific month/year like January 2020).

$$w_{ict} = \alpha + \beta LMT_{ict} + \psi_{ic} + \delta\ \tilde{t} + \mu_t + \varepsilon_{ict} \quad (4)$$

For additional flexibility, we test model 4 where the time slope δ is allowed to vary by industry, country, and industry by country, as shown in equations 4.1, 4.2, and 4.3. d_i, d_c, and d_{ic} are indicator variables for each industry, country, and country/industry combination, respectively.

$$w_{ict} = \alpha + \beta LMT_{ict} + \psi_{ic} + \delta_i \tilde{t} \times d_i + \mu_t + \varepsilon_{ict} \quad (4.1)$$

$$w_{ict} = \alpha + \beta LMT_{ict} + \psi_{ic} + \delta_c \tilde{t} \times d_c + \mu_t + \varepsilon_{ict} \quad (4.2)$$

$$w_{ict} = \alpha + \beta LMT_{ict} + \psi_{ic} + \delta_{ic} \tilde{t} \times d_{ic} + \mu_t + \varepsilon_{ict} \quad (4.3)$$

For research question two exploring heterogeneity, we first examine differences by industry and then by country. These are done through interactions with model 2, as shown in equations 2.1 and 2.2.

$$w_{ict} = \alpha + \beta_i LMT_{ict} \times d_i + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (2.1)$$

$$w_{ict} = \alpha + \beta_c LMT_{ict} \times d_c + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (2.2)$$

Another possible driver of heterogeneity could be the share of women employed in each industry and country combination. To estimate the effect of baseline female representation, we interact LMT_{ict} with how represented women are in the industry at the start of our analysis period. $ShareWomen_{ic}$ is the share of women employed in across all positions in the baseline month (first month of our sample) in industry i and country c. We decenter this by subtracting off the overall mean to yield $\widetilde{ShareWomen}_{ic}$, so that β_1

is the estimated impact of LMT at the mean level of baseline share of women. We also test a model where we discretize the baseline share of women into a variable equal to one if it is above 50%, and zero otherwise.

$$w_{ict} = \alpha + \beta_1 LMT_{ict} + \beta_2 LMT_{ict} \times \widetilde{ShareWomen}_{ic} + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (5.1)$$

$$w_{ict} = \alpha + \beta_1 LMT_{ict} + \beta_2 LMT_{ict} \times 1(ShareWomen_{ic} > 0.5) + \psi_{ic} + \phi_t + \varepsilon_{ict} \quad (5.2)$$

Finally, research question three is interested in the trends in hiring of women holding labor market conditions constant. We evaluate this in two ways: first, we plot out the time fixed effects ϕ_t from equation 2 over time. This gives us a non-parametric representation of the time trend, holding constant LMT. Second, we plot out δ from equation 4 over time. The first approach, plotting out the time fixed effects, allows us to also explore the second part of research question 3, whether the observed downturns in Figure 1 can be explained by changes in LMT—that is, holding LMT constant, do we still see a downturn in the estimated representation of women in leadership hires.

4. Results

4.1. Impact of LMT on share of women hired into leadership roles

We start by examining the results from the primary two-way fixed effects specification (equation 2), contrasted to the unadjusted model in equation 1. These results are presented in Table 2. For the unadjusted model, we find results going in opposite directions whether we use the level model or the log model. For the level model, we estimate that a one-unit increase in LMT (i.e., moving from 1 job post per active application to 2 job posts per active applicant) is associated with a 0.0004, or 0.04 percentage point, decrease in the share of new hires who are women. This runs counter to our hypothesis. On the other hand, the log-log model has the hypothesized positive sign and finds that a one percent increase in LMT is associated with a 0.055 percent increase in the share of women hired into leadership positions. If we include unit and time fixed effects, as shown in the right two columns, the coefficients are both positive, and both closer to zero (aligned with the hypothesis of attenuation bias without these

controls). The level model is not statistically significant and is small—a one unit change in LMT—which is a relatively large tightening of the labor market, slightly smaller than the interquartile range—is associated with a 0.03 percentage point increase in the share of women hired into leadership, which is small but not entirely insignificant. The log-log model is however statistically significant and suggests that a one percent increase in labor market tightness increases the share of women hired into leadership by 0.017 percent. Note that a unit change in the log LMT is around one standard deviation of the measure as well. While this relationship is small, it is economically meaningful, and suggests large changes in labor market conditions can indeed shift the share of women hired into leadership positions.

Table 2: Linear regression of Labor Market Tightness (LMT) on share of leadership hires who are women.

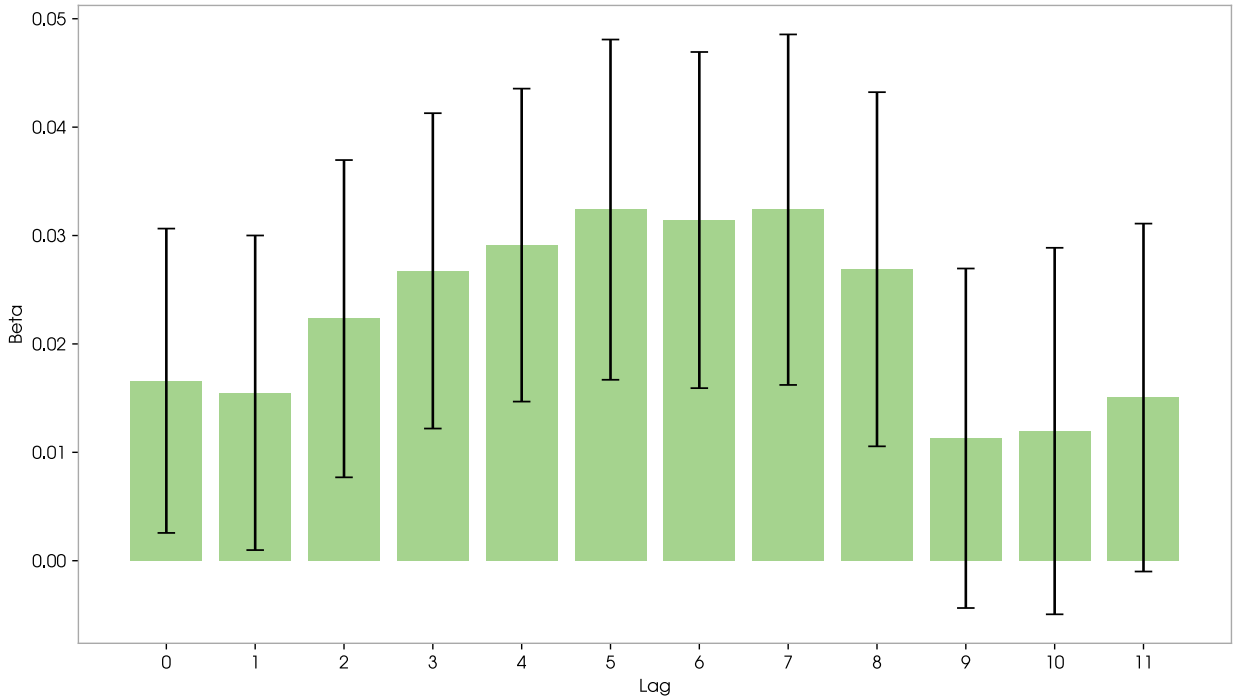
	Unconditional (eq 1)		TWFE (eq 2)	
	Level	Log	Level	Log
LMT	-0.0004	0.055 ***	0.0003	0.017 **
	(0.0004)	(0.004)	(0.0007)	(0.007)
Country × Industry FE	-	-	X	X
Time FE	-	-	X	X
Number of observations	6300	6300	6300	6300
R^2	0.000	0.043	0.858	0.838
AIC	-10678	3480	-22597	-7324
BIC	-10664	3494	-21301	-6028

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

Figure 3 presents the estimates of the impact based on the log-log model of equation 3 with different lags. This allows us to test the timing assumption and explore different potential lags in the response to shifts in labor market tightness and when hiring happens.

We find positive elasticities for any of the lags, but only statistically significant with zero through eight months of a lag. After that, the coefficients are sufficiently small to not be differentiable from no effect. Interestingly, the largest coefficient is for a six-month lag period, when the estimate is around 0.03 (up from 0.02 with no lag). This may reflect that for leadership hires, there is about a half-year lag between when a firm notices changes in the number of applicants and job openings, alters recruiting decisions, does the recruiting, interviews, makes offers, and has the new workers actually start their work. Going to longer lags, especially those that near one year, likely overextends the relationship and thus builds in noise into the estimate, given labor market conditions likely will have changed in the interim and firms will have made new decisions. Appendix Figure A.3 provides the same chart for the log model, and finds a similar shape, with statistically significant positive coefficients for the models with 3 to 7 months of lags.

Figure 3: Estimated elasticities depending on the number of months LMT is lagged by. Log-log model results.



Note: Whiskers represent 95% confidence intervals. Estimated coefficients from β in equation 3.

Despite the largest coefficients being found for a six-month lag, we opt to use the zero-lag model of equation 2 as our primary specification for future analyses. We do this both to be conservative in our approach (using the smaller of the estimates) with a model that does not impose this timing assumption based on magnitudes. Additionally, the zero-lag model of equation 2 has both the smallest Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC).

Table 3: Log-log Regressions with linear time trend and month fixed effects.

Equation	(4)	(4.1)	(4.2)	(4.3)
LMT	0.044***	0.043***	0.042***	0.050***
	(0.005)	(0.005)	(0.006)	(0.006)
Time elapsed (years)	0.019***			
	(0.002)			
Seasonal (month) FE	X	X	X	X
Time slope varies by country		X		
Time slope varies by industry			X	
Time slope varies by industry and country				X
Number of observations	6300	6300	6300	6300
R^2	0.835	0.836	0.837	0.843
AIC	-7279	-7302	-7302	-7277
BIC	-6179	-6128	-6094	-5172

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

Next, we estimate equation 4.1, 4.2, and 4.3, which weaken the timing assumption in a different way, namely by not using time fixed effects, but linear time trends plus monthly fixed effects. The results for the log model are shown in Table 3. Appendix Table A.4 presents the same results, but for the level model, where the findings are consistent

with this table. We note that the estimates of the elasticity are approximately twice as large when not controlling for the month-by-year fixed effects (as in Table 2) but for linear time trends and month fixed effects instead. Additionally, we note that the AIC from our primary specification of equation 2 is smaller than the AIC for any of these models, although BIC is smaller in most of these models. The larger coefficients may be because we are not accurately capturing the time trend with a flexible enough specification (as in the fixed effects version).

4.2. Heterogeneity in impact of LMT on hiring of women into leadership

We also examine heterogeneity in the estimated elasticity by country, industry, and baseline share of women in leadership. First consider heterogeneity by country, shown in Figure 4. Appendix Figure A.4 presents the same results for the level model. We find that there is substantial variation across countries in the measured elasticity, with France and India even having negative estimates (a larger share of leadership hires are women when labor market conditions worsen). However, most are positive and show the pro-cyclical relationship found in the aggregate estimate.

Figure 5 shows heterogeneity by industry, with Appendix Figure A.5 showing the same results for the level model. We again find meaningful variation across industries. While some have negative estimated elasticities, none of these are statistically significant. Meanwhile, five of the 17 industries have positive and statistically significant elasticities estimated. The largest estimates are for Oil, Gas, and Mining; Construction; Administrative and Support Services; Utilities; Transportation, Logistics, Supply Chain and Storage; and Financial Services. These results are suggestive of larger responsiveness to labor market conditions in industries with lower representation of women (Table A.5 in the Appendix), given the higher elasticities for these industries, many of which tend to be more male dominated. We examine this more directly next.

Figure 4: Heterogeneity in the estimated elasticity of labor market tightness on hiring of women into leadership, by country. Log-log model results.

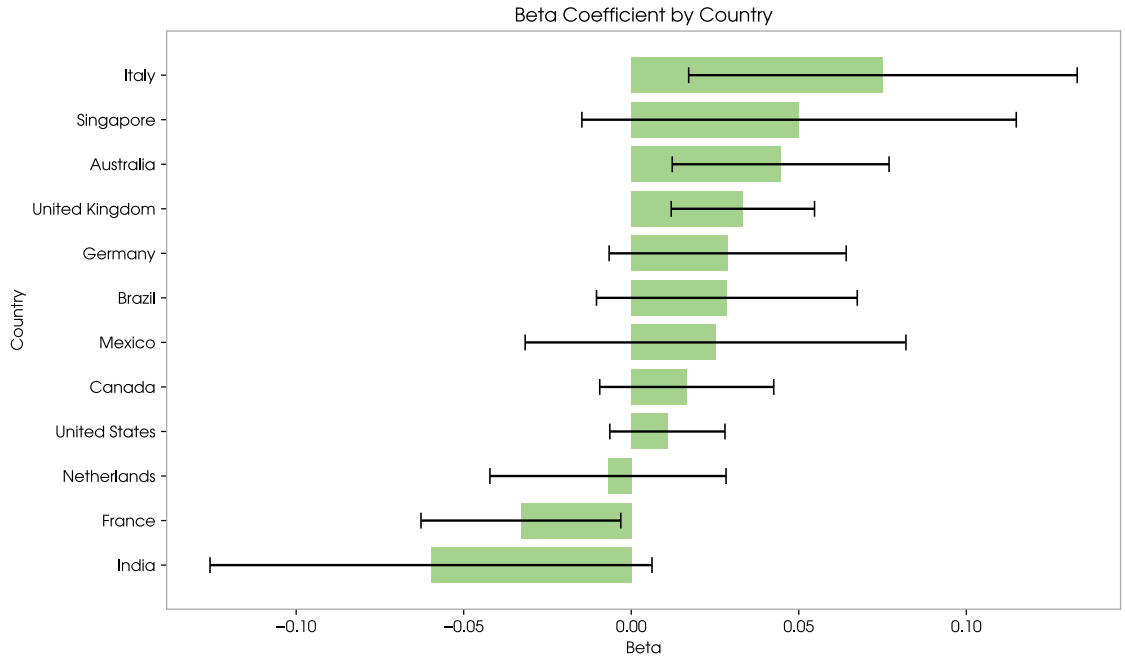
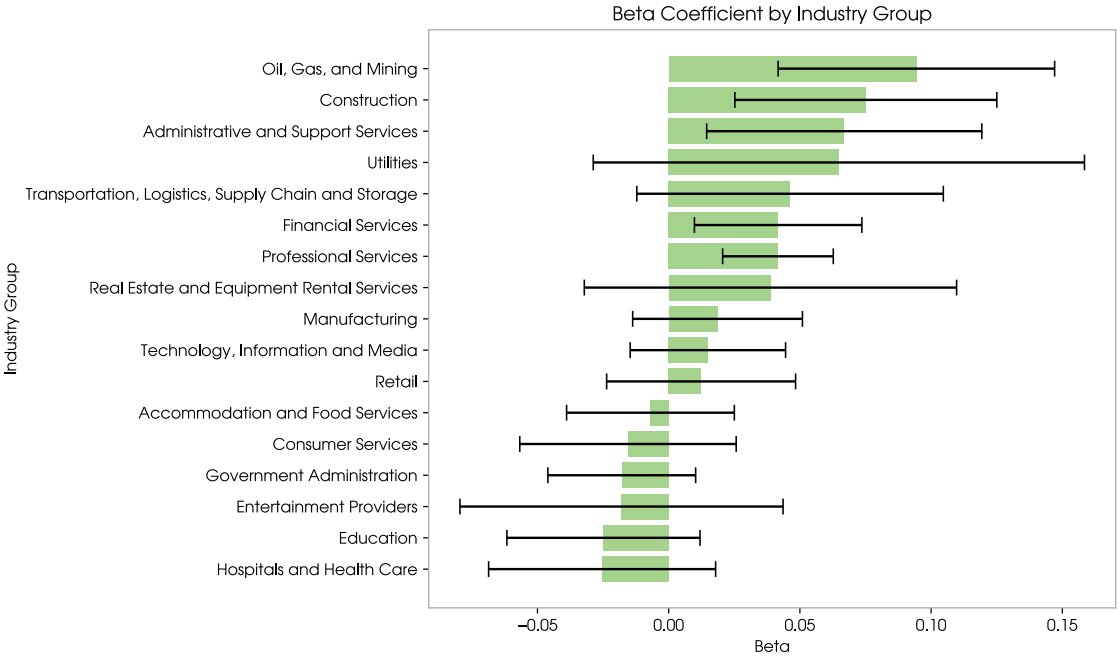


Figure 5: Heterogeneity in the estimated elasticity of labor market tightness on hiring of women into leadership, by industry. Log-log model results.



The final dimension of heterogeneity we explore is how the effect differs by the baseline (January 2020) share of women in the workforce within each industry and country combination. Table 4 presents these results. In the first two columns, we interact LMT with the de-centered baseline share of women in the workforce. For the level model, we again do not find statistically significant results. For the log model, we find the elasticity at the mean (given the zero-centering) of 0.018, as before (it was 0.017). We additionally find that each 0.1-point increase in the baseline share of women in the workforce is associated with a 0.158 point decrease in the elasticity. In other words, having a higher share of women in the industry overall makes the industry less sensitive to labor market conditions with respect to the hiring of women into leadership.

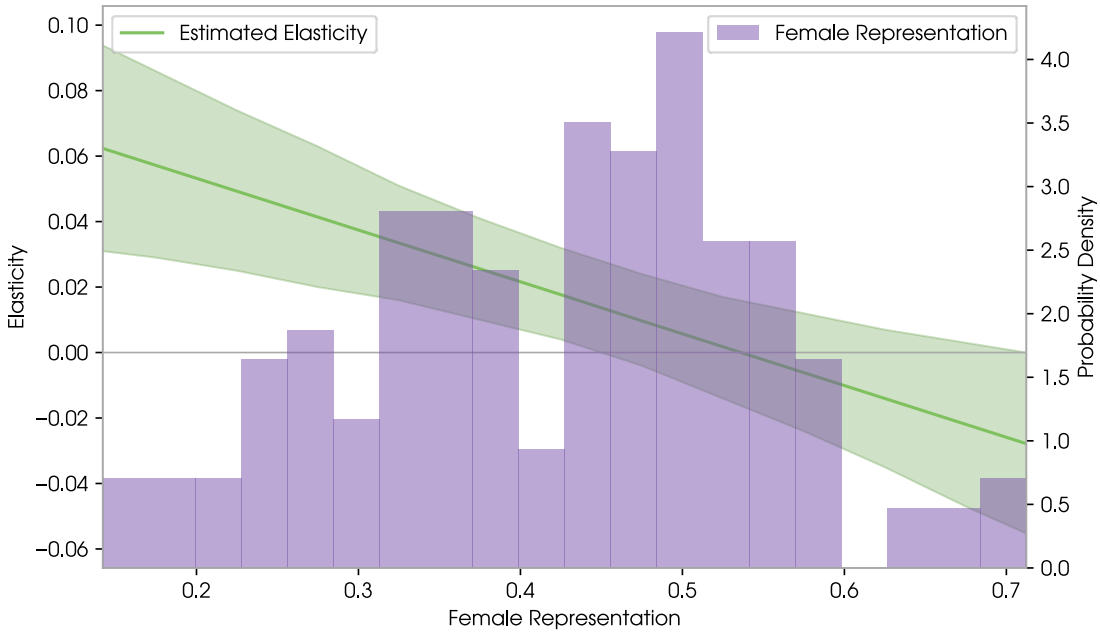
Table 4: Results by baseline share of women in leadership.

	Continuous baseline share of women in workforce		Discretized baseline share of women in workforce	
	Level	Log	Level	Log
LMT	0.0004	0.018**	0.0002	0.026***
	(0.0007)	(0.007)	(0.0008)	(0.008)
Baseline share of women × LMT	-0.0034	-0.158***		
	(0.0052)	(0.047)		
1(Baseline share of women>0.5) × LMT			-0.0004	-0.026**
			(0.0014)	(0.010)
Country × Industry FE	X	X	X	X
Time FE	X	X	X	X
Number of observations	6300	6300	6300	6300
R^2	0.858	0.838	0.858	0.838
AIC	-22595	-7339	-22595	-7329
BIC	-21293	-6036	-21293	-6026

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

Figure 6 presents the estimated elasticity along different values of baseline share of women in each industry overall, based on column 2 of Table 4. We also chart alongside it the histogram of baseline shares of women in the workforce across industry and country, to give a sense of the support wherein the estimated elasticities arise. We interestingly find positive and statistically significant elasticities for industries with shares below around 0.5—in other words, industries with fewer than half of the workforce in January 2020 being women. We also find a large density of industries and countries for which this is relevant. On the other hand, when the baseline share of women in the workforce is above around 0.46, there is no statistically significant elasticity. Thus, it is only in industries where women are a minority that we see fewer women hired into leadership when labor market conditions worsen.

Figure 6: Histogram of Female Representation across all industry and country combinations, with their relative estimated elasticity.



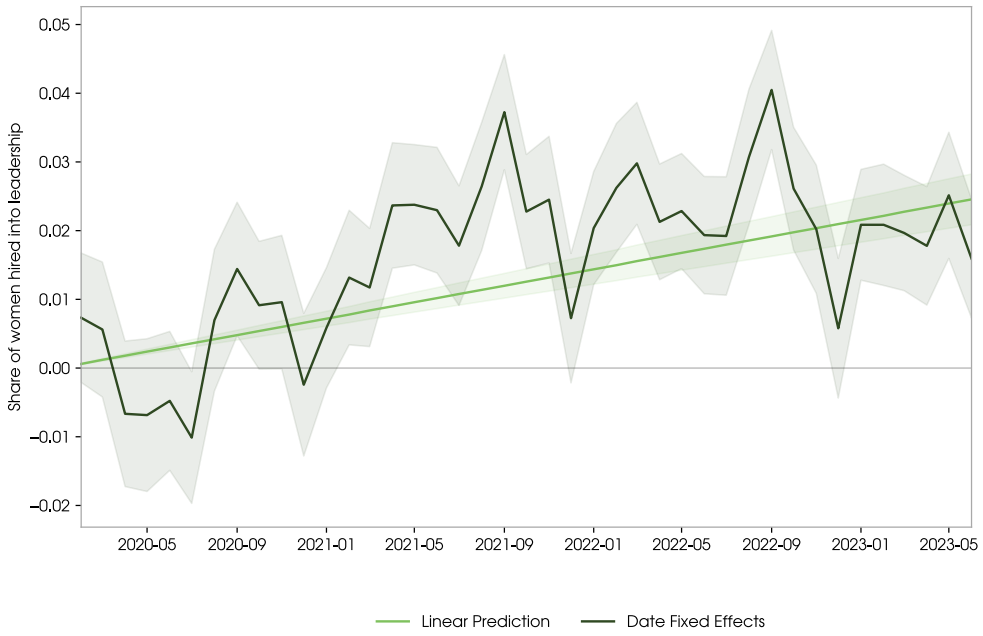
An alternative approach to this is shown in the last two columns of Table 4 (representing equation 5.2), where we interact with an indicator for having a baseline share of leadership who are women being above 0.5. Consistent with the findings of Figure 6, we find in the log-log model a positive elasticity of 0.026 for industries with

baseline share of women in the workforce below 50%. However, for firms with more than half of their workforce who are women, the estimated elasticity is 0.026-0.026=0 and insignificant. It is only among minority-women industries that there is the relationship between the labor market conditions and hiring of women into leadership positions.

4.3. Estimates of trajectory

In addition, we explore estimates of the trajectory of women being hired into leadership, holding constant LMT. Figure 7 shows both the linear trend estimated from equation 4 as well as the fixed effects estimated from equation 2, using their level form. However, the insights derived from this model and discussed below are the same when using the log-log model (as shown in Appendix Figure A.6). A lagged version of this analysis is presented in the Appendix.[1]

Figure 7: Global secular trend - time covariate coefficients and date fixed effects. Level model.



[1] Appendix Figures A.5 and A.6 show the linear trends under different assumptions of how many lags to measure between labor market tightness and hiring, such as is shown in Figure 3. Appendix Figures A.7 and A.8 show the same for the fixed effects trends. The upward trajectory measured decreases with further lags between the two measures. However, this may at least in part be due to including fewer initial months and so measuring the trajectory from a more recent period (due to dropping initial months when using the lags to build the data).

The linear model and fixed effects model both show trends that are relative to the baseline (January 2020) value starting at zero. In both cases, we see evidence for encouragement, with a higher share of women being hired into leadership each year on average. Taking the linear trend for example, we are now 0.02 (or 2 percentage points) higher in October 2023 than the average share in January 2020. This is in contrast to raw trends shown in Figure 1, which showed some evidence of stagnation or even in some countries of reversal. These findings suggest that this was largely due to the downturn in labor market conditions, and not reversal of the underlying secular trend towards more women being hired into leadership positions. The fixed effects trendline does not contradict this narrative either. While it does not precisely follow the linear trend (e.g., it captures the residual downtick in women hired into leadership at the onset of the COVID-19 pandemic), it generally follows the upward trajectory.

We further explore the linear time trend shown globally in Figure 7, but across industries and countries. Figure 8 shows the trend by industry group. We find positive time trends for all industries, although only statistically significant for 12 of 17 industries. The group with the largest increase is Oil, Gas, Mining, at 1.2 percentage point increase each year. Other traditionally male-dominated industries also show positive, statistically significant growth in the share of women hired into leadership, including construction and manufacturing.

Figure 9 presents the trends across the 12 countries. Again, each country has a positive trajectory, although three of them (India, Netherlands, and France) have an estimate that is not statistically significant. Italy, Brazil, and the United Kingdom have the steepest trajectories at 1.5, 1.3, and 1.0 percentage point increase per year.

Figure 8. Time interaction coefficient by industry group, from equation 4.1 (level).

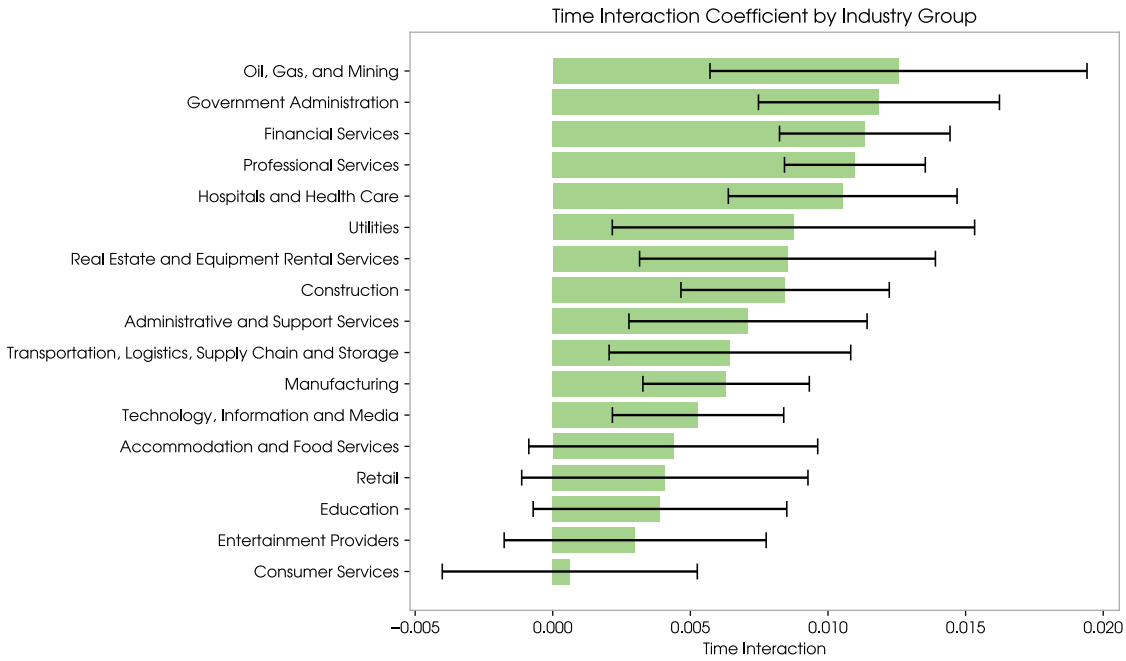
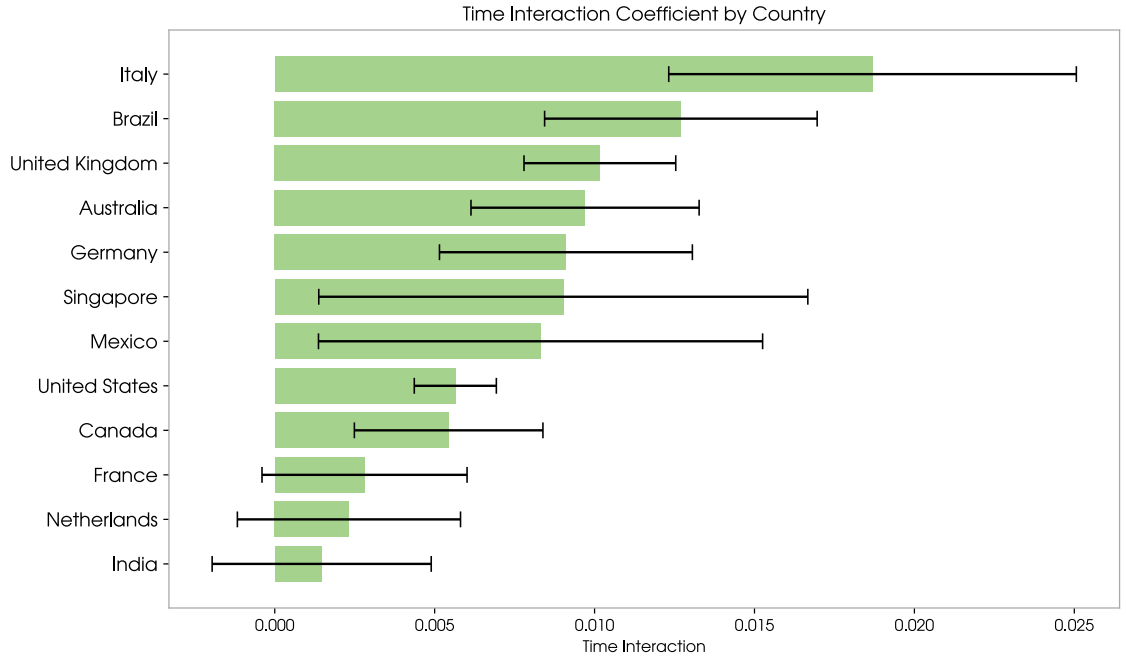


Figure 9. Time interaction coefficient by country, from equation 4.2 (level).



4.4. Impact of labor market tightness on share of leadership applications which are from women

Earlier, we illustrated that worsened labor conditions contribute to a diminished representation of women among new leadership hires. Hiring is an equilibrium outcome, implying that the observed measure may stem from changes in labor supply, labor demand, or a combination of both factors. To explore deeper into the estimated relationship, we replicate our methodology to investigate the degree to which it is influenced by shifts in labor supply, specifically focusing on the impact of changes in labor market conditions on the proportion of applications for leadership positions which are submitted by women as opposed to by men.

Table 5 presents the primary estimates concerning the proportion of women among leadership applicants. In Table 2, we established a positive, or procyclical, relationship between unfavorable labor market conditions and a reduced share of newly hired women in leadership roles. However, here for applicants, in the adjusted models (eq 2), we observe a negative, or countercyclical impact on the share of leadership applicants who are women. According to the level model, a substantial increase in labor market tightness, slightly smaller than the interquartile range, corresponds to a marginal 0.07 percentage point decline in the share of women applying for leadership roles – a relatively modest yet noteworthy effect. In the log-log model, a one percent rise in labor market tightness results in a 0.0124 percent decrease in the share of women hired into leadership positions. This estimate is slightly smaller in magnitude than the elasticity estimated in Table 2 for new hires, but as noted is in the opposite direction. Remember again that a unit change in log LMT is approximately one standard deviation of the measure. Importantly, these findings stand in opposition to the equilibrium findings – where worse labor market conditions lead to a diminished share of women hired into leadership roles – and imply that these are not driven by variation in labor supply (fewer women applying for those leadership positions).

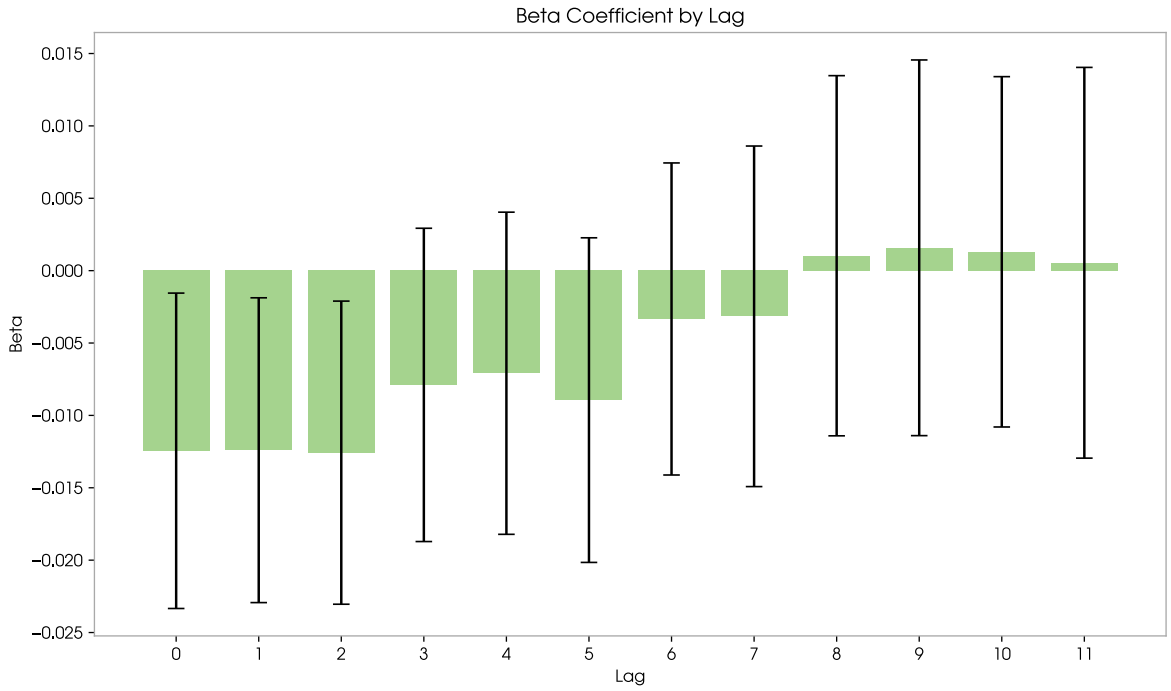
Table 5: Linear regression of Labor Market Tightness (LMT) on share of leadership applications who are women.

	Unconditional (eq 1)		TWFE (eq 2)	
	Level	Log	Level	Log
LMT	-0.0012***	0.0449***	-0.0007*	-0.0124**
	(0.0003)	(0.0032)	(0.0004)	(0.0056)
Country × Industry FE	-	-	X	X
Time FE	-	-	X	X
Number of observations	6300	6300	6300	6300
R^2	0.002	0.041	0.874	0.872
AIC	-14379	1237	-27057	-11061
BIC	-14366	1251	-25762	-9765

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

Figure 9 illustrates the estimated log-log elasticity under varying assumptions about the timing. In contrast to the differences in the elasticities observed in leadership hires depending on the timing assumption (Figure 3), which peak at approximately a 5-7 month lag (reflecting the time required for observing labor market conditions, receiving applications, conducting interviews, and making hires), no such lag is evident for applications. The elasticities at zero, one, or two-month lags display the largest, and solely statistically significant, magnitudes. This observation aligns with expectations, considering that a shorter lag with a more immediate response is anticipated, as this timeframe does not encompass the additional time required for interviews and hiring decisions.

Figure 9: Estimated elasticities for applications to leadership positions, depending on number of months LMT is lagged by. Log-log model results.



Appendix Figures A.10 and A.12 depict the estimated elasticities by country and industry, respectively, revealing again a dispersion in these values. Particularly in the case of industries, the results again indicate a robust connection between the elasticities between labor market conditions and the share of women applying for leadership positions, and how male-dominated the industry is, consistent with our findings for leadership hires. We explore this variation in estimated elasticities based on the baseline share of women in the industry and country. Table 6 displays the regression coefficients. In the model incorporating the interaction between LMT and an indicator for majority women at baseline, we observe no discernible correlation between LMT and the share of leadership applicants who are women in minority industry/country groups. However, consistent with previous evidence, there is an indication that, in instances where the baseline share of women is higher, the relationship between labor market conditions and the share of leadership applicants who are women becomes more negative (or counter-cyclical).

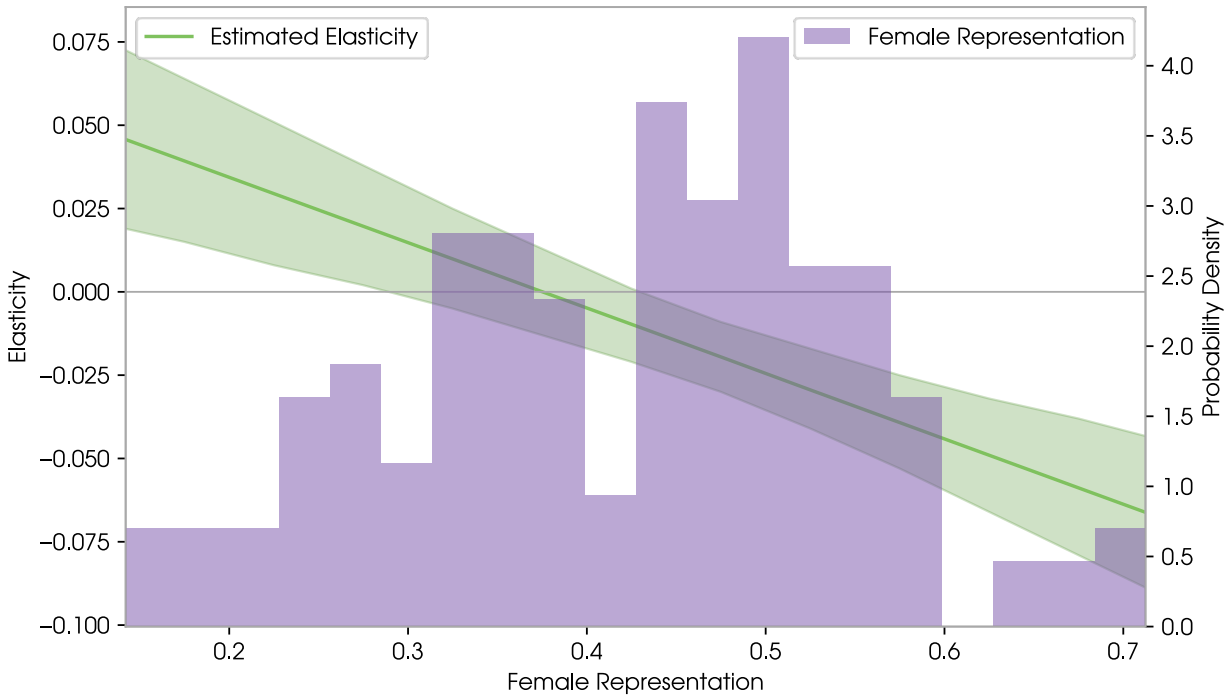
Table 6: Results by baseline share of women in leadership.

	Continuous baseline share of women in workforce		Discretized baseline share of women in workforce	
	Level	Log	Level	Log
LMT	-0.0005	-0.0097**	-0.0004	-0.0014
	(0.0004)	(0.006)	(0.0005)	(0.0061)
Baseline share of women × LMT	-0.0108**	-0.1962***		
	(0.0047)	(0.0402)		
1(Baseline share of women>0.5) × LMT			-0.0009	-0.0323***
			(0.0008)	(0.0083)
Country × Industry FE	X	X	X	X
Time FE	X	X	X	X
Number of observations	6300	6300	6300	6300
R^2	0.875	0.873	0.874	0.872
AIC	-27006	-11106	-27057	-11078
BIC	-25763	-9804	-25754	-9776

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

This phenomenon is clearly illustrated in Figure 10. In industries and countries where women constitute the majority of workers, a deterioration in labor market conditions leads to an increase in the share of women applying for leadership positions. Meanwhile, there is no strong relationship among the majority of observations with minority share women. One potential explanation for this trend could be that, during challenging labor market conditions, women may be more inclined to seek opportunities in female-dominated industries, resulting in a higher number of applications for leadership roles within those sectors.

Figure 10: Histogram of Female Representation across all industry and country combinations, with their relative estimated elasticity between labor market conditions and share of leadership applicants who are women.



5. Discussion

Despite decades of progress for women in the workforce, they are still underrepresented in leadership positions across the globe. Of additional concern is that women may bear a disproportionate burden of economic downturns. We find this to be the case in this paper. Using new data from LinkedIn across several countries and industries, we find that decreases in LMT—having fewer job postings available for each active applicant—leads to a smaller share of the new hires into leadership positions being women. This effect is robust across many specifications. In our preferred specification, we estimate an elasticity of 0.017. Put another way, a transition from a strong labor market where there are 3 job postings per every two applicants to one where there are only 1 job posting per every two applicants is associated with a log decrease in share of new hires

of around 0.02, or a 2 percent decrease in the share of women hired into leadership.[2] This is roughly equivalent to 3 years of gains in the secular trajectory (0.006 gains per year). The relationship may indeed be even larger, as this relies on our conservative model—models with multiple lags between the month of LMT and new leadership hires, as well as those with no time fixed effects but linear and seasonal controls, leads to elasticities that are around 2 times larger.

We further find evidence that there is variation across industries and countries. However, one important determinant to this responsiveness of share of new hires to labor market conditions is the baseline share of women in the industry. In fact, the observed relationship is only observed among industries with a baseline share of women below 50% (with an elasticity of 0.026), increasing the elasticity estimate to around zero among these industries by countries. Meanwhile, in industries where women are the majority of the workforce, the share of women hired into leadership roles did not depend on the labor market conditions.

Nevertheless, our analysis suggests that this association is unlikely to be rooted in labor supply dynamics, meaning that women are not less inclined than men to apply for leadership positions during challenging labor markets. In fact, if there is any difference, women are more likely to submit applications, particularly to roles in female-dominated industries. Therefore, the observed pattern, wherein the share of women hired into leadership roles decreases during economic downturns and increases during stronger labor markets, must be primarily influenced by the actions and decisions of the firms and hirers. To address and mitigate these trends, policies aimed at strengthening the representation of women in leadership, especially in male-dominated industries during recessions, should concentrate on the practices and decisions of hirers rather than the applicants.

We also show that there is reason to be encouraged. There is an overall upward trajectory in the share of leadership hires who are women across the past three years, increasing across the countries at a rate of approximately half of a percentage point per

[2] (ln(1.5)-ln(0.5))*0.017=0.019

year. The recent downturns in the share of women hired into leadership in some countries can be explained by decreases in labor market conditions.

Ultimately, it would be better if the hiring of women into leadership did not decrease when labor market conditions worsen, exposing them to additional vulnerabilities which could persist for years. The persistent underrepresentation of women in leadership positions globally constitutes a substantial and ongoing source of inequality, impacting economic productivity, decision-making processes, and overall organizational effectiveness. As demonstrated by the findings, economic downturns exacerbate this gender disparity, presenting a critical challenge that demands attention.

Despite the progress being made, there is still far to go. Our results show that many years of equitable hiring and advancement in the retention of women at all levels of seniority will be required to move the needle sufficiently to yield equity in the share of leaders who are women. Addressing the underrepresentation of women in leadership positions and in more male-dominated industries requires multifaceted policy interventions. First and foremost, proactive measures should be implemented to promote gender diversity in hiring processes, including targeted recruitment efforts, removing obstacles to internal mobility, mentorship programs, and diversity training. Establishing and enforcing policies that accommodate evolving needs and promote work-life balance for all genders, such as flexible schedules and parental leave, can also contribute to a more inclusive leadership landscape. Furthermore, promoting transparency and accountability in organizations' diversity initiatives can foster a culture of inclusivity.

While our study provides valuable insights, it is important to acknowledge its limitations. First, our data source, LinkedIn, may introduce certain biases, potentially underrepresenting specific demographics or industries. Additionally, our analysis focuses on trends within a specific time frame and may not capture long-term dynamics or unexpected external factors. While we have nearly four years of data, the results may be sensitive and specific to the post-pandemic recovery and subsequent downturn, and does not contain information across other business cycles, or even one full business cycle across the economy. Finally, despite a methodology which leverages unit and time fixed effects helping control for the primary potential sources of omitted variable bias and all

of our robustness checks pointing towards the existence of a positive elasticity, we may not fully have unearthed the causal impact if there are remaining time-varying confounders and underlying contemporaneous policy changes correlated both with changes in labor market tightness and the share of new leadership hires who are women.

This study opens avenues for further research in several areas. Firstly, deeper exploration into the specific mechanisms through which economic downturns impact the hiring of women into leadership roles would provide valuable insights. Additionally, comparative analyses across industries and regions could offer a more nuanced understanding of the factors driving gender disparities. Longitudinal studies tracking the progression of women in leadership roles over extended periods would allow for a more comprehensive evaluation of trends and patterns.

In conclusion, addressing the underrepresentation of women in leadership positions is not only a matter of equity but also a critical step towards achieving more efficient and effective organizations. By recognizing the complex interplay between labor market conditions and gender diversity in leadership, we can work towards creating environments that empower and elevate the contributions of women in the workforce.

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APPENDIX

Supplementary Tables and Figures

Table A.1: Industry and country combinations in the sample.

Industry group	Country
Accommodation and Food Services	Australia, Brazil, Canada, France, Germany, India, United Kingdom, United States
Administrative and Support Services	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Construction	Australia, Brazil, Canada, France, India, Netherlands, United Kingdom, United States
Consumer Services	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Education	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Entertainment Providers	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Financial Services	Australia, Brazil, Canada, France, Germany, India, Italy, Mexico, Netherlands, Singapore, United Kingdom, United States
Government Administration	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Hospitals and Health Care	Australia, Brazil, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Manufacturing	Australia, Brazil, Canada, France, Germany, India, Italy, Mexico, Netherlands, Singapore, United Kingdom, United States
Oil, Gas, and Mining	Australia, Canada, United Kingdom, United States
Professional Services	Australia, Brazil, Canada, France, Germany, India, Italy, Mexico, Netherlands, Singapore, United Kingdom, United States
Real Estate and Equipment Rental Services	Australia, Canada, France, Germany, India, United Kingdom, United States
Retail	Australia, Brazil, Canada, France, Germany, India, Italy, Netherlands, United Kingdom, United States
Technology, Information and Media	Australia, Brazil, Canada, France, Germany, India, Italy, Mexico, Netherlands, Singapore, United Kingdom, United States
Transportation, Logistics, Supply Chain and Storage	Australia, Canada, France, Germany, India, Netherlands, United Kingdom, United States
Utilities	Germany, United Kingdom, United States

Table A.2: Summary statistics table by country.

Country	LMT					Share of Women Hired in Leadership Positions				
	mean	*std*	*median*	*min*	*max*	*mean*	*std*	*median*	*min*	*max*
Australia	1.53	1.68	1.08	0.24	11.04	0.39	0.11	0.37	0.12	0.65
Brazil	0.16	0.13	0.12	0.02	0.99	0.34	0.08	0.35	0.09	0.54
Canada	1.42	1.04	1.14	0.25	7.36	0.4	0.11	0.39	0.17	0.66
France	1.24	1.08	0.88	0.29	7.73	0.38	0.09	0.39	0.11	0.61
Germany	6.01	5.16	4.54	0.64	28.51	0.3	0.07	0.29	0.07	0.55
India	0.24	0.14	0.2	0.06	0.96	0.25	0.09	0.24	0.04	0.54
Italy	0.29	0.21	0.2	0.06	0.94	0.34	0.06	0.34	0.16	0.46
Mexico	0.44	0.37	0.33	0.07	2.05	0.29	0.05	0.29	0.17	0.43
Netherlands	3.38	3.38	2.18	0.54	16.08	0.35	0.11	0.33	0.08	0.61
Singapore	0.63	0.31	0.58	0.19	1.44	0.34	0.05	0.34	0.18	0.46
United Kingdom	1.31	1.21	0.94	0.19	7.25	0.35	0.1	0.34	0.13	0.57
United States	2.42	2.03	1.75	0.37	10.76	0.38	0.11	0.39	0.14	0.58

Note: LMT=labor market tightness.

Table A.3: Summary statistics table by industry.

Country	LMT					Share of Women Hired in Leadership Positions				
	mean	*std*	*median*	*min*	*max*	*mean*	*std*	*median*	*min*	*max*
Accommodation and Food Services	1.7	1.55	1.3	0.07	7.36	0.33	0.08	0.34	0.06	0.54
Administrative and Support Services	6.97	6.4	5.47	0.2	28.51	0.36	0.06	0.36	0.2	0.58
Construction	1.82	2.53	1.1	0.02	14.25	0.19	0.05	0.2	0.04	0.32
Consumer Services	1.85	1.92	1.39	0.08	14.19	0.48	0.08	0.49	0.27	0.65
Education	1.33	2.09	0.73	0.06	16.75	0.46	0.07	0.47	0.23	0.64
Entertainment Providers	1.29	1.04	1.08	0.07	5.99	0.38	0.07	0.4	0.14	0.58
Financial Services	0.69	0.63	0.5	0.03	2.69	0.32	0.06	0.33	0.16	0.45
Government Administration	1.56	2.16	0.83	0.06	10.83	0.43	0.07	0.44	0.23	0.6
Hospitals and Health Care	2.42	2.68	1.68	0.04	14.6	0.47	0.11	0.51	0.17	0.66
Manufacturing	0.68	0.57	0.57	0.02	2.38	0.28	0.06	0.29	0.12	0.46
Oil, Gas, and Mining	0.86	0.43	0.81	0.25	2.21	0.24	0.05	0.23	0.13	0.4
Professional Services	1.07	0.97	0.79	0.08	5.62	0.36	0.05	0.37	0.2	0.5
Real Estate and Equipment Rental Services	1.8	1.91	1.16	0.1	10.04	0.31	0.08	0.32	0.1	0.48
Retail	2.32	2.73	1.15	0.03	13.31	0.37	0.07	0.39	0.15	0.54
Technology, Information and Media	0.98	0.74	0.78	0.09	3.51	0.31	0.05	0.32	0.17	0.45
Transportation, Logistics, Supply Chain and Storage	2.04	2.61	1.24	0.08	12.87	0.25	0.06	0.25	0.07	0.41
Utilities	3.83	2.34	3.05	0.68	10.55	0.26	0.04	0.27	0.1	0.36

Note: LMT=labor market tightness.

Table A.4: Level Regressions with linear time trend and month fixed effects.

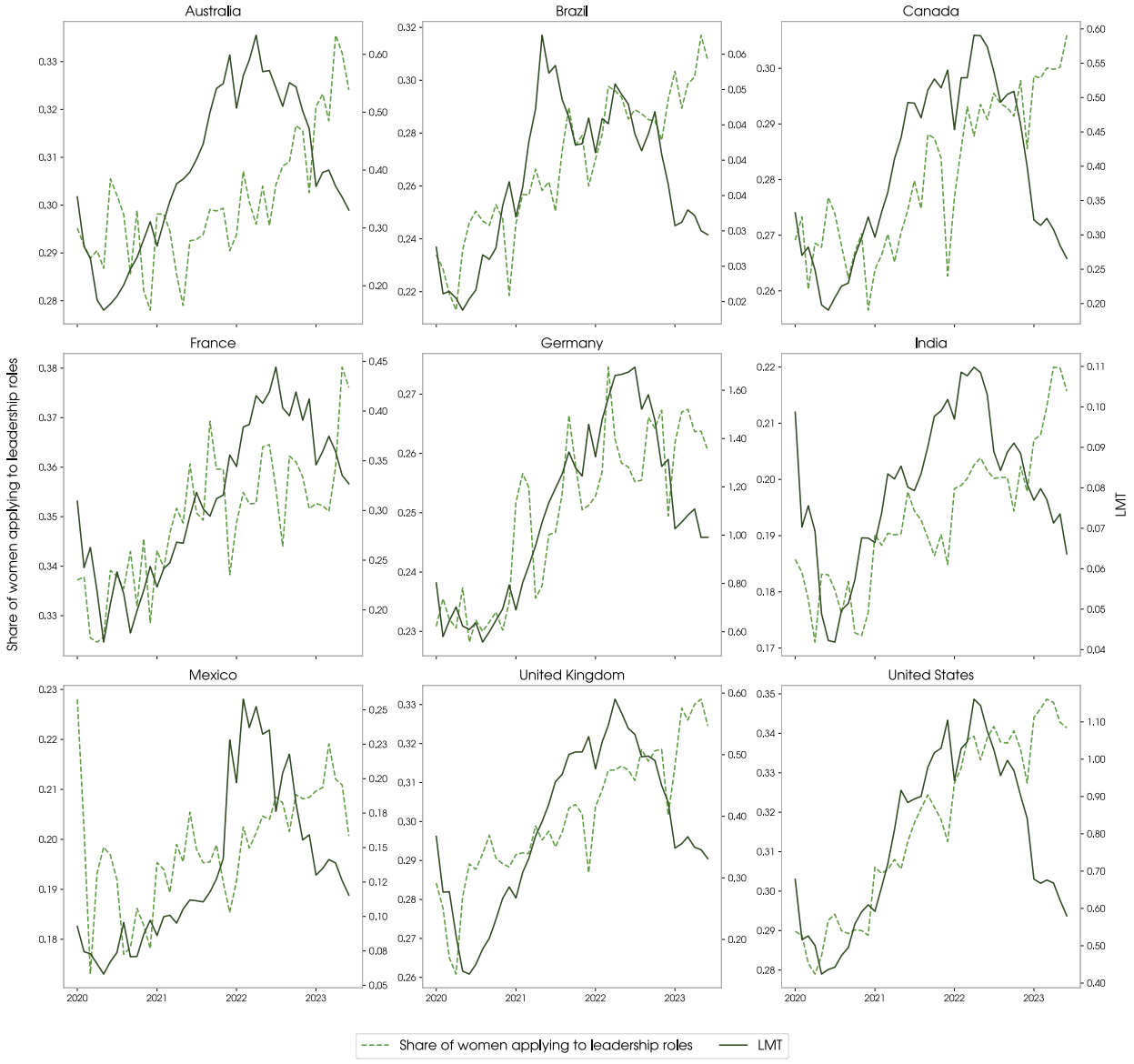
Equation	(4)	(4.1)	(4.2)	(4.3)
LMT	0.002 ***	0.002 ***	0.002 ***	0.003 ***
	(0.001)	(0.001)	(0.001)	(0.001)
Time elapsed (years)	0.007 ***			
	(0.001)			
Seasonal (month) FE	X	X	X	X
Time slope varies by country		X		
Time slope varies by industry			X	
Time slope varies by industry and country				X
Number of observations	6300	6300	6300	6300
R^2	0.856	0.855	0.861	0.856
AIC	-22544	-22510	-22473	-22544
BIC	-21370	-21302	-20368	-21370

Note: standard errors in parentheses. LMT: labor market tightness. AIC: Akaike information criterion. BIC: Bayesian information criterion.

Table A.5: Time average (2019-2023) of the share of women employed in senior leadership positions and overall, by industry. Averaged across countries.

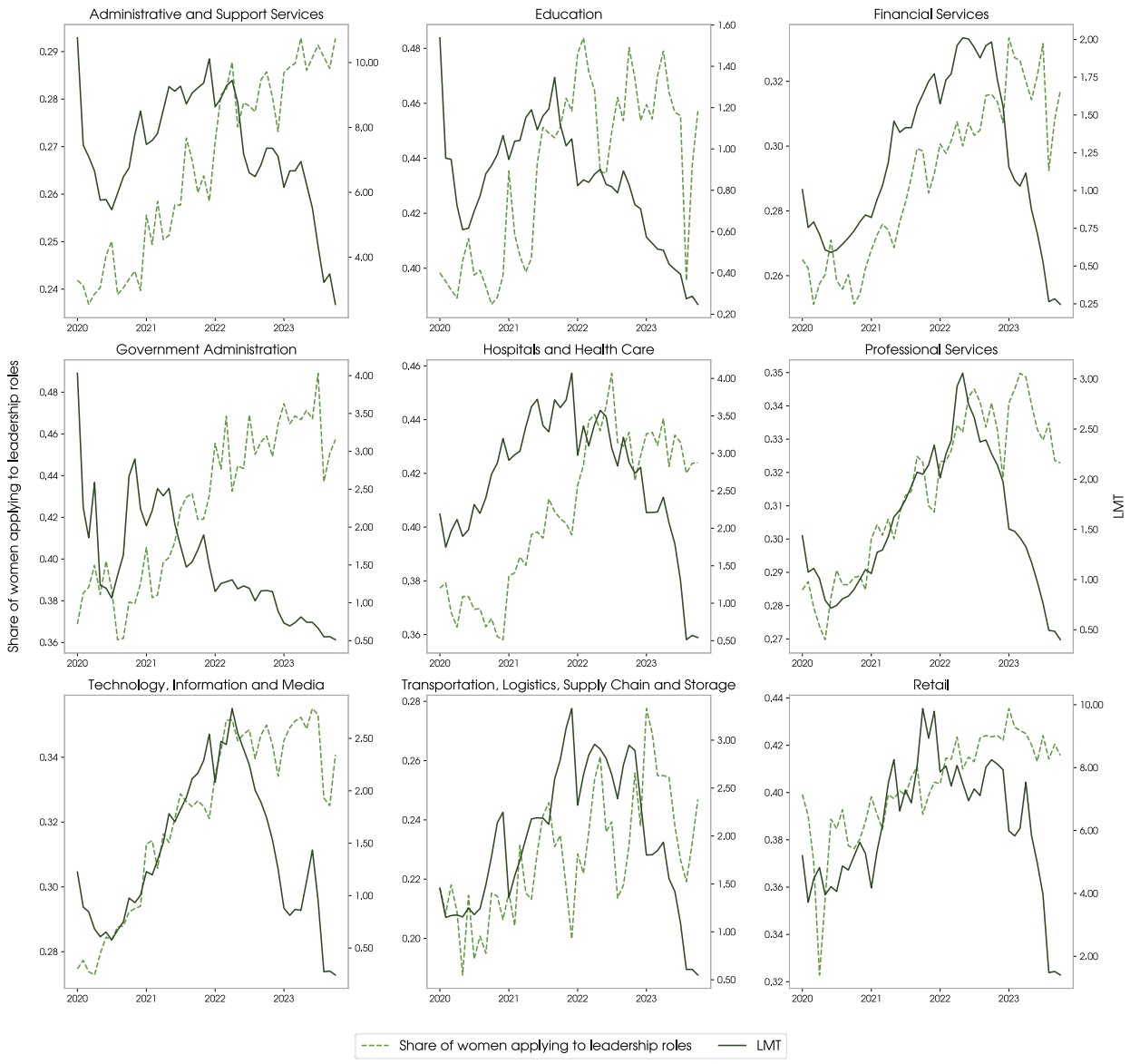
Industry Group	Overall	Senior Leaders
Accommodation and Food Services	45.0%	31.0%
Administrative and Support Services	47.2%	33.2%
Construction	22.9%	15.0%
Consumer Services	53.7%	41.5%
Education	53.9%	43.5%
Entertainment Providers	47.2%	34.6%
Financial Services	42.0%	29.2%
Government Administration	49.3%	40.0%
Hospitals and Health Care	62.3%	43.6%
Manufacturing	32.9%	23.1%
Oil, Gas, and Mining	23.9%	17.8%
Professional Services	42.1%	30.0%
Real Estate and Equipment Rental Services	42.3%	27.0%
Retail	49.0%	34.8%
Technology, Information and Media	36.2%	26.3%
Transportation, Logistics, Supply Chain and Storage	31.5%	21.4%
Utilities	31.6%	23.8%

Figure A.1 Share of Women Applying to Leadership Roles vs LMT by Country



Note: LMT=labor market tightness

Figure A.2: Share of Women Applying to Leadership Roles vs LMT in the United States by Industry Group



Note: LMT=labor market tightness.

Figure A.3: Bar plot of beta from eq. 3 level model across lags with confidence interval whiskers

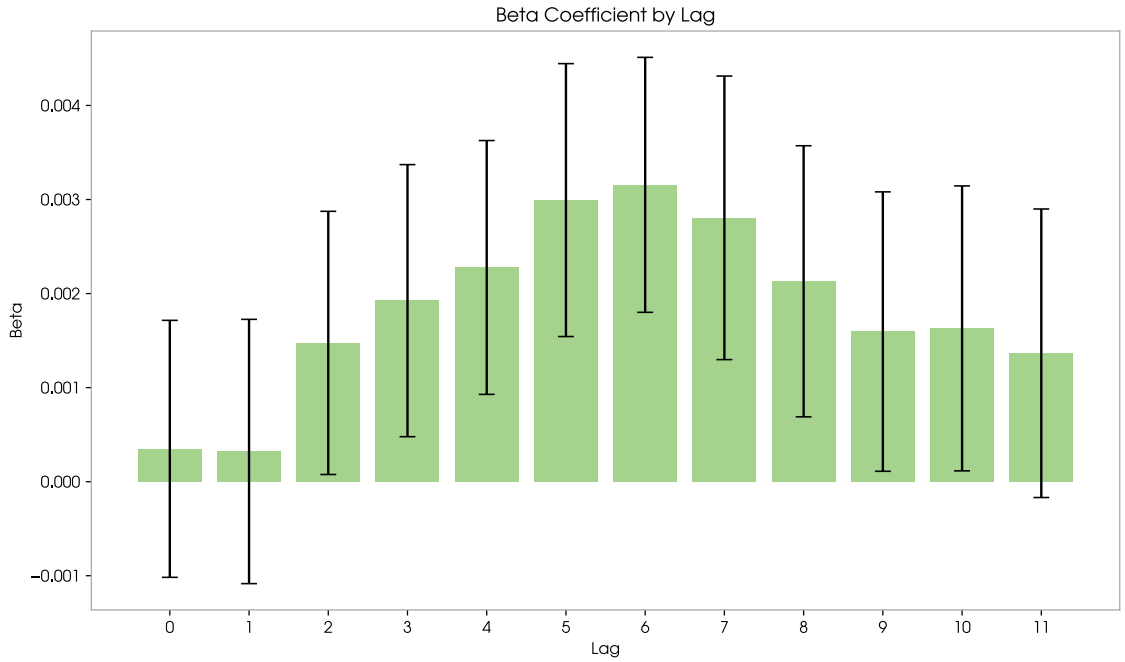


Figure A.4: Bar plot of beta from eq 2 level model across countries with confidence interval whiskers

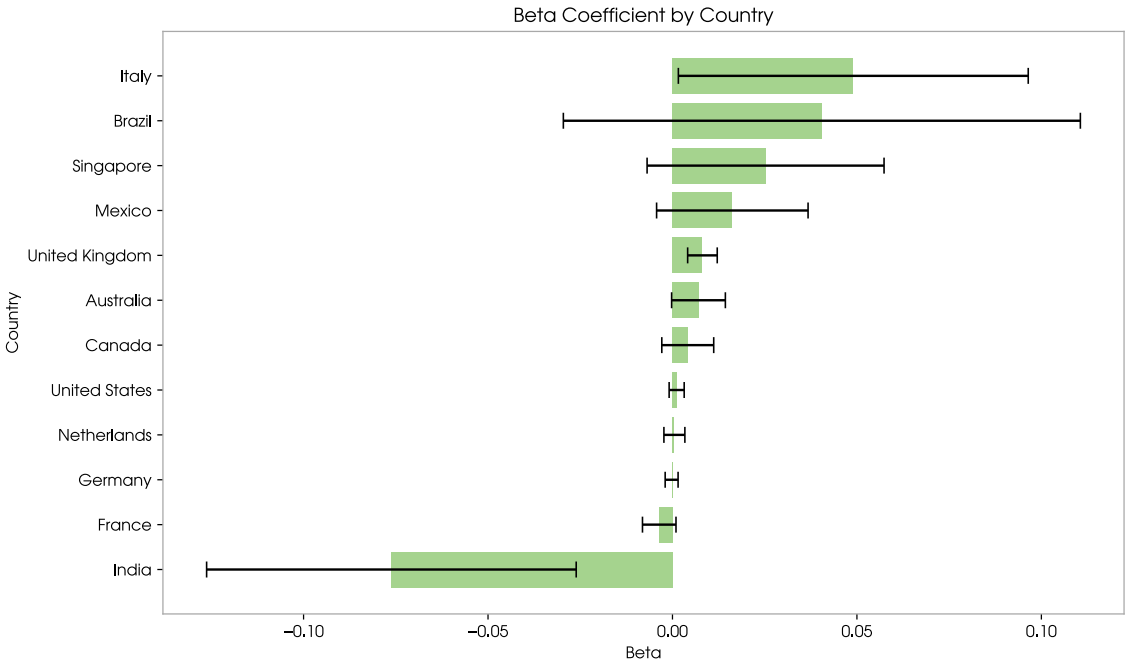


Figure A.5: Bar plot of beta from eq 2 level model across industries with confidence interval whiskers

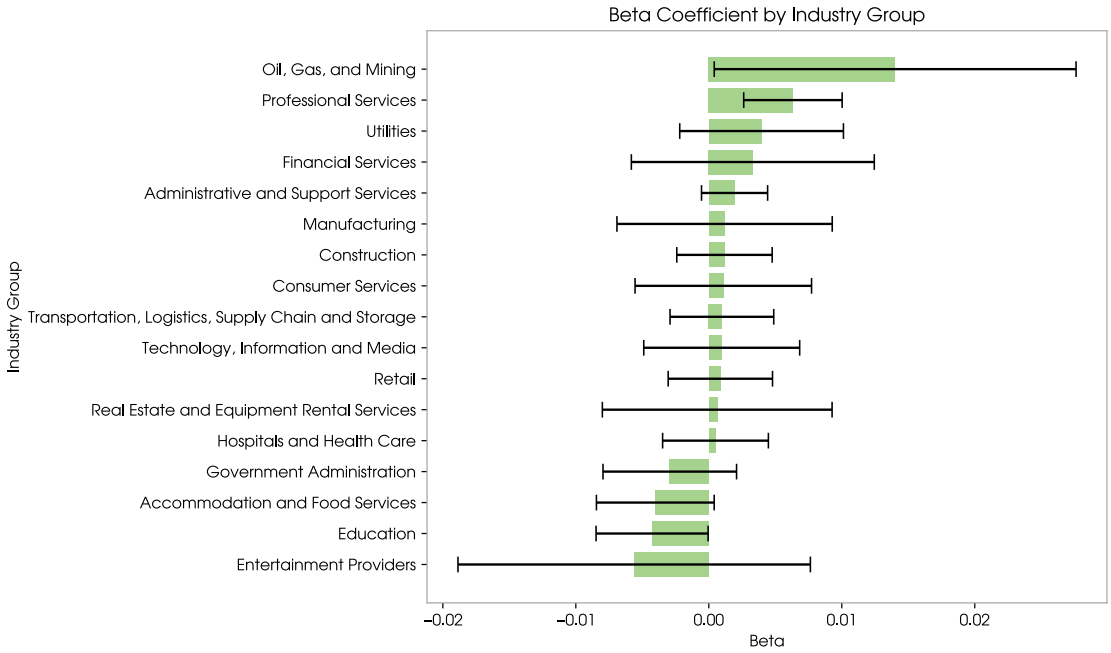


Figure A.6: Global secular trend - time covariate coefficients and date fixed effects – Log Model

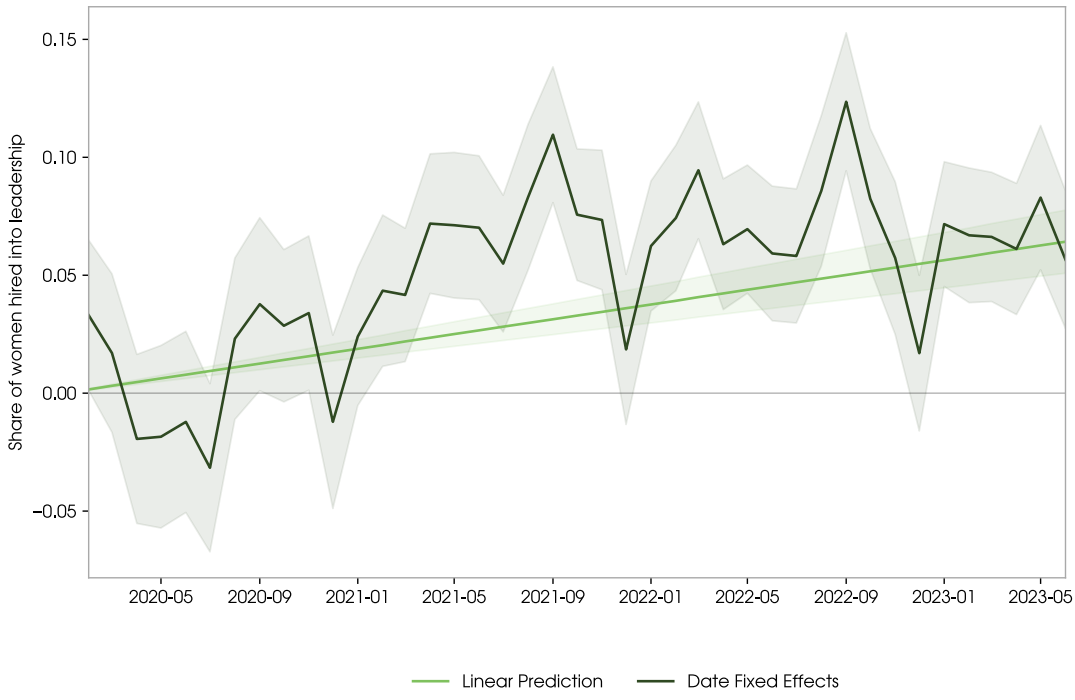


Figure A.7: Global secular trend across lags – time covariate coefficients and date fixed effects – Log Model

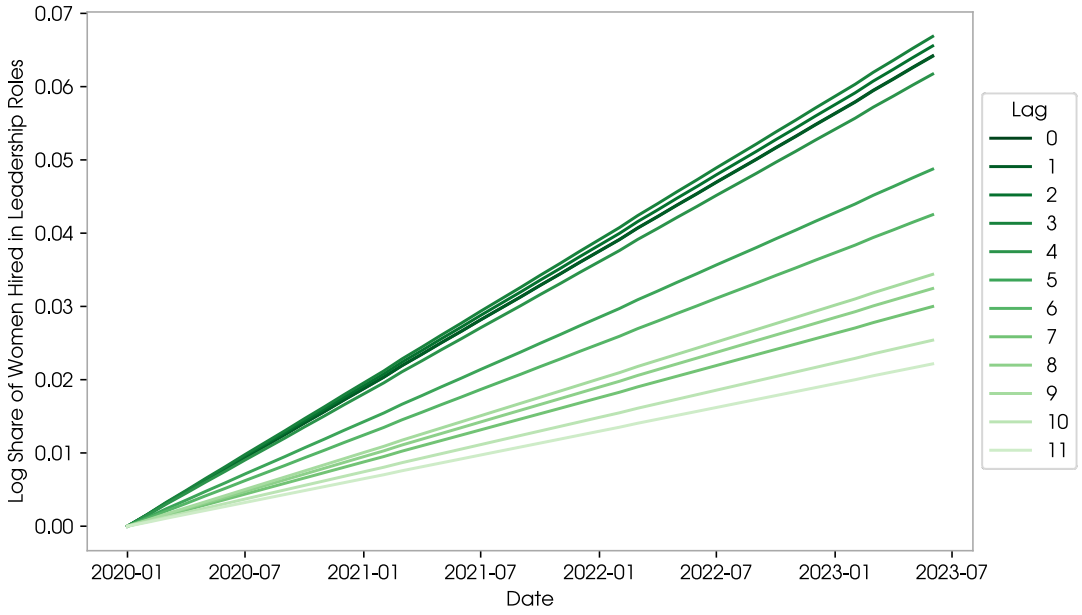


Figure A.8: Global secular trend across lags – time covariate coefficients and date fixed effects – Level Model

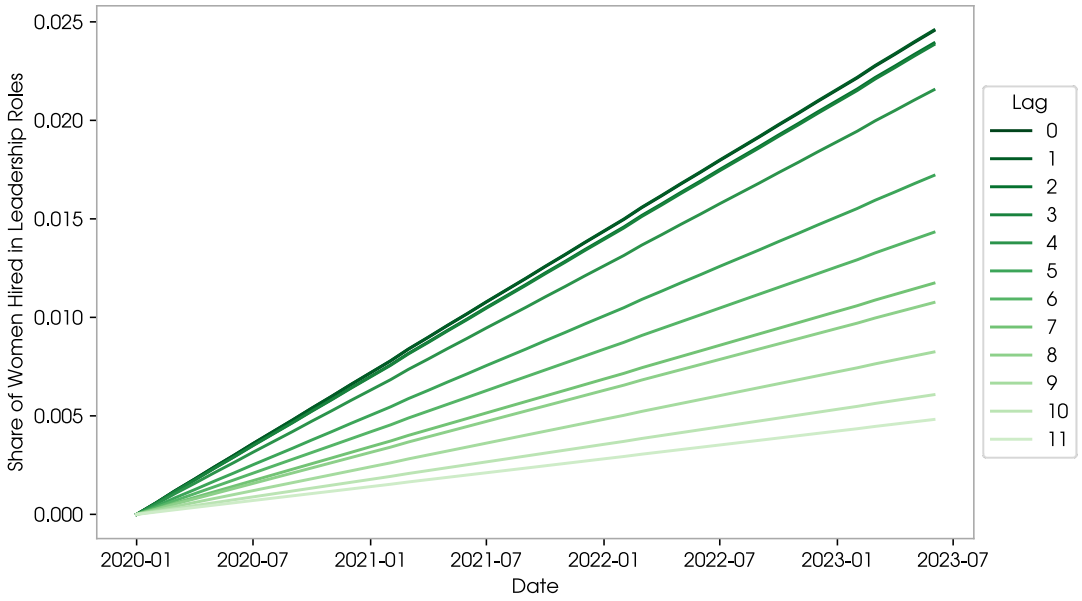


Figure A.9: Global secular trend across lags – time covariate coefficients and date fixed effects – Log Model

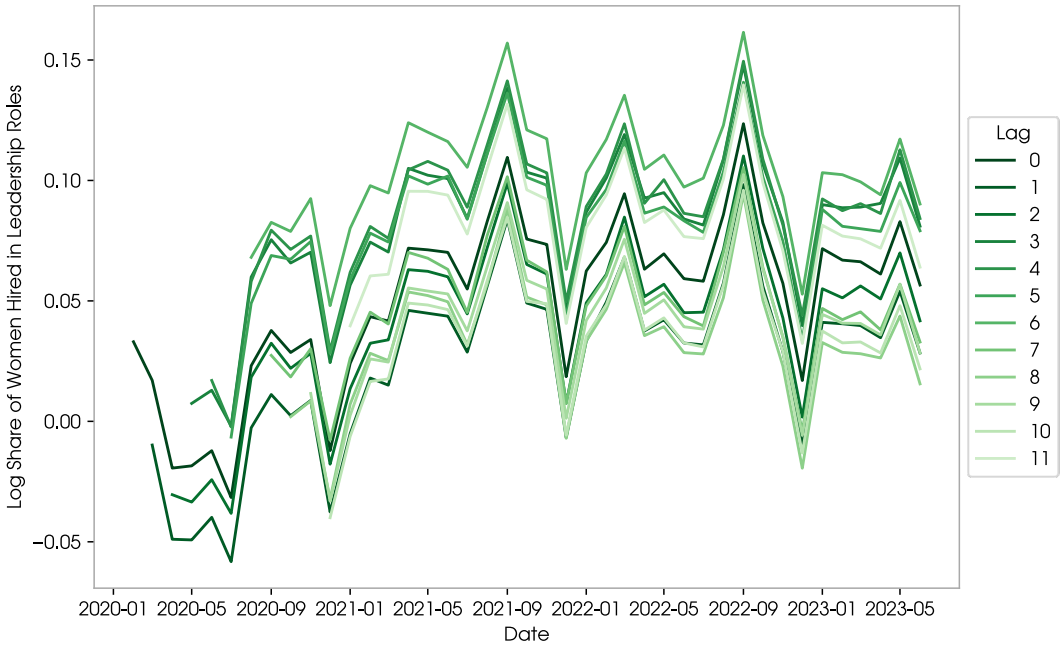


Figure A.10: Global secular trend across lags – time covariate coefficients and date fixed effects – Level Model

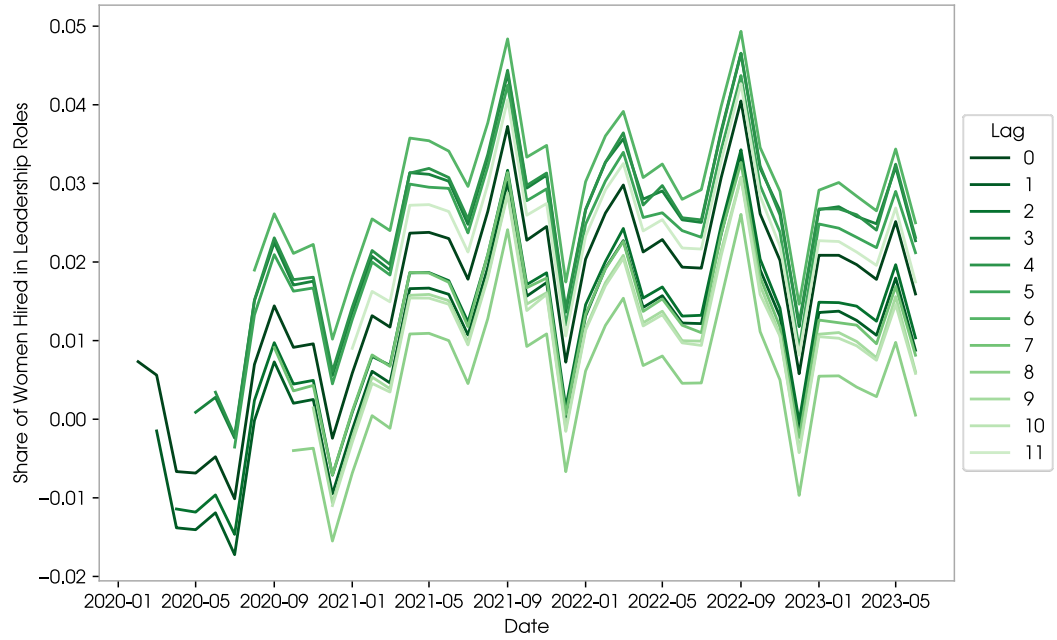


Figure A.11: Bar plot of elasticities from eq 2 log-log model across countries with confidence interval whiskers, share of leadership applicants who are women

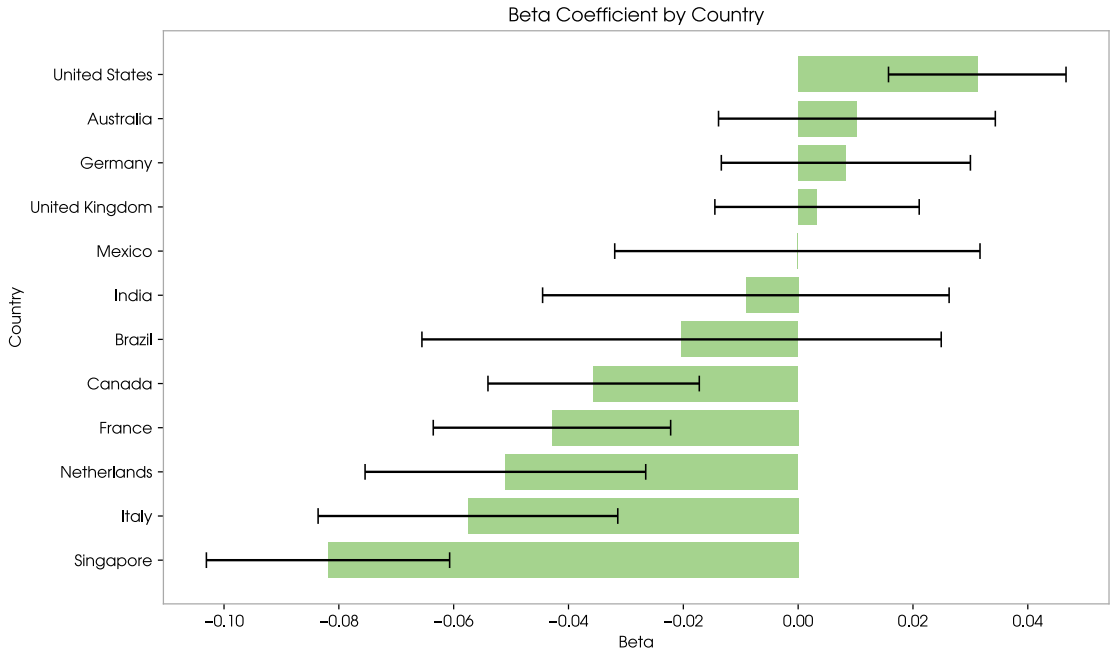


Figure A.12: Bar plot of elasticities from eq 2 log-log model across industries with confidence interval whiskers, share of leadership applicants who are women