Gender Gaps and Economic Growth: Why Haven't Women Won Globally (Yet)?*

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Abstract

Globally women's labor force participation lags that of men and women, on average, have lower labor market earnings than men. Does economic growth reduce gender disparities in labor market outcomes between women and men? Conversely, do gender inequalities in the labor market impede growth? To inform these questions, we conduct two analyses. First, we estimate regressions using harmonized data on gender gaps in a range of labor market outcomes from 153 countries spanning two decades (1998-2018). Second, we conduct a systematic review of the recent economics literature on gender gaps in labor markets, examining 16 journals over 21 years. Our empirical analysis demonstrates that growth is not a panacea. The relationship between growth and labor market gaps is mixed, and results vary by specification. This result reflects, in part, the gendered nature of structural transformation, in which growth leads men to transition from agriculture to industry and services while many women exit the labor force. Disparities in hours worked and wages persist despite growth, and heterogeneity in trends and levels between regions highlight the importance of local institutions. Newly

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harmonized microdata further show substantial heterogeneity by education level and marriage status. To better understand whether gender inequalities impeded growth, we explore a nascent literature that shows that reducing gender gaps in labor markets increases aggregate productivity. Our broader review highlights how traditional explanations for gender differences do not adequately explain existing gaps and how policy responses need to be sensitive to the changing nature of economic growth. We conclude by posing open questions for future research.

1 Introduction

84% of the world's 3.95 billion women live in low and middle-income countries (World Bank, 2022), where, in many places, sharp gender disparities disfavor women (Jayachandran, 2015). Yet sustained growth and structural transformation can improve individual well-being (Pritchett, 2022) and could, in theory, lower gender disparities. Does economic growth directly reduce gender gaps?

Recent experience suggests economic development alone may *not* address underlying inequities. Recent growth episodes have been accompanied by a significant increase in within-country inequality and regional disparities in welfare gains (Page and Pande, 2018; Fan et al., 2023). In many parts of the world, economic growth has not led to substantive improvements in women's economic outcomes, and gender gaps in earnings persist globally. Rather, a growing body of evidence suggests that the changing nature of economic growth, missing markets, discriminatory institutions, and the persistence of traditional gender norms may cause gender gaps in labor markets to persist even in the face of rising incomes (Jayachandran, 2015).[1]

Rigorous empirical evidence on the links between gender gaps in the labor market and economic growth has been largely limited to high-income countries (Goldin, 1995; Ngai et al., 2022).[2] Yet, the experience of low- and middle-income countries may be starkly different due to contextual variations ranging from different historical experiences and informal institutions to the changing nature of economic growth in the twenty-first century. We contribute to this discussion by examining two sets of har-

[1] A broader literature also highlights that economic growth has exacerbated labor market inequality in many countries (Kuznets, 1955; Fan et al., 2023), and that historically disadvantaged groups often benefit less from gains in aggregate productivity.

[2] Existing studies that examine the relationship in low- and middle-income countries include Gaddis and Klasen (2014) and Klasen (2019).

monized data on gender gaps in labor market outcomes. First, we use aggregate data from the World Bank's Global Jobs Indicators Database to study eight labor market indicators across 153 countries between 1998 and 2018. Second, we use novel microdata from the Harmonised World Labour Force Survey for 103 countries between 1998 and 2018 to study how the relationship between economic development and gender gaps in employment outcomes varies across subgroups. Taken together, this analysis allows us to explore rich heterogeneity and economically-relevant outcomes not frequently included in studies of gender gaps (which typically only analyze average labor force participation). Our cross-country analysis, focused on understanding the relationship between growth and gender gaps, identifies important descriptive facts that we hope encourage research on the causal relationships between growth and labor market gender gaps.

We report results across three specifications, using cross-sectional and within-country variation. Our analysis shows that while underlying time trends favor women's outcomes in the labor market, economic growth *per se* is not necessarily associated with a reduction in labor market gender gaps, with the relationship between economic growth and gender gaps in labor force participation differing substantially across specifications. We also show how changes in sectoral employment differ by gender. As countries become richer, men mainly transition from agriculture into manufacturing and services. In contrast, when women transition out of agriculture, they generally either enter the service sector or leave the labor force altogether. Conditional on working, gender gaps in hours worked and hourly earnings mostly remain unchanged.

We document substantial heterogeneity in both the levels and trends of gender gaps across countries. Over the past two decades, gender gaps in labor force participation have especially declined in Brazil, Mexico, and Indonesia, but have remained stagnant or even worsened in India, China, and South Africa. More broadly, levels in gender gaps do not only vary substantially across regions but also across countries within regions, highlighting the importance of tailoring policy interventions to each specific context.

An analysis of harmonized microdata shows that the relationship between gender gaps and economic growth remains largely unchanged when we control for individual-level covariates, including age, educational attainment, marriage status, number of

children, and place of residence. We further find substantial heterogeneity in how gender gaps evolve with economic development by educational attainment and marital status, emphasizing the importance of skill-biased change and social norms. Taken together, we thus find limited evidence that gender equality is a necessary corollary of growth - at least not uniformly so across the developing world.

The answer to the reverse question – whether reducing gender gaps in labor market outcomes raises economic growth – is critical for policy design. We discuss recent papers that use model-based approaches to study this question and conclude that the existing evidence suggests that closing gender gaps would substantially increase aggregate productivity by reducing talent misallocation. We then conduct a systematic literature review of papers published in 16 economics journals over 21 years to examine the underlying factors that cause these gender gaps to persist or diminish. The literature points to how gender barriers in brawn are mostly irrelevant to labor productivity in the modern economy, and differences in childbearing capacity or preferences are also unlikely to fully explain the prevalence of gender gaps. Evidence highlights how, among other drivers, structural transformation, technological change, formal institutional support, local shocks, and paternal altruism contributed to improving women's work outcomes in the past two decades. At the same time, however, cultural norms, discrimination, peer effects, and male backlash favored the status quo. The literature also underscores the uneven benefits of the changing nature of economic growth and that it is important to ensure that women, who usually occupy positions at the bottom of the professional ladder, will have access to high-income jobs in growing industries. We further discuss the malleability of informal institutions and the importance of accounting for political economy considerations when trying to close gender gaps.

Our paper expands on existing literature reviews on the correlates of gender gaps (Jayachandran, 2015; Fletcher et al., 2019; Jayachandran, 2021) and how gender gaps evolve with economic growth (Duflo, 2012; Klasen, 2019). While previous work focused on female labor force participation, we consider additional labor market indicators, including wages and hours worked. We further discuss recent macroeconomic research that studies how gender gaps affect economic productivity.

This paper is organized as follows. Section 2 provides a set of descriptive facts

based on cross-country analysis. Section 3 summarizes recent research on the effect of reducing gender gaps on economic productivity. Section 4 discusses different factors that contribute to the decline or persistence of gender gaps. Section 5 discusses open questions for future research. Section 6 concludes.

2 Economic Growth and Gender Gaps in the Labor Market: A Descriptive Analysis

2.1 Data and Labor Market Indicators

We begin by examining the relationship between labor market gender gaps and GDP per capita.[3] Initial research in this area documented a U-shaped relationship between economic growth and female labor force participation rates by examining the trajectory of individual countries over time or by comparing differences in labor force participation rates across multiple countries at a specific point in time (Boserup, 1970; Goldin, 1995). Recent studies extended this analysis by using panel data to exploit within-country variation over time (Gaddis and Klasen, 2014) and address concerns that the results are driven by differences across countries or general time variation.

We build on these existing findings and use two harmonized datasets to delve more deeply into how economic development affects gender gaps in labor market outcomes. First, we use the World Bank's Global Jobs Indicators Database (JOIN) to expand the set of labor market indicators studied. In addition to the more frequently-studied data on labor force participation rates, we also consider gender gaps in unemployment and sectoral employment rates, the type of work, hours worked, and wages.[4] Understanding sectoral employment shares is important as economic growth typically brings with it structural transformation and changes in the underlying comparative advantages of men and women (Ngai and Petrongolo, 2017). The type of work and

[3] We use GDP per capita since it is the main measure of economic development used by academics and policymakers, and it is correlated with self-reported individual life satisfaction globally (Deaton, 2008). This being said, we acknowledge the limitations of GDP as a measure of welfare, as discussed elsewhere (see, e.g., Stiglitz et al. (2010)): GDP per capita does not capture important aspects of individual well-being, including the relevance of unpaid work, human capital, environmental destruction, and life satisfaction - some of which is particularly relevant to gender.

[4] Another potentially relevant measure is the gender gap in formal employment. We show results on this margin in the appendix since information on formal employment is missing for many countries in the JOIN database.

wages are particularly salient because women tend to bear primary responsibility for unpaid care work (Gottlieb et al., 2024), and they also are more likely to be unpaid workers in family businesses (Goldberg et al., 2025).

Gender gaps in wages capture both observable differences across genders, as well as discrimination. Gaps in total market hours worked serve as an intensive margin measure of labor force participation, including both paid and unpaid market work. Our analysis includes *levels* for both women and men, although we focus on the gender gap as our key indicator to assess differences in men and women along these dimensions.

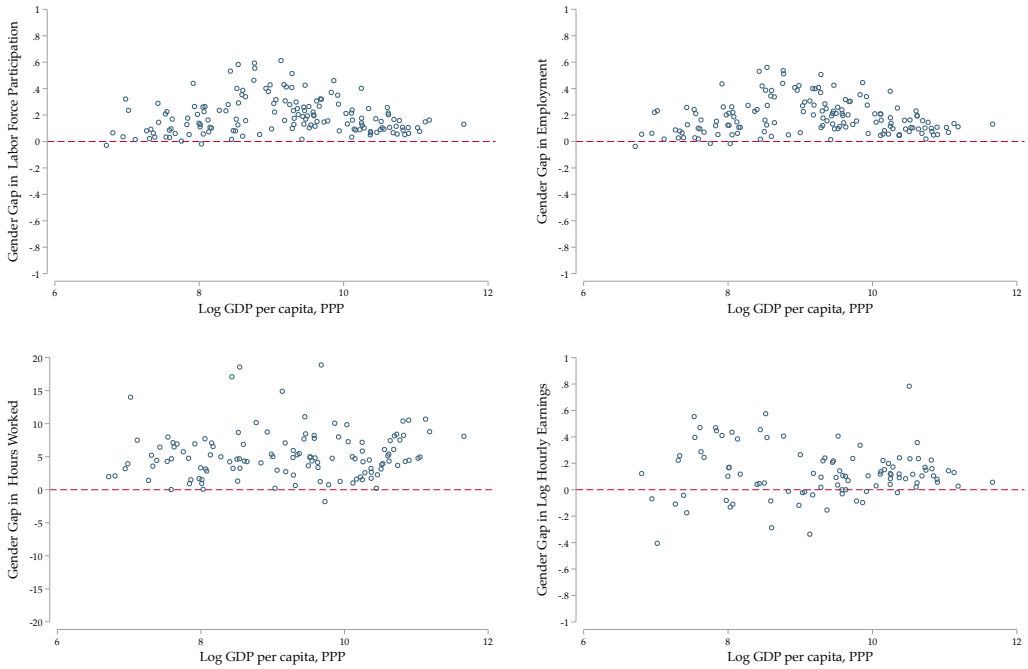
The JOIN database contains harmonized country-year labor market indicators for 168 countries, disaggregated by gender and sourced primarily from regular labor force surveys. Our main sample period ranges from 1998 until 2018.[5] We obtain data on GDP per capita, adjusted for purchasing power parity, from the World Development Indicators of the World Bank.[6] The definition of each variable is described in the data appendix. Throughout, gender gaps are defined as the outcome for men minus the outcome for women, such that positive numbers indicate a gap that favors men.

In addition, we also utilize newly harmonized microdata on 100 million individuals across 103 countries from the Harmonised World Labour Force Survey (HWLFS). While the current version of the HWLFS data covers fewer countries and outcomes than the JOIN data, the microdata allows us to conduct within-country heterogeneity analysis and control for individual-level covariates using information on place of residence (rural/urban), age, educational attainment, marriage status, and number of children. Appendix Table A1 shows the differences in the number of countries included in the JOIN and HWLFS data. While both data cover a similar number of high-income countries, JOIN covers 38 more middle-income and eight more low-income countries than HWLFS. As discussed in later subsections, we find very similar results in both datasets.

[5]Only 85 countries in the JOIN data have data before 1998. We exclude years after 2018 due to the Covid-19 pandemic, which substantially disrupted labor market outcomes.

[6]After restricting the sample to countries for which GDP data from the World Bank are available, we are left with 153 countries.

Figure 1: Gender Gaps Across Countries



Notes: The figures show the gender gaps in labor force participation, employment, hours worked, and log hourly earnings across countries. Hours worked and log hourly earnings are conditional on being employed. Hours worked do not include unpaid domestic and care work. Gaps are calculated as the outcome for men minus the outcome for women. The sample consists of 153 countries. We use the most recent year that is available for each country between 1998 and 2018. Data is from the World Bank's Global Jobs Indicators (JOIN) Database.

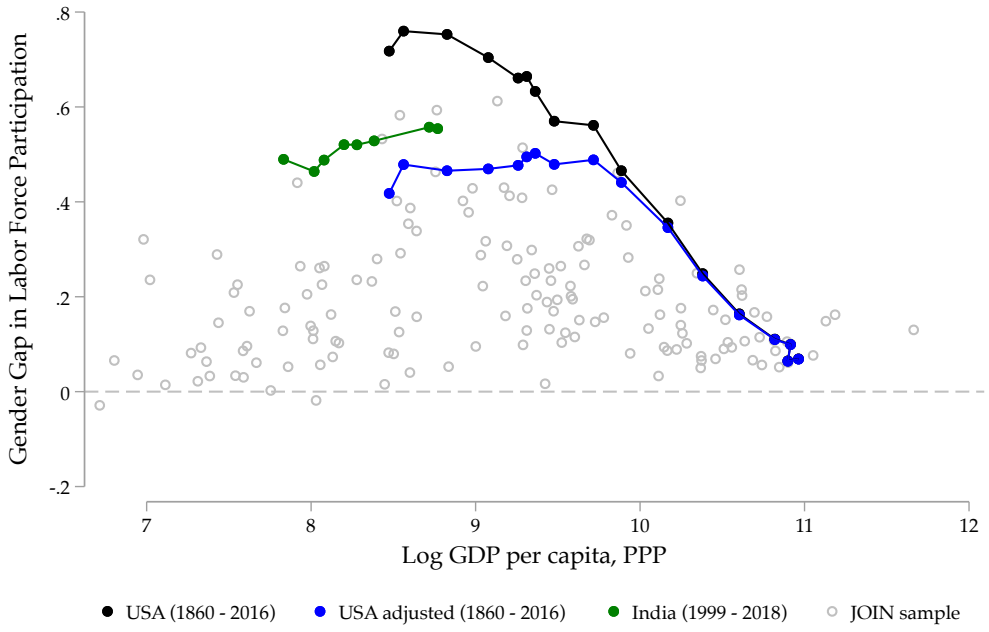
2.2 Visualizing the Raw Data

Figure 1 uses the most recent year available for each country to plot the gender gaps in four labor market indicators against the natural log of GDP per capita. We observe that most countries lie above the horizontal line that indicates gender parity, showing that women are underrepresented in almost all labor markets. We further observe substantial variation in gender gaps for countries at similar levels of income and no clear pattern with economic development.

Figure 2 further shows within-country patterns for the United States (US), a country that has been extensively studied, and India. Previous work on within-country patterns has focused on the historical evolution of gender gaps and economic growth in the US (Goldin, 1995).[7] We replicate these findings using census microdata

[7]Past research has also documented similar patterns in England and France (Tilly and Scott, 1987).

Figure 2: The Historical Evolution of Gender Gaps in the USA and India



Notes: The figure shows the historical evolution of gender gaps in labor force participation in the USA and India. The gap is calculated as the outcome for men minus the outcome for women. The blue line is adjusted such that adults in homes whose head of household is employed as an owner of a family farm are classified as employed. In the background, we show the gender gaps for the most recent available year for each country in the Global Jobs Indicators (JOIN) Database of the World Bank. Data for the USA are obtained from IPUMS and the Maddison Project Database and data on India are obtained from the JOIN Database.

from IPUMS and GDP data from the Maddison Project Database in Figure 2. In the background, we show again the country observations from the JOIN data used in Figure 1. Here we focus on labor force participation as a proxy for overall labor market-related gender gaps.

Following recent work by Ngai et al. (2022), we address concerns about changes to the reporting of unpaid work over time by also showing results for an adjusted labor force participation measure that classifies all adults whose head of household is a farm owner as employed. These individuals would have been expected to contribute to farm production – a productive activity largely carried out within family units – but otherwise unaccounted for in early employment statistics (Ruggles, 2015). The black and blue lines plot the adjusted and unadjusted gender gaps in labor force participation in the US between 1860 and 2016. Prior to World War II, gender gaps did not change substantially with GDP per capita despite the fact that the US GDP

per capita almost tripled. By contrast, we observe rapid declines in gender gaps in labor force participation with economic growth from 1950 onwards.

The US experience itself shows that economic growth per se is not a panacea for gender gaps: For nearly a century prior to 1950, gender gaps did not change much despite rapid economic growth. In addition, in 1950, the year when gender gaps began to close, the US was already substantially richer than most developing countries today - again, suggesting its experience need not predict that of many other countries.

In green, we further plot India's trajectory between 1999 and 2019 using JOIN data. While the country experienced substantial economic growth in the past two decades, gender gaps *deteriorated* in favor of males during this period (indicated by an upward movement in the green line). It is possible that this trajectory will change once India becomes as rich as the US in 1950, but the data suggests that economic growth alone is necessarily associated with gender gap closures.

Another striking pattern is the difference between the historical gender gaps in the US and the current gender gaps in low- and middle-income countries in the present. Relative to the JOIN countries shown in the background in grey, the US in the 19th century had far worse gender gaps in labor force participation. This suggests that the path and nature of economic development may also have changed, and that countries may not follow the US experience. We next analyze the cross- and within-country relationships in a regression framework.

2.3 Empirical Strategy

A challenge for establishing descriptive patterns in the data is that the results might depend on the choice of specification, including decisions on which fixed effects to include. In our main analysis, we adopt three specifications to analyze the associations between gender gaps and economic growth. We also discuss the robustness to alternative specifications that allow for non-linear or lagged relationships in Section 2.6. Our first specification pools all country-year observations without the inclusion of any fixed effects. For country c in year t, we estimate:

$$G_{ct} = \alpha + \beta y_{ct} + \epsilon_{ct} \tag{1}$$

where G_{ct} references the gender gap outcome and y_{ct} is the log of GDP per capita for a given country-year, adjusted for purchasing power parity.

Interpreting such cross-sectional analyses can be problematic in so far as countries differ on many dimensions, not just income. To make some progress on this concern, we also leverage the panel dimension of the available data to rely only on within-country variation as in Acemoglu et al. (2019). We start by analyzing the data using only country fixed effects, and then incorporate both country and year (two-way) fixed effects. Our second specification is

$$G_{ct} = \beta y_{ct} + \alpha_c + \epsilon_{ct} \tag{2}$$

where α_c are country fixed effects. Standard errors are clustered at the country level. By adding country fixed effects, β tells us, on average, how changes in income per capita (and therefore growth) relate to changes in gender gaps, holding constant the ways in which countries differ in features correlated with both income and gender gaps. The absorbed heterogeneity accounts for differences across countries that are stable, such as their historical legal frameworks, that could lead to different income and gender gaps.

Without time fixed effects, β includes all country-specific GDP changes at a particular time (and correlates of these changes), including aggregate time-specific influences. In the third specification, we then also include year fixed effects, commonly used in the literature (Gaddis and Klasen, 2014):

$$G_{ct} = \beta y_{ct} + \alpha_c + \delta_t + \epsilon_{ct} \tag{3}$$

where α_c are country fixed effects and δ_t are year fixed effects. Including two-way fixed effects accounts for both country-specific heterogeneity and temporal variation, allowing us to abstract from country-specific features (such as culture) and aggregate temporal fluctuations that may otherwise relate to our variables of interest. But we also note that the interpretation of this two-way fixed effects specification is not entirely straightforward: in the presence of time fixed effects, β corresponds to the association between deviations in income per capita in a given country *beyond* those absorbed through the cross-country time dummy for that year.

2.4 Results

We report the results of the three different regression specifications in Table 1. Our analysis focuses on gender gaps, defined as the difference in labor market outcomes between men and women (positive coefficients indicate an increasing gap favoring men). We also report results for the level outcomes for women and men in Appendix Tables A2 and A3.

Table 1: Economic Growth and Gender Gaps in JOIN Data

	Gender Gaps (Difference between Men's and Women's Outcome) in						
			Conditional on Employment				
	Labor Force Particpation (1)	Employed (2)	Hours Worked (3)	Log Hourly Earnings (4)	Employed in Agriculture (5)	Employed in Industry (6)	Employed in Service (7)
Panel A: Cross-Sectional Regression							
Log GDP per Capita	-0.02**	-0.02**	0.30	-0.00	-0.02**	0.04***	-0.05***
	(0.01)	(0.01)	(0.31)	(0.02)	(0.01)	(0.00)	(0.01)
R-squared	0.03	0.03	0.01	0.00	0.04	0.49	0.18
Panel B: Within-Country Analysis Using Only Country Fixed Effects							
Log GDP per Capita	-0.03**	-0.02	-0.18	-0.00	-0.02**	0.06***	-0.05***
	(0.01)	(0.01)	(0.65)	(0.05)	(0.01)	(0.01)	(0.01)
R-squared	0.92	0.91	0.78	0.60	0.89	0.83	0.93
Panel C: Within-Country Analysis Using Country Fixed & Year Effects							
Log GDP per Capita	0.09***	0.13***	1.41*	0.10	-0.01	0.12***	0.02
	(0.02)	(0.02)	(0.76)	(0.08)	(0.01)	(0.02)	(0.02)
R-squared	0.93	0.93	0.79	0.62	0.89	0.85	0.94
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
Observations	1,245	1,245	1,095	876	1,241	1,241	1,241

Notes: The table shows the gender gaps in work outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. A negative sign for β thus implies that gender gaps favoring men are getting smaller. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

We start by examining gender gaps in labor force participation (Column (1)) and observe substantial variation in the predicted relationship with economic growth across specifications. The cross-sectional regression that exploits variation in income levels across countries suggests that economic development is associated with lower gender gaps in labor force participation (Panel A). While we find similar results when we instead implement the within-country analysis using only country fixed effects (Panel B), the within-country analysis with country and year fixed effects suggests that economic growth is correlated with increases in gender gaps in labor force par-

ticipation (Panel C). Stated differently, we find that the association between gender gaps in labor force participation and economic growth flips once we also account for factors that are constant for specific time periods.

What explains the differences across specifications? The small differences in coefficients between Panels A and B suggest that differences in constant country-specific traits do not substantially influence the relationship between growth and gender gaps. Although the correlation between growth and gender gaps is stable in Panel B, inherent differences across countries explain much of the overall variation in gender gap outcomes, visible as the R-squared increases from less than 3% in the pooled analysis to more than 92% in the within country-analysis with country fixed effects. Differences in the within-country estimates without and with time fixed effects (Panels B and C) highlight how common time-varying factors are related to both economic growth as well as labor market gender gaps and how accounting for them matters. Appendix Figure A2 plots the year fixed effects directly and highlights how, after controlling for income growth and country-specific heterogeneity, gender gaps have declined over time in almost all outcomes. However, it is unclear the extent to which these positive trends capture changes in culture and technology and how much they capture consequences of longer-run economic development.

Column (2) shows that we find similar results for employment outcomes as for labor force participation. The next two outcomes consider (changes in) hours worked and hourly earnings for women and men, conditional on being employed. These results are noisy and do not show a consistent pattern across specifications, suggesting there is no clear evidence that economic growth is associated with closures in gender gaps in these two outcomes.

We then turn to changes in employment across the agricultural, manufacturing, and service sectors.[8] Individuals who are outside of the labor force or unemployed are again treated as zeros. As documented in previous research (Chiplunkar and Kleineberg, 2022), both genders are less likely to work in agriculture in richer countries. These exit rates are similar for men and women, such that the indicators of income and growth are not correlated with large changes in gender gaps (Column (5)). However, while men transition into both the manufacturing and service sectors,

[8]We use manufacturing and industry interchangeably in the paper. The JOIN database uses ISIC codes for manufacturing, electricity and utilities, and construction to define the industry sector.

women almost exclusively transition into the service sector or leave the labor force altogether. Economic growth is thus associated with a higher relative share of men in the manufacturing sector (Column (6)), while the association between economic growth and gender gaps in service sector employment depends on the specification (Column (7)).

In Appendix Tables A4-A6, we further examine how economic growth affects the types of work performed by men and women. Using the JOIN classification, we categorize employment into unpaid work, self-employment, wage employment, and employer status. We find that economic growth is associated with an increase in wage employment for both men and women. For women, it is also linked to a decline in unpaid work. Changes in gender gaps vary across specifications.

Taken together, these results show a mixed picture. We thus conclude that gender gaps in labor markets do not necessarily close with economic growth.

2.5 Additional Gender Gaps

In Appendix Tables A7-A9, we also study the relationship between economic development and gender gaps in eight additional indicators across formal employment, education, political participation, and health.[9] In the cross-country analysis (Panel A), we see indications that higher income is correlated with larger gender gaps (favoring men) in formal employment; in contrast, richer countries have lower gender gaps (favoring women) in primary, secondary, and tertiary schooling and political representation. For life expectancy and infant mortality, women do better than men on average. For richer countries, the gender gap (in favor of women) is larger for life expectancy but smaller for infant mortality. Results including country fixed effects again explain much of the variation in outcomes, but generally suggest qualitatively similar results.

Strikingly, once we include year fixed effects (Panel C), we see a stronger relationship between economic growth and gender gaps in formal employment, to the detriment of women, and there is some evidence that growth is associated with larger gender gaps in secondary and tertiary school. We no longer observe a significant relationship with changes in gender gaps in political representation and life expectancy.

[9]We show results on formal employment in the appendix since information on this outcome is only available for 90 of the 153 countries in our JOIN data.

The positive relationship between GDP per capita and gender gaps in infant mortality (i.e. a larger reduction in infant mortality for boys who start at higher levels) remains.

2.6 Alternative Specifications

We examine the sensitivity of the within-country analysis with country and year fixed effects to alternative specifications in Appendix Table A10. A potential concern is that economic growth may be related to gender gaps with a delay. We thus rerun our regressions using 1-year and 5-year lags for the GDP variable (Panels A and B). We continue to find an association suggesting significant increases in gender gaps in labor force participation and employment rates as countries become richer. Previous work has also shown that results can be sensitive to the source of the GDP variable that is used (Gaddis and Klasen, 2014). Instead of using GDP data from the World Bank Indicators of the World Bank, we instead use GDP from the Penn World Table in Panel C. In this case, the relationship between economic growth and labor force participation and employment rates becomes weaker and insignificant.[10] Finally, we also rerun our analysis with population weights to be representative of the world population (Panel D). In that case, the positive association between economic growth and increasing gender gaps in labor force participation and employment rates is even stronger than in the unconditional sample.

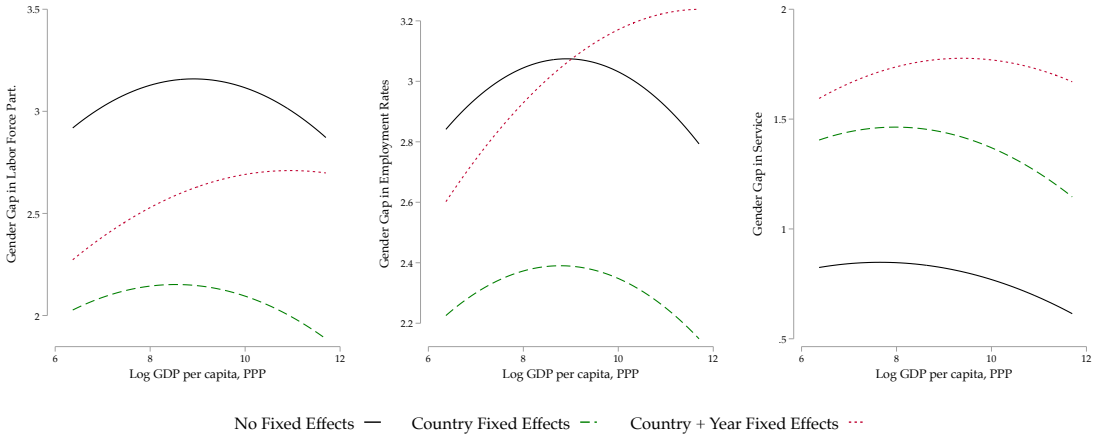
In terms of other outcomes, hours worked show evidence suggestive of relative increases for men with growth. We continue to see increases in relative male employment in industry, while changes in gender gaps in employment in agriculture vary by specification (with increases in gaps emerging with population weights). The relationship between service-related gaps and growth is quite small and insignificant in these specifications.

Earlier literature has also focused on the U-shaped relationship between economic development and female labor force participation (Boserup, 1970; Goldin, 1995). In Appendix Table A11, we replicate this analysis by adding a quadratic term for log

[10]The change in the results comes from differences in GDP measurements and differences in the samples for which GDP data is available. If we restrict the Penn World Table (10.01) analysis to country-years for which data from the World Bank Indicators is also available, the GDP coefficient for labor force participation rates increases to 0.04 ($se = 0.02$).

GDP per capita in the regressions. We find that the quadratic term is significant for gender gaps in labor force participation, employment rates, and service sector employment across all three specifications.[11]. To help with the interpretation of these coefficients, we plot the predicted relationship between gender gaps and economic growth for these outcomes in Figure 3.[12] Similar to the previous results, we find that the predicted relationship and the turning point at which gender gaps begin to close again depend substantially on the inclusion of year fixed effects. While the first two specifications imply a U-shape that reaches the turning point approximately in the middle of the sample distribution, the third specification with year fixed effects implies that the turning point is further out and higher than the current income levels of most countries.[13]

Figure 3: U-Shape for Selected Gender Gaps



Notes: The figure shows the predicted relationship between gender gaps and log GDP per capita (adjusted for PPP). The black line indicates the results from the cross-sectional regression in which we regress each outcome on a linear and squared term of log GDP per capita (adjusted for PPP). The green line indicates the results from the within-country analysis in which we regress each outcome on a linear and squared term of log GDP per capita and countries fixed effects. The red line indicates the results from the within-country analysis in which we regress each outcome on a linear and squared term of log GDP per capita and countries and year fixed effects. In each figure, we also add the sample means. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

[11]Without country and year fixed effects, the quadratic term for log hourly earnings and agriculture sector employment is also significant

[12]Appendix Figure A1 shows similar plots for the other labor market outcomes.

[13]For example, when using country and year fixed effects, we find that the positive squared term for gender gaps in labor force participation rates dominates the negative linear term once log GDP per capita is higher than 10.95. Only 3% of the countries in our sample exceeded this value in 2018.

To summarize, the results of the alternative specifications are consistent with the idea that there is not a robust relationship between gender gaps and economic growth. Taken together, our primary conclusion – that growth is not necessarily associated with gender gap closures in favor of women – holds.[14]

2.7 Regional Differences

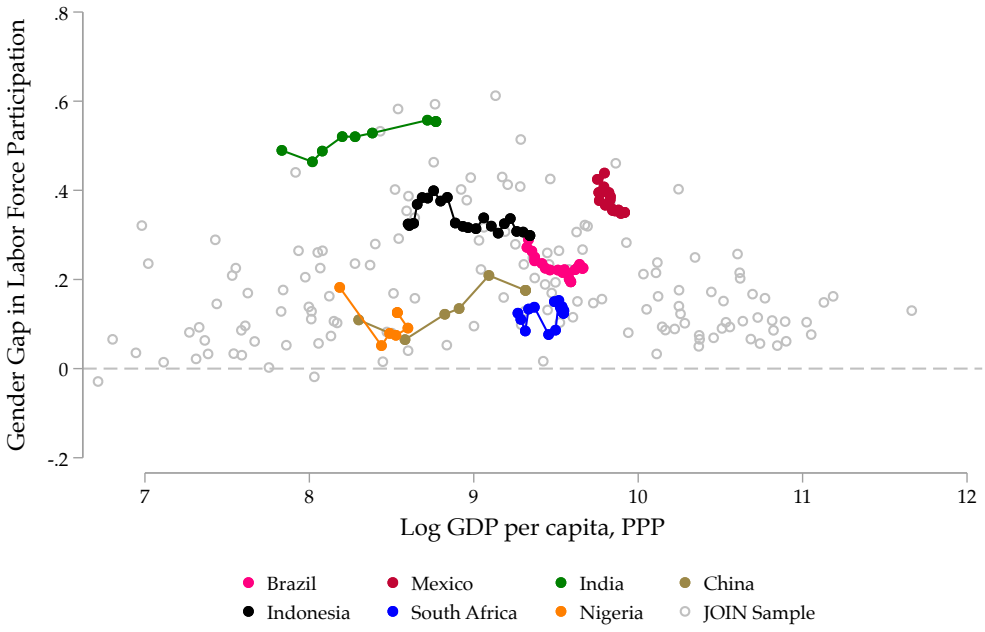
So far, we have studied global trends by pooling all countries in the JOIN data. However, this approach ignores substantial heterogeneity across countries. We document the differences in the association between economic development and gender gaps by plotting the trajectories of gender gaps in labor force participation for seven countries between 1998 and 2018 in Figure 4. Besides the trajectory of India, which we have already shown as part of Figure 2, we also plot the trajectories of Brazil, Mexico, China, Indonesia, South Africa, and Nigeria.

These patterns combine economic growth and general variation over time, but already show substantial heterogeneity across countries. As mentioned before, gender gaps worsen with economic growth in India. While the gender gaps in China and South Africa are relatively stable, we observe declines in gender gaps associated with growth in Indonesia, Mexico, and Brazil. Besides the different trajectories, the levels of gender gaps conditional on similar levels of economic development also vary substantially. The gender gaps are especially large in India, whereas there are only small differences in labor force participation rates between men and women in Nigeria, China, and South Africa.

We extend the analysis in Appendix Table A12, in which we interact log GDP per capita with seven region dummies. If we only include country fixed effects, we observe that the association between economic development and lower gender gaps in labor force participation rates is largely driven by countries in Latin America and the Caribbean; Central Asia's growth, which took place in the post-Soviet era, is associated with increases in gender gaps in nearly all categories. Across all regions, economic growth is associated with a worsening gender gap in manufacturing sector

[14] Alternative specifications would also use state-of-the-art panel methods that account for the persistence of labor market outcomes over time. However, we cannot implement these methods without inter- and extrapolating our data since we do not have observations for each country for every year.

Figure 4: Heterogeneity Across Selected Countries



Notes: The figure shows the historical evolution of gender gaps in labor force participation in Brazil, Mexico, China, India, Indonesia, South Africa, and Nigeria. The gap is calculated as the outcome for men minus the outcome for women. In the background, we show the gender gaps for the most recent available year for each country in the Global Jobs Indicators (JOIN) Database of the World Bank. Data for the seven selected countries are also obtained from the JOIN Database.

employment shares. Relative improvements in female employment in services are not present in Central Asia, the Middle East and North Africa, South Asia, or Sub-Saharan Africa.

Panel B replicates the analysis including both country and year fixed effects.[15] We find substantially different patterns in Column (1), where we now observe a significant increase in the gender gap in labor force participation associated with growth for five out of seven regions. For regions aside from South Asia and Sub-Saharan Africa, we continue to observe a large positive coefficient, indicating a positive association between growth and the gender gap in manufacturing employment. More broadly, the differences between Panel A and B suggest that common time factors within regions play a substantial role for the trajectory of gender gaps, pointing to how additional research is needed to understand the growth experience of individual countries.

[15] In this specification, we also interact the year fixed effects with the seven region dummies.

In addition to documenting differences in the association between economic development and gender gaps, we study heterogeneity in levels across countries by plotting country fixed effects in Appendix Figure A3. The figure does not only highlight substantial variation across regions, but also across countries within the same region. We observe that gender gaps in labor force participation rates, and hours worked are especially large in South Asia, and the Middle East and North Africa, whereas the gender gaps tend to be smaller in Sub-Saharan Africa. However, Sub-Saharan African countries also tend to have the largest gender gaps in hourly earnings. This suggests that a substantial fraction of the region's marginal female workers tend to have relatively low-paying jobs. In comparison to other regions, Sub-Saharan African countries also have more women working in agriculture relative to men but fewer women working in the manufacturing sector.

2.8 Microdata Analysis

Finally, we extend our analysis using HWLFS microdata, which allow us to control for individual-level covariates and explore within-country heterogeneity. For individual i in country c in year t, we estimate:

$$\begin{aligned} L_{ict} = \beta_1(\mathrm{y}_{ct} \times \mathrm{Female}_i) + \beta_2 \mathrm{y}_{ct} + \beta_3 \mathrm{Female}_i \\ + \beta_4(\mathrm{Female}_i \times \alpha_c) + \beta_5(\mathrm{Female}_i \times \delta_t) + X_i + \alpha_c + \delta_t + \epsilon_{ict} \end{aligned} \tag{4}$$

where L_{ict} references the labor market outcome and X_i represents a vector of controls that we vary across specifications. The list of potential controls include age, place of residence (urban/rural), educational attainment, marriage status, and number of children under 5 years. We always include sample weights such that all observations for each country-year observation sum up to one.[16] We note that, relative to the JOIN analysis, the interpretation of β_1 is reversed: a negative coefficient indicates a *widening* of gender gaps in favor of men. Appendix Table A13 replicates Table 1 using the HWLFS microdata. The interaction term yields a coefficient that is very similar in magnitude to our earlier estimates, and its sign once again reverses when we include country and year fixed effects.

[16]When we do heterogeneity analysis for different subgroups, we recalculate the weights such all observations for each country-year observation within a subgroup sum up to one.

A potential concern is that economic development may be correlated with other factors that also influence the gender gaps in labor market outcomes. To address this, we next use the HWLFS data to re-estimate our regressions with individual-level covariates in Panel A in Appendix Table A14. The relationship between gender gaps and economic development remains largely unchanged after including these controls, suggesting that changes in these alternative factors do not explain the observed patterns. However, we interpret these results with caution, as economic development could also directly affect these covariates.

We also use the HWLFS data to examine how the relationship between economic development and gender gaps varies across subgroups, beginning with an analysis based on college completion. Figure A4 presents local regression patterns using the most recent available survey for each country. The U-shaped relationship between female labor force participation and economic development is concentrated among women without a college degree. In contrast, participation among college-educated women is consistently higher, and the gender gap shows little change with economic development.

Panels B and C of Appendix Table A14 explore these differences further using within-country variation. The negative association between gender gaps and economic development in labor force participation is substantially weaker for the college-educated subsample.[17] We also observe a decline in the service-sector gender gap for the college subsample, but not for the non-college subsample. In contrast, gender gaps in industry employment widen for both subsamples, as men primarily take up these jobs

Panels A and B in Appendix Table A15 also reveal a weaker relationship between gender gaps in labor force participation and economic development for the non-married subsample, indicating that social norms may also be important in explaining changes in gender gaps. In addition, we find a weaker relationship in urban than in rural areas (Panels C and D).

[17]We also repeated the analysis using high-school completion and found no substantial heterogeneity. This suggests that college completion is distinctive because it enables women to enter well-paying service-sector jobs.

3 Does Closing Gender Gaps in Labor Market-Related Economic Outcomes Impact Economic Growth?

Our findings so far show a mixed picture, suggesting that there is no strong evidence that gender gaps necessarily shrink with economic growth. The results also highlight the gendered nature of structural transformation, with men entering the manufacturing and service sectors with growth, while many women leave the labor force. Now we ask a related question: Could growth have been higher if gender gaps had shrunk more? This could be the case if gender gaps result in talent misallocation across sectors and across occupations. In this section, we review the recent economics literature that examines the macroeconomic consequences of gender gaps in the labor market. We report results from a comprehensive literature review and discuss some of the seminal papers in this literature in detail.

3.1 Literature Review Findings

Appendix Table A16 summarizes the literature on the effect of gender gaps on aggregate productivity. Previous work has analyzed the importance of gender gaps in labor force participation, sectoral employment, entrepreneurship, occupational distribution, and educational attainment. Each of these papers finds that closing gender gaps would lead to substantial productivity gains. We focus our summary on four recent and important papers in this literature.

Hsieh et al. (2019) analyze talent allocation and productivity gains from the entry of high-skill women and Black professionals in the US. They start with a Roy (1951) model of occupational choice, in which each person chooses an occupation to maximize utility given their talents and preferences. They allow for three forces to prevent individuals from choosing the occupation where they have a comparative advantage: (i) labor market discrimination, which leads to a wedge between wages and marginal products, (ii) additional monetary costs to human capital accumulation for specific groups, which proxy for barriers to human capital investments, and (iii) differences in occupational preferences that capture changes in social norms. The key identification assumption is that the distributions of innate talent of women and Black men relative to white men remain constant over time. This assumption implies that

the change in the occupational distribution of women relative to white men since 1960 would have had to be driven by changes in labor market frictions, changes in human capital accumulation frictions, or by changes in common occupational preferences. This allows the authors to back out the contribution of changes in these three forces over time. Under these assumptions, their general equilibrium model allows for the estimation of the aggregate effects of the reduction in occupational barriers. The authors find that the improved allocation of talent explains between 20 to 40 percent of growth in aggregate market output per person in the 1960-2010 period, and estimate that the most important of the driving forces was the reduction in barriers to human capital investments.

Chiplunkar and Kleineberg (2022) broaden this analysis and focus on gender gaps in the context of structural transformation globally, examining inefficiencies present in both sectoral and occupational segregation by gender. Practically, this segregation manifests as women being concentrated in jobs like secretaries, rather than managerial professions, regardless of their sector of work. Using data from 91 countries between 1970 and 2015, the authors first document that the relationship between economic development and gender segregation follows an inverted U-shape as women leave the labor force as incomes grow, only opting into services much later in the development process. The authors use data from six countries to calibrate a Roy-style model in which individuals decide to participate in the labor force and, if they choose to work, select into an occupation and sector. The authors allow for talent misallocation through two channels: gender norms and wage discrimination. In counterfactual analysis, they find that half of the growth in service employment over this time period can be attributed to improvements in gender norms. Further evidence suggests that norms barrier-related reductions are concentrated in high-income settings. In contrast, wage discrimination is more consistent and stable across countries, regardless of income level. They conclude that reductions in gender barriers between 1970 and 2015 explain around one-fifth of the growth in output during this period, with increased output due to reduced barriers varying substantially across countries, ranging from 4% for India to 30% for Canada.

Ashraf et al. (2023) provide a complementary approach to empirically measure how gender restrictions related to work outside the home affect productivity. To do so, they leverage microdata from a multinational firm with headquarters in Europe that operates across 101 countries. These records contain micro-level information of earnings and career paths of around 100,000 employees in the company. Barriers faced by employees when deciding to work outside the home are proxied by the ratio of women to men in the labor force for the country in the decade the labor choice was made. Since the authors observe employees of different ages in this firm, they can exploit both cross-country and cross-cohort variation in barriers. Again, they develop a two-sector Roy model that, together with the use of individual records data, allows them to separately identify gender differences in fixed pay from differences in productivity. Their structural estimates indicate that equalizing barriers to labor force participation could increase the productivity of firms by 32 percent while keeping employment and the wage bill constant.

Chiplunkar and Goldberg (2024) explicitly study the barriers that are faced by women-owned firms in low- and middle-income countries and how they affect aggregate productivity. The authors build on a Roy model of occupational choice that incorporates a formal and informal sector and multiple labor market frictions that are allowed to differ by gender. The authors find that, while women entrepreneurs face higher business expansion costs, they have an advantage over men in hiring women workers. Counterfactual simulations show that removing all gender barriers in entrepreneurship except for the comparative advantage of women entrepreneurs in hiring women workers would double female labor force participation and increase aggregate productivity by 3%.

4 What Factors Underlie the Evolution (or Intransigence) of Labor Market Gender Gaps?

Given the growing evidence on the potential macroeconomic implications of persistent gender gaps in labor markets, it is important to ask what factors independently cause these gender gaps to persist or diminish. To study this question, we conducted a systematic literature review of papers published in 16 economics journals over 21

years (see Appendix C for details). In section 4.1, we discuss traditionally cited explanations for gender gaps, with a focus on the role of biology and innate gender differences and what the literature reveals about these explanations. In section 4.2, we then identify trends that contributed to the decline in gender gaps in the past two decades, with a focus on the role of formal institutions, structural transformation, and technological change. In Section 4.3, we review explanations for why gender gaps did not close faster, focusing on the persistence of cultural norms even as the factors that led to their initial formation have changed, gender discrimination, peer effects, and political economy-related explanations linked to male backlash.

4.1 Evidence on Innate Gender Differences

Differentials in sex-based characteristics have often been called on to explain variations in gendered labor market outcomes.

Brawn: A prominent explanation is that males have a comparative advantage in physical activities, leading to task specialization in agricultural production (Alesina et al., 2013; Carranza, 2014; Qian, 2008). However, structural transformation has changed the mix of available jobs in the economy, reducing the reliance on brawn for production. For example, while manufacturing initially was brawn-based, similar to agricultural work, technological innovations, especially in sectors that had historically employed females (like textiles), provided women an avenue to enter factory-based work. In the services sector, comparative advantage in physical tasks was, arguably, always less important. Increasingly, human capital —including both cognitive and interpersonal skills —is rewarded in the market, leveling the playing field in settings with relatively gender-equal education (Deming, 2017).

Childbirth: Another longstanding biological differentiator underlying gendered patterns in labor market dynamics has been pregnancy and childbirth. A vast literature has documented that women face a systematic penalty in labor markets after becoming parents. These child penalties vary widely by level of development (Kleven et al., 2025), going from being a small component in countries dominated by subsistence agriculture to a dominant share of the gender gap in high-income countries where

salaried industry and service sector work is widespread.[18] However, recent work has found little difference in child penalties between biological and adoptive mothers, suggesting that gender norms (e.g., related to care work) and discrimination, not biological differences, drive child penalties (Kleven et al., 2021; Andresen and Nix, 2022).

Preferences: An additional set of explanations for the existence of gender gaps in labor markets is related to differences in preferences. If men and women experience different levels of utility from working (or working in specific sectors or occupations), doing household chores or caring for children, gender gaps in labor markets could be justified. However, while multiple studies document differences in preferences between men and women (Croson and Gneezy, 2009), these differences themselves might be influenced by underlying social norms. Evidence for this comes from Gneezy et al. (2009) who find that while women in the patriarchal society of the Maasai in Tanzania tend to compete less than Maasai men, women in the matrilineal society of the Khasi in India tend to compete more than Khasi men. More broadly, existing studies also report cross-country evidence that women report more support for women working than men do in nearly all countries (Bernhardt et al., 2018). This suggests that gender gaps are likely not completely driven by differences in preferences and that other factors also play an important role.

4.2 What Trends Contributed to Gender Gap Closures?

Appendix Table A17 summarizes previous research on the underlying trends that contributed to declines in gender gaps, which we summarize here.

Formal Institutional Support: The first set of explanations is related to increased support for women from formal institutions. Using the World Bank's Women, Business, and the Law database, Hyland et al. (2020) document several stylized facts about the evolution of legal gender equality. While countries have made significant progress between 1970 and 2019 overall,[19] there is substantial variation across regions

[18] In contrast, marriage penalties —consistent with significant domestic and care responsibilities beyond those present with children —decline with development.

[19] The average legal gender equality score increased from 46 to 75 points during this period.

and important gender differences remain. As of 2019, in the average country, women only enjoyed three-quarters of the rights of men. In panel regressions, the authors show that improved legal equality is associated with higher female labor force participation and a smaller gender wage gap. We expand on this discussion in Section 5 when we discuss existing evidence on the impact of selected legal reforms on gender gaps.

Structural Transformation: As discussed, structural transformation has played an important role in increasing women's market activity. In contrast to the agricultural sector, the service sector is less reliant on brawn and more reliant on cognitive and interpersonal skills, creating a natural comparative advantage for women. Ngai and Petrongolo (2017) calibrate a model of structural transformation to the US economy and find that 20% of the decline in the gender wage gap and 60% of the change in the time allocation of men and women can be attributed to inter-sectoral transitions. Examining the growth of Bangladesh's garment sector, Heath and Mobarak (2015) show how women with better access to garment sector jobs delay marriage and childbirth, and remain in school longer as manufacturing employment opportunities increase the returns to skill increase for women.

Technological Change: Labor-saving innovations like electricity and household appliances have allowed women to allocate time from home production to work (Dinkelman, 2011; Greenwood et al., 2005). Medical innovation, including the pill, infant formula, and sulfa drugs, further made it easier for women to reconcile work and family by allowing women greater control over their fertility choices, providing additional flexibility in infant caretaking, and reducing maternal mortality (Bailey et al., 2012; Albanesi and Olivetti, 2016; Jayachandran et al., 2010). Finally, women also directly benefited from the diffusion of the personal computer in the US - a feature of both technological and structural transformation - which accounted for nearly 50% of reductions in gender wage gaps in the last two decades of the end of the twentieth century (Beaudry and Lewis, 2014).

Shocks: Besides these general trends, previous research has also documented the role of shocks in explaining changes in gender gaps. An extensive literature has studied

the impact of World War II and how it changed economic considerations regarding female labor force participation (Goldin and Olivetti, 2013a). Socialist rule, which explicitly focused on increasing women's economic activity, also often led to increased female empowerment, showing how political reforms can have substantial effects on social norms and gender attitudes in a short time (Campa and Serafinelli, 2019). These large-scale covariate shocks thus seem to be one of the factors that contribute to the substantial heterogeneity in gender gaps we observe across countries.

Paternal Altruism: An additional force that has supported a decline in gender gaps is that fathers care about the well-being of their daughters (Washington, 2008; Doepke and Tertilt, 2009). For example, Washington (2008) shows how having daughters increases the likelihood that a congressperson supports reproductive rights.

4.3 What Prevents a Faster Decline in Gender Gaps?

Other studies point to forces that hinder further declines in gender gaps. We review this research here, touching on many papers that have made important contributions to this discussion, as documented in Appendix Table A18.

Cultural Norms: As mentioned in section 3, structural transformation has substantially shifted labor demand and reduced reliance on brawn for economic production. However, culture is usually slow to adapt to changes, and customs often persist long after their economic rationale is no longer relevant. In a prominent example of this phenomenon, Alesina et al. (2013) find that the historical use of ploughs in agriculture, which advantaged male over female workers, is still correlated with present-day lower female labor force participation and more inequitable views on gender. Building on models of evolutionary anthropology, Giuliano and Nunn (2021) provide additional evidence for how cultural norms persist by documenting how gender norms and other cultural traits are stronger among countries with less variability in their ancestral environment.

A related line of inquiry directly documents how individual social learning related to women's market activity is slow as women and men must learn about the costs and benefits of women's market work by either observing the decisions of the previous generation (Fernández et al., 2004; Fernández, 2013) or other proximate women

(Fogli and Veldkamp, 2011). Social learning takes time and many remain ignorant of others' support for women's market activity, which shapes their own views and actions, suggesting pluralistic ignorance could be a significant norms-linked barrier to women's market activity. For example, Bursztyn et al. (2020) show how in Saudi Arabia, men's individual beliefs underestimate actual social support for women working, but correcting men's beliefs about community support for women working outside the home improves women's employment outcomes.

A broad set of studies also documents the ways in which norms continue to constrain women's activities, even in relatively more gender-equitable societies. These norms can take a variety of forms and affect many life decisions, including a woman's stated ambitions (Bursztyn et al., 2017) and relative incomes of men and women (Bertrand et al., 2015). Goussé et al. (2017) quantify the role of family attitudes in the UK and find that, if everyone adopted liberal views, labor market participation of women would increase by 30%.

Discrimination: In addition to norms, different forms of discrimination also hinder the closure of gender gaps. For example, previous research has found that female mayors are more likely to face early termination (Gagliarducci and Paserman, 2012), especially in areas with more conservative gender views, and that women receive relatively less credit for group work (Sarsons et al., 2021). These forms of discrimination are not only present among males, but can also be perpetuated by women: Bagues and Esteve-Volart (2010) show that an additional female evaluator on hiring committees for the Spanish Judiciary reduced the chance that a woman was hired. Evidence suggests taste-based discrimination is relevant even in high-income labor markets in progressive settings (Sin et al., 2022), and plays a role in shaping children's educational decisions and outcomes relevant to future labor force activity (Lavy and Sand, 2018).

Peer Effects: Evidence points to the relevance of gendered networks in limiting women's access to jobs, showing men are less likely to refer women to jobs, even if they know a qualified female applicant (Beaman et al., 2018). Existing male networks also might make it harder for women to advance professionally. Research from Denmark, for example, suggests that men's networks are more professionally valuable (in terms

of appointment to boards) than women's (von Essen and Smith, 2023), and Cullen and Perez-Truglia (2023) document how differences in face-to-face interactions with managers explains one-third of the gender gap in promotions at a firm in Southeast Asia. Women's more limited networks do not simply affect what jobs they access and their career progression, but also where they establish businesses and the economic returns to agglomeration (Rosenthal and Strange, 2012).

Political Economy: Finally, recent work also shows that those who can gain from limiting women's economic participation - namely, men - may strategically shut down opportunities to close gender gaps, hoping to retain economic opportunities that may otherwise go to women. Pande and Roy (2021) provide several historical examples to show how men have strategically opposed women's equality in situations where there are rents to be extracted from maintaining separate spheres by gender. Guarnieri and Rainer (2021) further document how domestic violence might increase in response to increased female empowerment.

5 The Way Forward: Research and Policy to Close Gender Gaps

What do the data and research suggest about how to tackle gender gaps, and which evidence gaps need to be filled? Here we outline several areas of focus that would benefit from additional attention of both academic researchers and policymakers. We outline high-priority areas for additional research and highlight "low-hanging fruit" for those interested in closing gender gaps.

Gender and Macroeconomic Research: Recent work in macroeconomics that has explicitly modeled gender-specific differences has substantially enhanced our understanding of gender gaps and their relationship with economic development and efficiency. For example, Gottlieb et al. (2024) use time-use data from 50 countries at all income levels to show that gender wedges in market, domestic, and care work play a central role – alongside marketization and income – in explaining cross-country differences in the gender division of work. Future macroeconomic models should incorporate such wedges more explicitly and study the role of policy in shaping them,

in order to better inform how governments might intervene. Future models should also account for the experiences of developing countries in recent decades. Barriers due to social norms might be stronger in countries like India, such that reducing barriers to human capital investments might not be enough to improve talent allocation. Non-labor market returns to education through marriage markets also play a more pivotal role in developing countries and are an important area for future models to explore. The importance of talent misallocation also sheds new light on the underlying changes to total factor productivity when accounting for what contributes to economic growth. Since the literature points to the importance of marketization in the process of economic development (Ngai et al., 2022), another area that would benefit from future study is the way in which government policies can support and accelerate marketization of household and care activities that can directly employ women, while freeing others to pursue different types of work. We further encourage research into alternative measures of welfare beyond GDP and the association between such measures and gender gaps in labor markets.

Secular Trends, Distributional Consequences, and Gender Inequality: While broader trends like globalization and automation have increased aggregate productivity, the largest benefits have often been realized by high-income earners, leading to increases in overall inequality (Piketty et al., 2018). Since women usually occupy positions at the bottom of the job ladder, these changes can lead to an increase in overall gender gaps. Other research also shows the uneven effects of technological changes like mobile internet (Chiplunkar and Goldberg, 2022) and trade policy (Sauré and Zoabi, 2014; Keller and Utar, 2022). Future research on gender gaps should thus explicitly consider the distributional effects of new policies and technologies that influence economic opportunities as economies develop, and what can be done to support individuals hurt by these changes. In such settings, it is also important to take into account how broader trends interact with existing social norms. For example, Cook et al. (2020) document a substantial gender earnings gap in the gig economy despite flexible labor markets and no evidence of gender discrimination, showing the importance of other constraints faced by women.

Reforming Discriminatory Legal Systems: Legal reforms, including family leave policies, tax and divorce regimes, pension policies, inheritance laws, quotas in education and jobs to ensure gender-equitable representation, and anti-discrimination laws, have been shown to be related to gender gaps reductions (Hyland et al., 2021). Data suggests, however, that many countries have laws and regulations that disfavor women. Beyond this, *de facto* implementation of gender-equitable laws is sometimes lacking, and often not well measured. Reforming systems that directly or indirectly constrain women's economic activities is a clear area where policy can tackle built-in inequities. Given the research pointing to the value of gender quotas in elevating women's interests and aspirations, prioritizing support for women in leadership may be a particularly important reform that could jumpstart a virtuous cycle that accelerates gender gap closures.

The Political Economy of Gender Gaps: As researchers and policymakers consider how to make high-income jobs in growing industries available to men, it is also important to preemptively identify how gatekeepers may limit women's access to high-income jobs and what can be done to prevent that. This concern is analogous to historical evidence of efforts to perpetuate caste- and enslavement-based exclusion. A related concern is that of backlash that may emerge after a less powerful group gains additional control, directly affecting women in their own households or communities (e.g., through violence). While the role of political economy and power dynamics in driving equitable development and gender equality outcomes has become more widely recognized, there has so far been little empirical research on male backlash, especially in the context of legal reform (Tertilt et al., 2022), making both these areas ripe for systematic investigation.

The Role and Malleability of Informal Institutions: While informal institutions like social norms are often seen as one of the main factors that contribute to existing gender gaps, recent research has also shown how norms and gender attitudes can change in response to policy and shifting economic environments (Field et al., 2021; Cheng et al., 2022). One example is Dhar et al. (2022), who show that changes to school curricula can be a powerful tool to shape adolescents' attitudes towards gender. Informal institutions should thus not be seen as fixed, and understanding the

forces that shape them is a promising avenue for further research.

Micro-level Interventions: Summarizing the vast research on different micro-level interventions that can improve gender gaps is beyond the scope of this paper, but we refer readers to the recent literature review of this topic by Heath et al. (2024). The authors identify a set of promising policies, including better availability of child-care, improving the position of women within households, psychological interventions, increased flexibility at work, and increased global exposure among female-intensive export industries.

Future Shocks and Gender Gaps: Households in the twenty-first century —particularly those in low and middle-income settings —will confront more frequent shocks, many of them related to climate change. These shocks will not be limited to individuals working in agriculture, but will extend to those directly affected by crises such as heat waves and floods. Given the extent to which we know climate change will affect individuals over the next century, more research is needed to understand the ways in which climate shocks affect women and men differently, and gender-specific preferences and adaptation strategies.

Beyond climate shocks, research suggests economic recessions have generally affected men's economic outcomes more than women's, but recent experience suggests this is not always the case. The unique nature of the Covid-19-induced recession initially affected women workers more strongly than men in the United States (Alon et al., 2020), and had more persistent negative impacts on female migrant workers' job attachment in India (Allard et al., 2022). Since some shocks have been instrumental in catalyzing women's economic activity, and others have made it more difficult, more research is needed to understand the nature of how covariate shocks like recessions may affect gender-specific outcomes.

Improving Data on Gender Gaps: A crucial final step for those interested in closing gender gaps is to more systematically gather, analyze, and make available data on gender gaps. High-quality, gender-disaggregated time series data on multiple dimensions of labor market-relevant gaps are lacking for many locations, and yet would be incredibly useful for diagnosing gaps and potential ways to close them.

Several areas where improved data could be useful include gender-specific information on informal versus formal work, time use, and unpaid work (including care), collected regularly and from samples representative of populations of interest at the subnational level or lower. Data on individual consumption or other proxies of individual welfare (e.g., anthropometric measures) are also crucial to understanding women's well-being and gender gaps. Given the high resource intensity required to collect this data, it could supplement representative data that is collected more regularly. Innovations in data collection in these more resource-intensive areas would be extremely helpful, ensuring that this type of data collection is feasible in low- and middle-income settings. Finally, collective action to highlight country-specific data gaps and encourage laggards to collect such data and make it available to researchers is an important step to making progress. 26% of the countries in the JOIN data have only one or two data points in our 21-year sample period, limiting the analysis that can be implemented. Having this data will make it easier for civil society to hold governments accountable and provide actionable recommendations to close gender gaps going forward.

6 Conclusion

While gender gaps in a variety of domains have begun to close over time, our analysis suggests that economic growth was not necessarily the driving force for these closures, and that further improvements in gender gaps are not guaranteed. Instead, countries today exhibit substantial variation in both the levels of gender gaps, and the relationship between gender gaps and growth. Yet research points to significant economic growth that could be unlocked through further closing those gender gaps, suggesting (beyond its intrinsic value) that achieving more gender-equitable outcomes is indeed a smart policy goal.

Although the existing research clearly suggests that closing gender gaps can increase overall productivity and drive growth, it is less clear the extent to which research from high-income countries' experiences will translate to lower-income contexts. The nature of work and structural transformation have changed dramatically in recent decades. Even if secular trends are closing some gender gaps, research also points to the persistence of social norms, discrimination, gender-segregated networks

and potential political economy considerations that push against these equalizing forces in context-specific ways.

Beyond differences in culture and economic opportunities, today's emerging economies will deal with a variety of shocks, ranging from the changing nature of work and the rise of generative artificial intelligence to climate change and geo-political conflict, all of which may affect gender gaps in ways not yet well understood. These prospects point to the importance of using data and evidence to inform our understanding of current gender gaps and effective strategies to close them.

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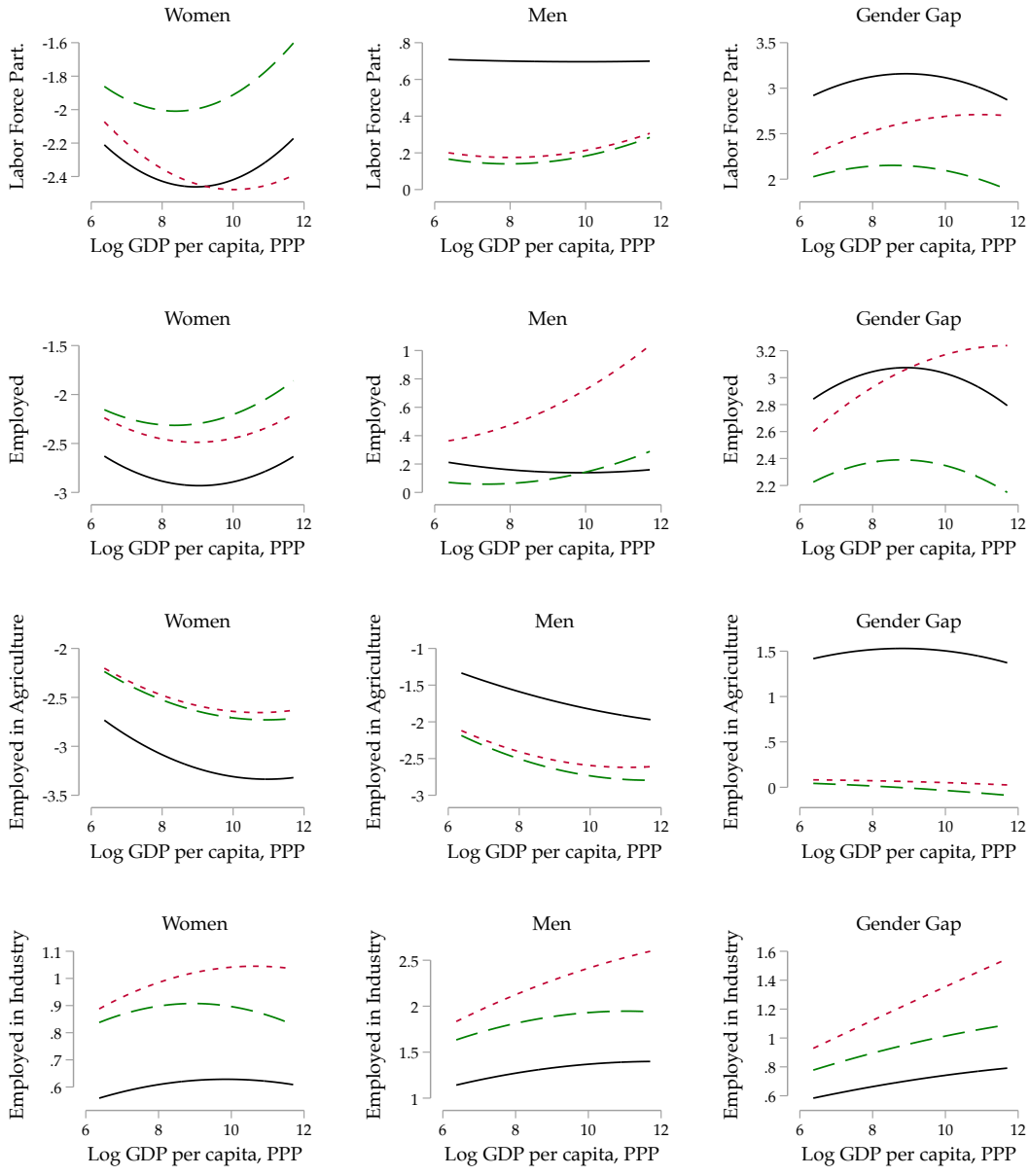
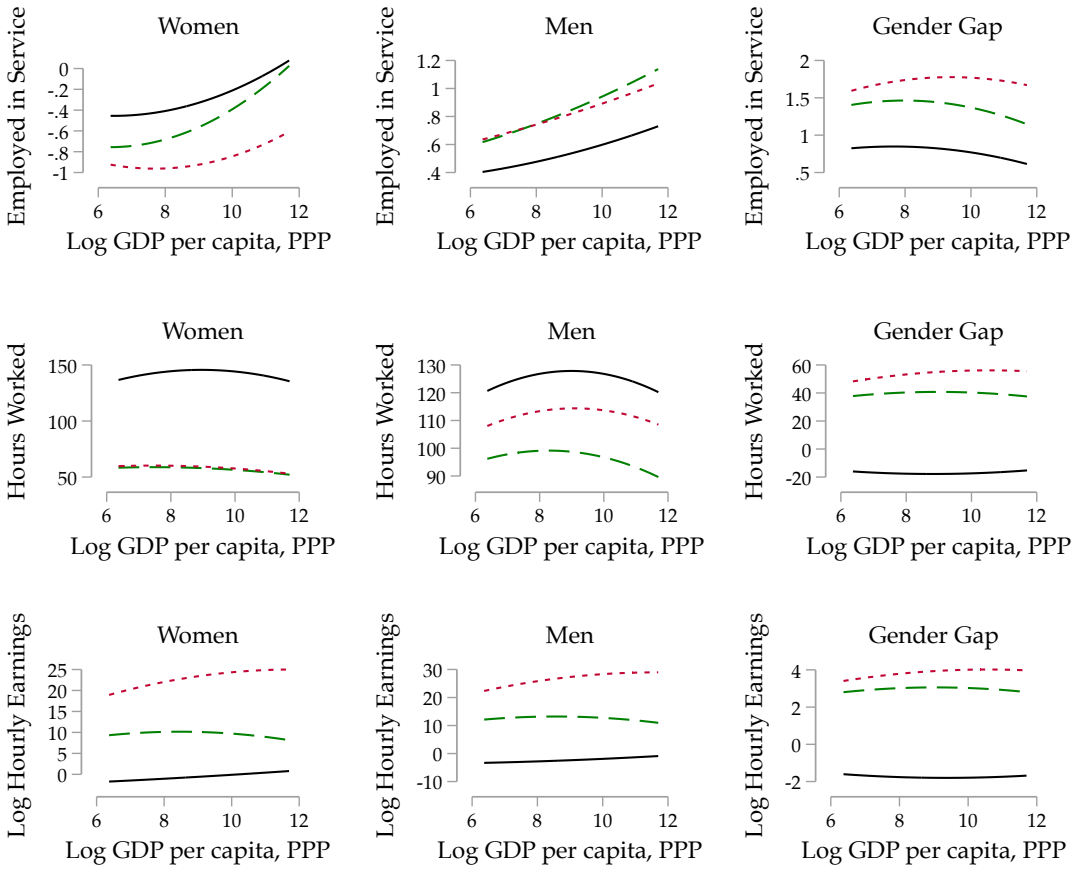
A. Appendix Tables and Figures

Figure A1: U-Shape for Additional Gender Gaps

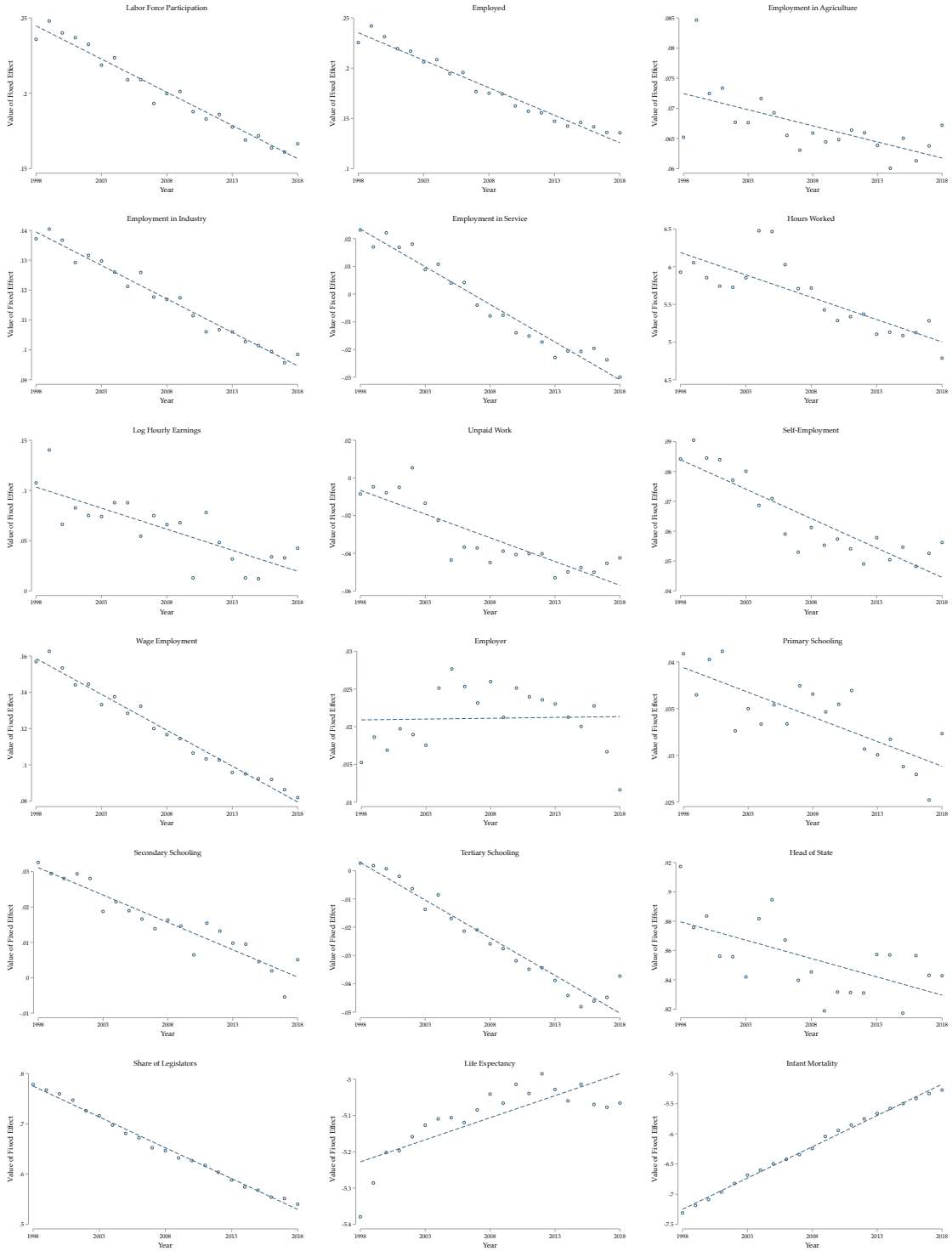


U-Shape for Additional Gender Gaps (Continued)



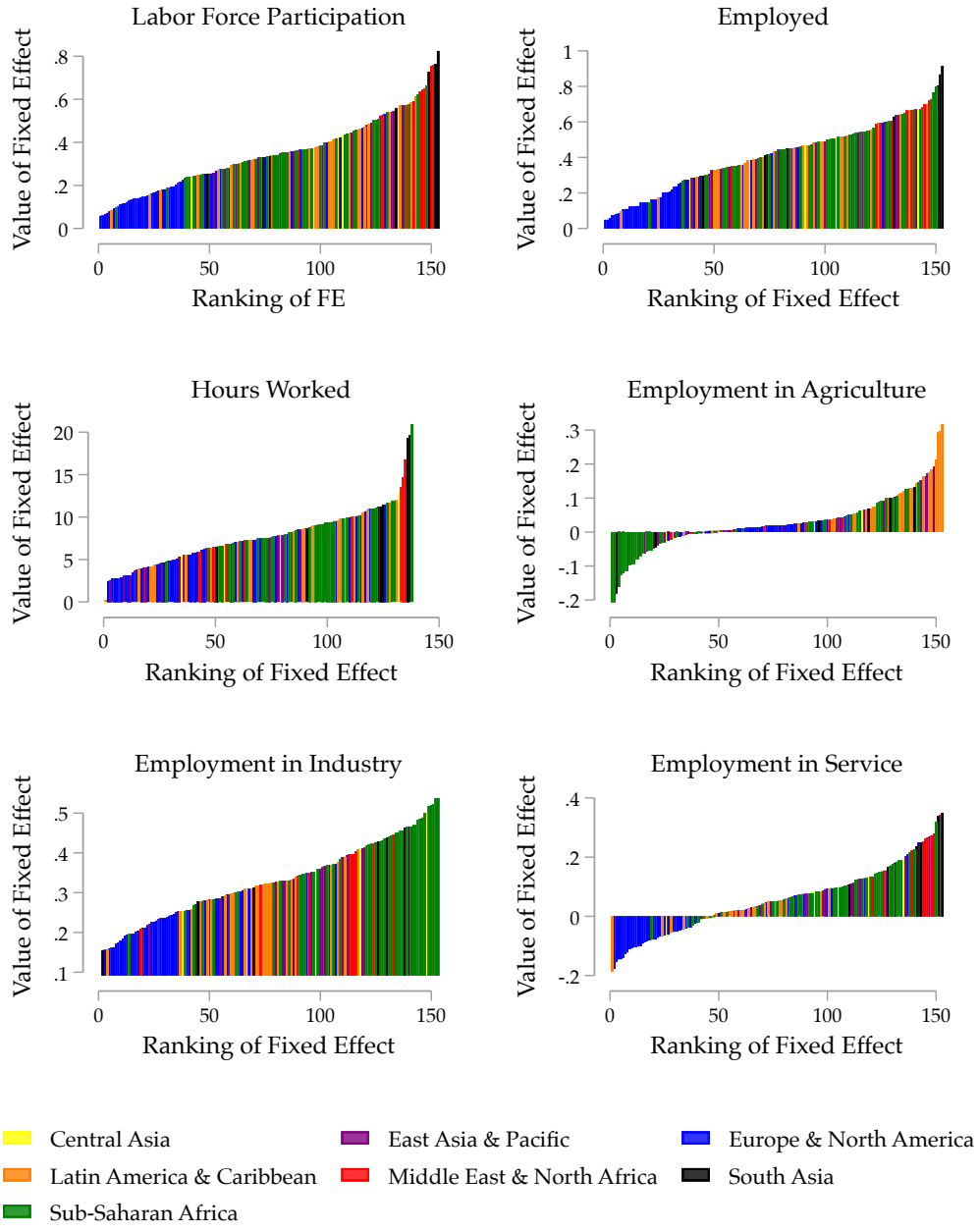
Notes: The figure shows the predicted relationship between gender gaps and log GDP per capita (adjusted for PPP). The black line indicates the results from the cross-sectional regression in which we regress each outcome on a linear and squared term of log GDP per capita (adjusted for PPP). The green line indicates the results from the within-country analysis in which we regress each outcome on a linear and squared term of log GDP per capita and countries fixed effects. The red line indicates the results from the within-country analysis in which we regress each outcome on a linear and squared term of log GDP per capita and countries and year fixed effects. In each figure, we also add the sample means. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Figure A2: Year Fixed Effects Plots



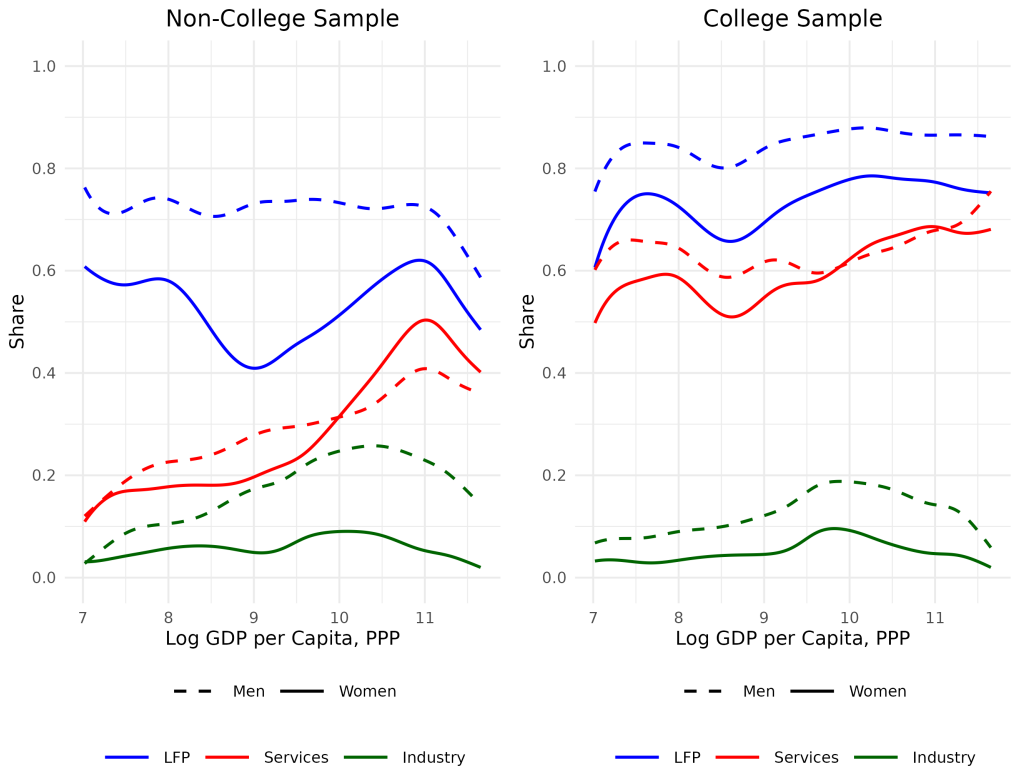
Notes: The figures plots the year fixed effects for the gender gap regressions. We regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Figure A3: Country Fixed Effects Plots



Notes: The figures show the value of country fixed effects for regressions involving gender gaps in labor force participation, hours worked, and share of employment in agriculture, industry and the services sector across countries. Gaps are calculated as the outcome for men minus the outcome for women. We regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Figure A4: Trends in Labor Market Outcomes by Educational Attainment



Notes: The figures plot the relationship between different labor market indicators and log GDP per capita (adjusted for PPP), separately by gender and college attainment. We estimate separate local regressions (bandwidth = 0.5) for each subsample. The data consists of the most recent survey for each country in the HWLFS microdata. Solid lines indicate outcomes for women and dashed lines indicate outcomes for men. The sample in the left plot is restricted to individuals who do not have at least an undergraduate degree and the sample in the right plot is restricted to individuals who have at least an undergraduate degree. Sample weights are constructed such that all observations for each country-year cell sum up to one. The blue lines indicate labor force participation rates, the red lines indicate employment shares in services, and the green lines indicate employment shares in industry.

Table A1: Country Coverage of HWLFS and JOIN by Income Group

Income Group	Countries in JOIN	Countries in HWLFS
Low Income	22	14
Middle Income	91	53
High Income	40	36

Notes: Country income classifications are obtained from the World Bank. The sample is restricted to countries for which labor market indicators and GDP data is available.

Table A2: Economic Growth and Labor Market Outcomes for Men

	Level Outcomes for Men						
			Conditional on Employment				
	Labor Force Particpation (1)	Employed (2)	Hours Worked (3)	Log Hourly Earnings (4)	Employed in Agriculture (5)	Employed in Industry (6)	Employed in Service (7)
Panel A: Cross-Sectional Regression							
Log GDP per Capita	-0.00	-0.01	-0.63**	0.48***	-0.12***	0.04***	0.06***
	(0.00)	(0.01)	(0.30)	(0.12)	(0.01)	(0.00)	(0.00)
R-squared	0.00	0.01	0.02	0.07	0.61	0.44	0.48
Panel B: Within-Country Analysis Using Only Country Fixed Effects							
Log GDP per Capita	0.02**	0.04***	-1.46	-0.24	-0.11***	0.06***	0.10***
	(0.01)	(0.01)	(1.19)	(0.72)	(0.01)	(0.01)	(0.01)
R-squared	0.73	0.79	0.61	0.60	0.89	0.83	0.87
Panel C: Within-Country Analysis Using Country Fixed & Year Effects							
Log GDP per Capita	0.02	0.12***	0.17	1.23	-0.10***	0.15***	0.07***
	(0.02)	(0.03)	(2.07)	(0.76)	(0.02)	(0.02)	(0.01)
R-squared	0.73	0.81	0.62	0.61	0.90	0.85	0.87
Mean of Outcome	0.79	0.72	43.32	-3.46	0.16	0.21	0.35
Observations	1,245	1,245	1,095	876	1,241	1,241	1,241

Notes: The table shows work outcomes for men across countries. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A3: Economic Growth and Labor Market Outcomes for Women

	Level Outcomes for Women						
			Conditional on Employment				
	Labor Force Particpation (1)	Employed (2)	Hours Worked (3)	Log Hourly Earnings (4)	Employed in Agriculture (5)	Employed in Industry (6)	Employed in Service (7)
Panel A: Cross-Sectional Regression							
Log GDP per Capita	0.02*	0.02	-0.92**	0.48***	-0.10***	0.01**	0.11***
	(0.01)	(0.01)	(0.37)	(0.12)	(0.01)	(0.00)	(0.01)
R-squared	0.02	0.01	0.03	0.07	0.47	0.03	0.54
Panel B: Within-Country Analysis Using Only Country Fixed Effects							
Log GDP per Capita	0.05***	0.06***	-1.28	-0.24	-0.09***	-0.00	0.15***
	(0.02)	(0.02)	(1.37)	(0.72)	(0.02)	(0.01)	(0.01)
R-squared	0.89	0.90	0.62	0.59	0.91	0.75	0.94
Panel C: Within-Country Analysis Using Country Fixed & Year Effects							
Log GDP per Capita	-0.07**	-0.00	-1.24	1.12	-0.09***	0.03***	0.05***
	(0.03)	(0.03)	(2.28)	(0.76)	(0.02)	(0.01)	(0.02)
R-squared	0.90	0.91	0.62	0.61	0.91	0.76	0.95
Mean of Outcome	0.57	0.52	37.68	-3.58	0.10	0.07	0.34
Observations	1,245	1,245	1,095	876	1,245	1,245	1,245

Notes: The table shows work outcomes for women across countries. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A4: Economic Growth and Gender Gaps in Work Type in JOIN Data

	Gender Gaps (Difference between Men's and Women's Outcome) in			
	Unpaid	Self-Employment	Wage-Employment	Employer
	(1)	(2)	(3)	(4)
Panel A: Cross-Sectional Regression				
Log GDP per Capita	0.03***	-0.02***	-0.03***	-0.00
	(0.01)	(0.01)	(0.01)	(0.00)
R-squared	0.12	0.05	0.09	0.00
Panel B: Within-Country Analysis Using Only Country Fixed Effects				
Log GDP per Capita	-0.00	-0.05***	0.00	0.01
	(0.02)	(0.01)	(0.01)	(0.00)
R-squared	0.53	0.80	0.89	0.64
Panel C: Within-Country Analysis Using Country Fixed & Year Effects				
Log GDP per Capita	0.07**	0.01	0.11***	0.00
	(0.03)	(0.02)	(0.02)	(0.01)
R-squared	0.55	0.81	0.91	0.66
Mean of Outcome	-0.02	0.07	0.13	0.02
Observations	1,227	1,227	1,227	1,227

Notes: The table shows the gender gaps in work outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. A negative sign for β thus implies that gender gaps favoring men are getting smaller. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A5: Economic Growth and Work Type Outcomes for Men in JOIN Data

	Level Outcomes for Men			
	Unpaid	Self-Employment	Wage-Employment	Employer
	(1)	(2)	(3)	(4)
Panel A: Cross-Sectional Regression				
Log GDP per Capita	-0.03***	-0.08***	0.12***	-0.00
	(0.00)	(0.01)	(0.01)	(0.00)
R-squared	0.17	0.48	0.70	0.00
Panel B: Within-Country Analysis Using Only Country Fixed Effects				
Log GDP per Capita	-0.05***	-0.05***	0.11***	0.01**
	(0.02)	(0.02)	(0.02)	(0.01)
R-squared	0.51	0.87	0.91	0.66
Panel C: Within-Country Analysis Using Country Fixed & Year Effects				
Log GDP per Capita	0.02	0.00	0.17***	0.00
	(0.03)	(0.03)	(0.03)	(0.01)
R-squared	0.52	0.87	0.91	0.67
Mean of Outcome	0.05	0.18	0.47	0.03
Observations	1,227	1,227	1,227	1,227

Notes: The table shows work type outcomes for men across countries. The outcomes are equal to zero if the men are outside of the labor force or unemployed. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A6: Economic Growth and Work Type Outcomes for Women in JOIN Data

	Level Outcomes for Women			
	Unpaid	Self-Employment	Wage-Employment	Employer
	(1)	(2)	(3)	(4)
Panel A: Cross-Sectional Regression				
Log GDP per Capita	-0.06***	-0.07***	0.14***	-0.00
	(0.01)	(0.01)	(0.01)	(0.00)
R-squared	0.35	0.39	0.68	0.00
Panel B: Within-Country Analysis Using Only Country Fixed Effects				
Log GDP per Capita	-0.05***	-0.00	0.11***	0.01
	(0.02)	(0.02)	(0.02)	(0.00)
R-squared	0.75	0.84	0.96	0.57
Panel C: Within-Country Analysis Using Country Fixed & Year Effects				
Log GDP per Capita	-0.05*	-0.00	0.06**	-0.00
	(0.02)	(0.03)	(0.02)	(0.00)
R-squared	0.76	0.85	0.96	0.58
Mean of Outcome	0.06	0.11	0.33	0.01
Observations	1,227	1,227	1,227	1,227

Notes: The table shows work type outcomes for women across countries. The outcomes are equal to zero if the women are outside of the labor force or unemployed. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A7: Gender Gaps for Additional Outcomes

	Gender Gaps (Difference between Men's and Women's Outcome) in							
		Education			Politics		Health	
	Formally Employed	Primary	Secondary	Tertiary	Head of State	Share of Legislators	Life Expectancy	Infant Mortality
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Cross-Sectional Regression								
Log GDP per Capita	-0.01	-0.04***	-0.02***	-0.02***	-0.10***	-0.06***	-0.82***	3.44***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.03)	(0.01)	(0.11)	(0.17)
R-squared	0.03	0.33	0.17	0.15	0.05	0.09	0.18	0.66
Panel B: Within-Country Analysis Using Only Country Fixed Effects								
Log GDP per Capita	-0.02	-0.02***	-0.02**	-0.04***	-0.04	-0.33***	-0.09	4.65***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.09)	(0.03)	(0.22)	(0.39)
R-squared	0.80	0.87	0.83	0.80	0.47	0.80	0.90	0.96
Panel C: Within-Country Analysis Using Country Fixed & Year Effects								
Log GDP per Capita	0.00	-0.01	0.02*	0.02*	0.01	-0.03	-0.38	2.24***
	(0.03)	(0.01)	(0.01)	(0.01)	(0.11)	(0.04)	(0.31)	(0.56)
R-squared	0.81	0.87	0.84	0.83	0.48	0.85	0.90	0.97
Mean of Outcome	0.01	0.03	0.03	-0.01	0.86	0.65	-5.17	-5.89
Observations	454	1,415	1,415	1,415	3,141	3,020	3,332	3,343

Notes: The table shows the gender gaps in additional outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank, along with the World Development Indicators (WDI) and Varieties of Democracy (V-DEM) databases.

Table A8: Level Outcomes for Men for Additional Outcomes

	Level Outcomes for Men							
		Education			Politics		Health	
	Formally Employed	Primary	Secondary	Tertiary	Head of State	Share of Legislators	Life Expectancy	Infant Mortality
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Cross-Sectional Regression								
Log GDP per Capita	0.12***	0.06***	0.17***	0.07***	-0.05***	-0.03***	6.20***	-21.26***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.25)	(0.97)
R-squared	0.47	0.29	0.43	0.30	0.05	0.09	0.67	0.69
Panel B: Within-Country Analysis Using Only Country Fixed Effects								
Log GDP per Capita	0.21***	0.07***	0.20***	0.15***	-0.02	-0.16***	8.53***	-31.37***
	(0.04)	(0.01)	(0.03)	(0.02)	(0.04)	(0.02)	(0.62)	(2.51)
R-squared	0.83	0.70	0.86	0.72	0.47	0.80	0.95	0.94
Panel C: Within-Country Analysis Using Country Fixed & Year Effects								
Log GDP per Capita	0.25***	-0.00	0.02	-0.02	0.01	-0.02	1.29*	-12.02***
	(0.07)	(0.03)	(0.05)	(0.02)	(0.05)	(0.02)	(0.66)	(3.37)
R-squared	0.84	0.71	0.86	0.76	0.48	0.85	0.97	0.96
Mean of Outcome	0.29	0.94	0.68	0.19	0.93	0.82	65.67	34.86
Observations	454	1,415	1,415	1,415	3,141	3,020	3,332	3,343

Notes: The table shows additional outcomes for men across countries. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank, along with the World Development Indicators (WDI) and Varieties of Democracy (V-DEM) databases.

Table A9: Level Outcomes for Women for Additional Outcomes

	Level Outcomes for Women							
		Education			Politics		Health	
	Formally Employed	Primary	Secondary	Tertiary	Head of State	Share of Legislators	Life Expectancy	Infant Mortality
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Cross-Sectional Regression								
Log GDP per Capita	0.14***	0.10***	0.19***	0.09***	0.06**	0.03***	6.51***	-15.47***
	(0.02)	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(0.31)	(0.91)
R-squared	0.47	0.37	0.48	0.37	0.04	0.09	0.72	0.69
Panel B: Within-Country Analysis Using Only Country Fixed Effects								
Log GDP per Capita	0.23***	0.09***	0.22***	0.19***	-0.05	0.16***	7.98***	-21.66***
	(0.05)	(0.02)	(0.03)	(0.02)	(0.09)	(0.02)	(0.66)	(2.14)
R-squared	0.83	0.82	0.88	0.76	0.54	0.80	0.97	0.95
Panel C: Within-Country Analysis Using Country Fixed & Year Effects								
Log GDP per Capita	0.24***	0.01	0.00	-0.05*	0.03	0.02	1.38	-10.03***
	(0.09)	(0.03)	(0.04)	(0.03)	(0.12)	(0.02)	(1.08)	(3.18)
R-squared	0.84	0.82	0.89	0.82	0.54	0.85	0.98	0.96
Mean of Outcome	0.28	0.90	0.65	0.20	0.10	0.18	74.95	18.77
Observations	454	1,415	1,415	1,415	1,424	3,020	1,419	1,428

Notes: The table shows additional outcomes for women across countries. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank, along with the World Development Indicators (WDI) and Varieties of Democracy (V-DEM) databases.

Table A10: Alternative Specifications for Within-Country Analysis

	Gender Gaps (Difference between Men's and Women's Outcome) in						
			Conditional on Employment				
	Labor Force Particpation (1)	Employed (2)	Hours Worked (3)	Log Hourly Earnings (4)	Employed in Agriculture (5)	Employed in Industry (6)	Employed in Service (7)
Panel A: 1-Year GDP Lag							
Log GDP per Capita	0.09***	0.12***	1.51*	0.11	-0.01	0.12***	0.01
	(0.02)	(0.02)	(0.81)	(0.07)	(0.01)	(0.02)	(0.02)
R-squared	0.93	0.93	0.79	0.62	0.89	0.84	0.94
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
Observations	1,242	1,242	1,092	876	1,238	1,238	1,238
Panel B: 5-Year GDP Lag							
Log GDP per Capita	0.06***	0.06***	0.89	0.03	0.01	0.06***	-0.01
	(0.02)	(0.02)	(0.85)	(0.08)	(0.01)	(0.01)	(0.01)
R-squared	0.94	0.94	0.85	0.62	0.90	0.82	0.95
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
Observations	1,228	1,228	1,077	871	1,224	1,224	1,224
Panel C: GDP Data from the Penn World Table (10.01)							
Log GDP per Capita	0.02	0.04	0.07	0.07	-0.02**	0.07***	-0.00
	(0.03)	(0.03)	(0.82)	(0.06)	(0.01)	(0.01)	(0.02)
R-squared	0.92	0.91	0.78	0.61	0.89	0.83	0.93
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
Observations	1,239	1,239	1,091	873	1,235	1,235	1,235
Panel D: Population Weights							
Log GDP per Capita	0.15***	0.14***	3.36**	0.00	0.06***	0.07***	0.01
	(0.02)	(0.02)	(1.56)	(0.06)	(0.02)	(0.01)	(0.02)
R-squared	0.99	0.99	0.89	0.85	0.95	0.90	0.99
Mean of Outcome	0.12	0.12	4.76	0.21	0.01	0.15	-0.05
Observations	1,245	1,245	1,095	876	1,241	1,241	1,241

Notes: The table shows the gender gaps in work outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank. In Panels A, B, and D, data on GDP per capita is obtained from the World Development Indicators of the World Bank.

Table A11: U-Shape Across Specifications

	Gender Gaps (Difference between Men's and Women's Outcome) in						
			Conditional on Employment				
	Labor Force Particpation	Employed	Hours Worked	Log Hourly Earnings	Employed in Agriculture	Employed in Industry	Employed in Service
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Cross-Sectional Regression							
Log GDP per Capita	0.66***	0.64***	-5.33	-0.41*	0.33***	0.09**	0.22*
	(0.17)	(0.17)	(3.61)	(0.24)	(0.10)	(0.03)	(0.13)
Squared Log GDP per Capita	-0.04***	-0.04***	0.30	0.02*	-0.02***	-0.00	-0.01*
	(0.01)	(0.01)	(0.20)	(0.01)	(0.01)	(0.00)	(0.01)
R-squared	0.15	0.15	0.02	0.02	0.14	0.49	0.21
Panel B: Within-Country Analysis Using Only Country Fixed Effects							
Log GDP per Capita	0.45***	0.50***	7.83	0.65	0.01	0.12*	0.36***
	(0.14)	(0.15)	(6.96)	(0.72)	(0.10)	(0.07)	(0.07)
Squared Log GDP per Capita	-0.03***	-0.03***	-0.44	-0.04	-0.00	-0.00	-0.02***
	(0.01)	(0.01)	(0.36)	(0.04)	(0.01)	(0.00)	(0.00)
R-squared	0.93	0.92	0.78	0.60	0.89	0.83	0.94
Panel C: Within-Country Analysis Using Country Fixed & Year Effects							
Log GDP per Capita	0.46***	0.52***	9.59	0.74	0.01	0.13*	0.38***
	(0.15)	(0.17)	(6.89)	(0.71)	(0.10)	(0.07)	(0.08)
Squared Log GDP per Capita	-0.02**	-0.02**	-0.46	-0.03	-0.00	-0.00	-0.02***
	(0.01)	(0.01)	(0.36)	(0.04)	(0.01)	(0.00)	(0.00)
R-squared	0.93	0.93	0.79	0.62	0.89	0.85	0.94
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
Observations	1,245	1,245	1,095	876	1,241	1,241	1,241

Notes: The table shows the gender gaps in work outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. In Panel A, we regress each outcome on a linear and squared term of log GDP per capita (adjusted for PPP). In Panel B, we regress each outcome on a linear and squared term of log GDP per capita (adjusted for PPP) and country fixed effects. In Panel C, we regress each outcome on a linear and squared term of log GDP per capita (adjusted for PPP) and country and year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A12: Gender Gaps and Economic Growth by Region

	Gender Gaps (Difference between Men's and Women's Outcome) in						
			Conditional on Employment				
	Labor Force Particpation (1)	Employed (2)	Hours Worked (3)	Log Hourly Earnings (4)	Employed in Agriculture (5)	Employed in Industry (6)	Employed in Service (7)
Panel A: Only Country Fixed Effects							
Central Asia × Log GDP per Capita	0.35***	0.36***	6.19***	0.00	-0.09***	0.18**	0.26*
	(0.11)	(0.09)	(0.94)	(.)	(0.00)	(0.07)	(0.16)
East Asia and Pacific × Log GDP per Capita	-0.01	-0.01	-1.00	-0.14***	-0.02	0.07***	-0.05***
	(0.03)	(0.03)	(1.04)	(0.05)	(0.02)	(0.01)	(0.01)
Europe and North America × Log GDP per Capita	-0.04**	-0.03	-0.94	0.06	-0.01	0.06***	-0.08***
	(0.02)	(0.02)	(0.59)	(0.08)	(0.01)	(0.01)	(0.02)
Latin America and Caribbean × Log GDP per Capita	-0.13***	-0.12***	-0.13	0.01	-0.08***	0.04***	-0.08***
	(0.02)	(0.02)	(0.68)	(0.06)	(0.02)	(0.01)	(0.02)
Middle East and North Africa × Log GDP per Capita	0.05	0.16	-14.33	0.00	0.08	0.09*	-0.00
	(0.10)	(0.10)	(11.90)	(0.06)	(0.09)	(0.05)	(0.06)
South Asia × Log GDP per Capita	0.06	0.05	3.25	-0.10**	-0.01	0.06***	0.01
	(0.04)	(0.04)	(2.81)	(0.05)	(0.03)	(0.00)	(0.02)
Sub-Saharan Africa × Log GDP per Capita	0.02	0.03	2.38	0.25	0.01	0.05***	-0.03
	(0.03)	(0.03)	(2.40)	(0.22)	(0.03)	(0.01)	(0.02)
R-squared	0.93	0.92	0.79	0.61	0.89	0.83	0.94
Panel B: Country & Year Fixed Effects							
Central Asia × Log GDP per Capita	0.30***	0.44***	0.00	0.00	0.13*	1.15***	-0.84***
	(0.10)	(0.10)	(.)	(.)	(0.08)	(0.19)	(0.21)
East Asia and Pacific × Log GDP per Capita	0.15**	0.15**	1.48	0.31***	0.09	0.08***	-0.02
	(0.06)	(0.06)	(2.05)	(0.08)	(0.07)	(0.03)	(0.03)
Europe and North America × Log GDP per Capita	0.10***	0.17***	0.08	0.09	-0.01	0.16***	0.01
	(0.03)	(0.03)	(0.69)	(0.10)	(0.02)	(0.03)	(0.03)
Latin America and Caribbean × Log GDP per Capita	-0.05	-0.04	2.68*	0.16	-0.04	0.05**	-0.05
	(0.04)	(0.03)	(1.50)	(0.11)	(0.04)	(0.02)	(0.04)
Middle East and North Africa × Log GDP per Capita	0.24*	0.33*	-18.52*	0.18	0.08	0.19***	0.05
	(0.13)	(0.18)	(9.58)	(0.20)	(0.09)	(0.07)	(0.09)
South Asia × Log GDP per Capita	0.23***	0.23***	-2.64	-0.19***	0.25***	0.01	-0.03
	(0.06)	(0.06)	(4.04)	(0.07)	(0.03)	(0.01)	(0.02)
Sub-Saharan Africa × Log GDP per Capita	0.05	0.06	0.50	0.39	-0.01	0.03	0.04*
	(0.06)	(0.05)	(3.66)	(0.50)	(0.04)	(0.03)	(0.02)
Mean of Outcome	0.22	0.21	5.63	0.12	0.06	0.14	0.01
R-squared	0.95	0.95	0.86	0.69	0.91	0.88	0.96
Observations	1,232	1,232	1,081	860	1,228	1,228	1,228

Notes: The table shows the gender gaps in work outcomes across countries. Gender gaps are calculated as the outcome for men minus the outcome for women. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP) interacted with the seven region dummies, the seven region dummies, and country fixed effects. In Panel B, we regress each outcome on log GDP per capita (adjusted for PPP) interacted with the seven region dummies, seven six region dummies, and country and year fixed effects, and interactions between the region dummies and the year fixed effects. Standard errors are clustered at the country level. Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Table A13: Economic Growth and Gender Gaps in HWLFS Data

	In Workforce (1)	Employed (2)	Agriculture (3)	Industry (4)	Services (5)
A: Cross-Sectional Regression					
Log GDP per Capita × Female	0.05***	0.05***	0.02***	-0.03***	0.06***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Log GDP per Capita	0.00	-0.00	-0.10***	0.03***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Female	-0.72***	-0.66***	-0.25***	0.15***	-0.56***
	(0.16)	(0.14)	(0.07)	(0.04)	(0.11)
Joint p-value	0.001	0.004	<0.001	0.113	<0.001
B: Within-Country Analysis Using Only Country Fixed Effects					
Log GDP per Capita × Female	0.05*	0.03	0.03**	-0.05***	0.05***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Log GDP per Capita	0.00	0.05	-0.10***	0.04***	0.11***
	(0.02)	(0.03)	(0.02)	(0.01)	(0.01)
Joint p-value	0.092	0.020	0.008	0.808	<0.001
C: Within-Country Analysis Using Country Fixed & Year Effects					
Log GDP per Capita × Female	-0.10***	-0.14***	0.01	-0.15***	-0.00
	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)
Log GDP per Capita	0.06**	0.20***	-0.10***	0.19***	0.10***
	(0.03)	(0.04)	(0.03)	(0.02)	(0.01)
Joint p-value	0.287	0.177	0.014	<0.001	<0.001
Countries	103	103	103	103	103
Observations	117,696,339	117,696,339	117,696,339	117,696,339	117,696,339
Country-Year Obs.	891	891	891	891	891
Mean Male	0.74	0.68	0.10	0.22	0.36
Mean Female	0.57	0.51	0.06	0.07	0.38

Notes: The table shows the gender gaps in employment outcomes across countries. The change in gender gaps with economic development is captured by the coefficient for the Log GDP per Capita × Female interaction term. A negative sign for β thus implies that gender gaps favoring men are getting larger. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP), a female dummy, and an interaction between both variables. In Panel B, we also include country-by-gender fixed effects. In Panel C, country-by-gender and year-by-gender fixed effects. Standard errors are clustered at the country level. Sample weights are constructed such that all observations for each country-year cell sum up to one. Regressions are based on HWLFS microdata.

Table A14: Heterogeneity by College Completion in HWLFS Data

	In Workforce (1)	Employed (2)	Agriculture (3)	Industry (4)	Services (5)
Panel A: Individual-Level Controls					
Log GDP per Capita × Female	-0.09***	-0.13***	0.02	-0.15***	-0.00
	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)
Log GDP per Capita	0.03	0.17***	-0.08***	0.17***	0.08***
	(0.02)	(0.04)	(0.02)	(0.02)	(0.02)
Joint p-value	0.090	0.403	0.040	0.005	0.001
Countries	103	103	103	103	103
Observations	117,696,339	117,696,339	117,696,339	117,696,339	117,696,339
Country-Year Obs.	891	891	891	891	891
Mean Male	0.74	0.68	0.10	0.22	0.36
Mean Female	0.57	0.51	0.06	0.07	0.38
Panel B: College Subsample					
Log GDP per Capita × Female	-0.06***	-0.05*	0.02**	-0.06***	-0.01
	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)
Log GDP per Capita	0.11***	0.18***	-0.02**	0.06***	0.14***
	(0.03)	(0.04)	(0.01)	(0.01)	(0.03)
Joint p-value	0.149	0.004	0.586	0.275	0.006
Countries	103	103	103	103	103
Observations	17,229,328	17,229,328	17,229,328	17,229,328	17,229,328
Country-Year Obs.	891	891	891	891	891
Mean Male	0.86	0.81	0.02	0.15	0.63
Mean Female	0.75	0.69	0.01	0.06	0.62
Panel C: Non-College Subsample					
Log GDP per Capita × Female	-0.10***	-0.15***	0.02	-0.15***	-0.02
	(0.02)	(0.03)	(0.02)	(0.02)	(0.01)
Log GDP per Capita	0.02	0.16***	-0.09***	0.18***	0.07***
	(0.03)	(0.04)	(0.03)	(0.02)	(0.02)
Joint p-value	0.030	0.692	0.047	<0.001	0.026
Countries	103	103	103	103	103
Observations	98,795,663	98,795,663	98,795,663	98,795,663	98,795,663
Country-Year Obs.	891	891	891	891	891
Mean Male	0.73	0.66	0.11	0.23	0.32
Mean Female	0.53	0.48	0.07	0.07	0.34

Notes: The table shows the gender gaps in employment outcomes across countries by educational attainment. The change in gender gaps with economic development is captured by the coefficient for the Log GDP per Capita × Female interaction term. A negative sign for β thus implies that gender gaps favoring men are getting larger. In Panel A, we regress each outcome on log GDP per capita (adjusted for PPP), a female dummy, an interaction between both variables, country-by-gender and year-by-gender fixed effects, age fixed effects, number of children under 5 fixed effects, educational attainment fixed effects, a married dummy, and an urban dummy. In Panels B and C, we restrict the sample to individuals with a college education and individuals without a college education, respectively. Standard errors are clustered at the country level. Sample weights are constructed such that all observations for each country-year cell sum up to one. Regressions are based on HWLFS microdata.

Table A15: Heterogeneity by Marriage and Place of Residence in HWLFS Data

	In Workforce (1)	Employed (2)	Agriculture (3)	Industry (4)	Services (5)
Panel A: Married Subsample					
Log GDP per Capita × Female	-0.11***	-0.15***	0.02	-0.15***	-0.02
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
Log GDP per Capita	0.04*	0.16***	-0.08***	0.17***	0.07***
	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)
Joint p-value	0.091	0.758	0.052	0.011	0.036
Countries	103	103	103	103	103
Observations	65,920,986	65,920,986	65,920,986	65,920,986	65,920,986
Country-Year Obs.	891	891	891	891	891
Mean Male	0.84	0.80	0.12	0.26	0.42
Mean Female	0.58	0.54	0.08	0.07	0.39
Panel B: Non-Married Subsample					
Log GDP per Capita × Female	-0.05**	-0.09***	0.03**	-0.15***	0.03**
	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)
Log GDP per Capita	0.01	0.16***	-0.08***	0.17***	0.07***
	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)
Joint p-value	0.281	0.057	0.049	0.042	<0.001
Countries	103	103	103	103	103
Observations	41,714,622	41,714,622	41,714,622	41,714,622	41,714,622
Country-Year Obs.	891	891	891	891	891
Mean Male	0.62	0.53	0.08	0.16	0.29
Mean Female	0.52	0.44	0.03	0.06	0.35
Panel C: Urban Subsample					
Log GDP per Capita × Female	-0.07***	-0.11***	0.00	-0.13***	0.02
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Log GDP per Capita	0.06**	0.20***	-0.01	0.15***	0.06*
	(0.02)	(0.04)	(0.01)	(0.02)	(0.03)
Joint p-value	0.827	0.003	0.728	0.015	0.004
Countries	96	96	96	96	96
Observations	59,661,585	59,661,585	59,661,585	59,661,585	59,661,585
Country-Year Obs.	763	763	763	763	763
Mean Male	0.74	0.67	0.04	0.22	0.42
Mean Female	0.56	0.50	0.02	0.07	0.41
Panel D: Rural Subsample					
Log GDP per Capita × Female	-0.10***	-0.14***	0.04*	-0.15***	-0.04**
	(0.03)	(0.04)	(0.02)	(0.02)	(0.02)
Log GDP per Capita	0.02	0.14**	-0.11***	0.17***	0.08***
	(0.03)	(0.06)	(0.04)	(0.03)	(0.03)
Joint p-value	0.105	0.952	0.147	0.013	0.084
Countries	96	96	96	96	96
Observations	31,672,253	31,672,253	31,672,253	31,672,253	31,672,253
Country-Year Obs.	763	763	763	763	763
Mean Male	0.75	0.69	0.23	0.21	0.26
Mean Female	0.55	0.50	0.14	0.06	0.30

Notes: The table shows the gender gaps in employment outcomes across countries by marriage status and place of residence. The change in gender gaps with economic development is captured by the coefficient for the Log GDP per Capita × Female interaction term. A negative sign for β thus implies that gender gaps favoring men are getting larger. We regress each outcome on log GDP per capita (adjusted for PPP), a female dummy, an interaction between both variables, country-by-gender and year-by-gender fixed effects, age fixed effects, number of children under 5 fixed effects, educational attainment fixed effects, a married dummy, and an urban dummy. In Panels A and B, we restrict the sample to married and unmarried individuals, respectively. In Panels C and D, we restrict the sample to urban and rural individuals, respectively. Standard errors are clustered at the country level. Sample weights are constructed such that all observations for each country-year cell sum up to one. Regressions are based on HWLFS microdata.

Table A16: The Productivity Costs of Gender Gaps

Country (Paper)	Gender Gap Measure	Dataset	Empirical Methods	Findings
Global Ashraf et al. (2023)	Labor force participation	Administrative firm records; World Bank country data from 101 countries. 2015-2019	Roy-Borjas model of occupational choice and empirical analysis covering approximately 100,000 employees of a large multinational firm	While average productivity within countries is stable for men, female productivity is negatively correlated with relative FLFP. This relationship is consistent with positive female selection into work, particularly at low levels of female labor force participation, and it signals the presence of norms that restrict women's work outside the home. Removing gender-specific barriers that prevent employers from hiring productive women would increase firm productivity by 32%, holding constant employment levels and the total wage bill.
Global Chiplunkar and Kleineberg (2022)	Sectoral and occupational segregation by gender	IPUMS International data covering 91 countries 1970-2015	Roy-based model with heterogeneous agents (differing by gender and ability) incorporating differences in productivity, returns to human capital, and gender-specific barriers (attributed to norms and discrimination). Calibrated using data from India, Indonesia, Brazil, Mexico, Canada, and the U.S.	Reductions in gender barriers attributed to discrimination and gender norms affected sector-specific employment and growth and are responsible for approximately 25-30% of growth in real value added in the high and middle-income countries studied, and 20% overall. While norms-related barriers have greatly reduced, gender wage gaps reflecting discrimination persist and are similar across countries of varying income status.
Global Klasen (2002)	Education	Cross-country income, growth, and human capital (education, fertility, etc.) from secondary data sources (e.g., Penn World Tables) 1960 - 1992	Cross-country and panel regressions; educational investments are used as IVs to account for potential endogeneity in education outcomes	Gender inequality in education reduces the average level of human capital, directly reducing growth. Gender-based educational inequalities also indirectly reduce growth through lowering investment and increasing population growth. Education gender gaps in Sub-Saharan Africa, South Asia and the Middle East contributed to lower per capita growth of 0.4 - 0.9 percentage points, compared to East Asia and the Pacific.

Table A16: The Productivity Costs of Gender Gaps

Country (Paper)	Gender Gap Measure	Dataset	Empirical Methods	Findings
Austria Weber and Zulehner (2014)	Labor force participation	Administrative matched employer-employee data records 1978-2006	Proportional hazard model	Firms with low shares of female employees relative to the industry average have shorter survival rates, with start-up firms with very low female shares surviving 18 months less than firms with female shares above the industry median. These differential exit rates are larger in concentrated industries. Consistent with employer learning, firms that start with low female shares and survive increase their female workforce over time.
India Chiplunkar and Goldberg (2024)	Entrepreneurship and labor force participation	Economic Census of India; Annual Survey of Industries, and National Sample Surveys 1998-2005	Roy-based model incorporating firm formalization choices	Women face higher costs to labor force participation and business start-up and formalization, but they have a comparative advantage in hiring other women. Policies that boost female entrepreneurship could increase female labor force participation by helping female entrepreneurs expand and hire new employees. Removing all excess barriers faced by women entrepreneurs would double female labor force participation, and increase aggregate output by 3% and real income by 43%.
United States Erosa et al. (2022)	Home production responsibilities	Current Population Survey. 1976-2010	Roy model	Removing the uneven division of nonmarket responsibilities between men and women would increase aggregate labor productivity by 3.4%.
United States Heathcote Jonathan and Giovanni (2010)	Labor supply, education, and consumption	Current Population Survey March files; and Consumer Expenditure Survey. 1967-2005	Growth model incorporating overlapping generations, incomplete markets, and joint household decisions	Increases in demand for female employees in the US, attributable to sectoral shifts favoring women or norms changes, drew women into the labor force and closed gender wage gaps. The average gain to an individual entering the economy in 2000, compared to a baseline steady state, is a 1.4 percent increase in lifetime consumption.

Table A16: The Productivity Costs of Gender Gaps

Country (Paper)	**Gender Gap Measure**	**Dataset**	**Empirical Methods**	**Findings**
United States Hsieh et al. (2019)	Occupational distribution	Population Census, American Community Surveys 1960-2012	Roy model of occupational choice, augmented to allow for labor market discrimination, barriers to the acquisition of human capital, and occupation-specific preferences.	Labor market discrimination, barriers to human capital investments, and differences in occupational preferences (reflecting social norms) limit occupational choice among high-skilled women and Blacks. Improved allocation of talent due to reduced market frictions explains 20 - 40 percent of growth in aggregate market output per person in the US from 1960 to 2010. Higher female economic activity has driven the bulk of this growth, and most improvements reflect decreased human capital investment costs, rather than changes in discrimination or norms, particularly for women.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	Dataset	Methods	Findings
Panel A: Formal Institutions			
Global Hyland et al. (2020)	World Bank's Women, Business, and the Law database 1970-2019	Panel regressions	A one-point increase in the WBL index is associated with an increase in female labor force participation of 4.1 percentage points and a decrease in the gender wage gap of 6.7 percentage points.
Panel B: Structural Transformation			
Global Bridgman et al. (2018)	126 time-use surveys from 43 countries 1960 - 2000	Descriptive statistics and a model of household allocation to market work, home production, and leisure to explain marketization through structural transformation	While household labor contributes to half of all work undertaken globally, its contribution to total labor declines with higher GDP per capita. In low-income settings, women work many more hours than men. As GDP per capita increases, women decrease total work hours and hours in household production and increase market hours; men increase total hours of work, reducing market and increasing household work.
Bangladesh Heath and Mobarak (2015)	Household survey across 60 villages/4-subdistricts 2009	Difference-in-differences based on timing of the arrival of garment factories within commuting distance to surveyed villages	Women with better access to garment sector jobs delay marriage and childbirth, and gain (at the median village) 1.5 additional years of schooling compared to male siblings. Educational gains are concentrated in young girls, while employment and (fewer) educational gains accrue to older girls who postpone marriage to work in factories. Gains are attributable to changes in the returns to skill and/or increases in female bargaining power.
United States Ngai and Petrongolo (2017)	March Current Population Surveys; and time use surveys 1965-2008	Multi-sectoral model incorporating goods, services, and home services production, in which women have a comparative advantage in market and home-produced services	The rise of services, driven by structural transformation and marketization of home production, raises women's relative wages and market hours. The model accounts for over half the observed trends in male and female time allocation and 20% of the decline in the gender wage gap in the US.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	Dataset	Methods	Findings
Panel C: Technology			
Global Cavalcanti and Tavares (2008)	World Bank data and New Chronos Database at the Statistical Office of the European Union. 1975-1999	IV using the manufacturing price index and terms of trade adjustment	A 20% decrease in the relative price of home appliances increases female labor force participation on average by 2-3%. In the United Kingdom, around 10-15% of the increase in female force participation between 1975 and 1999 is explained by reductions in relative prices of home appliances.
China Wang et al. (2022)	Population census, industrial census, and economic census 1990-2005	Long-differences analysis of changes in tariff rates across prefectures and employment rates	Increased import competition increased female labor force participation. Effects are driven by an expansion of female-intensive sectors, a reduction in within-firm discrimination, and increased computerization.
Germany Black and Spitz-Oener (2010)	The Qualification and Career Survey and the IAB employment sample 1979-1999	Fixed coefficients model based on gender-specific task prices and first-differences analysis of changes in workplace computerization and workplace tasks	Relative to men, women have experienced larger increases in nonroutine and interactive tasks and reductions in routine tasks. These changes, driven by technological advancements, explain 50% of the observed convergence of the gender wage gap.
Mexico Juhn et al. (2013)	National Survey of Employment, Salaries, Technology, and Training 1991-2000	First-differences analysis of changes in tariffs and relative female employment and wages	NAFTA-induced tariff reductions improved employment and wage outcomes of women relative to men in blue-collar jobs, consistent with increased computerization and reduced reliance on physically demanding skills.
Mexico Juhn et al. (2014)	National Survey of Employment, Wages, Technology and Training 1992, 2001	Theoretical model of firm technology choice and trade liberalization, and regression analysis examining relationship between relative female employment and liberalization	Trade liberalization leads to adoption of technologies that reduce reliance on brawn, decreasing men's comparative advantage in blue-collar tasks. Tariff reductions due to the North American Free Trade Agreement (NAFTA) caused new firms to enter the export market and update their production technologies, increasing relative female employment and relative wage gains in blue-collar, but not white-collar, jobs.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	Dataset	Methods	Findings
South Africa Dinkelman (2011)	Administrative data in rural KwaZulu-Natal, geographical data, and two census surveys 1996-2001	IV using land gradient and fixed effects approaches	Rural electrification increased female employment by 9 to 9.5 percentage points and hours worked for both men and women. Consistent with an increase in labor supply, female wages fall. Evidence suggests reduced home production costs are an important mechanism.
United States Albanesi and Olivetti (2016)	IPUMS, national health surveillance data, and other historical data series from published papers (e.g., for the price of infant formula) 1930-1960	Overlapping generations model of household labor supply with fertility choice	Significant improvements in maternal health enabled a rise in both fertility and female labor force participation in the US. Improvements derived from technological advances that reduced maternal mortality and pregnancy-related disabilities, and that led to widespread availability of infant formula. Improved maternal outcomes account for 50 percent of the increase in married women's labor force participation and fertility from 1930 - 1960.
United States Attanasio (2008)	Panel Study of Income Dynamics, Current Population Survey, US Census Bureau, Survey of Income and Program Participation, Bureau of Labor Statistics data, Consumer Expenditure Survey 1970-2000	Lifecycle model of labor supply and saving	Decreasing child care costs combined with an increase in female wage levels and gender wage gap closures can explain the dynamics of observed increases in women's labor force participation and average wages in the US in the 1950s compared to those in cohorts from the two previous decades.
United States Bailey et al. (2012)	National Longitudinal Survey of Young Women and National Fertility Study data 1943 - 1954 birth cohorts, 1970 fertility	Difference-in-differences exploiting state-level variation within birth cohorts in early legal access to the Pill	By the 1980s, pill access (from age 18 to age 21) had increased women's wages by 8 percent per hour worked. Two-thirds of wage gains due to early pill access are attributed to improved labor market experience, and one-third to investments in additional education and occupational improvements.
United States Beaudry and Lewis (2014)	5 percent public use Census; and American Community Surveys 1980-2010	IV using pre-PC education levels	Changes in skill prices associated with IT diffusion (coinciding with the adoption of PCs post-1980) account for more than 50 percent of the decline in the US gender wage gap from 1980 - 2000, occurring alongside increases in education-wage differentials.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	Dataset	Methods	Findings
United States Bhalotra et al. (2023)	Census data 1940-1950	Difference-in-differences using variation in baseline mortality rates and the timing of arrival of new antibiotics	The introduction of sulfa antibiotics in the US reduced child mortality and increased women's disposable time, affecting fertility decisions by inducing women to start fertility later. This in turn induced an increase in female labor force participation by 7%.
United States Cortes et al. (2021)	Dictionary of Occupational Titles and the Occupational Information Network; IPUMS; and American Community Survey 1980 - 2016	Model of occupational choice and descriptive regressions, including Oaxaca-Blinder decompositions	Women's increased representation in high-paying jobs reflects the growing importance of social tasks in these jobs, and increasing relative pay for jobs with relatively high social tasks. From 1980 - 2016, a one standard deviation increase in the importance of a job's social task composition is associated with a 0.475 percentage point increase in female representation relative to men. Gains are concentrated among college-educated women.
United States Greenwood et al. (2005)	Historical time series data on basic amenities (access to water, electricity, indoor plumbing, etc.), household appliances (refrigerators, washers, vacuums, etc.), and women's labor force participation and wages 1900-1980	Overlapping generations model where households decide whether to adopt technology and whether a married woman should work for pay	Labor-saving household technologies in durable goods allowed married women to spend more time outside of the home, increasing their labor force participation. The introduction of new household technologies can explain more than half the observed rise in female labor force participation over this time.
United States Vidart (2024)	Historical data on electricity generation at the county level, combined with census microdata 1910-40	Triple difference-in-differences exploiting electrification roll-out by educational level and cohort, and an overlapping generations model where electricity is skill-biased and human capital investments are made early in life	The introduction of electricity induced skill-biased technological change that favored women, increasing investment in girls' education and later participation in skilled jobs. Impacts of electricity on female labor force participation accrue beyond direct changes in labor market engagement for future generations. Electrification also decreased fertility and delayed childbearing but increased overall women's marriage rates.
United States Yamaguchi (2012)	Dictionary of Occupational Titles and the Panel Study of Income Dynamics, Current Population Survey 1980-2010	Roy-based model and semi-parametric empirical analysis (correlated random effects) to allow for unobservable selection into occupations	Around 65% of the decrease in the gender wage gap between 1980 and 2010 can be attributed to declining returns to motor skills. After 2000, the returns to motor skills stabilized, but the gender wage gap continued to fall due to faster growth of cognitive and general skills for women relative to men.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	Dataset	Methods	Findings
Panel D: Shocks			
Germany Campa and Serafinelli (2019)	German Socioeconomic Panel, German General Social Survey, and General Social Survey 1992-1997	Spatial regression discontinuity using the division of Germany after 1945	Relative to women in West Germany, women in East Germany were 10 percentage points more likely to report that career success was important for them in 1990. These effects are concentrated in areas that experienced the largest growth in female employment in East Germany. Similar results are found in an alternative identification strategy that exploits variation in the timing of U.S. immigrants from Central and Eastern European countries versus Western European countries.
United States Goldin and Olivetti (2013b)	IPUMS data, Palmer survey 1940-1960	Triple differences using variation in time, mobilization rates, and marriage and fertility status	For educated white women who were married without children during WWII, an increase in state-level mobilization rate of 6.8 percentage points (the difference between "high" and "low" mobilization states) increased the number of weeks worked by 28% and female labor force participation rates by 30% in 1950. Effects are smaller for women who were unmarried or were married and had children. Effects persisted among women with relatively higher education.
Panel E: Paternal Altruism			
United States and England Doepke and Tertilt (2009)	Historical data on schooling and fertility rates, database of articles published in the Times of London 1840-1899	Overlapping generations model and descriptive evidence	While men want to limit the rights of their own wives, they want to increase rights for other women because they care about their daughters and because women's rights increase educational investments in children. As technological change increases returns to education, men's support for the expansion of women's rights increases. Historical evidence from England and the United States is consistent with these patterns, and reflected in the evolution of arguments provided in parliamentary debates and newspaper editorials in favor of women's rights.

Table A17: What Trends Contributed to Gender Gaps Closures?

Country (Paper)	**Dataset**	**Methods**	**Findings**
United States Washington (2008)	Voting record scores compiled by the American Association of University Women, the National Organization of Women, and the National Right to Life Coalition 1997-2004	Difference-in-differences strategy using variation in the gender of legislators' children	Controlling for the total number of children, each daughter increases a Congress member's likelihood to vote liberally, as measured by the voting scores from two women's interest groups; this effect is 25% the size of the effect of being a female legislator. Effects are largest for issues related to related to reproductive rights.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
Panel A: Cultural Norms			
Global Alesina et al. (2013)	Multiple sources, including the Ethnographic Atlas and GAO's Global Agro-Ecological Zones (GAEZ) 17^{th} century-Present	IV using geographic suitability for agricultural technologies	Societies that traditionally used ploughs, giving a comparative advantage to men in agriculture, have lower female labor force participation and less equal gender norms today.
Global Giavazzi et al. (2013)	World Value Surveys 1980-2000	IV using lagged attitudes and outcomes	When exploiting variation in cultural attitudes over time and across countries, a change in cultural attitudes from the first to the third quantile is associated with an 11.5 percentage point higher female employment rate.
Global Giuliano and Nunn (2021)	Historical data measuring temperature anomalies, droughts, location of ancestral ethnic groups, and FLFP (500 to 1900 CE), World Development Indicators data on FLFP (1970 and 2012)	Evolutionary biology model; Empirical approach uses variety of fixed effects	Female labor force participation exhibits less persistence in locations where ancestors experienced more cross-generational environmental variability; results are consistent with the idea that cultural persistence is weaker with greater ancestral instability.
Global Nollenberger et al. (2016)	Program for International Student Assessment data for over 11,000 second generation 15-year old immigrant students from 35 countries in 9 host countries; migrant country Gender Gap Index data 2003, 2006, 2009, and 2012	Regressions utilizing variety of controls and fixed effects to isolate role of sending country gender equality	A one standard deviation unit increase in parent country gender equality reduces the math gender gap by 29 percent of a standard deviation unit, which is two-thirds the size of the gender gap attributable to current country gender equality.
Australia Grosjean and Khattar (2018)	Colonial census data of six Australian states (various years, 1800s); Household, Income and Labour Dynamics in Australia survey; census data 2011	Panel regressions using variation in where (mostly male) convicts were sent	Higher historical male-female sex ratios increased marriage rates among women and lowered the share of women working outside their home in the short run. These differences persist: A one standard deviation increase in the historical male-female sex ratio reduces present-day female working hours by 6%.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
India Carranza (2014)	Census of India, National Sample Survey, and Economic Survey of India 1997-2001	IV using variation in the fraction of loamy and clayey soil textures across districts	Areas with soil more suitable for deep tillage, which gave men a comparative advantage in agriculture, have lower female labor force participation and more male-skewed sex ratios today.
India Munshi and Rosenzweig (2006)	Survey of 4,900 households and schools in Bombay, India, covering 20 cohorts of school-going children 2001-2002	Model of schooling choice; empirical estimation using regressions derived from model, focused on school choice and children's gender	While lower-caste girls benefit from increased returns to nontraditional white-collar occupations by switching to English schools, lower-caste boys continue to stay in local language schools.
Saudi Arabia Bursztyn et al. (2020)	Experimental data on 500 men and 291 women, Saudi Arabia 2010-2011	RCT	Men underestimate the share of other men who support women working outside of their homes. Correcting these beliefs for men increased take up of a job matching service and likelihood that the wife applied and interviewed for a job.
United Kingdom Goussé et al. (2017)	British Household Panel Survey 1991-2008	Search model of marriage formation and within-household resource allocation	Model estimates suggest that if everyone were liberal, the marriage rate would decline and married women would increase labor market participation by 30%. This effect is quantitatively similar to removing the comparative advantage of women in home production.
United States Babcock et al. (2017)	Lab experiments with college students 2012-2013	Five lab experiments	In lab games, women volunteer 50 percent more than men in tasks with "low promotability" - i.e., those individuals prefer are done, but that they be completed by others. Additional games show that this gender volunteering gap is not driven by differences in preferences but reflects a correct belief that women are more likely than men to volunteer and to agree to help if asked.
United States Bertrand et al. (2015)	National Survey of Families and Households 1988 - 1994	RDD using the husband's income share	The distribution of wives' incomes sharply decline when close to exceeding husbands'. Marriage outcomes are worse for couples where the husband earns less than the wife.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
United States Blau et al. (2011)	Census data, UN statistics 1980-2000	Cross-sectional regressions using information on ancestral countries	Compared to native women, women immigrants initially work less when they migrate from countries with low female labor force participation rates. No differences in the labor supply of men point to the role of cultural norms in explaining the patterns.
United States Bursztyn et al. (2017)	Administrative and survey data for students in an elite US MBA program 2010-2016	RCT	Single female students reported lower salary demands and more work flexibility on a real-stakes placement questionnaire when they expected their preferences to be revealed to their classmates (particularly single males).
United States Cook et al. (2020)	Company data on all Uber driver-weeks from 196 US cities 2015 - 2017	Wage regressions and Gelbach decomposition	There is a 7% gender earnings gap among Uber drivers. Around half of the pay gap can be attributed to differences in driving speed. Differences in experience (learning-by-doing) explain another third of the gap. Preferences and constraints over where to work explain the remaining gap.
United States Fernandez (2007)	Census data (1970) and World Value Survey data (1981-2001)	Cross-sectional regressions using information on origin countries	In a sample of second-generation American women, a one standard deviation increase in conservative origin country cultural attitudes is associated with 6% lower work hours. Similar effects are found when using labor force participation rates in ancestral countries as cultural proxies instead.
United States Fernández (2013)	Census, IPUMS, and General Social Survey data 1880-2000	Theoretical model of cultural change	Women endogenously learn about the payoffs from working by observing the work decisions of the preceding generation, consistent with the s-shaped change in FLFP observed empirically. Wage changes affect the pace of intergenerational learning.
United States Fernández et al. (2004)	General Social Survey data and Female Labor Force Participation and Marital Instability data (1988, 1994); IPUMS data (1940-1980)	Dynamic model of marital matching and labor supply Empirics utilize exogenous variation in proportion of men raised by working mothers due to state-specific variations in World War II mobilization.	A man's wife is more likely to work when the man's mother worked; this "echo" effect increases the probability his wife works anywhere from 24 to 32 percentage points.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
United States Fogli and Veldkamp (2011)	Census data and American Community Survey data 1940 - 2000	Overlapping generations model of dynamic learning about children's outcomes as women work for pay, calibrated to US data	Women learn about the payoffs of maternal employment by observing the behavior of other women working in their region, and so labor force participation rates vary across regions and correlated within regions. The model predicts, and data shows, that learning generates an S-shaped evolution in women's economic activity over time.
Panel B: Discrimination			
China He et al. (2023)	8,848 fictitious resumes responding to online job advertisements before and after China shifting from a one-child to a two-child policy 2016	Resume experiment and multiple difference-in-differences approaches based on changes to one-child policy	Women are subject to labor market discrimination based on whether they are expected to have more children or not. This discrimination worsens with women's reproductive age.
China Kuhn and Shen (2023)	Universe of unique job advertisements posted on the third largest online job board in China 2018-2019	Before-after analysis and difference-in-differences around timing of removal of gender-specific requests on job advertisements	Removal of employers' explicit gender requests led to a large and immediate increase in applications from the opposite gender of the originally advertised request. Callbacks to women who applied to jobs that had requested men rose by 61%; the callback rate to men who applied to jobs that had requested women rose by 146%. Employers' gender requests are based on relatively weak preferences or outdated stereotypes.
India Beaman et al. (2009)	Census, election, and primary survey data 1991-2008	Regression analysis leveraging random variation in which village councils were subject to reservations	Village councils reserved in the two previous election cycles are almost twice as likely to have women stand for and win election to village councils than those without reservation. Effects are driven by improved voter attitudes towards female leaders, but backlash is evident: Men are *more* biased against women in leadership positions in village councils that had only been reserved once.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
Israel Lavy and Sand (2018)	Administrative data from sample of Tel-Aviv schools with students' academic records and exam scores, merged with administrative demographic data; teacher Growth and Effectiveness Measures for Schools 2002-2004	Regression analysis leveraging teachers' random assignment to students and teacher bias measures	Primary school teachers' gender bias affects students' middle and high school achievement and high school enrollments and outcomes, driving future occupational gender gaps. Results are particularly strong when teachers have more positive relative assessments of boys, who then perform better, and in biases in math classes.
Italy Alesina et al. (2013)	1.2 million loans made to sole proprietors using Central Credit Register and Bank of Italy Loan Interest Rate Survey 2004 - 2007	Regression analysis, Blinder-Oaxaca decomposition and propensity score matching to assess role of gender in credit costs	Despite having similar to, or slightly better, loan outcomes than males, Italian female business owners pay approximately 9 basis points more than males for credit in commonly used overdraft lines. Differential borrowing costs are not explained by gender-specific business types, bank choice, or credit history, and likely reflect taste-based discrimination or limited bargaining among women with majority-male loan officers.
Italy Gagliarducci and Paserman (2012)	Administrative data set on all Italian mayoral terms 1993-2003	RDD using narrow election margins	Female mayors are 3-5 percentage points more likely to experience early termination than male mayors. Differences are not driven by lower female mayor performance; risk of early termination for female mayors is highest in all-male councils and regions with more conservative gender views.
Malawi Yishay et al. (2020)	Field experiment and survey data from 143 Malawian villages 2009	RCT	All farmers are less willing to learn about a new agricultural technology from female farmers, despite them doing as well as male farmers at acquiring, retaining and using new information. Differences in female farmers' perceived knowledge explain the pattern; despite this, male and female farmers have similar effects on diffusion rates and farm yields.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
New Zealand Sin et al. (2022)	Linked Employer-Employee Database, Longitudinal Business Database, and Household Labor Force Survey 2002-2016	Regression analysis of gender wage gaps, controlling for different individual, firm, and industry characteristics	13 - 17% of within-firm gender wage gaps in New Zealand - a progressive country with flexible labor markets- are not explained by differential sorting. Instead, one-quarter to one-third of within-firm gender wage gaps are accounted for by women's lower bargaining power and lower productivity. The remainder is explained by taste-based discrimination among employers, who anticipate declines in women's work with increases in caregiving.
Spain Bagues and Esteve-Volart (2010)	Public examination data for 150,000 candidates for the Spanish Judiciary 1987 - 2007	Analysis leveraging natural experiment generating random allocation of candidates to evaluation committees	An additional female evaluator in evaluation committees decreases the likelihood that a female candidate is hired by 2.8%. This is driven by female-majority committees overestimating the quality of male candidates.
Sweden Folke and Rickne (2022)	Swedish Work Environment Survey linked to annual employer-employee data for the entire employed population (1999, 2001, 2003, 2005, and 2007); survey experiment data using the Swedish Citizen Panel (2020)	Compensating differentials model to assess how sexual harassment affects workplace sex segregation and wage gaps, along with descriptive analysis and a survey experiment	Individuals take costly steps to avoid working in places with higher sexual harassment. Male-dominated workplaces pay higher wages, yet harassment vulnerability is also higher in sex-segregated workplaces. Taken together, harassment avoidance not only contributes to gender segregation in workplaces, but to approximately 10% of gender wage gaps.
United States Egan et al. (2022)	Panel data on all financial advisers in the United States from Financial Industry Regulatory Authority's BrokerCheck database 2005 - 2015	Regression analysis controlling for variety of individual and firm-level covariates and fixed effects	There is a gender gap in punishment: Female financial advisors are 20% more likely to be fired than males after misconduct. Results are not attributable to features of gender-specific work or misconduct and likely reflect in-group bias among males, since the punishment gap reduces with more female representation in firm management.
United States Gayle George-Levi (2012)	Panel Study of Income Dynamics 1968-1997	Dynamic general equilibrium model of labor supply, occupational sorting, and human-capital accumulation	40-50% of the increase in women's labor market experience in professional and non-professional jobs between 1968 and 1997 can be explained by a decline in discrimination.
United States Neumark et al. (2019)	Artificial job applications sent to 40,000 job vacancies 2014	Resume experiment	Women tend to have higher callback rates than men within the same age groups, but age discrimination is stronger for women, with callback rates declining from 29% for young women to 18% for old women for sales jobs.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
United States Sarsons et al. (2021)	Dataset of CVs of economists who came up for tenure at top-35 US PhD-granting universities (1985 - 2014), and data from two experiments - one with mTurk and one with HR recruiters (1985 - 2014)	Regression analysis of research output controlling for a variety of covariates and fixed effects; exogenous variation for the experiments	For equal quality research, each paper male economists coauthor increases their probability of tenure by 7.4%; the rate for female economists is 4.7%, and women are credited less for work coauthored with men. Approximately 65% of the unexplained gender gap in economist tenure rates reflects differential returns to collaboration. Experimental evidence corroborates these results and suggests biased beliefs about performance in gender-stereotypical areas and the gender of decision makers play a role in gender-specific recognition of contributions in group work.
Panel C: Peer Effects			
Global Ductor et al. (2023)	EconLit database, covering over 900,000 papers and 1,900 journals 1970-2017	Regression analysis, including various fixed effects to isolate the association of gender with research output	Female economists collaborate with fewer co-authors, are more likely to collaborate with the same co-authors over time, and their co-authors are more likely to overlap with each other; women's smaller research networks explain 18% of the gender gap in research production and 20% of the gender gap in top 5 publications.
Chile Zimmerman (2019)	College application-relevant data - e.g., test scores, admissions outcomes (1980 - 2001); data on firm leadership (2013); Chilean tax records (2005-2013)	RDD exploiting admissions cutoffs to elite business-focused programs in Chile	Admission to elite business programs raises the probability that males from wealthy households - but not females or those from lower-income households - have extremely high income and professional outcomes in Chile (e.g., at top 0.1% in income, hold a board seat), increasing gender and income-based attainment gaps. Peer effects among males from wealthy households, rather than differences in skill, college outcomes, or industry choice, are likely the culprit.
Denmark von Essen and Smith (2023)	Matched employer-employee dataset for all firms with more than 50 employees, including participation on boards and networks 1995 - 2011	OLS, additional regressions that aim to control for a variety of fixed effects	Larger co-worker networks increase the probability of appointment to board director for the first time, but the effect is larger for men. Gender differences likely derive from men's better connections to larger, listed firms, in comparison to women's connections to family firms and other women.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
India Field et al. (2016)	Microfinance administrative data and survey data for 636 female microentrepreneurs in urban India 2006-2007	RCT	Short business training and counseling sessions with female entrepreneurs increased business activities only when women were invited to train with a peer of their choice. Impacts were strongest among women who faced restrictive norms and appeared to operate through increased ambition or commitment to goals set.
Malawi Beaman et al. (2018)	Administrative data from RCT on applicant referrals and job candidate characteristics, including application test results 2011	RCT	When job applicants in Malawi were invited to refer an applicant of any gender, only 30 percent referred a woman, and men were 20 percentage points less likely than women to refer women, despite being capable of referring qualified women. Women's referrals of other women were lower quality than men's. Both results highlight how social networks can reinforce labor market gender gaps.
South Asia Cullen and Perez-Truglia (2023)	Administrative data from a large bank in Southeast Asia on employment relationships and outcomes, survey data of firm employees 2015-2018	Event studies exploiting the timing of quasi-random manager rotations, generating variation in face-to-face interactions (due to shared smoking habits) and gender homophily among employees and managers	When men are assigned to male managers (compared to female managers), their salaries increase by approximately 14.6 percent more in the next 2.5 years. Removing the "old boys network" effect would reduce gender pay grade gaps by 40 percent. Results are driven by in-person interactions.
United States Rosenthal and Strange (2012)	Census data and Dun and Bradstreet's (D&B) Marketplace files, summarizing firm characteristics across a range of sectors 2000-2007	Theoretical model of entrepreneurship, urban structure and firm location, allowing for gender differences in benefits to agglomeration and costs to working far from home; empirical analysis of firm outcomes by owner gender utilizing various fixed effects to isolate variation by business owner gender	Female-owned businesses have lower returns to agglomeration, possibly due to women's more limited networks, and women face higher costs to working far from home (due to domestic duties). Female-owned businesses in the US are segregated at levels similar to that of racial residential segregation.

Table A18: What Prevented a Faster Decline in Gender Gaps?

Country (Paper)	Dataset	Methods	Findings
Panel D: Political Economy			
Global Pande and Roy (2021)	Cambridge Alumni Database (1869-1900); survey of female Cambridge alumnae and sisters; data on degree outcomes and rankings in economics (1903-1955); World Values Survey and World Bank Women, Business, and Law Index (2010-2020)	Case study and descriptive analysis	"Separate spheres" ideology confining women to home-based pursuits was reinforced through the Industrial Revolution as men benefitted from women's specialization in household production and reduced labor competition. Men (including influential economists) had incentives to maintain more restrictive norms on gender roles and actively fought against gender equality.
Cameroon Guarnieri and Rainer (2021)	Demographic and Health Surveys 2004 and 2011	RDD examining border areas of Cameroon that were partitioned into British and French colonies from 1919 through 1961	Areas under British colonial rule, which had more opportunities for women than areas under French rule, have 24 percentage points higher female employment shares today, but also 10 percentage points higher rates of spousal violence.

B. Appendix Data and Variable Descriptions

This appendix contains information on data sources and variable definitions.

Global Jobs Indicators Database (JOIN)

A country's **labor force participation rate** is the share of individuals aged 15 to 64 who participate in the labor force.

A country's **employment rate** the share of individuals aged 15 to 64 who are employed, including unpaid individuals, wage employees, and individuals who are self-employed. While the JOIN database reports the employment rate among individuals in the labor force, we use the unconditional employment rates by multiplying the JOIN variable with the labor force participation rate.

The number of **average weekly working hours** is computed, by gender, as the mean of working hours for employed individuals aged 15 to 64. **Median earnings** are calculated for wage workers (aged 15 to 64) on an hourly basis.[20] They are deflated to 2011 using the Consumer Price Index (CPI) and adjusted for purchasing power parity using World Development Indicator (WDI) exchange values. Individuals are classified as **formally employed** if they are wage-employed worker with either social security or a contract.

Sectoral employment shares are based on the following International Standard Industrial Classification (ISIC) codes: Agriculture includes Agriculture, Hunting, Fishing (ISIC 01-05). Industry includes Mining (ISIC 10-14), Manufacturing (ISIC 15-37), Electricity and Utilities (ISIC 40-41), and Construction (ISIC 45). Services include Commerce (ISIC 50-55), Transportation, Storage and Communication (ISIC 60-64), Financial, Insurance and Real Estate (ISIC 65-74), Services: Public Administration (ISIC 75), Other Services (ISIC 80-99) and unspecified categories or items. While the JOIN database reports the sectoral employment rates among employed individuals, we use the unconditional sectoral employment shares by multiplying the JOIN variable with the unconditional employment rate.

Following ICSE-93, **unpaid workers** include family workers and self-employment jobs in a market-oriented establishment. The establishment is operated by a person living in the same household. This person cannot be regarded as a partner at a level comparable to that of the head of the establishment because of the person's degree of commitment to the operations of the establishment in terms of working time or other factors. The JOIN database reports unpaid work rates conditional on employment and we generate the unconditional paid rate by subtracting the unpaid work rate from 1 and then multiplying the variable with the unconditional employment rate.

An **employer** is a business owner who hires employees on a continuous basis. **Wage employment** refers to individuals whose primary remuneration does not di-

[20] In the JOIN data, reported earnings are winsorized (such that values below the 1st percentile are coded at that level, with a similar adjustment made for values above the 99th percentile)

rectly depend on the revenue of the enterprise they work for. They are typically paid wages or salaries, though compensation may also take the form of piece-rate payments or payments in kind.

Education shares are also computed by gender, separately for those whose highest completed level of education is primary schooling, secondary schooling, and post-secondary schooling.

For all labor market outcomes, we restrict the sample to country-year observations for which information on sectoral employment shares is available to minimize changes in samples across regressions.

World Development Indicators (WDI)

Life expectancy is computed by gender in years at the time of birth. The **infant mortality rate** is computed by gender as the fraction of infants deaths per 1,000 live births. **Gross domestic product** is measured per capita in constant 2017 international $ and adjusted for purchasing power parity (PPP).

Varieties of Democracy (V-DEM)

The **head of state** is identified by gender from which a gender dummy variable for each year is constructed. The **share of legislators** is also computed based in lower chambers by examining the gender composition within a country in a given year.

Maddison Project

Data on the **historical gross domestic product** per capita in the United States is obtained from the Maddison Project. We deflate the measure to reflect constant 2017 international $.

Table B1: JOIN Database Country-Year Coverage

Country Name	Region	Income Group	First Year	Last Year	Obs.	List of Years Observed
Afghanistan	South Asia	Low income	N/A	N/A	0	N/A
Albania	Europe & Central Asia	Upper middle income	2003	2018	10	2003, 2004, 2009, 2011, 2013, 2014, 2015, 2016, 2017, 2018
Angola	Europe & Central Asia	High income	2018	2018	1	2018
Argentina	Latin America & Caribbean	Upper middle income	2012	2018	6	2012, 2014, 2015, 2016, 2017, 2018
Armenia	Latin America & Caribbean	High income	2010	2017	3	2010, 2012, 2017
Australia	East Asia & Pacific	High income	N/A	N/A	0	N/A
Austria	Europe & Central Asia	High income	1998	2003	6	1998, 1999, 2000, 2001, 2002, 2003
Azerbaijan	Europe & Central Asia	Upper middle income	2008	2008	1	2008
Bahamas, The	Europe & Central Asia	Upper middle income	2001	2001	1	2001
Bangladesh	Europe & Central Asia	Upper middle income	2005	2016	5	2005, 2010, 2013, 2015, 2016
Barbados	Latin America & Caribbean	High income	N/A	N/A	0	N/A
Belarus	Latin America & Caribbean	High income	1998	2010	13	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010
Belgium	Latin America & Caribbean	High income	1998	2003	6	1998, 1999, 2000, 2001, 2002, 2003
Belize	Latin America & Caribbean	High income	1998	1999	2	1998, 1999
Benin	Latin America & Caribbean	High income	2018	2018	1	2018
Bhutan	Latin America & Caribbean	High income	2003	2017	4	2003, 2007, 2012, 2017
Bolivia	Latin America & Caribbean	High income	1999	2018	18	1999, 2000, 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Bosnia and Herzegovina	Latin America & Caribbean	High income	2001	2018	11	2001, 2007, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Botswana	Sub-Saharan Africa	Upper middle income	2002	2015	4	2002, 2009, 2013, 2015
Brazil	Sub-Saharan Africa	Upper middle income	1998	2018	19	1998, 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Bulgaria	Sub-Saharan Africa	Upper middle income	2002	2016	12	2002, 2004, 2005, 2006, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Burkina Faso	Sub-Saharan Africa	Upper middle income	2009	2009	1	2009
Burundi	Sub-Saharan Africa	Upper middle income	1998	2013	2	1998, 2013
Cabo Verde	Sub-Saharan Africa	Upper middle income	2000	2007	2	2000, 2007
Cambodia	Sub-Saharan Africa	Upper middle income	2001	2012	6	2001, 2003, 2006, 2008, 2009, 2012
Cameroon	Sub-Saharan Africa	Upper middle income	2001	2014	4	2001, 2007, 2010, 2014
Canada	Sub-Saharan Africa	Upper middle income	2001	2001	1	2001
Central African Republic	Sub-Saharan Africa	Low income	2003	2008	2	2003, 2008
Chad	North America	High income	2003	2018	3	2003, 2011, 2018
Chile	North America	High income	1998	2017	9	1998, 2000, 2003, 2006, 2009, 2011, 2013, 2015, 2017
China	North America	High income	2002	2013	6	2002, 2005, 2007, 2008, 2010, 2013
Colombia	North America	High income	1999	2018	20	1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Comoros	North America	High income	2004	2013	2	2004, 2013
Congo, Dem. Rep.	North America	High income	2004	2012	2	2004, 2012
Congo, Rep.	Sub-Saharan Africa	Lower middle income	2005	2011	2	2005, 2011
Costa Rica	Latin America & Caribbean	High income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Cote d'Ivoire	Latin America & Caribbean	High income	2002	2008	2	2002, 2008
Croatia	Latin America & Caribbean	High income	2011	2016	6	2011, 2012, 2013, 2014, 2015, 2016
Cyprus	Europe & Central Asia	High income	2000	2016	16	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016
Czechia	Europe & Central Asia	High income	1998	2016	9	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Denmark	Europe & Central Asia	High income	2004	2016	13	2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Djibouti	Europe & Central Asia	High income	2002	2017	4	2002, 2012, 2015, 2017
Dominican Republic	Latin America & Caribbean	Upper middle income	2000	2015	15	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015
Ecuador	Latin America & Caribbean	Upper middle income	1998	2018	19	1998, 1999, 2000, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Egypt, Arab Rep.	Middle East & North Africa	Lower middle income	1998	2018	14	1998, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
El Salvador	Middle East & North Africa	Lower middle income	1998	2018	18	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012, 2014, 2015, 2016, 2017, 2018
Estonia	Europe & Central Asia	High income	2000	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Eswatini	Europe & Central Asia	High income	2000	2016	3	2000, 2009, 2016
Ethiopia	Sub-Saharan Africa	Low income	1999	2016	14	1999, 2000, 2003, 2004, 2005, 2006, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Fiji	East Asia & Pacific	Upper middle income	1998	2008	1	2008
Finland	Europe & Central Asia	High income	1998	2016	14	1998, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
France	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Gabon	Sub-Saharan Africa	Upper middle income	2005	2017	2	2005, 2017
Gambia, The	Sub-Saharan Africa	Upper middle income	1998	2015	4	1998, 2003, 2010, 2015
Georgia	Sub-Saharan Africa	Upper middle income	1999	2018	19	1999, 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Germany	Sub-Saharan Africa	Upper middle income	2002	2011	10	2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011
Ghana	Sub-Saharan Africa	Lower middle income	1998	2016	4	1998, 2005, 2012, 2016
Greece	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016

Table B2: JOIN Database Country-Year Coverage (Continued)

Country Name	Region	Income Group	First Year	Last Year	Obs.	List of Years Observed
Guatemala	Europe & Central Asia	High income	2000	2018	13	2000, 2002, 2003, 2004, 2006, 2010, 2011, 2013, 2014, 2015, 2016, 2017, 2018
Guinea	Sub-Saharan Africa	Lower middle income	2002	2018	4	2002, 2007, 2012, 2018
Guinea-Bissau	Sub-Saharan Africa	Low income	2010	2018	2	2010, 2018
Guyana	Latin America & Caribbean	High income	1999	1999	1	1999
Haiti	Latin America & Caribbean	Lower middle income	2001	2012	3	2001, 2007, 2012
Honduras	Latin America & Caribbean	Lower middle income	1998	2018	20	1998, 1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Hungary	Europe & Central Asia	High income	2000	2016	17	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Iceland	Europe & Central Asia	High income	2004	2015	12	2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015
India	Europe & Central Asia	High income	1999	2018	8	1999, 2004, 2005, 2007, 2009, 2011, 2017, 2018
Indonesia	East Asia & Pacific	Upper middle income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Iran, Islamic Rep.	East Asia & Pacific	Upper middle income	2016	2016	1	2016
Iraq	East Asia & Pacific	Upper middle income	2006	2012	2	2006, 2012
Ireland	East Asia & Pacific	Upper middle income	1998	2016	16	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2013, 2014, 2015, 2016
Italy	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Jamaica	East Asia & Pacific	Lower middle income	1999	2002	3	1999, 2001, 2002
Jordan	East Asia & Pacific	Lower middle income	2000	2016	16	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2016
Kazakhstan	East Asia & Pacific	Lower middle income	2001	2018	18	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Kenya	East Asia & Pacific	Lower middle income	1999	2015	3	1999, 2005, 2015
Kiribati	East Asia & Pacific	Lower middle income	2006	2006	1	2006
Korea, Rep.	East Asia & Pacific	High income	2001	2017	16	2001, 2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017
Kosovo	East Asia & Pacific	High income	2002	2017	15	2002, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017
Kyrgyz Republic	Middle East & North Africa	High income	2002	2018	12	2002, 2003, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2015, 2016, 2017, 2018
Lao PDR	East Asia & Pacific	Lower middle income	2002	2018	4	2002, 2007, 2012, 2018
Latvia	East Asia & Pacific	Lower middle income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Lebanon	Middle East & North Africa	Lower middle income	2004	2011	2	2004, 2011
Lesotho	Middle East & North Africa	Lower middle income	2002	2018	4	2002, 2010, 2017, 2018
Liberia	Sub-Saharan Africa	Low income	2007	2016	4	2007, 2010, 2014, 2016
Lithuania	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Luxembourg	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Madagascar	East Asia & Pacific	High income	1999	2012	4	1999, 2005, 2010, 2012
Malawi	East Asia & Pacific	High income	2004	2016	4	2004, 2010, 2013, 2016
Maldives	East Asia & Pacific	High income	1998	2016	5	1998, 2002, 2004, 2009, 2016
Mali	East Asia & Pacific	High income	2003	2018	3	2003, 2010, 2018
Malta	East Asia & Pacific	High income	2009	2016	8	2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Marshall Islands	East Asia & Pacific	High income	1999	1999	1	1999
Mauritania	East Asia & Pacific	High income	2000	2014	4	2000, 2004, 2008, 2014
Mauritius	Sub-Saharan Africa	Upper middle income	2001	2017	13	2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2017
Mexico	East Asia & Pacific	Upper middle income	1998	2018	18	1998, 2000, 2002, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Micronesia	East Asia & Pacific	Upper middle income	2000	2013	3	2000, 2005, 2013
Moldova	East Asia & Pacific	Upper middle income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Mongolia	East Asia & Pacific	Upper middle income	2002	2018	12	2002, 2006, 2007, 2008, 2009, 2010, 2011, 2013, 2014, 2016, 2017, 2018
Montenegro	East Asia & Pacific	Upper middle income	2002	2010	6	2002, 2004, 2005, 2008, 2009, 2010
Morocco	East Asia & Pacific	Upper middle income	1998	2013	7	1998, 2005, 2006, 2007, 2008, 2009, 2013
Mozambique	East Asia & Pacific	Upper middle income	2002	2014	4	2002, 2008, 2012, 2014
Myanmar	East Asia & Pacific	Upper middle income	2005	2017	4	2005, 2010, 2015, 2017
Namibia	Sub-Saharan Africa	Upper middle income	2003	2015	6	2003, 2009, 2012, 2013, 2014, 2015
Nauru	Sub-Saharan Africa	Upper middle income	N/A	N/A	0	N/A
Nepal	Sub-Saharan Africa	Upper middle income	1998	2014	6	1998, 2003, 2008, 2010, 2013, 2014
Netherlands	Sub-Saharan Africa	Upper middle income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Nicaragua	East Asia & Pacific	High income	1998	2014	5	1998, 2001, 2005, 2009, 2014
Niger	Sub-Saharan Africa	Low income	2002	2018	6	2002, 2005, 2007, 2011, 2014, 2018
Nigeria	Sub-Saharan Africa	Lower middle income	2003	2018	6	2003, 2009, 2010, 2012, 2015, 2018
North Macedonia	Europe & Central Asia	High income	1999	2018	17	1999, 2000, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Norway	Europe & Central Asia	High income	2004	2016	13	2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Pakistan	South Asia	Lower middle income	1999	2018	17	1999, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2017, 2018
Palau	South Asia	Lower middle income	2000	2006	2	2000, 2006
Panama	Latin America & Caribbean	High income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

Table B3: JOIN Database Country-Year Coverage (Continued)

Country Name	Region	Income Group	First Year	Last Year	Obs.	List of Years Observed
Palau New Guinea	South Asia	Lower middle income	2009	2009	1	2009
Paraguay	Latin America & Caribbean	High income	1999	2018	19	1999, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Peru	Latin America & Caribbean	Upper middle income	1998	2018	20	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Philippines	East Asia & Pacific	Lower middle income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Poland	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Portugal	Europe & Central Asia	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Puerto Rico	Latin America & Caribbean	Upper middle income	2000	2005	2	2000, 2005
Romania	Europe & Central Asia	High income	1999	2018	19	1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2018
Russian Federation	Europe & Central Asia	Upper middle income	2003	2016	7	2003, 2005, 2007, 2009, 2012, 2015, 2016
Rwanda	Sub-Saharan Africa	Low income	2000	2018	7	2000, 2005, 2010, 2013, 2016, 2017, 2018
Samoa	Sub-Saharan Africa	Low income	2013	2013	1	2013
Sao Tome and Principe	Sub-Saharan Africa	Low income	2000	2017	3	2000, 2010, 2017
Saudi Arabia	Middle East & North Africa	High income	2013	2013	1	2013
Senegal	Sub-Saharan Africa	Lower middle income	2001	2018	4	2001, 2005, 2011, 2018
Serbia	Europe & Central Asia	Upper middle income	2003	2018	15	2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2013, 2014, 2015, 2016, 2017, 2018
Seychelles	Sub-Saharan Africa	Lower middle income	2006	2013	2	2006, 2013
Sierra Leone	Sub-Saharan Africa	Lower middle income	2003	2018	4	2003, 2011, 2014, 2018
Slovak Republic	Sub-Saharan Africa	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Slovenia	Sub-Saharan Africa	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Solomon Islands	Sub-Saharan Africa	High income	2005	2013	3	2005, 2012, 2013
Somalia	Sub-Saharan Africa	High income	2013	2016	2	2013, 2016
South Africa	Sub-Saharan Africa	High income	2000	2018	18	2000, 2001, 2002, 2003, 2004, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
South Sudan	Sub-Saharan Africa	High income	2009	2015	2	2009, 2015
Spain	Sub-Saharan Africa	High income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Sri Lanka	Sub-Saharan Africa	High income	1998	2016	17	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2006, 2007, 2008, 2009, 2011, 2012, 2013, 2014, 2015, 2016
St. Lucia	Sub-Saharan Africa	High income	2016	2016	1	2016
Sudan	Sub-Saharan Africa	High income	2009	2014	2	2009, 2014
Suriname	Sub-Saharan Africa	High income	1999	1999	1	1999
Sweden	Sub-Saharan Africa	High income	2004	2016	13	2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
Switzerland	Sub-Saharan Africa	High income	2012	2015	4	2012, 2013, 2014, 2015
Syrian Arab Republic	Middle East & North Africa	Low income	2003	2003	1	2003
Tajikistan	Sub-Saharan Africa	Low income	1999	2013	5	1999, 2003, 2004, 2009, 2013
Tanzania	Sub-Saharan Africa	Low income	2000	2018	8	2000, 2006, 2007, 2009, 2011, 2012, 2014, 2018
Thailand	East Asia & Pacific	Upper middle income	1998	2018	21	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Timor-Leste	East Asia & Pacific	Lower middle income	2001	2010	3	2001, 2007, 2010
Togo	East Asia & Pacific	Lower middle income	2001	2018	5	2001, 2006, 2011, 2015, 2018
Tonga	East Asia & Pacific	Upper middle income	2009	2009	1	2009
Trinidad and Tobago	Latin America & Caribbean	High income	2000	2011	2	2000, 2011
Tunisia	Middle East & North Africa	Lower middle income	2000	2015	5	2000, 2001, 2005, 2010, 2015
Turkiye	Middle East & North Africa	Lower middle income	2000	2018	19	2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Tuvalu	Sub-Saharan Africa	Lower middle income	2010	2010	1	2010
Uganda	Sub-Saharan Africa	Low income	1999	2016	7	1999, 2002, 2005, 2009, 2010, 2012, 2016
Ukraine	Europe & Central Asia	Lower middle income	2002	2014	12	2002, 2003, 2004, 2005, 2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014
United Kingdom	Europe & Central Asia	Lower middle income	1998	2016	19	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
United States	North America	High income	2000	2018	11	2000, 2005, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Uruguay	North America	High income	1998	2018	20	1998, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
Uzbekistan	Europe & Central Asia	Lower middle income	2000	2003	2	2000, 2003
Vanuatu	East Asia & Pacific	Lower middle income	2010	2010	1	2010
Venezuela	Europe & Central Asia	Upper middle income	1998	2006	7	1998, 2000, 2001, 2002, 2004, 2005, 2006
West Bank and Gaza	Europe & Central Asia	Upper middle income	1998	2017	16	1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2016, 2017
Yemen, Rep.	Middle East & North Africa	Low income	1998	2014	3	1998, 2005, 2014
Zambia	Sub-Saharan Africa	Lower middle income	1998	2015	8	1998, 2002, 2004, 2008, 2010, 2012, 2014, 2015
Zimbabwe	Sub-Saharan Africa	Lower middle income	2001	2017	4	2001, 2007, 2011, 2017

Notes: The table offers a basic description of our main dataset, including what countries are included, to what region and income group they belong, and years observed in the dataset (from 1998 to 2018, inclusive, for our purposes). Data are obtained from the Global Jobs Indicators (JOIN) Database of the World Bank.

Harmonized World Labor Force Survey (HWLFS)

The Harmonized World Labor Force Survey (HWLFS) is a large-scale micro-dataset constructed from thousands of labor force surveys and labor modules of household surveys. It provides harmonized individual-level information on demographic characteristics, educational attainment, employment status and job characteristics for a large set of countries spanning the global income distribution and all world regions. A full description of the dataset and the harmonized procedure is provided in Gottlieb (2025).

Survey selection. For the purpose of this paper, we include all surveys used in the HWLFS that are (1) nationally representative, (2) contain necessary demographic, employment and job variables described below, and (3) their aggregate labor market indicators are consistent with external benchmarks. For each survey, we compare employment-to-population ratios and labor force participation rates with official statistics from the International Labour Organization (ILO) and the World Bank. Surveys whose aggregates differ substantially from these external benchmarks are excluded unless discrepancies can be reconciled based on reports from national statistical offices. When multiple surveys are available for a given country–year, we retain the survey that provides the closest match to official aggregates. Overall, our micro level analysis draws from 891 country year surveys in 103 countries.

Variables of interest. All selected surveys include information on age, sex, marital status, and educational attainment. Education is measured in years of schooling when available; otherwise, we use highest completed degree. We classify individuals as college educated if they have completed at least an undergraduate degree. Employment status and characteristics of the main job are consistently available. Sector of employment is derived from industry codes reported using ISIC (Rev. 3 or 4) mapped into sectors. A subset of surveys includes data on the presence of children under age 5 in the household and on place of residence (urban versus. rural).

Labor market status. Our sample includes all individuals aged 15 to 64 for a total of 117 million observations. We classify each person into one of four mutually exclusive labor market statuses based on their employment status and their main job for those who are employed: working in agriculture, industry, services or not working.

Table B4: HWLFS Country Survey List

Country	Survey Name	Years	Number of Years
Angola	Inquerito Integrado sobre o Bem-Estar da Populacao	2008	1
Albania	Labour Force Survey	2007-2013	7
Armenia	Integrated Living Conditions Survey	2004, 2007-2013	8
Armenia	Labour Force Survey	2014-2019	6
Australia	Household, Income and Labour Dynamics in Australia	2001-2017	17
Austria	European Labor Force Survey	2002-2017	16
Belgium	European Labor Force Survey	2001-2017	17
Benin	Enquête Harmonisée sur le Conditions de Vie des Ménages	2018	1
Benin	Enquête Modulaire Intégrée sur les Conditions de Vie des ménages	2010, 2015	2
Burkina Faso	Enquête Harmonisée sur le Conditions de Vie des Ménages	2018	1
Burkina Faso	Integrated Public Use Microdata Series - International	1996	1
Bulgaria	European Labor Force Survey	2001-2017	17
Belarus	Integrated Public Use Microdata Series - International	2009	1
Bolivia	Encuesta de Hogares	2005-2009, 2011-2020	15
Brazil	Integrated Public Use Microdata Series - International	1960, 1970, 1980, 1991, 2000	5
Brazil	Pesquisa Nacional por Amostra de Domicílios	2009, 2011-2015	6
Bhutan	Labor Force Survey	2018-2020	3
Botswana	Integrated Public Use Microdata Series - International	1991, 2001, 2011	3
Canada	Labour Force Survey	1987-2015, 2017-2020	33
Switzerland	European Labor Force Survey	2001-2017	17
Chile	Encuesta de Caracterización Socioeconómica Nacional	1990, 1992, 1994, 1996, 1998, 2000, 2003, 2006, 2009, 2011, 2013, 2015, 2017	13
Chile	Integrated Public Use Microdata Series - International	1960, 1970, 1982	3
China	Family Panel Studies	2012, 2014, 2016	3
Côte d'Ivoire	Enquête Harmonisée sur le Conditions de Vie des Ménages	2018	1
Cameroon	Fourth Cameroon Household Survey	2014	1
Colombia	Gran Encuesta Integrada de Hogares	2006-2010, 2012-2019	13
Colombia	Integrated Public Use Microdata Series - International	1973, 1993	2
Costa Rica	Encuesta Continua de Empleo	2010-2023	14
Costa Rica	Integrated Public Use Microdata Series - International	2000	1
Cyprus	European Labor Force Survey	2001-2017	17
Czechia	European Labor Force Survey	2001-2017	17
Denmark	European Labor Force Survey	2001-2017	17
Dominican Republic	Integrated Public Use Microdata Series - International	2002, 2010	2
Ecuador	Encuesta Nacional de Empleo, Desempleo y Subempleo	2007-2018	12
Ecuador	Integrated Public Use Microdata Series - International	1990, 2001	2
Egypt	Harmonized Labor Force Survey	2006-2017	12
Egypt	Integrated Public Use Microdata Series - International	1986, 1996	2
Spain	European Labor Force Survey	2001-2017	17
Estonia	European Labor Force Survey	2005-2017	13
Ethiopia	National Labour Force Survey	2005, 2013	2
Finland	European Labor Force Survey	2001-2017	17
Fiji	Integrated Public Use Microdata Series - International	2007, 2014	2
France	Enquête emploi annuelle	2003-2019	17
United Kingdom	British Household Panel Survey	1991-2008	18
Georgia	Labour Force Survey	2017-2021	5
Ghana	Living Standard Survey	1987, 1988, 1991, 1998, 2005, 2008, 2017	7
Guinea	Integrated Public Use Microdata Series - International	1983, 2014	2
Guinea-Bissau	Enquête Harmonisée sur le Conditions de Vie des Ménages	2018	1
Greece	European Labor Force Survey	2001-2017	17
Croatia	European Labor Force Survey	2002-2017	16
Hungary	European Labor Force Survey	2001-2017	17
Indonesia	Integrated Public Use Microdata Series - International	1976, 1980, 1985, 1990, 1995, 2010	6
India	Indian National Sample Survey	1987, 1999, 2004-2007, 2009, 2011	8
India	Periodic Labor Force Survey	2017-2023	7
Ireland	European Labor Force Survey	2001-2017	17
Iran	Integrated Public Use Microdata Series - International	2006, 2011	2
Iraq	Integrated Public Use Microdata Series - International	1997	1
Iceland	European Labor Force Survey	2001-2017	17
Israel	Integrated Public Use Microdata Series - International	1995, 2008	2
Jamaica	Integrated Public Use Microdata Series - International	1982, 1991, 2001	3
Jordan	Harmonized Labor Force Survey	2005-2014, 2016	11
Kenya	Kenya Integrated Household Budget Survey	2019-2021	3
Kyrgyzstan	Integrated Public Use Microdata Series - International	1999, 2009	2
Cambodia	Labor Force Survey	2012, 2019	2
South Korea	Korean Labor and Income Panel Study	1998-2018	21
Laos	Integrated Public Use Microdata Series - International	2005	1
Liberia	Integrated Public Use Microdata Series - International	2008	1
Sri Lanka	Labor Force Survey	1992-2004, 2011-2022	25
Lesotho	Integrated Public Use Microdata Series - International	2006	1
Lithuania	European Labor Force Survey	2001-2017	17
Luxembourg	European Labor Force Survey	2001-2017	17
Latvia	European Labor Force Survey	2001-2017	17
Morocco	Integrated Public Use Microdata Series - International	1982, 1994, 2004, 2014	4
Mexico	Encuesta Nacional de Ocupación y Empleo	2005-2019	15
Mexico	Integrated Public Use Microdata Series - International	1970, 1990, 1995, 2000	4
Mali	Integrated Public Use Microdata Series - International	1987, 1998, 2009	3
Mali	Living Standards Measurement Survey	2014, 2017	2
Malta	European Labor Force Survey	2009-2017	9
Mongolia	Labor Force Survey	2002, 2006-2008, 2010-2021	16
Malawi	Integrated Public Use Microdata Series - International	1987, 1998	2
Malawi	Integrated Household Survey	2004, 2010, 2016, 2019	4
Malaysia	Integrated Public Use Microdata Series - International	1970, 1980, 1991, 2000	4
Namibia	Labor Force Survey	2012-2014, 2016, 2018	5
Niger	National Survey on Household Living Conditions and Agriculture	2011, 2014	2
Nigeria	Living Standards Measurement Survey	2010, 2012	2
Netherlands	European Labor Force Survey	2001-2017	17
Norway	European Labor Force Survey	2001-2017	17
Nepal	Integrated Public Use Microdata Series - International	2001, 2011	2
Pakistan	Integrated Public Use Microdata Series - International	1973	1
Pakistan	Social & Living Standards Measurement	2001, 2005-2008, 2013, 2014, 2018	8

Table B5: HWLFS Country Survey List (Continued)

Country	Survey Name	Years	Number of Years
Panama	Integrated Public Use Microdata Series - International	1970, 1990, 2000, 2010	4
Peru	Encuesta Nacional de Hogares	2007-2019	13
Philippines	Labor Force Survey	2005-2019	15
Papua New Guinea	Integrated Public Use Microdata Series - International	2000	1
Poland	European Labor Force Survey	2001-2017	17
Portugal	European Labor Force Survey	2001-2017	17
Paraguay	Integrated Public Use Microdata Series - International	1962, 1972, 1982, 1992, 2002	5
Palestinian Territories	Harmonized Labor Force Survey	2000-2016	17
Romania	European Labor Force Survey	2001-2017	17
Russia	Russia Longitudinal Monitoring Survey	2004-2017	14
Rwanda	Enquête Intégrale sur les Conditions de Vie des Ménages	2000, 2005	2
Rwanda	Labor Force Survey	2017-2021	5
Sudan	National Baseline Household Survey	2009	1
Senegal	Enquête nationale sur l'Emploi au Sénégal	2019	1
Senegal	Integrated Public Use Microdata Series - International	1988, 2013	2
Sierra Leone	Integrated Household Survey	2018	1
Serbia	European Union Statistics on Income and Living Conditions	2013-2020	8
South Sudan	Integrated Public Use Microdata Series - International	2008	1
Slovakia	European Labor Force Survey	2001-2017	17
Slovenia	European Labor Force Survey	2001-2017	17
Sweden	European Labor Force Survey	2001-2017	17
Togo	Enquête Harmonisée sur le Conditions de Vie des Ménages	2018	1
Togo	Integrated Public Use Microdata Series - International	2010	1
Tunisia	Enquête nationale sur la population et l'emploi	2005, 2006, 2010-2013, 2016, 2017, 2022, 2023	10
Turkey	Integrated Public Use Microdata Series - International	1985, 1990, 2000	3
Tanzania	Integrated Labour Force Survey	2006, 2014, 2021	3
Tanzania	Integrated Public Use Microdata Series - International	2002	1
Uganda	Integrated Public Use Microdata Series - International	2002	1
Uganda	Uganda National Panel Survey	2005, 2018, 2019	3
Uruguay	Encuesta Continua de Hogares	2006-2017	12
Uruguay	Integrated Public Use Microdata Series - International	1963, 1985, 1996	3
United States	Current Population Survey	1967-2022	56
Venezuela	Integrated Public Use Microdata Series - International	1981, 1990, 2001	3
Vietnam	Integrated Public Use Microdata Series - International	2009	1
Yemen	Labor Force Survey	2013	1
South Africa	Integrated Public Use Microdata Series - International	1996, 2001, 2007	3
South Africa	Labor Market Dynamics	2010-2019	10
Zambia	Integrated Public Use Microdata Series - International	1990, 2000, 2010	3
Zimbabwe	Labour Force and Child Labour Survey	2014, 2019	2

Appendix C. Literature Review Methodology

We use a two-step search process to identify all relevant articles published in 16 leading economics journals between 2002 to 2023. In the first step, we use JSTOR and journal-specific search engines to compile a list of articles that meet the following search keywords:

(*"gender"* OR *"women"* OR *"female"*) AND (*"wage gap"* OR *"labor force participation"* OR *"marriage"* OR *"discrimination"* OR *"norms"* OR *"empowerment"*).

In the second step, we manually review each paper that meets the search keywords to identify whether they cover the relevant topics in Appendix Tables A16-A18. For Appendix Table A16, we further decided to include unpublished working papers since many articles on the effects of gender gaps on aggregate productivity are relatively recent.

Table C1 summarizes the outcomes of the search results. Column (1) shows the total number of articles published in each of the journals reviewed between 2002 and 2023. Column (2) shows the number of articles that matched the search keywords; Column (3) shows the number of papers that we eventually included in the literature review after the manual checks. We only included papers that examined the underlying factors in changes to gender-related labor market outcomes. Many articles we dropped include papers that focus on fertility as well as evaluations of specific policies.

Table C1: Literature Review Statistics

Journal	**Published**	**Matched Keyword Search**	**Included After Manual Review**
American Economic Review	4361	606	27
The Quarterly Journal of Economics	850	199	13
Econometrica	1798	126	8
The Review of Economics and Statistics	1406	258	7
Journal of Development Economics	2193	573	7
Journal of Labor Economics	608	219	7
Journal of Political Economy	1390	145	6
The Review of Economic Studies	1167	138	6
American Economic Journal: Applied Economics	608	248	6
Journal of the European Economic Association	1119	171	6
American Economic Journal: Macroeconomics	531	57	2
American Economic Journal: Economic Policy	653	143	2
Journal of Public Economics	2834	562	2
The Journal of Human Resources	748	379	2
The World Bank Economic Review	537	107	1
American Economic Journal: Microeconomics	607	57	0