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Gender Divergence in Sectors of Work

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Abstract

The past half century has witnessed widespread gender convergence across many labor market outcomes, including hours worked, earnings, and occupations. However, this paper shows that, over the same period, men's and women's sectors of employment actually diverged. We decompose the rise in sectoral segregation into three drivers representing changes in preferences, discrimination, and technologies. Changes in the employment preferences of married women are the most important factor, explaining 59% of the rise in segregation. These changes in preferences also reduce the gender earnings gap because the non-wage amenities women value are increasingly prevalent in higher paying sectors.

Zusammenfassung

Im letzten halben Jahrhundert kam es in vielen Bereichen des Arbeitsmarktes, darunter Arbeitszeit, Einkommen und Berufe, zu einer weitgehenden Annäherung der Geschlechter. Diese Studie zeigt jedoch, dass sich die Beschäftigungssektoren von Männern und Frauen im gleichen Zeitraum tatsächlich auseinanderentwickelt haben. Wir zerlegen den Anstieg der sektoralen Segregation in drei Faktoren: veränderte Präferenzen, Diskriminierung und Technologien. Veränderte Beschäftigungspräferenzen verheirateter Frauen sind der wichtigste Faktor und erklären 59% des Anstiegs der Segregation. Diese veränderten Präferenzen verringern auch die geschlechtsspezifische Einkommenslücke, da die von Frauen geschätzten nicht-lohnbezogenen Annehmlichkeiten in höher bezahlten Sektoren zunehmend an Bedeutung gewinnen.

JEL

E20, J16

Keywords

occupational segregation, gender earnings gap, amenities, discrimination, labor supply

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1 Introduction

Over the past fifty years, women's labor market outcomes have converged towards men's on many dimensions, including hours worked, earnings, and occupation choice Goldin (2014); Olivetti/Petrongolo (2016); Hsieh et al. (2019). Nevertheless, this paper documents that, over the same period, the sectors where men and women work have diverged, leading to more gender segregation by sector of employment. This makes the incidence of sector specific shocks more unequal across genders, which influences the depth and persistence of recessions Bardóczy (2022); Alon et al. (2020); Patterson (2023); Fukui/Nakamura/Steinsson (2023); Albanesi (2024). It also raises questions about the true extent of gender convergence in labor markets and the factors behind persistent differences.

The rise in sectoral segregation relates to the gender equality paradox, i.e., the observation that certain sociological differences between men and women become more pronounced as societies become more egalitarian. The phenomenon is paradoxical in that one expects gender gaps to attenuate as barriers against women are removed. Instead, the literature documents the emergence of new forms of social differentiation between men and women as gender equality advances, including in values, personality, education and occupational preferences Stoet/Geary (2018); Falk/Hermle (2018); Mac Giolla/Kajonius (2019); Breda et al. (2020); Cherney (2023); Schmader (2023); Herlitz et al. (2024). Understanding the root cause of these new forms of gender differentiation is critical to explaining the persistence of gender gaps in developed, egalitarian economies.

This paper documents a new instance of the gender equality paradox in the form of rising sectoral segregation in the United States from 1975 to 2019. It provides empirical and structural decompositions to identify the economic forces behind this trend and studies their implications. The stylized facts are robust to using various levels of sector disaggregation and to changes in the distribution of occupations across sectors. The findings are also consistent with cross-country evidence from other developed economies. In the European Union, countries with the smallest differences in hours worked between men and women—a broad measure of labor market convergence—have the highest levels of sectoral gender segregation.

The rise in sectoral segregation is entirely driven by the employment outcomes of married women. This contrasts sharply with the decline in occupational segregation, which was similar for single and married women. Structural transformation plays a role. Around 40% of the rise in segregation is due to the growing employment share of gender segregated sectors like Information (which is male-dominated) and Education and Health (which is

female-dominated). However, the remaining 60% is due to within-sector changes in the gender composition of employment.

Motivated by the empirical findings, we apply the structural decomposition approach of Hsieh et al. (2019) to understand the economic forces behind them. This framework—developed to study shifts in the occupational composition of employment—ascribes changes in the sectoral composition of employment to three factors: preferences, discrimination, and technology (encompassing both wages and the returns to education). Changes in the preferences of married women are the most important factor, accounting for 59% of the rise in sectoral segregation. Single women do not exhibit similar changes in preferences.

The model also predicts how each channel affects the evolution of the gender earnings gap. Changes in preferences reduced earnings inequality, explaining roughly one-quarter of the decline during this period. The results reflect the fact that the non-wage amenities valued by women are increasingly provided by higher paying sectors.

The analysis concludes by relating the estimated preferences to observable sector-level amenities to shed light on the type of job attributes they may be capturing. Four categories of amenities are considered: work arrangements, measured by the share of part time workers and hours worked per week; child-friendliness, measured by the average number of children of workers in that sector; homophily, measured by the female share of employment; and risk, measured by the correlation of the sector's employment with the business cycle. All groups appear to value flexible work arrangements in the form of the part time share, though the effect is most pronounced among married women. Married women are the only group whose preferences are significantly correlated with a sector's child-friendliness.

Related Literature.

The findings contribute to the literature studying the sources of gender inequality in labor markets and their implications. Existing research highlights many important channels, including motherhood penalties Albanesi/Olivetti (2016); Kleven/Landais/Søgaard (2019), occupation choice Cortés/Pan (2018); Lordan/Pischke (2022); Wasserman (2022), bargaining differences Biasi/Sarsons (2021); Coskun/Gartner/Taskin (2025), job search behavior Cortés et al. (2023), local norms Ashraf et al. (2024), the demographic structure Arellano-Bover et al. (2024), the impact of structural transformation Olivetti/Petrongolo (2016); Ngai/Petrongolo (2017); Kuhn/Manovskii/Qiu (2024); Peters et al. (2025), and more.

Methodologically, the structural decomposition follows the approach of Hsieh et al. (2019). Interestingly, while they find that declining discrimination explains most of the fall in

occupational segregation, the results here suggest changes in preferences are driving the rise in sectoral segregation. The prominence of the model's preference channel is consistent with a growing body of research showing that men and women have different valuations of non-wage amenities like flexible work arrangements Goldin (2015); Mas/Pallais (2017); Wiswall/Zafar (2017); Morchio/Moser (2024); Corradini/Lagos/Sharma (2025). While many studies find that these gender-specific preferences increase the gender earnings gap, the results here suggest that compositional changes may be shrinking this effect over time, as the non-wage amenities valued by women are increasingly prevalent in higher paying sectors.

The findings shed light on potential explanations of the gender equality paradox. While female labor force participation grew in response to declining discrimination, sectoral segregation increased due to the changing preferences of working women. The result is consistent with the hypothesis that a more gender-equal distribution of resources alleviates subsistence constraints, enabling men and women to express their preferences more independently from one another Falk/Hermle (2018).[1]

In the model, changing preferences reflect not only pre-existing differences, but also compositional changes due to selection. This suggests that women on the margin of participating in market work may have different preferences over sectors than women who are firmly attached to the labor force. It may also reflect the fact that women now expect to have a family and a career simultaneously and thus value flexible work arrangements more than when women chose one or the other, or one after the other Goldin (2021).

Finally, the results are pertinent to the macroeconomics literature on families and household decision making. Rising sectoral segregation can influence the division-of-labor across genders in other household tasks, such as childcare and home production Doepke/Tertilt (2016); Alon/Coskun/Doepke (2020); Coskun/Dalgic (2024). It also affects the extent of family insurance against sector-specific shocks, which can influence the depth and persistence of business cycle fluctuations Balleer/Merz/Papp (2021); Bardóczy (2022); Alon et al. (2022); Fukui/Nakamura/Steinsson (2023); Ellieroth (2023); Albanesi (2024).

[1] The mechanism relates to the economics literature studying the dynamics of household bargaining Doepke/Tertilt (2014); Doepke/Kindermann (2019) and studies of wealth effects on the valuation of non-wage amenities at work Boar/Lashkari (2021); Luo/Mongey (2024).

2 Stylized Facts

The primary data source is the IPUMS Current Population Survey (IPUMS-CPS) data. The analysis focuses on changes in segregation for five cohorts of young people (ages 25-35) between 1975 and 2019. Appendix A1 contains additional details on the data sources, sample populations, and variable construction.

2.1 Rising Gender Segregation in the United States

Gender segregation at time t is measured using the Blau/Hendricks (1979) definition

$$S_{gt} = \frac{\Sigma_{i \in I} |p_{igt} - p_{imt}|}{2},$$

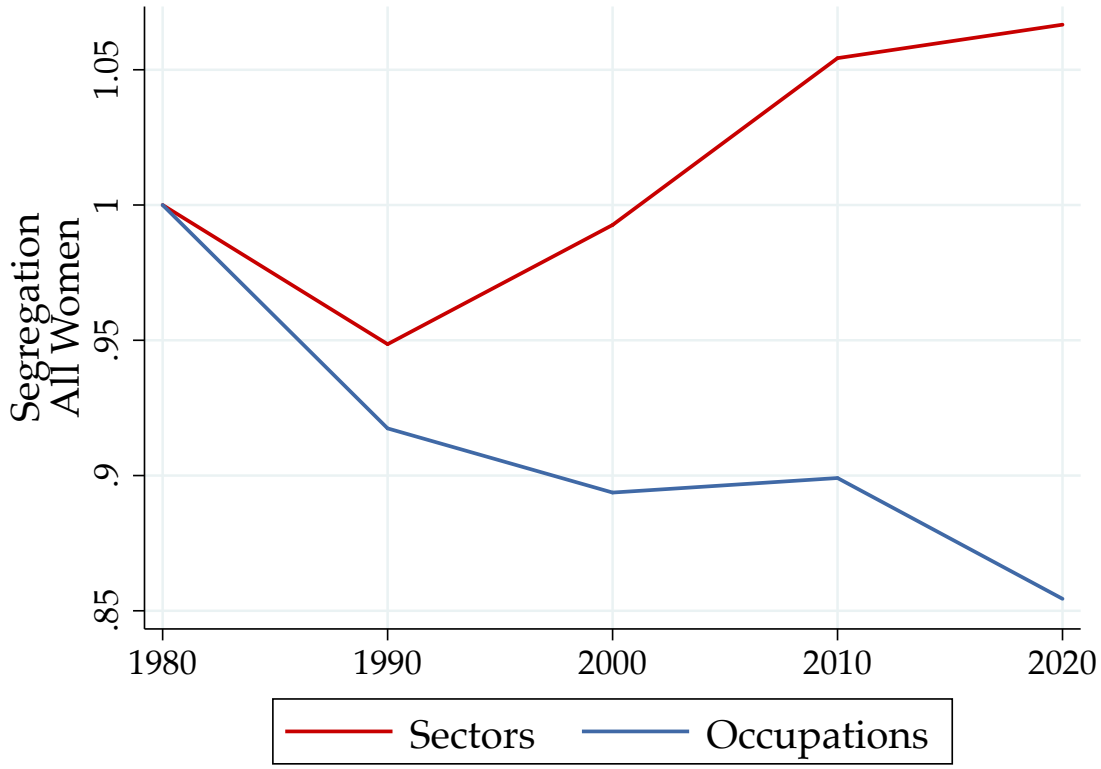
where i indexes either sector or occupation, g indexes the group of interest (all women, single women, or married women), and m is the reference group (men). p_{igt} is the share of all employed members of group g in sector or occupation i. Thus $\Sigma_{i \in I}\, p_{igt} = 1$.

The index measures the total divergence in the employment composition across groups. If men and women are equally distributed across sectors, $S_t = 0$. If every sector is either totally male- or female-dominated, $S_t = 1$. Intermediate cases produce index values between 0 and 1. The metric is naturally weighted, with larger sectors contributing more to measured segregation.

Figure 1 displays the evolution of gender segregation in the United States across sectors and occupations since 1975. It confirms that there was a large decrease in the gender segregation of occupations, which fell by 15%. There has been a large concurrent *increase* in the gender segregation of sectors of employment of 7% over the same period. Occupations remain more segregated than sectors in level terms, though the gap narrowed considerably (Figure A1).

The diverging trends in occupational and sectoral segregation raise questions about the extent to which labor market outcomes for men and women are truly converging during this period. The timing is also significant. Most of the decrease in occupational segregation occurred alongside the rise in female labor market participation, while the increase in sectoral segregation is concentrated after 2000, when women's labor force participation plateaued Albanesi (2024). The difference in timing suggests that sectoral effects may play a greater role in explaining persistent gender differences in labor markets outcomes in recent

Figure 1: Sectoral Divergence and Occupational Convergence Between Men and Women



Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Sectors are defined by BLS's (Bureau of Labor Statistics) main sectors and occupations as 2-digit occupations from SOC codes (Standard Occupational Classification). Segregation is indexed to 1 in 1980. See Appendix A1.1 for details.

Source: IPUMS-CPS between 1975-2019, age group is 25-35.

years, while occupation effects and rising participation rates played a more central role in earlier periods.

Role of Specific Industries and Structural Transformation.

Figure 2 provides a heterogeneity analysis of the aggregate fact. Panel 2a decomposes the rise in aggregate sectoral segregation into the contributions of each sector. The largest contributors are Construction, Information, and Education and Health. Construction and Information were male-dominated in 1980 (93% and 56% male, respectively), whereas Education and Health was female-dominated (70% female). All three sectors increased their total employment share relative to 1980, contributing to the rise in segregation through a size effect. However, in the Information and Education and Health sectors there was also a within-sector increase in segregation, with Information becoming more male-dominated (62%) and Education and Health becoming more female-dominated (77%).

These examples illustrate how segregated sectors can contribute to rising segregation by growing faster than less segregated sectors. Services sectors tend to be female-dominated and have grown substantially in recent decades due to structural transformation Ngai/Petrongolo (2017). Figure A2 plots the counterfactual path for segregation if sectoral employment shares are held fixed at their 1980 values while the within-sector gender composition is varies as in the data. The shift-share exercise suggests that 40% of the rise in segregation is explained by structural transformation, while the remaining 60% reflects within sector compositional changes.

Marital Status and the Family Channel.

Gender gaps in labor market outcomes may also be the result of joint household labor supply decisions and the spousal division-of-labor in home production and childcare Doepke/Tertilt (2016); Doepke/Kindermann (2019); Kleven/Landais/Søgaard (2019); Coskun/Dalgic/Ozdemir (2023). Panel 2b investigates this possibility by comparing trends in sectoral segregation for married and single women separately, using all men as the common reference group.[2]

The data suggest a prominent family channel. The rise in segregation is entirely due to married women. Between 1975 and 2020 the sectoral segregation of married women increased by 17%, while segregation fell by 1% for single women. This difference in trends is noteworthy since no comparable gap exists for occupations. Figure A5 shows that married women also drive the contributions of individual sectors to aggregate segregation displayed in panel 2a.

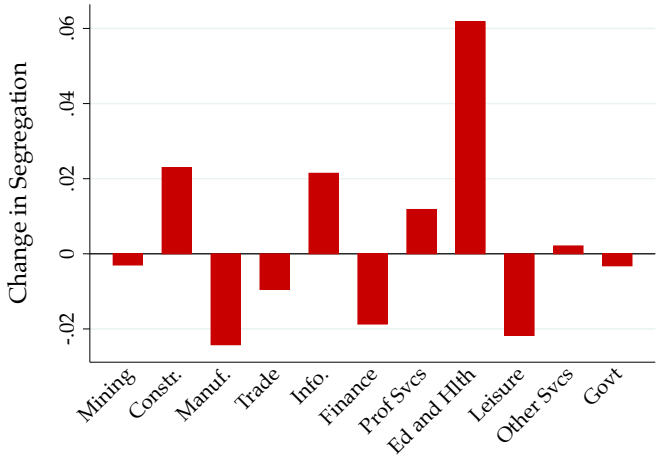
Divergence between married and single women may reflect selection into marriage or may be the result of household specialization and the impact of childcare. The data do suggest that childcare considerations play an important role. Figure A6 plots the change in sectoral segregation for women with and without children. Women with children account for the rise in segregation, mirroring the divergence between single and married women.

Cross-Country Evidence.

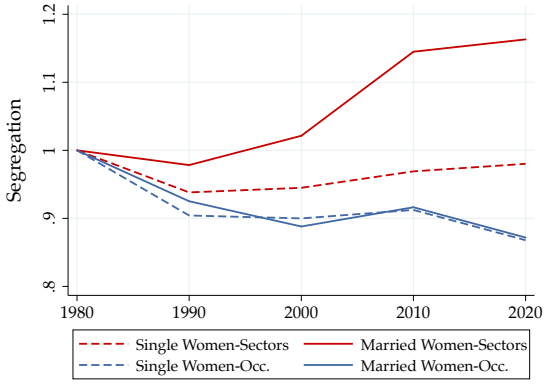
The evolution of gender equality and female labor force participation followed similar patterns across different countries Olivetti (2014); Olivetti/Petrongolo (2016). Changes in

[2] For robustness, Figure A4 plots the rise in segregation for single and married women using single and married men, respectively, as the reference group. Single women have a much lower level of segregation compared to single men and show an increase over time. The rise in segregation for married women compared to married men is roughly the same as when the reference group is all men.

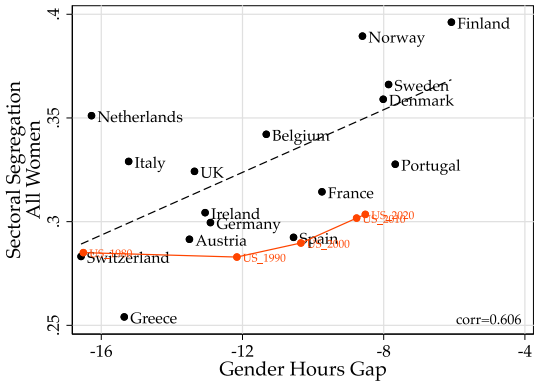
Figure 2: Sectoral Segregation: Heterogeneity Analysis



(a) Contribution of Individual Sectors (United States)



(b) Sectoral Segregation by Marital Status (United States)



(c) Cross Country Evidence (Europe and United States)

Notes: Gender hours gap is the average of 2005-2009. See Appendix A1.1 and A1.2 for details.
Source: Data sources are IPUMS-CPS (1975-2019) and EU-LFS (2008-2019). The age group analyzed is 25-54 (Europe) and 25-35 (US).

technology and gender norms led to higher female labor force participation, lower occupational segregation, and smaller earnings gaps. Panel 2c shows that the rise in sectoral gender segregation is more than just a United States phenomenon, using data from the European Union Labour Force Survey.

Both the time series in the United States and cross-country European data paint a similar picture: in economies where women work more, sectoral gender segregation is higher. As in the United States, the cross-country correlation is driven primarily by married rather than single women (Figure A7). Adjusting for cross-country differences in sectoral employment shares to account for the role of services preserves the positive correlation (Figure A8).

2.2 Additional Robustness

Appendix A2.1 examines how segregation trends compare when computed using finer industry classifications at the 2-digit NAICS level. The more disaggregated measures show a rise in segregation for married women and modest decline for single women.

Another possibility is that the rise in sectoral segregation merely reflects a reshuffling of occupations–which remain more segregated than sectors despite recent convergence. Many occupations have become more concentrated within certain sectors due to the rise of domestic outsourcing Katz/Krueger (2019). The rise in sectoral segregation is robust to holding fixed the occupational composition of sectors (Figure A2).

To assess these compositional effects in more detail, Appendix A2.2 recomputes sectoral segregation by aggregating over the two dimensional sector by occupation space (Figure A10a). While the aggregate pattern is unchanged, the compositional changes influence the relative contribution of particular sectors to aggregate segregation, which we illustrate with two examples. First, when neglecting sectors, there appears to be substantial occupational convergence in Management (Figure A10b). However, accounting for the distribution of managers across sectors, segregation declined much less (that is, more women became managers, but in sectors that were female-dominated). By contrast, in the Education and Health sector, the rise in segregation is substantial, even accounting for occupations (Figure A10c). That is, women moved into Education and Health but became healthcare assistants and practitioners roughly equally.

Finally, Appendix A2.3 examines whether segregation trends are driven by changes in the employment composition of men, women, or both. As an assessment, Figure A11 computes alternative paths for segregation holding either male or female employment shares across sectors fixed at their 1980 values. Women's employment composition drives the rise in sectoral segregation: when only female employment shares change, the rise in sectoral segregation is 30% higher than in the data. When only male employment shares change, segregation instead *decreases*.

3 A Model-Based Decomposition of Sectoral Segregation

The preceding section documents a rise in sectoral segregation, driven predominantly by changes in the employment composition of married women. This section adapts the model of Hsieh et al. (2019) to explain the changing employment choices of single and married women relative to men. In the model, changes in the employment composition of any group can be explained by changes in preferences, discrimination, or technology. Under suitable assumptions the three channels can be identified with data on sectoral earnings, education, and employment shares.

The model population consists of a unit mass of heterogeneous individuals making consumption, education, and sector of employment choices. The lifetime utility U of an individual from group g in cohort c who chooses to work in sector i is given by

$$\log U = \beta \left[\sum_{t=c}^{c+2} \log C_{ig}(c,t) \right] + \log[1 - s_i(c)] + \log z_{ig}(c),$$

where C is consumption, s denotes time investment in human capital prior to entering the labor market, and z is a sector specific utility term capturing the value of all non-wage amenities in sector i to group g. Households live for three periods (young, middle age, and old) with c indexing their cohort and t indexing time. The coefficient β captures the value of consumption relative to leisure. Consumption is earnings net of educational expenditures e,

$$C_{ig}(c,t) = [1 - \tau_{ig}^{w}(t)] w_i(t) h_{ig}(c,t) \epsilon - e_{ig}(c,t)[1 + \tau_{ig}^{h}(c),]$$

where ϵ is the individual's sector-specific ability in i and $w_i(t)$ is the sector's efficiency wage. $\tau_{ig}^{w}(t)$ and $\tau_{ig}^{h}(c)$ capture sector-group specific labor marker discrimination and barriers to human capital accumulation. Individual human capital $h_{ig}(c,t)$ depends on educational expenditures and time spent in school, as well as learning on the job, such that

$$h_{ig}(c,t) = \gamma(t-c) s_i(c)^{\phi_i(c)} e_{ig}(c,t)^{\eta},$$

where $\phi_i(c)$ captures sector-specific returns to education, which may vary across cohorts. Parameter η is the elasticity of human capital with respect to educational expenditure and the function $\gamma(t-c)$ captures returns to work experience.

The model economy has I distinct sectors. If each individual's sector-specific abilities are

drawn from a multivariate Fréchet distribution, $F(\epsilon_1, ..., \epsilon_I) = \exp\left(-\sum_{i=1}^{I} \epsilon_i^{-\theta}\right)$, the model yields tractable expressions for sectoral earnings and choice probabilities. With additional normalizations, the model identifies differences in group-specific preferences and discrimination from data on group-specific sector shares and earnings. Two normalizations are required to address the two degrees of freedom lost to the fact that sector shares must sum to one and the fact that sector wages are not observed in the home sector.

Following Hsieh et al. (2019), we achieve identification by normalizing the home sector so that preferences z equal one and no group faces discrimination in home production. Earnings and employment shares at time t of any group g relative to the benchmark group m can be expressed,

$$\frac{\text{earnings}_{igt}}{\text{earnings}_{imt}} = \left(\frac{\tau_{igt}}{\tau_{imt}}\right)^{-\frac{1}{1-\eta}} \times \left(\frac{\text{share}_{igt}}{\text{share}_{imt}}\right)^{-\frac{1}{\theta(1-\eta)}} \tag{3.1}$$

$$\frac{\text{share}_{igt}}{\text{share}_{imt}} = \left(\frac{1-\text{LFP}_{gt}}{1-\text{LFP}_{mt}}\right) \times \left(\frac{\tau_{igt}}{\tau_{imt}}\right)^{-\theta} \times \left(\frac{z_{igt}}{z_{imt}}\right)^{-\frac{\theta(1-\eta)}{3\beta}} \tag{3.2}$$

where earnings_{igt} is the geometric average of earnings and share_{igt} is the share of group g employed in sector i at time t. LFP_{gt} is the labor force participation rate.

These equations provide intuition for how the model identifies discrimination and preferences from the data. Equation 3.1 exploits the model's mapping from relative employment shares to relative ability levels in order to capture differences in selection across genders. If group g has a higher employment share in i than group m, g's average ability is expected to be lower (by a factor depending on θ and η). Conditional on this selection, the remainder of the gender earnings gap in sector i must be due to discrimination. Equation 3.2 states that conditional on participation and discrimination, differences in employment shares reflect relative preferences z_{igt}/z_{imt}. That is, if a group is overrepresented in a sector relative to what their earnings would predict, it must be due to preferences.

The final channel that can drive changes in segregation is technology. This includes sector-specific efficiency wages (productivities) $w_i(t)$ and returns to education $\phi_i(c)$. While these technological factors are common to all groups within a time period or cohort, they contribute to changes in segregation and earnings gaps by interacting with prevailing levels of discrimination and preferences of each group across sectors. Identifying these factors requires assuming that men face no discrimination in education and labor markets.[3]

[3] This is without loss of generality if we interpret the discrimination parameters τ as capturing *relative* discrimination across groups.

Sectoral wages $w_i(t)$ and men's preferences z_{imt} can then be recovered directly from male earnings and employment data. Returns to education $\phi_i(c)$ can be retrieved by inverting the optimal human capital investment policy, $s_i^*(c)$, and using data on male years of schooling across sectors over time.

The parameters η, θ, β, and $\gamma(t-c)$ are fit following Hsieh et al. (2019). Appendix A3 contains additional details. Given these parameters, changes in preferences, discrimination, and technology can be estimated from sectoral data on earnings, employment shares, and years of schooling. By construction, the procedure *exactly matches* the aggregate trends in sectoral segregation (through the employment shares) and the gender earnings gap (through earnings). Changes in these aggregates over time are therefore driven by the interaction of the model's three channels: the evolution of group preferences for different types of jobs z_{igt}; changes in gender discrimination τ_{igt}; and technological shifts affecting wages $w_i(t)$ and returns to education $\phi_i(c)$ across sectors.

4 Results

Estimating the model on the IPUMS-CPS data yields preferences and discrimination for men, single women, and married women in five cohorts from 1975-2019 across twelve sectors including the home sector. The following paragraphs summarize these estimates–which have intuitive properties–before turning to the main counterfactuals.

Consistent with Hsieh et al. (2019)'s findings for occupations, the average sector's discrimination against women declined substantially. Dispersion in discrimination across sectors also declined. Discrimination against single and married women is highly but not perfectly correlated (around 90%) and married women face discrimination that is 23% higher than single women on average, possibly reflecting motherhood penalties, though this difference declines from 65% on average in 1980 to just 1% in 2020.

In terms of technology, the returns to education $\phi_i(c)$ increased across cohorts. Efficiency wages $w_i(t)$ also grew over time, reflecting productivity growth and growing fastest in the Leisure and Hospitality sector (105%), followed by Information (87%). Wages in Education and Health grew by 15%.

Using the relative preferences $\frac{z_{igt}}{z_{imt}}$ of women compared to men, sector preferences are more correlated across cohorts of married women (84%) than between single and married women within a cohort (68%), suggesting that single and married women value non-wage

amenities differently. Women's relative preferences increased the most for high-skilled services sectors: Information, Education and Health, and Finance. Single women also increased their relative preference for Professional Services, while married women increased their relative preference for Government.

Finally, women's preferences are negatively correlated with gender discrimination. This suggests that reductions in discrimination against women not only raises their wages, but may also increase the provision of non-wage amenities they value. This type of endogenous increase in amenities is consistent with the findings of Corradini/Lagos/Sharma (2025), who show that female-centric amenities increase when women have more representation in collective bargaining negotiations.

4.1 Drivers of Sectoral Segregation

Table 1 reports the decomposition of the rise in sectoral segregation into three drivers: preferences, discrimination, and technology. Since these channels interact non-linearly in the model, the table reports a leave-one-out decomposition. Each entry reports the resulting change in the row variable that can be attributed to changes in the column variable. For example, the column titled "Prefs." shows how much of the change in segregation or the gender earnings gap remains *unexplained* when only discrimination and technology vary, attributing this gap to the omission of the preference channel.[4]

Table 1: Decomposition of Aggregate Changes in Segregation and Gender Earnings Gap

		Actual	Prefs. (z)	Disc. (τ)	Tech. (w, ϕ)
Segregation	Married	0.049	0.029	0.006	0.008
	Single	-0.006	-0.015	-0.032	0.016
Gender Earnings Gap	Married	-0.347	-0.080	-0.214	-0.077
	Single	-0.097	-0.023	-0.004	-0.060

Notes: Role of preferences (z), discrimination (τ), and technology (efficiency wages w and returns to schooling ϕ) for changes in segregation and the gender earnings gap, 1980-2020. Each entry shows the model-predicted change in each row variable that can be attributed to the column variable using a leave-one-out decomposition (Section 4.1.)

Changes in the preferences of married women were the most important driver of rising segregation from 1980 to 2020. Changing preferences can account for 59% ($\frac{0.029}{0.049}$) of the increase for married women, while changes in discrimination and technology each explain around 15%. In contrast, changes in the preferences of single women actually *reduced* sectoral segregation between 1980 and 2020.

[4] In the preferences counterfactual we fix preferences for men as well as women, and in the technology counterfactual we hold technology fixed for both genders. Since discrimination against men is normalized to one in each period, the discrimination counterfactual only varies discrimination for women.

The effects of discrimination are quite different for single and married women. Changes in discrimination led to an increase in the sectoral segregation of married women, but decreased it for single women. For married women, the greatest reductions in discrimination were in the more female-dominated sectors, drawing in more women and increasing measured segregation. The opposite is true for single women: discrimination against single women fell more quickly in the more male-dominated sectors.

Technological change increased the sectoral segregation of both groups. Rapid wage growth in already segregated service sectors draws in both men and women, increasing the sector's employment share and contributing to a rise in aggregate segregation through a size effect (see Section 2.1). Groups also respond differently to common technological changes in wages and returns to education because they interact with prevailing differences in discrimination and preferences.

4.2 Implications for the Gender Earnings Gap

The second panel of Table 1 reports the impact of each channel on the evolution of the aggregate gender earnings gap. Most of the decline in the aggregate gender earnings gap since 1980 was due to married women rather than single women. However, the youngest cohort of married women in 2020 still face a gender earnings gap of 15% compared to men.

The decomposition results show that the preferences of both single and married women shifted toward higher paying sectors. The contribution of these preference shifts was similar across the two groups, explaining 23% ($\frac{0.080}{0.347}$) of the decline for married women and 24% for single women. Instead, technology and discrimination appear to be driving the different trends. For single women, changes in technology appear to be the dominant factor, accounting for 62% of the decline in their earnings gap, while discrimination accounts for just 4%. The situation is reversed for married women. Declining discrimination accounts for 62% of the reduction in the earnings gap for married women, while technology changes account for only 22%. In absolute terms, the largest factor behind the decline in the gender earnings gap is the reduction in labor market discrimination against married women.

4.3 The Impact on Specific Sectors

Figure 3a further decomposes the results by showing how each of the model's channels shapes the contribution of individual sectors to aggregate segregation for all women.

Formally, it decomposes the sectoral components in Figure 2a into contributions from preferences, discrimination, technology, and their interaction.

The impact of each of the model's channels is far from uniform across sectors. Some sectoral contributions are dominated by a single channel, while others exhibit more balanced effects. For instance, changes in segregation in the Finance sector are nearly entirely explained by a decline in discrimination, while changes in the Construction sector are driven almost entirely by changes in wages. The rise in segregation in the Education and Healthcare sector reflects more balanced contributions across the channels, depending substantially on changes in both preferences and discrimination.

Figure 3b provides the corresponding decomposition of changes in the aggregate gender earnings gap. The impact of each channel was more uniform for earnings gaps than for segregation. Table 1 shows that falling discrimination is the largest driver of the decline in the gender earnings gap. It accounts for a steady 50% *within* nearly all sectors. Changes in technology generate a similarly uniform contribution, accounting for roughly 30% of the within effect for most sectors. Conversely, the contribution of preferences varies, accounting for most of the cross-sector heterogeneity in the evolution of the gender earnings gap.

4.4 Investigating Mechanisms Behind the Preferences Channel

The decomposition results show that the changing job preferences of married women are a primary driver of rising sectoral segregation in the United States. These preferences, z_{igt}, capture all non-wage utility benefits that a group g gets from working in sector i. This section relates these estimated preferences to observable sector-level amenities to shed light on the type of job characteristics they represent.

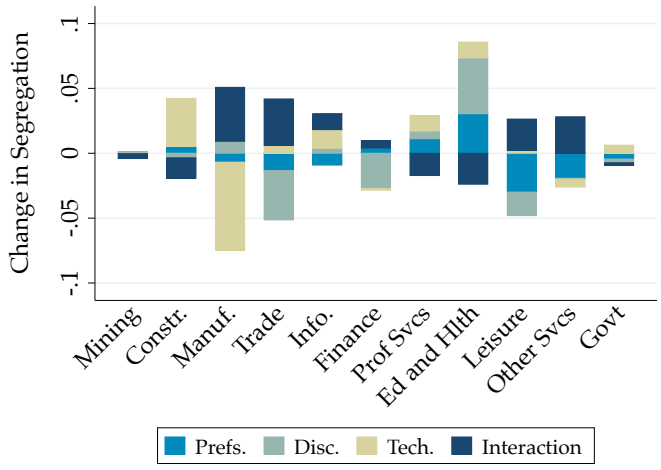
We measure four categories of amenities at the sector level: work arrangements, measured by the share of part time workers and the average hours worked per week; child-friendliness, measured by the average number of children workers have; homophily, measured by the female share of employment; business cycle risk, measured by the correlation of the sector's employment with the business cycle.[5] The regression model is

$$z_{igt} = \beta_{0g} + \boldsymbol{\beta}_g \mathbf{X}_{it} + \epsilon_{igt}, \tag{4.3}$$

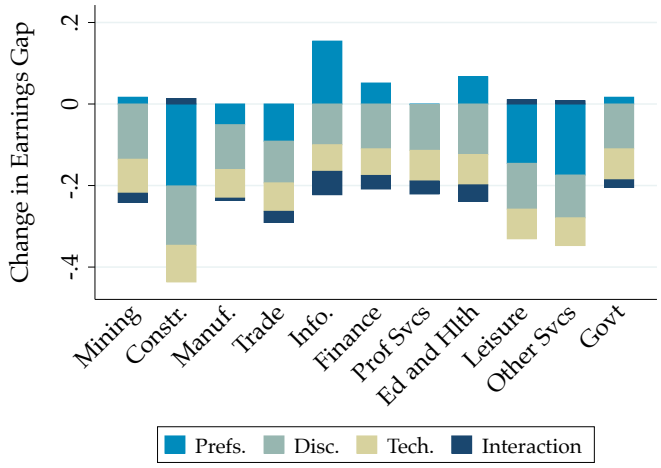
where z_{igt} is the estimated preferences of group g for sector i at time t. $\mathbf{X}_{i,t}$ is the

[5] Most of the variation in amenities is across sectors rather than within sectors over time. See Table A1.

Figure 3: Decomposing Sectoral Changes in Segregation and Gender Earnings Gaps



(a) Change in Sectoral Segregation



(b) Change in Gender Earnings Gap

Notes: Contribution of preferences, discrimination, and technology to explaining the changes in sectoral gender segregation and the gender earnings gap in each sector between 1980 and 2020 in the United States. The decomposition holds each driver fixed one by one and attributes unexplained changes in each outcome to the omitted driver.

corresponding vector of sector-level amenities, normalized by their standard deviation to facilitate interpretation. The coefficients β_g are estimated separately for each group.

Table 2 presents the estimates. Work arrangements and child-friendliness are the strongest correlates of the model derived preferences, while homophily and business cycle risk do not exhibit statistically significant relationships. All groups (married women, single women, and men) appear to have a preference for flexible work arrangements, proxied by the part-time share. The point estimates suggest this preference is stronger for married women than

Table 2: Group Preferences For Sectoral Amenities

	Married	Single	Men
Part time share	0.111	0.080	0.080
	[0.000]	[0.000]	[0.000]
Hours	0.032	-0.044	-0.028
	[0.055]	[0.014]	[0.004]
Num. children	0.019	0.001	-0.005
	[0.002]	[0.875]	[0.390]
Female share	-0.015	-0.023	-0.005
	[0.236]	[0.135]	[0.511]
Business cycle risk	0.002	-0.014	-0.008
	[0.748]	[0.108]	[0.159]
R^2	0.834	0.802	0.848
Observations	55	55	55

Notes: Correlation of preferences z_{igt} with sector-level amenities, weighted by group employment shares. Row variables normalized by their standard deviation. p-values reported in parentheses. Source: IPUMS-CPS and model output.

single women.[6] Interestingly, conditional on part-time share, married women also appear to favor sectors with longer work hours. However, the most pronounced difference across groups is for child-friendliness, which is highly correlated with married women's preferences but not those of the other groups.

Appendix Table A2 attempts to address the endogeneity of workplace characteristics by re-estimating (4.3) measuring amenities $\mathbf{X}_{it}$ using only male employees for work arrangements and child-friendliness.[7] While point estimates differ slightly, the qualitative differences between groups and their statistical significance remain unchanged.

Together, the results are consistent with the fact that women continue to be primary caregivers in the majority of households, even when both parents work Alon et al. (2022). It is also consistent with a growing body of research measuring the non-wage occupational preferences of women in other contexts with much more precise data and empirical designs Mas/Pallais (2017); Wiswall/Zafar (2017). While certainly indicative, the results here should be interpreted with caution given the small sample size (five cohorts times eleven market sectors) and absence of exogenous variation.

[6] F-tests reject the null hypothesis that the married and single women's coefficients on part-time share are the same at the 10% significance level and the 5% level for married women versus men.

[7] For example, do married women prefer a sector because it has a particular characteristic, or does a sector have a characteristic because it has a high share of married women?

5 Conclusion

Sectors are now more segregated by gender than they were 50 years ago. The trend is driven by the changing employment preferences of married women. The paper provides suggestive evidence that flexible work arrangements and childcare considerations are the main non-wage amenities underlying these preferences. Changes in the preferences of married women have also decreased the gender earnings gap. Women increasingly value the non-wage amenities of higher paying sectors. One avenue for future research is to understand the extent to which these shifts represent increases in the provision of non-wage amenities in some sectors, or whether amenities are fixed and tastes are changing over time. Better measurement of the non-wage amenities offered by different sectors can provide insight; most of the existing literature focuses on the variation in amenities across firms or occupations. Developing theories to explain the amenities offered by different sectors—and how they depend on considerations such as the task content of production, the degree of labor market power, and the expected length of employment relationships—is also a fruitful direction for future research.

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Appendix

A1 Data Appendix

A1.1 Data Description: United States

We use IPUMS-CPS data from 1975 to 2019, applying the crosswalk procedure provided by the Census Bureau to map 1990 Census industry codes to NAICS (North American Industry Classification System) codes, which are then aggregated into main sectors by the Bureau of Labor Statistics. Similarly, we use a crosswalk from the 2010 occupation codes to SOC (Standard Occupational Classification) codes, which can be used at the two-digit level. We exclude individuals working in agriculture or the military from our analysis. Our sample consists of individuals aged 25 to 55.

Individuals working fewer than 10 hours per week are categorized as non-employed, while those working between 10 and 30 hours per week are assigned a 50% weight to the home sector (non-employed) and a 50% weight to the employed group, following Hsieh et al. (2019).

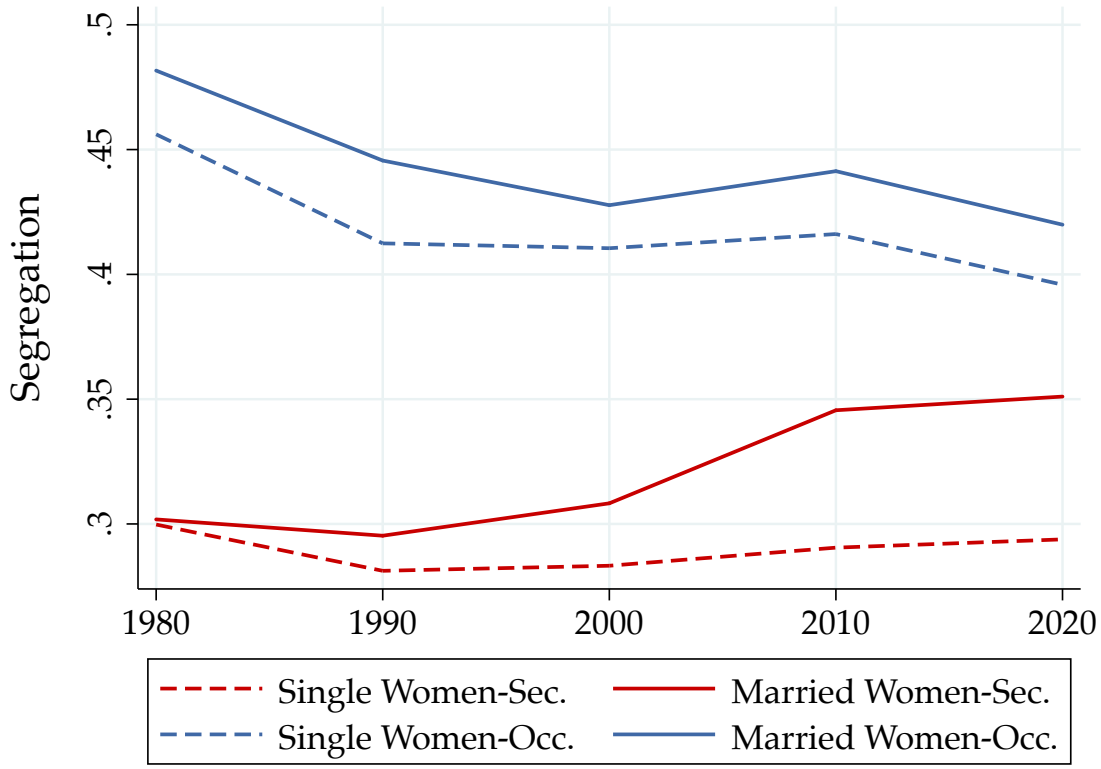
A1.2 Data Description: Europe

We use the harmonized European Labour Force Survey from 1995 to 2019 for individuals aged 25 to 54. The measure of working hours is constructed using the methodology described in Bick/Brüggemann/Fuchs-Schündeln (2019). The European-wide NACE (Nomenclature of Economic Activities) harmonized industry classification is only available for the years 2008–2019; therefore, we restrict our segregation analysis to this period. We convert NACE codes to align them with the U.S. sector classification, following the approach in Alon et al. (2022). The following aggregations are applied: Trade, Transportation, Electricity, and Water are grouped under ”Trade”; Professional and Administrative Services under ”Prof Svcs”; Education and Health under ”Ed and Hlth”; Finance and Real Estate under ”Finance”; and Accommodation and Arts under ”Leisure.” The remaining sectors are labeled as follows: Public Administration as ”Govt,” Construction as ”Constr.,” Other Services as ”Other Svcs,” Information as ”Info,” Manufacturing as ”Manuf.,” and Mining as ”Mining.” Agriculture is excluded from the analysis.

A2 Additional Figures and Tables

Figure A1 illustrates the level of segregation of sectors and occupations for married and single women relative to all men rather than the normalized series in the main text.

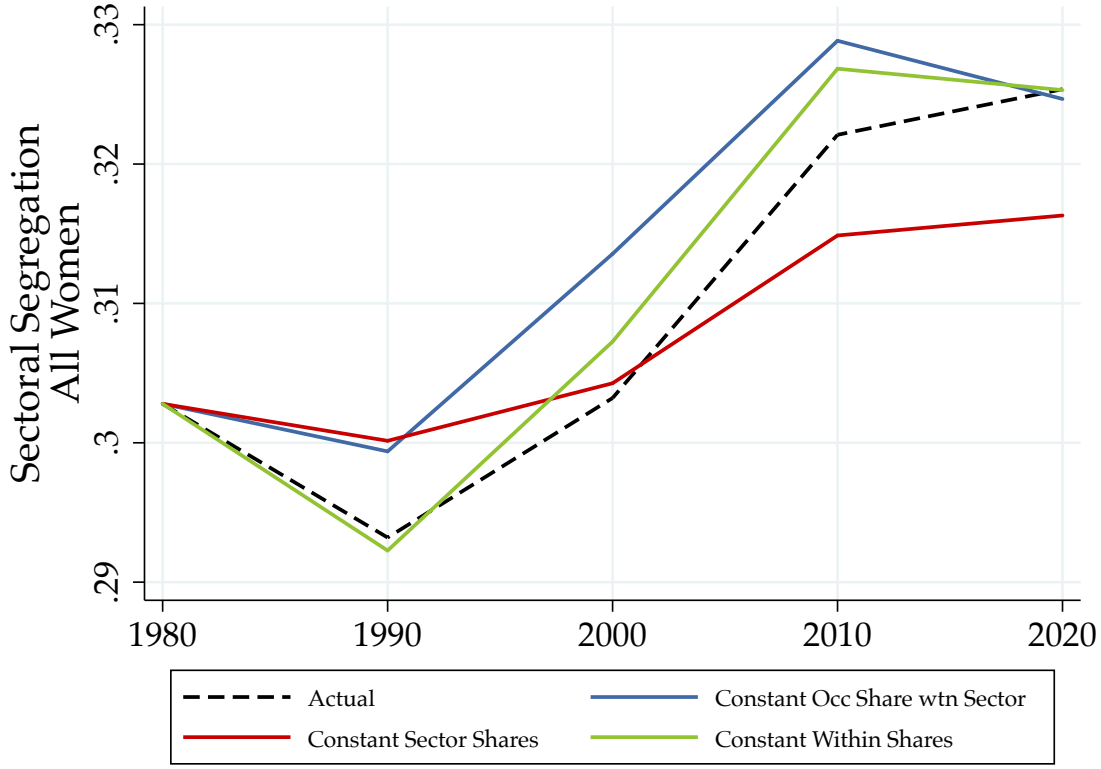
Figure A1: Occupational convergence and sectoral divergence wrt Marital Status.



Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

Figure A2 shows the actual sectoral segregation of women (the black dashed line) alongside a counterfactual segregation measure which holds sectoral employment shares of the overall labor force fixed at their 1980s levels (the red line). The formal decomposition is described in the next paragraph. The purpose of this counterfactual is to assess the impact of the expansion of (primarily female-dominated) service sectors, which may have amplified segregation. Even with fixed sector sizes, segregation would have increased significantly because of within sector changes in gender composition. Using the difference between these two lines, We conclude that changes in the total employment shares account for only 25% of the rise in sectoral segregation among married women (Figure A3) and 41% among all women (Figure A2).

Figure A2: Fixed Sector Sizes



Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Hypothetical "constant sector size" assumes the 1980's overall sectoral distribution.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

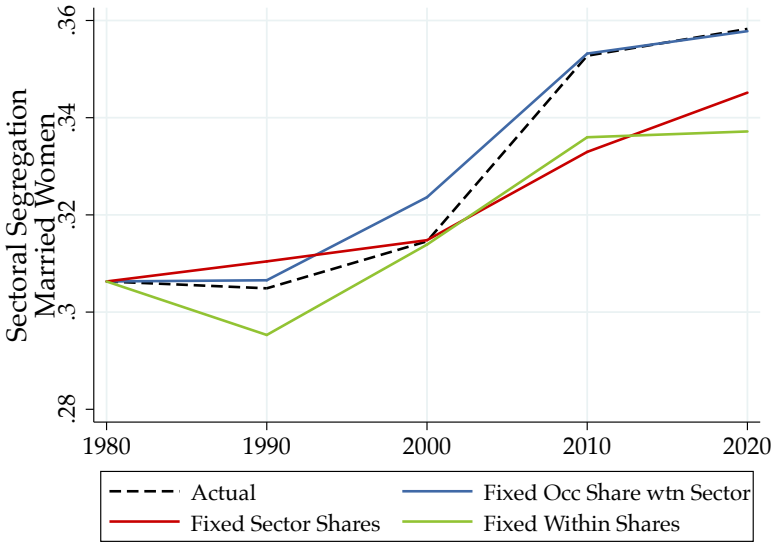
In Figures A2 and A3, we calculate segregation under several counterfactual scenarios. It is important to note that in each scenario, we exogenously hold one factor constant without accounting for its impact on other measures. To ensure comparability, we normalize the sum of employment shares across sectors to 1 in each counterfactual scenario. Consider the measured employment share of sector s and occupations o for gender f, represented as $\frac{p^f_{so}}{\sum_s \sum_o p^f_{so}}$ (e.g. the share of women whose occupation is Manager in the Education and Health sector) which serves as the key variable in constructing the segregation measure. This can be expressed as follows:

$$\frac{p^f_{so}}{\sum_s \sum_o p^f_{so}} = \underbrace{\frac{p^f_{so} + p^m_{so}}{\sum_o p^f_{so} + p^m_{so}}}_{\text{Occupation share wtn Sector}} \underbrace{\frac{p^f_{so}}{p^f_{so} + p^m_{so}}}_{\text{Wtn female share}} \underbrace{\frac{\sum_o p^f_{so} + p^m_{so}}{\sum_s \sum_o p^f_{so} + p^m_{so}}}_{\text{Sector Share}} \underbrace{\frac{\sum_s \sum_o p^f_{so} + p^m_{so}}{\sum_s \sum_o p^f_{so}}}_{\text{1/Female Share}}$$

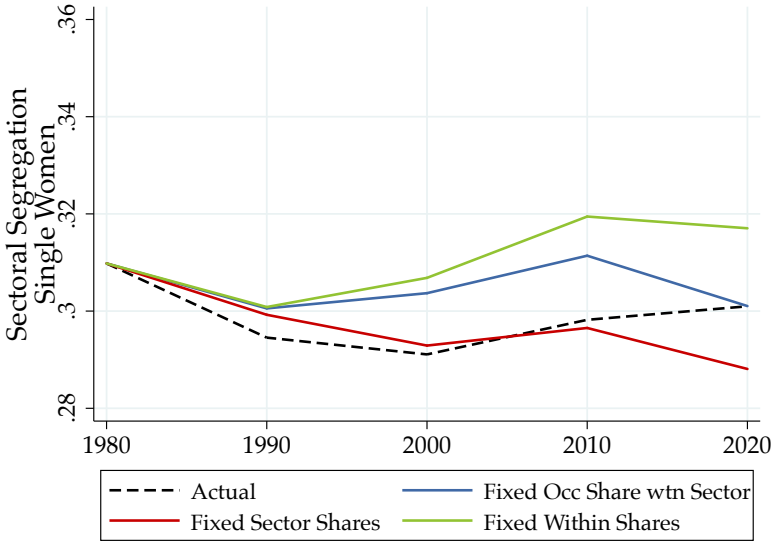
By holding one component of the above equation constant at its 1980s level, we calculate the hypothetical employment share of sector s and occupation o for all groups (married

women, single women, and men) across all sector-occupation pairs. We then normalize the sum of employment shares for each group to 1.

Figure A3: Counterfactual Segregation



(a) Married Women



(b) Single Women

Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Hypothetical "constant sector size" assumes the 1980's overall sectoral distribution.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

Figure A3a shows that if sectoral composition remained unchanged (i.e., sector shares were held constant), the segregation of married women would be lower. Similarly, if women's representation within each sector-occupation pair had remained constant (i.e., within-sector shares did not change), segregation would also be lower. This suggests that

the increase in female representation within jobs contributed to amplifying segregation. If occupational composition within each sector had remained unchanged, segregation would be slightly higher.

Figure A4 presents both sectoral and occupational gender segregation for single and married individuals, where the comparison group consists of men with the same marital status. We find that, regardless of whether women are compared to all men or only to men with the same marital status, sectoral segregation increases while occupational segregation falls.

Figure A5 shows the contributions of each sector the rising segregation for single and married women separately. Education and Health contributed more to segregation for married than single women.

Figure A6 disaggregates the rise in sectoral segregation by presence of children and plots it in comparison to the decomposition based on marital status.

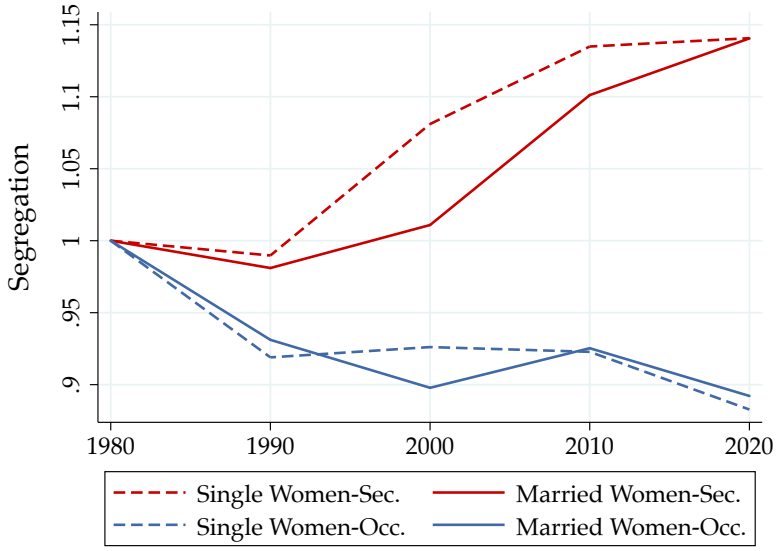
Figure A7 breaks down the analysis presented in Figure 2c by marital status. The left panel (Figure A7a) shows that sectoral segregation is highly correlated with the observed gender hours gap per capita for married women. In contrast, Figure A7b shows that this correlation is not significant for single women.

To examine the impact of different sectoral compositions on segregation across European countries, we calculate a counterfactual segregation measure by holding all sector sizes fixed at the EU average while allowing female shares within each sector to vary across countries as observed in the data. This exercise aims to rule out the influence of large government and education-health sectors in some countries, which tend to be female-dominated. Figure A8 demonstrates that the counterfactual segregation measure also strongly correlates with the gender hours gap. This suggests that the results are not merely driven by more gender-equal countries having larger female-dominated sectors but rather by the fact that female shares within sectors are also higher in these countries.

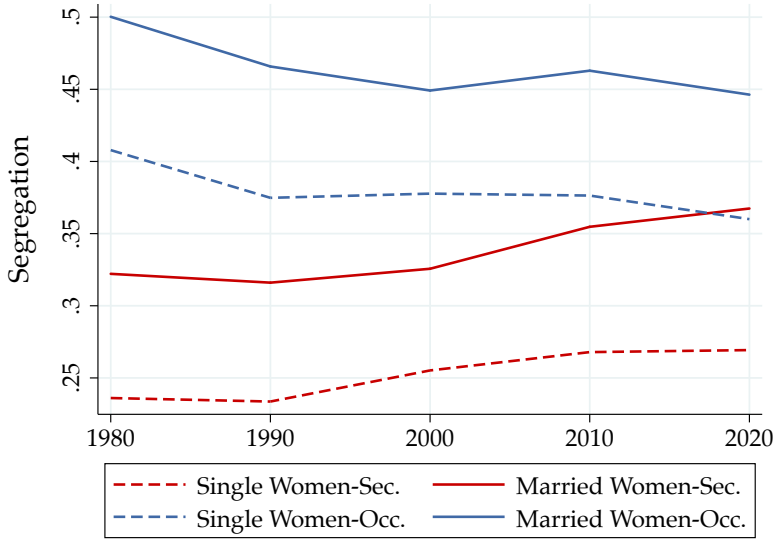
A2.1 Sector Disaggregation

We report sectoral segregation at the 2-digit level in Figure A9. The conversion of 1990 industry codes into NAICS codes may introduce some inconsistencies, as certain industries in the 1990 codes only match to NAICS at the 2-digit level. Consequently, the segregation measure could be affected by these inconsistencies when higher NAICS digits are considered.

Figure A4: Gender Segregation within Marital Status



(a) Normalized to 1980s

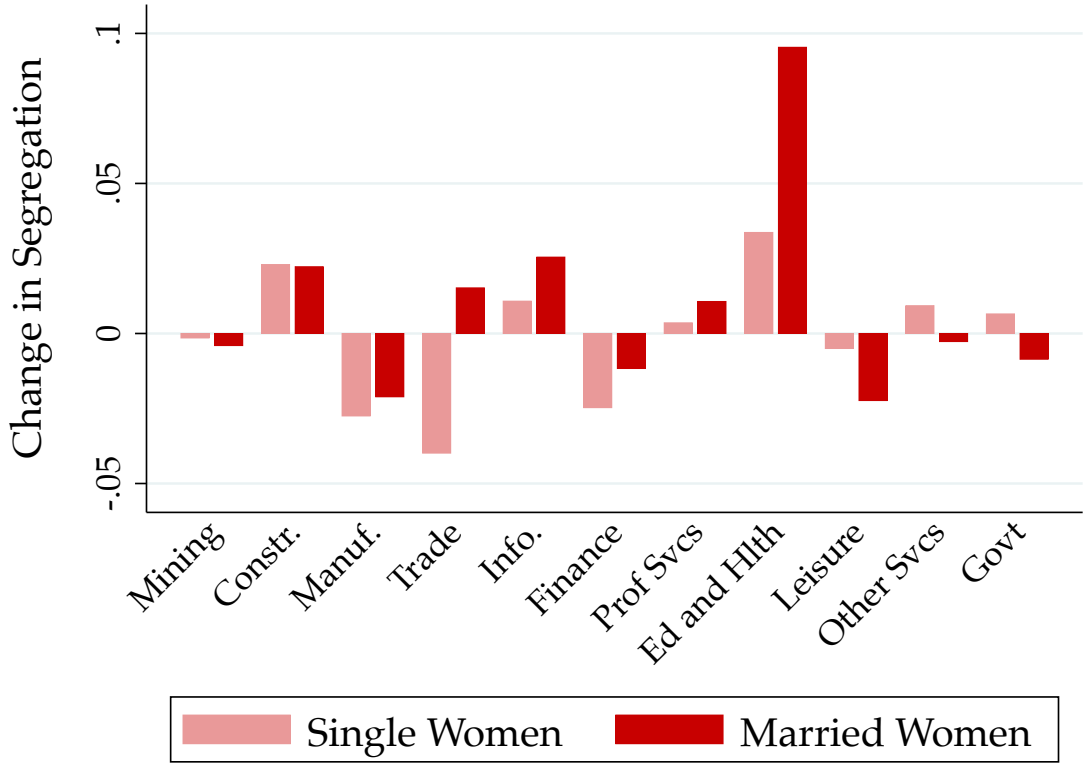


(b) Levels

Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Comparison group for single women is single men, and married men for married women.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

We observe a modest decline in segregation for single women at the 2-digit level in Figure A9b. In contrast, Figure A9a shows that segregation rises over time for married women, although the gradient is lower at the 2-digit level. The discrepancy between broad sectors and the 2-digit industries in married women's segregation is mainly due to the Trade sector: most of the Trade sector is male-dominated throughout the sample period, except for retail stores, which began as female-dominated in 1980 and became less so over time. Taking all

Figure A5: Changes in Segregation 1980-2020



Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

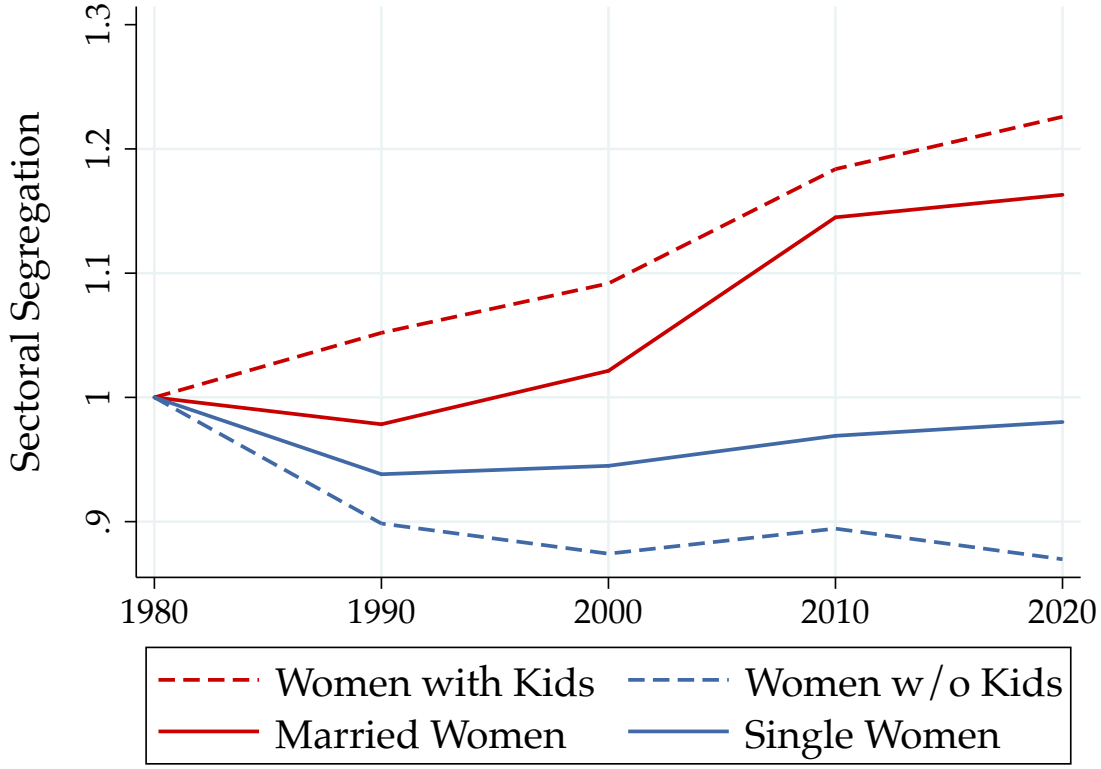
sub-sectors together, Trade overall became more male-dominated and thus contributed to married women's rising segregation, however the decline in segregation in retail trade at the 2-digit level makes the aggregate rise in segregation less dramatic at the 2-digit level.

Kuhn/Manovskii/Qiu (2024) find the constant gender shares in manufacturing and services to be quite unexpected, given the well-documented changes in gender composition over time in more finely defined sectors or occupations. This highlights the importance of developing a theory of aggregation for these classifications.

A2.2 Segregation Measure

Segregation is defined as $\frac{\Sigma_s |p_{sf} - p_{sm}|}{2}$ where s is sectors p_{sf} and p_{sm} are employment shares of women and men in a given sector. For robustness, we also compute employment shares for sector and occupation pairs, across 11 sectors (BLS sectors) and 22 occupations (SOC-2 digit). We exclude sector-occupation pairs with fewer than 50 observations, resulting in a total of 110 sector-occupation pairs for further analysis of segregation.

Figure A6: Marital Status and Presence of Children (United States)



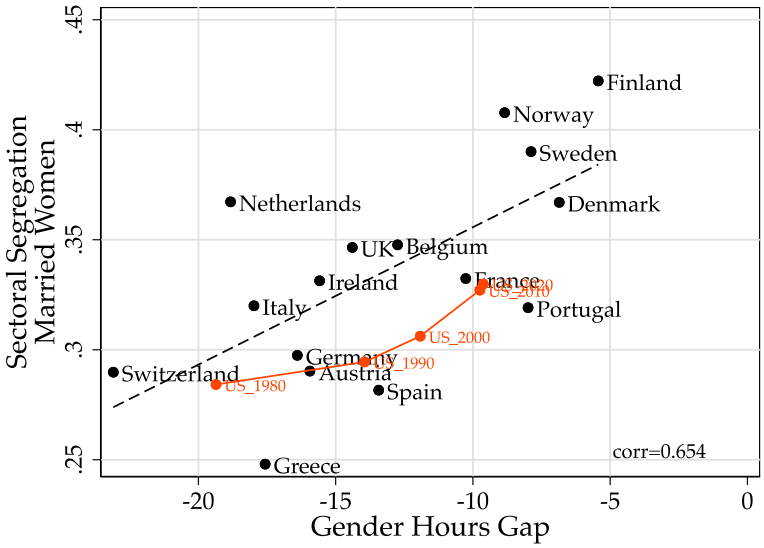
Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Motherhood is defined as the existence of children younger than age 18. Solid lines represent the segregation when the sample is divided into 3 groups as men, single women, married women, whereas in dashed lines, the division is as men, women with kids, women without kids.

Source: IPUMS-CPS between 1975-2019, age group is 25-35.

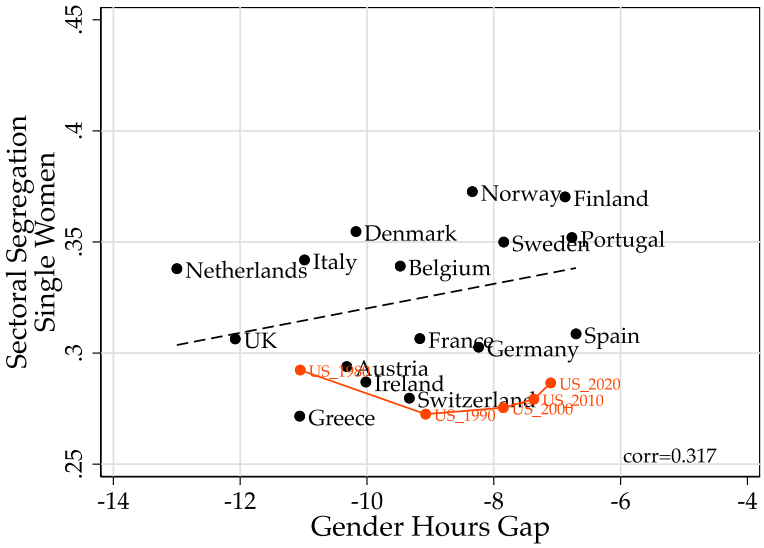
An alternative segregation measure is given by $\frac{\Sigma_{so}|p_{sof}-p_{som}|}{2}$ where so is sector-occupation pairs, p_{sof} and p_{som} are employment shares of women and men in a given sector-occupation pair.

We further define two versions of segregation for a single sector or occupation; 1) overall segregation: $\frac{|\Sigma_s p_{sof}-\Sigma_s p_{som}|}{2}$, 2) segregation which takes into account either sectoral or occupational variation; $\frac{\Sigma_s|p_{sof}-p_{som}|}{2}$. The second measure is larger than the first if an additional imbalance exists in the second dimension, which may be masked in the first measure. Figure A10a presents different segregation measures for married women. When segregation is calculated at the occupational level, we observe convergence. When calculated at the sectoral level, we observe divergence. However, when measured across sector-occupation pairs, the pattern appears more stable. By construction, the segregation level is highest for sector-occupation pairs: even slight gender imbalances in sectoral distribution for a single occupation result in a larger value for formula (2) than for formula (1).

Figure A7: Segregation in Europe



(a) Married Women



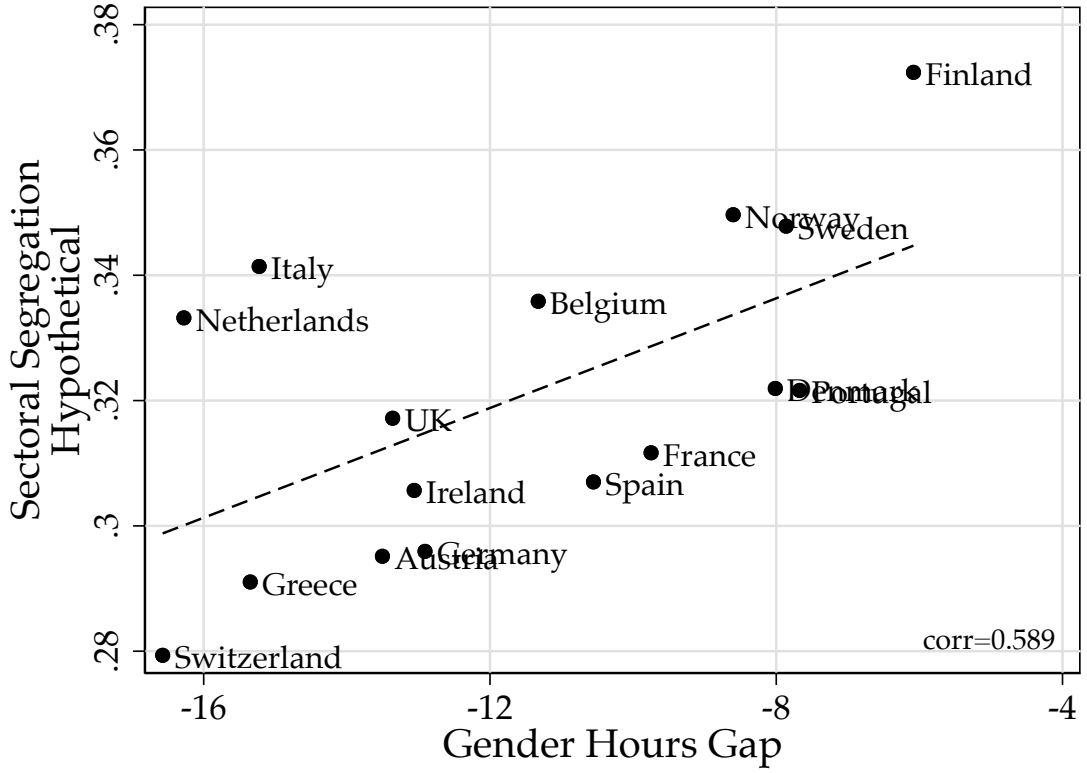
(b) Single Women

Notes: Average sectoral segregation for 25-54 age group for 2008-2019 is reported. Gender hours gap is the average of 2005-2009 for the respective group of single and married women relative to all men. See Appendix A1.2 for details. Data points for the US are exactly the same as in Figure A1.

Source: EU-LFS.

Repeating this analysis for specific sectors and occupations provides useful insights. Figure A10c reports sectoral gender segregation for the education and health sector. Even when occupational variation within the sector is considered (blue line), the overall trend remains

Figure A8: EU-average Sector Sizes



Notes: Average sectoral segregation for 25-54 age group and for the year 2008-2019 is reported. Gender hours gap is the average of 2005-2009. Hypothetical sectoral segregation assumes the EU-average overall sectoral distribution to rule out the effect of sector sizes in segregation.

Source: EU-LFS

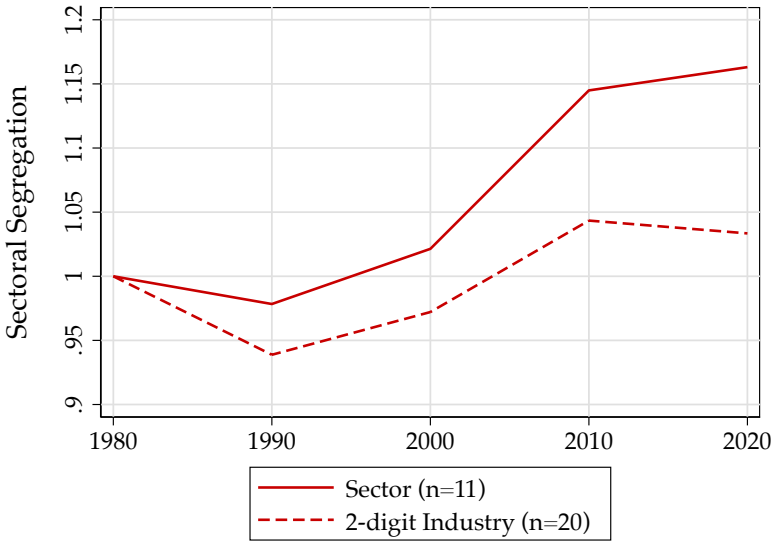
largely unchanged apart from a slightly higher value. This suggests that gender imbalance in the education and health sector is not primarily driven by sorting into different occupations within the sector.

In contrast, Figure A10b illustrates segregation trends for management occupations. A decline in segregation over time (red line) indicates gender convergence in management occupations. However, when accounting for sectoral variation (blue line), we see that gender convergence in management did not occur uniformly across sectors, leading to a more stable pattern after the 1990s.

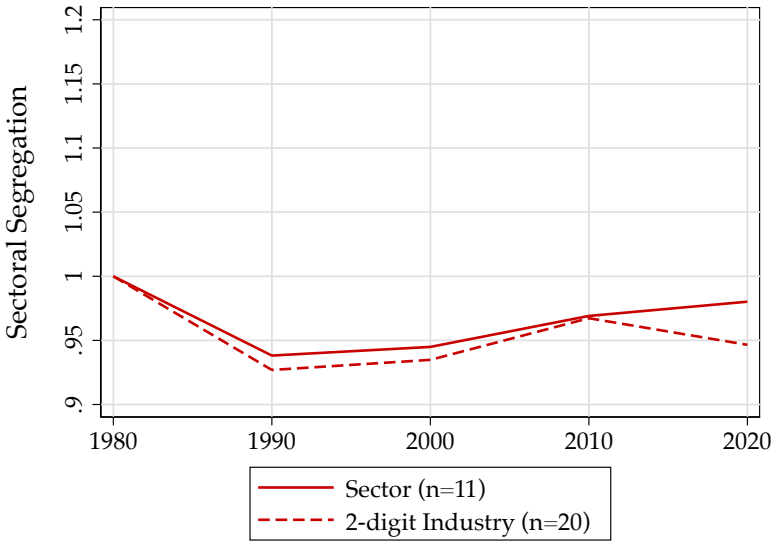
A2.3 Men, Women, Or Both?

Figure A11 decomposes the segregation of all women relative to all men into its components: one representing the distribution of employment across sectors for women,

Figure A9: Sector Segregation at the 2-digit level



(a) Married Women



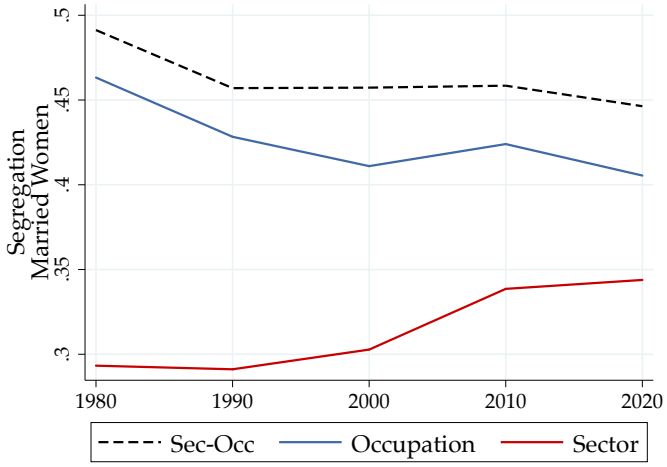
(b) Single Women

Notes: Sector is defined as BLS sectors, 2-digit NAICS classification is based on crosswalk from 1990 industry codes to NAICS provided by Census Bureau.

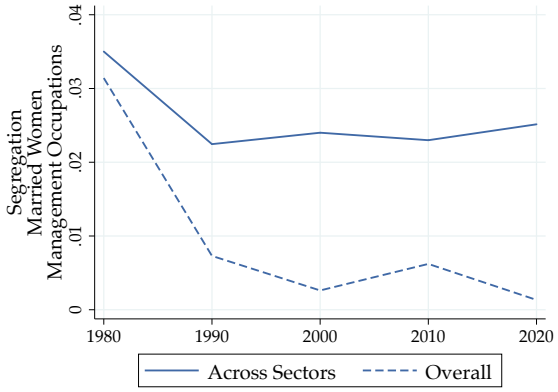
Source: IPUMS-CPS.

and the other for men. When we hold men's sectoral distribution constant at its 1980s level and only allow women's (both married and single) sectoral distribution to vary as it did in the data, we observe that segregation would have increased even more compared to the actual segregation if the only change had come from women's sectoral composition. This suggests that the change in men's sectoral distribution has mitigated segregation, as men

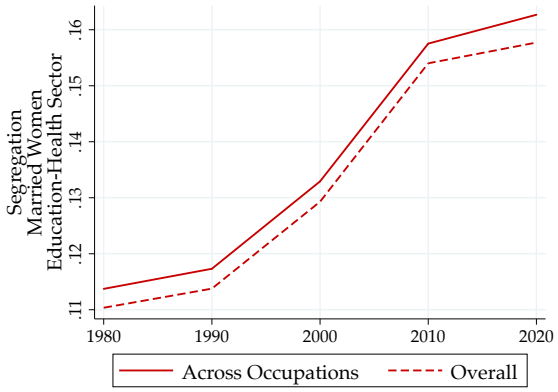
Figure A10: Sector-Occupation Segregation of Married Women



(a) Overall



(b) Management Occupations



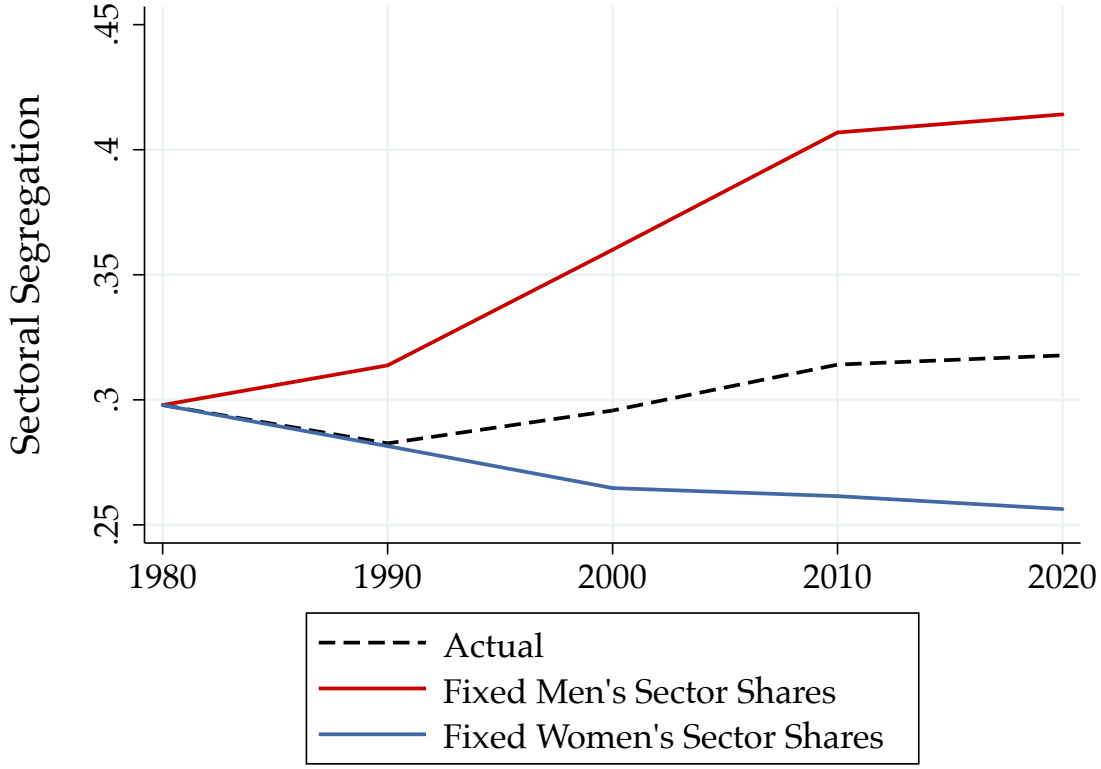
(c) Education and Health Sector

Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Dashed lines in panel b and c refer to the segregation measure only with respect to occupations or sectors, whereas solid lines considers sectoral (or occupational) variation within occupations (or sectors) as well.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

are working in female-dominated sectors to a greater extent, consistent with the growth of the service sector.

Finally Figure A12 shows the sample share of each group (men, single women, and married women in each cohort, along with their characteristics (labor force participation rate, hours worked per week, and years of education).

Figure A11: Gender Decomposition of Segregation



Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019. Hypothetical scenarios assume 1980's sectoral distribution within men(women) by only varying women(men)'s sectoral distribution.

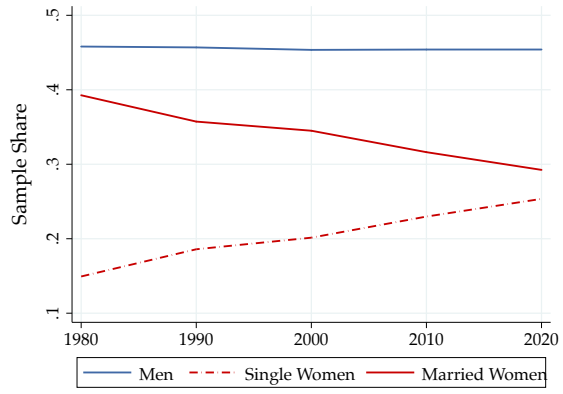
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

A2.4 Potential Mechanisms

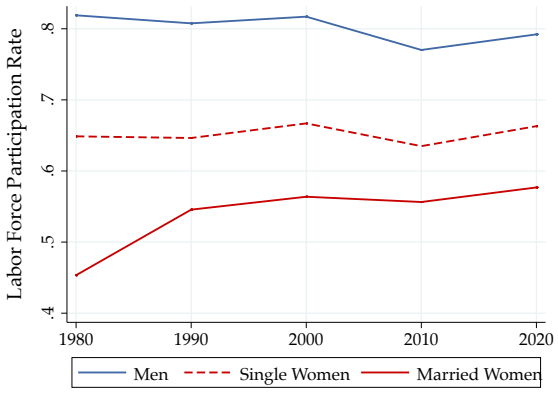
The riskiness measure is constructed using BLS Current Employment Statistics industry employment. The methodology of Coskun/Dalgic (2024) is applied. Annual sectoral employment and GDP data are HP-filtered with a smoothing parameter of $\lambda = 6.25$ for the period 1975–2019. The 20-year centered correlation coefficients of the cyclical components of GDP and industry-level employment are used in the regression. The riskiness measure for the 1980s is based on the correlation coefficient from 1970 to 1989, for the 1990s, it is from 1980 to 1999, and so on. For the last decade, the 2020s, the correlation coefficient is calculated for the years 2010–2019.

Table A1 shows the share of variation in each amenity in the regression (4.3) that is due to permanent differences across sectors (as opposed to within-sector variation over time). There are large permanent differences in work arrangements, especially the part time share. Riskiness and the female share of employment are also more different across sectors

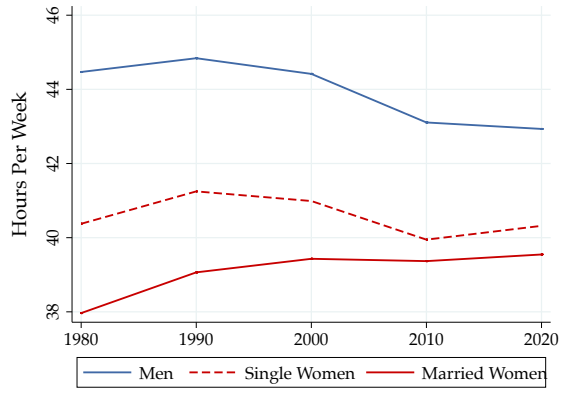
Figure A12: Characteristics of Each Group



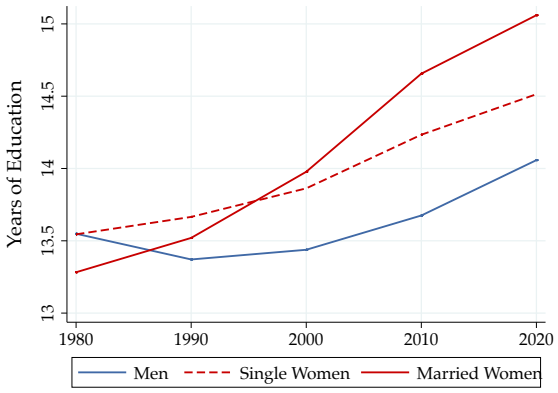
(a) Sample Share



(b) Labor Force Participation



(c) Hours



(d) Education

Notes: Years are pooled for every 10 years such that 1980 refers to 1975-1984 etc..., 2020 refers to 2015-2019.
Source: IPUMS-CPS between 1975-2019, age group is 25-35.

than within. The exception is number of kids, which declined substantially across all sectors over time, though to varying degrees, as the fertility rate declined. Still, 44% of the variation in number of kids is due to permanent differences across sectors.

Table A2 provides a robustness check of the main regression results where we measure work arrangements and number of children for male workers only to address the endogeneity of preferences, which increase female representation in a sector, with amenities. The qualitative differences across groups are unchanged.

Table A1: Fraction of Variance in Amenities: Permanent Cross-Sector Differences

PT share	Hours	Num. kids	Fem. share	Risk
0.958	0.854	0.442	0.979	0.643

Notes: Data source is IPUMS-CPS between 1975-2019, age group is 25-35. The values are the share of the total variance in each amenity explained by the sector fixed effect. "PT share" is the share of part time workers, "Hours" is average hours per week, "Num. kids" is the average number of children employees have, "Fem. share" is the female share of total employment, "Risk" is the correlation of the sector's employment with the business cycle.

Table A2: Preferences and Amenities at the Sector Level.

	Married	Single	Men
Part time share, men only	0.123	0.084	0.082
	[0.000]	[0.000]	[0.000]
Hours, men only	0.098	0.022	0.007
	[0.000]	[0.404]	[0.528]
Num. children, men only	0.040	0.019	0.013
	[0.006]	[0.157]	[0.183]
Female share	0.010	0.014	0.026
	[0.478]	[0.420]	[0.029]
Business cycle risk	0.013	0.002	0.007
	[0.093]	[0.835]	[0.312]
R^2	0.670	0.675	0.824
Observations	55	55	55

Notes: Correlation of preferences z_{igt} with sector-level amenities, weighted by group employment shares. Row variables normalized by their standard deviation. p-values in parentheses. Source: IPUMS-CPS and model output.

A3 Computational Appendix

The computational algorithm follows the approach in Hsieh et al. (2019). Parameters θ, η, β are set in the same manner as in their work (see Table A3). Returns to education, $\phi_i(c)$, are estimated by computing,

$$s_i(c) \;=\; \frac{\text{years of schooling}}{25}$$

for each cohort $\times$ year $\times$ sector and then inverting the optimal schooling policy, so

$$\phi_i(c) = \frac{s_i(c)}{1 - s_i(c)} \times \frac{1-\eta}{3\beta}.$$

Given these parameters, the model identifies cohort-group discrimination τ, preferences z, and sectoral wages w using data on earnings and employment. Identification requires assuming that men face no discrimination in market work; no group faces discrimination in home production; and normalizing preferences for the home sector to one for all groups. To identify the level of preferences for cross-year comparisons we need to also assume a home sector wage for each year. Hsieh et al. (2019) set this wage to be equal to the wage of the

Secretary occupation, we set it to be the Leisure and Hospitality wage. The bottom panel of Table A3 summarizes the model assumptions and normalizations. With these assumptions, the following algorithm reveals the unknowns:

1. Using earnings and employment shares of the youngest cohort of men in each time period, compute male preferences, z_{imt} and wages $w_i(t)$ for each sector and year. With K market sector and the home sector, this involves solving a system of $2K+1$ non-linear structural equations.
2. Given baseline group (men) preferences z_{imt}, combine formulas 3.1 and 3.2 to recover preferences for all groups using earnings gaps and participation rates,

$$\tilde{z}_{igt} = \left(\frac{\overline{\text{wage}}_{igt}}{\overline{\text{wage}}_{imt}}\right)^{-\frac{1}{1-\eta}} \times \left(\frac{1-LFP_{gt}}{1-LFP_{mt}}\right)^{-\frac{1}{\theta}} \times \tilde{z}_{imt},$$

   where true preferences are recovered by $z_{igt} = (\tilde{z}_{igt})^{\frac{3\beta}{1-\eta}}$.
3. Given the normalizations, recover discrimination τ by combining equation 3.1 with earnings and employment data,

$$\tau_{igt} \;=\; \frac{\tau_{igt}}{\tau_{imt}} = \left(\frac{\text{share}_{igt}}{\text{share}_{imt}}\right)^{-\frac{1}{\theta}} \times \left(\frac{\overline{\text{wage}}_{igt}}{\overline{\text{wage}}_{imt}}\right)^{-(1-\eta)}.$$

Some of the computational exercises will also rely on estimates of the returns-to-experience, $\gamma(t-c)$. Given estimated wages, these can be recovered using within cohort lifecycle earnings growth,

$$\frac{\overline{\text{wage}}_{i,m}(c,t)}{\overline{\text{wage}}_{i,m}(c,c)} = \frac{w_i(t)\gamma_i(t-c)s_i^{\phi(t)}}{w_i(c)s_i^{\phi(c)}}$$

which implies

$$\gamma_i(t-c) = \left(\frac{\overline{\text{wage}}_{i,m}(c,t)}{\overline{\text{wage}}_{i,m}(c,c)}\right) \times \left(\frac{w_i(t)s_i^{\phi(t)}}{w_i(c)s_i^{\phi(c)}}\right)^{-1}$$

where $\gamma(0) \equiv 1$. Finally, Hsieh et al. (2019) shows how the composite group discrimination τ can be further decomposed with additional assumptions on initial conditions. Additional decompositions of this type are not pursued here.

Table A3: Parameters

Param.	Meaning	Value/Norm.
θ	Dispersion of idiosyncratic ability	1.46
η	Elasticity of human capital w.r.t education spending	0.103
β	Utility weight on pre-working life	0.231
$\tau_{i,men}$	Composite discrim. in all sectors for men	0
$\tau_{home,g}$	Composite discrim. in home sector, all groups	0
$\tilde{z}_{home,g}$	Pref. for home sector, all groups	1
$\overline{\text{wage}}_{home}$	Home sector wage for all groups	$\overline{\text{wage}}_{Leisure,m}$

Notes: Hsieh et al. (2019) estimate θ using dispersion of residuals from wage regressions on age, group, and education. η is estimated using education expenditure as a share of GDP. β estimated using Mincerian returns to schooling.

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