# MARKET TRANSFORMATION AND THE OPPORTUNITY STRUCTURE FOR GENDER INEQUALITY: A COHORT ANALYSIS USING LINKED EMPLOYER-EMPLOYEE DATA FROM SLOVENIA

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*Abstract:*

We apply a life course, and particularly a cohort-based, approach to shed new light on how market transformation affects gender inequality. Previous analyses have paid arguably inadequate attention to the cohort-specific effects of marketization, overlooking meaningful cohort variation as the changing economic landscape alters the structural and normative context of gender inequality. In doing so we not only further life course research among transition societies but also generalize Petersen and Saporta's (2004) notion of the opportunity structure for discrimination to the organization of markets more broadly. Using linked employer-employee registry data from Slovenia we find pronounced cohort effects of transition, with younger cohorts being disproportionately harmed by marketization. Results also suggest that economic change altered the structure of gender inequality in organizations in cohort-specific ways. This suggests a cohort-based approach is necessary to understand the gender consequences of market transition and that this process importantly shapes the feasibility and acceptance of various forms of inequality.

# MARKET TRANSFORMATION AND THE OPPORTUNITY STRUCTURE FOR GENDER INEQUALITY: A COHORT ANALYSIS USING LINKED EMPLOYER-EMPLOYEE DATA FROM SLOVENIA

Despite considerable scholarly and public interest in the effects of market transition among post-Soviet countries, our knowledge regarding how market reforms have affected gender inequality remains limited. Although many formerly socialist states in Central and Eastern Europe (CEE) had official gender egalitarian policies, gender wage inequality under socialism was large and persistent, and often comparable to levels among developed Western societies (Rosenfeld and Trappe 2002). While scholars feared that women would bear the disproportionate costs of market transition (Hauser et al. 1993; Einhorn 1993), most evidence has indicated that women's socioeconomic situation did not drastically worsen in the immediate years following 1989 (van der Lippe and Fodor 1998; Giddens 2002; Fodor 2002; Rueschemeyer and Szelenyi 1995). What has emerged, however, is that gender inequality among formerly CEE countries differs substantially in form from developed Western economies. Whereas within-job gender wage inequality among Western societies like the U.S., Sweden, and Norway is negligible relative to sorting between occupations and establishments (Petersen and Morgan 1995; Petersen et al. 1997; Meyersson et al. 2001), within-job inequality is significant among CEE societies (Jurajda 2003; Krizkova et al. 2010; Penner et al. 2012; Sørenson and Trappe 1995).

As life course research has demonstrated, much of the gender pay differential originates early in the careers of young men and women, which is compounded by cumulative advantage processes over men's and women's working lives (DiPrete and Soule 1988; Gerhart 1988). Gender inequality is driven not only by differing preferences among men and women (Correll 2001; 2004; Fernandez and Friedrich 2011), but also by employer stereotypes and discrimination in the

allocation, promotion, and rewarding of workers (see England 1992, chap. 2). Particularly structural conditions play a decisive role in social stratification. Petersen and Saporta (2004) contend that structural factors determine the "opportunity structure" for gender inequality and discrimination, i.e. structurally where inequality in the employment relationship is likely to occur. In their analysis of a large U.S. organization, they argue that allocative forms of inequality are more legally feasible in today's post-Civil Rights era compared to job-level discrimination, explaining why sorting across occupations and establishments comprises the majority of the gender gap in the U.S.

In the context of market transition, the structural opportunities available for inequality are likely to vary significantly depending on one's birth cohort. Although few studies explicitly consider cohort-specific effects, one study of Eastern Germany found marked differences in the impact of market transition by cohort (Mayer, Diewald, and Solga 1999). As societies transition from a centrally planned to a market economy, increasing social inequality (Bandelj and Mahutga 2010), this alters the opportunities and constraints available to an entire society, which we define broadly as the "opportunity structure" to encompass both normative and structural (i.e. supply- and demand-side) factors. Yet these effects depend on individuals' social or cohort position, providing cohorts a unique character and outlook reflecting their unique historical experiences (Ryder 1965). Due to the gradual and path dependent nature of transition, the changing opportunity structure of marketization should have a relatively small impact on gender inequality among individuals in middle-aged and older cohorts. By contrast, given their greater exposure to mechanisms of labor market inequality, younger cohorts should be more harmed by transition. As a result, in the context of gender inequality, we argue that the period in which a woman finishes

schooling and enters the labor market may play an important role in shaping her labor market prospects vis-à-vis her male counterpart.

In this paper, we make two primary contributions. First, by adopting a life course approach, we shed new light on how market transformation affects gender inequality in cohort-specific ways. Previous research has paid inadequate attention to how transition to a market-based system after socialism may matter differently for different cohorts of people: those who have lived a significant part of their lives under socialism and those who enter the labor market during major structural economic transformation. In this respect, we contribute to a growing body of literature spurred by Elder (1974), focusing on how events differentially affect individuals across the life course. Second, this cohort approach furthers our understanding of the structure of gender inequality in organizations by investigating how market transformation alters the feasibility and success of various forms of gender inequality (i.e. establishment-, occupation-, and job-level inequality). Our analyses therefore also extend Petersen and Saporta's (2004) notion of the opportunity structure for discrimination, generalizing this idea to the organization of markets more broadly by examining how marketization and privatization change the ways that gender inequality is organized as societies transition from one system of socio-economic organization to another.

We apply our life-course inspired cohort-based approach to an examination of the gender pay gap using matched employer-employee registry data from Slovenia between the years of 1993 and 2007, which allows us to examine the long-term impact of postsocialist economic transformation on gender inequality. Like other CEE countries, Slovenia has undergone significant social and economic change amidst transition, including rising gender inequality (Pollert 2003). Despite this, during the examined period, Slovenia has been the strongest economic performer in the region and has managed to maintain high female labor force participation throughout transition.

Using these high quality matched data, the Slovenian case provides an excellent context in which to observe the cohort-specific impact of market transformation on gender inequality.

## THE OPPORTUNITY STRUCTURE FOR GENDER INEQUALITY IN TRANSITION SOCIETIES

*The Sources and Structure of Gender Inequality in Organizations*

In capitalist societies scholars typically maintain that gender inequality arises from a combination of worker preferences and employer beliefs and practices. We argue that these factors are culturally determined and influenced by larger societal structures and norms. For workers, differences in cultural beliefs about gender task competencies (Correll 2001; 2004; Cjeka and Eagly 1999; Fernandez and Friedrich 2011), socialization patterns (Betz and O'Connell 1989; Marini and Brinton 1984; Marini et al. 1996), the gendered division of labor in families (Becker 1981; 1985; Mincer and Polachek 1974), and social networks (Marsden 1987; 1988; Straits 1996) are argued to lead men and women to prefer differing jobs and careers, contributing to gendered educational sorting and sex segregation in the labor market. For employers, it is asserted that these same gender expectations and cultural beliefs encourage them to allocate women and men to differing positions in firms and to culturally devalue female-dominated or female-stereotypical work (England 1992; Heilman 1980; 1984; Reskin and Roos 1990). As noted by Petersen and Saporta (2004), these factors produce three distinct types of gender inequality in organizations. First, thanks to a combination of worker preferences and employer practices, men and women are allocated to different occupations and establishments that offer differential rewards. Inequality of this sort results from distinctive patterns of hiring, but also in worker promotions and dismissals. This form of inequality is commonly referred to as allocative inequality. Second, employers may

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systematically pay women lower wages than men in the same occupation in a given establishment. This form of inequality is labeled within-job wage inequality. Third, majority female jobs and occupations receive lower pay compared to majority male ones even net of skill requirements and work-related activities, yielding valuative inequality.

The relative importance of different forms of inequality ultimately depends on its structural feasibility and cultural acceptance. In the United States, following the enactment of the 1964 Civil Rights Act, blatant employer discrimination according to ascriptive characteristics became substantially more difficult and normatively less defensible. Within-job wage inequality in the United States is therefore among the hardest to implement as it is straightforward to document, clear-cut, and likely to have a plaintiff, all factors which make this form of inequality structurally less feasible for employers (Petersen and Saporta 2004). Consequently within-job gender pay inequality is negligible in the U.S. (c.f. Petersen and Morgan 1995).

By contrast, allocative and valuative inequality remain much more widespread. Because documenting discrimination at the point of hire involves a multitude of factors including inequalities in the recruitment process itself, who receives a job offer, the quality of those offers, who is hired, and subsequent promotions and dismissals, allocative discrimination is substantially more difficult to prove in court (Petersen and Saporta 2004). Likewise, regardless of the source, assuming that men and women indeed have differing job preferences allocative inequality is functionally more accepted than the other two forms of gender disparities. Few studies have empirically evaluated the impact of allocative inequality on the gender wage gap given these measurement difficulties. One of the rare exceptions is Petersen et al. (2000), which, using longitudinal data on job applicants to a single high tech firm, finds surprisingly no evidence of gender-based allocative inequality, though they do find indications of race-based inequality.

Fernandez and Sousa (2005) and Fernandez and Friedrich (2011), however, find evidence of significant gender differences in preferences and job networks in allocative inequality (see also Fernandez and Fernandez-Mateo [2005] for racial differences in job networks). Finally, valuative inequality in the United States is the most challenging to demonstrate. In this case, inequality is the product of discrimination against a particular class of jobs or occupations, making it difficult and ambiguous to document, and a plaintiff is rarely forthcoming (Petersen and Saporta 2004). Although valuate inequality is also morally unacceptable, bias is often unconscious (Fiske 1998; Fisk et al. 1991), further increasing the difficulty of documenting this form of inequality. Further, given that valuative discrimination acts by changing perceptions of what kinds of work are socially valuable, while it may be the case that most members of society would agree that this type of inequality is reprehensible, in practice it becomes normative and any given valuation is not typically viewed as problematic. A large body of research has suggested that valuative inequality plays a significant role in the gender pay gap (e.g. England 1992), though the precise size of this effect is difficult to estimate.

*Comparative Trends in Gender Inequality*

Cross-nationally, scholars have documented similar patterns of gender inequality among developed Western societies, suggesting that social structures and norms also influence inequality in other contexts as well. As in the United States, gender equity legislation outlawing blatant discrimination was adopted by the majority of advanced developed countries in the second half of the 20th century, including in Australia and across Western Europe (Ellis 1991). Accordingly, within-job wage disparities are typically small, with women for instance earning on average 2-6% less in Norway (Petersen et al. 2007) and 1.4-5% less in Sweden (Myersson et al. 2001) than men

doing the same work in the same establishment. These rates are in line with Petersen and Morgan's (1995) estimate of a gap of about 1-5% in the United States, where within-job inequality accounts for only 5-25% of the overall gender wage gap. Conversely, sorting into occupations and establishments explains the vast majority of the gender pay gap in Norway, Sweden, and the U.S., with occupational segregation appearing to be particularly important.

However, among transition societies, patterns of gender inequality appear to differ. Absent an equivalent legacy of gender equity legislation, the within-job wage differential remains a large component of the total gender pay gap among former command economies. In their study of the Czech Republic, Krizkova et al. (2010) document that Czech women earn on average 10 percent less than their male counterparts for doing the same work for the same employer. As such, the within-job component comprises nearly half of the total gender pay gap. Krizkova and colleagues do find that occupational segregation plays an important role, and that sorting on occupations matters more than sorting into establishments. Jurajda (2003) and Sørenson and Trappe (1995) also find similar segregation patterns in Slovakia and former East Germany respectively, suggesting within-job inequality is widespread among former socialist societies.

Moreover, the former socialist legacy appears to have also have left a significant imprint on gender inequality in other ways as well. In the years following the implementation of gender equity legislation in the Czech Republic the gender wage gap changed little (Krizkova et al. 2010). Relatedly, gender inequality has been found to be systematically lower at all levels among publicly-owned establishments across CEE countries, implying that organizations with greater ties to the socialist past remain more egalitarian possibly due to their communist legacy (Krizkova et al. 2010; Jurajda 2003; Penner et al. 2012). Market transition and particularly the growth in private sector jobs thus not only affects total inequality in the labor market (Heyns 2005), but also the

organization of sex-based pay disparities, especially as they relate to the relative importance of sorting versus within-job inequality (van der Lippe and Fodor 1998). As a result, much of the differences in the organization of gender inequality between capitalist and transition societies are likely due to the historical differences in the structural feasibility as well as the cultural acceptance of gender inequality.

One major limitation to understanding how market transition alters the male-female earnings gap has been a lack of suitable data. Because the majority of previous studies have relied on individual cross-sectional data from a single time point or have analyzed longitudinal patterns over a relatively short time period, little is known about how market transition has affected *overall* trends in the gender gap since the beginning of transition. Using longitudinal data between 1992 and 1998 on a single birth cohort born across four regions of the former Soviet Union, Trapido (2007) finds evidence of rising gender pay differentials among the economically expanding Baltic States of Latvia and Estonia and a decline in the gender gap in two economically stagnant regions of Russia and Ukraine. Trapido points to the increase of female-dominated "occupational ghettos" (Charles and Grusky 2004) in growing market economies as an important factor contributing to gender inequality, akin to service sector expansion in other developed market societies. Similarly, comparing patterns of occupational sex segregation in East and West Germany, Rosenfeld and Trappe (2002) find segregation was higher in the East and different in form than in West Germany. Compared to the West, female-dominated occupations in the East contained a higher proportion of women, though male-dominated occupations in the East were paradoxically less sex segregated. Interestingly, patterns of gender segregation in eastern Germany have increasingly converged onto Western patterns come to resemble those in the West. Likewise, Penner et al. (2012) report gender

pay inequality in Slovenia has increasingly converged onto Western-style forms of inequality with men dominating better-rewarded occupations and establishments.

*A Cohort-Based Approach to Market Transition*

To appreciate how market transition alters gender inequality we argue that a life course perspective, and specifically a cohort-based approach, is necessary. Although relatively little research has applied a cohort-based approach to market transformation, Mayer et al. (1999) finds significant differences across labor force cohorts. They document that after the fall of the Berlin Wall members of the oldest cohort in East Germany were pushed into early retirement in order to cope with rapid sectoral change. In contrast, middle-aged workers were among the most likely to retain their job, while members of the youngest cohort had the highest rates of downward and upward mobility. Similar trends have also been reported in China; following the onset of reforms in the 1980s, younger cohorts experienced more job changes relative to older cohorts and benefitted more from working in quasi-marketized firms (Zhou and Moen 2001). Toro-Tulla (2014) likewise applies a cohort-based approach to economic development in Puerto Rico, finding major differences in the opportunity structure present across cohorts thanks to the rapidly changing industrial landscape.

Taken together, these studies suggest that the timing of institutional changes in individuals' life course (i.e. their age) produces important differences in the effect of those changes, requiring a cohort-specific understanding of the effects of economic transformation. We follow Ryder (1965), Glenn (2005), and others in defining a cohort as an assemblage of social actors that have experienced the same social, economic, or political event. Cohorts capture meaningful differences according to two temporal dimensions: biographical life stage and historical experience. To

appreciate the impact of market transition, it is necessary to examine the current structural constraints and opportunities facing individuals at a particular point in life, which are defined by their past experiences and their life stage when the transition occurred (Ryder 1965; Mayer and Schoepflin 1989; Zhou and Moen 2001). One of the major themes of the life course approach is the idea of cumulative advantage (or disadvantage), the idea that individuals' initial advantage leads to subsequent gains across the life course, producing growing advantage among individuals or groups relative to others (DiPrete and Eirich 2006; Merton 1968). In his classic study of the Great Depression, Elder (1974) revealed the importance of social upheavals on between- and within-cohort differences. Building on this idea, we argue that individuals in different cohorts, who enter the labor market when the opportunity structure for inequality differed, may have been affected by the transformation very differently. Workers across different cohorts are at different stages of their career and locations in the stratification system and are hence differentially susceptible to economic transformation processes (Zhou and Moen 2001). For instance, individuals in middle-aged and older cohorts have accrued particular advantaged (or disadvantaged) positions in the labor market. Thus we would expect these cohorts, whose careers are already well-established, to be less susceptible to large-scale changes in inequality. Or, viewed from the perspective of more recent cohorts, we would expect those entering the labor market to be at greater risk of new patterns of inequality inherent to the changing economic system thanks to newly marketized social arrangements. Moreover, relative to older cohorts whose gender beliefs were more strongly influenced by socialism, newer cohorts might espouse more egalitarian Western gender norms (c.f. Cotter, Hermsen, and Vanneman 2011; Frieze and Ferligoj 1995). Hence newer cohorts may harbor different beliefs about gender typical work, appropriate forms of gender inequality, and the level of that inequality. Beyond changing social norms, continual rises

in female educational attainment have also furthered inter-cohort differences by reshaping the labor force supply, contributing to inequality (Pollert 2003; Mateju et al. 2007). The effects of market transition are therefore moderated by cohort location given this differential susceptibility; consequently, cohorts-specific patterns of inequality proxy for the opportunity structure (and resulting expectations) that were available to them at the time they entered the labor market, producing enduring differences over time.

## THE SLOVENIAN CASE

We investigate the influence of the transition to a market-based economy on gender inequality in Slovenia. Although a postsocialist society, as part of the former Yugoslavia, Slovenia enjoyed considerable relative autonomy from Moscow under Communist rule. As in other socialist societies this meant the state was controlled by its own Communist party that espoused the Marxist-Leninist ideology, though economic planning and decision-making was more decentralized compared to Soviet satellites (Bandelj 2008). After the fall of the Berlin Wall in 1989, Slovenia declared its independence from Yugoslavia in June 1991, embracing extensive economic reform. Compared to shock therapy reform programs in Estonia and Ukraine, privatization and marketization were carried out at a more gradual pace in Slovenia. Due to this slower pace and the direct role played by the state in overseeing economic transformation, market restructuring in the first two decades after independence has had a comparably minor effect on unemployment and firm operations in Slovenia. Subsequently, Slovenia maintained strong and stable growth throughout much of the restructuring process, leaving Slovenia the most successful transition economy in Central and Eastern Europe prior to the financial crisis (OECD 2011).

Although the Yugoslav socialist system officially espoused gender egalitarian policies that established centralized wage setting and ensured full employment for all, this did not translate into an equal division of household and care responsibilities (Kanjuo-Mrčela and Černigoj-Sadar 2007; Jogan 2011). Still, aided by a well-developed childcare and parental leave system, Slovenia has continued to enjoy high female labor force participation, with women working overwhelmingly full time, so that part-time employment remains rare (Kanjuo-Mrčela and Černigoj-Sadar 2007). Data on sex segregation among occupations and economic sectors also suggest a persistent gendered division of labor, with occupational and sector segregation ranging from 26.9% and 17.2% respectively in 2000 to 26.1% to 18.5% respectively by 2009 (European Commission 2010). Moreover, recent analyses have suggested that Slovenian women were harmed by the economic and political changes during transition, particularly due to privatization, establishment restructuring, and rising competition from abroad. In turn, the intensification of work has been especially pronounced for women given their double burden of care and paid work (Jogan, 1995; 2005).

Compared to the average across EU member states, the gender pay gap in gross income in Slovenia is among the lowest. According to Eurostat (2014), the male-female earnings gap was 16.7% in the EU27 and 2.5% in Slovenia in 2012. This is largely attributable to the frequency of full-time female employment as well as women's overrepresentation in the public sector, which tends to pay better than the private sector (Eurostat 2014). Nevertheless, one comparative study concluded that after controlling for individual characteristics, the differences in the gender gap increased dramatically in Slovenia and some other postsocialist states, suggesting the unadjusted pay gap masks larger gender pay disparities (Plantenga and Remery 2006). These findings underscore the necessity of comparing men and women who work for the same employer.

Likewise, they interestingly suggest that gender wage inequality in Slovenia, like in other CEE societies (e.g. Jurajda 2003; Krizkova et al. 2010; Sørenson and Trappe 1995), differs substantially from Western societies like the U.S., Sweden, and Norway in that job-level inequality is large and that occupational and establishment sorting actually serve to conceal these differences (c.f. Meyersson et al. 2001; Petersen and Morgan 1995; Petersen et al. 2001).

**DATA**

To examine the cohort-specific effects of market transformation in organizational gender inequality we use longitudinal linked employer-employee administrative data from Slovenia between the years of 1993 and 2007. These data are particularly unique in two respects. First, for each year of observation, these registry data contain information on the entire Slovenian working population, with the exception of individuals who transferred jobs in that year. Given the population-level nature of these data, they represent a significant methodological improvement over standard survey data, which seldom contain observations of men and women working in the same establishment. Second, these data span a large temporal period, importantly including the early years of market transition and up to the beginning of the global financial crisis in 2009. Aside from one article that used these data to analyze how economic change affects labor market stratification (Penner et al. 2012), no previous investigation has used such extensive, long-term data in a transitional economy.

These data, however, have two drawbacks. First, we are unable to differentiate between regular and overtime pay as earnings information is derived from individual tax records. However, as supplemental results suggest overtime is relatively uncommon in Slovenia; we therefore believe this limitation is relatively unproblematic. Analyses therefore focus on inequality in total (log)

pay. Second, like other registry data, these data have limited individual-level covariates. For instance, the data contain no information on parental status, meaning we are unable to control for the influence of family responsibilities.[1] The data also contain no information on the number of hours individuals work. Yet as with overtime, part-time work is relatively uncommon in Slovenia, suggesting this poses few problems.

We restrict our investigation to workers between the ages of 17 and 66 who worked in mixed-gender establishments and occupations, resulting in over 10 million person-years of 1.1 million different individuals nested within 128,000 establishments.[2] In any given year we observe an average of 667,000 individuals within 54,000 establishments and 1,500 occupations per year, totaling 222,000 occupation-establishment units. The occupational scheme relies on Slovenia's national classification system, which roughly parallels the ISCO-88 code. Education is coded according to 14 categories and is captured by dummy variables in all regression models. Experience is measured continuously in years, calculated by subtracting years of education from age. We also include a term for experience squared in order to account for nonlinearity in the relationship between experience and pay. We construct five labor force cohorts, differentiated by 10-year birth intervals spanning individuals born between 1934 and 1983. Total cohort observations as well as other key descriptive variables are portrayed in Table 1.


[Table 1 about here]

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[1] As a result, we are unable to test mechanisms related to parental status such as the motherhood penalty.

[2] The total gender wage gap was also comparable when averaged across the entire population of workers (i.e. including individuals in both mixed- and non-mixed-gender establishments and occupations), suggesting this restriction poses few problems.

**METHODS**

To analyze the cohort-specific nature of market transition on gender inequality we estimate a series of linear models that exploit the multilevel structure of the data. To first examine aggregate trends in population gender inequality we estimate a regression according to:

$$\ln(w_{it}) = x_{it}\beta + \varepsilon_{it} \tag{1}$$

where $\ln(w_{it})$ is log total pay for individual $i$ ($i = 1, 2, \ldots, N$) in year $t$ ($t = 1993, 1994,\ldots, 2007$), $x_{it}$ is a vector of covariates including a dummy variable for female, educational attainment dummies, experience (measured continuously), and experience squared. This first equation does not control for individuals' establishment or occupation, thereby capturing the average level of gender inequality across the labor market. To understand how transition has altered the structural feasibility of various forms of inequality we similarly investigate aggregate trends in inequality at the establishment, occupation, and occupation-establishment level by fitting a model with fixed effects:

$$\ln(w_{it}) = x_{it}\beta + \gamma_{it} + \varepsilon_{it} \tag{2}$$

where $\gamma_{it}$ represents fixed effects for either the establishment, occupation, or the occupation-establishment unit, respectively (see Petersen et al. 2014 for a similar approach).[3]

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[3] Typically, fixed effects regressions are estimated with individual data (e.g. Wooldridge 2010), which estimates the effect of covariates on intra-individual change over time. Our analysis parallels this tradition except that including

Equations 1 and 2 examine generally how the opportunity structure for gender inequality (i.e. how inequality is organized in the labor market) has changed throughout transition. Our primary goal – describing how the changing opportunity structure has produced cohort-specific effects – can be investigated by comparing cohort-specific gender gaps. We do this in two ways. First, as in Equation 1 we consider population gender effects (i.e. with no establishment or occupation controls) separately by cohort according to:

$$\ln(w_{ijt}) = x_{ijt}\beta + \varepsilon_{ijt} \tag{3}$$

which simply adds subscript $j$ ($j$ = 1, 2,…, 5) for each cohort to denote that regressions are estimated separately by cohort to capture the interaction effect. Our second line of approach is to analyze each cohort separately in conjunction with fixed effects at various levels of the labor market:

$$\ln(w_{ijt}) = x_{ijt}\beta + \gamma_{ijt} + \varepsilon_{ijt} \tag{4}$$

in which $\gamma_{ijt}$ comprises a *cohort-specific* fixed effect at either the establishment, occupation, or occupation-establishment level. In essence, allowing for cohort-specific fixed effects at various labor market units eases the classical assumption that a unit fixed effect exerts similar influences on all workers, thereby permitting this effect to vary across cohorts while still accounting for all unobserved, invariant attributes in this same labor market unit. Consequently, this explicitly

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fixed effects for higher labor market aggregates (e.g. occupations) assesses intra-level (e.g. occupational) changes between groups of employees such as men and women.

acknowledges cohort-specific variation in the opportunity structure for gender inequality across occupations, establishments, and occupation-establishments.

Results depict the male-female wage gap at various levels of the labor market over time, measured according to a female dummy variable. This coefficient can be interpreted as the average wage penalty associated with being female at each relevant level of analysis (e.g. population, occupation, establishment, or occupation-establishment) net of other covariates. We additionally estimate all models separately by year in order to account for all other stable year-specific differences across time.

Although inference is somewhat trivial given that our registry data contain the entire population of workers, coefficients for being female are statistically significant in nearly all cases, with $z$-statistics ranging from 15 to 125. Occasionally, however, coefficients are not distinguishable from zero due to a small number of observations, particularly among the youngest cohort in the early-1990s and the oldest cohort in the mid-2000s. We denote these occasional non-significant estimates with a dotted line in all figures. Appendix A contains the actual coefficients used to construct our figures. Lastly, all coefficients are estimated with robust standard errors or clustered standard errors clustered at the respective establishment, occupation, and occupation-establishment level.


**RESULTS**

*Aggregate Changes in Gender Wage Inequality*

We begin by contextualizing changes in gender wage inequality according to aggregate earnings differentials between men and women. Figure 1 depicts aggregate changes in population, establishment, occupation, and occupational-establishment (i.e. job-level) inequality. Since the

beginning of transition, total population gender inequality increased nearly two-and-a-half times, with women earning 10 (1-exp$^{-.106}$) percent less than men at the beginning of transition and 24 percent less than men by the late 2000s, corresponding to a decline in women's earnings from 90 to 76 percent of men's wages. Much of this increase in total inequality occurred in the initial years of transformation, though the gender gap also rose steeply in the 2000s.

Figure 1 also decomposes total gender differentials into its respective establishment, occupation, and job-level shares. Initially, occupational and particularly establishment inequality was actually higher than across the population as a whole. Thus in the initial years of transition, women typically worked in better compensated occupations and establishments than men, which helped to mitigate population gender differences.[4] Also during the early years, nearly all of the gender wage gap was within occupation-establishment units as evidence by a nearly equal level of within-job inequality as the population gap. Whereas we would expect occupation-establishment inequality to shrink if job-level inequality were becoming increasingly unacceptable and infeasible, occupation-establishment inequality instead rose across time in absolute terms, remaining large and persistent, suggesting this was not the case. Hence, compared to Western countries like the United States and Norway where occupation- and establishment-sorting explain 80-90 percent of the gender gap (Petersen and Morgan 1995; Petersen et al. 1997), sorting in Slovenia remains relatively unimportant: by 2007 it comprised merely 29 percent of the total

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[4] Interestingly, occupation-firm differentials during this time were smaller than the overall population gap. Thus while women tended to work in better paid firms and occupations, they were nevertheless employed in lower paid jobs within these units. This could occur if, for example, women were more likely than men to work in better-compensated occupations such as law, more likely to work in better-compensated firms like law firms, but less likely to be a lawyer in a well-paying law firm.

gender pay gap.[5] The overwhelming majority of gender inequality in Slovenia therefore occurs between women and men performing the same work for the same employer, but who nevertheless receive different pay. These findings thus support Krizkova et al. (2010) that within-job inequality plays a significant role in gender inequality in formerly socialist economies.[6]


[Figure 1 about here]


Nevertheless, marketization and privatization of the economy appears to have altered the structure of gender inequality. Despite the absolute rise in within-job inequality, job-level gender differentials declined in relative terms amidst a rising share of firm- and occupation-level inequality, which contributed strongly to the overall growth in population inequality. Given the rising significance of sorting between occupations and establishments, this suggests that market transition in Slovenia has accompanied an increasing shift towards Western-style forms of inequality, as suggested in Penner et al. (2012).

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[5] We obtain this number for the year 2007 by subtracting the inverse population gap from the inverse occupation-establishment gap divided by the absolute population gender gap, i.e.: $[(1+-.192) - (1+-.269)] / (|-.269|) = .286$. By contrast, sorting across occupations and establishments explained none of the initial gender gap as worker assortativity actually served to mitigate gender differentials in the early 1990s (see Fig. 1).

[6] Although not the focus of our investigation, we note that other research (e.g. Penner et al. 2012; Plantenga and Remery 2006) has found that aggregate population gender inequality in Slovenia is surprisingly higher conditional on human capital variables compared to bivariate estimates, suggesting a considerable masking effect. Gender inequality is therefore larger among similarly skilled men and women, as supported by the pervasive occupation-establishment inequality found in our estimates. For this reason, existing estimates of the gender gap in Slovenia (e.g. Eurostat 2014), which rely primarily on unconditional data, grossly underestimate the extent of gender inequality.

*Cohort Changes in Population Gender Wage Inequality*

Figure 2 further decomposes changes in population-level inequality into five distinct cohorts, displaying how the changing opportunity structure amidst market transition differentially affects gender inequality depending on one's cohort location. As this figure reveals, cohort differences are stark and in virtually all cases statistically distinct from one another.[7] Most noticeably, transition accompanied substantially large and sustained rises in gender inequality among the two younger cohorts, though inequality also moderately increased in the middle cohort. By comparison, the gender gap remained fairly stable among the two oldest cohorts.

Among the two youngest cohorts (i.e. 1974-1983 and 1964-1973) we see marked differences in inequality. At the beginning of transition in 1991, individuals in the 1974-1983 and the 1964-1973 cohorts were aged 8-17 and 18-27, respectively, implying that most individuals in the youngest cohort were still attending school or had just begun working while individuals in the second-youngest cohort were in the early phases of their careers. Because many individuals in the very youngest cohort were still in school in the early 1990s, this cohort continued to add members to the labor force into the 2000s, so that its composition changes across the years. As a result, initially low and continually rising inequality among this cohort may partly reflect compositional effects. Nevertheless, looking at the second youngest cohort (1964-73), the majority of which had already entered the labor force at the beginning of observation, we also see steep increases in inequality during the early years of transition. Thus despite compositional effects influencing

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[7] Although reported results were obtained separately by cohort, we likewise investigated whether cohort-specific female wage penalties were significantly different from each other according to auxiliary analyses. Similar to results reported herein, point estimates were significant from each other in nearly all cases except among the 1974-1983 cohort in the early 1990s and among the 1934-43 cohort in the late 2000s.

inequality among the 1974-83 cohort, the initial spurt in inequality among the 1964-73 cohort and later patterns among both cohorts provides strong evidence that individuals in younger cohorts were more strongly affected by the rapidly changing socioeconomic landscape of market transition.[8]


[Figure 2 about here]


Moreover, Figure 2 indicates that market transition appears to have stronger effects on younger compared to older cohorts. Whereas the gender gap among the 1954-63 cohort increased from -.10 to -.16 log points in the first three years of observation, the gap increased over *five times* from -.05 to -.28 log points for the 1964-73 cohort during this same period. Among the youngest cohort the growth in inequality was even larger and continued to increase throughout the 2000s, though, as noted earlier, part of this rise may be compositional in nature. Furthermore, aggregate changes in inequality appear to be rooted in cohort-specific effects. Nearly all of the rise in aggregate population gender inequality in the early years of transition was concentrated among the 1964-73 cohort, but also somewhat among the 1954-63 cohort amidst the initial proliferation of newly marketized social arrangements. Similarly, the rise in the aggregate population gender gap in the 2000s appears to have been driven primarily by growing inequality among the 1974-83

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[8] Compositional effects in the form of retirement also affected the oldest cohort. While changes in the gender gap of this cohort may have partly been driven by labor force turnover, given the relative stability of inequality in this and among the second oldest cohort, compositional effects are likely less important these cohorts. These retirement compositional changes likewise apply to subsequent cohort analyses at the establishment, occupation, and occupation-establishment level, though we do not dwell on them in these contexts either.

cohort. This indicates that aggregate measures of inequality neglect important cohort-based differences in market transition, and that economic transition more strongly influences individuals in younger cohorts.

*Cohort Changes in Occupation-Establishment Gender Wage Inequality*

Figure 3 portrays changes in occupation-establishment (i.e. job-level) gender earnings inequality by cohort, revealing how economic transition altered the acceptance and feasibility of within-job gender inequality. Similar to changes in cohort-specific population gender differentials in Figure 2, within-job inequality spiked dramatically in the early years of transition for the 1964-1973 cohort, rising from -.06 to -.27 log points between 1993 and 1996. We also observe similar, though smaller rises in job-level inequality among the middle (1954-1963) cohort during this same period as inequality increased from -.10 to -.15 log points. Nearly all of the growth in population gender inequality in the initial years of marketization among the 1964-1973 and the 1954-1963 cohorts in Figure 2 was therefore the product of rising job-level inequality. Moreover, these results indicate that virtually the entire rise in aggregate population gender inequality in the early 1990s (c.f. Figure 1) resulted from increasing job-level inequality among these two cohorts as well. Within-job inequality also rose among the youngest (1974-1983) cohort in the 2000s, suggesting that growth in their cohort-specific population gender differentials (see Fig. 2) were also largely driven by within-job differentials. Still, aside from the youngest cohort, job-level inequality has slowly declined over time following this initial spike, though cohort-specific differences in the level of occupation-establishment inequality nevertheless endure. Thus with the exception of the most recent cohort whose inequality continues to increase, job-level discrimination become substantially more common at the onset of marketization, though its prevalence has waned across

time (see also Appendix B and C for cohort-specific establishment and occupation inequality figures, which also reveal enduring cohort-based differences in sorting patterns since transition). Consequently, these lasting differences in the level and form of inequality across cohorts suggest that economic transition accompanied drastic changes in the opportunity structure for inequality, affecting cohorts differentially given their differing susceptibility.

[Figure 3 about here]

*Wage Increases: A Cohort-Specific Mechanism of Inequality*

What could account for the particularly large growth in gender inequality among the two youngest cohorts? Figures 4*a* and 4*b* suggests one possible mechanism – differential wage increases. Among the 1964-1973 cohort, which experienced substantial increases in inequality in the early years of transition, men's real wages rose steadily while women's wages initially faltered before growing (see Figure 4*a*). This stagnation in women's wages at the onset of transition in the early 1990s proved lasting, cementing the male wage premium in this cohort. In this sense, men's cumulative advantage in the 1964-1973 cohort mirrored that of Gerhart (1988) in which persistent gender differentials arise at the onset of men's and women's working careers, imparting a permanent scar. A different sort of cumulative advantage process worked in men's favor in the 1974-1983 cohort; as men and women from the youngest cohort entered the labor market in the 1990s, men's wage growth came to outpace women's by approximately 25% each year leading to a widening divide over time. This form of cumulative advantage matches Merton's (1973) classical model in which small initial differences contribute to growing advantage that accumulates over time. By contrast, Figure 4*b* shows that cohort-specific male and female wage growth for the older

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cohorts remained approximately in step with each other, indicating that economic transition did

not result in the same sort of cumulative advantage processes for men in these other cohorts.[9]


[Figure 4 about here]


**DISCUSSION AND CONCLUSION**

Although gender scholars have long been interested in the effects of market transition, our

understanding of the consequences of marketization on gender inequality remains incomplete. In

this paper we apply a life course, and particularly a cohort-based, approach to shed new light on

how transformation affects gender inequality using Slovenia as a case study. Given that the

transition to capitalism accompanies new structures and norms that alter both labor supply and

demand, we argue that these changes are likely to yield cohort-specific effects as workers across

different cohorts are differentially susceptible to economic transformation processes (Zhou and

Moen 2001). In doing so we not only further life course research among transition societies but

also generalize Petersen and Saporta's (2004) notion of the opportunity structure for discrimination

to the organization of markets more broadly.

We find massive cohort-specific differences in how market transformation affected gender

inequality. As predicted, we discover the largest increases in population gender inequality among

individuals in younger cohorts, with gradationally higher inequality the younger the cohort. By

contrast, the gender gap remained essentially stable among workers in older cohorts since

transition. Moreover, rising aggregate gender population inequality appears to have been driven

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[9] We find similar results for the oldest cohort, though retirement appears to have induced additional sporadic variation,
thereby obscuring the general trend.

primarily by cohort-specific increases. Practically all of the growth in aggregate gender inequality in the early years of transition was confined to the then-youngest cohort. Later in the early 2000s, inequality began to rise sharply again and was likewise concentrated among a new cohort of young workers.

Results also suggest that younger cohorts tended to experience different forms of gender inequality since the beginning of marketization. Compared to relative stability or declines among the oldest two cohorts, members of the three younger cohorts experienced rises in firm-, occupation- and job-level inequality, with again steeper rises the younger the cohort. Thus market transition accompanied an *increase in gender inequality at all organizational levels* for more recent labor force entrants. Nevertheless, due to the comparably larger growth in firm- and occupation-level inequality, the importance of job-level discrimination, which comprised the bulk of inequality in the early years of transition, has declined relative to inequality across establishments and occupations (i.e. sorting). Consequently, economic change in Slovenia has accompanied a slow but steady transition to Western-style forms of inequality with sorting increasingly playing a larger role in gender inequality (c.f. Petersen and Morgan 1995; Petersen et al. 1997).

We point to one potential mechanism – differential wage increases – as a cohort-specific mechanism of gender inequality. As we found, men belonging to the cohort which had just entered the labor market immediately following the beginning of economic transition in the early 1990s received steady pay increases over time while women's pay initially faltered before growing. Nevertheless, this brief stagnation yielded an indelible gender gap for this cohort. Similarly, as a new cohort entered the labor market in the late 1990s and early 2000s, men's earnings quickly outpaced their respective female counterparts', contributing to a widening gender gap for this

cohort over time. Cumulative advantage processes therefore played a pivotal role in creating and maintaining distinct cohort patterns of gender inequality in the wake of economic restructuring.

The markedly greater increase in gender inequality and the rising prevalence of new forms of inequality among younger cohorts suggests that amidst ongoing economic change the opportunity structure for gender inequality differed markedly across cohorts, with younger workers being at greater risk of newly marketized workplace arrangements and new gender beliefs about inequality vis-à-vis older, more established cohorts. The stability of these patterns over time also indicates that the cohort-specific opportunity structure produced distinct effects on individuals within cohorts that endure over the life course. As a result, cumulative advantage not only dictates the susceptibility of a given cohort to large-scale changes in inequality, but in doing so has important effects on gender inequality. These results therefore suggest that aggregate measures of inequality used in previous studies neglect important cohort differences, and may possibly reveal why prior research has found such minimal gender consequences of transition (e.g. van der Lippe and Fodor 1998; Giddens 2002; Fodor 2002; Rueschemeyer and Szelenyi 1995). Although it is not possible to make strong generalizations from an examination of one formerly socialist society, there is little reason to believe that Slovenia is a really exceptional case (if nothing else, it may be a conservative one as the period examined is one of relative economic prosperity). Nevertheless, future research could benefit from a similar cohort-based approach in cross-national context.

More generally, these results speak to the importance of structural conditions in the organization of gender inequality. As sociologists typically maintain (e.g. Reskin 1998), employers discriminate so long as they are able to and that discrimination is common in the labor market. Given the massive changes societies undergo as they shift towards capitalism, transition societies represent a unique opportunity to understand how institutions and norms affect the structure of

inequality. As we observe, economic restructuring accompanied a decline in blatant job-level discrimination as this form of gender inequality, traditional to postsocialist societies (Krizkova et al. 2010), became less feasible and acceptable under growing capitalistic, Western influence. Although members of the youngest cohort deviate from this pattern, it may be too early to rule out longer-term effects for this cohort. Thus, consistent with Petersen and Saport (2004), our results indicate that structural factors yield decisive influences on social stratification processes by shaping the feasibility and acceptance of various forms of inequality.

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**Table 1**: Descriptive Statistics

| | Women | Men | Overall |
|---|---|---|---|
| Cohorts | | | |
| 1974-1983 | 826,987 | 668,595 | 1,495,582 |
| 1964-1973 | 1,526,368 | 1,545,307 | 3,071,675 |
| 1954-1963 | 1,600,026 | 1,655,271 | 3,255,297 |
| 1944-1953 | 1,086,526 | 823,224 | 1,909,750 |
| 1934-1943 | 210,744 | 65,497 | 276,241 |
| Education (%) | | | |
| Basic education or less | 22.61 | 23.42 | 23.03 |
| Secondary education | 54.50 | 60.68 | 57.74 |
| Tertiary education | 14.98 | 11.48 | 19.22 |
| Mean experience (years) | 20.47 | 21.52 | 21.07 |
| Wage gap (mean female wage/mean male wage) | -- | -- | .88 |
| N (observations) | 4,757,894 | 5,250,651 | 10,008,545 |
| N (persons) | 489,216 | 574,422 | 1,063,638 |
| N (mixed sex occupations) | 3,044 | 3,044 | 3,044 |
| N (mixed sex establishments) | 128,683 | 128,683 | 128,683 |
| N (mixed sex jobs) | 869,380 | 869,380 | 869,380 |

Note: Education levels measured according to ISCED classification system. Occupation measured according to 4-digit national classification system.

**Figure 1:** Aggregate Trends in Gender Pay Inequality, 1993-2007
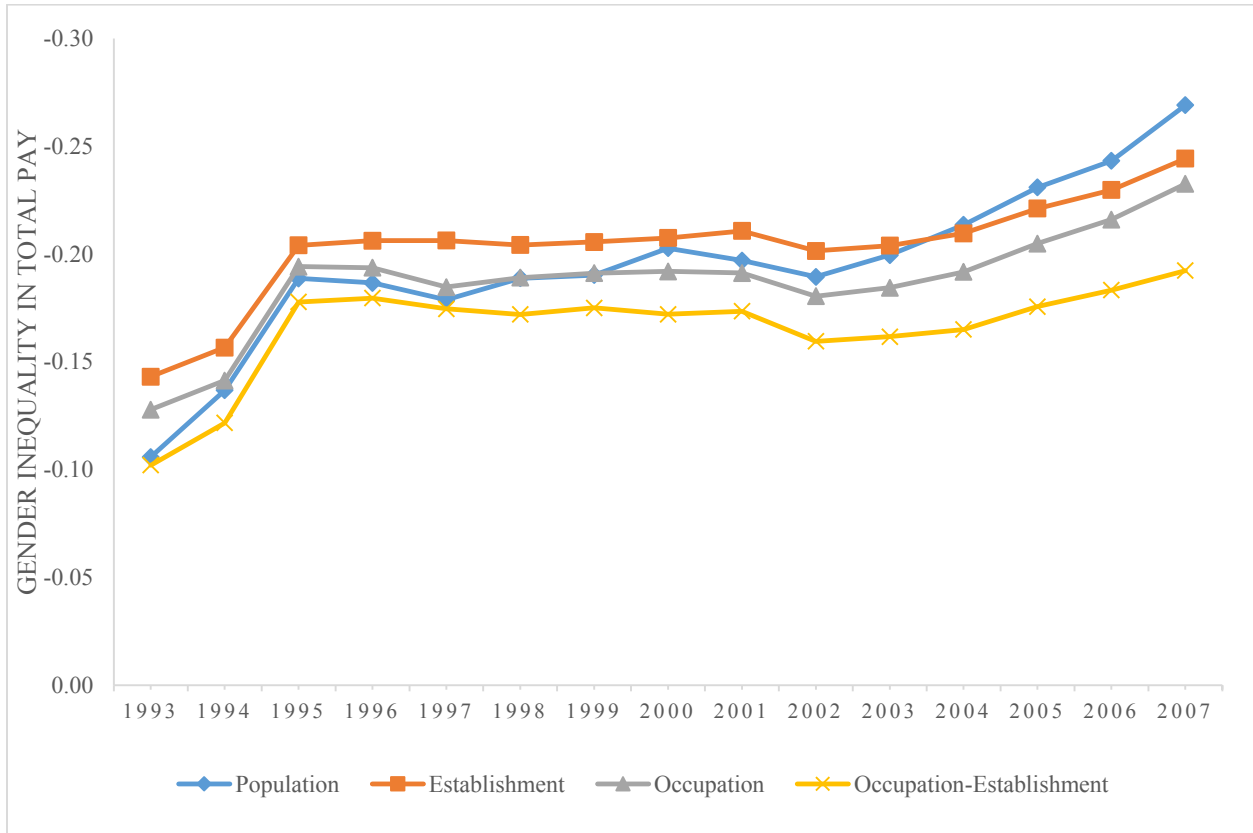


*Note:* Models estimated separately for each year, controlling for education and experience. Coefficients are all statistically significant with robust z-statistics ranging from 56 to 209.

**Figure 2:** Population-Level Gender Wage Inequality by Cohort
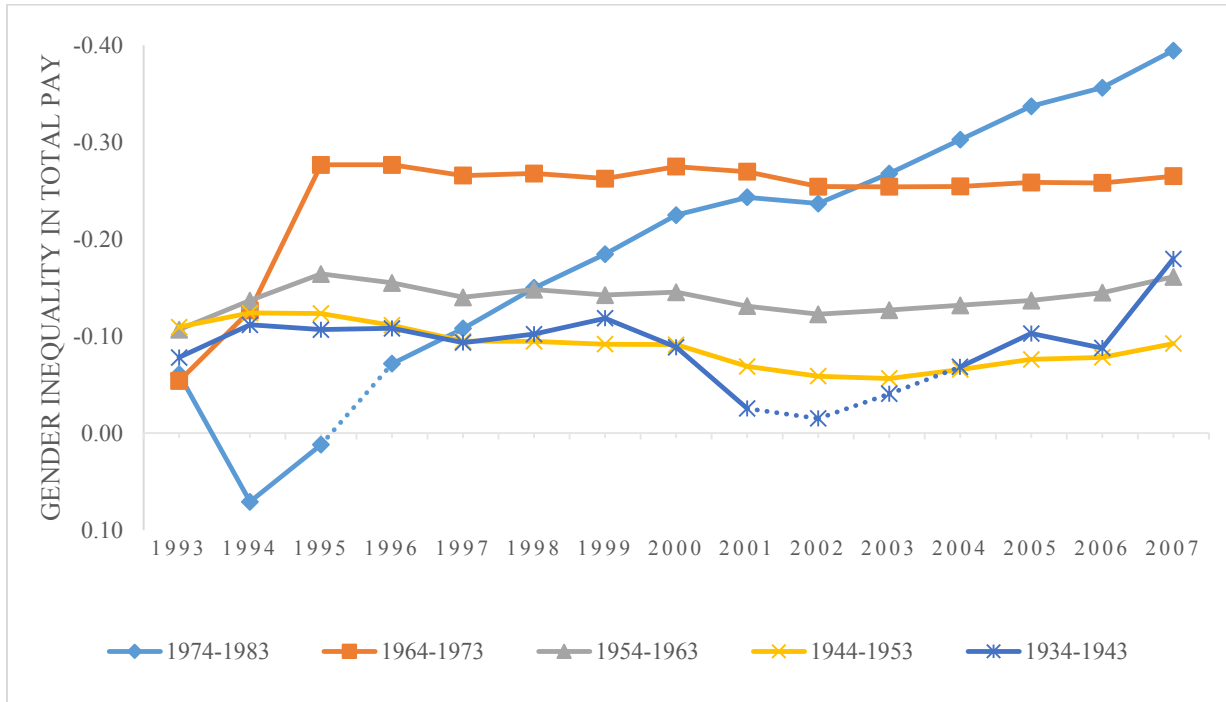


*Note:* Models estimated separately for each year, controlling for education and experience. Non-significant year estimates denoted with a dotted line, otherwise all estimates are significant at <.05 level using robust SEs.

**Figure 3:** Occupation-Establishment (Job-Level) Gender Wage Inequality by Cohort
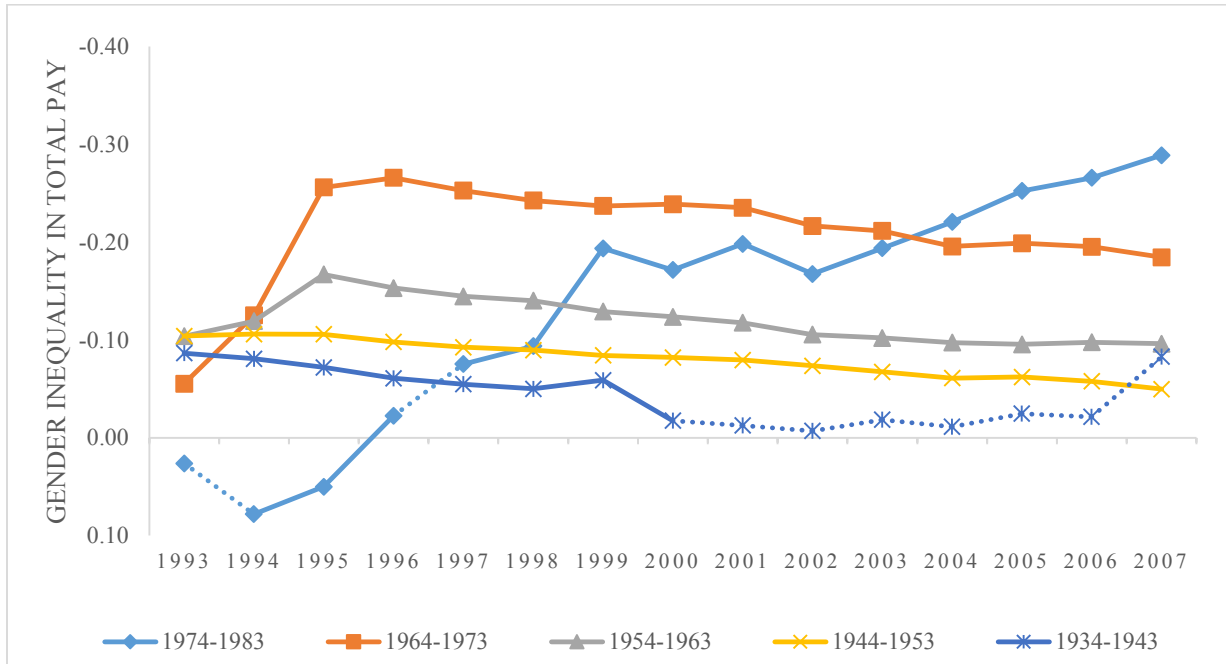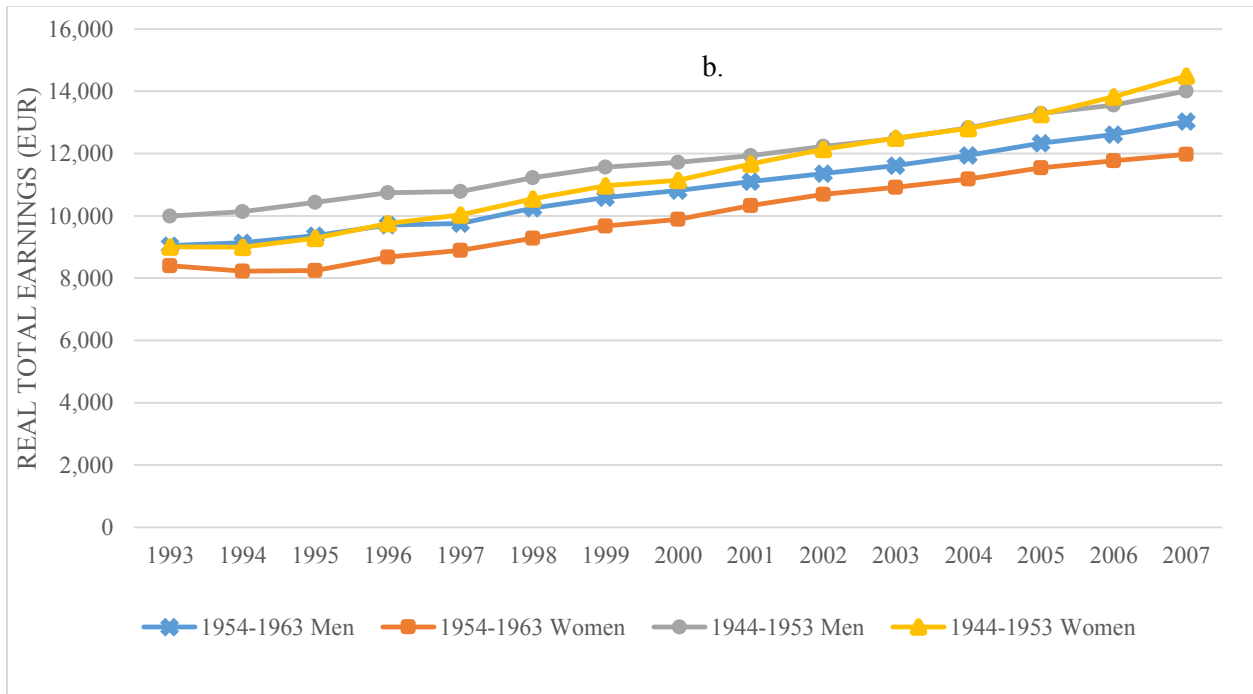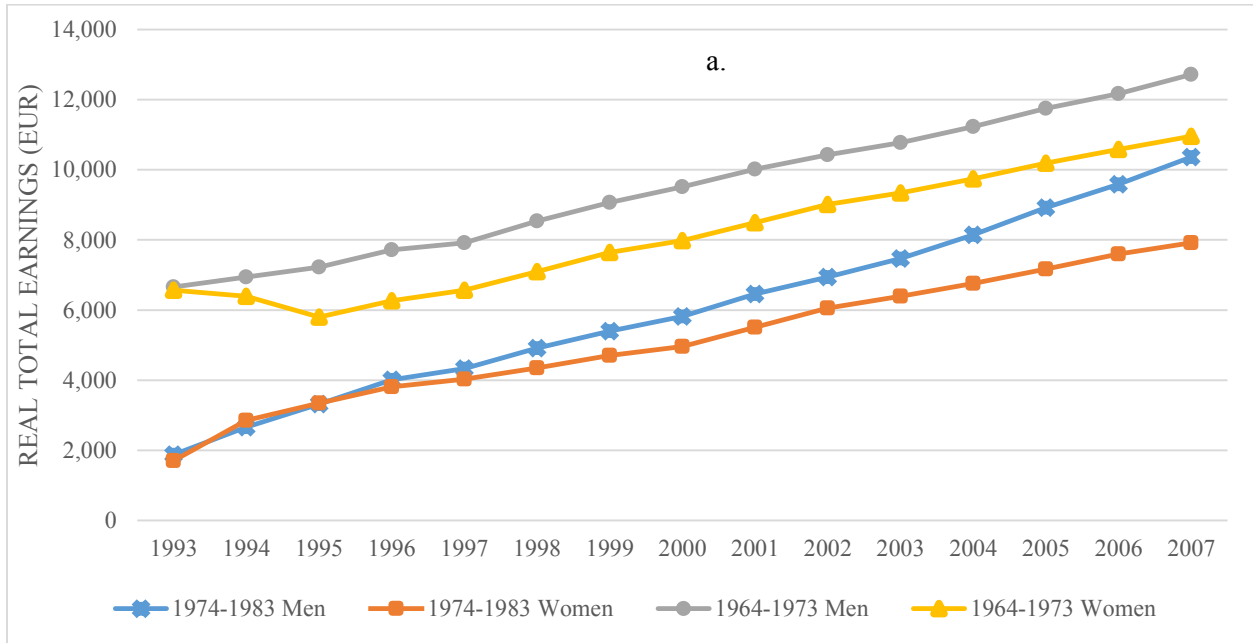


*Note:* Models estimated separately for each year, controlling for education and experience. Non-significant year estimates denoted with a dotted line, otherwise all estimates are significant at <.05 level using robust SEs clustered at the occupation-establishment level.

**Figure 4:** Changes in Real Total Earnings by Cohort and Gender

## APPENDIX

**A:** Point Estimates

### Population Point Estimates

| YEAR | Cohort 1: 1974-1983 | Cohort 2: 1964-1973 | Cohort 3: 1954-1963 | Cohort 4: 1944-1953 | Cohort 5: 1934-1943 |
|------|------|------|------|------|------|
| 1993 | -.061 | -.054 | -.107 | -.109 | -.078 |
| 1994 | .071 | -.126 | -.137 | -.124 | -.112 |
| 1995 | .012ns | -.277 | -.164 | -.123 | -.107 |
| 1996 | -.072 | -.277 | -.155 | -.111 | -.108 |
| 1997 | -.108 | -.266 | -.140 | -.095 | -.093 |
| 1998 | -.150 | -.268 | -.148 | -.095 | -.102 |
| 1999 | -.185 | -.262 | -.142 | -.092 | -.118 |
| 2000 | -.225 | -.275 | -.145 | -.091 | -.089 |
| 2001 | -.243 | -.270 | -.131 | -.069 | -.025ns |
| 2002 | -.237 | -.254 | -.123 | -.059 | -.015ns |
| 2003 | -.268 | -.254 | -.127 | -.056 | -.040ns |
| 2004 | -.302 | -.254 | -.132 | -.066 | -.068 |
| 2005 | -.337 | -.258 | -.137 | -.076 | -.103 |
| 2006 | -.356 | -.258 | -.145 | -.078 | -.088 |
| 2007 | -.394 | -.265 | -.161 | -.092 | -.180 |

### Establishment Point Estimates

| YEAR | Cohort 1: 1974-1983 | Cohort 2: 1964-1973 | Cohort 3: 1954-1963 | Cohort 4: 1944-1953 | Cohort 5: 1934-1943 |
|------|------|------|------|------|------|
| 1993 | .015ns | -.062 | -.142 | -.156 | -.167 |
| 1994 | .121 | -.126 | -.158 | -.156 | -.163 |
| 1995 | .066 | -.266 | -.188 | -.154 | -.157 |
| 1996 | -.031 | -.271 | -.183 | -.152 | -.157 |
| 1997 | -.079 | -.270 | -.177 | -.148 | -.155 |
| 1998 | -.093 | -.260 | -.172 | -.146 | -.148 |
| 1999 | -.158 | -.257 | -.165 | -.142 | -.138 |
| 2000 | -.178 | -.263 | -.160 | -.137 | -.112 |
| 2001 | -.200 | -.264 | -.155 | -.133 | -.086 |
| 2002 | -.193 | -.250 | -.146 | -.125 | -.056 |
| 2003 | -.222 | -.246 | -.146 | -.118 | -.085 |
| 2004 | -.256 | -.242 | -.142 | -.119 | -.083 |
| 2005 | -.290 | -.243 | -.141 | -.120 | -.079ns |
| 2006 | -.311 | -.240 | -.146 | -.120 | -.070ns |
| 2007 | -.343 | -.240 | -.148 | -.117 | -.124ns |

## Occupation Point Estimates

| YEAR | Cohort 1: 1974-1983 | Cohort 2: 1964-1973 | Cohort 3: 1954-1963 | Cohort 4: 1944-1953 | Cohort 5: 1934-1943 |
|---|---|---|---|---|---|
| 1993 | -.032ns | -.058 | -.131 | -.132 | -.069 |
| 1994 | .080 | -.116 | -.141 | -.124 | -.060 |
| 1995 | .026 | -.257 | -.174 | -.123 | -.051 |
| 1996 | -.051 | -.267 | -.164 | -.115 | -.057 |
| 1997 | -.088 | -.257 | -.150 | -.099 | -.048 |
| 1998 | -.130 | -.254 | -.152 | -.095 | -.048 |
| 1999 | -.195 | -.248 | -.145 | -.090 | -.068 |
| 2000 | -.203 | -.253 | -.137 | -.087 | -.043 |
| 2001 | -.219 | -.252 | -.130 | -.076 | -.018ns |
| 2002 | -.206 | -.235 | -.121 | -.071 | -.010ns |
| 2003 | -.229 | -.230 | -.120 | -.068 | -.061 |
| 2004 | -.261 | -.225 | -.119 | -.068 | -.053 |
| 2005 | -.290 | -.227 | -.120 | -.072 | -.043ns |
| 2006 | -.311 | -.228 | -.123 | -.069 | -.060ns |
| 2007 | -.346 | -.227 | -.128 | -.072 | -.081ns |

## Occupation-Establishment Point Estimates

| YEAR | Cohort 1: 1974-1983 | Cohort 2: 1964-1973 | Cohort 3: 1954-1963 | Cohort 4: 1944-1953 | Cohort 5: 1934-1943 |
|---|---|---|---|---|---|
| 1993 | .026ns | -.055 | -.104 | -.104 | -.087 |
| 1994 | .078 | -.125 | -.119 | -.106 | -.081 |
| 1995 | .050 | -.256 | -.167 | -.106 | -.072 |
| 1996 | -.023ns | -.266 | -.153 | -.098 | -.061 |
| 1997 | -.075 | -.253 | -.145 | -.093 | -.055 |
| 1998 | -.094 | -.243 | -.140 | -.090 | -.050 |
| 1999 | -.194 | -.237 | -.129 | -.084 | -.059 |
| 2000 | -.172 | -.239 | -.124 | -.082 | -.018ns |
| 2001 | -.198 | -.235 | -.118 | -.080 | -.012ns |
| 2002 | -.167 | -.217 | -.106 | -.074 | -.007ns |
| 2003 | -.194 | -.212 | -.102 | -.067 | -.018ns |
| 2004 | -.221 | -.196 | -.097 | -.061 | -.011ns |
| 2005 | -.252 | -.199 | -.095 | -.062 | -.025ns |
| 2006 | -.266 | -.195 | -.098 | -.058 | -.021ns |
| 2007 | -.289 | -.184 | -.096 | -.050 | -.083ns |

**B:** Establishment-Level Gender Wage Inequality by Cohort
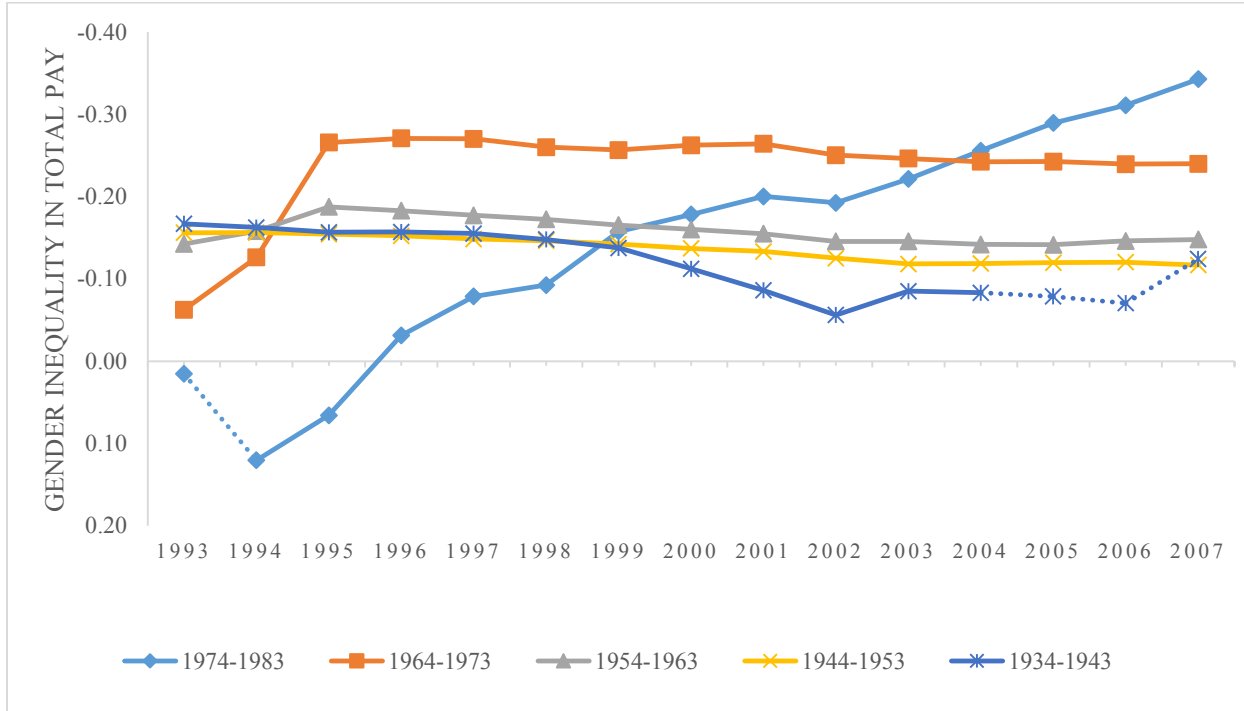


*Note:* Models estimated separately for each year, controlling for education and experience. Non-significant year estimates denoted with a dotted line, otherwise all estimates are significant at <.05 level using robust SEs clustered at the firm level.

**C:** Occupational Gender Wage Inequality by Cohort



*Note:* Models estimated separately for each year, controlling for education and experience. Non-significant year estimates denoted with a dotted line, otherwise all estimates are significant at <.05 level using robust SEs clustered at the occupation level.