GRAPE Working Paper # 2

When the opportunity knocks: large structural shocks and gender wage gaps

Joanna Tyrowicz, Lucas van der Velde

FAME | GRAPE 2017

Foundation of Admirers and Mavens of Economics
Group for Research in Applied Economics

When the opportunity knocks: large structural shocks and gender wage gaps

Joanna Tyrowicz
FAME|GRAPE
University of Warsaw

Lucas van der Velde
FAME|GRAPE

Abstract

Undergoing a large structural shock, labor markets may become less inclusive. We test for this thesis analyzing the behavior of adjusted gender wage gaps in a wide selection of transition countries. We estimate comparable measures of adjusted gender wage gaps for a comprehensive selection of transition countries over a period spanning nearly three decades. We combine these estimates with measures of labor market reallocation in transition economies to uncover the relation between worker flows and the gender wage gap. Results indicate that in periods of reallocation, the adjusted wage gaps increase. Distinguishing between flows according to their contribution to structural transformation reveals the distinctive role paid by separations from the state-owned manufacturing sector, usually leading to greater adjusted gaps. The emerging new sectors in the economy tend to be more inclusive in the short run, associated with a lower adjusted gender gap. In the medium run, the adverse effect of greater separations from the old sector is even more pronounced, while the emergence of the new sector is less relevant.

Keywords:

gender wage gap, transition, non-parametric estimates, worker flows

JEL Classification

C24, J22, J31, J71

Corresponding author

Joanna Tyrowicz, j.tyrowicz@grape.org.pl

Acknowledgements

We are grateful to Julia Domagalik, Jakub Mazurek and Wojciech Hardy for their efforts in the data collection and management process. Earlier version of this paper has received extremely valuable comments from Saul Estrin, Randy Filer, Gianna Gianelli, Joanna Siwinska, Tymon Sloczynski and Irene van Staveren as well as participants of AIEL, ECSR/EQUALSOC, EALE and TIMTED and seminars at University of Warsaw, Warsaw School of Economics. The remaining errors are ours. This research is a follow up of a project funded by CERGE-EI under a program of the Global Development Network RRC 12. L. van der Velde and J. Tyrowicz gratefully acknowledge the support of National Science Center (grant UMO UMO-2012/05/E/HS4/01510). All opinions expressed are those of the authors and have not been endorsed by CERGE-EI or the NCN.

Published by: FAME | GRAPE
ISSN: 2544-2473

Foundation of Admirers and Mavens of Economics
ull. Mazowiecka 11/14
00-052 Warszaw
Poland

W | grape.org.pl
E | grape@grape.org.pl
TT | GRAPE_ORG
FB | GRAPE.ORG
PH | +48 799 012 202

1 Introduction

The sociological view of discrimination is typically derived from power differences, which in turn are derived from the position that the privileged and the disfavored occupy in a society (Reskin and Bielby 2005). Theories of conflict, segregation (Bergmann 1974, Bielby and Baron 1984, Collins et al. 1993, Cohen 2011),[1] and feminization (Weisberg 1993, Douglas 1998), among others, hypothesize why women do not receive equal pay for equal work.[2] The economic view of inequality distinguishes between unevenness rooted in underlying productivity differentials and inequity which cannot be explained away by objective differences in productivity-related characteristics and thus is attributed to tastes (Becker 1957, Krueger 1963, Phelps 1972, Stiglitz 1973, Ashenfelter and Oaxaca 1987). A large body of research in social sciences documents a (slow) decline in adjusted gender wage gaps (Weichselbaumer and Winter-Ebmer 2007). Both sociology and economics view inequality as a result of relatively slow-moving institutions (Roland 2008). Swift changes in inequality would be consistent with either fundamental and rapid changes in agency and structure (sociological view) or with drastic shifts in tastes (economic view). Neither field of research suggests there is room for short-run fluctuations in inequality. Our objective is to fill this gap by studying short-term fluctuations in adjusted gender wage gaps. We focus on gender wage gaps not only due to its paramount policy relevance but also because gender equality is relevant for each economy, whereas not all countries have sufficient representation (and data coverage) of e.g. minorities.

Our central hypothesis is that the scope of (adjusted) inequality rises when the labor market undergoes a massive reallocation, a term we refer to as a shock to the structure of employment (or: a structural shock). Our hypothesis refers to wage differentials among workers, i.e. after both men and women already obtained employment. Note that the leading explanations of gender inequality refer to either the ability to obtain a given job (e.g. segregation theory) or job characteristics (e.g. feminization theory). Hence, one may rely only on those measures which adjust for job-related characteristics. Another leading explanation – conflict theory in sociology and household bargaining in economics – builds on prevailing social norms, characteristic of a society or a country. Hence, our inference has to be based on short-term fluctuations in adjusted gender wage gaps and eliminate country-level specificity. Finally, economics offers to explain inequality by insufficient bargaining power vis-a-vis employers by the disfavored group. Indeed, at the periods of large structural shocks, many workers may lose their bargaining power vis-a-vis employers, but it remains unclear why this process should be systematically more prevalent among women. After all, as secondary earners, they may have a higher reservation wage and thus remain out of employment rather than allow to be underpaid.

Our empirical strategy is structured to meet those goals. We harmonize individual level data on hourly wages and other wage-related personal characteristics for thirteen countries over almost twenty years. We thus offer the first comparable and reliable measures of adjusted gender wage gaps

[1] Conceptualizations of segregation, are usefully reviewed by Martell et al. (2012).

[2] In the remainder of this paper, the term "inequality" or "inequity" refers to unequal pay for equal work. We refer to overall wage differentials, which confound unequal work, unequal pay and unequal composition of the workforce, as raw wage gaps. We interchangeably use the terms inequality and adjusted wage gaps to refer solely to unequal pay for equal work.

and changes thereof in a large group of countries over a relatively long horizon. To the best of our knowledge, this is the largest collection of such estimates.[3] We match gender wage gaps variation over time with rich data on worker flows. We develop indicators of labor market churning among men for each country and year. Excluding common trends and country-level specificity, we show that short-term spikes in (men's) labor market churning are associated with larger adjusted women's wage inequality for incumbents and lower for younger cohorts. We offer several explanations of this empirical regularity, encouraging further theorizing about the drivers of gender wage inequality.

The thirteen countries under study in this paper constitute a historically and culturally diverse group of Eastern, Central and Southern European countries. During the period of study, all these countries transition from a centrally planned economy to a market-based system, which makes them a particularly useful case to study. First, under central planning women were encouraged to work and wages were generally much more equal than in market economies. However, socialist attitude towards women was only superficially egalitarian; in fact, gender social norms in former socialist countries are much less equal than in Western European economies (e.g. Seguino 2007). The tension between agency and structure was thus particularly strong with reference to gender equality in those countries and the systemic change of economic transition gave rise to substantial adjustments in wage schedules across genders (see for example Munich et al. 2005a,b, for a comparison of wage schedules under central planning and market system in Czechoslovakia). Second, since socialistic labor markets collapsed nearly overnight, we can benefit from studying cohorts active in the labor market prior to the onset of transition and cohorts which only entered the labor market after 1990. We hypothesize that the link between labor market churning and gender wage inequality is particularly strong for those, who are more exposed to shocks – in the case of our study this would be cohorts of women working in the labor market already before the onset of transition.

The paper is structured as follows. We begin by presenting the relevant literature with a focus on two main points: the theoretical underpinnings of gender inequality and the previous empirical findings in the field. In the subsequent section, we carefully describe the data and method used in this study. This section also introduces the database used to measure gross worker flows in transition economies: the Life in Transition Survey, and discusses properties of the estimated flows. In addition to a description of each database, this section provides a first insight at gender wage gaps in the thirteen countries. Finally, in section 4 we characterize the estimated adjusted gender wage gaps and the relationship with the large structural shocks in the labor market. We conclude by discussing the relevance of various sociological and economic theories to explain the empirical patterns identified in our study.

2 Structural change and wage gaps - theories and facts

Most sociological theories identify societal norms as being at the root of gender inequality, for example by defining modes of behaviour that are consistent with gender division of labour and

[3] Ñopo et al. (2012) report results for a broader selection of countries, but at one given point in time. Hence, using these data, one cannot abstract for country specificity. A complete set of our estimates together with documentation may be downloaded from [LINK]

power. In particular, approaches emerging from conflict theory tradition emphasize the element of subordination and gender empowerment. Stratification theory stands at the core of emergent gender differences in outcomes (see Seguino 2007, for a general exposition). Women from societies holding more traditional gender values are less able to take advantage of arising opportunities (e.g. Fernandez and Fogli 2009, Alesina and Giuliano 2010). Women who live in areas with more traditional gender norms, have worse economic outcomes, even if they do not share those values themselves (e.g. Charles et al. 2018). According to the segregation theory, many cultures impose specific spaces were individuals are not allowed to function at par, which spills to other spheres of society, including the labor market. Feminization theory adds that some of those segregationist norms display in women being allowed to work only in those occupations that are consistent with their lower status in e.g. religious worship practices or political rights. Thus, women are restricted to work in lower aspiration jobs and would be excluded from competition for high rank positions. Taste based theory of inequality started by Becker (1957) argues that if the privileged group in the society has a distaste for some other groups, they may require to be compensated for the discomfort of being in contact. In this sense, inequality stems from the fact that co-workers of women demand a compensation for working in their surrounding, or clients of firms in which women work have to be compensated for the disutility of receiving e.g. service from them, etc.

The strong link between gender norms and women's labor market outcomes hints that changes in norms may trigger a change in gender inequality. Indeed, empirical literature consistently finds that once the norms change, the relative position of women in the labor market improves as well (see a thorough review by Marianne 2011). The evolution of gender norms, and the reasons behind its change, have been debated in the literature. Following the so-called modernization hypothesis, the change in material conditions has lead to more egalitarian gender norm from very different positions. Inglehart and Norris (2003) suggest that wealth levels reached by Western societies stood behind the emergence of postmodern values already in the 1970's. Focusing on labor market, Seguino (2007) and Fernandez (2013), among others, study changes in employment and expected earnings, respectively) and argue in favor of a virtuous circle where modernization allows better outcomes for women, which reinforces the original changes in the gender norms.[4] Causality, thus runs both ways, but the process is by nature slow-moving (Roland 2008).

2.1 Trends in gender inequality

There appears to be a clear trend of declining raw gender wage gaps, but this process is mostly driven by a narrowing gap in human capital, as argued by Blau and Kahn (2017) in the case of the US and Lemieux (2006) for Canada. Similarly, Arulampalam et al. (2007) find lowering of the raw gender wage gap in EU15 countries. This convergence in human capital was reinforced by the skill-biased technological change, which reduced returns to occupations where men may have had a comparative advantage (e.g. those that require physical strength and/or endurance). Indeed, skill biased technological change is not gender-neutral (e.g. Juhn et al. 1993, Card and DiNardo 2002,

[4] The emergence of authoritarian parties praising traditional norms can be thought both as a conservative reaction to previous changes and as a consequence of the deterioration of economic conditions in some Western countries Norris and Inglehart (2019).

Lemieux 2006, Hansen 2007, Andini 2007, Black and Spitz-Oener 2010). In parallel to technological processes, Hsieh et al. (2013) show the potential role for institutional barriers, which in the early 1960s prevented pure talent-based choice of occupations and which were gradually removed with the Equal Opportunity Act and related legislation on occupational licensing (see also earlier work by Card and DiNardo 2002).

Notwithstanding, there is still compelling evidence that in high pay occupations women are paid inequitably, *ceteris paribus* (e.g. Olivetti and Petrongolo 2008, Picchio and Mussida 2011, Christofides et al. 2013, Kassenboehmer and Sinning 2014, Mussida and Picchio 2014, Olivetti and Petrongolo 2014). In fact, although in a meta-analysis Stanley and Jarrell (1998) argue that the adjusted wage gaps declined as well, this trend is much slower than in the case of the raw gap. Empirical work has sought the reasons for inequality decline in various societal processes. Bartolucci (2013), Card et al. (2016) make a case about wage bargaining; Bertrand et al. (2015) emphasize household bargaining; Mandel and Semyonov (2005), Cha and Weeden (2014), Goldin (2014) place attention on the role that the technology plays in allowing more flexible working time arrangements on many jobs. Greater equality in educational opportunities also had a significant impact (Falch and Naper 2013, Strand 2014, Lavy and Sand 2015), as did changes to the design of welfare state instruments (Mandel and Shalev 2009, Mandel 2012). One of the reasons behind slow pace of the inequality decline has also been lack of working hours flexibility (see Cortes and Pan 2013, Goldin 2014, Cortes and Pan 2016).

2.2 Structural change and gender inequality

Despite the richness of this literature, little effort so far was put into analyzing the role of structural change. There has been some prior empirical work on cyclical fluctuations in wage inequality, but this work focused mostly on raw wage differentials, not on the wage gaps adjusted for individual worker characteristics. For example, Biddle and Hamermesh (2013) argue that relative wages of women follow business cycle in the US. They attribute the volatility in unadjusted relative wages to higher cyclicality of wages among movers as opposed to those who do not change jobs. Greater job mobility among women and minorities generates cyclical fluctuations observed in raw wage gaps (see also Hirsch and Winters 2014). These patterns, consistent with segregation theory and to some extent with feminization theory, reflect adjustments solely in raw gender wage gaps. These patterns remain silent about changes in actual inequality.

The transitory structural reallocation of production in war periods, in particular during World War II, appears as a useful case study. Some rise in the labor market participation of women observed in many countries at the time has proven to be permanent (e.g. Acemoglu et al. 2004, Fernández et al. 2004, Goldin and Olivetti 2013) and has lead to important changes on the role of women (e.g. Walby 2003, Summerfield 2013). However, little is known about how the war-related structural shock affected gender wage inequality, because accessing high quality data on both wages and worker flows is a challenge. Moreover, these studies lack causal identification. Some recent studies look at exogenous variation in plant shutdown (i.e. local structural shocks in the labor market) and demonstrate strong effects not only for the directly affected workers, but also for

their spouses, due to changes in the bargaining power within household as well as vis-a-vis the employers, and due to negative health spillovers (e.g. Ortigueira and Siassi 2013, Lundborg et al. 2015, Huttunen and Kellokumpu 2016, Huttunen et al. 2018).

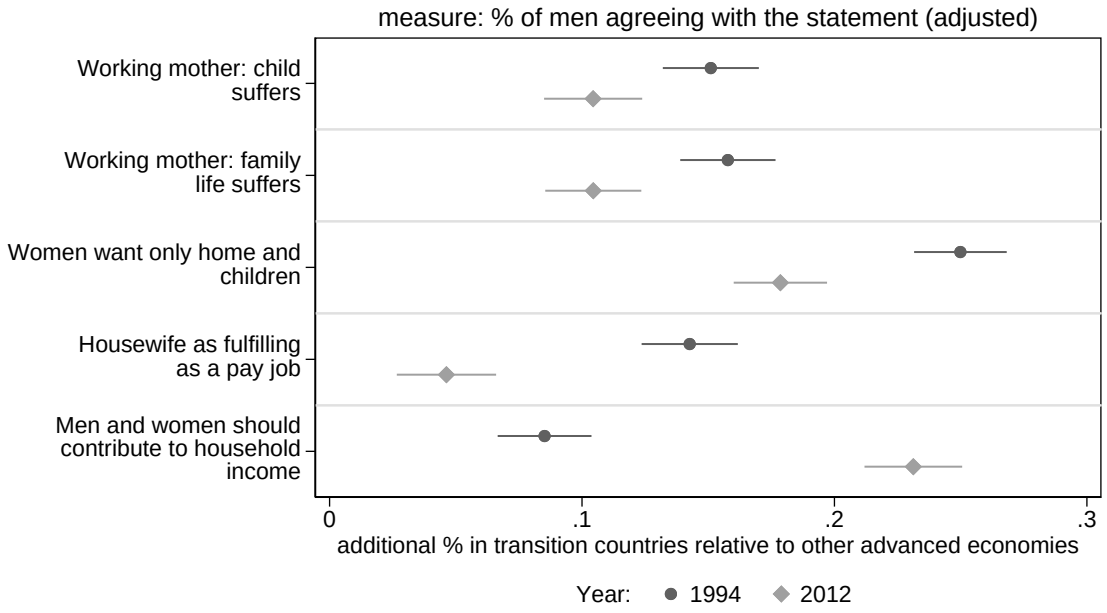
2.3 Experience of transition countries

The structural shock experienced by the countries transitioning from centrally planned to market based system is particularly interesting. First, the shocks were sudden and thorough. The average GDP drop in 1992 relative to pre-1989 level amounted to as much as 20%. The shock was exogenous to the extent that there were no anticipation effects. Labor market participants at that time could not account for the onset of transition in their educational, nor occupational choices (clearly, subsequent labor market flows were partially endogenous). Second, former socialist countries were characterized by different starting points in terms of economic structure and human capital, which affected workers' ability to adapt to new conditions. Third, centrally planned economies were characterized by relatively high participation rates, also among women, prior to the transition (Tyrowicz et al. 2018), and relatively high gender equality of wages (King et al. 2017). Job security and availability of child care implied little conflict between family and professional obligations. Working hours were regular, while overtime was relatively rare (e.g. Fay and Frese 2000, for East Germany).

Despite labor market equality, the societies exhibited also strong traditionalist views on the role of women in society. In a collective comparative volume, edited by Penn and Massino (2009), researchers find that despite important differences in former Soviet Block countries, the ruling party consistently displayed a paternalistic attitude towards the social position of women. These views are visible until today. In the World Values Survey, Eastern European respondents paint a portrait of women as second earners, less viable as leaders, and more dispensable as workers than respondents in Western Europe (Seguino 2007). While in general social norms identify that women should be the primary care givers rather than fulfil their professional aspirations, women should also participate in the labor market and help household income, see Figure 1. In this graph, we use data from International Social Survey Program to document differences in gender norms across Central and Eastern European countries (i.e. former Soviet Block countries) and Western Europe. A positive indicator signifies that a higher share of men agree with a given statement in transition countries than in advanced European countries, adjusting for country composition effects.

Indeed, prior work has demonstrated that socialist societies were characterized by higher female labor force participation and more frequent employment even among households with small children. However, these outcomes appear to conflict with pervailing social norms and gradually the progressive outcomes were getting undone with the progress of transition. A study on Germany and maternity leaves after reunification provides evidence on this direction (Boelmann et al. 2020). While some of the differences in social norms induced during socialism persist (rich literature studied the case of East and West Germany, e.g. Lee et al. 2007, Rosenfeld et al. 2004, Bauernschuster and Rainer 2012, Trappe et al. 2015, Boelmann et al. 2020), it appears that the structure dominated agency in a sense that superficial gender equality on the institutional level coexisted with low gender

Figure 1: Transition countries: more traditional social norms than other advanced economies



Data source: International Social Survey Program, data for years 1994 and 2012.
Notes: Given that the country composition changes between years in ISSP, we provide the differential as the estimate of the β coefficient on the following regression: $variable_i = \alpha + \beta * transition_i + \epsilon_i$, where the $variable_i$ denotes a given measure of the social norm, $transition_i$ denotes a dummy variable taking on the value of 1 for transition countries and 0 otherwise and ϵ_i denotes random term. All estimates of β are highly statistically significant for each $variable_i$. As $variable_i$ we use the answers to the following questions (in order of presentation at the figure): (i) Pre-school child is likely to suffer if his or her mother works; (ii) All in all, family life suffers when the woman has a full time job; (iii) A job is all right, but what most women really want is a home and childern; (iv) Being a housewife is just as fulfilling as working for pay; (v) Both the men and the women should contribute to household income. In all these questions, $variable_i$ takes on the value 1 if respondents declare to agree or strongly agree with the statement, and 0 otherwise.

empowerment on a practical level.

Transition brought a substantial and sharp decline in employment.[5] The downward adjustment was larger for women (Blau and Kahn 1996). Consistent with the phenomenon of asymmetric adjustment in the participation rates for men and for women is structural change in labor demand. In the case of Germany, as demonstrated by Hunt (2002), decrease in measured raw gender wage gap occurred mostly due to work force composition effects, i.e. a reduction in low-skill low-paid jobs for women and a substantial decrease in female participation rates. In Slovenia, strong cohort effects were observed, with younger women experiencing more raw wage gaps than younger men (King et al. 2017). Brainerd (2000) discusses the erosion of the social position of women in a number of Eastern European countries, specifically due to less adaptability and less competitive approach to career. Similar conclusions are reached by Adamchik and Bedi (2003), Grajek (2003) for Poland and Jolliffe and Campos (2005) for Hungary.

In addition to changing position of women, the very context of transition from central planning to market system indeed constitutes a large structural shock (see Newell and Reilly 1999, for

[5]There is compelling evidence on overmanning and inefficient use of labor prior to the transition (Kornai 1980, Porket 1989, Kornai 1994).

evidence from a comparative study). In addition to change of ownership structure and altering the incentives in the economy (Tyrowicz and Van der Velde 2018), other strong forces affected the labor market equilibrium. First, in nearly all countries transition was accompanied by an educational boom, with a large proportion of (younger) labor force obtaining a tertiary degree (Ammermüller et al. 2005, Denny and Doyle 2010, Rutkowski 1996). Second, transition driven restructuring has been coupled with deepening globalization and increasing role of global value chains, which largely affected the specialization in the Eastern European countries. Finally, general trends in demographics and urbanization intensified, affecting both the demand structure and the supply characteristics. Despite sizable country and industry specific effects (Stockhammer and Onaran 2009) the main findings so far suggest unequivocally that inequality grows, while changes in educational attainment explain considerable part of that change (e.g. Garner and Terrell 1998). There was also a strong effect of human capital and factor market imperfections on household decisions regarding labor use and reallocation (Rizov and Swinnen 2004).

As demonstrated by Munich et al. (2005a) for Czech Republic, one of the few countries for which data permitted direct comparison, gender inequality did not increase rapidly during transition. But this result was not universal for all transition countries, nor for the entire transition period. Brainerd (2000) analyses raw wage gaps for specific individuals in seven transition economies for the period directly before and after the introduction of the major economic reforms. She finds that raw gender wage differentials grew.[6] Despite rich literature and an apparent consensus that gender wage differentials changed during the transition, there are two reasons why these results have to be interpreted with caution. First, the results are not comparable across data, wage definitions, methods, countries and years. In fact, many estimates do not adjust for individual worker characteristics, let alone selection into employment, occupational segregation, etc. In fact, many of the studies report raw wage differentials, rather than adjust for differences in educational attainment (typically high for women in the former Soviet Block countries). Given this heterogeneity, one finds it naturally questionable to compare the results across countries and periods.[7] Second, there are no studies, to the best of our knowledge, who would look systematically at all countries of the region, rather than a narrow selection.[8]

Moreover, none of the earlier analyses comprised measures of labor market reallocation. Many of the studies attribute changes in gender wage inequality to fluctuations in employment (composition effects of working men and working women), without actually studying the effects of fluctuations on those who stayed in employment. From the perspective of bargaining theory, there is a number

[6]For country level analyses see Trapido (2007) for Estonia, Latvia and Russia, Adamchik and Bedi (2003) for Poland, Pastore and Verashchagina (2006) on Belarus, Dohmen et al. (2008) for Russia, Munich et al. (2005a) for Czech Republic on direct transition effects, Campos and Jolliffe (2003) on Hungary, Orazem and Vodopivec (1997) for Slovenia, Arabsheibani and Mussurov (2006) for Kazakhstan, (Ganguli and Terrell 2006) for Ukraine, Gorodnichenko and Sabirianova Peter (2005) compare Russia and Ukraine, Lehmann and Terrell (2006) analyze wage formation patterns for Ukraine. Using data for a few selected years, Madalozzo and Martins (2007) find decreasing adjusted gender wage gaps for Brazil and Chi and Li (2008) find the opposite for China.

[7]The simplifications necessitated by the availability (and the quality) of data typically bias the estimates of adjusted gaps without much intuition on the size of this bias. Indeed, Goraus et al. (2017) show that the estimates of adjusted gender wage gap using the same data may range from 8% to as much as 26%, depending on controls for selection effects, on the decomposition method employed and on the set of covariates included.

[8]Newell and Reilly (1999) analyze the adjusted gender wage gap along quantiles for 11 transition countries in mid-1990s. This study does not have any time dimension, though.

of reasons why this channel may be particularly relevant. First, change in the social position of women my display not only in employment status *per se*, but also in the ability to negotiate wage rise (especially in high inflation environment, as was the case in many countries in our study). Second, selection effects may be related to household optimization and thus represent a confounding of worker-employer relations with worker's within household relations. But once in employment, it is in households' interest to maximize earned income. Hence, gender wage inequality fluctuating in the short run is not likely to display. Our paper is the first to actually empirically evaluate the link between short-run labor market fluctuations and actual gender wage inequality.

2.4 Methodology of measuring gender inequality

Wide variety of methods has been developed over the past five decades, offering many approaches to estimating in the observational data the scope of unequal pay for equal work (see Fortin et al. 2011, for a thorough overview of decomposition methods in economics). Adjusted measures of gender wage gap should account for possibly relevant objective differences, which is not only a data issue but also a conceptual one. Namely, for obtaining adequate measures of adjusted gender wage gaps one needs to compare men and women actually "alike" in terms of all relevant observable characteristics. Note, that often – particularly in comparative context – one is limited in how many characteristics can be measured in a comparable way.

Against this background, Ñopo (2008) formulated a non-parametric method to obtain the estimates of inequality (or: adjusted gender wage gaps). This method proves the most reliable estimate when data limitations prevent the inclusion of rich set of covariates, with the additional advantage of informing about the size and sign of the selection bias (Goraus et al. 2017). This advantage stems from the fact that unlike majority of the parametric approaches, Ñopo (2008) provides estimates of adjusted wage gaps based on non-parametric exact matching procedure. Hence, the method utilizes the information about unmatched men and women in the sample to infer the sign and size of the bias.[9]

Ñopo (2008) produces two separate estimates in addition to the adjusted gender wage gap. The first one is the difference that prevails between the compensations of two groups of women: those whose characteristics can be matched to characteristics of men and those who cannot.[10] The second one is the difference that prevails between the compensations of two groups of men: those whose characteristics can be matched to characteristics of women and those who cannot (computed analogously). Thus, the risk of falsely attributing the wage gaps to differences in characteristics is mitigated.

[9] Ñopo (2008) was not the only to use matching for identifying adjusted wage gaps. For example, Pratap et al. (2006) employed it to measure adjusted wage differences between the formal and informal sectors in Argentina. The assumption of Rosenbaum and Rubin (1983) about the "ignorability of treatment" required for propensity score matching is not likely to be satisfied in case of gender (it should not be perceived as "treatment"). Hence, matching on characteristics should provide more reliable estimates than matching on propensity scores.

[10] It is computed as the difference between the expected wages of women in the common support minus the expected wages of women out of the common support, weighted by the probability measure (under the distribution of characteristics of women) of the set of characteristics that men do not have.

3 Data

We collect data for a broad list of countries from Central and Eastern Europe and former Soviet Bloc. Acquiring reliable data sets for early transition is a challenging task. Most of these countries lacked any labor force surveys (LFS) in the first years since transition. When available, LFS data frequently do not comprise information on compensation and household structure simultaneously. Finally, LFS is usually recovered from a rotating panel, which makes it impossible to obtain reliable measures of structural change in the labor market. While one can compute the measures of net change in employment (e.g. growth in service sector employment and decline in manufacturing employment), worker-level information is needed to know how many worker flows were actually needed to accomplish a given change. We contacted the statistical offices in all transition countries to obtain individual level data and used all available data sources for the period. We describe these databases in detail below.

To obtain measures of structural change and labor market adjustment we utilize a dataset developed by the European Bank for Reconstruction and Development, *Life in Transition survey* (LiT). This survey was conducted in 29 countries, including most of the European transition economies; only Turkmenistan from the former USSR and Kosovo were missing.[11] The LiT survey contains retrospective information on labor market status and thus it constitutes the most comprehensive source of data on labor market flows. Since this data are retrospective, it could be susceptible to demographic trends, in particular migration. However, the survey asks about the entire labor market history of a household member, which means that only migrations of full households could be a source of a bias.

3.1 Collection of individual earnings data

We use data from International Social Survey Program, Living Standard Measurement Surveys of the World Bank and national labor force surveys. Data for some of the transition and benchmark countries come also from the Structure of Earnings Survey. Table A1 describes in detail the source of data and period covered for each of the analyzed countries.[12]

International Social Survey Program. It is a voluntary initiative for countries world wide to collect data for social sciences research. This study focuses on attitudes and beliefs, but the survey contains an internationally comparable roster with demographic, educational, labor market and household structure information. While it is not customary to use such data in labor

[11] In each country, 1000 individuals were interviewed. The sampling procedure reflects different stratification levels, including sub-national departments and cities. The 2006 wave of the LiT survey provides retrospective data on employment.

[12] The Wage Indicator Project is an alternative dataset. It is operated by Wage Indicator Foundation and comprises self-reported online survey data on wages for 80 countries; however, data from transition countries is only available since the late 2000's, that is after majority of the adjustment to the structural shock of economic transition to a market-based system was completed. We excluded the EU Standards on Income and Living Conditions from the analysis since the survey allows recovering hourly wages for only a small subset of the population, i.e. those employed full-time full year without any job transitions in the last year. Even if this were not a problem, the inclusion of the database would likely had a minor impact on our estimates since the collection period overlaps with data on flows for two years.

market analyses, these particular data sets have numerous advantages. First, they are available for transition countries already in early years after the collapse of the centrally planned system. For some of the transition countries it is available already pre-transition, whereas Poland, Russia and Slovenia may be acquired as of 1991. ISSP data was already used for gender discrimination analyses (e.g. Blau and Kahn 2003).

Living Standards Measurement Survey. Developed by The World Bank, LSMS is a standardized household budget survey with a number of modules in the questionnaire relating to the household structure, demographics, educational history, labor market status and wages. While LSMS is coordinated by The World Bank, it is usually implemented by statistical offices from the beneficiary countries. This feature might raise some doubts concerning both the quality of the data (e.g. many missing values) and representativeness of the sample. Notwithstanding sample sizes for small countries participating in the LSMS program comprise about 10 000 observations, while in some cases the number of observations exceeds 30 000 individuals. LSMS data were used for Albania, Azerbaijan, Bosnia, Bulgaria, Kyrgyzstan, Serbia and Tajikistan.

National Labor Force Surveys. As evidenced by Stanley and Jarrell (1998), studies based on LFS type of data are characterized by lower publication bias. Availability of relatively high quality data on hours actually worked implies hourly wages may be computed with higher precision, thus resulting in lower bias due to inadequate treatment of part-time or overtime. However, without access to household roster, accounting for the household structure is impossible, which prevents taking good account of asymmetric labor supply decisions by men and women in the presence of small children in the household.

We use LFS data for Serbia for years 1995-2002 and for Poland for years 1995-2006. In addition to these LFS, we also employ a similar database for Russia, the Longitudinal Monitoring Survey. Collected since the onset of transition, the database has been used extensively in research before, e.g. Zohoori et al. (1998), Gregory et al. (1999) as well as many public health studies.

Structure of Earnings Surveys. This database collects information on workers' individual characteristics, hours worked and wages from employers. While it is collected in the form of a survey it is quasi-administrative data. In many countries firms have a legal obligation to report individual wage data for all workers or a representative sub-sample of workers. In comparison to the alternative sources, the SES is the most reliable database in terms of hours worked and compensations of different form (normal hours, additional hours, premia and similar). However, SES database lacks information on household structure and is only collected from the enterprise sector; in some countries, the sample is restricted further to cover only part of the enterprise sector, excluding e.g. small firms with less than 10 employees.

We use SES data for Hungary for years 1994-2006, as SES was not collected in earlier years. In addition, we also utilize EU-SES data, which is a harmonized data set over all EU Member States, available every fourth year since of 2002.

3.2 Harmonizing individual level data and estimation

In total, we acquired almost 150 datasets (countries/source/years) from transition countries with comprehensive information on wages that could be matched with data on worker flows. We document the specific years and sources for each country in Table A1 in the Appendix. For each dataset we employed a standardized harmonization procedure. First, we recorded the availability of control variables, and the coding of these variables in each dataset. Based on this information we obtained definitions of the control variables which permit comparability across datasets. For example, some datasets report narrowly defined educational attainment in levels, others in years and others in broadly defined levels. In the interest of comparability, in each dataset we recode the available information into three educational levels: less than secondary, secondary and tertiary. We repeat this procedure for each control variable. Second, we harmonize wage measurement. For datasets with wages defined as continuous variables, we compute hourly wages.

Once we obtain harmonized control variables and hourly wages, for each dataset separately we perform Ñopo (2008) decomposition to obtain adjusted gender wage gaps, expressed in percent of mens' wages. In order to maintain the comparability of the estimates of the adjusted gender wage gap, we employ one decomposition method and always utilize the same set of control variables within each source. All estimations account for sample weights.

Given the multiplicity of data sources, some compromise was necessary as to which variables are used for matching. Ñopo (2008) suggests age, education, marital status and urban/rural identification are sufficient to adequately capture gender wage gap in the matching procedure. Three arguments support this choice. First, industry of employment and occupation are much more of a "choice" variable than demographics and already acquired education. One could expect them to be much more labile and to the same extent influencing the gap as possibly being influenced by it. If, as suggested by theoretical contributions listed earlier, occupation is by itself a form of discrimination, then we should not adjust for occupation when estimating gender wage gaps. Second, as evidenced by Figure A1 in the Appendix, the inclusion of job specific characteristics in itself does not change substantially the estimates of the adjusted wage gap (the unexplained part of the wage gap), while it lowers substantially the share of population that falls into the common support.[13] Smaller common support does not undermine the reliability of the adjusted gender wage gap measure, but hazards its external validity. Finally, from an empirical standpoint, the inclusion of additional covariates is not always possible. Information on relevant firm characteristics, such as ownership type, the size, or the industry are usually absent from our datasets.

Following Ñopo (2008) and Huber et al. (2013), all continuous variables were converted to categorical variables. This concerns age (5 year age groups were formed) and residence (multiple categories with different reference levels were universally recoded to urban/rural dummy, where the threshold is around 20 thousand people). Also, we produced a categorical variable with three education levels: tertiary or above, primary and below and any secondary. Such broad characterization was dictated by data availability - a more refined categorization would not be feasible for some countries. Marital status used in matching takes two values (in relationship

[13] The example is obtained using Polish LFS data.

and single, regardless of reason). As described by Ñopo (2008), all these categorical variables are effectively interacted because this procedure allows exact matches only. The outcome variable in this analysis is hourly wage.

In addition to overall gender inequality estimated for each country and year, we also study cohort distribution of these adjusted wage gaps. In an effort to proxy for the exposure to the transition shock, we separate individuals in our samples into two groups: cohorts active in the labor market prior to the onset of transition (i.e. born before 1965) and the cohorts whose labor market initiation came at the period of structural change (i.e. born after 1965). Note that our adjusted gender wage gaps account for age, i.e. we only study wage differentials of men and women of the same age, hence this split is in principle neutral to the measurement. Note also that some of our individual level samples come from late 2000s, which implies that we observe pre- and post-transition cohorts many years after their labor market entry.

3.3 Adjusted gender wage gaps

Our final sample for the analysis in this study consists of measures of adjusted gender wage gaps (which we use as indicator of gender inequality, i.e. unequal pay for equal work) for a given country in a given year.[14] We also obtain raw gender wage differentials, for comparison purposes. Finally, we obtain measures of adjusted gender wage gaps separately for birth cohorts born before 1965 and birth cohorts born after 1965.

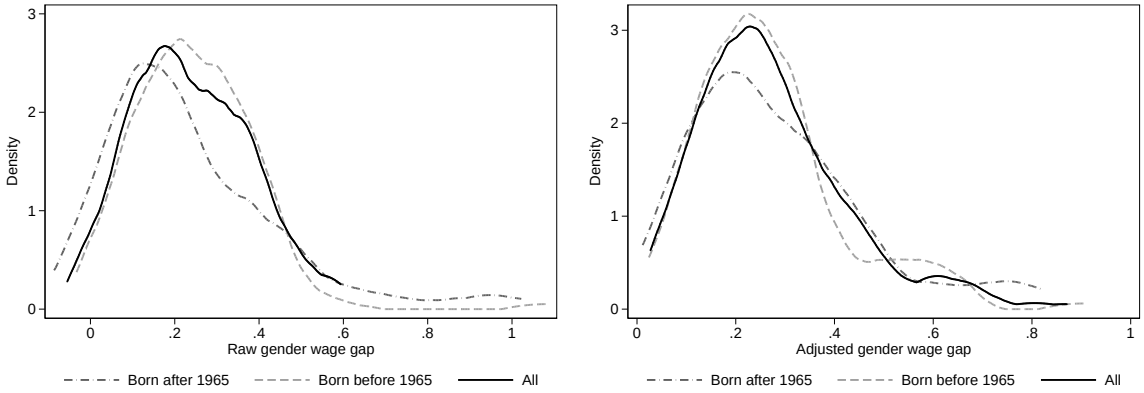
Both raw and adjusted gender wage gap estimates are highly dispersed in our sample, with values ranging from almost nil to as much as 95% of men wages. On average, cohorts active before transition exhibit lower gender wage gaps than entrants, but only by a small margin (22% to 20% at the median). The discrepancies for the gender wage gaps between data sources do not exceed 10 percentage points and are consistent with the range of discrepancies reported by International Labor Organization in the Key Labor Market Indicators database. Typically, wage gaps are lower in data with larger number of observations (such as SES or LFS) than in other surveys, which may suggest that wage gaps are not the only dimensions of gender inequality in the labor markets. Moreover, variance of the estimates appears to be lower in SES and LFS than in ISSP, consistent with the evidence from the description of the adjusted gender wage gap.

Figure 2 shows the distribution of the gender wage gap estimates for cohorts active before transition and for cohorts that entered afterwards. In Table A2 we provide summary statistics of the gender wage gaps for our two cohort groups. Gender wage gaps, adjusted or not, are quite similar in both cohorts, and hover around 23% - 25% of men's wages. However, for the cohort born after 1965 estimates present a greater dispersion. As is standard in the gender wage gap literature, adjusted gender wage gap are greater than the raw gaps, suggesting that conditional on characteristics, women should earn more than men.

Finally, we check the relevance of the non-overlapping distributions of men and women. In general, our matching leaves no men and women without a match, but there could still be a contribution of differential characteristics between men and women to the total wage differential.

[14] On few occasions, we have more than one dataset available in a given country and year.

Figure 2: Estimates of the gender wage gap: raw (left) and adjusted (right)



Data source: please refer to Table A1 for details on specific datasets for each country and year.
Notes: We plot density of raw and adjusted gender wage gaps for all the individuals and when the estimates are obtained separately for cohorts born before and after 1965.

We report in Table A2 in the Appendix that this is not the case. In fact, the wage difference due to difference of characteristics distribution over men and women is minor in our sample.

3.4 Measuring labor market flows

In order to measure the extent of labor market churning, we compute measures of flow intensity from individual data in the LiT survey.[15] The restrospecticve questionnaire from the LiT database provides information on the jobs held by workers in each year. This characteristic permits a direct identification of gross worker flows: separations and hirings.[16] LiT data provides an identification for job spells, we can observe the years in which the respondent work in a given position.[17] To mitigate the potential endogeneity between womens' wages and womens' employment patterns, we compute all the measures on flows realized by male workers.

LiT survey includes information on firm, including the industry and the ownership structure at the time of employment.[18] Given this information, we are able to provide measures for multiple types of worker flows. We compute measures for general separations, hirings, gross and net reallocation, and excess reallocation.[19]

The measures are expressed as a percentage of workers. **Hirings** is defined as the ratio between

[15] The index of structural change developed by Lilien (1982) is a frequently used indicator of the labor reallocation. It conveniently synthesizes the changes in employment structure. However, the Lilien index might be insufficient to capture the scale of churning in the labor market at a given point in time, because it is a net measure rather than a gross measure.

[16] Taking up a new job is not necessarily job creation (the position may be assumed after someone whose contract was terminated or the previous worker retired) and separation is not necessarily job destruction (the position may be immediately filled by someone else).

[17] A small fraction of LiT participants report multiple contemporaneous jobs. We identify the main occupation in a given year using the lowest ISCO code which corresponds to the highest skill level. "Nested" jobs, that is jobs that begin and end while an individual has another occupation are excluded from the analysis.

[18] Respondents are also asked about the year in which the firm began to operate, which could be used as a proxy for whether the firm was privatized or is a new private firm; however, we do not exploit the distinction between privatized and new firms.

[19] These flows corresponds to the measures employed in Davis and Haltiwanger (1992); however, our definition are based on worker flows while Davis and Haltiwanger analyze job flows.

the number of new matches in a given year and the number of employees in the previous year. New matches refer both to movements out of non-employment and to job-to-job flows. **Separations** refer to the probability of a ending a match, which could occur either because a worker found a better position (job-to-job flows) or because the worker became non-employed.[20] Hirings then indicate the proportion of new matches, whereas separations indicates the proportion of matches that are dissolved.

$$\text{Hirings} = \frac{Flow_{N\to E} + Flow_{E_i\to E_j}}{E_{t-1}} \quad \text{and} \quad \text{Separations} = \frac{Flow_{E\to N} + Flow_{E_i\to E_j}}{E_{t-1}},$$

where E_i, E_j denote employments in positions with $i \neq j$ and N refers to non-employment.

Hirings and separations present an overall picture of labor market churning, but if we were to only look at them we would miss important questions related to how (a)synchronized these flows were. We complement these measures with three additional, conventional indicators of labor market reallocation: gross reallocation measure, net reallocation measure and excess reallocation measure. **Gross reallocation** is defined as the sum of hirings and separations. This measure indicates the total number of flows experienced by an economy in a year. **Net reallocation** is defined as the difference between hirings and separations. This measure indicates whether employment grew in the country. Negative values indicate that the workforce shrank. Finally, **excess reallocation** is the difference between gross and excess flows. This measure indicates the extent of labor market churning, that is the difference between all labor market flows and the flows needed to reach the new state.

Following Hausmann et al. (2005), we identify **episodes of rapid change** in the reallocation indicators. Episodes of rapid change in a given labor market in a given year have to meet two criteria: the measure has high value in a given country (80^{th} percentile as the threshold to define high values); and the measure grew 50% with respect to the previous year. Hence, our identification of episodes of change looks as follows:

$$Episode = \begin{cases} 1 & \text{if } lmflow_t > 80^{th} \text{ percentile and } lmflow_t > 1.5 * lmflow_{t-1} \\ 0 & \text{otherwise,} \end{cases}$$

where $lmflow$ denotes previously discussed measures of labor market flows, computed separately for cohorts born before and after 1965.

Table 1 reveals the capital importance of distinguishing between cohorts.[21] Cohorts born after 1965 are characterized by higher hiring rates, relative to cohorts born before 1965. By contrast, separations appear to be quite similar across cohorts, which results in the negative net changes for cohorts born before 1965, some of them related to retirement. Values of excess suggest that

[20] The distinction between unemployed and inactive is hard to recover in LiT database, as workers were not asked about their search behavior during non-employment spells. This consideration also affected our decision to measure hirings as a percentage of the workforce instead of as the probability of finding employment.

[21] Table 1 displays the descriptive statistics of worker flows for the cohorts born before and after 1965. In this table we report measures averaged over the countries and only for the years for which we have matching samples allowing estimation of the adjusted gender wage gap. Table A3 extends the sample to cover all years for the same list of countries.

Table 1: Labor market flows for selected cohorts

	Hirings	Separations	Net	Gross	Excess
	All cohorts				
All cohorts	0.093	0.087	0.090	0.007	0.070
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)
	7	15	9	18	15
Cohorts born before 1965	0.053	0.085	0.068	-0.032	0.031
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
	16	13	6	25	24
Cohorts born after 1965	0.163	0.090	0.134	0.072	0.061
	(0.07)	(0.04)	(0.08)	(0.06)	(0.05)
	11	7	10	10	14

Data: LiT survey. *Note:* Table presents means of reallocation measures, standard deviations in parentheses (both with sample weights), and the number of episodes observed in the data. *Hirings* is the ratio of new matches to employment; *separations* is the ratio of dissolved matches to employment; *net* is the difference between separations and hirings; *gross* is the sum flows to employment, out of employment and between jobs; *excess* is the difference between gross and the absolute value of net. Sample restricted country year pairs for which we can recover the gender wage gap. See Table A3 for averages for a complete sample countries and years available in LiT survey.

cohorts born after 1965 experienced more fluctuations in career patterns. This pattern indicates that workers from earlier cohorts tended to remain in more stable sectors and industries, e.g. public administration, and mostly left employment to retire. In spite of the differences in terms of labor market flows, there appears to be less evidence that cohorts born before and after 1965 differed in their transition patterns. Point estimates indicate that cohorts born after 1965 were more likely to experience reallocation to the new sector: they had a greater probability of leaving the old sectors (manufacturing and SOE) and flows to the new sectors represented a larger proportion of hirings. Differences, however, are only statistically significant among those that entered services.

In total, we identify between 6 and 25 episodes of rapid labor reallocation matching the estimates of the gender wage gap, depending on the measure. The number of episodes of hirings is higher than the number of episodes of separations for both cohorts. For illustrative purposes, in Figure A2 we show the episodes of hirings and separations for all countries for which we were able to estimate the gender wage gap. We document substantial country-level heterogeneity both in terms of timing and in the number of episodes. For example, Czech Republic appears to have more episodes towards the end of the transition period; in Russia, episodes appear to be evenly split over time; and in Poland they appear to be concentrated in the period 1995 to 2000.

4 Results

Our approach in this study is to verify if the episodes of massive labor market reallocation are associated with changes consists of two steps. First, we compute comparable measures of adjusted gender wage gaps. These estimates are obtained by the means of the Ñopo (2008) decomposition. We obtain these estimates for all the labor market participants together, and then split by birth cohorts. In one group (cohorts born before 1965) we consider those who have had actual labor market experience prior to the structural changes in the economy. In the other group (cohorts born after 1965) we consider birth cohorts who entered labor market only after the onset of the structural

changes.[22] Subsequently, these gender wage gap estimates are used as explained variables, whereas the episodes of particularly intensive labor market flows play the role of the correlates. This way we analyze the relationship between short-run dynamics of structural structural change and the (estimates of) adjusted gender wage gap.

In Table 2 we show the estimations for the episodes measures for the five indicators of the labor market flows. We include fixed effects for country, year and data source. Columns indicate the variables used in the estimation on the right hand side of the equation. The estimates of the gender wage gap are always the left-hand side of the equation. For example, in column (1) we report the coefficients on a dummy for hirings episodes, in the previous year (denoted by L_1), in any of the last two years (denoted by L_2) or in any of the last three years (L_3). We cluster standard errors at country-year level. Hence, the estimates are not susceptible to the fact that availability of data is greater in the case of some countries.[23]

The episodes of massive structural change in the labor market correlate strongly with subsequent changes in the adjusted gender wage gaps. A sudden hiring episode is associated with a decline in adjusted gender wage gaps for cohorts entering in the labor market prior to the transition by as much as 10 percentage points, i.e. on average roughly 20%. We find no effect of hiring episodes for the older birth cohorts. Separations episodes per se yield no reaction in gender inequality, but when separations and hirings are both exceptionally high – i.e., when gross labor market flows episodes occur – gender wage inequality grows for birth cohorts born before 1965 and declines for birth cohorts born after 1965. With episodes in net labor market flows – greater hirings than separations – the gaps decline for cohorts who entered labor market after the onset of transition. The persistently negative estimates for the younger cohorts and positive coefficients for older labor market cohorts explain why episodes in gross labor market flows do not exhibit when all cohorts are studied together: the effects quantiatively cancel out. Note that countries in our sample experienced the episodes of rapid labor market flows at different years. Our specifications adjust for country-level specificity and time trends, hence the estimated coefficients identify the actual role of episodes, rather than transition per se.

For all types of episodes, we find that the adjusted gender wage gaps of cohorts who enter labor market after the onset of transition are reduced. This may be due do several mechanisms. First, it could be that at the beginning of their careers the youth of both gender receives fairly similar wages simply because they are low. This age based explanation builds on the literature which argues that gender inequality accumulates with the career. This explanation is corroborated by the adjusted gender wage gaps growing subsequent episodes in large gross labor market flows.

Second, it could be that labor market entrants differ from workers with established careers in terms of outside option. Unlike cohorts already established in the labor market, the cohorts entering the labor market after transition lacked a "safe" alternative: whereas older cohorts could have accepted wage cuts and wage arrears in exchange for at least keeping the job, the younger

[22] People born in 1965 would be 25 years old in 1990, which is the age of labor market entry for tertiary educated, individuals without a university degree would have at most a few years of employment experience.

[23] In an alternative specification, we weighted country × year observations by the number of sources available. The estimated coefficients were robust to this manipulaiton. Results are available upon request.

Table 2: Episodes of fast transition and the adjusted gender wage gap

	Hirings	Separations	Gross	Net	Excess
	All cohorts				
L_1	-0.042	-0.019	0.002	-0.010	-0.026
	(0.04)	(0.02)	(0.03)	(0.02)	(0.03)
L_2	-0.013	-0.012	0.019	-0.028 *	0.007
	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
L_3	-0.026	-0.005	0.027	-0.028 *	0.019
	(0.02)	(0.03)	(0.03)	(0.02)	(0.04)
N	134	134	134	134	134
	Cohorts born before 1965				
L_1	0.062	-0.027	0.056 **	0.039	-0.005
	(0.05)	(0.02)	(0.03)	(0.03)	(0.05)
L_2	0.036	-0.011	0.045 **	0.011	0.044
	(0.04)	(0.01)	(0.02)	(0.02)	(0.04)
L_3	0.027	0.011	0.064 **	0.002	0.079 **
	(0.04)	(0.03)	(0.04)	(0.02)	(0.04)
N	134	134	134	134	134
	Cohorts born after 1965				
L_1	-0.140 **	-0.037	-0.136 *	-0.099 ***	-0.067 *
	(0.08)	(0.03)	(0.08)	(0.04)	(0.04)
L_2	-0.093 *	-0.005	-0.082	-0.079 **	-0.037
	(0.05)	(0.04)	(0.08)	(0.04)	(0.04)
L_3	-0.095 *	0.012	-0.072	-0.079 **	-0.025
	(0.06)	(0.04)	(0.08)	(0.04)	(0.04)
N	128	128	128	128	128

Notes: Table presents coefficients from 45 independent regressions of the adjusted gender wage gap on episodes of rapid labor market change, with country and source fixed effects. We run separate regression for each lag and each measure of labor market flows, and sample according to birth cohort. In each specification, we include all countries and years. Columns indicate the variable on which measures of rapid labor market change were obtained. L_n represent dummy variables on whether the country experienced an episode of reallocation of a given variable in any of the last n years. All estimates are weighted by the inverse standard deviation of the adjusted gender wage gap and the inverse number of data points per country year. Additional controls include a set of dummy variables for years and country x data source fixed effects. Standard errors clustered at the country-year level. *,**,*** indicate significance at the 15%, 10% and 1% level.

cohorts did not have that choice, as they frequently searched their first employment. It appears that both young men and young women accepted similarly low offers, whereas among older labor market participants women accepted lower raises or higher wage cuts. Consequently, whereas a combination of self-selection and risk aversion could help to explain why gender wage gaps in cohorts active before onset of transition are related to labor market, they have little explanatory power among cohorts that entered the labor market afterwards. If that mechanism is indeed the case, the bargaining theory explains only the adjustment for the birth cohorts active already prior to 1989, but not the mechanisms applying to the younger birth cohorts.

Finally, to the extent that women are considered secondary earners, their income might be perceived as less relevant for the household. Thus, one should expect women to have a higher reservation wage and accept relatively higher pay, *ceteris paribus*. This may explain why the adjusted gender wage gap declines after the hiring episodes: wage offer for young women has to rise (gender inequality declines) if they are to join the labor force. This result is both positive and negative in interpretation. The positive interpretation relates to the outcomes: hiring episodes are conducive to more equality. The negative interpretation relates to the mechanisms: the second earners are only participating if the primary earners consider their earnings worth the mental costs of seeing the women employed. Prior theoretical literature did not preview for such short-run deviations from general social norm.

The transition countries offer a great natural experiment to study how large structural shocks in the labor market affect gender inequality, i.e., gender wage gaps adjusted individual for differences in characteristics. Our initial hypothesis was that periods of large structural change had an aymmetric effect on wages based on worker's gender. Indeed, it appears that more labor flows tend to be less beneficial for women established in the labor market and more beneficial for newcomers in terms of wage inequality. Note that our results pertain to workers, so we refer to actual unequal pay for equal work, abstracting from unequal access to jobs.

While the use of transition economies as a natural experiment is quite promising, data limits possible empirical strategies. First, one could be interested in splitting cohorts into more groups, but data constrains our ability to stratify the samples further. Second, the lack of comparable data from all transition countries implies using databases of varying reliability. We took steps to moderate this concern, namely we harmonize the data and include country and source fixed effects. We also cluster standard errors at country level. However, these steps only mitigate the risk that lower quality data drive our results. We cannot fully account for the possibility that in those countries and years for which data remains unavailable the patterns are different from those identified in our study.

5 Conclusions

Gender wage differentials have garnished considerable attention of the researchers worldwide. Notwithstanding, comparative studies remain rare; such analyses require micro-data sets which are relatively difficult to acquire and of diverse quality. The few existing comparative papers

either focus on the raw gap (e.g. Polachek and Xiang 2014) or employ meta-analysis techniques to control for differences in estimation procedure (e.g. Stanley and Jarrell 1998, Weichselbaumer and Winter-Ebmer 2007). Our paper contributes to filling this gap. We employed a relatively robust non-parametric technique developed by Ñopo (2008) to provide comparable estimates for over 150 databases from transition economies over the past three decades. We utilize these estimates to provide insights on the link between structural shocks in the labor market and gender inequality in wages.

We explore the role played by structural transformation of the labor market, particularly periods of large and sudden labor reallocations. Transition countries are a suitable case study, as they experienced a period of rapid adjustment of the labor market, which responded to two forces: transition from probably overmanned and inefficient state-owned enterprises to private firms; and reallocation of production away from manufacturing and into services resulting from globalization forces. We seek to learn whether the churning resulting from the two sources of reallocation affected wages of a vulnerable group asymmetrically.

Our results suggest that a surge of hirings is associated with lower gender wage gaps, adjusted for individual characteristics, among cohorts that entered the labor market after the onset of transition. Meanwhile, episodes of large gross flows raise gender wage gaps for those cohorts, who were well established in the labor market before the beginning of the large structural shocks. In sum, for both young and old labor market participants we find evidence of strong relationship between short-run labor market fluctuations and gender inequality in wages. While we find evidence for cohort divide in terms of sign – the short-run fluctuations are prevalent for all cohorts of labor market participants. The observed cohort divide may be related to a skill match between education obtained under central planning and requirements of the capitalist labor market. Another plausible explanation is related to an asymetrically weakening bargaining position of the workers who were established in the labor market prior to the transition: women may have been more prone to accept wage cuts in exchange for job stability.

In a broader context, our results confirm that crises may have asymmetric effects in the labor market, with stronger effects among groups in a disadvantageous position, such as women. Hence, our results could be interpreted as arguments in favor of targeting policies that help to cushion business cycle effects to specific groups. A possible example, related to the skill obsolescence narrative from transition economies, could consist of maintaining gender quotas in re-skilling and activation programs targeted at nonemployed individuals.

References

Acemoglu, D., Autor, D. H. and Lyle, D.: 2004, Women, war, and wages: The effect of female labor supply on the wage structure at midcentury, Journal of Political Economy **112**(3), 497–551.

Adamchik, V. A. and Bedi, A. S.: 2003, Gender pay differentials during the transition in poland, The Economics of Transition **11**(4), 697–726.

Alesina, A. and Giuliano, P.: 2010, The power of the family, Journal of Economic Growth **15**(2), 93–125.

Ammermüller, A., Heijke, H. and Wößmann, L.: 2005, Schooling quality in eastern europe: Educational production during transition, Economics of Education Review **24**(5), 579–599.

Andini, C.: 2007, Returns to education and wage equations: A Dynamic Approach, Applied Economics Letters **14**(8), 577–579.

Arabsheibani, G. R. and Mussurov, A.: 2006, Returns to schooling in Kazakhstan: OLS and Instrumental Variables approach, IZA Discussion Papers 2462, Institute for the Study of Labor (IZA).

Arulampalam, W., Booth, A. L. and Bryan, M. L.: 2007, Is there a glass ceiling over Europe? Exploring the gender pay gap across the wage distribution, Industrial and Labor Relations Review pp. 163–186.

Ashenfelter, O. and Oaxaca, R.: 1987, The economics of discrimination: Economists enter the courtroom, American Economic Review **77**(2), 321–325.

Bartolucci, C.: 2013, Gender wage gaps reconsidered a structural approach using matched employer-employee data, Journal of Human Resources **48**(4), 998–1034.

Bauernschuster, S. and Rainer, H.: 2012, Political regimes and the family: how sex-role attitudes continue to differ in reunified germany, Journal of Population Economics **25**(1), 5–27.

Becker, G. S.: 1957, The economics of discrimination, University of Chicago press.

Bergmann, B. R.: 1974, Occupational segregation, wages and profits when employers discriminate by race or sex, Eastern Economic Journal **1**(2), 103–110.

Bertrand, M., Kamenica, E. and Pan, J.: 2015, Gender identity and relative income within households, The Quarterly Journal of Economics **130**(2), 571–614.

Biddle, J. E. and Hamermesh, D. S.: 2013, Wage discrimination over the business cycle, IZA Journal of Labor Policy **2**(1), 1–19.

Bielby, W. T. and Baron, J. N.: 1984, A woman's place is with other women: Sex segregation within organizations, Sex segregation in the workplace: Trends, explanations, remedies pp. 27–55.

Black, S. E. and Spitz-Oener, A.: 2010, Explaining women's success: Technological change and the skill content of women's work, Review of Economics and Statistics **92**(1), 187–194.

Blau, F. D. and Kahn, L. M.: 1996, Wage structure and gender earnings differentials: an international comparison, Economica pp. S29–S62.

Blau, F. D. and Kahn, L. M.: 2003, Understanding international differences in the gender pay gap, Journal of Labor Economics **21**(1).

Blau, F. D. and Kahn, L. M.: 2017, The gender wage gap: Extent, trends, and explanations, Journal of Economic Perspectives **55**(3), 789–865.

Boelmann, B., Raute, A. and Schoenberg, U.: 2020, Wind of change? cultural determinants of maternal labour supply, mimeo, University College Lodon.

Brainerd, E.: 2000, Women in transition: Changes in gender wage differentials in Eastern Europe and the former Soviet Union, Industrial and Labor Relations Review pp. 138–162.

Campos, N. F. and Jolliffe, D.: 2003, After, before and during: returns to education in hungary (1986–1998), Economic Systems **27**(4), 377–390.

Card, D., Cardoso, A. R. and Kline, P.: 2016, Bargaining, sorting, and the gender wage gap: Quantifying the impact of firms on the relative pay of women, Quarterly Journal of Economics **131**(2), 633–686.

Card, D. and DiNardo, J. E.: 2002, Skill-biased technological change and rising wage inequality: Some problems and puzzles, Journal of Labor Economics **20**(4), 733–783.

Cha, Y. and Weeden, K. A.: 2014, Overwork and the slow convergence in the gender gap in wages, American Sociological Review **79**(3), 457–484.

Charles, K. K., Guryan, J. and Pan, J.: 2018, The effects of sexism on American women: The role of norms vs. discrimination, Working Paper 24904, National Bureau of Economic Research.

Chi, W. and Li, B.: 2008, Glass ceiling or sticky floor? Examining the gender earnings differential across the earnings distribution in urban China, 1987–2004, Journal of Comparative Economics **36**(2), 243–263.

Christofides, L. N., Polycarpou, A. and Vrachimis, K.: 2013, Gender wage gaps, "sticky floors" and "glass ceilings" in Europe, Labour Economics **21**, 86–102.

Cohen, D. S.: 2011, The stubborn persistence of sex segregation, Columbia Journal of Gender and Law **20**, 51.

Collins, R., Chafetz, J. S., Blumberg, R. L., Coltrane, S. and Turner, J. H.: 1993, Toward an integrated theory of gender stratification, Sociological Perspectives **36**(3), 185–216.

Cortes, P. and Pan, J.: 2013, Outsourcing household production: Foreign domestic workers and native labor supply in Hong Kong, Journal of Labor Economics **31**(2), 327–371.

Cortes, P. and Pan, J.: 2016, When time binds: Returns to working long hours and the gender wage gap among the highly skilled, IZA Discussion Papers 9846, Institute for the Study of Labor (IZA).

Davis, S. J. and Haltiwanger, J.: 1992, Gross job creation, gross job destruction, and employment reallocation, Quarterly Journal of Economics **107**(3), 819–863.

Denny, K. and Doyle, O.: 2010, Returns to basic skills in central and eastern europe, Economics of Transition **18**(1), 183–208.

Dohmen, T., Lehmann, H. and Zaiceva, A.: 2008, The gender earnings gap inside a Russian firm: First evidence from personnel data - 1997 to 2002, Zeitschrift fur ArbeitsmarktForschung - Journal for Labour Market Research **41**(2/3), 157–179.

Douglas, A.: 1998, The feminization of American culture, Macmillan.

Falch, T. and Naper, L. R.: 2013, Educational evaluation schemes and gender gaps in student achievement, Economics of Education Review **36**, 12–25.

Fay, D. and Frese, M.: 2000, Working in east german socialism in 1980 and in capitalism 15 years later: A trend analysis of a transitional economy's working conditions, Applied Psychology **49**(4), 636–657.

Fernandez, R.: 2013, Cultural change as learning: The evolution of female labor force participation over a century, American Economic Review **103**(1), 472–500.

Fernandez, R. and Fogli, A.: 2009, Culture: An empirical investigation of beliefs, work, and fertility, American Economic Journal: Macroeconomics **1**(1).

Fernández, R., Fogli, A. and Olivetti, C.: 2004, Mothers and sons: Preference formation and female labor force dynamics, Quarterly Journal of Economics **119**(4), 1249–1299.

Fortin, N., Lemieux, T. and Firpo, S.: 2011, Decomposition methods in economics, Handbook of labor economics **4**, 1–102.

Ganguli, I. and Terrell, K.: 2006, Institutions, markets and men's and women's wage inequality: Evidence from Ukraine, Journal of Comparative Economics **34**, 200–227.

Garner, T. I. and Terrell, K.: 1998, A Gini decomposition analysis of inequality in the Czech and Slovak Republics during the transition, CEPR Discussion Papers 1897, C.E.P.R. Discussion Papers.

Goldin, C.: 2014, A grand gender convergence: Its last chapter, American Economic Review **104**(4), 1091–1119.

Goldin, C. and Olivetti, C.: 2013, Shocking labor supply: A reassessment of the role of World War II on women's labor supply, American Economic Review **103**(3), 257–262.

Goraus, K., Tyrowicz, J. and van der Velde, L.: 2017, Which Gender Wage Gap Estimates to Trust? A Comparative Analysis, Review of Income and Wealth **63**(1), 118–146.

Gorodnichenko, Y. and Sabirianova Peter, K.: 2005, Returns to schooling in Russia and Ukraine: a semiparametric approach to cross-country comparative analysis, Journal of Comparative Economics **33**(2), 324–350.

Grajek, M.: 2003, Gender pay gap in Poland, Economics of Planning **36**(1), 23–44.

Gregory, P. R., Mokhtari, M. and Schrettl, W.: 1999, Do the Russians really save that much? Alternate estimates from the Russian Longitudinal Monitoring Survey, Review of Economics and Statistics **81**(4), 694–703.

Hansen, J.: 2007, Human capital and welfare dynamics in Canada, The B.E. Journal of Economic Analysis & Policy **7**(1).

Hausmann, R., Pritchett, L. and Rodrik, D.: 2005, Growth accelerations, Journal of Economic Growth **10**(4), 303–329.

Hirsch, B. T. and Winters, J. V.: 2014, An anatomy of racial and ethnic trends in male earnings in the US, Review of Income and Wealth **60**(4), 930–947.

Hsieh, C.-T., Hurst, E., Jones, C. I. and Klenow, P. J.: 2013, The Allocation of Talent and US Economic Growth, Working Paper 18693, National Bureau of Economic Research.

Huber, M., Lechner, M. and Wunsch, C.: 2013, The performance of estimators based on the propensity score, Journal of Econometrics **175**(1), 1–21.

Hunt, J.: 2002, The transition in East Germany: When is a ten-point fall in the gender wage gap bad news?, Journal of Labor Economics **20**(1), 148–169.

Huttunen, K. and Kellokumpu, J.: 2016, The effect of job displacement on couples' fertility decisions, Journal of Labor Economics **34**(2).

Huttunen, K., Møen, J. and Salvanes, K. G.: 2018, Job loss and regional mobility, Journal of Labor Economics **36**(2), 000–000.

Inglehart, R. and Norris, P.: 2003, Rising Tide: Gender Equality and Cultural Change Around the World, Cambridge University Press.

Jolliffe, D. and Campos, N. F.: 2005, Does market liberalisation reduce gender discrimination? Econometric evidence from Hungary, 1986–1998, Labour Economics **12**(1), 1–22.

Juhn, C., Murphy, K. M. and Pierce, B.: 1993, Wage inequality and the rise in returns to skill, Journal of Political Economy **101**(3), 410.

Kassenboehmer, S. C. and Sinning, M. G.: 2014, Distributional changes in the gender wage gap, Industrial & Labor Relations Review **67**(2), 335–361.

King, J., Penner, A. M., Bandelj, N. and Kanjuo-Mrcela, A.: 2017, Market transformation and the opportunity structure for gender inequality: A cohort analysis using linked employer-employee data from slovenia., Social Science Research **67**, 14–33.

Kornai, J.: 1980, Economics of shortage: Volumes A and B, North Holland.

Kornai, J.: 1994, Transformational recession: the main causes, Journal of Comparative Economics **19**(1), 39–63.

Krueger, A. O.: 1963, The economics of discrimination, Journal of Political Economy **71**(5), 481–486.

Lavy, V. and Sand, E.: 2015, On the origins of gender human capital gaps: Short and long term consequences of teachers' stereotypical biases, NBER Working Paper 20909, National Bureau of Economic Research.

Lee, K. S., Alwin, D. F. and Tufiş, P. A.: 2007, Beliefs about women's labour in the reunified Germany, 1991–2004, European Sociological Review **23**(4), 487–503.

Lehmann, H. and Terrell, K.: 2006, The Ukrainian labor market in transition: Evidence from a new panel data set, Journal of Comparative Economics **34**(2), 195–199.

Lemieux, T.: 2006, Increasing residual wage inequality: Composition effects, noisy data, or rising demand for skill?, American Economic Review **96**(3), 461–498.

Lilien, D. M.: 1982, Sectoral shifts and cyclical unemployment, Journal of Political Economy **90**(4), 777–793.

Lundborg, P., Nilsson, M. and Vikström, J.: 2015, Heterogeneity in the impact of health shocks on labour outcomes: evidence from swedish workers, Oxford Economic Papers **67**(3), 715–739.

Madalozzo, R. and Martins, S. R.: 2007, Gender wage gaps: Comparing the 80s, 90s and 00s in Brazil., Revista de Economia e Administraco **6**(2).

Mandel, H.: 2012, Winners and losers: The consequences of welfare state policies for gender wage inequality, European Sociological Review **28**(2), 241–262.

Mandel, H. and Semyonov, M.: 2005, Family policies, wage structures, and gender gaps: Sources of earnings inequality in 20 countries, American Sociological Review **70**(6), 949–967.

Mandel, H. and Shalev, M.: 2009, How welfare states shape the gender pay gap: a theoretical and comparative analysis, Social Forces **87**(4), 1873–1911.

Marianne, B.: 2011, Chapter 17 - new perspectives on gender, in D. Card and O. Ashenfelter (eds), Handbook of Labor Economics, Vol. 4, Elsevier, pp. 1543 –1590.

Martell, R. F., Emrich, C. G. and Robison-Cox, J.: 2012, From bias to exclusion: A multilevel emergent theory of gender segregation in organizations, Research in Organizational Behavior **32**, 137–162.

Munich, D., Svejnar, J. and Terrell, K.: 2005a, Is women's human capital valued more by markets than by planners?, Journal of Comparative Economics **33**(2), 278–299.

Munich, D., Svejnar, J. and Terrell, K.: 2005b, Returns to human capital under the communist wage grid and during the transition to a market economy, Review of Economics and Statistics **87**(1), 100–123.

Mussida, C. and Picchio, M.: 2014, The gender wage gap by education in Italy, Journal of Economic Inequality **12**(1), 117–147.

Newell, A. and Reilly, B.: 1999, Rates of return to educational qualifications in the transitional economies, Education economics **7**(1), 67–84.

Ñopo, H.: 2008, Matching as a tool to decompose wage gaps, Review of Economics and Statistics **90**(2), 290–299.

Ñopo, H., Daza, N. and Ramos, J.: 2012, Gender earning gaps around the world: a study of 64 countries, International Journal of Manpower **33**(5), 464–513.

Norris, P. and Inglehart, R.: 2019, Authoritarian and Populist Values, Cambridge University Press, pp. 85–212.

Olivetti, C. and Petrongolo, B.: 2008, Unequal pay or unequal employment? A cross-country analysis of gender gaps, Journal of Labor Economics **26**(4), 621–654.

Olivetti, C. and Petrongolo, B.: 2014, Gender gaps across countries and skills: demand, supply and the industry structure, Review of Economic Dynamics **17**(4), 842–859.

Orazem, P. F. and Vodopivec, M.: 1997, Value of human capital in transition to market: Evidence from Slovenia, European Economic Review **41**(3), 893–903.

Ortigueira, S. and Siassi, N.: 2013, How important is intra-household risk sharing for savings and labor supply?, Journal of Monetary Economics **60**(6), 650–666.

Pastore, F. and Verashchagina, A.: 2006, Private returns to human capital over transition: A case study of Belarus, Economics of Education Review **25**(1), 91–107.

Penn, S. and Massino, J.: 2009, Gender politics and everyday life in state socialist Eastern and Central Europe, Springer.

Phelps, E. S.: 1972, The statistical theory of racism and sexism, American Economic Review **62**(4), 659–661.

Picchio, M. and Mussida, C.: 2011, Gender wage gap: A semi-parametric approach with sample selection correction, Labour Economics **18**(5), 564–578.

Polachek, S. W. and Xiang, J.: 2014, The gender pay gap across countries: A human capital approach, Discussion Papers 8603, Institute for the Study of Labor (IZA).

Porket, J.: 1989, Overmanning, in J. Porket (ed.), Work, Employment and Unemployment in the Soviet Union, Springer, pp. 114–143.

Pratap, S., Quintin, E. et al.: 2006, Are labor markets segmented in Argentina? a semiparametric approach, European Economic Review **50**(7), 1817–41.

Reskin, B. F. and Bielby, D. D.: 2005, A sociological perspective on gender and career outcomes, Journal of Economic Perspectives **19**(1), 71–86.

Rizov, M. and Swinnen, J.: 2004, Human capital, market imperfections, and labor reallocation in transition, Journal of Comparative Economics **32**(4), 745–774.

Roland, G.: 2008, Fast-moving and slow-moving institutions, in J. Kornai, L. Matyas and G. Roland (eds), Institutional change and economic behaviour, Springer, pp. 134–159.

Rosenbaum, P. R. and Rubin, D. B.: 1983, The central role of the propensity score in observational studies for causal effects, Biometrika **70**(1), 41–55.

Rosenfeld, R. A., Trappe, H. and Gornick, J. C.: 2004, Gender and work in germany: Before and after reunification, Annu. Rev. Sociol. **30**, 103–124.

Rutkowski, J.: 1996, High Skills Pay Off: the Changing Wage Structure During Economic Transition in Poland, Economics of Transition **4**(1), 89–112.

Seguino, S.: 2007, Plus ça change? Evidence on global trends in gender norms and stereotypes, Feminist Economics **13**(2), 1–28.

Stanley, T. D. and Jarrell, S. B.: 1998, Gender wage discrimination bias? A meta-regression analysis, Journal of Human Resources pp. 947–973.

Stiglitz, J. E.: 1973, Approaches to the economics of discrimination, American Economic Review **63**(2), 287–295.

Stockhammer, E. and Onaran, E.: 2009, National and sectoral influences on wage determination in Central and Eastern Europe, European Journal of Industrial Relations **15**(3), 317–338.

Strand, S.: 2014, School effects and ethnic, gender and socio-economic gaps in educational achievement at age 11, Oxford Review of Education **40**(2), 223–245.

Summerfield, P.: 2013, Women workers in the Second World War: production and patriarchy in conflict, Routledge.

Trapido, D.: 2007, Gendered transition: Post-soviet trends in gender wage inequality among young full-time workers, European Sociological Review **23**(2), 223–237.

Trappe, H., Pollmann-Schult, M. and Schmitt, C.: 2015, The rise and decline of the male breadwinner model: institutional underpinnings and future expectations, European Sociological Review **31**(2), 230–242.

Tyrowicz, J. and Van der Velde, L.: 2018, Labor reallocation and demographics, Journal of Comparative Economics **46**(1), 381–412.

Tyrowicz, J., van der Velde, L. and Goraus, K.: 2018, How (not) to make women work?, Social Science Research **75**, 154–167.

Walby, S.: 2003, Gender transformations, Routledge.

Weichselbaumer, D. and Winter-Ebmer, R.: 2007, The effects of competition and equal treatment laws on gender wage differentials, Economic Policy **22**(50), 235–287.

Weisberg, D. K.: 1993, Feminist legal theory: Foundations, Vol. 1, Temple University Press.

Zohoori, N., Mroz, T. A., Popkin, B., Glinskaya, E., Lokshin, M., Mancini, D., Kozyreva, P., Kosolapov, M. and Swafford, M.: 1998, Monitoring the economic transition in the Russian Federation and its implications for the demographic crisis - the Russian Longitudinal Monitoring Survey, World Development **26**(11), 1977–1993.

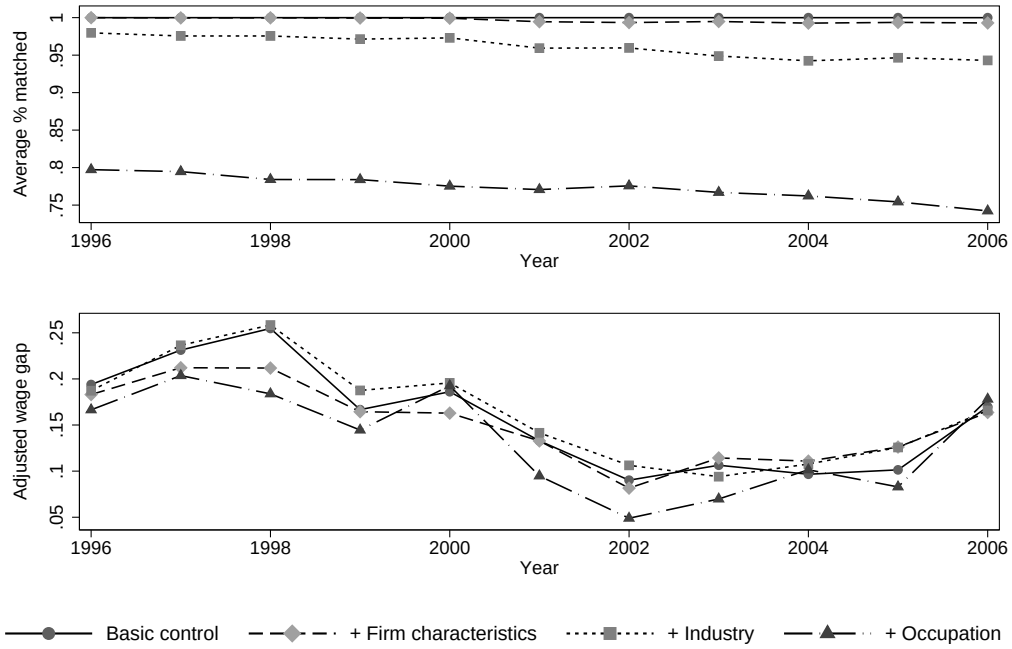
A Data

Table A1: Countries and years available

Country	Source			
	SES	LFS	ISSP	Others
BGR	2002, 2006		1992, 1996/2000, 2002/2003	1995, 1997, 2001
CZE	2002, 2006		1992, 1994/1999, 2002	
HRV			2006, 2006	
HUN	1994/2006		1990, 1992, 1994/1999, 2002/2003, 2006	
LTU	2002, 2006		2002, 2002	
LVA	2002, 2006		1995/1996, 1998/2000, 2002/2004, 2006	
POL	2002, 2006	1995/2006	1991/1992, 1994/1999, 2002/2004, 2006	
ROM	2002, 2006		2002, 2002	
RUS			1992, 1994/1997, 1999/2000, 2003, 2006	1994/1996, 1998, 2000/2006
SRB		1995/2002		2002/2003
SVK	2002, 2006		1998/1999, 2002/2004	
SVN			1994/2000, 2002/2004, 2006	
TJK				1999, 2003

Notes: Table displays different datasources used to recover the gender wage gap for each country and year included in our analysis. *SES*, for Structure of Earnings Survey, *LFS* for national labor force surveys; *ISSP* stands for the International Social Survey Program; *Others* include the Longitudinal monitoring survey (Russia) and the Living Standards and Measurement Survey (remaining countries) . More information on each database are available on the main text.

Figure A1: Comparison of gender wage gaps and sample match for different sets of control variables



Notes: The upper figure displays the evolution of workers in the common support under different specifications. The measure used is the average of the percentage matched for men and women. All estimations are conducted on Polish LFS data. The lower figure displays the evolution of the adjusted gender wage gap. *Basic controls* include age, education, marital status and a dummy for cities over 20 000 inhabitants. *Firm characteristics* adds size of the firm, ownership status and a dummy for whether worker has a full time position. *Industry* adds industry of employment, coded using NACE 1 codes. *Occupation* adds ISCO 88 occupational codes at the 1 digit level.

Table A2: Summary statistics of the matching

	Raw gap	Δ_A	Δ_M	Δ_F	Δ_X	% Matched male	% Matched female
	All cohorts						
Total sample	134						
Median	0.225	0.246	-0.004	0.000	-0.031	0.988	0.978
p90	0.416	0.462	0.011	0.032	0.063	1.000	1.000
p10	0.053	0.108	-0.042	-0.034	-0.120	0.863	0.825
	Cohorts born before 1965						
Total sample	134						
Median	0.233	0.249	-0.002	0.000	-0.004	0.992	0.976
p90	0.400	0.496	0.015	0.055	0.083	1.000	1.000
p10	0.068	0.106	-0.058	-0.034	-0.123	0.857	0.821
	Cohorts born after 1965						
Total sample	128						
Median	0.184	0.242	-0.002	-0.003	-0.043	0.994	0.995
p90	0.484	0.518	0.021	0.034	0.052	1.000	1.000
p10	0.028	0.100	-0.102	-0.046	-0.115	0.844	0.786

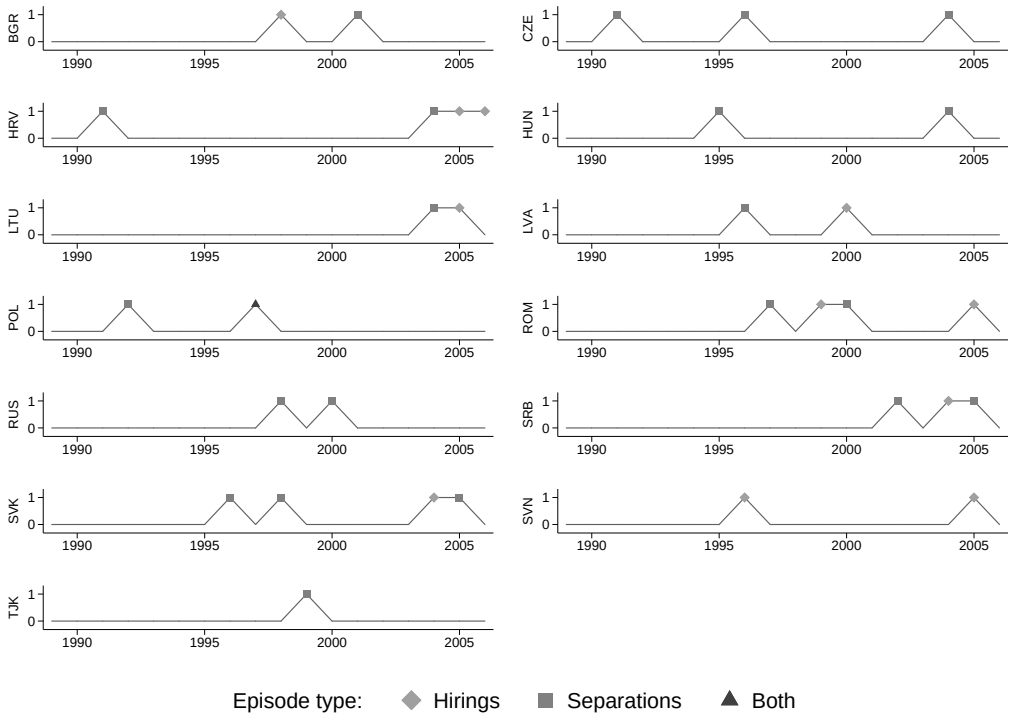
Notes: Table displays results of the estimation of the gender wage gap. Δ_A stands for the adjusted gender wage gap; Δ_M, for differences in wages between matched and unmatched men; Δ_F, for differences in wages between matched and unmatched women; and Δ_X for the explained component of the gap. All estimates presented as percentage of average male wage. For a full list of countries, databases and years under analysis refer to Table A1 in the Appendix. Given the short list of covariates included in the regression, the percent of matched men and women is large, regardless of the cohort under study. Hence, the contribution of differences in wage between workers in and out of the common sample on the total gender wage gap is unlikely to be substantial. The average value of these gaps conditional on observing some gap is presented in columns Δ_M and Δ_F.

Table A3: Labor market flows: all years

	Hirings	Separations	Net	Gross	Excess
All birth cohorts	0.083	0.081	0.100	0.002	0.070
	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)
	35	38	35	64	39
Only cohorts born before 1965	0.044	0.079	0.072	-0.035	0.031
	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)
	55	45	41	70	63
Only cohorts born after 1965	0.167	0.087	0.171	0.080	0.079
	(0.09)	(0.06)	(0.10)	(0.10)	(0.07)
	41	51	31	52	47

Note: Table presents average and standard deviations of different worker flows, in parentheses, for two cohorts of workers: those born before and after 1965. *Hirings* is the ratio of new matches to employment; *separations* is the ratio of dissolved matches to employment; *net* is the difference between separations and hirings; *gross* is the sum flows to employment, out of employment and between jobs; *excess* is the difference between gross and the absolute value of net. Data on labor market flows is available for 27 countries, each with 28 years of observations. The availability of the labor flows data is thus bigger than that for which we can estimate the adjusted gender wage gap, see Table A1.

Figure A2: Number of hirings and separation episodes per year: all cohorts



Notes: The vertical axes identifies whether an episode took place in that year (denoted by 1) or not (denoted by 0). The figure also indicates on which variable we recorded the episodes. Estimates for other countries / years and other measures available upon request.

B Full specification

Table B1: Adjusted gender wage gap and structural change: complete list of estimations

	Active before transition						Joined after transition						All cohorts					
	Hirings			Gross			Hirings			Gross			Hirings			Gross		
	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3
L_1	0.062			0.056*			-0.140*			-0.136^{+}			-0.042			0.002		
	(0.05)			(0.03)			(0.08)			(0.08)			(0.04)			(0.03)		
L_2		0.036			0.045*			-0.093 $^{+}$			-0.082			-0.013			0.019	
		(0.04)			(0.02)			(0.05)			(0.08)			(0.02)			(0.02)	
L_3			0.027			0.064*			-0.095^{+}			-0.072			-0.026			0.027
			(0.04)			(0.04)			(0.06)			(0.08)			(0.02)			(0.03)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Source FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.500	0.496	0.494	0.504	0.502	0.517	0.559	0.544	0.548	0.576	0.547	0.545	0.574	0.570	0.572	0.570	0.571	0.574
N	134	134	134	134	134	134	128	128	128	128	128	128	134	134	134	134	134	134
	Active before transition						Joined after transition						All cohorts					
	Separations			Net			Separations			Net			Separations			Net		
	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3	L_1	L_2	L_3
L_1	-0.027			0.039			-0.037			-0.099$^{\#}$			-0.019			-0.010		
	(0.02)			(0.03)			(0.03)			(0.04)			(0.02)			(0.02)		
L_2		-0.011			0.011			-0.005			-0.079*			-0.012			-0.028^{+}	
		(0.01)			(0.02)			(0.04)			(0.04)			(0.01)			(0.02)	
L_3			0.011			0.002			0.012			-0.079*			-0.005			-0.028^{+}
			(0.03)			(0.02)			(0.04)			(0.04)			(0.03)			(0.02)
Year f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Source f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.495	0.492	0.492	0.501	0.492	0.491	0.528	0.523	0.523	0.565	0.557	0.557	0.572	0.570	0.570	0.570	0.576	0.576
N	134	134	134	134	134	134	128	128	128	128	128	128	134	134	134	134	134	134

Notes: Table presents the full set of estimated coefficients for regressions from Table 2 for the episodes in hirings, separations gross and net labor market flows. Results for episodes in excess flows available upon request. Full set of fixed effects estimates available upon request. Standard errors clustered at the country level in parentheses. $+$,*, $^{\#}$ indicate significance at the 15%, 10% and 5% .