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How (Not) to Make Women Work?

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Abstract

Women in developed economies have experienced an unparalleled increase in employment rates, to the point that the gap with respect to men was cut in half. This positive trend has often been attributed to changes in the opportunity costs of working (e.g. access to caring facilities) and not-working (e.g. educational attainment). Meanwhile, the gender employment gaps were stagnant in transition economies. Admittedly, employment equality among genders was initially much higher in transition countries. We exploit this unique evidence from transition and advanced countries, to analyze the distributional nonlinearities in the relationship between the institutional environment and the (adjusted) gender employment gaps. We estimate comparable gender employment gaps on nearly 1600 micro databases from over 40 countries. We relate these estimates to changes in the opportunity costs of working and not-working. Changes in opportunity costs exhibited stronger correlation with gender employment equality where the gap was larger, i.e. advanced economies. We provide some evidence that these results are not explained away by transition-based theories, and argue that the observed patterns reflect a level effect. Currently, advanced and transition economies are at par in terms of gender employment equality. Hence, the existing instruments might not be sufficient to further reduce the gender employment gap.

Keywords:

employment, gender gaps, opportunity cost of working, transition, non-parametric estimates

JEL Classification

J2, J7, P7

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1 Introduction

Female participation rate in most advanced economies increased substantially over the last decades, from values close to 50% on average in 1990, to roughly 60% two decades later. This change has been attributed to many sources, prominently to institutions, i.e. family-friendly policies (Blau and Kahn 2007). These policies decrease the opportunity cost of working for primary care givers, typically women, who can more easily combine work and family life. Empirically, Mandel and Semyonov (2005) argue that the expansion of these policies served to reduce gender wage inequality andto increased female labor force participation. Whereas Blau and Kahn (2013) indicate that the *insufficient* expansion of family-friendly policies explains the lower female labor force participation in the US relative to other advanced economies. In addition to these policies, increased educational attainment and skill-biased technical change jointly increase the opportunity cost of not working for women. Black and Spitz-Oener (2010) provide evidence that technological progress helped to reduce the gender wage gap in Germany.

Meanwhile, despite similar institutional and technological trends, female labor force participation rates dropped considerably in transition economies. Several studies document this phenomenon: Brainerd (2000), Hunt (2002), Blau and Kahn (2003) comparatively and Adamchik and Bedi (2003), Grajek (2003), Jolliffe and Campos (2005), Trapido (2007) for country level analyses. Employment rates fell for men as well in transition economies, yet the fall was not as pronounced. As a result, the ratio of female to male participation dropped from above 85% to below 80%. Whereas in advanced economies we observed a continuous trend towards a higher female participation rate, in transition countries the trend was negative in early transition and never fully reversed. While the initial fall is substantial and intriguing, the failure of female employment rates to recover is equally relevant for a better understanding of determinants of female participation in the labor market. This research attempts to provide insights both on the initial fall in female employment rates relative to men in transition countries and on the failure to recover. To the extent that leisure preference can differ systematically across countries, we analyze gender employment gaps rather than female participation or employment rates. Our analysis focuses on the relation between opportunity costs of work and gender employment equality instead of potentially confusing employment rates.

Naturally, lack of progress in gender employment equality could be a specific feature of the transition process. On the one hand, introducing the market system might have involved a restructuring process that consistently favored the type of jobs (and human capital) held by men. If that were the case, the pronounced fall in female employment rate relative to men would reflect changes in labor demand. It could also be that the indirect effects of the rising unemployment dominate the direct ones, i.e. if discouragement effects were stronger for female workers. However, unemployment rates explain only a small part of variation in employment

rates in transition economies, which hints that adverse effects of restructuring cannot be the full answer. On the other hand, the institutional configuration during central planning, and particularly the system of work orders[1] could play a role. From the supply side, this system "coerced" female labor supply at par with men, irrespective of preferences and opportunity cost of employment. From a demand side, the obligation to hire workers of both genders should reduce gender employment gaps, particularly in the presence of statistical and taste-based discrimination motives.

Typically, policy analysis focuses on instruments that facilitate and *encourage undertaking* employment by women. When discussing gender employment gaps, the main questions revolve around equal access to occupations. The current policy debate addresses the opportunity cost of employment and potential barriers to employment, implicitly assuming more or less equal preferences for employment among men and women. By contrast, in centrally planned economies, state *coerced* women to supply labor close to par with men, effectively eliminating the scope for opportunity cost and barriers channels to operate. The large structural change associated with the transition to a market system enabled an adjustment of labor supply to individual preferences.

Given these insights, we exploit the richness of a novel collection of micro-level datasets to inspect the time patterns and correlates of the adjusted gender employment gaps. We focus on the proxies for the alternative cost of working and the alternative cost of not-working. We show that the decrease in female employment in transition countries stems from delayed and reduced entry of young cohorts rather than withdrawal by already active cohorts. This pattern is at odds with the supply channel explanation. We also show that entry frictions were gender-specific, relative to the central planner's allocation of workers to jobs. In fact, adjusted gender employment gaps were lower for the older cohorts, i.e. those who entered labor market before the transition. Indeed, younger women in transition economies experience a larger adjusted employment gap when compared to older women. Among older cohorts, the downward adjustment in labor supply, particularly at the beginning of the transition, was similar among men and women.

While the fall in entry rates could explain the initial fall in employment, it serves poorly to understand the failure to recover later on. Our findings suggest that in advanced economies the rise in female employment was related to an increase in the opportunity cost of not working and a fall in the opportunity cost of working, due to the increase in educational attainment and greater

[1]Work order (or work allocation) was a system of automatic assignment to employers at the moment of graduation. This assignment was based on formal qualifications (level and field) and in principle could only be objected under specific circumstances. Also, terminating employment contract was only possible under the condition that a new employment contract was issued. Enforcement of work orders differed between centrally planned economies and across time, but as a general rule, in each country every person willing to work had employment guarantee in his/her profession. There has been surprisingly little research on the effects of work orders on employment outcomes.

availability of the family-friendly institutional framework. Such findings are then consistent with existing literature (Blau and Kahn 2007). However, in economies undergoing transition none of these mechanisms appear to work. We hypothesize that changes in opportunity costs have heterogeneous effects at different levels of gender employment gaps. We test for this explanation with the help of unconditional quantile regressions, as developed by Firpo et al. (2009). Effects are generally lower (in absolute values) at lower quantiles, and often not statistically significant, suggesting that the reduction in the opportunity costs of working operates mostly when gender employment gaps are large. Consequently, even though crafting a family-friendly institutional set up has some potential to shrink gender employment gaps, these policies might not be able to fully close them.

Our contribution to the literature is then twofold. First, we document the adjusted gender employment gaps for a collection of 1544 datasets from 46 countries over a period of more than 20 years. The length of the covered time span enables us to inquire the nature of changes in the gender employment gap over a long time horizon, whereas, the broad range of countries under analysis permits a reliable identification of the driving forces behind gender inequality in access to employment. To the best of our knowledge similar comparative analysis do not exist for advanced, nor transition economies.[2] A second contribution is that we test explicitly the role for the institutional arrangements, i.e. encouraging vs *forcing* higher activity rates in shaping working preferences. Our analysis presents new evidence on factors driving the adjusted gap in female labor force participation.

The paper is structured as follows. In the next section we review the relevant literature. The insights from earlier research give grounds to the method employed in this study, which also is discussed in this section. To test our hypotheses, we have compiled a large number of micro-datasets from transition and advanced economies. We thus present an overview of these data in section 3. The presentation of data is complemented with a description of the empirical strategy and main descriptive statistics. The results are discussed in section 4. We conclude the paper with policy implications of our study.

2 Motivation and insights from earlier studies

Most European economies experience – or will soon experience – a decrease in the size of the labor force as a result of population ageing. This demographic pressure renew the interest in the study of employment rates of several population groups, among them women. A number of studies focusing on women (see for example Mandel and Semyonov 2005, Bertola et al. 2007, Blau and Kahn 2007, Weichselbaumer and Winter-Ebmer 2007, Mabsout and van Staveren

[2]Comparative analysis, such as Blau and Kahn (1992, 1996), Brainerd (2000), Gorodnichenko and Sabirianova Peter (2005), Trapido (2007) usually focus on gender wage gap, and not on access to employment, covering shorter time horizons and smaller selection of countries.

2010, Plunkett 2011, Blau and Kahn 2013) report a growing participation of women in the labor market. Among determinants, literature emphasize the role of labor market institutions (such as prevalence of part-time employment, wage setting, unions), family institutions and social norms (e.g. elasticity of women's labor supply to husbands wages), and changing characteristics of jobs (e.g. demand for non-cognitive skills). Morrisson and Jutting (2005) argue that, from a gender equality perspective, formal and informal institutions are often misaligned. According to these authors, the most important factor determining women's participation in economic activities outside the household are social rather than economic institutions.

In the context of emerging and transitioning economies, it was argued that during the transition, labor market participation of women weakened and was characterized by segmentation, which yielded grounds for greater gender (adjusted) gaps than under planning. Many studies argue that gender differentials actually *emerged* in transition, e.g. Trapido (2007) for Estonia, Latvia and Russia, Adamchik and Bedi (2003) for Poland, Pastore and Verashchagina (2006) for Belarus, Campos and Jolliffe (2002) on Hungary, Orazem and Vodopivec (1997) for Slovenia, Arabsheibani and Mussurov (2006) for Kazakhstan, Gorodnichenko and Sabirianova Peter (2005) compare Russia and Ukraine, Dohmen et al. (2008) for Russia and Lehmann and Terrell (2006) for Ukraine.

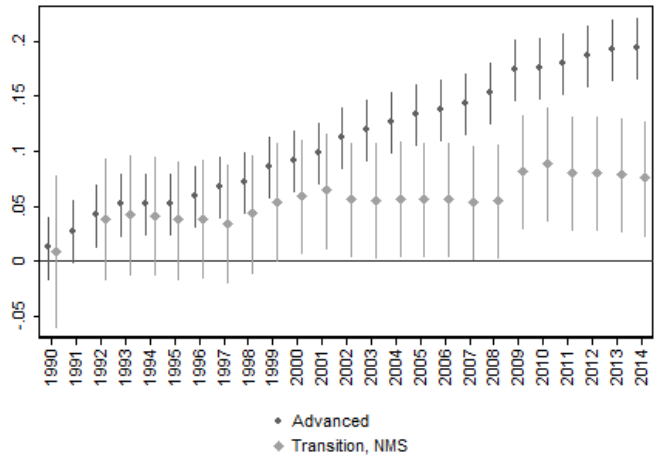
Indeed, as demonstrated for Czech Republic, one of the few countries for which the data permitted direct comparison, gender gaps increased rapidly during transition (Munich et al. 2005a,b). In a similar spirit, Brainerd (2000) analyses household budget surveys for seven transition economies for the period *directly* before and after the introduction of the major economic reforms, utilizing the *quasi*-panel structure of the HBS data. She finds that gender inequality grew in this period – changes affected women adversely, contributing to the widening of the gender wage gap. Garner and Terrell (1998), Lauerova and Terrell (2002), Ganguli and Terrell (2005) find evidence that human capital accumulation and gendered sorting across occupations were two of the underlying factors contributing to widening gaps between men and women. There is also a strong effect of human capital and factor market imperfections on household decisions regarding labor use and reallocation (Rizov and Swinnen 2004).

While changes in gender gaps have been observed, it is not clear from standard economic theory, why they should vary in any given country. The literature on developed countries highlights the relevance of long-term trends, notably demographics (Freeman 1979, Stapleton and Young 1984) and skill biased technological change (e.g. Juhn et al. 1993, Card and DiNardo 2002, Lemieux 2006, Hansen 2007, Andini 2007, Juhn et al. 2014, Sauré and Zoabi 2014). These changes may be reflected in the "value" of education and experience (potentially also other individual characteristics) and not just the "quantity demanded". Thus the returns could be altered with time, while with the differentiated sorting of workers across genders and/or gender-specific entry barriers one should expect differences in the extent of *unexplained* part of the

gender gaps. In addition, the interplay between transition driven restructuring and globalization had large effects on both ownership and occupations/industries structure in Eastern European countries. Finally, general trends in demographics and urbanization affect both the demand structure and the supply characteristics. Despite sizable country and industry specific effects (Stockhammer and Onaran 2009), the consensus narrative in the literature is that gender gaps widened and female labor participation did not increase as fast as that of men, with a stronger disparity in catching up / transitioning economies.

One could also question the empirical premises for these considerations. Figure 1 reports time trends in female to male employment ratio cleaned of distortions stemming from a changing sample composition (we report the estimates of year effects in a model which includes also country fixed effects). Clearly, employment ratios of women have grown relative to men over the entire period for the advanced economies, but on average a similar pattern was true for the transitioning economies until early 2000s. Substantial heterogeneity in this group of countries makes time effects appear insignificant, and it also raises concerns over the generality of findings in earlier empirical literature.[3]

Figure 1: Time trends for the ratio of employment rates for women relative to men



Note: Coefficients on year effects from a regression of employment rate ratio (women/men) with country fixed effects and no constant. *Data source:* OECD. Transition countries include: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, Slovakia, Slovenia. Advanced: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

One potential explanation for this pattern is unemployment. Increasing unemployment has direct effects on employment rates, but also indirect effects, e.g. discouragement effect. Transition countries experienced a substantial and sudden increase in unemployment rates in early years of transformation, though the scale differed across countries. If this surge affected

[3]While the stock of analyses is indeed large, respective studies usually analyze only a few selected countries, often just one, and typically over a short period of time.

women disproportionately, one should expect a strong negative correlation between overall unemployment rate and the female employment rate. Moreover, relatively high and prevailing unemployment allows employers to be more selective about job candidates. While women are typically more educated in transition countries, they might also be less flexible in terms of overtime or work-related travel. This potential trade off between skills and flexibility might reinforce a possible initial bias against women in transition labor markets.

The explanation based on unemployment, however, is at odds with the data. We run simple regressions with time fixed effects, thus exploiting country level heterogeneity. Our dependent variable is the female employment rate, and we include overall unemployment, a transition dummy and interactions of the two controls. To facilitate the interpretation, we standardized the female employment rate and the unemployment rate. Results are reported in Table A.2. Regardless of the sample composition, we find that higher unemployment rate is associated with a lower employment rate of women. However, this effect is *weaker* for transition countries. The result is robust to the control group included – whether transition countries are compared to advanced market European economies or to the whole world. The interaction term is positive, significant and fairly large relative to the standardized unemployment effect.

An alternative explanation can be derived from the theoretical propositions for the emergence of the gender employment gaps driven by transition or catching up. Namely, if central planning offered equal opportunities for *entry* and market economies did not – then, employment gaps would have emerged gradually as newly entering cohorts faced unequal school to work transition rates. By the same token, if exits were equal for men and women under central planning and unequal since the onset of market based system, the differences in employment rates between men and women would emerge only gradually. We address this question with the novel collection of micro-level data.

3 Methods and data

3.1 The role for cohort effects

Changes in female employment rates may in principle occur at the intensive and at the extensive margin, where the first involves changes in employment status of already working individuals; and the second refers to the intensity of entries to and exits from labor market by individuals. Thus, this process inherently involves the role of demographics and the interaction between demographics characteristics and preferences. One viable alternative to decompose these two effects is a shift-share analysis. While it cannot explain *why* we observe some of the tendencies, it allows to capture the role of the changing structure of the population and the (possibly changing) work intensities across subsequent cohorts.

Our proposed shift-share analysis decomposes the changes in employment rates to four

components. First, we capture the effects of changes in the age structure experienced in nearly all countries. While possibly in the short run this effect is not as visible, over a decade the average age of participating population could change already by as much as 3 to 5 years. Second and third, we measure the exit rate among the oldest age group and the entry rate among the youngest age group. Many of the analyzed countries experienced an educational boom, which typically delays labor market entry for the tertiary educated by 3 to 5 years (Rutkowski 1996, Ammermueller et al. 2003, Denny and Orla Doyle 2005). On the other side, the aging of the post-war baby boom cohorts has often been accompanied by instruments encouraging relatively early exits (Fox 1997). Without precluding a priori if these processes differed in intensity for men and women, exit and entry rates could have changed substantially. Fourth, we capture the intensity of other factors such as unemployment rates. The details of the decomposition are presented in Appendix B.

3.2 Measurement of adjusted gender employment gaps

Gender gaps may be computed as a difference in mean of the variable of interest for men and women. These gaps – often referred to as raw gaps – do not allow to observe whether the measured differences are an expression of genders inequality in outcomes or underlying characteristics (see Fortin et al. 2011, for a methodological overview). Typically, each of these methods produces a share of the gender gap that can be attributed to differences in endowments (i.e. *explained* gap) and a part that cannot be captured by these factors (i.e. *unexplained* or *adjusted* gap).

Inherently to the method, the reliability of the adjusted gap measure owes to the inclusion of all relevant determinants and to the robustness of the coefficients. For example, for the parametric decomposition to maintain reliability it is crucial that the estimated regressions are sensible. If in a given country labor markets are segmented and plagued with multiple barriers for genders, men may never share the combination of characteristics of women and vice versa. Also, marginal effects associated with some of these characteristics may be largely unsystematic if the positively or negatively discriminated group is small and specific. Relying on estimated parameters in such cases may be misleading, thus undermining the reliability of what is then attributed to discrimination.

A partial solution to both problems was proposed by Ñopo (2008), who employs one-to-many perfect matching to address the segmentation and unreliability of estimated parameters. Restricting the analysis to matched individuals assures that only "similar" individuals are compared (e.g. men to women of exactly the same age, education, residence and family situation).[4] One features of Ñopo decomposition (2008) is that it provides an interpretation

[4]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 the gender is perceived as "treatment". Thus,

for differences outside the range of shared characteristics, what is typically called the *common support*. This decomposition allows to measure directly what part of the observed raw gap could be attributed to men being *different* from women.[5] Moreover, a comparative exercise conducted by Goraus et al. (2015) shows that Ñopo (2008) decomposition should be preferred when there is fear of an omitted variable bias, as the estimates with only some conditioning variables were fairly similar to those for a larger set of control factors.

This decomposition divides the gap into four additive elements, two of which are analogous to the elements of the standard Oaxaca (1973) and Blinder (1973) decomposition (i.e. the differences in the characteristics and the unexplained difference in outcomess), but their interpretation is limited to the *common support*, and the remaining two account for *differences in the supports* (i.e. the differences between the matched and the unmatched men as well as the differences between the matched and the unmatched women). Indeed, Ñopo decomposition (2008) has two major advantages for our study. First, it is reliable even with a relatively small set of control variables. Second, it allows a four way decomposition, i.e. we can explicitly analyze the part of the gap that stems from the lack of common support, i.e. men whose characteristics do not match those of any woman and vice versa. Clearly, earlier empirical evidence as well as theoretical considerations demonstrate that it can be of relevance.

3.3 Data

Data for this study come from a variety of sources. First, we collected standardized micro data sets such as Household Budget Surveys and/or Labor Market Surveys from central statistical offices of transition countries. Often, in the early years of transition, standardized surveys were either not available, or not fully representative or not fully standardized. We thus complement the data collected from central statistical offices with alternative sources. First, whenever available, we use data from national censuses acquired from *Integrated Public Use Microdata Series International* (IPUMS-I).[6] Second, we make extensive use of the *International Social Survey Program* (ISSP), a source employed previously (used earlier in the labor literature by e.g. Blau and Kahn 2003). Third, for some countries also *Living Standard Measurement Surveys* of The World Bank were available.[7] Finally, we also use data from *Life in Transition Survey* (LiTS) - a recent alternative source collected by the European Bank for Reconstruction and Development. This is a retrospective study administered in 2006 in 29 transition economies.

the matching process in Ñopo (2008) is based on characteristics, not propensity scores.

[5] Ñopo (2008) was not the only to use matching to measure discrimination. For example, Pratap and Quintin (2002) employed propensity score matching to measure wage differences between formal and informal sectors in Argentina.

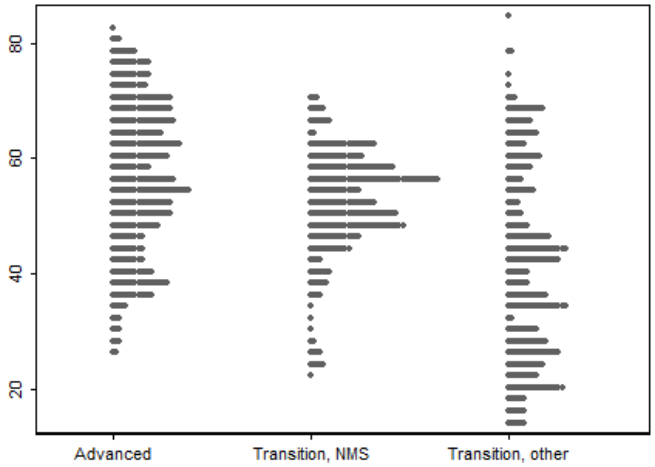
[6] We use IPUMS-I as source of data for Armenia, Belarus, Hungary and Romania (both also in years prior to the transition) as well as Slovenia.

[7] LSMS data were used for Albania, Azerbaijan, Bosnia, Bulgaria, Kyrgyzstan, Serbia and Tajikistan. For Bulgaria data from LSMS are coupled with the EU-LFS data.

Detailed data on employment history were collected, thus permitting computation of worker flows for a large sample of transition economies (see EBRD 2006, Sanfey and Teksoz 2006). For advanced market economies, data were obtained from the European Community Household Panel (ECHP), the European Union Labor Force Survey (EU-LFS) and ISSP data.[8]

In total, we were able to acquire more than 1600 datasets from 46 countries over the period 1970-2012. Table C.1 describes in detail the source of data and period for each of the analyzed countries. Of the acquired over 1600 data points (countries/source/years) about 900 are for transition countries and the remaining from a control group of Western Europe. We are utilizing the data starting from 1989, thus the final number of data points included in this study is 1544. Indeed, employment rates among women are dispersed in our collection of samples, with values ranging from about 20% to as much as 80%, see Figure 2. The discrepancies for the employment rates between data sources do not exceed 2 percentage points and are consistent with the range of discrepancies reported by International Labor Organization in the Key Labor Market Indicators database. Typically, employment rates for both genders are higher in the census data than in other surveys, which may suggest that active individuals are underrepresented in labor force or household budget surveys as well as other types of survey studies.

Figure 2: Employment rates in the collection of micro-data



Data source: please refer to Table C.1 for details.

Given differences in variables reported across 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. We extend this selection of variables to include information on the presence of children in the household who are below the age of entering into the compulsory educational system. The presence of children may affect ability to participate in the labor

[8]Data from Luxembourg Income Study comprise ECHP and EU-LFS, hence provide no additional data coverage.

market and the opportunity cost of employment for the primary care givers, usually women.

Following Ñopo (2008) and Huber et al. (2010), all continuous variables were recoded to categorical variables. This concerns age (age groups of five years were formed) and residence (multiple categories with different reference levels were universally recoded to urban/rural dummy). Also, when available, years of education were recoded to a categorical variable with three levels: tertiary or above, any secondary, and primary and below. This choice was dictated by data availability - more detailed categorization would not be feasible for some countries. Marital status takes two values: in a relationship and single, which also covers divorced and widow. Ñopo (2008) procedure allows exact matches only.

The outcome variable in this study is employment. This choice is motivated by both the question at hand and data constraints. In terms of the data, not all sources allow a clear delineation between unemployment and inactivity, whereas the delineation between employment and non-employment is definite. In terms of the research question, the high activity rate coupled with high unemployment is not likely to be a persistent economic equilibrium, with high employment rates being the ultimate objective for policies.

Our data does not cover all years for all countries. Thus, our results are even more prone to the bias stemming from composition of countries than analyses of the macroeconomic aggregates. We address this point in two ways. First, we explicitly analyze how our sample differs from macroeconomic aggregates in terms of time trends. This permits the reader to gain some intuition on the interpretation of our results. The conclusions from this exercise are rather reassuring, as general trends are reflected, although our data present substantially higher dispersion. Table A.1 reports analogous estimates for the macroeconomic aggregates from the OECD database and aggregates obtained on our collection of micro-datasets. Those time trends are presented on Figure A.1. The only difference appears to be that employment rates are increasing and slightly concave in the available aggregates for all countries, and they are increasing and slightly convex in the available collection of micro-data sets. Also Figure A.2 replicates the features of Figure 1. Second, we provide estimates with time, country and data source fixed effects, which to some extent alleviates the problem of uneven availability of micro-level data.

3.4 Empirical strategy

We analyze the change in the employment share across countries employing a variation of the shift-share decomposition. To this end we disaggregate the changes in the employment share to cohorts active prior to the transition and subsequent entrants, utilizing the the vast collection of micro-level data sets procured for this study. The main analysis focuses on the estimated adjusted employment gaps between men and women. First, we obtain the estimates of raw gender employment gaps for each of the 1544 data sets in our collection. We then employ Ñopo

(2008) decomposition to obtain estimates for the adjusted gender employment gaps for each of the countries, years and data sources available. These estimates are fully comparable, because all data sets have been standardized. For example, age was categorized in the same age groups, labor force definition is coherent, etc. Both the raw and adjusted gender employment gaps are thus expressed in "similar" terms.

Once we obtain the estimates of the adjusted gender wage gap, we utilize them as explained variables. We analyze time patterns of adjusted gender employment gaps in comparison to the raw gender employment gaps. Subsequently, we seek determinants of gender employment gaps and explicitly test for the specificity of the transition economies. To this end we collected macro-level aggregates capturing the opportunity cost of working and the opportunity cost of not-working. These variables include tertiary attainment among women, fertility rates, and access to institutionalized care. Testing for the specificity of the transition countries occurs via Chow-type test, i.e. we include an interaction term for a given proxy for opportunity cost of working and transition country dummy. We also provide quantile regression estimates.

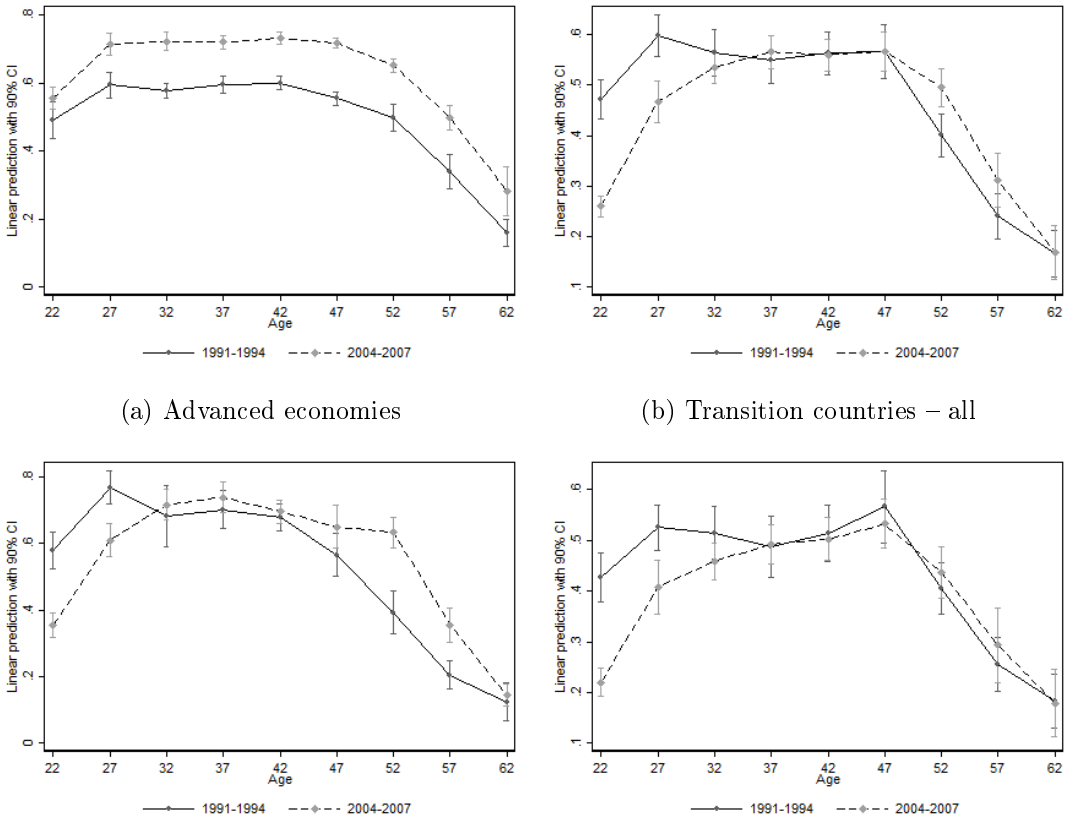
4 Results

4.1 Cohort explanation of the decrease in employment rates

Results for the advanced countries show that on average, employment of women increased for all age groups, whereas in the case of the transition countries the pattern is very different. Figure 3 depicts the marginal effects from regressing employment ratio age, across countries in two fairly distant time periods (we chose the time periods to maximize the country coverage). We look at employment rates to abstract from the dispersed legislation on maternity leaves and early retirement arrangements.[9] The results from advanced economies show that the improvement in women participation is visible throughout the age distribution, in particular, women tend to work for more years, as the decline in employment begins at a later age. Against this background, the evolution over time in the transition economies is strikingly different. First, younger cohorts experienced a decrease in employment ratios, particularly in the New Member States, which reflects two important trends: increased tertiary enrollment and labor market frictions at entry. Second, there is a an *increase* in the employment ratio of women over 40. Higher employment among older women in 2000s roughly balances the fall in employment among entrants (although not in all transition countries).

[9]Also, not all of the data would permit that. For example LiTs data do not permit separating inactivity during the working age from unemployment spell. Thus, we assume that if an individual returns to the labor force in the observational window, i.e. before 2006, non-employment is equivalent to unemployment. However, if non-employment is preceded by adolescence or followed by retirement, we consider these periods inactivity and use them to compute entries and exits.

Figure 3: Age patterns of female employment rate – selected cohorts



(a) Advanced economies

(b) Transition countries – all

(c) Transition countries – New Member States

(d) Transition countries – other

Notes: Figure shows the predictions along 5-year age groups from a regression of employment, with age group, country and data source fixed effects. We use all available data for subgroups of countries, but only in the described periods (1991-1994 for the earliest data and 2004-2007 for the latest data). Inverse frequency weights to account for multiple data sources for a given country in a given year.

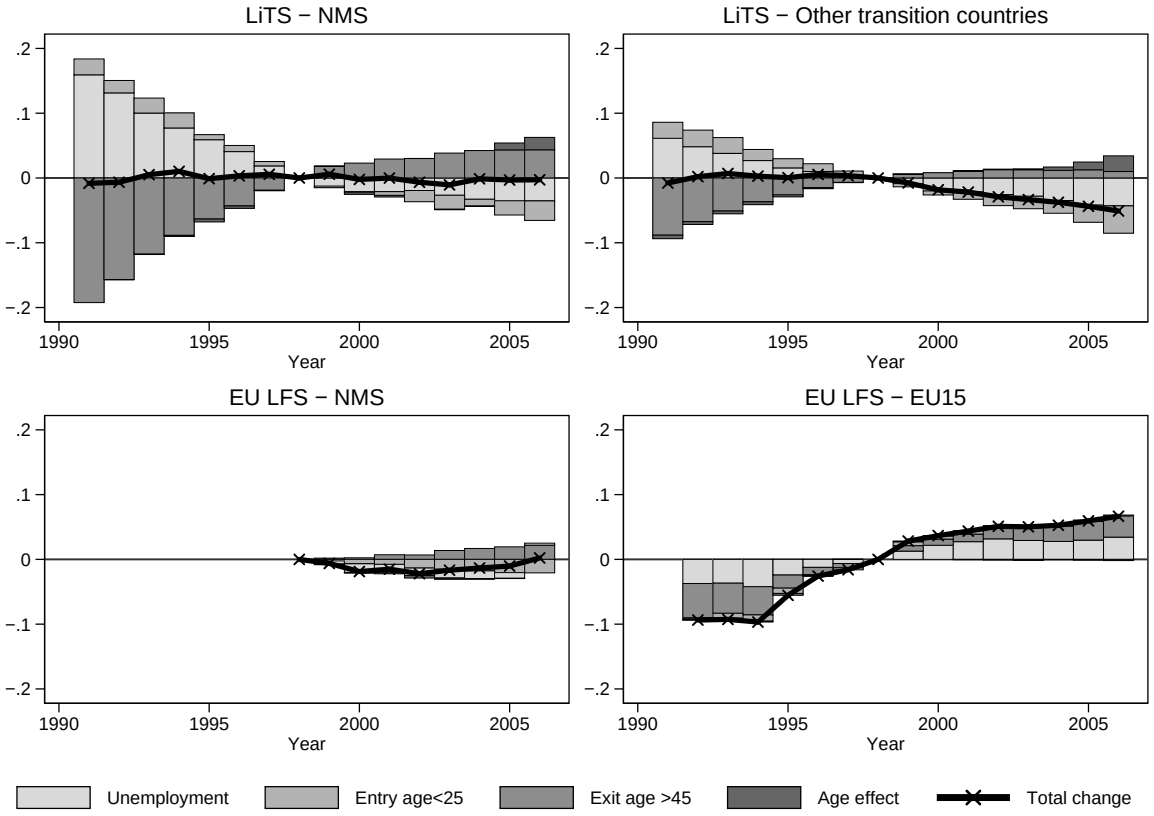
Using these insights, we perform also a shift-share analysis.[10] We divide observations for women into three age groups: under 25, between 25 and 45 and above 45. For these three groups we measure the labor market status in every observed year. We define as "entry" the change in the share of population under 25 years of age that has reported working. We define as "exit" the change in the share of population above 45 years of age that has reported inactivity. In both cases, a positive change corresponds to an increase in employment, see B. The results are robust to the selection of the threshold age values. While this computation can be done for each age group, we show the contribution of the changes in the age structure and the changes

[10] Details on the decomposition can be found in Appendix B. For the shift-share analysis one needs to explore the time series dimension of work force age structure. The observations about the structure need to be available at regular and fairly short intervals, with possibly similar sample selection mechanism. For example, ISSP data change the sample selection mechanism, while census data is available with low frequency. Thus, for this analysis we focus on the two data sources that satisfy the criteria: EU LFS and LiTS (EU LFS alone has little coverage of transition countries, particularly before 1998).

of the labor market status at the aggregate level for the sake of simplicity.[11]

Having identified the entries, exits and employment for each data set, we obtain composite measures for the transition countries and for the benchmark advanced economies. We anchor all values in 1998 and compute accrued contributions to the overall change between this anchor year and a respective period. In short, values represent the following difference $P(emp_t) - P(emp_{1998})$. As a result, changes before and after the anchor year should be mirror images if the patterns are constant. Results are reported in Figure 4.

Figure 4: Decomposition of changes in female employment rate



Notes: Figure shows changes in employment rate related to different components in transition and advanced economies by data source, with 1998 as a reference year, due to data availabilitysss. Data come from the Life in Transition Survey (LiTS) and from the EU Labor Force Survey (EU-LFS). Details of the decomposition in the Appendix B.

The results by and large confirm the initial conclusions from Figure 3. The decrease of employment rates in transition countries stems mostly from disproportional downward adjustments in Southern and Eastern European countries. Among New Member States the negative and the positive contributions roughly balance. Second, despite this difference, there appears to be a consistent pattern for NMS and other transition economies, at least in terms of the contributions

[11] Disaggregated results can be made available upon request.

of different elements: an increase in the employment ratio of older women, particularly in NMS prevented an otherwise larger fall in the female employment. The negative values for the youngest cohorts over the second half of the sample (positive before 1998) show that entry became more difficult. The changes in the magnitude of contributions around 2000 is not an artifact of anchoring processes in 1998. In fact, whatever the base year, the changes in tendencies are revealed around that year in transition countries. This was a period of relatively bad economic conditions in many of the analyzed countries (i.e. aftermath of the Russian crisis and own currency crises in some of these countries, the burst of the dot.com bubble and global economic slow down in general). This interesting pattern may stem from two sources: structural adjustment necessitated by global trends have had opposite effects on position of women in the labor markets than the change of the economic system and/or initial adjustment was excessive, with recovery from the second slowdown initiating the reversal of this "overshooting".

The role of labor market frictions – in addition to the educational boom – is exhibited by the contributions of non-employment. In almost every year, a part of the decrease in the employment rate was due to non-employment at the age between 25 and 45. However, when compared to changes at the extensive margin (entries and exits), the contribution of non-employment appears to be of lesser importance. This observation provides additional support to the results of regressions reported in Table A.2. The conclusions from LiTs are qualitatively confirmed by EU LFS data, though the scope of changes revealed by the former is substantially smaller.

The patterns observed in transition countries are generally opposite of what can be observed in EU15. In fact, it was the improvement in the labor market conditions towards the late 1990s and the accompanying reduction in unemployment which drove the increase in the female employment ratios across Western Europe. In transition countries, changes in unemployment were indeed responsible for a share of the fall in female employment ratios, but only *after 1995*. In advanced economies the opposite holds. The contributions of increased intensity of entries among younger cohorts has a small but positive impact. Gradually also exit rates dropped, raising the employment in older age groups. Thus, it is the combination of a higher entry rates, reduction in unemployment and longer labor market activity that explains the observed substantial increase in the employment rates in advanced economies.

The tendencies displayed by Figure 4 suggests that most of the adjustment in the employment rates was done during the first years of transition, at least in the case of labor market exit. One could argue that after the first convulse years, a new equilibrium was reached and only smaller changes ensued, with only a gradual recovery among the older cohorts. While this is plausible, there are other possible interpretations. The coincidence of the change in magnitudes in the period of economic turmoil of late 1990s and early 2000s suggests that the early movements towards retirement and the delayed entry might have been more a reaction towards unfavorable

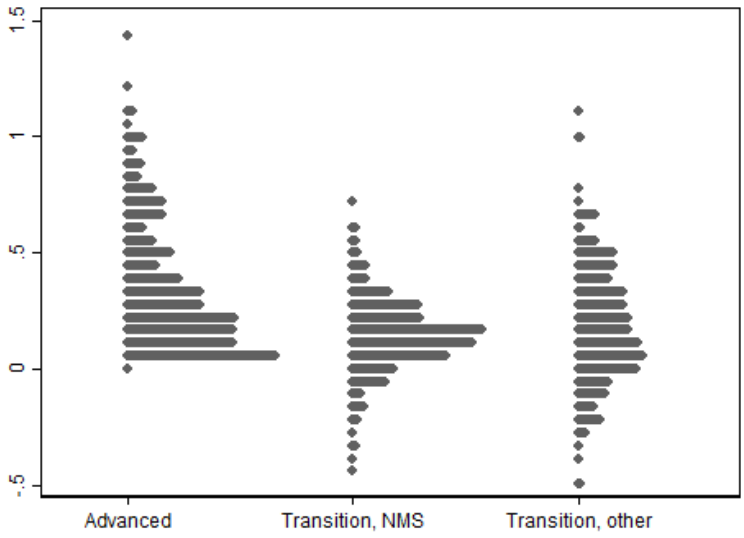
conditions in the labor market than a true expression of women's preferences. These multiple interpretations of the decomposition emphasize the need of a comparative analysis to isolate the two effects: the revelation of preferences and the changes in the labor market conditions. We proceed to this analysis in the following sections.

4.2 Decomposition of gender employment gaps

We first obtain the estimates of adjusted gender employment gap using the collection of 1544 micro-level data sets for transition and advanced economies. We then utilize these estimates as explained variable, providing insights into time patterns and relationship between gender employment gap and the proxies of opportunity cost of employment.

Figure 5 reports a remarkable dispersion of the adjusted gender employment gaps. As evidenced by Figure 2 employment rates are lower in the transition countries, but the equality of employment between men and women is higher in these countries, relative to the advanced economies. After adjusting for individual characteristics, this greater equality becomes even more pronounced. Remarkable dispersion of the adjusted gender employment gaps is a phenomenon suggesting there is clear role for the institutional factors. Indeed, about 70% of the variation in the adjusted gender employment gaps is cross-sectional.

Figure 5: Adjusted gender employment gaps



Notes: distribution of adjusted gender employment gaps. Displayed are unweighted averages over data sources for each available country and year.

Inspecting data by source reveals that the strength of the correlation between raw and adjusted gender employment gaps depends to some extent on a data source. For example, in the case of standardized labor force surveys, variation in raw employment gaps explains nearly 100% variation in adjusted employment gaps, but in LiTS this indicator falls to 85%. To

control for this within country and year dispersion of estimates we include source fixed effects in all estimations. However, this may be insufficient if for a given year and country there is only one data source. To mitigate this problem, we estimate all models with inverse frequency weights, which utilize all available data but give equal weight to each available country and year, regardless of the number of available data sources. This is our preferred specification. In order to test the robustness of the findings, we also provide estimations with alternative weighting schemes. These additional specifications are reported in Appendix E.

4.3 Time trends in adjusted gender employment gaps

As evidenced already in Table A.1, trends in employment rates differed between transition and advanced economies. However, the two groups of countries also experienced different developments for education (gradual increase in advanced economies and educational boom in 1990s in transition economies) as well as fertility (gradual decrease in fertility in advanced economies and downward adjustment condensed in much shorter time in transition countries). These differences could affect the time trends in adjusted gender employment gaps. The year of transition is defined by the EBRD timing, for example it is 1989 in the case of Poland and 1991 in the case of Kyrgyzstan. The year of transition is set to 1945 for advanced economies (and 1974 for Spain). To avoid discretionary choices on the timing of transition, we also estimate time patterns in terms of calendar years. In Table 1 we report a formal analysis of these time patterns.

Transition economies had substantially lower gaps at the beginning of the analyzed period (i.e. negative estimate on transition country dummy in random effects specifications). Introducing sample year as a measure of time may be crude, both econometrically and interpretationally. To test the robustness of the time pattern to how time is measured, we include two more specifications. In column (3) and (4) we report results for estimations where the measure of time is given by years since transition. In the case of advanced economies, this indicator measures time since 1945; whereas for transition countries, the indicator takes the value of 0 at the year of transition and increases since. The results remain unaffected. While adjusted gaps in advanced economies display a negative sloping trend (which reflects the higher participation of women), the estimates for transition economies follow a more complex pattern that resembles an inverse U-shape, consult Figure D.1 in the Appendix for visualization of the time trends. Similar conclusions emerge from specifications with country fixed effects: the time pattern for transition economies is a little steeper, but the difference is not economically large.

Table 1: Adjusted gender employment gap - time patterns

	Calendar years		Years from transition	
	(1)	(2)	(3)	(4)
Transition country	-0.6100***		-0.1859***	
	(0.0708)		(0.0597)	
Time	-0.0322***	-0.0240***	0.0144***	-0.0281***
	(0.0092)	(0.0039)	(0.0031)	(0.0029)
x transition country	0.0525***	0.0375***	-0.0013	0.0383***
	(0.0103)	(0.0047)	(0.0048)	(0.0035)
$Time^2$	0.0004	0.0002	-0.0003***	0.0001***
	(0.0003)	(0.0001)	(0.0000)	(0.0000)
x transition country	-0.0012***	-0.0007***	-0.0003*	-0.0005***
	(0.0004)	(0.0002)	(0.0002)	(0.0001)
Constant	1.0595***	0.4504***	0.6965***	0.8013***
	(0.1060)	(0.0349)	(0.1007)	(0.0444)
Country F.E.	No	Yes	No	Yes
Observations	1,544	1,544	1,544	1,544
R-squared	0.184	0.758	0.155	0.760

Notes: Estimates of adjusted gender employment gap from Ñopo (2008) as a dependent variable. Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. Specifications with alternative weights in Table E.1 and E.2 in the Appendix. Data source fixed effects included.
Transition country dummy defined to comprise Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Ukraine and Uzbekistan.

These results corroborate the findings of the cohort decomposition analysis reported in Figure 4. The time patterns in adjusted employment gaps between men and women reflect diverging trends, in parallel to the employment rates. The estimated coefficients reveal a consistently decreasing trend for the advanced countries and a mild inverted U-shape for the transition economies (see Figure D.1), independently of the measure of time used. This evidence on time patterns for the adjusted gender employment gaps suggests that the divergence in employment rates is not a phenomenon of the underlying fundamentals (demographics and possibly educational attainment); it is rather a consequence of changes in the relative position of women in the labor market. We proceed to analyze correlates of these changes in the reminder of our empirical analysis.

4.4 Correlates of adjusted gender employment gap

The estimation of the gender employment gap comprises among others, controls for education and presence of children in the household. Thus, at individual level, a gap is identified only if among men and women with identical characteristics are characterized by different employment rate. We correlate the estimates of adjusted gaps with country level measures, which may be indicative of how individual characteristics *translate* to barriers and incentives in the context of a given country in a given year. The estimations are run with country, time and data source fixed effects.

We provide two types of specifications. First, we obtain gender employment gaps for total population. We address our main research question by the means of a Chow test and unconditional quantile regression. These estimates are provided in Table 2. We find that lower *levels* of (adjusted) gender employment gaps are associated with lower (absolute) correlation between the opportunity costs of employment and employment equality. However, that effect may be a consequence of specific features of the transition process and thus transition counties. Hence, we provide also a second type of specifications, where we inquire if and to what extent the gender employment gaps in transition countries alone are different between the cohorts active already prior to the transition and younger ones. We present these estimates in Table 3.

Estimations in Table 2 demonstrate remarkable consistency. All variables that proxy for the opportunity cost of working (related to child care facilities) and opportunity cost of not working (related to the human capital and labor productivity) prove to be significant, even after accounting for year, country and data source fixed effects. Coefficients have expected signs – more tertiary education and higher educational attainment of women are associated with lower adjusted gender employment gaps. The same holds for the overall employment rate among women and GDP per capita, which means that, in general, gains from more inclusive labor markets and higher labor productivity make the employment more equal across genders. [12] However, in all cases the sign for the interaction between a given proxy for the opportunity costs and a dummy for transition countries has the opposite sign. We test formally whether general coefficients and transition interactions are equal in absolute values. While all factors raising the opportunity cost of working are related to lower adjusted gender employment gap, the relation is significant mostly in advanced economies. In transition economies, the interaction term effectively "cancels out" the correlation in the case of human capital variables and reduces in half the "good will" effect associated with higher female employment rates.

Although in full sample higher labor force participation of women is associated with a decrease in adjusted gender employment gaps – sort of a "goodwill effect" – it is substantially less so in transition economies. There were two possible explanations on why employment

[12] In the Appendix E we show the analogous specifications with alternative weights.

rates among women dropped in transition economies: i. labor supply prior to transition was excessive relative to preferences (coerced by the central planning and work order system); ii. entry barriers were lower prior to the transition (due to the work order system) along with lower opportunity cost of employment. Our results indicate that although returns to human capital reduce adjusted gender employment gaps, it is not so in transition countries. Although with higher opportunity cost of employment (lower access to child care facilities), adjusted gender employment gaps increase, in transition countries these gaps cannot be explained by higher opportunity cost of not working (i.e. returns to tertiary education), while for the labor productivity the effect is actually negative, i.e. gender employment gaps increase with labor productivity in transition countries.

In the second stage of our analysis, we apply the same technique (Ñopo 2008), but for two separate subsamples in each database. The first subsample consists of individuals for whom labor market activity has commenced prior to the beginning of economic transition. The second subsample consist of individuals, who entered the labor market after the onset of transition. The year of transition is defined by the EBRD timing, for example it is 1989 in the case of Poland and 1991 in the case of Kyrgyzstan. Results from Table 3 reveal strikingly different conditions for cohorts entering labor market after the onset of transition, relative to older generations. Younger cohorts face much higher adjusted gender employment gaps. This result is robust to inclusion of various controls. While with this method we should not argue that the discontinuity occurred exactly at the entry of transition (the coefficient is a difference in averages between the two groups of cohorts, estimating an explicit discontinuity is impossible in our setting), there is a clear discrepancy in the adjusted employment gaps for women active prior to the transition and younger labor market entrants. Although interpretation of cross-sectional coefficients would be likely plagued by endogeneity, the reported values correspond to differences-in-differences: we exploit the cross-sectional variation in how the estimates of adjusted gender wage gap differ between post-transition and pre-transition cohorts.

The results form the bottom part of Table 3 confirm that the relationship between opportunity cost of working and not-working is non-monotonous with respect to the value of the gender employment gap. For countries with more gender equality, the difference between older and younger cohorts is negligible is typically insignificant. Moreover, congestion by educated men – proxied by the share of educated labor force – becomes insignificant as the gender employment gap grows. By contrast, opportunity cost of working – proxied by the share of educated women and share of women in the labor force – is associated stronger with the gender employment gap, as the latter is higher. The same holds for the opportunity cost of working, proxied by the share of households with small children. In fact, the estimated average coefficients seem to be closer to the ones obtained at the 3rd quartile than the median of the GEG distribution, i.e. a linear model overstates the strength of the relationship between GEG and country-level correlates.

Table 2: Adjusted gender employment gap and opportunity cost of working

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Access to early childhood facilities	% of children in kindergartens	Employment rate of women
	linear estimates with interaction							
coefficient		-0.26***	-0.69***	-0.88***	0.18*			-1.53***
		(0.04)	(0.10)	(0.13)	(0.11)			(0.08)
x transition		0.41***	0.76***	0.98***	-0.12	-0.56*	-0.18**	0.77***
		(0.03)	(0.15)	(0.15)	(0.16)	(0.29)	(0.09)	(0.10)
constant	0.35***	0.43***	0.40***	0.49***	0.27***	0.39***	0.31***	1.03***
	(0.12)	(0.05)	(0.12)	(0.13)	(0.11)	(0.06)	(0.07)	(0.11)
R-squared	0.71	0.78	0.72	0.72	0.77	0.82	0.83	0.80
Wald test (p-value)		0.00	0.54	0.31	0.55			0.00
coefficient at	quantile estimates							
25^{th} pctile		0.01	-0.09	-0.19**	0.19***	-0.33	-0.19*	-0.49***
		(0.04)	(0.08)	(0.08)	(0.04)	(0.51)	(0.10)	(0.08)
50^{th} pctile		0.24***	-0.19*	-0.52***	0.35***	-1.22***	-0.46***	-0.81***
		(0.04)	(0.11)	(0.11)	(0.07)	(0.45)	(0.11)	(0.10)
75^{th} pctile		0.35***	-1.16***	-0.83***	0.61**	0.42	-0.04	-1.57***
		(0.08)	(0.19)	(0.22)	(0.25)	(0.40)	(0.10)	(0.18)
no. of observations	1,544	1,441	1,544	1,544	931	424	441	1,544

Notes: Estimates of adjusted gender employment gap from Ñopo (2008) as dependent variable. Robust standard errors presented in parentheses. Estimates come from a regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. Specifications with alternative weights reported in Table E.3 and E.5 in the Appendix.

Differences in the number of observations across specifications stem from the availability of data on control variables.

Information on GDP per capita comes from World Development Indicators, World Bank, and on the share of children in early childhood care facilities and in kindergartens - from TransMonEE database, UNICEF. Remaining explanatory variables come from own estimation on available micro-level datasets.

Transition country dummy as in Table 1. Wald test serves to examine whether the sum of variable coefficient and coefficient of its interaction with transition country dummy is significantly different from zero.

Table 3: Adjusted gender employment gap - cohort effects in transition countries

	(1)	(2)	(3)	(4)	(5)	(6)
		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Employment rate of women
	linear estimates for transition countries					
Working bef. transition (dummy)		-0.03**	-0.03*	-0.03**	-0.10***	0.01
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient			0.01	-0.04	0.77***	-0.62***
			(0.11)	(0.06)	(0.12)	(0.07)
Constant		0.30**	0.30*	0.32**	0.30*	0.56***
		(0.15)	(0.15)	(0.16)	(0.18)	(0.15)
R-squared		0.47	0.47	0.48	0.50	0.50
	quantile estimates					
25^{th}						
Working bef. transition (dummy)		-0.00	0.01	0.01	0.01***	0.05***
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.01	0.24**	-0.25***	0.43***	-0.28***
		(0.05)	(0.10)	(0.07)	(0.07)	(0.06)
50^{th}						
Working bef. transition (dummy)		-0.05***	-0.04***	-0.04***	0.07***	0.01
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.12***	0.33***	-0.33***	0.51***	-0.41***
		(0.04)	(0.10)	(0.07)	(0.09)	(0.06)
75^{th}						
Working bef. transition (dummy)		-0.07***	-0.04*	-0.08***	0.10***	-0.01
		(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
Coefficient		0.28***	-0.14	-0.50**	0.87***	-0.65***
		(0.09)	(0.18)	(0.13)	(0.18)	(0.11)
Observations		1,570	1,761	1,761	1,390	1,761

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). For given country, year, and source we have two estimates: one for women that were above the age of 25 before transition, and one for the remaining women. Robust standard errors presented in parentheses. Estimates come from a regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. Specifications with alternative weights reported in Table E.4 and E.6 in the Appendix.

4.5 Discussion

Using novel collection of datasets we demonstrate that at the beginning of 1990's, adjusted gender employment gaps were generally higher in Western and Southern European economies than in Central and Eastern Europe. However, with the progress of transition, diverging trends emerged: relative to the transition countries, inequality progressed in "old" EU Member States. We thus sought the determinants of this divergence in changes of opportunity cost of employment. These opportunity costs might have presented different patterns in developed and transition economies, or they could present a different relation to gender employment gaps. Indeed, the latter seems to be the case. The typical proxies for opportunity costs of working and not-working prove to operate with much less strength in transition countries.

One would be tempted to argue that these effects were driven by young women who suffered higher barriers in access to jobs due to harsh labor market conditions, especially in early transition. This hypothesis cannot be completely disregarded, as for cohorts which entered labor market after the transiton has started, estimates of the adjusted employment gaps are higher and this effect is relatively large. Data reveal that the majority of adjustment in employment rates comes from less intensive entry by young cohorts. A possible explanation is that observing the unemployment spikes, women – particularly younger cohorts – have refrained from entering labor market and continued with education. This explanation, however, implies that young women in transition countries systematically interpret unemployment differently than young men. While not impossible, such explanation would entail a large scope for irrationality.

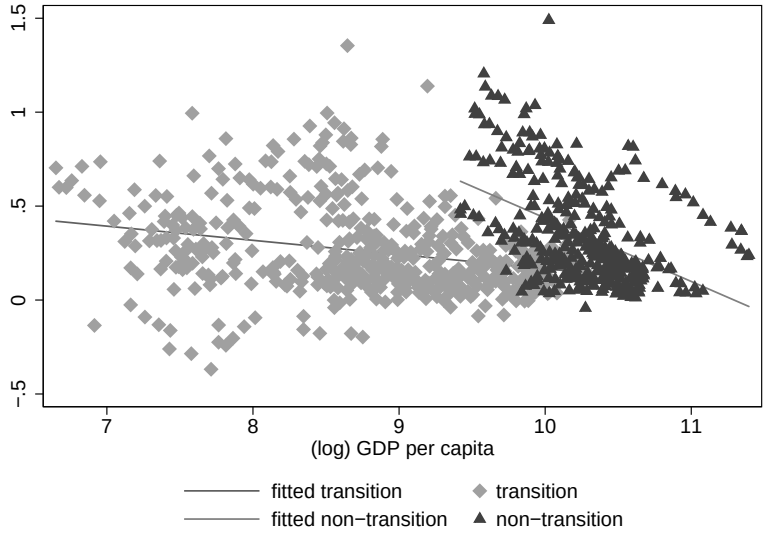
Older women continue to be active, particularly after the initial transition turmoil has passed, which resulted in lower gender employment gaps relative to the cohorts that joined the labor market after the change from centrally planned to market-based economic system. We interpret our findings as evidence that "coerced" high employment rates during the period of central planning did translate to forming a persistent habit, but this habit was not transmitted intergenerationally, partly due to changes in educational aspirations and partly due to a changing access to caring facilities.[13]

Relatively weaker correlation between employment equality and labor market institutions which aim at reducing the opportunity cost of working are not surprising for countries with relatively low gender inequality in employment. Indeed, analyzing specific cases of policy reform, many studies find zero or negligible effects: Lundin et al. (2008) for Sweden, Havnes and Mogstad (2011) for Norway and Givord and Marbot (2015) for France. Clearly, the literature reports also significant effects of reducing the opportunity cost of working in countries such as Canad or the US, but they seem to operate most strongly through single mothers (Gelbach 2002, Baker et al. 2008). Also, while differences between transition countries and Western European

[13]The main instruments for "coercing" high employment were work orders, but admittedly, access to caring facilities as well as employment security could have played an important role.

economies are striking and robust, one should note that our conclusions are consistent with earlier literature, notably Boserup (1970), Goldin (1995), Mammen and Paxson (2000), Eastin and Prakash (2013). In fact, when advanced economies were at the same level of economic development, their labor markets were characterized by high adjusted gender employment gaps, see Figure 6. Although with economic development there seems to be a convergence towards substantially lower levels of adjusted gender employment gaps, the speed of convergence is highly heterogeneous across countries. As demonstrated by the estimates of the opportunity cost of employment – it might not occur fully.

Figure 6: Adjusted gender employment vs. (log) GDP per capita



Even though our results are consistent and robust, some caveats require further discussion. First, we employ estimates from various sources of differing quality. While the inclusion of source and country fixed effects should attenuate any problem, one could still wonder if relatively large availability of lower quality data such as the ISSP undermines the validity of all findings. Yet, a large number of studies has offered estimates and conclusions based on such sources.[14] Finally, there is not a single country for which ISSP is the only data source.

Second, the weighting scheme employed accounts for the multiplicity of data sources for a given country in a given year, but it does not allow to control for the size of the country. Consequently, in our estimations, a change in gender employment gap of one percentage point in Estonia is equivalent to an equal relative change in Romania, Poland or Russia. However, this paper seeks patterns at a country level. Both the hypotheses and the testable predictions based on theoretical insights refer to the relationship to be explored in a cross-sectional dimension,

[14] Following Filer and Hanousek (2002) we identify Orazem and Vodopivec (1997), Filer et al. (1999), Lubyova and Van Ours (1999), Ham et al. (1999), Earnhart (2000), Filer and Munich (2000), Jurajda (2001) and subsequently also Flabbi et al. (2008), Zweimüller et al. (2008), Veraschagina (2012). In addition, there are several publications by Blau and Kahn (1992, 1996, 2003).

rather than individual level. Moreover, our measures of gender employment gaps are obtained at country level. Thus, such weighting scheme is a feature rather than a weakness of our study. Notwithstanding, our results should not be treated as informative with relation to how much the adjusted gaps in employment have increased on average for women subsequent the transition.

Third, one could argue that in the interest of data coverage there were excessive compromises concerning the coding of variables, making the characteristics too broadly defined, which would result in unreliable estimation of the adjusted employment gaps. To address this point we recall some of the features of the nonparametric decomposition method developed by Ñopo (2008). This method has been shown to present superior properties relative to parametric estimators particularly in cases where covariates are too few or too broadly defined (Goraus et al. 2015). Second, even if there is an upward bias on the estimates, there is no reason for it to differ systematically across transition and advanced economies, nor across cohort. Thus, we believe the potential bias in our key estimates is limited. As a further robustness test, in appendix Tables E.7 to E.10, we show that the results for matched and non-matched women and for the unadjusted gender employment gaps are similar to those presented in Tables 2 and 3.

5 Conclusions

Gender wage differentials have attracted considerable attention of researchers from around the world, whereas analyses devoted to gender gaps in access to jobs have lagged behind. We identified only a handful of articles, while comparative studies are rare. Indeed, such analyses require micro-data sets, which are relatively hard to acquire and of diverse quality. Our paper exploits a rich collection of over 1500 micro data sets for transition and advanced economies to provide insights on effective methods of reducing the apparent gender-specific barriers in employment. Estimates of the adjusted gender gap in employment suggest a gradual decreasing trend for the advanced European economies and an opposite trend in transition countries. Initial adjusted gaps were much smaller in transition countries, though. We seek to explain these patterns as well as changes in the dispersion of these estimates. We frame our analysis in the context of opportunity cost of working and not working, both of which are related to prior human capital investment as well as caring functions (still provided more frequently by women).

Our approach was motivated by theoretical and empirical insights. Under central planning, high employment rates were promoted by the political system, school-to-work transition was automatic and usually well matched to education. Indeed, employment rates among women were on average much higher in centrally planned economies than contemporaneously in advanced European economies. Thus, either preference for leisure was substantially lower in transition economies, or employment among women was pushed above preferred level by the institutional

arrangements. Should the latter hold, a transition into a market system could be expected to result in high exit rates among all working cohorts (back to their preferred levels), reduced entry rates for young cohorts (due to matching frictions), and an increasing gender employment gaps. These trends would be opposite to those experienced by the advanced European economies.

Not all of these expectations find support in data. Having computed gender employment gaps adjusted for individual characteristics for 46 countries over nearly 3 decades we analyze their correlates (accounting for country specificity). We provide important and novel conclusions. First, it appears that instruments facilitating the combination of family and professional life work only up to a point. We find significant correlations between proxies of the opportunity cost of working and not working for advanced economies, but the transition countries are characterized by virtually zero correlations. This is not a feature of the transition countries *per se*, however. Namely, quantile regressions reveal that the correlations decrease in size of the estimated gender employment gap. Second, we find that that gender employment gaps in transition countries are higher for the cohorts which entered labor market after central planning. We interpret this as evidence that work orders and other institutional arrangements (admittedly forcefully) facilitating school to work transition might have made it easier for women to be more at par with men in terms of employment. Once these arrangements were abandoned with the onset of market economy, gender employment gaps in transition countries are higher.

The policy implications of our findings are the following. Results show important role for educational aspirations and demographics, as well as access to child care facilities. Thus, it could be suggestive that policies lowering the opportunity cost of working and increasing the opportunity cost of not working (i.e. investment in human capital) are effective in reducing adjusted gender employment gaps. However, the experience of the transition countries adds some caveats on this matter and provides valuable insights. First, *coerced* labor supply from women close to par with men, as was the case of many transition countries, has proven to be effective over long run, i.e. there seems to be some room for habit formation. This hints that instruments facilitating school-to-work transition may have particular relevance for gender employment equality. Second, as gender employment inequality, adjusted for individual characteristics, becomes relatively low, the instruments lowering the opportunity costs of working become less effective – the correlations are lower in absolute terms between the proxies of opportunity costs of working and the adjusted gender employment gaps. Thus, policies lowering costs of working and increasing the costs of not working by themselves may not be sufficiently effective.

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A Descriptives

Table A.1: Employment rate of women – time trends in OECD data and our collection of micro-datasets

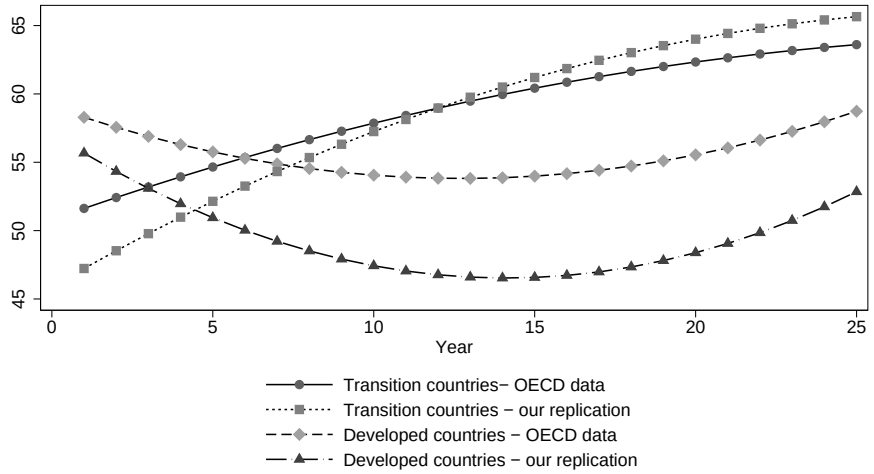
	A: OECD data		B: aggregates from micro-data	
Time trends	Advanced	Transition	Advanced	Transition
Time	0.83***	-0.83***	1.37***	-1.50***
	(0.10)	(0.12)	(0.17)	(0.13)
Time squared	-0.01***	0.03***	-0.02***	0.05***
	(0.00)	(0.00)	(0.01)	(0.00)
Constant	50.80***	59.09***	45.89***	57.12***
	(0.55)	(0.86)	(1.05)	(3.51)
R^2	0.56	0.30	0.82	0.74
Number of countries	16	13	16	16
Observations	395	234	624	597

Note: Panel regression robust estimator with country fixed effects. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Data from OECD in panel A of Table A.1. Transition countries include: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, Slovakia, Slovenia. Advanced: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

Our collection of micro-data utilized to obtain aggregates in panel B, with weights corresponding to the inverse of the number of available data sources for a given year and country. Advanced: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom. Transition: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Russia, Slovakia, Slovenia.

Figure A.1: Time trend shapes – estimates from Table A.1



Note: Horizontal axis depicts time (in years), vertical axis measures the fitted shape of the time pattern in employment rates of women.

Table A.2: Employment rate of women and overall unemployment rate

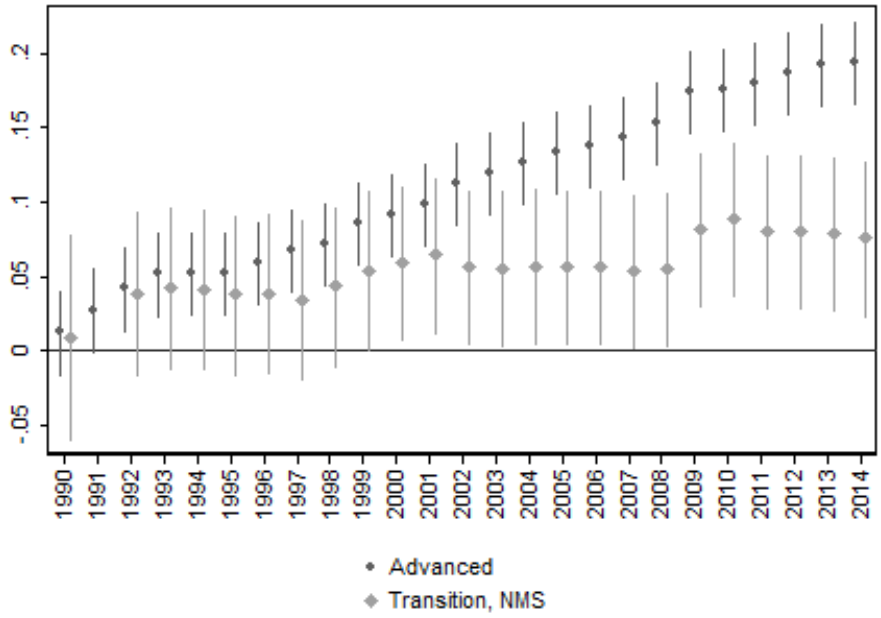
Employment rate of women (standardized)	ILO	OECD	EUROSTAT
Unemployment rate (standardized)	-0.5760***	-0.5684***	-0.4774***
	(0.0550)	(0.0304)	(0.0428)
Transition country dummy	0.3316**	0.0689	-0.1694**
	(0.1513)	(0.0746)	(0.0715)
x unemployment rate	0.3798**	0.2293***	0.2139***
	(0.1883)	(0.0569)	(0.0686)
Constant	-0.1591***	-0.0365	0.0584
	(0.0466)	(0.0257)	(0.0432)
No of observations	515	1,338	632
R^2	0.266	0.310	0.250

Note: Unemployment rate and employment rates standardized within sample, panel regression robust estimator with time fixed effects. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

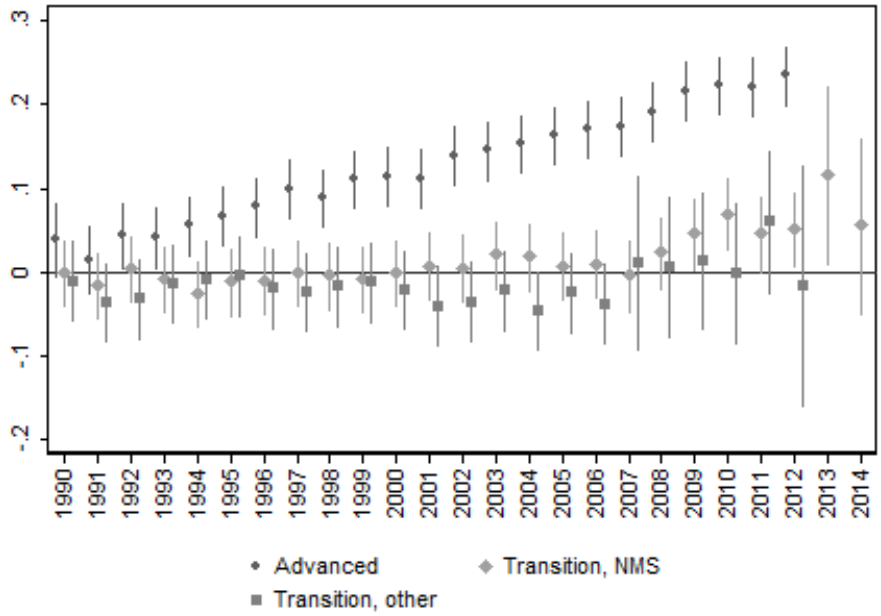
Sample for ILO data comprises all member states, some time series date back to 1970s. Sample for OECD comprises all EU Member States and associated countries, with some time series dating back to 1960s. EUROSTAT comprises current EU member states. Data for EU15 used as of 1989.

Transition dummy defined to include Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine.

Figure A.2: Replication of time effects estimates for employment rates – ratio of employment rates (women to men)



(a) OECD aggregates



(b) aggregation from our collection of micro-data

Data source: OECD, please refer to Table A.1 for details on OECD data coverage and to Table C.1 for micro-level data collected in this paper. *Note:* estimates show the coefficients on time effects, thus actual values need not be similar.

B Decomposing changes in employment for women

We can start by noticing that we can write the employment rate in two alternative forms:

$$P(emp) = \sum_{a=1}^{3} P_t(Age = a) * P(emp_t|_{Age=a}) \quad \text{(B.1)}$$

$$P(emp_t) = 1 - (P(I_t) + P(U_t) + P(S_t) + P(R_t)) \quad \text{(B.2)}$$

where U stands for unemployment, I inactivity, S for schooling and R for retirement. Equation (B.1) states that the probability of being employed equals the weighted average of the conditional probabilities of being employed over age groups. Equation (B.1) states that the probability of being employed can be defined by exclusion, as the difference between 1 and the probability of having another labor market status. Clearly, equation (B.1) also characterizes the conditional probabilities from equation (B.2).

Define the difference in the employment probability between two periods as:

$$\begin{aligned} P(emp_t) - P(emp_{t-1}) &= \sum_{a=1}^{3} P_t(Age = a) * P(emp_t|_{Age=a}) \\ &\quad - \sum_{a=1}^{3} P_{t-1}(Age = a) * P(emp_{t-1}|_{Age=a}) \end{aligned} \quad \text{(B.3)}$$

Hence, a counterfactual term $\sum_{a=1} P_t(Age = a) * P(emp_{t-1}|_{Age=a})$ indicates what would have been the employment probability in period t if the conditional probabilities remained constant over time. Alternatively, it can be interpreted as the employment probability that would have prevailed in period $t-1$ if the age structure was the same as in t. Plugging the counterfactuals to we obtain:

$$\begin{aligned} \Delta P(emp) &= \sum_{a=1}^{3} P_t(Age = a) * P(emp_t|_{Age=a}) - \sum_{a=1}^{3} P_t(Age = a) * P(emp_{t-1}|_{Age=a}) \\ &+ \sum_{a=1}^{3} P_t(Age = a) * P(emp_{t-1}|_{Age=a}) - \sum_{a=1}^{3} P_{t-1}(Age = a) * P(emp_{t-1}|_{Age=a}) \end{aligned}$$

After rearranging to obtain a more succinct version of the same equation:

$$\begin{aligned} \Delta P(emp) &= \sum_{a=1}^{3} P_t(Age = a) * (P(emp_t|_{Age=a}) - P(emp_{t-1}|_{Age=a})) \\ &+ (\sum_{a=1}^{3} (P_t(Age = a) - P_{t-1}(Age = a)) * P(emp_{t-1}|_{Age=a})) \end{aligned} \quad \text{(B.4)}$$

The first term indicates the part of the changes in the employment probability that results from changes in the probabilities within the subgroups, keeping the age structure constant; while in the second term we keep the conditional probabilities constant, thus indicating the part of the change in the employment probability that arises as a result of changes in the age composition of the workforce. Of course, we can take the decomposition one step further and study what is behind the changes in the conditional employment probabilities from the first term.

$$\rightarrow \quad \sum_{a=1}^{3} P_t(Age = a) * (E[emp_t|_{Age=a}] - E[emp_{t-1}|_{Age=a}]) \tag{B.5}$$

$$= \quad \sum_{a=1}^{3} P_t(Age = a) * (\Delta P(I|_{Age=a}) + \Delta P(U|_{Age=a}) + \Delta P(S|_{Age=a}) + \Delta P(R|_{Age=a})) * (-1)$$

In this expression, each of the terms has a simple interpretation. For example, the term $P_t(Age = 1) * \Delta P(S|_{Age=a}) * (-1)$ indicates the part of the change in the employment probability that can be attributed to changes in schooling patterns in the youngest age group. A positive value, for example, suggests that less people were pursuing education in the period $t + 1$, which, *ceteris paribus* should lead to an increase in the employment probability. Alternatively, we could aggregate the changes over all age groups to obtain, for instance, the changes in the employment probabilities that resulted from changes in the probability of being inactive: $\sum_{a=1}^{3} P_t(Age = a) * (\Delta P(I|_{Age=a})$.

In the decompositions, we define 3 age groups: those in early stages of their career (younger than 25), individuals in the prime age (25 to 45 years old), and older workers (between 45 and 60 years old). Similarly, we define three different labor force status: employed (including self-employed), unemployed and inactive. The distinction between the later two follows the ILO conventions. Yet, this does not imply that all spells of non-working are alike. Those corresponding to the youngest group are more likely to be transitory and reflect schooling decisions, while amongst the oldest age group might be related to early retirement patterns. Following the notation, this means that we only observe changes in schooling for the youth and in retirement for the elderly. Finally, for the graphical presentation in Figure 4, we counted changes in inactivity in the middle age group as a part of the unemployment changes.

C Data sources

While data sources used in this study vary by characteristics, all of the utilized variables have been recoded to convey the same meaning. Thus, although some sources comprise more detailed information (e.g. many levels of educational attainment) we followed the availability in the largest number of available sets in coding the data. Table C.1 reports the availability of data sources for countries and years.

National Labor Force Surveys and EU LFS. National labor force surveys have been collected from the statistical offices of these countries. In addition, we utilize EU LFS, i.e. a data set compiled by the Eurostat on the basis of Member States LFS. As evidenced by Stanley and Jarrell (1998), studies based on LFS-type of data are characterized by lower publication bias for a gender wage gap (a topic related to ours). Some of the country LFS data sets did not contain 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. These data sets could not be used.

Life in Transition Survey. A recent alternative source collected by the European Bank for Reconstruction and Development. This is a retrospective study administered in 2006 in 29 transition economies. Detailed data on employment history were collected, thus permitting computation of worker flows for a large sample of transition economies (see EBRD 2006, Sanfey and Teksoz 2006).

Census data. Integrated Public Use Microdata Series International project at the University of Minnesota aims to collect data such as census for many countries of the year and make it available for research in possibly standardized form. Currently it comprises data for abut 63 countries from roughly 200 censuses. While these are large population data sets, they rarely comprise information about income and actually none of the transition countries available in IPUMS-I has posed income questions in their censuses. Nonetheless, this data is rich in information about household structure, thus permitting high quality analysis of the participation gap.

Living Standards Measurement Survey. Developed by The World Bank, LSMS is a standardized a 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 implies 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 benefiting from the LSMS program comprise about 10 000 observations, while in some cases the number of observations exceeds 30 000 individuals.

European Community Household Panel. Developed by the Eurostat, ECHP was a European level equivalent of the household budget surveys in Member States. In principle it contains high quality data on both household structure and earnings, but some relevant data are missing (e.g. coding for urban/rural residence in some countries). This study was done among the EU Member States between 1994 and 2001 and was subsequently replaced by European Union Statistics on Income and Living Conditions as of 2003 for only six Member States, with other countries joining in later years. Since the focus of our study is on transition countries, many of whom were already EU Member States by the moment of joining EU-SILC, this last data set was not acquired for our study. ECHP provides about 110 data points for the "benchmark" group of 15 EU Member States in the 1990s. In addition, for Germany we also use German Socio-Economic Panel data for 1985-2008.

International Social Survey Program. It is a voluntary initiative for countries world wide to collect data for social sciences research. The focus of this study is 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 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. Sample sizes in ISSP are much lower than in labor force or household surveys. However, ISSP data was already used for gender discrimination analyses (cfr. Blau and Kahn 1992, 1996, 2003).

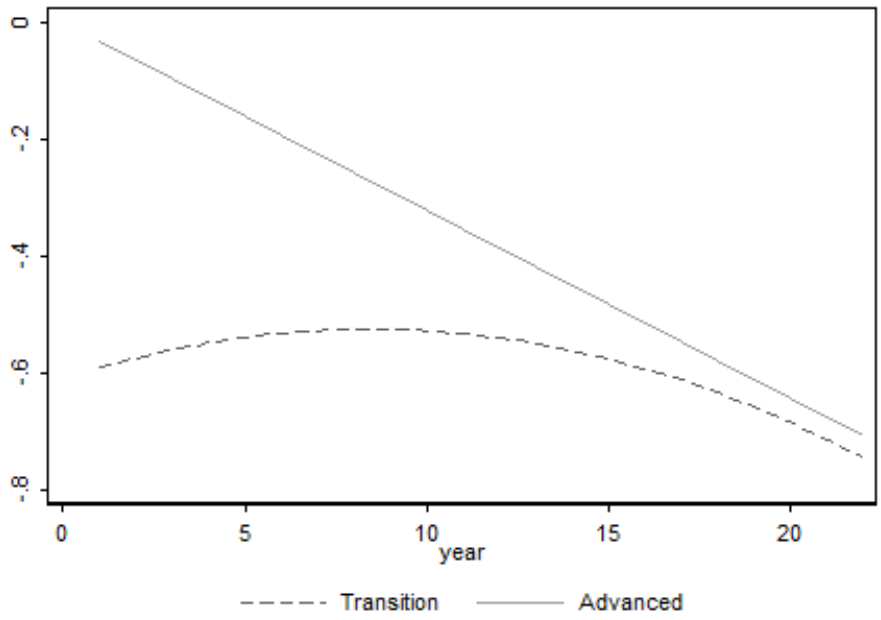
Table C.1: Countries and periods covered with data sources

Country	LFS	EU LFS	Census	LSMS	ECHP	ISSP	LiTS
	Transition countries						
Albania				2002-2005			1989-2006
Armenia				2001			1989-2006
Azerbaijan				1995			1989-2006
Belarus	2008, 2011		1999				1989-2006
Bosnia & Herz.				2001-2004			1989-2006
Bulgaria	1995-2012	2000-2012		1995-97, 2001-03		1993-2012	1989-2006
Croatia	1996-2008					2006-2012	1989-2006
Czech Republic		1998-2012				1993-2012	1989-2006
Estonia	1995-2012	1997-2012				2009	1989-2006
FYR Macedonia							1989-2006
Georgia	2000-2012						1989-2006
Hungary	1995-2012	1997-2012	1990, 2001			1986-2009	1989-2006
Kazakhstan							1989-2006
Kyrgyzstan				1993, 1996-1998			1989-2006
Latvia	1998-2014	1998-2012				1995-2012	1989-2006
Lithuania	2011-2012	1998-2012				1995	1989-2006
Moldova							1989-2006
Montenegro							1989-2006
Poland	1995-2012	1997-2012				1991-2012	1989-2006
Romania	1995-2012	1997-2012	1977, 1992, 2002				1989-2006
Russia	1994-2011					1991-2012	1989-2006
Serbia	1995-2011			2002-2004, 2007			1989-2006
Slovakia		1998-2012				1995-2004	1989-2006
Slovenia		1996-2012	2002			1991-2012	1989-2006
Tajikistan				1999, 2003, 2009			1989-2006
Ukraine	2008-2010					2008-2009	1989-2006
Uzbekistan							1989-2006
	Benchmark countries						
Austria		1995-2012			1995-2001	1985-2012	
Belgium		1992-2012			1994-2001		
Denmark		1992-2012			1994-2001	1997-2012	
Finland		1995-2012			1996-2001	2000-2012	
France		1993-2012			1994-2001	1996-2012	
Germany		2002-2012			1994-2001	1985-2012	
Greece		1992-2012			1994-2001		
Ireland		1999-2012			1994-2001	1988-2012	
Italy		1992-2012			1994-2001	1988-2009	
Netherlands		1996-2012			1994-2001	1987-2008	
Norway		1996-2012				1989-2012	
Portugal		1992-2012			1994-2001	1997-2009	
Spain		1992-2012			1994-2001	1993-2012	
Sweden		1995-2012			1997-2001	1994-2012	
Switzerland		1996-2012				1987-2012	
UK		1992-2012			1994-2001	1985-2012	

Notes: For Belarus we use Household Budget Survey (2008, 2011). For Georgia we Integrated Household Survey (2000, 2005, 2008-2012). For Hungary we use Structure of Earnings Survey (1995-2012). For Russia we utilize Russian Longtidunal Monitoring Survey (1994-2010).

D Results

Figure D.1: Time trend shapes – estimates from Table 1



Note: Please refer to Table 1 for model specification and Table C.1 for country and year composition of the sample. Horizontal axis depicts time (in years), vertical axis measures the shape of the time pattern in adjusted gender employment gaps.

E Robustness checks

Table E.1: Adjusted gender employment gap - time patterns: specification for datasets with the largest number of observations

	(1)	(2)	(3)	(4)
Transition	-0.6855***		-0.1776**	
	(0.0779)		(0.0847)	
Year	-0.0344***	-0.0297***		
	(0.0107)	(0.0049)		
x transition	0.0614***	0.0468***		
	(0.0115)	(0.0056)		
Year^2	0.0005	0.0004**		
	(0.0004)	(0.0002)		
x transition	-0.0014***	-0.0010***		
	(0.0004)	(0.0002)		
Years from transition			0.0178***	-0.0283***
			(0.0039)	(0.0035)
x transition			0.0019	0.0411***
			(0.0057)	(0.0041)
Years from transition^2			-0.0003***	0.0001***
			(0.0000)	(0.0000)
x transition			-0.0004**	-0.0006***
			(0.0002)	(0.0001)
Constant	0.9877***	0.3823***	0.5528***	0.7303***
	(0.0901)	(0.0350)	(0.0963)	(0.0478)
Observations	933	933	933	933
R-squared	0.202	0.804	0.177	0.805

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Specifications (2), and (4) include country fixed effects. Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1. When more than one data source was available for given country and year, we kept the dataset with the highest number of observations. For further details see the notes to the Table 1.

Table E.2: Adjusted gender employment gap - time patterns: specification for estimates averaged for a given country and year

	(1)	(2)	(3)	(4)
Transition	-0.5229***		-0.0901	
	(0.0710)		(0.0612)	
Year	-0.0291***	-0.0246***		
	(0.0099)	(0.0044)		
x transition	0.0525***	0.0391***		
	(0.0111)	(0.0053)		
Year^2	0.0003	0.0002		
	(0.0003)	(0.0002)		
x transition	-0.0013***	-0.0006***		
	(0.0004)	(0.0002)		
Years from transition			0.0154***	-0.0291***
			(0.0033)	(0.0034)
x transition			-0.0012	0.0405***
			(0.0051)	(0.0040)
Years from transition^2			-0.0003***	0.0001***
			(0.0000)	(0.0000)
x transition			-0.0006***	-0.0005***
			(0.0002)	(0.0001)
Constant	0.6830***	0.3550***	0.3216***	0.7301***
	(0.0662)	(0.0140)	(0.0591)	(0.0344)
Observations	933	933	933	933
R-squared	0.160	0.798	0.126	0.801

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Specifications (2), and (4) with country fixed effects. Robust standard errors, *** p<0.01, ** p<0.05, * p<0.1. When more than one data source was available for a given country and year, we have constructed observation with the average value of explained and explanatory variables. For further details see the notes to the Table 1.

Table E.3: Adjusted gender employment gap and opportunity cost of working: specification for datasets with the largest number of observations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Access to early childhood facilities	% of children in kindergartens	Employment rate of women
	linear estimates with interaction							
Coefficient		-0.24***	-1.78***	-2.18***	0.21***			-2.19***
		(0.04)	(0.16)	(0.26)	(0.16)			(0.12)
x transition		0.40***	1.74***	2.25***	-0.19**	-0.46	-0.04	1.51***
		(0.03)	(0.19)	(0.25)	(0.16)	(0.36)	(0.11)	(0.15)
Constant	0.47***	0.36***	0.47***	0.73***	0.32**	0.49***	0.34***	1.10***
	(0.13)	(0.05)	(0.13)	(0.15)	(0.13)	(0.09)	(0.09)	(0.12)
R-squared	0.75	0.83	0.79	0.78	0.78	0.86	0.86	0.84
Wald test (p-value)		0	0.61	0.56	0.03			0
coefficient at	Quantile estimates							
25^{th} pctile		-0.02	0.03	-0.21	0.07	-1.09**	-0.11	-0.55***
		(0.06)	(0.17)	(0.19)	(0.08)	(0.42)	(0.09)	(0.19)
50^{th} pctile		0.21**	-0.12	-0.47*	0.26**	-0.39	-0.40***	-0.72***
		(0.08)	(0.26)	(0.24)	(0.10)	(0.70)	(0.11)	(0.24)
75^{th} pctile		0.27	-1.54***	-0.69	0.34	-0.11	-0.04	-1.70***
		(0.17)	(0.47)	(0.58)	(0.41)	(0.73)	(0.16)	(0.52)
Observations	933	845	933	933	724	229	241	933

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Robust standard errors presented in parentheses. Estimates come from a regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1. When more than one source of data was available for given country and year, we kept the dataset with the largest number of observations. For further details see the notes to the Table 2.

Table E.4: Adjusted gender employment gap - cohort effects: specification for datasets with the largest number of observations

	(1)	(2) Persons with tertiary in % of population	(3) Women with tertiary in % of tertiary	(4) % of households with small children	(5) Employment rate of women
	linear estimates for transition countries				
Working bef. transition (dummy)	-0.04***	-0.03**	-0.04***	0.07***	0.02
	(0.01)	(0.02)	(0.02)	(0.03)	-0.02
Coefficient		0.02	-0.06	0.73***	-0.70***
		(0.13)	(0.08)	(0.13)	-0.09
Constant	0.27	0.21	0.25	0.22	0.69***
	(0.18)	(0.18)	(0.19)	(0.20)	(0.19)
Observations	1,124	1,124	1,124	1,006	1,124
R-squared	0.48	0.48	0.48	0.50	0.51
	quantile estimates				
25^{th}					
Working bef. Transition (dummy)		-0.02	-0.02	0.07**	0.03
		(0.03)	(0.03)	(0.03)	(0.03)
Coefficient		0.26**	-0.27**	0.44***	-0.37**
		(0.13)	(0.11)	(0.11)	(0.15)
50^{th}					
Working bef. Transition (dummy)		-0.07**	-0.07*	0.02	-0.01
		(0.03)	(0.04)	(0.04)	(0.03)
Coefficient		0.30*	-0.24**	0.47***	-0.39**
		(0.17)	(0.10)	(0.16)	(0.16)
75^{th}					
Working bef. Transition (dummy)		-0.02	-0.07	0.03	0.01
		(0.06)	(0.06)	(0.07)	(0.06)
Coefficient		-0.40	-0.25	0.51*	-0.68**
		(0.33)	(0.21)	(0.30)	(0.28)
Observations		1,124	1,124	1,006	1,124

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). For given country, and year we have two estimates: one for women that were above the age of 25 before transition, and one for the remaining women. Robust standard errors presented in parentheses. Estimates come from a regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1. When more than one data source was available for given country and year, we kept the dataset with the highest number of observations. For further details see the notes to the Table 3.

Table E.5: Adjusted gender employment gap and opportunity cost of working: specification for estimates averaged for a given country and year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Access to early childhood facilities	% of children in kindergartens	Employment rate of women
	linear estimates with interaction							
Coefficient		-0.29***	-1.33***	-2.01***	0.37***			-1.41***
		(0.04)	(0.17)	(0.18)	(0.13)			-0.1
x transition		0.45***	1.65***	2.20***	-0.05	-0.53	-0.16	0.80***
		(0.03)	(0.24)	(0.23)	(0.34)	(0.34)	(0.10)	-0.13
Constant	0.22	0.38***	0.33**	0.63***	0.21	0.31***	0.35***	0.84***
	(0.14)	(0.03)	(0.14)	(0.15)	(0.14)	(0.06)	(0.06)	-0.13
R-squared	0.73	0.83	0.75	0.76	0.72	0.86	0.88	0.79
Wald test p-value		0.00	0.09	0.23	0.01			0
coefficient at	Quantile estimates							
25^{th} pctile		0.03	-0.09	-0.06	0.15*	-0.61	-0.16	-0.43***
		(0.06)	(0.20)	(0.22)	(0.08)	(1.23)	(0.12)	(0.14)
50^{th} pctile		0.21***	-0.31	-0.42	0.31***	-0.66	-0.51***	-0.74***
		(0.07)	(0.29)	(0.29)	(0.10)	(0.70)	(0.12)	(0.19)
75^{th} pctile		0.37**	-1.72***	-1.18*	0.63**	-0.33	0.02	-1.57***
		(0.16)	(0.53)	(0.64)	(0.27)	(0.59)	(0.12)	(0.38)
Observations	933	845	933	933	775	229	241	933

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Robust standard errors from regression with country, and year fixed effects, *** p<0.01, ** p<0.05, * p<0.1. When the data was available from more than one source for given country and year, we have constructed observation with the average value of explained and explanatory variables. For further details see the notes to the Table 2.

Table E.6: Adjusted gender employment gap - cohort effects: specification for estimates averaged for a given country and year

	(1)	(2) Persons with tertiary in % of population	(3) Women with tertiary in % of tertiary	(4) % of households with small children	(5) Employment rate of women
	linear estimates for transition countries				
Working bef. transition (dummy)	-0.03*	-0.03	-0.03*	0.08***	0
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
Coefficient		0.08	-0.06	0.67***	-0.47***
		(0.17)	(0.09)	(0.13)	(0.09)
Constant	0.26	0.17	0.23	0.09	0.50***
	(0.17)	(0.18)	(0.18)	(0.18)	(0.18)
Observations	1,124	1,124	1,124	1,096	1,124
R-squared	0.49	0.49	0.49	0.50	0.50
	quantile estimates				
25^{th}					
Working bef. Transition (dummy)		-0.02	-0.01	0.08**	0.02
		(0.03)	(0.03)	(0.03)	(0.03)
Coefficient		0.45**	-0.28**	0.48***	-0.18
		(0.18)	(0.11)	(0.13)	(0.13)
50^{th}					
Working bef. Transition (dummy)		-0.05	-0.03	0.06	-0.00
		(0.03)	(0.03)	(0.04)	(0.03)
Coefficient		0.43**	-0.22*	0.48***	-0.26*
		(0.20)	(0.11)	(0.15)	(0.13)
75^{th}					
Working bef. Transition (dummy)		-0.01	-0.03	0.11*	0.01
		(0.06)	(0.06)	(0.06)	(0.06)
Coefficient		-0.06	-0.17	0.88***	-0.53*
		(0.39)	(0.25)	(0.24)	(0.29)
Observations		1,124	1,124	1,096	1,124

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). For given country, and year we have two estimates: one for women that were above the age of 25 before transition, and one for the remaining women. Robust standard errors from regression with country, and year fixed effects, *** p<0.01, ** p<0.05, * p<0.1. When the data was available from more than one source for given country and year, we have constructed observation with the average value of explained and explanatory variables. For further details see the notes to the Table 3.

Table E.7: Raw gender employment gap and opportunity cost of working

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Access to early childhood facilities	% of children in kindergartens	Employment rate of women
	linear estimates with interaction							
Coefficient		-0.30***	-0.67***	-0.86***	0.08			-1.42***
		(0.03)	(0.09)	(0.11)	(0.09)			-0.06
x transition		0.38***	0.72***	0.88***	-0.14	-0.81***	-0.21***	0.51***
		(0.03)	(0.11)	(0.14)	(0.14)	(0.26)	(0.08)	-0.09
Constant	0.30***	0.44***	0.35***	0.47***	0.21***	0.39***	0.29***	1.01***
	(0.11)	(0.04)	(0.11)	(0.11)	(0.10)	(0.05)	(0.06)	-0.09
R-squared	0.75	0.80	0.76	0.76	0.80	0.83	0.84	0.84
Wald test p-value		0.00	0.65	0.91	0.02			0
	Quantile estimates							
coefficient at the 25^{th} pctile		-0.06	-0.24***	-0.24***	0.06	-1.44***	-0.35***	-0.55***
		(0.04)	(0.09)	(0.09)	(0.05)	(0.52)	(0.11)	(0.08)
coefficient at the 50^{th} pctile		0.12***	-0.34***	-0.60***	0.44***	-1.43***	-0.02	-0.79***
		(0.04)	(0.11)	(0.11)	(0.07)	(0.49)	(0.16)	(0.10)
coefficient at the 75^{th} pctile		0.26***	-0.93***	-0.96***	0.53***	0.10	-0.06	-1.41***
		(0.07)	(0.17)	(0.21)	(0.20)	(0.38)	(0.13)	(0.17)
Observations	1,544	1,441	1,544	1,544	931	424	441	1,544

Notes: Estimates of raw gender employment gap from Ñopo (2008). Robust standard errors from regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. For further details see the notes to the Table 2.

Table E.8: Raw gender employment gap - cohort effects

	(1)	(2)	(3)	(4)	(5)
		Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Employment rate of women
	linear estimates for transition countries				
Working bef. transition (dummy)	0.00	0.00	-0.02	0.11***	0.05***
	(0.01)	(0.02)	(0.01)	(0.03)	-0.01
Coefficient		-0.02	-0.32***	0.71***	-0.83***
		(0.12)	(0.07)	(0.14)	(0.07)
Constant	0.21	0.21	0.40**	0.26	0.56***
	(0.17)	(0.17)	(0.17)	(0.20)	(0.16)
Observations	1,761	1,761	1,761	1,390	1,761
R-squared	0.45	0.45	0.46	0.47	0.49
	quantile estimates				
25^{th}					
Working bef. transition (dummy)		0.07***	0.05***	0.14***	0.10***
		(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.08	-0.25***	0.39***	-0.45***
		(0.10)	(0.07)	(0.08)	(0.06)
50^{th}					
Working bef. transition (dummy)		0.05***	0.02	0.13***	0.08***
		(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		-0.13	-0.33***	0.52***	-0.57***
		(0.11)	(0.07)	(0.09)	(0.06)
75^{th}					
Working bef. transition (dummy)		-0.01	-0.05**	0.07**	0.02
		(0.02)	(0.02)	(0.04)	(0.02)
Coefficient		-0.12	-0.34***	0.66***	-0.61***
		(0.18)	(0.12)	(0.16)	(0.10)
Observations		1,761	1,761	1,390	1,761

Notes: Estimates of raw gender employment gap from Ñopo (2008). For given country, year, and source we have two estimates: one for women that were above the age of 25 before transition, and one for the remaining women. Robust standard errors from regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. For further details see the notes to the Table 3.

Table E.9: Employment gap between matched and non-matched women and opportunity cost of working

		ln GDP per capita	Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Access to early childhood facilities	% of children in kindergartens	Employment rate of women
	linear estimates with interaction							
Coefficient		0.00	0.03	0.00	-0.01			0.04***
		(0.01)	(0.02)	(0.02)	(0.02)			(0.01)
x transition		-0.01***	0.03	-0.01**	0.07*	-0.02	0.00	0.01
		(0.01)	(0.03)	(0.03)	(0.04)	(0.07)	(0.02)	(0.02)
Constant	-0.01	0.00	-0.02	0.01	-0.01	0.01	-0.01	-0.04*
	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)
R-squared	0.46	0.50	0.47	0.47	0.52	0.58	0.59	0.47
Wald test p-value		0.02	0.00	0.00	0.02			0
	Quantile estimates							
coefficient at the 25^{th} pctile		0.00	0.02***	0.00	-0.01*	0.00	0.01	0.00
		(0.00)	(0.01)	(0.00)	(0.01)	(0.05)	(0.01)	(0.00)
coefficient at the 50^{th} pctile		-0.00	0.02***	-0.00	-0.03***	0.03	0.01	0.01***
		(0.00)	(0.00)	(0.00)	(0.01)	(0.04)	(0.01)	(0.00)
coefficient at the 75^{th} pctile		-0.05***	0.08***	0.11***	-0.10***	-0.04	0.02	0.04**
		(0.01)	(0.03)	(0.03)	(0.02)	(0.10)	(0.03)	(0.02)
Observations	1,552	1,449	1,552	1,552	931	426	443	1,552

Notes: Estimates of employment gap between women inside (matched) and outside (non-matched) of the common support obtained following Ñopo (2008). Robust standard errors from regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. For further details see the notes to the Table 2.

Table E.10: Employment gap between matched and not-matched women - cohort effects

	(1)	(2)	(3)	(4)	(5)
		Persons with tertiary in % of population	Women with tertiary in % of tertiary	% of households with small children	Employment rate of women
	linear estimates for transition countries				
Working bef. transition (dummy)	-0.02***	-0.02***	-0.02***	-0.03**	-0.03
	-0.003	-0.004	-0.003	-0.006	-0.003
Coefficient		-0.02	-0.08***	-0.04	-0.02
		-0.03	-0.02	-0.03	-0.02
Constant	-0.0029	0.0004	0.0489	-0.0051	0.0111
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Observations	1,765	1,765	1,765	1,390	1,765
R-squared	0.21	0.21	0.22	0.23	0.21
	quantile estimates				
25^{th}					
Working bef. Transition (dummy)		-0.00	-0.00	0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Coefficient		0.02***	-0.02**	0.01	0.01*
		(0.01)	(0.01)	(0.01)	(0.01)
50^{th}					
Working bef. Transition (dummy)		-0.00	0.00	-0.02***	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)
Coefficient		0.01	0.00	-0.11***	0.01
		(0.01)	(0.01)	(0.01)	(0.01)
75^{th}					
Working bef. Transition (dummy)		-0.02***	-0.02***	-0.04***	-0.02***
		(0.00)	(0.00)	(0.01)	(0.00)
Coefficient		-0.00	-0.01	-0.11***	0.01
		(0.03)	(0.03)	(0.03)	(0.02)
Observations		1,765	1,765	1,390	1,765

Notes: Estimates of employment gap between women inside (matched) and outside (not-matched) of the common support obtained following Ñopo (2008). For given country, year, and source we have two estimates: one for women that were above the age of 25 before transition, and one for the remaining women. Robust standard errors from regression with country, year and source fixed effects, *** p<0.01, ** p<0.05, * p<0.1, with weights corresponding to the inverse of the number of available data sources for a given year and country. For further details see the notes to the Table 3.