IAAEU Discussion Paper Series in Economics
No. 06/2018

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June 2018

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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 the opportunity costs of not-working (notably, relative growth in wages in positions more frequently occupied by women, improved 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 relationship between the institutional environment and the (adjusted) gender employment gaps. We estimate comparable gender employment gaps on nearly 1500 micro databases from over 40 countries. Changes in both types of the opportunity costs exhibited strong 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-related phenomena. We argue that the observed divergence in time trends reflects a level effect: the lower the gender employment gap, the lower the strength of the relationship between gender employment equality and the opportunity costs of working. An implication from our study is that the existing instruments might be insufficient to further reduce the gender employment gap.

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

JEL codes: J2, J7, P7

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

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 and to increase female labor force participation. Indeed, Blau and Kahn (2013) argue 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 the family-friendly policies, increased educational attainment and skill-biased technical change are jointly believed to increase the opportunity cost of not working for women.[1]

Meanwhile, despite similar institutional and technological trends, female labor force participation rates dropped considerably in transition economies. Several studies document this phenomenon.[2] Admittedly, they fell from much higher levels than those observed in advanced economies. Employment rates fell for men as well in transition economies, but the fall was not as pronounced. As a result, the ratio of female to male participation declined from levels above the advanced economies (i.e. above 85%) to that at par or below advanced economies (i.e. below 80%). Whereas in advanced economies we observed a steady 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 exploits these diverging trends between advanced and transition economies in order to provide insights on mechanisms rising female labor force participation.

Declining fertility and increase in family-friendly policies might have affected the gender employment gap due to lower opportunity cost of working: there are fewer children to be taken care of and the cost of caring was partially reduced. The rise in the educational attainment of women, and change in the employment structure which generated greater opportunities for women increased the opportunity cost of not-working: there is more employment opportunities and wages increase for the skilled population. We provide the proxies for the opportunity cost of working and the opportunity cost of not-working and seek their relation to the patterns of gender employment gaps across a large selection of countries over nearly three decades. To the extent that leisure preference can differ systematically across countries, we analyze gender employment gaps rather than female

[1] Black and Spitz-Oener (2010) provide evidence that technological progress helped to reduce the gender wage gap in Germany. Ngai and Petrongolo (2017) provide a mechanism for the role of the service sector in changing gender employment structure in the US.

[2] 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.

participation or employment rates. We exploit the richness of a novel collection of micro-level datasets to provide comparative estimates of the gender employment gaps, adjusted for individual characteristics.

We show that the decrease in female employment in transition countries stems from the delayed and reduced entry of young cohorts rather than the withdrawal by already active cohorts. We also show that entry frictions were gender-specific, relative to the central planner's allocation of workers to jobs. Adjusted gender employment gaps were lower for the older cohorts, i.e. those who entered labor market before the transition. 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 availability of the family-friendly institutional framework. Such findings are then consistent with existing literature (Mandel and Semyonov 2005, 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 shown 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 1484 datasets from 46 countries over a period of more than two decades. 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 analyses do not exist for advanced, nor transition economies.[3] A second contribution is that we test explicitly the role of institutional arrangements and the alternative costs of (not)working. Specifically, the transition countries are an interesting case to analyze, because prior to the transition individuals were effectively *forced* to work, possibly above their preferred rates of labor market participation. Meanwhile, other advanced countries typically implement policies which aim to *encourage* higher activity rates.

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. In section 3 we describe the specific case of transition countries as a useful case for analyzing the potential future trends in female labor force participation. To test

[3]Comparative analyses, 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.

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 4. Section 5 presents the stylized facts about the patterns of gender employment gaps over the past decades in both groups of countries. The results are discussed in section 6. We conclude the paper with policy implications of our study.

2 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 aging. This demographic pressure renews 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, Plunkett 2011, Blau and Kahn 2013) report a growing participation of women in the labor market. Among determinants, literature emphasizes the role of labor market institutions such as prevalence of part-time employment (e.g. Booth and van Ours 2013), wage bargaining mechanisms (e.g. Mabsout and van Staveren 2010), and unionization (e.g. Visser 2002).

While changes in gender gaps have been observed, it is not clear from economic theory, why they should vary at all. 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 both wages and employment.

The changing characteristics of jobs indeed appear to increase female employment. For example, the rise in the demand for cognitive skills and a decline in demand for physical strength are believed to raise the relative demand for female workers (Olivetti and Petrongolo 2014, 2016). The rise of the service sector *per se*, contributes to greater demand for female workers. In a theory-based simulation model, Ngai and Petrongolo (2017) show that two channels at play (increasing marketization of home work and a growing labor demand in the service sector) account for a large share of the increase in the female labor supply.

Research into the secular trends concerning family institutions and social norms. Exogenous variation in relative decline of the price of home services, suggests that greater availability of household workers increases the labor supply of women, as evidenced in Hong Kong (Cortes and Pan 2013) and in the US (Cortes and Tessada 2011). Indeed, while homework hours declined for

both genders over the recent decades, the decline was greater for women (Fang and McDaniel 2016). Female labor supply appears to be very responsive to social norms as well. Female employment depends on the husbands' wage and potential wage differential (Bertrand et al. 2015) as well as skill differential (Schwartz and Han 2014, Bertrand et al. 2016) Hence, while formal institutions appear to push towards higher female employment, social norms oppose this trend. Indeed, 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.

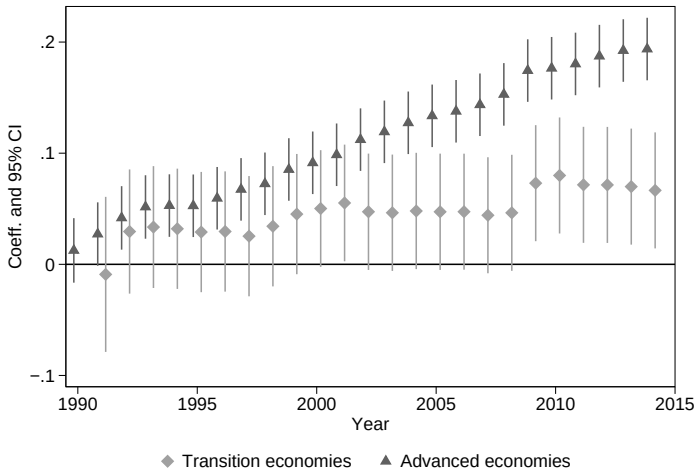
3 The case of transition countries

Female employment trends in transition countries differ from the trends observed in advanced economies.[4] To reliably test the commonality of trends in female to male employment ratio, one needs to adjust for the fact that some of the transition countries did not exist as separate states until e.g. 1995, also data availability varies by country and time. We estimate time trends for the transition and advanced countries, controlling for country fixed effects. Figure 1 reports these time trends, relative to 1989. Clearly, employment ratios of women have grown relative to men over the entire period in advanced economies, but on average a similar pattern was observed for the transitioning economies and advanced economies until early 2000s. It is later in transition that the changes in trends begin to emerge. This striking time pattern shows that clearly it is not solely the "early transition" story, that makes this particular group of countries in Central, Southern and Eastern Europe interesting.

Typically, policy analysis focuses on instruments that facilitate and *encourage* labor supply of 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, the state *coerced* women to supply labor close to par with men, effectively eliminating the scope for opportunity cost and barriers channels to operate. In particular, the institution of work orders played an important role. Work order (or work allocation) was a system of automatic worker assignment to employers at the moment of graduation. This worker assignment was based on formal qualifications (level and field) and in principle could only be objected under specific circumstances. Also, terminating

[4]One could also question the empirical premises for generalizations over the heterogeneous group of advanced countries. 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. Notably, the advanced economies around the world differ substantially in levels of labor market participation in total, the ratio of employment rates for men and women. In Scandinavian countries, participation rates have been at par for most of the period, whereas in the rest of advanced countries, women have improved their position, in some cases nearly doubling the ratio between female and male participation rates, e.g. Spain. The overall positive trend is a stunningly universal phenomenon though.

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



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. *Note:* Having collected all the available data, for the two groups of countries, we estimate a model: F/M employment ratio $= \alpha_c + \beta_t + \epsilon_{c,t}$, where α_c denotes a vector of country dummies α_t denotes a vector of year dummies, and $\epsilon_{c,t}$ is the unexplained, random component. The model has no constant, to identify all country and year effects. Coefficients on year dummies from this regression, estimated separately in a model for advanced economies and separately in a model for transition economies are reported in the figure.

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. 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. Finally, work orders result in effectively frictionless school-to-work transition.

During the transition, labor market participation of women weakened and was characterized by segmentation, which yielded grounds for greater gender (adjusted) gaps than under central 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.[5] Indeed, as demonstrated for Czech Republic, one of the few countries for which data permitted a direct comparison, gender wage gaps increased rapidly during transition (Munich et al. 2005a,b). In a similar spirit, Brainerd (2000) analyses household budget surveys for

[5]Majority of the literature focuses on gender *wage* gaps, but some analyses include hours worked.

seven transition economies for the period *directly* before and after the introduction of the major economic reforms, utilizing the *quasi*-panel structure of the data for Poland. 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). Despite sizable country and industry specific effects (Stockhammer and Onaran 2009), the consensus narrative in the literature is that gender gaps widened in transitioning economies.

There is several mechanisms may explain the trends in gender employment gaps in transition countries. First, labor restructuring in the onset of transition could have played a role. Massive unemployment, as experienced by many of the transition countries, could asymmetrically affect women's employment. 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 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. 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, if unemployment has little or not explanatory power for the observed trends, the adverse effects of restructuring cannot be the full answer. In the remainder of this paper we test empirically role of unemployment in explaining the female labor force participation in transition countries.

Second, the institutional change associated with the removal of the work orders enabled an adjustment of labor supply to individual preferences. These preferences may differ across genders, and transition economies constitute a useful case to observe the magnitude of this difference. Third, the removal of work orders introduced also an immanent friction in labor market entry of the young cohorts. If that friction was gender specific, we would observe gradual changes in the male-to-female employment ratio. While the fall in entry rates could explain the initial fall in employment, it serves poorly to understand the failure to recover later on. Fourth, 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. This would imply that general trends increase the opportunity cost of not-working in advanced economies, but reduce it in transition economies. Fifth, transition countries experienced the demographic trends

of declining fertility in parallel to the advanced economies, which would reduce the opportunity cost of working. In the remainder of this paper, we analyze these mechanisms.

4 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 force 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 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. Detailed data on employment history were collected, thus permitting computation of worker status 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.

In total, we acquired almost 1500 datasets from 46 countries for the period 1990-2014.[8] Tables C.1 and C.2 provide a detailed account of the data sources and the available periods for each of the analyzed countries. Of the acquired data points (countries/source/years) 864 are for transition countries and the remaining from a control group of Western Europe.

Data show remarkable disperssion in employment rates among women, with values ranging from below 20% to slightly over 80%, see Figure 2. 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.

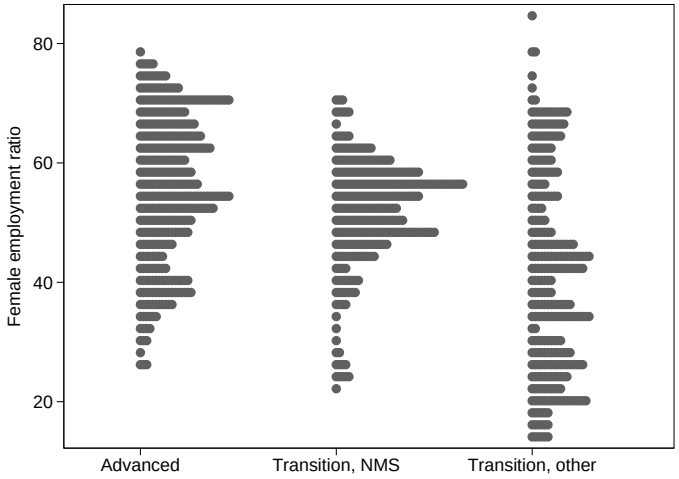
Acquiring the individual level data was but a first step in the analysis. We subsequently harmonized the data, to assure that in each of the available sets the same individual characteristic has the same actual meaning. For example, some of the datasets report education in years and others in levels. The process of harmonization permitted obtaining comparable variable definitions.

[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.

[8] Earlier data are available in transition and advanced economies, but they are not comparable.

Figure 2: The distribution of female employment ratios in the collection of micro-data



Data source: please refer to Tables C.1 and C.2 for a sample description.

Once this step was completed, we could obtain *comparable* measures of gender employment gaps.

Since raw gaps – a difference in mean employment ratio among men and women – do not allow to control for the differences in the individual worker characteristics, we employ a decomposition, to obtain an *adjusted* measure of gender employment gaps (see Fortin et al. 2011, for a methodological overview). We use Ñopo (2008) decomposition. This choice is motivated by a number of reasons. First, adjusted gender employment gaps are is obtained from a binary measure of employment, which makes the use of parametric methods questionable, but makes the use of one-to-many perfect matching method particularly suitable.[9] Second, it is important to "compare the comparable", i.e. only include in the decomposition those men and women, who are "similar" to the opposite gender. Indeed, the way the Ñopo (2008) decomposition is designed, only "similar" individuals are included in the estimation of the adjusted gap.[10] This way, potential labor market segmentation is properly tackled. Third, a comparative exercise conducted by Goraus et al. (2015) shows that Ñopo (2008) decomposition should be preferred when the set of individual characteristics is small (e.g. by data availability), as the estimates with only some conditioning variables were fairly similar to those for a larger set of control factors.

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

[9]The outcome variable in this study is employment. This choice is motivated by both the question at hand and data constraints: data on hours worked was often missing. In terms of the data, not all sources allow a clear delineation between unemployment and inactivity, whereas the distinction between employment and non-employment is definite. In terms of the research question, one could be worried that employment rate does not put sufficient attention on activity rate and selection into unemployment. However, the high activity rate coupled with high unemployment is not likely to be a persistent economic equilibrium. Moreover, high employment rates rather than activity rates are the ultimate objective for policies.

[10]In fact, one of the features of Ñopo (2008) decomposition is that it provides an interpretation 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.

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 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.

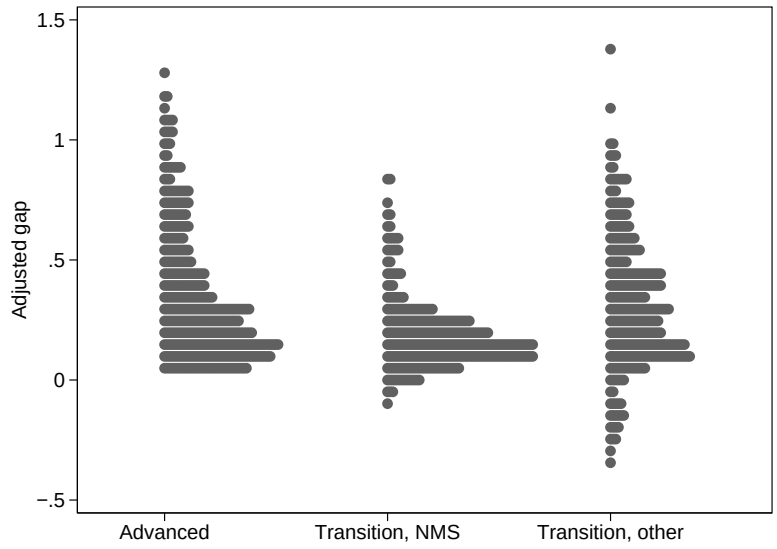
Our data do not cover all years for all countries. Thus, our results are prone to the composition effects. We address this concern in two ways. First, we explicitly analyze how our sample differs from macroeconomic aggregates in terms of time trends. This permits the reader to gain some intuition on 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 in our collection of 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.[11]. 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.

Figure 3 reports a remarkable dispersion of the adjusted gender employment gaps, where the adjusted gender employment gaps are obtained via Ñopo (2008) decomposition. 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. 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.

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, the country-level variation in raw employment gaps explains nearly 100% of the country-level variation in adjusted employment gaps, but in LiTS this covariance falls to 85%. To control for this within country and year dispersion of estimates we include source

[11] Also Figure A.2 replicates the features of Figure 1

Figure 3: Adjusted gender employment gaps



Notes: distribution of adjusted gender employment gaps estimated via Ñopo (2008) decomposition. Displayed are unweighted averages over data sources for each available country and year.

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.

5 Stylized facts

5.1 The role of unemployment

As we noted earlier, one potential explanation for the pattern in gender employment gaps in transition countries is the massive unemployment. The explanation based on unemployment, however, is at odds with the data. We run a panel regression where dependent variable is the female employment rate, and we include overall unemployment, a transition dummy and interactions of the two controls. The regression has year fixed effects, thus exploiting country level heterogeneity. To facilitate the interpretation, we standardized the female employment rate and the unemployment rate. Results are reported in Table A.2. As expected, we find overall 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.

5.2 Cohort explanation of the decrease in employment rates

Changes in female employment rates involve changes in employment status of already working individuals; and the intensity of entries to and exits from labor market by individuals. Thus, this process inherently involves the role of demographics. In advanced countries, on average, employment of women increased for all age groups, whereas in the case of the transition countries the pattern is very different. Figure D.1 depicts the marginal effects from regressing employment ratio on 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.[12] 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 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).

A shift-share analysis cannot explain *why* we observe some of the tendencies, but it allows to capture the role of the changing structure of the population and the (possibly changing) work intensities across subsequent cohorts. We decompose 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.[13] On the other side of the age distribution, 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 non-employment in the prime age. The details of the decomposition are presented in Appendix B.

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

[12] 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.

[13] 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).

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 Appendix 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 of the labor market status at the aggregate level for the sake of brevity.

The results by and large confirm the intuitive interpretation of age and cohort effects presented in Figure D.1. 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, there appears to be a consistent pattern for transition economies: an increase in the employment ratio of older women 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 tendencies are reversed around that year in transition countries.

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 in the second decade of transition. This observation provides additional support to the results of regressions reported in Table A.2.

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 non-employment were indeed responsible for a share of the fall in female employment ratios, but only *after 1995*. In advanced economies the opposite holds: the increased intensity of entries among younger cohorts has a small but positive contribution. 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.

5.3 Time trends in adjusted gender employment gaps

As evidenced already in Figure 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.[14] 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.3 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.

[14]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.

Table 1: Adjusted gender employment gap - time patterns

	Calendar years		Years from transition	
	(1)	(2)	(3)	(4)
Transition country	-0.4659***		-0.0635	
	(0.0426)		(0.0521)	
Time	-0.0278***	-0.0260***	0.0163***	-0.0273***
	(0.0066)	(0.0036)	(0.0027)	(0.0028)
× transition	0.0494***	0.0392***	-0.0018	0.0388***
	(0.0079)	(0.0042)	(0.0043)	(0.0033)
$Time^2$	0.0003	0.0002*	-0.0003***	0.0001***
	(0.0003)	(0.0001)	(0.0000)	(0.0000)
× transition	-0.0013***	-0.0004***	-0.0006***	-0.0004***
	(0.0003)	(0.0001)	(0.0002)	(0.0001)
Constant	0.6486***	0.3582***	0.2952***	0.7130***
	(0.0373)	(0.0102)	(0.0502)	(0.0286)
Country FE	No	Yes	No	Yes
N	1,478	1,478	1,478	1,478
R-squared	0.1516	0.7708	0.1190	0.7729

Notes: Estimates of adjusted gender employment gap from Ñopo (2008) as a dependent variable. Robust standard errors, *** p<0.001, ** p<0.01, * p<0.05, 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 D.1 and D.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 D.2. 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 in adjusted gender employment gap for advanced countries and a mild inverted U-shape for transition economies (see Figure D.3), independently of the measure of time used. This evidence suggests that the divergence in employment rates is not a phenomenon of the underlying demographic trends and increase in educational attainment. We proceed to analyze correlates of these changes in the next section.

6 Results

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 nearly 1500 datasets 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.

Once we obtain the estimates of the adjusted gender employment 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 operationalizing the opportunity cost of working and the opportunity cost of not-working.

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.

6.1 Correlates of adjusted gender employment gap

There were two possible explanations on why employment 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. Estimates 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. 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. In transition economies, the interaction term effectively "cancels out" the correlation in the case of human capital variables and halves the magnitude of the effect associated with higher female employment rates.

In the second stage of our analysis, we apply the same decomposition technique (Ñopo 2008) in 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 different situation of 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 over time between post-transition and pre-transition cohorts.

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***	-1.03***	-0.92***	0.27***			-1.93***
		(0.04)	(0.10)	(0.14)	(0.09)			(0.08)
× transition		0.41***	1.05***	1.03***	-0.27*	-0.47	-0.17*	1.25***
		(0.03)	(0.14)	(0.16)	(0.14)	(0.29)	(0.09)	(0.11)
Wald test (p-value)		0	0.890	0.280	0.980	0.110	0.0600	0
Constant	0.35**	0.42***	0.44***	0.50***	0.28**	0.38***	0.30***	1.09***
	(0.12)	(0.04)	(0.11)	(0.12)	(0.12)	(0.06)	(0.07)	(0.10)
R-squared	0.74	0.81	0.75	0.75	0.75	0.83	0.83	0.82
coefficient at	quantile estimates							
25^{th} pctile		-0.06	-0.15*	0.06	0.06	-0.39	-0.17*	-0.53***
		(0.04)	(0.08)	(0.09)	(0.05)	(0.52)	(0.10)	(0.07)
50^{th} pctile		0.18***	-0.34***	-0.08	0.19**	-0.89*	-0.47***	-0.89***
		(0.04)	(0.11)	(0.12)	(0.08)	(0.50)	(0.10)	(0.09)
75^{th} pctile		0.35***	-1.63***	-0.47*	0.23	0.57	-0.02	-1.74***
		(0.08)	(0.23)	(0.25)	(0.32)	(0.39)	(0.09)	(0.17)
no. of observations	1,478	1,371	1,478	1,475	975	402	419	1,478

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<0.001, ** p<0.01, * p<0.05, 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.1 and E.2 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	-0.02	-0.05***	-0.02	-0.03*	0.11***	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.17***	-0.02	-0.13	0.79***	-0.61***
		(0.03)	(0.11)	(0.07)	(0.11)	(0.07)
Constant	0.33*	0.28***	0.34*	0.41**	0.09	0.69***
	(0.14)	(0.05)	(0.14)	(0.14)	(0.15)	(0.14)
R-squared	0.51	0.55	0.51	0.51	0.54	0.53
	quantile estimates					
25^{th}						
Working bef. transition		0.00	0.01	0.01	0.14***	0.06***
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.01	0.27*	-0.25**	0.61***	-0.35***
		(0.05)	(0.11)	(0.08)	(0.10)	(0.07)
50^{th}						
Working bef. transition		0.00	-0.04**	-0.05**	0.10***	0.02
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.09*	0.36**	-0.31***	0.72***	-0.54***
		(0.04)	(0.11)	(0.08)	(0.13)	(0.07)
75^{th}						
Working bef. transition		-0.07**	-0.01	-0.07**	0.13**	0.02
		(0.02)	(0.02)	(0.02)	(0.05)	(0.02)
Coefficient		0.29**	-0.49*	-0.30	0.98***	-0.85***
		(0.09)	(0.19)	(0.15)	(0.25)	(0.12)
Observations	1,770	1,569	1,684	1,672	1,416	1,684

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). *Working bef. transition* is a dummy variable taking the value of 1 for cohorts active in the labor market prior to the transition and zero otherwise. For given country, year, and source we have two estimates of adjusted gender employment gaps: 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<0.001, ** p<0.01, * p<0.05, 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.5 and E.6 in the Appendix.

The results form the bottom panel 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 and in most cases 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 to those at the median of the GEG distribution, i.e. a linear model overstates the strength of the relationship between GEG and country-level correlates.

6.2 Discussion

The 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, equality improved in "old" EU Member States. Our study provides these novel results using a comprehensive collection of individual data. We then sought the determinants of this divergence in changes of opportunity cost of employment. These opportunity costs exhibit similar patterns in developed and transition economies, but they are characterized by a different relation to gender employment gaps. The typical proxies for opportunity costs of working and not-working prove to operate with much less strength in countries where gender employment gaps are already relatively lower.

One would be tempted to argue that our findings are 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: for the cohorts entering labor market after the onset of transition, the estimates of the adjusted employment gaps are higher and this effect is relatively large. However, 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 surge in unemployment, women – particularly younger cohorts – have refrained from entering labor market and continued 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 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.[15]

[15]The main instruments for "coercing" high employment were work orders, but admittedly, employment security

Perhaps, 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 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).

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, our results remain similar if ISSP data receive a zero weight whenever alternative source of data exist for a given country in a given year.[16] 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 control for the size of the country. Consequently, estimations are cross-sectional at a country level rather than individual level. In essence, in the estimations in Tables 2 and 3, Russia and Estonia receive an equal weight, although the size of their population differs significantly. 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, 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.

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 gender employment gaps. First, recall that Ñopo (2008) decomposition has been shown to have superior properties relative to parametric estimators particularly in cases where covariates are few or 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 cohorts. Thus, we believe the potential bias in our

could have played an important role.

[16] Also, a large number of studies has offered estimates and conclusions based on such sources. 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).

key estimates is limited. As a further robustness test, in appendix Tables E.3 to E.8, 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.

7 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 studies, 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 nearly 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 institution of work orders, school-to-work transition was automatic and usually matched to education. Indeed, employment rates among women were on average much higher in centrally planned economies than contemporaneously in advanced European economies. If central planning pushed employment of women above their preferences, 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 lower preferred activity levels and due to matching frictions), and an increase in 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 25 years 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 at par with men in terms of employment. Once these institutional features were abandoned with the onset of market economy, gender employment gaps in transition countries increase and the secular trends of declining fertility and growing educational attainment cannot reverse the increase of gender inequality in employment, even with family-friendly policies.

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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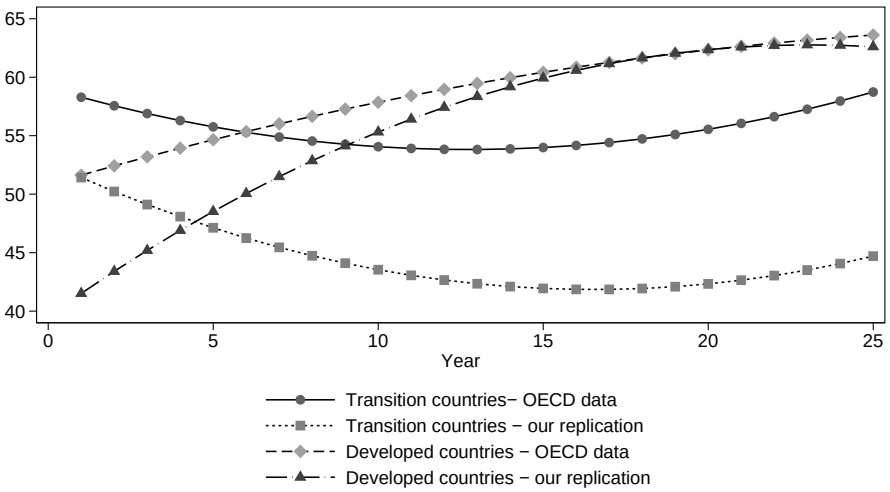
A Descriptives

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***	2.01***	-1.31***
	(0.10)	(0.12)	(0.23)	(0.13)
$Time^2$	-0.01***	0.03***	-0.04***	0.04***
	(0.00)	(0.00)	(0.01)	(0.00)
Constant	50.80***	59.09***	39.54***	52.70***
	(0.55)	(0.86)	(1.59)	(1.34)
R-squared	0.56	0.30	0.92	0.82
Observations	395	234	558	486
No of countries	16	13	15	11

Note: Panel regression robust estimator with country fixed effects. Standard errors in parentheses, *** p<0.001, ** p<0.01, * p<0.05. 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

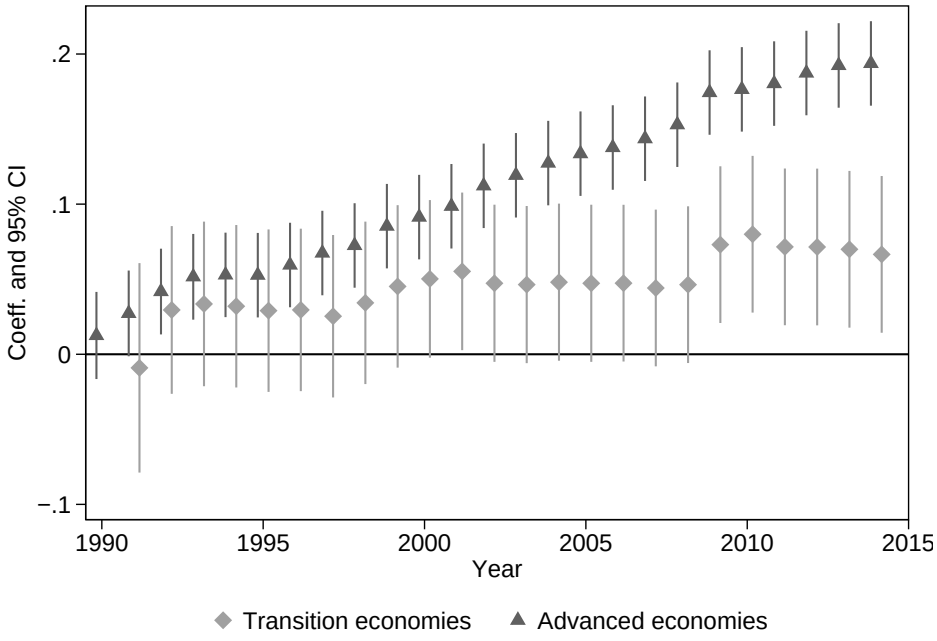
Employment rate of women (standardized)	ILO	EUROSTAT	OECD
Unemployment rate (standardized)	-0.60***	-0.19***	-0.52***
	(0.06)	(0.02)	(0.03)
Transition country (dummy)	0.31*	0.40***	0.13
	(0.15)	(0.07)	(0.07)
× unemployment rate	0.34*	0.02	0.16**
	(0.17)	(0.03)	(0.06)
Constant	-0.12*	0.33***	0.15***
	(0.05)	(0.05)	(0.03)
Observations	486	632	1,030
R-squared	0.23	0.95	0.25

Note: Unemployment rate and employment rates standardized within sample, panel regression robust estimator with time fixed effects. Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05

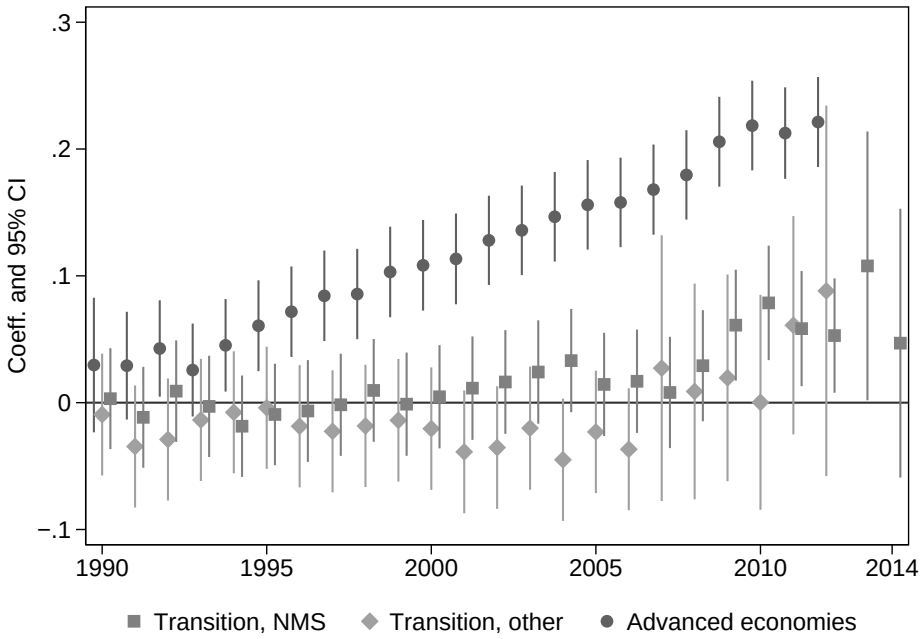
Sample for ILO data comprises all member states, some time series date back to 1970s. Sample for OECD comprises all EU Member States and associated countries, with some time series dating back to 1960s. EUROSTAT comprises current EU member states. Data for EU15 used as of 1989.

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 Tables C.1 and C.2 for a detailed account of the 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.

$$\begin{aligned} \Delta P(emp) &= \sum_{a=1}^{3} P_t(Age=a) * (E[emp_t|_{Age=a}] - E[emp_{t-1}|_{Age=a}]) \\ &= \sum_{a=1}^{3} P_t(Age=a) * (\Delta P(I|_{Age=a}) + \Delta P(U|_{Age=a}) + \Delta P(S|_{Age=a}) + \Delta P(R|_{Age=a})) * (-1) \end{aligned} \tag{B.5}$$

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 D.2, 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. Tables C.1 and C.2 report 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 (I)

Country	Census	ECHP	ELFS	ISSP	LFS	LSMS	LiTS
	Transition countries						
ALB						2002/2005	1989/2006
ARM	2001						1989/2006
AZE							1989/2006
BGR			2000/2012	1993/1997, 1999/2000, 2002/2003, 2005		1995, 1997, 2001, 2003	1989/2006
BIH						2001/2004	1989/2006
BLR	1999				2008, 2011		1989/2006
CZE			1998/2012	1992/1997, 1999/2008, 2010, 2012			1989/2006
EST			1997/2012				1989/2006
GEO					2000, 2005, 2010/2011		1989/2006
HRV				2006, 2008/2009	1996/2008		1989/2006
HUN	1990, 2001		1997/2012	1990/1999, 2001/2009			1989/2006
KAZ							1989/2006
KGZ						1993, 1996/1998	1989/2006
LTU			1998/2012				1989/2006
LVA			1998/2012	1995/1996, 1998/2001, 2003/2005, 2007, 2009	1998/2014		1989/2006
MDA							1989/2006
MKD							1989/2006
MNE							1989/2006
POL			1997/2012	1991/1997, 1999, 2002, 2008	1995/2010		1989/2006
ROM	1992, 2002		1997/2012		2007/2011		1989/2006
RUS				1991/1994, 1996, 1998, 2000/2003, 2005/2007, 2009/2010, 2012	1994/1996, 1998, 2000/2011		1989/2006
SRB					1995/2002, 2008/2011	2002/2003, 2007	1989/2006
SVK			1998/2012	1999, 2004			1989/2006
SVN	2002		1996/2012	1991/1994, 1996/1997, 1999/2000, 2003, 2005/2006, 2009, 2012			1989/2006
TJK						1999, 2003, 2009	1989/2006
UKR				2008/2009	2008/2010		1989/2006
UZB							1989/2006

Notes: List of all databases used for transition countries. *2002/2005* indicates all years between 2002 and 2005, inclusive. Under the heading LFS, we include data from nationally comparable sources: Household Budget Survey (Belarus 2008, 2011); Integrated Household Survey (Georgia, 2000, 2005, 2008/2012); and the Russian Longtidunal Monitoring Survey (Russia, 1994/2010).

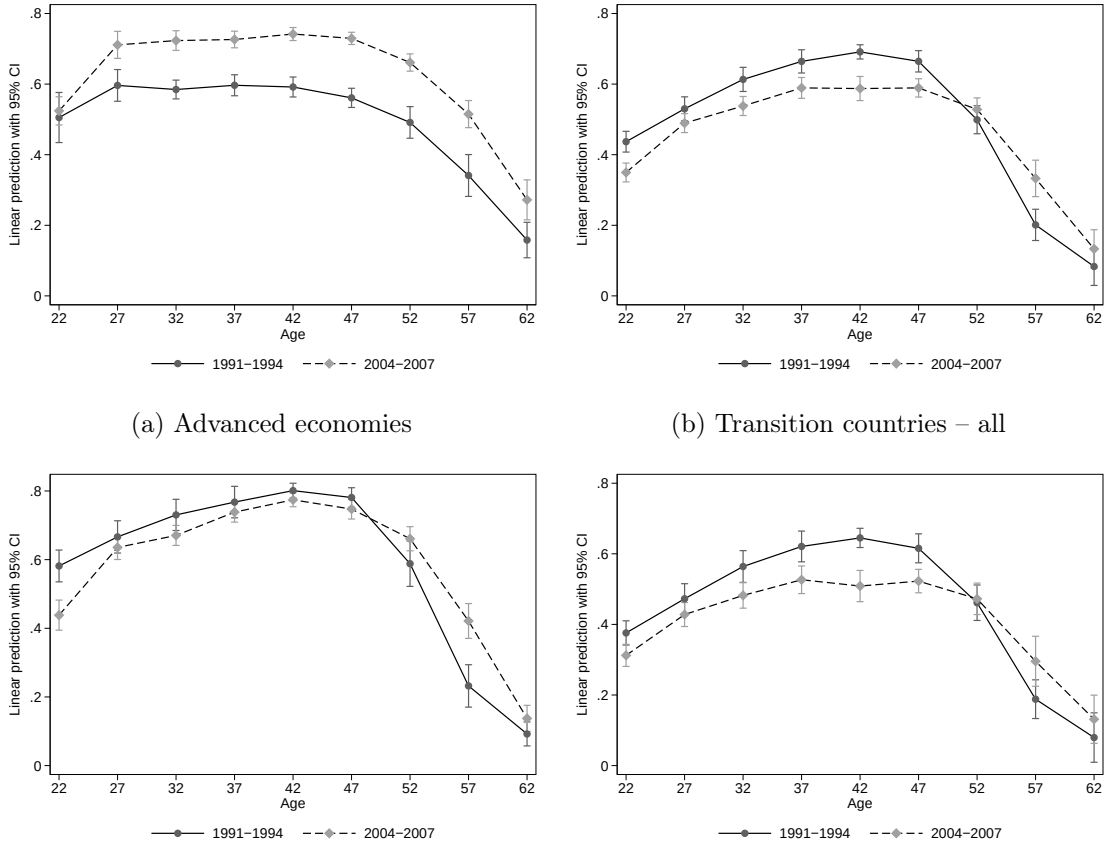
Table C.2: Countries and periods covered with data sources (II)

Country	ECHP	ELFS	ISSP
	Benchmark countries		
AUT	1995/2001	1995/2012	1989, 1995, 1999, 2001/2002, 2004, 2008, 2010
BEL	1994/2001	1992/2012	
CHE		1996/2012	1998, 2001/2003, 2005, 2007, 2009
CYP		2000/2012	1996/1999, 2001/2002, 2004/2005, 2007/2009
DEU	1994/2001	2002/2012	1989/2000, 2002, 2004, 2006, 2008, 2010, 2012
DNK	1994/2001	1992/2012	1997/1998, 2001/2003, 2005/2006, 2008/2010
ESP	1994/2001	1992/2012	1994/2006, 2008/2010, 2012
FIN	1996/2001	1995/2012	2000/2010, 2012
FRA	1994/2001	1993/2012	1996, 1998/1999, 2002/2010, 2012
GBR	1994/2001	1992/1997, 1999/2012	1989/2007, 2009/2010, 2012
GRC	1994/2001	1992/2012	
IRL	1994/2001	1992/1997, 1999/2012	1989, 1991, 1993/1994, 1996, 1998, 2002/2003, 2005, 2008
ISL		1999/2012	2009, 2012
ITA	1994/2001	1992/2012	1989, 1991, 1993/1997, 2008
LUX	1994/2001	1992/1997, 1999/2012	
NLD	1994/2001	1996/2012	1989, 1991, 1993/1995, 1997/1998, 2000, 2002, 2005/2006, 2008
NOR		1996/2012	1989/2008, 2010, 2012
PRT	1994/2001	1992/2012	1997, 1999/2000, 2003/2004, 2006, 2009
SWE	1997/2001	1995/2012	1994/1996, 1998/1999, 2002/2010, 2012

Notes: List of all databases used for benchmark countries. *1995/2001* indicates all years between 1995 and 2001, inclusive.

D Stylized facts

Figure D.1: 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.

Table D.1: Replication of Table 1 using one dataset per country-year (the one with more observations)

Dependent variable:	Calendar years		Years from transition	
adjusted gender employment gap	(1)	(2)	(3)	(4)
Transition country	-0.454***		-0.0471	
	(0.0528)		(0.0645)	
Time	-0.0298***	-0.0294***	0.0157***	-0.0282***
	(0.00820)	(0.0042)	(0.0034)	(0.0033)
× transition country	0.0534***	0.0451***	-0.0001	0.0409***
	(0.00979)	(0.0049)	(0.0054)	(0.0039)
Time^2	0.000404	0.0004**	-0.0003***	0.0001***
	(0.000319)	(0.0002)	(0.0000)	(0.0000)
× transition country	-0.00153***	-0.0006***	-0.0007***	-0.0005***
	(0.000398)	(0.0001)	(0.0002)	(0.0001)
Constant	0.639***	0.3592***	0.2849***	0.7128***
	(0.0462)	(0.0120)	(0.0622)	(0.0335)
Country FE	No	Yes	No	Yes
Observations	930	930	930	930
R-squared	0.142	0.7973	0.1099	0.7983

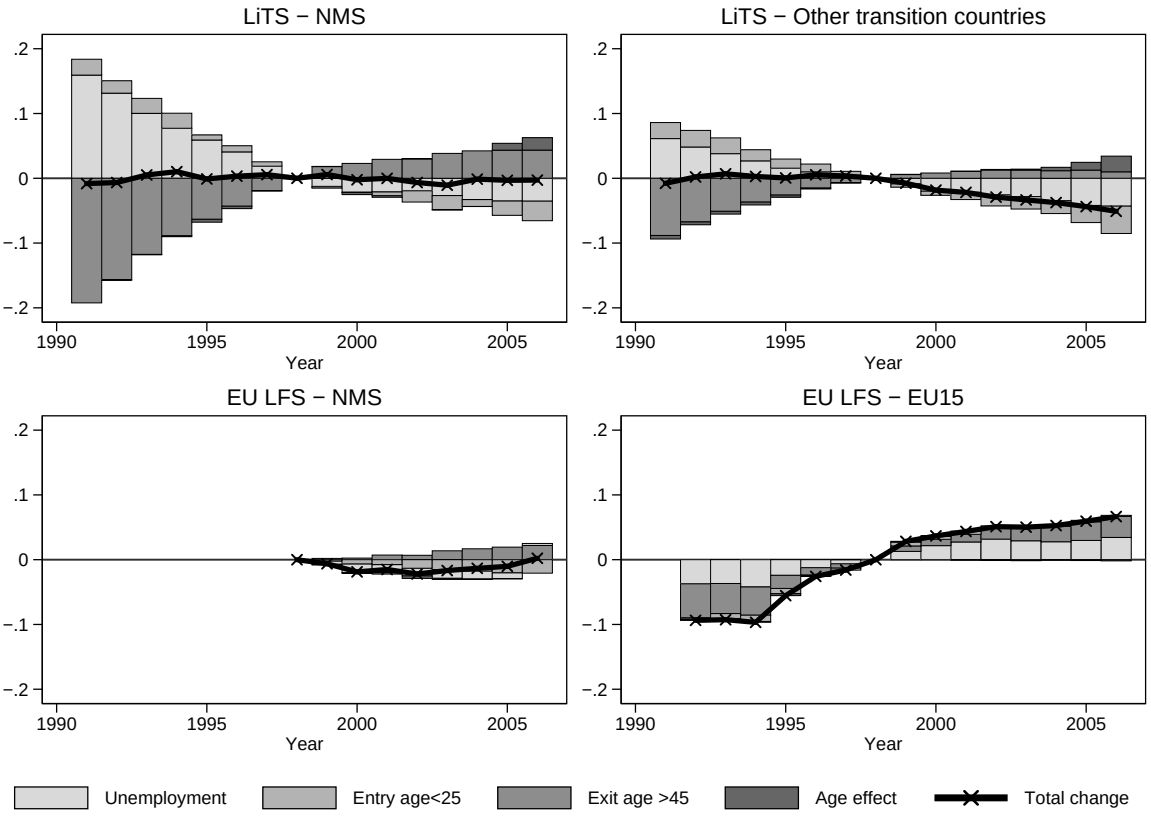
Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Specifications (2), and (4) include country fixed effects. Robust standard errors, *** p<0.001, ** p<0.01, * p<0.05. When more than one data source was available for given country and year, we kept the dataset with the highest number of observations. For further details see the notes to the Table 1.

Table D.2: Replication of Table 1 averaging observations from the same country and year

Dependent variable:	Calendar years		Years from transition	
adjusted gender employment gap	(1)	(2)	(3)	(4)
Transition country	-0.466***		-0.0635	
	(0.0525)		(0.0643)	
Time	-0.0278***	-0.0260***	0.0163***	-0.0273***
	(0.00816)	(0.0041)	(0.0034)	(0.0032)
× transition country	0.0494***	0.0392***	-0.0018	0.0388***
	(0.00973)	(0.0049)	(0.0054)	(0.0039)
Time^2	0.000285	0.0002	-0.0003***	0.0001**
	(0.000318)	(0.0002)	(0.0000)	(0.0000)
× transition country	-0.00131***	-0.0004***	-0.0006***	-0.0004***
	(0.000396)	(0.0001)	(0.0002)	(0.0001)
Constant	0.649***	0.3582***	0.2952***	0.7130***
	(0.0460)	(0.0119)	(0.0619)	(0.0331)
Country FE	NO	YES	NO	YES
N	929	929	929	929
R-squared	0.158	0.8021	0.1238	0.8042

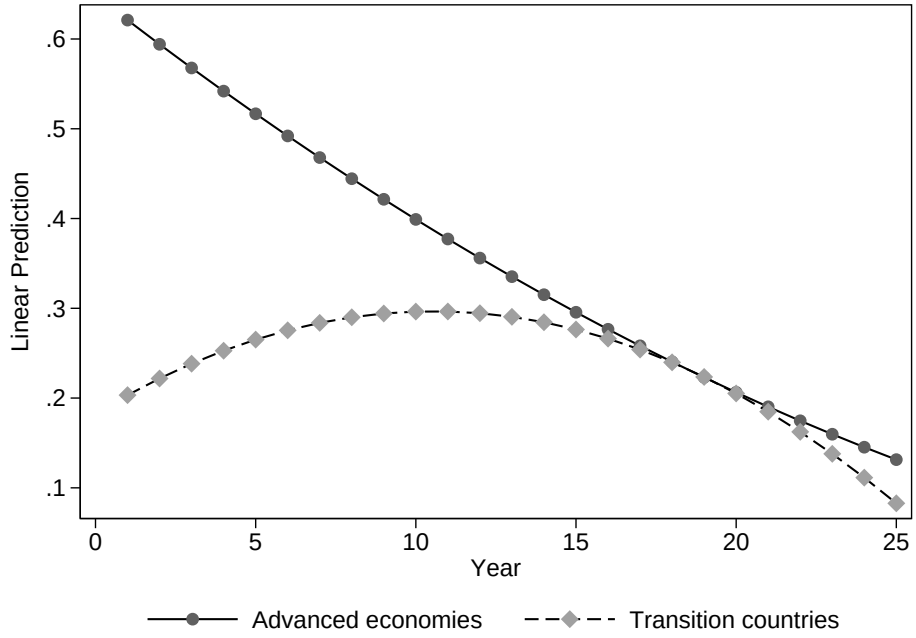
Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Specifications (2), and (4) include country fixed effects. Robust standard errors, *** p<0.001, ** p<0.01, * p<0.05. When more than one data source was available for given country and year, we kept the dataset with the highest number of observations. For further details see the notes to the Table 1.

Figure D.2: Decomposition of changes in female employment rate



Notes: We anchor all values in 1998 and compute accrued contributions to the overall change between this anchor year and a respective period. Results are reported in Figure D.2. The 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. 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. Disaggregated results can be made available upon request.

Figure D.3: Time trend shapes – estimates from Table 1



Note: Please refer to Table 1 for model specification and Tables C.1 and C.2 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

E.1 Gender employment gap and opportunity costs of working

Table E.1: Replication of Table 2 using one dataset per country-year (the one with more 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		-0.22***	-1.83***	-2.33***	0.13			-2.18***
		(0.04)	(0.15)	(0.26)	(0.10)			(0.12)
× transition		0.41***	1.69***	2.37***	-0.06	-0.48	-0.03	1.54***
		(0.03)	(0.19)	(0.26)	(0.16)	(0.41)	(0.11)	(0.15)
Wald test (p-value)		0	0.310	0.780	0.610	0.240	0.810	0
Constant	0.29*	0.40***	0.51***	0.76***	0.32**	0.48***	0.34***	1.06***
	(0.14)	(0.05)	(0.12)	(0.15)	(0.13)	(0.08)	(0.08)	(0.11)
R-squared	0.73	0.82	0.78	0.76	0.77	0.87	0.87	0.83
coefficient at	Quantile estimates							
25^{th} pctile		-0.05	-0.09	0.12	-0.04	-1.32***	-0.08	-0.51***
		(0.05)	(0.12)	(0.17)	(0.05)	(0.46)	(0.11)	(0.10)
50^{th} pctile		0.21***	-0.49***	-0.12	0.18*	-0.68*	0.17	-0.76***
		(0.04)	(0.16)	(0.24)	(0.09)	(0.40)	(0.20)	(0.11)
75^{th} pctile		0.36***	-2.25***	-0.85*	0.20	0.97	0.07	-1.88***
		(0.11)	(0.41)	(0.45)	(0.37)	(0.75)	(0.12)	(0.22)
Observations	930	842	930	928	730	228	240	930

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<0.001, ** p<0.01, * p<0.05. 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.2: Replication of Table 2, averaging estimates from the same 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		-0.28***	-1.81***	-2.12***	0.45***			-2.39***
		(0.04)	(0.16)	(0.20)	(0.10)			(0.11)
× transition		0.45***	1.88***	2.33***	-0.17	-0.43	-0.16	1.87***
		(0.03)	(0.22)	(0.24)	(0.16)	(0.34)	(0.10)	(0.14)
Wald test (p-value)		0.00	0.710	0.210	0.0200	0.210	0.110	0.00
Constant	0.29***	0.40***	0.42***	0.61***	0.22***	0.28***	0.33***	0.97***
	(0.02)	(0.02)	(0.03)	(0.07)	(0.02)	(0.04)	(0.05)	(0.04)
R-squared	0.73	0.83	0.77	0.77	0.73	0.87	0.88	0.83
coefficient at	Quantile estimates							
25^{th} pctile		0.02	-0.26*	-0.13	0.11**	-0.47	-0.16	-0.42***
		(0.04)	(0.13)	(0.13)	(0.04)	(0.64)	(0.12)	(0.08)
50^{th} pctile		0.18***	-0.69***	-0.39**	0.31***	-0.51	-0.45***	-0.83***
		(0.04)	(0.19)	(0.17)	(0.07)	(0.37)	(0.10)	(0.11)
75^{th} pctile		0.43***	-2.26***	-1.13***	0.81***	-0.15	0.13	-1.84***
		(0.08)	(0.41)	(0.35)	(0.20)	(0.40)	(0.11)	(0.23)
Observations	929	841	929	929	785	228	240	929

Notes: Estimates of adjusted gender employment gap from Ñopo (2008). Robust standard errors from regression with country, and year fixed effects, *** p<0.001, ** p<0.01, * p<0.05. When more than one source was available for the same country country and year, we have constructed observation with the average value of explained and explanatory variables over different sources. For further details see the notes to the Table 2.

Table E.3: Replication of Table 2 where the dependent variable is the unadjusted gender employment gap

	(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***	-0.97***	-0.90***	0.19**			-1.76***
		(0.03)	(0.09)	(0.12)	(0.08)			(0.07)
× transition		0.38***	0.99***	0.90***	-0.06	-0.69***	-0.18**	0.88***
		(0.02)	(0.13)	(0.14)	(0.12)	(0.25)	(0.08)	(0.09)
Wald test (p-value)		0.00	0.85	0.99	0.17	0.01	0.02	0.00
Constant	0.30**	0.45***	0.39***	0.49***	0.21**	0.38***	0.27***	1.09***
	(0.11)	(0.04)	(0.10)	(0.11)	(0.10)	(0.05)	(0.06)	(0.09)
R-squared	0.76	0.81	0.78	0.77	0.78	0.85	0.85	0.86
	quantile estimates							
25^{th} pctile		-0.11***	-0.29***	0.01	-0.01	-1.01*	-0.24***	-0.61***
		(0.04)	(0.09)	(0.09)	(0.06)	(0.54)	(0.08)	(0.08)
50^{th} pctile		0.08**	-0.50***	-0.19*	0.22**	-1.26**	0.08	-0.91***
		(0.03)	(0.11)	(0.11)	(0.08)	(0.52)	(0.14)	(0.09)
75^{th} pctile		0.16**	-1.26***	-0.69***	0.13	0.27	-0.18	-1.64***
		(0.08)	(0.20)	(0.22)	(0.26)	(0.39)	(0.15)	(0.15)
Observations	1,478	1,371	1,478	1,478	977	402	419	1,478

Notes: Estimates of raw gender employment gap from Ñopo (2008). Robust standard errors from regression with country, year and source fixed effects, *** p<0.001, ** p<0.01, * p<0.05, 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.4: Replication of Table 2 where the dependent variable is the gap between women inside and outside of the common support

		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	0.01	-0.00	-0.03			0.01
		(0.01)	(0.02)	(0.03)	(0.02)			(0.02)
× transition		-0.01**	0.06**	-0.06**	0.08***	-0.00	0.01	0.04
		(0.01)	(0.03)	(0.03)	(0.03)	(0.07)	(0.02)	(0.02)
Wald test (p-value)		0.00	0.00	0.00	0.03	0.95	0.77	0.00
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)	(0.02)	(0.02)	(0.02)	(0.02)
R-squared	0.48	0.52	0.49	0.49	0.52	0.60	0.60	0.49
coefficient at	Quantile estimates							
25^{th} pctile		-0.00	0.02***	-0.01***	-0.01	0.03	0.01	0.01**
		(0.00)	(0.01)	(0.00)	(0.01)	(0.04)	(0.01)	(0.00)
50^{th} pctile		-0.00	0.02***	-0.01	-0.01	0.04	0.01	0.00
		(0.00)	(0.01)	(0.01)	(0.01)	(0.04)	(0.01)	(0.00)
75^{th} pctile		-0.03**	0.05*	-0.05	0.01	-0.01	0.04	0.07***
		(0.01)	(0.03)	(0.04)	(0.02)	(0.11)	(0.03)	(0.03)
Observations	1,478	1,371	1,478	1,478	977	402	419	1,478

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<0.001, ** p<0.01, * p<0.05, 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.

E.2 Gender employment gap and opportunity costs of working: heterogeneity across cohorts

Table E.5: Replication of Table 3 using one dataset per country-year (the one with more observations)

		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	-0.03*	-0.06***	-0.03	-0.05**	0.08***	0.02
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)
Coefficient		0.19***	-0.05	-0.14	0.74***	-0.64***
		(0.04)	(0.13)	(0.08)	(0.12)	(0.08)
Constant	0.28	0.22***	0.30	0.37*	0.10	0.67***
	(0.17)	(0.06)	(0.17)	(0.17)	(0.17)	(0.17)
R-squared	0.51	0.57	0.51	0.52	0.54	0.54
	quantile estimates					
25^{th}						
Working bef. transition		-0.03*	-0.02	-0.04*	0.10***	0.04**
		(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Coefficient		0.03	0.31**	-0.33***	0.64***	-0.43***
		(0.05)	(0.12)	(0.09)	(0.10)	(0.08)
50^{th}						
Working bef. transition		-0.03*	-0.06***	-0.08***	0.06*	-0.00
		(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
Coefficient		0.15**	0.24	-0.28**	0.71***	-0.51***
		(0.05)	(0.13)	(0.09)	(0.15)	(0.08)
75^{th}						
Working bef. transition		-0.07**	0.00	-0.07**	0.08	0.03
		(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
Coefficient		0.28**	-0.66***	-0.23	0.86***	-0.84***
		(0.09)	(0.19)	(0.16)	(0.24)	(0.13)
Observations	1,124	963	1,110	1,099	1,010	1,110

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.6: Replication of Table 3, averaging observations from the same country and year

		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	-0.02	-0.05***	-0.02	-0.03*	0.09***	0.01
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Coefficient		0.19***	-0.02	-0.14	0.69***	-0.46***
		(0.04)	(0.16)	(0.08)	(0.12)	(0.09)
Constant	0.25	0.25***	0.25	0.34*	0.07	0.50**
	(0.16)	(0.05)	(0.16)	(0.16)	(0.16)	(0.16)
R-squared	0.52	0.58	0.52	0.53	0.54	0.54
	quantile estimates					
25^{th}						
Working bef. transition		-0.02	-0.01	-0.01	0.08***	0.03*
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.05	0.34*	-0.30***	0.44***	-0.22**
		(0.04)	(0.14)	(0.08)	(0.11)	(0.08)
50^{th}						
Working bef. transition		-0.02	-0.04*	-0.04**	0.06**	0.00
		(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Coefficient		0.09*	0.29	-0.27**	0.48***	-0.31***
		(0.04)	(0.15)	(0.08)	(0.12)	(0.09)
75^{th}						
Working bef. transition		-0.04	-0.01	-0.04	0.12**	0.02
		(0.02)	(0.03)	(0.02)	(0.04)	(0.02)
Coefficient		0.26**	-0.18	-0.30*	0.90***	-0.59***
		(0.08)	(0.23)	(0.15)	(0.22)	(0.14)
Observations	1,124	963	1,120	1,115	1,098	1,120

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<0.001, ** p<0.01, * p<0.05. When more than one source was available for the same country country and year, we have constructed observation with the average value of explained and explanatory variables over different sources. For further details see the notes to the Table 3.

Table E.7: Replication of Table 3 where the dependent variable is the unadjusted gender employment gap

		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	0.02*	-0.01	0.02	-0.00	0.15***	0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		0.09**	-0.04	-0.26***	0.83***	-0.73***
		(0.03)	(0.10)	(0.06)	(0.10)	(0.06)
Constant	0.26*	0.27***	0.27*	0.42**	0.03	0.69***
	(0.12)	(0.05)	(0.13)	(0.13)	(0.13)	(0.13)
R-squared	0.54	0.59	0.54	0.55	0.58	0.58
	quantile estimates					
25^{th}						
Working bef. transition		0.04***	0.07***	0.05***	0.17***	0.12***
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		-0.10*	0.11	-0.28***	0.51***	-0.56***
		(0.04)	(0.11)	(0.08)	(0.11)	(0.07)
50^{th}						
Working bef. transition		0.04***	0.05***	0.01	0.15***	0.09***
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Coefficient		-0.01	-0.10	-0.33***	0.69***	-0.68***
		(0.04)	(0.12)	(0.08)	(0.12)	(0.07)
75^{th}						
Working bef. transition		-0.06**	0.01	-0.05*	0.13**	0.03
		(0.02)	(0.02)	(0.02)	(0.04)	(0.02)
Coefficient		0.25**	-0.34	-0.25	0.96***	-0.78***
		(0.09)	(0.21)	(0.15)	(0.23)	(0.12)
Observations	1,770	1,569	1,684	1,672	1,416	1,684

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<0.001, ** p<0.01, * p<0.05. 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.8: Replication of Table 3 where the dependent variable is the gap between women inside and outside of the common support

		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	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Coefficient		0.01	-0.02	-0.05**	-0.02	0.00
		(0.01)	(0.03)	(0.02)	(0.03)	(0.02)
Constant	0.01	0.02	0.01	0.03	0.03	0.01
	(0.04)	(0.01)	(0.04)	(0.04)	(0.04)	(0.04)
R-squared	0.22	0.26	0.22	0.22	0.22	0.22
	quantile estimates					
25^{th}						
Working bef. transition		0.00	-0.00	0.00	0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Coefficient		-0.00	0.03**	-0.01	0.01	0.03***
		(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
50^{th}						
Working bef. transition		0.00	-0.00	-0.00	-0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Coefficient		0.00	0.02	-0.01	-0.00	0.02
		(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
75^{th}						
Working bef. transition		-0.02***	-0.02***	-0.02***	-0.03***	-0.02***
		(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Coefficient		-0.01	0.02	-0.04	-0.02	0.04
		(0.02)	(0.03)	(0.03)	(0.04)	(0.02)
Observations	1,783	1,582	1,697	1,685	1,425	1,697

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<0.001, ** p<0.01, * p<0.05, 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.

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