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Gender Pay Gaps in the Former Soviet Union: A Review of the Evidence

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ABSTRACT

The goal of this paper is to examine the patterns and movements of the gender pay gaps in the countries of the former Soviet Union (FSU) and to place them in the context of advanced economies. We survey over 30 publications and conduct a meta-analysis of this literature. Gender pay gaps in the region are considerable and above the levels observed in advanced economies. Similar to advanced economies, industrial and occupational segregation widens the gaps in the FSU countries, whereas gender differences in educational attainment tend to shrink them. However, a much higher proportion of the gaps remain unexplained, pointing toward the role of unobserved gender differences related to actual and perceived productivity. Over the last 25 years, the gaps contracted in most FSU countries, primarily due to the reduction in the unexplained portion. Underlying the contraction at the mean are different movements in the gap across the pay distribution. Although the glass-ceiling effect has diminished in some FSU countries, it has persisted in others. We investigate the reasons underlying these findings and argue that the developments in the FSU region shed new light on our understanding of the gender pay gaps.

KEYWORDS: Gender Pay Gap; Former Soviet Union; Meta-analysis

JEL CLASSIFICATIONS: J16; J31; P2

I. INTRODUCTION

Gender pay gaps are an important measure of gender inequalities in labor markets. The rich literature analyzing the gaps and their evolution in advanced economies[2] has established a number of stylized facts. While the gaps have contracted, they nevertheless remain considerable (Blau and Kahn 2017; ILO 2016b). The narrowing of the gaps in these countries has been associated with improvements in women's human capital characteristics, medical advances, the availability of childcare, technological progress in household production, and growth in the sectors that tend to employ women (Olivetti and Petrongolo 2016; Ngai and Petrongolo 2017). Industrial and occupational segregation are the most important observed characteristics contributing to the gaps in advanced economies. However, as much as half of the gender pay gap remains unexplained and the unexplained portion has not diminished. Its persistence has been attributed to broader forces underlying wage inequality and labor market discrimination (Blau and Kahn 2017). On average, gender pay gaps in advanced economies tend to be higher at the top end of the distribution, potentially indicative of the glass-ceiling effect. Despite these common patterns, there is considerable variation, arguably due to the differences in the overall wage dispersion, mechanisms of selection into employment, the state of social care infrastructure, and labor market regulations (Olivetti and Petrongolo 2008; Perugini and Selezneva 2015).

The countries of the former Soviet Union[3] (FSU) have been viewed as relatively advanced in measures of gender equality due to their socialist past (Sattar 2012). This view can arguably invite comparisons with developed economies, many of which have in place well-established social care policies, labor market regulations, and antidiscrimination legislation aimed at addressing the gender imbalance in the labor markets. How do the FSU countries fit in the patterns observed in advanced economies? In this paper, we examine the existing gender pay gap literature on the FSU countries to establish the patterns and evolution of the gender pay gap and

[2] By advanced economies, we mean the United States and the countries of the European Union. Several papers to which we refer analyze the sample of OECD countries found here: http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm.

[3] The countries of the FSU surveyed in this paper include the Russian Federation (RUS), countries of the Western Commonwealth of Independent States (CIS) (Belarus BLR, Moldova MDA, and Ukraine UKR), South Caucasus (Armenia ARM, Azerbaijan AZE, and Georgia GEO), and Central Asia (Kazakhstan KAZ, Kyrgyz Republic KGZ, Tajikistan TJK, and Uzbekistan UZB). Turkmenistan is excluded due to data unavailability. Also, we do not consider the Baltic countries (Estonia, Latvia, and Lithuania), which became EU members in 2004.

the factors that have influenced it. We draw parallels with the evidence from advanced economies, and we argue that the developments in the FSU region can shed new light on our understanding of gender pay gaps and the forces that shape them.

During the early Soviet period, female participation in the labor force was seen as a key element in the industrialization process and in achieving Soviet economic growth objectives. The Soviet Constitution of 1936 explicitly accorded equal rights to work and payment for work to men and women, one of the earliest examples of gender equality legislation. The imperative to increase female labor force participation and to promote fertility grew due to the loss of a large portion of the male population during WWII. The Soviet government adopted a number of measures, such as the establishment of a universal childcare system through an extensive network of nurseries and kindergartens. Thus, according to some estimates, by the 1960s more than 75 percent of the female working-age population was in the labor force (Gunderson 1989). However, the resulting low gender gap in labor force participation rates was not mirrored by a low gap in the distribution of unpaid work within the household. Women remained the primary bearers of household and care responsibilities. In part due to these responsibilities, women concentrated in white-collar occupations that offered greater flexibility but were relatively lowly remunerated on the Soviet wage grid. The patterns of gender-based industrial and occupational segregation were further reinforced by job restrictions that prevented women from engaging in “unsuitable” and hazardous occupations that were typically more generously remunerated. As a result, Soviet women earned between 65 to 75 percent of men’s pay (Ofer and Vinokur 1982; Katz 1997; Gunderson 1989). Aided by the relatively low overall wage dispersion in the Soviet Union, this gap was nevertheless among the more equal outcomes at the time compared to Western countries (Gunderson 1989).

The collapse of the Soviet Union upended many of the existing institutional support mechanisms and had complex gendered consequences. The first decade of transition was characterized by macroeconomic instability and a poor labor market environment that shrank the economies of the FSU countries by 5.4 percent per year between 1990 and 2000. The deterioration of the social care infrastructure increased women’s care burden. Although women’s labor force participation rates declined, they did so at slower rates than men’s. This was in part because many women

joined the workforce in response to spousal job loss while others moved into lower-level occupations (Pignatti 2016; Pastore and Verashchagina 2011). As a result, in the early transition period, the gender gaps in labor force participation rate contracted rather than widened.

The weakening of wage setting mechanisms precipitated by the breakdown of the socialist system contributed to the widening wage inequality and placed increasing pressure on the gender pay gap because women were concentrated at the bottom end of the wage distribution (Brainerd 2000). As the state sector shrank, the private sector and, in particular, its informal component grew. The share of the informal economy reached as high as 48.9 percent of the GDP in 1999 (Schneider et al. 2010). In this environment, wage arrears became prevalent, disproportionately so in male-dominated industries (Ogloblin 1999).

The second decade of transition (2000–10) brought with it a brisk recovery for most FSU countries. It was fueled by economic and public-sector reforms, as well as the energy sector boom (in the case of resource-rich FSU countries). The momentum of the recovery was stalled by the 2008 financial crisis, which hit male-dominated sectors especially hard. Notably, recent years have seen the (re)introduction of legislation and policies aimed at addressing gender-based discrimination.

Despite these common developments across FSU countries, similar to advanced economies, they constitute a diverse group that as of 2017 includes seven lower-middle-income economies (Armenia, Georgia, Moldova, Kyrgyz Republic, Tajikistan, Ukraine, and Uzbekistan) and five upper-middle-income countries (Azerbaijan, Belarus, Kazakhstan, Russian Federation, and Turkmenistan) (World Bank 2017). Four FSU countries are energy-exporting economies (Azerbaijan, Kazakhstan, Russian Federation, and Turkmenistan).

In this paper, we synthesize the existing literature on the gender pay gaps in the FSU countries with the aim of establishing how the post-Soviet developments have influenced the gender pay gaps and placing the FSU countries in the context of advanced economies. The rest of the paper is structured as follows. Section 2 discusses our research strategy, which entails surveying the existing literature and supplementing the findings with a meta-analysis of the data drawn from

this literature. This section also presents the summary statistics of the meta-dataset. Section 3 establishes the current picture and the evolution of gender pay gaps at the mean and across the pay distribution. Section 4 analyzes the factors contributing to this picture and places them in the context of evidence from other countries. The final section concludes and identifies avenues for further research.

II. DATA AND METHODOLOGY

The initial list of studies in the survey was retrieved using the Econlit search engine and covers the 1986–2013 period. The keyword combinations used were "gender pay gap," "gender wage gap," "gender earnings gap," "gender pay differential," "gender wage differential," or "gender earnings differential," combined with the word "transition" or individual FSU country names. This yielded 61 articles, working papers, book chapters, or manuscripts. Out of these, 40 studies covered countries other than the FSU countries, leaving us with 21 publications. Five more studies were found from the related literature. We reviewed the reference lists in these publications, which allowed us to identify additional 12 studies. The final list contains a total of 39 studies.

These studies differ in terms of their representativeness. Most studies utilize country-level, nationally representative data for the working-age population based on household or labor force surveys. Others use more narrow samples. In particular, Ogloblin and Brock (2005) and Ogloblin and Brock (2006) focus on urban and rural populations, respectively. Semykina and Linz (2007) analyze a sample of employees in three Russian cities. Dohmen, Lehmann, and Zaiceva (2008) use personnel data from one Russian firm.

The studies also differ in terms of methodological approaches. As many as 28 publications use the Oaxaca-Blinder (OB) decomposition approach and its extensions, or express the gap in terms of the ceteris paribus gender dummy (Oaxaca 1973; Blinder 1973; Neumark 1988; Oaxaca and Ransom 1994; Reimers 1983). These studies enable the analysis of the gender pay gap at the mean. Nine use quantile decomposition methods, such as the ones developed in Machado and

Mata (2005) and Firpo, Fortin, and Lemieux (2007), that allow for the assessment of variation in the gap across the pay distribution. Two studies use the matching-based decomposition approach developed in Ñopo (2008). This approach accounts for the potential violation of the assumption of common support in the empirical distributions of observed characteristics for females and males, which may occur in the presence of industrial and occupational segregation.[4] Finally, eight studies evaluate the forces that have contributed to the changes in the gap over time by using the decomposition approach developed in Juhn, Murphy, and Pierce (1991).[5]

Our second source of data on the gender pay gaps comes from the database of the United Nations Economic Commission for Europe (UNECE). The UNECE dataset covers the 2000–13 period and includes a measure of the gender pay gap that is consistent across countries. The pay refers to the actual monthly earnings of employees and includes basic wages, cost-of-living allowances, and other guaranteed and regularly paid allowances and excludes overtime payments, bonuses and gratuities, family allowances, and other social security payments made by employers.

In contrast, the gender pay gaps in the surveyed studies vary by the pay measure, sample restrictions, and estimation methods. A meta-analysis-type estimation,[6] in which the base is the monthly actual earnings of wage workers, enables us to make consistent comparisons with the gender pay gap assessment based on the UNECE database. Importantly, it allows us to evaluate the role of differences in methodologies and sample restrictions across the reviewed studies. For the meta-analysis, we select the studies that use nationally representative data and employ the OB decomposition approach and its extensions, or a ceteris paribus gender dummy variable.

[4] In addition to Ñopo, Danza, and Ramos (2011) and Khitarishvili (2016), Goraus and Tyrowicz (2013) use the decomposition approach in Ñopo (2008) and data from 14 transition countries, including five FSU countries (Armenia, Belarus, Kyrgyz Republic, Russian Federation, and Tajikistan). Their focus is on the regional comparison between the transition countries and Western European countries and, as such, they do not report individual country-based findings.

[5] For a survey of decomposition methods, see Fortin, Lemieux, and Firpo (2011).

[6] The analysis is not a fully fledged meta-analysis because we do not control for the precision of the gender pay gap estimates (Stanley et al. 2013; Weichselbaumer and Winter-Ebmer 2005). This is in part because the majority of the studies in the sample do not report the standard errors of the gender pay gap or its components. The literature has used other approaches to control for the quality of the gender pay gap estimates. For example, one such approach entails restricting the sample to the studies that use several methodological approaches to obtain the gender pay gap estimates (Weichselbaumer and Winter-Ebmer 2005). The model is then weighed by the inverse of the coefficient of variation of the gender pay gap estimates based on different methodologies in each study. In our case, conducting such an exercise is not feasible given that only a few studies report gender pay gap estimates based on different methodological approaches.

The meta-analysis in its broadest form includes 26 studies and uses 128 observations, out of which 66 cover the first decade of transition and the remaining 62 correspond to the year 2000 and later (table 1). Close to half of our sample (52 observations) is drawn from the studies on the Russian Federation, followed by Ukraine and the Kyrgyz Republic. About two-thirds (86) of the estimates were produced by female authors, and more than half (76) appear in peer-reviewed publications. The number of observations reported in each publication varies from 1 to 15, with multiple observations due to the coverage of several countries or of a number of years for the same country.

Table 1. Composition of the Meta Dataset

Variable	Number of observations
Total	128
Year	
1986–99	66
2000–13	62
Country	
Belarus	8
Georgia	7
Kazakhstan	6
Kyrgyz Republic	18
Moldova	3
Russian Federation	52
Tajikistan	8
Ukraine	21
Uzbekistan	5
Female author	
No	42
Yes	86
Published	
No	52
Yes	76
Pay type	
Hourly	52
Monthly	76
Pay measure	
Actual	115
Contractual	13
Wage employment	
No	71
Yes	57
Full time	
All	123
Full time	5
Heckman	
No	111
Yes	17
Experience	
Age	76
Potential	47
Actual	5

OB male structure	
No	87
Yes	41
OB female structure	
No	106
Yes	22
OB pooled structure	
No	83
Yes	45
Male dummy	
No	108
Yes	20
Publication	
Anderson, Esenaliev, and Lawler (2015)	5
Anderson and Pomfret (2003)	6
Arabsheibani and Lau (1999)	4
Blunch (2010)	12
Ganguli and Terrell (2005)	3
Gerry, Kim, and Li (2004)	5
Glinskaya and Mroz (2000)	6
Gustaffson et al. (2015)	1
Hansberry (2004)	12
Johnes (2002)	3
Johnes and Tanaka (2008)	2
Kazakova (2007)	8
Khitarishvili (2009)	4
Khitarishvili (2016)	3
Klycheva (2016)	6
Newell and Reilly (1996)	1
Newell and Reilly (2001)	15
Ogloblin (1999)	2
Ogloblin (2005)	1
Paci and Reilly (2004)	4
Pastore and Verashchagina (2006)	2
Pastore and Verashchagina (2011)	6
Pavlova (2006)	10
Pignatti (2012)	2
Reilly (1999)	4
World Bank (2012)	1

As many as 76 observations are expressed in monthly terms and 52 observations are expressed in hourly terms. If hours of work are not controlled for, the use of monthly pay measures may result in a higher estimated gap than the use of hourly pay measures because women tend to work fewer hours than men in paid employment (Brainerd 1998). As many as 13 observations are reported in terms of contractual rather than actual wages, which can introduce bias if wage arrears are present (Gerry, Kim, and Li 2004; Ogloblin 2005).

Sample restrictions, too, can influence the estimates of the gender pay gap. In the meta-dataset, 57 observations correspond to the sample of wage workers only and the remaining 71 to the sample that includes both self-employed and wage workers. On the one hand, focusing on wage workers highlights that the earnings determination processes of wage workers and self-employed individuals vary, with the measure of interest being the gender wage gap as opposed to the gender earnings gap (Garcia-Mainar and Montuega-Gomez 2005). In addition, the quality of pay data among self-employed workers may be lower than among wage workers, justifying restricting the sample to wage workers only (Benedek and Lelkes 2011). With that said, Torosyan and Filer (2014) find that the level of underreporting is similar between wage workers and the self-employed in Georgia.

On the other hand, limiting the sample to wage workers constrains the applicability of the analysis to a potentially small portion of the employed workforce. For example, in 2013, the share of employed females engaged in wage work in Azerbaijan was only 29 percent (World Bank 2017). Furthermore, limiting the sample can bias coefficient estimates if the selection into the labor force and, in particular, into wage work is not properly accounted for (Dimova and Gang 2007). This may be a particularly serious issue in the countries in which wage employment is a relatively small share of overall employment (Comola and de Mello 2013). In the dataset, 17 observations are adjusted for the sample-selection bias using the Heckman approach, enabling the assessment of the role of the bias in the estimation of the gender pay gap.

The meta-analysis employs the following specification:

$$G_i = X_i\beta + \gamma C_i + \delta T_i + \theta T_i D_i + \varepsilon_i, \qquad (1)$$

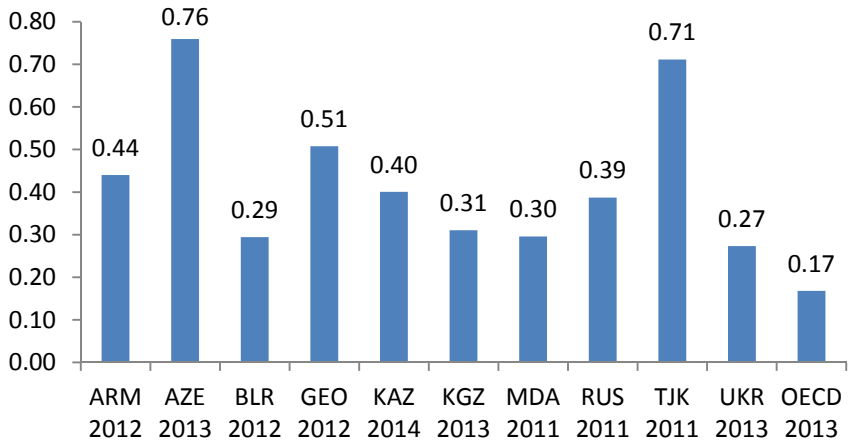
where G_i is a measure of the gender pay gap of observation *i*; X_i is the vector of meta explanatory variables; C_i is the vector of country dummy variables; T_i is the continuous year variable; D_i is the dummy variable denoting the post-2000 period; $\beta, \gamma, \delta,$ and θ are the vectors of coefficients that correspond to the meta explanatory variables, country dummy variables, year variable, and the interaction term between the year variable and the dummy variable for the post-2000 period, respectively; and ε_i is the error term. We estimate equation (1) using the ordinary least squares (OLS) method, accounting for the fact that the error terms from the same publication may be correlated (i.e., that $E[\varepsilon_{ig}\varepsilon_{jg'}] \neq 0$ if $g = g'$for $g = 1, \ldots, G$) by clustering the error terms by publication.

In line with other meta-analyses (Paci and Reilly 2004; Weichselbaumer and Winter-Ebmer 2005) and based on the data availability in the reviewed studies, the meta explanatory variables in X_i include: dummy variables that denote whether the study uses monthly pay (hourly pay as the base); contractual pay (actual pay as the base); wage employment only (all paid employment as the base); full-time employment (full-time and part-time employment as the base); and Heckman sample-selection correction. When assessing the unexplained portion of the gender pay gap, we use two additional sets of dummy variables: one that denotes the proxy used for experience (actual as the base) and another that indicates whether the unexplained portion of the gap is an outcome of the OB-type decomposition or a ceteris paribus gender dummy variable coefficient (the latter used as the base).

III. GENDER PAY GAPS AT THE MEAN AND ACROSS THE PAY DISTRIBUTION

The findings based on the UNECE data indicate the presence of considerable variation in the unadjusted gender pay gap in the FSU countries. The gaps are the smallest in the westernmost FSU countries, ranging from 27 log points in Ukraine to 30 log points in Moldova, implying female/male pay ratios of 76 and 74. These levels are comparable to the levels established for the Soviet period. The gaps are substantially wider in the countries of the South Caucasus and Central Asia. They are as wide as 71 and 76 log points in Tajikistan and Azerbaijan, respectively, implying female/male pay ratios of 49 and 47 (figure 1).

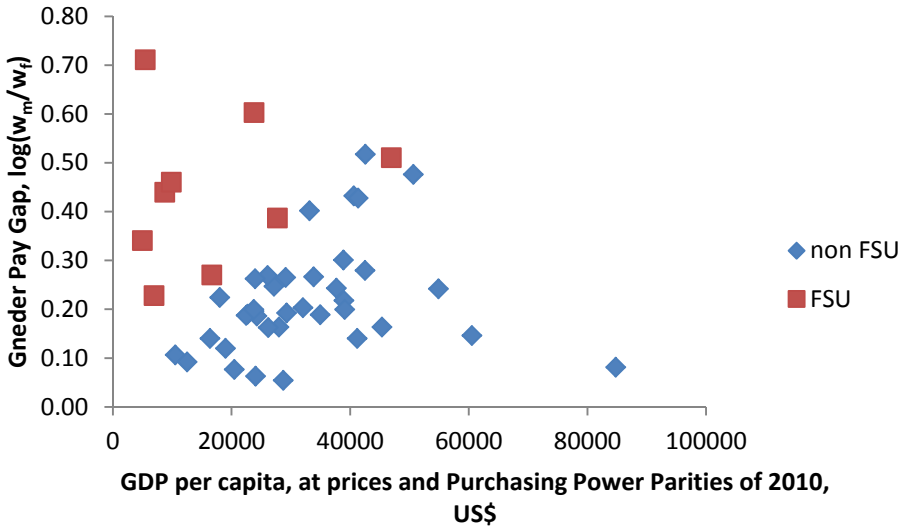
Figure 1. Gender Gap in Monthly Earnings (in log points)



Sources: UNECE (2016); for KAZ, ILO (2016a); OECD (2017)

Despite the broad variation, the gaps in the FSU region are consistently wider than in industrialized countries. The unweighted average of 44 log points for the FSU countries is more than twice as high as the 17 log-point average among the OECD countries (figure 1) and above the gaps for countries at similar levels of per capita GDP (figure 2). This picture underscores that the FSU countries no longer exhibit higher levels of gender equality in pay than advanced economies or other countries at similar levels of development.

Figure 2. Gender Pay Gap and GDP per Capita



Source: UNECE (2016)

Yet, our findings also reveal that over the last two-and-a-half decades, the gender pay gap in the FSU countries contracted (table 2, col 1), in line with the developments elsewhere (Paci and Reilly 2004; Blau and Kahn 2017). This finding potentially implies that the gender pay gaps sharply increased prior to the collapse of the Soviet Union or very early in the transition. Analysis using the UNECE dataset focuses on the recent period between 2000 and 2013 and reveals a decline in the gender pay gap of 1 log point per year. This estimate corresponds to the OLS coefficient of the year variable in the estimation of the log of gender pay gap, with country dummy variables included, and is statistically significant at 1 percent. Providing support for the validity of this result, the findings for the same period based on the meta-analysis indicate that the gender pay gap shrank by 1.2 log points per year (the sum of the continuous year variable and the interaction term between the year variable and the dummy for the post-2000 period).[7]

[7] In addition, the meta-analysis results reveal no evidence of publication bias (Stanley 2005). For the 2000–13 period, studies that have a female (co)author report gender pay gap that is 21.6 log points narrower.

Table 2. OLS Estimation of the Gender Pay Gap Using the Meta-dataset

VARIABLES	1986–2013 Total gap	1986–2013 Unexplained portion
	(1)	(2)
Year	-0.0120*	-0.0126**
	(0.00625)	(0.00585)
Year#2000+	5.46e-05*	4.77e-05*
	(2.91e-05)	(2.42e-05)
Female author	0.0222	0.0414
	(0.0501)	(0.0363)
Published	0.0535	0.0177
	(0.0439)	(0.0289)
Monthly [a]	0.0784*	-1.85e-05
	(0.0407)	(0.0356)
Contractual pay [b]	0.156**	0.0577
	(0.0689)	(0.0414)
Wage employment [c]	0.0131	0.00882
	(0.0475)	(0.0279)
Heckman	-0.00667	0.0108
	(0.0541)	(0.0580)
Potential [d] experience		0.1036**
		(0.0502)
Actual experience		-0.0275
		(0.0514)
OB male wage structure [e]		-0.0210
		(0.0303)
OB female wage structure		-0.0398
		(0.0242)
OB pooled structure		-0.0483
		(0.0341)
Constant	23.86*	25.16**
	(12.52)	(11.64)
Observations	115	128
R-squared	0.534	0.291

Notes: *** p<0.01, ** p<0.05, * p<0.1;[a] base is hourly;[b] base is actual pay;[c] base is all employment types (wage and self-employed);[d] base is actual experience;[e] base is ceteris paribus male dummy variable; country dummies included, but not reported; standard errors are clustered by publication.

Differences in observed characteristics appear to play a relatively small role in explaining the gap. According to the reviewed studies, on average close to 90 percent of the (already wider) gap in the FSU region is unexplained. In contrast, in industrialized economies the unexplained component is typically less than 50 percent (Blau and Kahn 1996, 2006). The substantially wider gender pay gaps in the FSU region are therefore due to unobserved factors.

Moreover, according to the meta-analysis results, it is the reduction in the unexplained portion of the gap of 1.2 log points a year that is largely responsible for the contractions in the observed gap (table 2, col 2). This finding is consistent with the available evidence for the 1980s and 1990s from the post-Communist and advanced economies. Weichselbaumer and Winter-Ebmer (2005) find a 1.9 percentage point decrease per year in the unexplained portion of the gap, whereas Paci and Reilly (2004) indicate a 1 percentage point decrease.[8] However, it contrasts with more recent developments in advanced economies, which reveal a slowdown in the contractions in the unexplained portion of the gap (Blau and Kahn 2017).

Beyond the common picture of the developments at the mean, the evidence with respect to the shape of the gap across the pay distribution and its movements reveals striking heterogeneity (table A2). The findings for advanced economies tend to be more uniform in revealing a higher gap at the top than at the bottom or middle of the pay distribution, indicative of the glass-ceiling effect (Perugini and Selezneva 2015; ILO 2016b; Cristofides, Polycarpou, and Vrachimis 2013). They also suggest that in recent years the declines in the gender pay gap have been the slowest at the top end of the pay distribution (Blau and Kahn 2017). In fact, among EU CEE countries, Perugini and Selezneva (2015) indicate a strengthening of the glass-ceiling effect during the 2008 crisis (outweighed by a shrinking of the gap at the bottom end of the distribution). Nevertheless, there is evidence of heterogeneity. In particular, in Southern European and Baltic countries the gap tends to be wider at the bottom than at the top end of the pay distribution (Cristofides, Polycarpou, and Vrachimis 2013; Nicodemo 2009). Such distributional heterogeneity can be attributed to different social and institutional contexts that may condition which segments of the male and female working-age population drive the movement in the gap at the mean.

Among the FSU countries, evidence from Central Asia is indicative of the presence and potential persistence of the glass-ceiling effect. On the one hand, Paci and Reilly (2004) report an inverted U-shaped gender wage gap in Tajikistan in 1999, with the gap being the widest in the middle of the distribution. On the other hand, the findings for Kazakhstan suggest that in 1996 the gap was

[8] Out of the former Soviet countries in this analysis, Weichselbaumer and Winter-Ebmer (2005) include the Russian Federation and Paci and Reilly (2004) include Belarus, Kazakhstan, Kyrgyz Republic, Russian Federation, Tajikistan, Ukraine, and Uzbekistan.

the highest at the top end of the distribution (Newell and Reilly 2001). Similarly, in Uzbekistan the gap was the highest at the top end of the distribution in 1995 and in 2001 (Newell and Reilly 2001; Paci and Reilly 2004). More recently, Anderson, Esenaliev, and Lawler (2015) report that as of 2013, the gender pay gap in the Kyrgyz Republic was the highest at the top end of the distribution.

Studies based on the Russian Federation reveal a more mixed picture. During the 1990s, Gerry, Kim, and Li (2004) suggest that low-earning women in the Russian Federation experienced the most wage discrimination. However, other studies find that the gap was the widest in the middle or at the top, more consistent with the glass-ceiling effect (Atencio and Posadas 2015; Newell and Reilly 2001; Reilly 1999; Hansberry 2004). By the late 1990s and early 2000s, Hansberry (2004) indicates that the gap was the lowest at the top; yet the evidence in Atencio and Posadas (2015) and Gustafsson et al. (2015) indicates the opposite. For the most recent period, the evidence is also indicative of the widest gap in the middle (Atencio and Posadas 2015) or at the top of the pay distribution (ILO 2016b), in line with the presence of the glass-ceiling effect.

The findings from Belarus, Georgia, and Ukraine, on the other hand, reveal a weakening of the glass-ceiling effect. This result indicates that in these countries the contractions in the gap at the mean have been driven by high-earning women. In some cases, the gap widened at the bottom end of the pay distribution, suggesting that the economic expansion benefitted low-earning men as well (Pastore and Verashchagina 2011; Khitarishvili 2016; Pignatti 2012).

In the rest of the analysis, we examine the forces that have played a role in the contraction in the gap at the mean and in the heterogeneous movements in the gap across the pay distribution.

IV. ANALYSIS OF THE GENDER PAY GAP

Human Capital Characteristics

The relatively small role of observed factors in explaining the gender pay gap in the FSU countries is to a large degree due to the advantage women hold in terms of their educational attainment. This finding is consistent with the evidence from advanced economies, in which women have caught up or surpassed men in terms of their human capital characteristics (Blau and Kahn 2017). Focusing on the whole transition region, Sattar (2012) finds that after controlling for education, the gender pay gap increases. Country-level studies support this conclusion. Pignatti (2012) finds that education and experience jointly were associated with lower gender pay gaps during 2000s in Ukraine. An analysis by the World Bank (2016b) confirms this finding for Ukraine for 2012. In the Russian Federation and Kazakhstan, despite the presence of industrial and occupational segregation that favors men, the explained portion of the pay gap attributed to observed characteristics is negative, indicating that the female advantage in educational attainment outweighs their disadvantage due to industrial and occupational segregation (ILO 2016b; Blunch 2010). In the case of the Russian Federation, this result held already in early transition, according to Newell and Reilly (1996) and Ogloblin (1999). Nevertheless, some regional variation is present. In Tajikistan, for example, in recent years, gender gaps in enrollment rates favoring boys have emerged at the secondary level. At the tertiary level, in 2013 only 36 percent of enrolled students were women (World Bank 2016a). Consequently, in Tajikistan gender differences in education contributed to rather than diminished the magnitude of the gender wage gap (Paci and Reilly 2004).

Similar to advanced economies, despite the typically stronger tertiary enrollment numbers, women in the FSU are overrepresented in health, education, and social services, and are underrepresented in engineering, manufacturing, and construction (Flabbi 2011). In fact, in the majority of FSU countries, women represent more than 70 percent of graduates in education and more than 65 percent of students in health and welfare. However, they are underrepresented in technical subjects. In Azerbaijan, fewer than 20 percent of students in engineering, manufacturing, and construction are women (World Bank 2016a). Hence, even though women's educational attainment tends to be higher, gender specialization in education perpetuates the

patterns of industrial and occupational segregation that contribute to gender pay gaps in the FSU countries (ILO 2016b).

Industrial and Occupational Segregation

Women in the FSU countries tend to be concentrated at the bottom of the occupational ladder and in typically lower-paying sectors of the economy, such as education, health, and social services. These are primarily state-financed sectors, which also offer better work flexibility and social benefits, such as maternity leave (Lausev 2014; Sattar 2012).

At least to some degree, the gender-based occupational segregation in the region has its roots in the Soviet-era job restrictions, many of which are still in effect. The World Bank (2015) reports that in countries with at least one job restriction, women earn 52 percent of men's wages compared to 64 percent in the countries without such restrictions.

These patterns of segregation are also driven by gender roles and existing social institutions that reinforce women's role as primary care providers. As a result, women may not take advantage of lucrative employment opportunities, instead moving into industries and work arrangements in which remuneration is traded for greater flexibility. Goldin (2014) argues that the predominance of occupations with rigid work-hour arrangements underlies the persistence of the unexplained portion of the gender wage gap in the United States. Focusing on the FSU region, Pastore and Verashchagina (2011) contend that the deterioration of the social care infrastructure over the last two-and-a-half decades has led many employed women in Belarus to move away from higher-paid jobs in the "material production" industries into lower paid but more flexible public-sector jobs in education and health; additionally, their working hours contracted relative to men. These developments were considerable enough to widen the gender pay gap in Belarus. That the gap widened primarily at the bottom of the pay distribution underscores the fact that the worsening of social care provisioning has affected low-earning women in Belarus the most. Once employed, women's earnings continue to be disproportionately affected by care responsibilities, as the evidence from Tajikistan highlights. Women in Tajikistan lose considerably more working days than men taking care of sick children (Maltseva 2007).

In the presence of segregation, positive and negative sector-specific shifts can have considerable gender implications. For example, Ngai and Petrongolo (2017) argue that the expansion of the service sector has been instrumental in the gender wage gap contraction in the United States. Similar findings apply to the FSU countries with respect to public-sector shifts. Khitarishvili (2016) finds that the public-sector expansion between 2004 and 2007 in Georgia was associated with the shrinking of the gap. It benefitted women at the top end of the distribution the most. Similarly, public-sector shifts contributed to the reduction in the gender wage gap in Ukraine between 2003 and 2007, also mostly at the top end of the distribution (Pignatti 2012).[9] The opposite changes took place at the bottom end of the distribution. The expansion of employment in private industries, such as construction and transport, and the corresponding wage increases in these industries between 2004 and 2007 were associated with the widening of the gap at the bottom end of the distribution in Georgia (Khitarishvili 2016). In fact, in Ukraine the gender pay gap in the private sector widened all across the pay distribution between 2003 and 2007, although not enough to counteract the contraction in the gap in the public sector (Pignatti 2012). In Belarus, between 2001 and 2006, the gap also widened at the bottom and contracted at the top, although the end result was the widening in the gap at the mean (Pastore and Verashchagina 2011). These movements in the gender pay gap across the pay distribution highlight that the beneficiaries of the economic expansion in Georgia, Ukraine, and Belarus were primarily low-earning men and high-earning women.

In contrast to the expansionary periods, during the 2008 crisis, developments in the private sector appear to have contributed to the contraction in the gap. The contractionary effect was particularly pronounced at the bottom end of the distribution in Georgia, as low-earning men were hurt the most (Khitarishvili 2016). Between 1986 and 2003, the period that encompasses

[9] It is notable that the gender pay gaps in the public sector in the transition region tend to be wider than in the private sector, whereas the opposite holds in other developed and developing countries (Lausev 2014; World Bank 2012). This is likely due to the considerable occupational segregation within the public sector, in which women tend to hold lower-level positions than men. Indeed, Jovanovic and Lokshin (2004) find that the gap was 19 percent in the private sector and 25 percent in the public sector in the city of Moscow in 1997. In Georgia, during 2004–11, the gap in the public sector was consistently higher than the gap in the private sector (Khitarishvili 2016); in 2011, it was 39 percent in the public sector and 34 percent in the private sector. In Ukraine, Ganguli and Terrell (2005) and Pignatti (2012) also find that up until 2003 the gap in the public sector in Ukraine was higher than its counterpart in the private sector.

the collapse of the Soviet Union and the first decade of transition, the narrowing of the gender wage gap in Ukraine was also primarily due to the contraction at the bottom end of the distribution (Ganguli and Terrell 2005). These findings highlight that contractions in the gap may reflect an environment in which both men's and women's absolute positions deteriorate.

In sum, the reviewed evidence indicates that although changes in occupational and industrial segregation due the deterioration of the social care infrastructure and the expansion of male-dominated sectors may have placed increasing pressure on the gap, the forces contributing to the contraction—such as shifts in the public sector—dominated.

Pay Effects

Our review of the literature has established an important but modest role for educational attainment, as well as industrial and occupational segregation, in explaining the gender pay gap in the FSU countries. In contrast, unobserved factors are the chief reason behind the gap and the reduction in their importance has been instrumental in reducing the gap in the FSU countries.

To some extent, the relatively large estimates of the unexplained portion of the gap can be an artifact of the assumptions underlying the estimation approaches. For example, the OB decomposition method and its extensions assume that the characteristics of men and women have common support. Yet, in the economies with a high degree of industrial segregation this may not be the case if, for example, men or women are not represented in some industries. If so, the portion of the gap that reflects the incomplete overlap may get attributed to the unexplained portion of the gap, overestimating its magnitude. Khitarishvili (2016) compares the results of the OB-type estimation with the results based on the decomposition method in Ñopo (2008), which accounts for the lack of overlap. She finds that in the Georgian context the unexplained portion of the gap in OB-type estimation is indeed overestimated by 4 log points, which is about 7 percent of the total gap.

Biased estimates of the unexplained portion of the gap can also stem from measurement errors in variables. For example, the use of potential experience as a proxy for actual experience may overestimate the unexplained portion of the gap due to attenuation bias (Paci and Reilly 2004;

Regan and Oaxaca 2009). A meta-analysis does suggest that some estimation choices may play a role in overestimating the unexplained portion of the gap. For example, studies using potential experience report an unexplained portion of the gap that is 10.4 log points higher than studies using actual experience (table 2, col 2). Also, studies that use contractual pay report an estimate that is 7.4 log points higher than the studies that use actual pay, consistent with the presence of wage arrears that disproportionately affected men (Ogloblin 1999).

Nevertheless, estimation and measurement issues shed little light on the factors underlying the substantially wider gender pay gap in the FSU countries compared to advanced economies, despite the similarities in the role of gender differences in observed characteristics. The literature offers a number of possible explanations, including the overall wage dispersion, selection issues, gender differences in personality traits, labor market discrimination, and the role of wage-setting institutions and labor market regulations (Blau and Kahn 2017). We examine these issues in the context of available evidence from the FSU countries.

Wage Inequality

International evidence indicates that wider pay structures tend to be associated with higher gender pay gaps (Blau and Kahn 2003, 1996). However, inequality in the FSU countries appears to be comparable to what is seen elsewhere. For example, the post-2000 average Gini coefficient for FSU countries was 32 compared to 30 for non-FSU UNECE countries, with the difference being statistically insignificant at reasonable levels (World Bank 2016a).

On the other hand, recent movements in the overall pay dispersion could have in fact facilitated the contraction in the gap. The Gini coefficient in each of the FSU countries either declined or remained unchanged after 2000. The average Gini coefficient in the FSU region decreased from 38 in the 1990s to 32 for the post-2000 period, with the difference being statistically significant at a less than 1 percent significance level (World Bank 2016a).

We assess the link between the changes in wage inequality and the gender wage gap by analyzing empirical studies from the FSU countries that use the approach in Juhn, Murphy, and Pierce (1991). Their approach highlights that widening (compressing) wage inequality will

expand (contract) the gender wage gap and its unexplained portion if women are concentrated at the bottom end of the wage distribution, which is a typical pattern. It breaks down the changes in the gap into two components. The gender-specific component is due to the differences in men's and women's characteristics and in the returns to these characteristics. The wage-structure component is due to changes in the skill or industrial premia that apply to both men and women. It can be further decomposed into the changes in men's residual wage distribution (as a measure of wage inequality), and in women's position in that distribution.

Focusing on the early transition period, Brainerd (2000) and Johnes and Tanaka (2008) find that the widening wage inequality in the Russian Federation in the 1990s outweighed the improvement of women's position in men's residual wage distribution and the narrowing of gender-specific differences, resulting in a small expansion of the gender wage gap. On the other hand, Reilly (1999) finds that the expanding wage inequality during this period was, to the contrary, outweighed by the improvement in women's position in the male residual wage distribution and the narrowing of gender differences, resulting in a slight contraction in the gender wage gap.[10] Despite these differences, all three studies reveal the increasing pressure on the gap due to the widening inequality in the Russian Federation during the 1990s.

Unlike the case of the Russian Federation, Anderson and Pomfret (2003) find that residual wage inequality compressed in the Kyrgyz Republic between 1991 and 1993. The gender pay gap nevertheless widened because women's position in the male residual wage distribution worsened substantially. Similarly, in Belarus between 1996 and 2001 and between 2001 and 2006, even though wage inequality compressed slightly, the gender pay gap widened; in that case it is because women's characteristics and returns to these characteristics worsened relative to men's (Pastore and Verashchagina 2011). The same development was observed in Ukraine between 1999 and 2003, as women's position in the male residual wage distribution worsened (Pavlova 2006). On the other hand, since 2003, although compression in the residual wage inequality in Ukraine continued, women's returns to characteristics improved, hence the two forces have been

[10] Dohmen, Lehmann, and Zaiceva (2008) also report the contraction in the gender pay gap in the Russian Federation, but (potentially because the authors use the data from one firm) in their analysis wage inequality narrowed between 1997 and 2002, working in tandem with the narrowing of gender-specific differences to reduce the gap.

working in tandem to narrow the gender wage gap (Pignatti 2012). In sum, the available evidence for the post-2000 period reveals a compression in overall wage dispersion, which facilitated rather than counteracted the contraction in the gender wage gap.

In sum, the current level of wage inequality in the FSU countries is comparable to what is observed in advanced economies and hence is unlikely to explain the much-larger unexplained portion of the gap. However, recent compressions in wage inequality do appear to have played a role in contracting the gap by reducing its unexplained portion.

Selection Issues

A considerable body of literature examines the role of selection into employment on the gender pay gaps and their unexplained portion. Mulligan and Rubinstein (2008) argue that the shift from negative to positive selection into employment between the 1970s and 1990s was responsible for the narrowing of the gender wage gap in the United States. A number of cross-country studies contend that women's positive selection into employment contributes to the greater underestimation of the gap in the countries with a low female labor force participation rate, resulting in the negative correlation between gender gaps in employment rate and pay.[11]

In contrast, in the FSU countries, there is little evidence of the positive selection of women into employment. If anything, the selection of women (and in some cases men) into employment appears to be negative, which would suggest that a considerable portion of employed women are less productive than women who stay out of workforce.[12] In the presence of negative selection, observed gaps will be overestimated if there is a stronger negative selection into female employment, which indeed appears to be the case in the FSU countries. Out of the seven studies in this review that use the Heckman sample-selection correction, Ogloblin (1999) is the only study that finds evidence of positive selection, and only for men; selection is negative for women. Evaluating the selection bias in a panel-data setting using the data from a large Russian firm,

[11] See Olivetti and Petrongolo (2008) for OECD countries, Christofides, Polycarpou, and Vrachimis (2010) for EU countries, and Perugini and Selezneva (2015) for EU CEE countries.

[12] Positive (negative) selection into employment means that unobservable characteristics that drive the selection into employment are positively (negatively) correlated with pay. This implies that women who are more likely to work have greater (lower) earning potential compared to women who are not in the labor force. Mulligan and Rubinstein (2008) argue that the presence of negative selection effects is consistent with positive assortative spousal matching, in which productive women stay out of workforce because they are married to productive husbands.

Dohmen, Lehmann, and Zaiceva (2008) find that females in the lower part of the distribution were less likely to leave their job at the firm, lending further support to the hypothesis of negative selection. In the context of negative selection, changes associated with the transition process, such as the deterioration of the social care infrastructure, may have contributed to the growing upward bias in the gap, as Pastore and Verashchagina (2011) find for Belarus.

We assess the magnitude of the resulting bias using the meta-analysis and find that although it is a factor, the negative selection is not strong enough to bias upwards the estimates of the gender pay gap. Indeed, the coefficient estimate of the Heckman correction is small and statistically insignificant (table 2, col 2). It is therefore not surprising that the coefficient of correlation between the gender gaps in the employment rate and pay in the FSU countries was only -0.03 in 2013, in contrast to -0.47 in OECD countries (World Bank 2016a; Olivetti and Petrongolo 2008). These findings highlight the different nature of selection into employment in the FSU region compared to advanced economies.

In the context of the FSU countries, the literature has also evaluated the selection bias that stems from ignoring the presence of wage arrears. Gerry, Kim, and Li (2002) and Ogloblin (2005) account for it in the context of the Russian Federation. They find that ignoring wage arrears resulted in the overestimation of the unexplained portion of the gap by about 9 percentage points. This was the case because men were more affected by wage arrears in terms of both their incidence and magnitude due to the types of jobs in which they were employed. However, as wage arrears became less common between the mid-1990s and early 2000s, the degree of overestimation decreased and, as a result, arguably so did the unexplained portion of the gap in the analysis (Ogloblin 2005).

Taken together, these selection biases on their own do not appear to be strong enough to explain the substantially higher observed gender pay gaps in the FSU countries compared to advanced economies.

Personality Traits

A recent strand of literature explores the role of gender differences in personality traits related to labor productivity and remuneration that are typically unobserved, such as the desire to compete, the need for challenge, and the willingness to bargain. This literature uses measures of personality traits based on experimental and self-reported data. It finds that gender differences in personality are indeed important, although they explain only a modest portion of the gender pay gap (Shurkov and Eckel 2018; Blau and Kahn 2017). The evidence from the FSU countries is broadly in line with these conclusions. Using employee data from three Russian cities, Semykina and Linz (2007) find that gender differences in personality traits, such as the need for challenge and the need for affiliation, explain about 8 percent of the gender pay gap. The results in Anderson, Esenaliev, and Lawler (2015) suggest a relatively small role for gender differences in personality traits in the Kyrgyz context. However, the authors find a much stronger effect with respect to the gender differences in risk-taking behavior, which explains close to 20 percent of the gender pay gap in the Kyrgyz Republic. To the extent that some of the gender differences in personality traits and risk-taking behavior are socially acquired, it is plausible that their explanatory power will be stronger in environments in which gender norms are more pronounced (Shurkov and Eckel 2018). However, our understanding of the role of nature versus nurture (in general) and in the case of the FSU countries (in particular) is still in very early stages, and more research is needed in order to paint a clearer picture.

Labor Market Discrimination

None of the evidence available in the reviewed literature enables us to rule out the role of gender-based labor market discrimination in influencing the gender pay gap, even though its precise magnitude is hard to establish. Recent efforts have focused on utilizing matched employer-employee datasets or conducting experiments that aim at directly measuring labor market discrimination. The resulting evidence has been supportive of its presence (Blau and Kahn 2017).

In a rare analysis focusing on the FSU region, Asali, Pignatti, and Skhirtladze (2017) evaluate the evidence of labor market discrimination at the hiring stage. They conduct an experiment in which fictitious resumes of otherwise identical men and women were uploaded on several

Georgian employment-service web sites. The study finds no evidence of gender discrimination at the hiring stage. Whether these experimental results can be generalized to more typical settings remains an open question. On the other hand, indirect evidence of gender-related labor market discrimination in the FSU region has been documented throughout the transition period in the form of explicit discrimination in job postings and violations of the labor rights of women (Ganguli and Terrell 2005; World Bank 2016b).

If labor market discrimination is responsible for the large unexplained portion of the gender pay gap in the FSU countries, the key question to explore is what factors may be enabling it. International evidence suggests that cross-country differences in legislative and institutional infrastructure may be one such factor. We consider them next.

Regulatory and Legislative Steps

In particular, higher rates of unionization, wage coordination, and better work-family reconciliation policies tend to be associated with lower gaps (Blau and Kahn 2003, 1996; Perugini and Selezneva 2015) and, more specifically, with a lower unexplained portion of the gap (Christofides, Polycarpou, and Vrachimis 2010). The magnitude and pervasiveness of discrimination may be higher in lower-income countries because of the poorer coverage of antidiscriminatory regulation and enforcement capacity (World Bank 2012). We examine each issue in the context of the FSU countries using the available evidence.

Focusing on the role of unions, during the Soviet period the primary function of unions was to serve as channels of communication between the Communist leadership and workers; the unions were not involved in the wage-setting process or in worker representation (Brainerd 2000). Their current role in the wage-setting process remains small, although in the Russian Federation and Ukraine unions are formally involved in the determination of the minimum wage (WageIndicator 2017). To evaluate the strength of centralized collective bargaining in the FSU countries we use data from the Fraser Institute's Economic Freedom Dataset, with higher values of an index

representing a lower level of collective bargaining (Gwartney, Lawson, and Hall 2016).[13] The data confirm that collective bargaining institutions are weaker in the FSU countries than in other countries. The index is 7.31 for the FSU countries and 6.51 for the rest of the world, with the difference being statistically significant at 5 percent. Furthermore, within the FSU region, the correlation coefficient between the gender pay gap and the lack of centralized collective bargaining is 0.37. This result indicates that the FSU countries with a greater degree of unionization exhibit lower gender pay gaps, consistent with evidence from advanced economies (Blau and Kahn 2003, 1996; Christofides, Polycarpou, and Vrachimis 2010).

Stronger minimum wage legislation, too, is typically associated with narrower gender pay gaps in the FSU countries because women tend to be concentrated at the bottom end of the pay distribution. Indeed, Brainerd (2000) attributes the greater widening in the gender pay gap in the Russian Federation and Ukraine compared to Eastern European countries in early transition to the greater erosion of minimum wages in the 1990s. She finds that, whereas prior to 1995 the Russian Federation and Ukraine kept the minimum wage rate at 30 percent of the average wage, by 1995 it had fallen to 8.6 percent in the Russian Federation and less than 1 percent in Ukraine (Brainerd 2000). In contrast, more recently, Lukyanova (2011) finds that the threefold increase in the minimum wage in the Russian Federation between 2005 and 2009 contributed to the 3 percentage point contraction in the gender wage gap. Ganguli and Terrell (2005) and Pignatti (2012) also argue that minimum wage legislation played a role in shrinking the gender wage gap in Ukraine. This impact was visible primarily at the bottom end of the wage distribution and in the public sector. These findings underscore that the effectiveness of minimum wage legislation depends on the coverage of employment standards.

In the context of the FSU countries, the importance of the coverage of employment standards is also visible in the evidence on the impact of gender equality laws. In particular, the introduction of legislation aimed at reducing gender inequalities has contributed to a contraction of the gender pay gap in Ukraine, with the effect being stronger in the public sector than in the private sector (Pignatti 2012). In the case of the Kyrgyz Republic, which has a sizable share of self-

[13] The dataset includes data for 159 developed and developing countries. The data for Belarus, Turkmenistan, and Uzbekistan is unavailable. Reported correlations correspond to the gender pay gap for the most recent year available and the strength of regulations for 2014.

employment, Klycheva (2016) finds that the 2011 equal rights amendment to the constitution has not played a role in narrowing the gender pay gap. Hence, the impact of the legislation may depend on the scope and strength of enforcement. Further highlighting this point, currently only Azerbaijan and Uzbekistan have laws that mandate both equal remuneration for work of equal value and nondiscrimination based on gender in hiring (World Bank 2015). Yet, these two countries also have the highest gender pay gaps in the region, which, in the case of Azerbaijan, have hardly changed since the 1990s.[14]

In sum, the evidence from the FSU countries is consistent with the argument that a weaker institutional infrastructure may underlie a large unexplained portion of the gap, potentially due to greater space for labor market discrimination. It also suggests that institutional improvements may have played a role in reducing the unexplained portion of the gap. However, this evidence further highlights that the effectiveness of the existing infrastructure, such as wage-setting institutions and antidiscriminatory legislation, may be constrained by the economic structure of the FSU countries, which is characterized by large shares of employment in the informal sector and self-employment.

V. CONCLUSIONS

The findings reviewed in this paper indicate that gender pay gaps in the countries of the FSU vary substantially but overall remain sizable. Contrary to the preconceptions about the lasting impact of the socialist legacy, they are wider than in other countries at similar levels of development. They tend to be wider in the South Caucasus and Central Asian regions and are moderate in the Russian Federation and Western CIS. Gender differences in educational attainment tend to contract the gap in the FSU countries, whereas industrial and occupational segregation contributes to it; this is in line with the evidence from advanced economies. Yet, compared to advanced economies, the magnitude of the unexplained portion of the gap in the FSU countries is substantially higher. This can be attributed to the stronger role of unobservable factors that affect the actual and perceived productivity of men and women.

[14] The data on the changes in the gender pay gap for Uzbekistan is not available (UNECE 2016).

Over the last 25 years, the gender pay gap has narrowed in the FSU countries, with the exception of Belarus. The primary reason underlying the contraction in the gap over the whole period has been the reduction in the unexplained portion of the gap. Available evidence suggests that improvements in the state of institutional infrastructure and gender equality legislation have played a role, even though the structure of the economy in which they were implemented may have limited their effectiveness.

Underneath these common patterns lie different shifts in the gender pay gap across the pay distribution. In some countries the glass-ceiling effect appears to have weakened, especially in the public sector, whereas in others it has persisted. To some degree, these differences can also be attributed to the dependence of the movements in the gap on the phase of the business cycle. During expansions, high-earning women and low-earning men appear to have benefitted whereas during the downturns, low-earning men and women have been the biggest losers.

The findings of this review establish distinctive elements in the factors underlying the gender pay gap in the FSU countries and its evolution. For example, in contrast to advanced economies, there is no evidence of a negative relationship between gender gaps in labor force participation and pay, potentially due to the absence of positive selection effects. This finding prompts further investigation into the ways in which the mechanisms of selection into employment are influenced by the interplay among the macroeconomic environment, labor market conditions, and the state of social care infrastructure.

The analysis also underscores that the next steps in contracting the gender pay gap in the FSU countries will have to involve further disentangling of the unobserved factors that enter the unexplained portion of the gap. Beyond the factors analyzed in this survey, the role of entrenched gender norms and stereotypes with respect to women's productive and reproductive roles merits careful consideration. Gender norms and stereotypes are arguably instrumental in shaping the legislative framework and social care infrastructure, decisions with respect to educational paths, labor force participation, patterns of industrial and occupational segregation, and personality traits, as well as influencing the choices employers make in determining employee remuneration. Hence, the analysis of their malleability in response to prevailing

economic forces and policy interventions may provide key insights for enabling further contractions in the gap.

What emerges undisputed from this survey is that a contraction in gender pay gaps in the FSU countries will require an arsenal of interventions, some of which address existing issues analyzed in this survey whereas others anticipate emerging challenges, such as the ageing population and the growing care needs likely to be borne by women.

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APPENDIX

Table A1. List of Empirical Studies that Evaluate the Gender Pay Gap in the FSU Countries

Country	Year	Study	Approach used					Source and notes
			OB	Ñopo	JMP	Quantile	Gender dummy	
Russian Federation	1996–2002	Hansberry (2004)	X					Econlit
	1993, 2000	Johnes and Tanaka (2008)	X		X			Econlit
	1996, 2002, 2011	Atencio and Posadas (2015)				X		Econlit
	1994	Arabsheibani and Lau (1999)	X					Atencio and Posadas (2015)
	1994–96	Ogloblin (1999)	X					Econlit
	2000–02	Ogloblin (2005)	X					Econlit
	1997, 2002	Dohmen, Lehmann, and Zaiceva (2008)	X		X	X	X	Econlit, one-firm data
	1992, 1996	Newell and Reilly (2001)	X			X	X	Johnes and Tanaka (2008)
	1992, 1996	Reilly (1999)			X	X	X	Atencio and Posadas (2015)
	1992	Newell and Reilly (1996)	X					Atencio and Posadas (2015)
	1994–98	Gerry, Kim, and Li (2004)	X					Econlit
	1992–95	Glinskaya and Mroz (2000)	X					Johnes and Tanaka (2008)
	2000–03	Semykina and Linz (2007)	X					Econlit, employees in Taganrog, Saratov, and Ekaterinburg
	2003	Gustafsson et al. (2015)					X	Econlit
	1996, 1998, 2000, 2002	Kazakova (2007)	X				X	Econlit
	1991, 1993, 1994	Brainerd (1998)			X			Khitarishvili (2016)
	1991, 1994	Brainerd (2000)			X			Pastore and Verashchagina (2011)
	2012–13	Elder and Kring (2016)						Other, young population
Ukraine	1991, 1994	Brainerd (2000)			X			Pastore and Verashchagina (2011)
	1996	Newell and Reilly (2001)	X					Johnes and Tanaka (2008)
	1986, 1991, 2003	Ganguli and Terrell (2005)				X		Pignatti (2012)
	2000–03	Pavlova (2006)	X		X			Econlit
	2003, 2007	Pignatti (2012)	X		X	X		Econlit
	2009	Blunch (2010)	X					Sattar (2012)
	2012–13	Elder and Kring (2016)						Other, young population
Armenia	2012–13	Elder and Kring (2016)						Other, young population

Belarus	1996, 2001	Pastore and Verashchagina (2006)	X				X	Econlit
	1996, 2001, 2006	Pastore and Verashchagina (2011)	X		X	X		Econlit
Moldova	2002	Ñopo, Daza, and Ramos (2011)		X				Anderson, Esenaliev, and Lawler (2015)
	2009	Blunch (2010)	X					Sattar (2012)
	2012–13	Elder and Kring (2016)						Other, young population
Georgia	2000–04	Khitarishvili (2009)	X					Econlit
	2004, 2007, 2011	Khitarishvili (2016)	X	X		X		Econlit
Azerbaijan	2005	Pastore et al. (2016)	X			X		Econlit, young population
Kyrgyz Republic	1993, 1997	Anderson and Pomfret (2003)	X		X		X	Pastore and Verashchagina (2011)
	2010–12	Klycheva (2016)	X					Other
	2013	Anderson, Esenaliev, and Lawler (2015)				X		Other
	2009	World Bank (2012)	X					Other
Kazakhstan	1996	Newell and Reilly (2001)	X					Johnes and Tanaka (2008)
	2009	Blunch (2010)	X					Sattar (2012)
Tajikistan	1999	Paci and Reilly (2004)	X			X		Pastore and Verashchagina (2011)
	1999	Johnes (2002)					X	Johnes and Tanaka (2008)
	2003	Ñopo, Daza, and Ramos (2011)		X				Anderson, Esenaliev, and Lawler (2015)
	2009	Blunch (2010)	X					Sattar (2012)
Uzbekistan	2001	Paci and Reilly (2004)	X			X		Pastore and Verashchagina (2011)
	1995	Newell and Reilly (2001)	X					Johnes and Tanaka (2008)

Notes: OB includes standard Oaxaca-Blinder decomposition approach with male or female pay structure as nondiscriminatory, as well as its variants proposed in Neumark (1988), Oaxaca and Ransom (1994), and Reimers (1983); JMP stands for the decomposition in Juhn, Murphy, and Pierce (1991); quantile stands for quantile decompositions methods, such as Firpo, Fortin, and Lemieux (2007), Machado and Mata (2006), and Melly (2005).

Table A2. Gender Pay Gap across the Pay Distribution

Country	Year	10th	25th	50th	75th	90th	Source	Measure
Ukraine	1986	0.29	0.37	0.41	0.45	0.46	Ganguli and Terrell (2005)	Monthly
	1991	0.22	0.41	0.44	0.51	0.47	Ganguli and Terrell (2005)	Monthly
	1996	0.29	0.23	0.26	0.15	0.12	Newell and Reilly (2001)	Hourly
	2003	0.07	0.19	0.47	0.50	0.44	Ganguli and Terrell (2005)	Monthly
	2003	0.02	0.13 (20th)	0.34	0.34(70th)	0.33	Pignatti (2012)	Hourly
	2007	0.10	0.20 (20th)	0.32	0.28 (70th)	0.21	Pignatti (2012)	Hourly
Belarus	1996	-0.10	0.02	0.10	0.18	0.20	Pastore and Verashchagina (2011)[1]	Hourly
	2001	-0.01	0.07	0.15	0.19	0.19	Pastore and Verashchagina (2011)[1]	Hourly
	2006	0.10	0.18	0.22	0.20	0.15	Pastore and Verashchagina (2011)[1]	Hourly
Georgia	2004	0.41	0.70	0.70	0.70	0.63	Khitarishvili (2016)	Monthly
	2007	0.70	0.60	0.61	0.70	0.53	Khitarishvili (2016)	Monthly
	2011	0.32	0.32	0.53	0.65	0.35	Khitarishvili (2016)	Monthly
Kazakhstan	1996	0.18	0.18	0.27	0.48	0.51	Newell and Reilly (2001)	Hourly
Kyrgyz Republic	2013	0.12	0.17	0.21	0.33	0.39	Anderson, Esenaliev, and Lawler (2015)	Monthly
Tajikistan	1999	0.69		0.92		0.61	Paci and Reilly (2004)	Monthly
Uzbekistan	1995	0.18	0.26	0.23	0.30	0.36	Newell and Reilly (2001)	Monthly
	2001	0.16		0.22		0.30	Paci and Reilly (2004)	Monthly
Russian Federation	1992	0.10	0.18	0.19	0.22	0.23	Newell and Reilly (2001)	Hourly
	1996	0.12	0.20	0.29	0.29	0.26	Newell and Reilly (2001)	Hourly
	1996	0.10	0.23	0.27	0.20	0.36	Hansberry (2004)[1]	Hourly
	1996	0.10		0.3		0.16	Atencio and Posadas (2015)	Hourly
	1998	0.37	0.23	0.25	0.21	0.18	Hansberry (2004)[1]	Hourly
	2000	0.14	0.27	0.45	0.41	0.38	Hansberry (2004)[1]	Hourly
	2002	0.21	0.30	0.25	0.22	0.10	Hansberry (2004)[1]	Hourly
	2002	0.13		0.25		0.35	Atencio and Posadas (2015)	Hourly
	2011	0.22		0.29		0.15	Atencio and Posadas (2015)	Hourly

	Gender dummy variable coefficients						
1992	0.15	0.23	0.26	0.31	0.33	Reilly (1999) monthly	Monthly
1992	0.10	0.18	0.19	0.22	0.23	Reilly (1999) hourly	Hourly
1996	0.26	0.23	0.35	0.38	0.38	Reilly (1999) monthly	Monthly
1996	0.12	0.20	0.29	0.29	0.26	Reilly (1999) hourly	Hourly
2003	0.38	0.40	0.39	0.41	0.43	Gustaffsson et al. (2015)[1]	Monthly

Notes: [1] approximation from a graph