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Inequality of opportunity and beliefs about success and failure

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Abstract

This paper explores the relationship between inequality of opportunity and beliefs about whether fair or unfair processes determine success and failure. Fair and unfair processes are defined according to the inequality of opportunity framework. Fair processes are those which are attributable to individual effort and skill. Unfair processes are those which cannot be attributable to individual skill or effort, and are linked to inadequate social benefits and bad governance. I find that while inequality of opportunity is strongly correlated with beliefs that failure is due to unfair processes, it is not correlated with perceptions about determinants of success. I also find that people in countries with higher income inequality tend to believe that both success and failure can be attributed to fair processes. The reverse is true for unemployment: where unemployment is high, people tend to attribute both success and failure to unfair processes. These results suggest that while people take credit for their own success, they acknowledge when economic failure may be due to unfair processes. This has implications for how we think about the channels through which inequality of opportunity may impact individual behaviour and, in turn, growth.

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JEL Classification: D31, O15, Z13

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1 Introduction

"Attitude is a little thing that makes a big difference."

- Winston Churchill

"...when I think about capitalism, I think about all the small businesses that were started because we have the opportunity and the freedom in our country for people to do that and to make a good living for themselves and their families."

- Hillary Rodham Clinton, CNN Presidential Democratic debate, Las Vegas, 13 October 2015

Equality of economic opportunity has become a ubiquitous aim of governments and development institutions in recent years. Its importance is mainly argued on moral and ethical grounds. Unlike income inequality, inequality of opportunity isolates the extent to which inequality in circumstances beyond an individual's control influences inequality of outcomes. Morally, we may prefer that people reach their potential and that circumstances out of their control should not inhibit this. Nonetheless, circumstances such as race or gender have been shown to heavily influence outcomes for minority or other disadvantaged groups (Altonji and Blank, 1999; Bertrand and Mullainathan, 2004; Blau and Kahn, 2000). Luck plays a role in everyone's life, but the consensus in philosophy circles, and increasingly among economists, is that inequality due to effort is justified, but inequality due to circumstances is not (Roemer, 1998; van de Gaer, 1993).

Beyond moral arguments, equality of opportunity is seen as a tool for achieving sustainable long-run economic growth. Disparity in outcomes due to exogenous circumstances may be bad for growth because when socio-economic background determines economic outcomes, rather than hard work and creativity, there is less reason to invest in human capital or innovation. People will under-invest and growth can suffer (Marrero and Rodríguez, 2013). By way of example, consider an economy where leadership positions in firms are given based on favouritism or elite social networks, rather than to the most capable from a pool of applicants. Fewer people will

invest in education and skills in order to obtain those positions and the economy will suffer as a result.

Lastly, inequality of opportunity may contribute to civil unrest, thus reducing sustainability of any growth. When family background, gender, race or place of birth limit an individual's opportunities for participation in the economy, this can cause frustration and mass discontent. This type of discontent can be seen in events from the civil rights movements in the United States to backlash against the white economic elite in various African countries.

One channel through which inequality of opportunity can influence individual under-investment and discontent is through perceptions and beliefs. In the transition region, perceptions of process fairness, especially fairness in government, have been shown to be correlated with life satisfaction (Djankov et al., 2016) as well as with inequality of employment opportunities (Abras et al., 2013). Perceptions of fairness are also important for voter turnout across countries (Birch, 2010). People who perceive that their life chances are limited by unfair processes may be more likely to challenge the status quo. Also, if people do not believe they can get rewarded for hard work and ability, there may be little incentive for people to "buy into the system", for example by building their skills or building a business. This argument depends crucially on how people perceive their own success, or lack thereof. Blaming failure on an unfair system can lead to dramatically different choices than if one believes effort is largely rewarded. For example, evidence shows that unequal opportunities have an effect on preferences for redistribution of wealth (Alesina and Ferrara, 2005; Eisenkopf et al., 2013). At the same time, being able to benefit from one's own hard work can also reduce support for redistribution (Balafoutas et al., 2013). Therefore, the importance of inequality of opportunity may rely heavily on how people perceive their own wealth and what they believe about the system in which they operate to generate wealth.

This paper looks at the links between inequality of opportunity, measured at the country level, and views about the underlying processes that support economic success or failure. First, I construct measures of inequality of opportunity for a set of 34 countries. Second, I test whether this

assessment is consistent with beliefs about what it takes to succeed or fail. For the analysis I use the 2010 Life in Transition Survey (LiTS2), of the European Bank for Reconstruction and Development (EBRD) and the World Bank.

This paper builds on a paper by Abras et al. (2013) that evaluates inequality of employment opportunities data from an earlier version of the LiTS, from 2006. Abras et al. (2013) consider correlations between inequality of opportunity (for employment) and perceptions of success and life satisfaction. They find that people are likely to attribute success to an unfair process when inequality of employment opportunities is high. They also find that higher inequality of employment opportunities is correlated with lower levels of life satisfaction. Their employment measure gives them a snapshot of labour market outcomes because it asks about whether a person was employed at all over a 12-month period. The results are reflective of attitudes and values in 2006.

My paper complements theirs by extending the measurement of inequality of opportunity to wealth, a longer-term measure of success. I also include an analysis of perceptions of failure. Success is logically the opposite of failure, but multiple factors determine success or failure in any given endeavour. The relative importance of the different factors may be viewed differently depending on the outcome of an effort. If I try hard to meet a deadline and fail, I may not take responsibility for the fact that I did not try hard enough to succeed. Alternatively, if I did try hard enough and still fail, it may be that success to meet the deadline requires more than just hard work. For example, functioning infrastructure and institutions may be just as important as effort for my ability to meet the deadline. Moreover, in many cases there is a grey area where we neither succeed nor fail, neither move out ahead nor fall behind. Thus, even though success and failure are likely due to similar processes, people can perceive them differently, with correspondingly distinct policy implications. I thus contribute to the debate on how to interpret measures of inequality of opportunity over a more long-term measure of well-being (wealth) and with more in-depth analysis of how it is reflected in people's attitudes.

More broadly, this paper contributes to the evidence on how inequality of opportunity may be

correlated with "market beliefs", an important market-enabling institution (Besley et al., 2009). Market-based economies require incentives that are fairly tied to effort, skills and investment. State commitment to reform requires strong public support of such processes. But pro-market structures that fail to benefit the population at large are at risk of eroding public confidence in market-based reforms. Moreover, well-functioning markets should create opportunity across the socio-economic spectrum, but transition takes time and some reforms may bring opportunities disproportionately to certain groups. The resulting inequality of opportunity may destroy pro-market beliefs, and replace them with a different set that may include preferences for market-distorting policies. Hence, it is important to understand the relationship between inequality of opportunity and beliefs.

The paper proceeds as follows. First, I describe the methodology used to estimate inequality of opportunity, including how I define wealth and circumstances. Second, I discuss the survey items used as dependent variables in the analysis. Next I describe my empirical specification for the main estimations and the data I use. This is followed by a presentation of the results and a conclusion.

2 Methodology

Our methods include two stages of estimation. First, I obtain estimates of inequality of opportunity for each of the 34 countries, using wealth as the outcome measure of well-being, following the approach in Ferreira, Gignoux, and Aran (2011). I also report the extent to which each circumstance contributes to inequality of opportunity using a Shapley decomposition. This technique determines how much of the variation in inequality that is explained by circumstances is attributable to each circumstance. Importantly, it accounts for correlation between the circumstances.[1] Second, I use these inequality of opportunity estimates in regression analyses that examine whether they are correlated with perceptions of determinants of success and failure.

2.1 Measuring inequality of opportunity

The technique I use for measuring inequality of opportunity has its theoretical roots in Roemer (1998). The first step in the measurement is to conceptualise what constitutes opportunity. It is nearly impossible to measure opportunity sets directly, since for any given individual one typically only observes the outcomes obtained. For example, in household survey data one can observe an individual's income or wealth outcomes. Sometimes one can also observe the action taken that led to the outcome. Going back to the example, actions might include whether the person took a job or what level of education they obtained. But one does not usually see all the forgone opportunities (for example, choosing employment out of high school instead of higher education) or the lack thereof (for example, choosing employment out of high school from a set of options that does not include higher education).

More specifically, in place of measuring inequality of opportunity directly, I use the Roemer (1998) framework to measure it indirectly. I follow the methodology set out in Ferreira, Gignoux, and Aran (2011) and based on earlier work by Bourguignon, Ferreira, and Menéndez (2007). In

[1] See Shorrocks (2013) for a technical analysis of this technique, as well as an extensive literature review.

this approach, inequality of opportunity is defined as the portion of inequality in wealth that can be attributed to circumstances at birth. The approach neatly distinguishes between what is an input and what it an output for economic success by going back to birth and characterising only an individual's "initial conditions" as inputs. Initial conditions (circumstances) include gender, place of birth and parental characteristics. These circumstances are what determine your lifetime flow of "unfair" opportunity. Economic outcomes are what follow from the interaction of the circumstances with effort and the policy environment. Note that economic outcomes may include income, wealth, or any other measure of economic success. In this paper, I look specifically at wealth outcomes. Wealth, and thus inequality of opportunity, is measured at the household level. My estimates thus approximate inequality of opportunity for individuals, which will be largely correlated among household members. The potential exception to this is whether it is correlated between household members of different genders, which I will discuss in more detail in the succeeding sections.

The estimation of inequality of opportunity occurs in three steps. The first step is to generate a measure of household wealth. The second step is to regress household wealth on circumstances of the household head at birth. In the third step, I calculate an inequality index with the results from the second step to get inequality of opportunity. I discuss each step in turn.

Using an asset index to measure wealth

Wealth of household i in country k, y_{ik}, is measured as a weighted sum of assets (Filmer and Pritchett, 2001; McKenzie, 2005; Sahn and Stifel, 2003). This asset index accounts for both a household's durable assets and housing quality indicators. While asset indexes do not capture flows of income and do not capture quality of assets, there are important advantages to using wealth rather than income to measure inequality, especially in the context of the transition region. First, income is often difficult to account for accurately as the rural poor and informal sector workers often do not have a predictable or easily summed up income stream. The use of barter further undermines accurate accounting. Second, self-employed or seasonal workers may report income differently than full-time employees. Third, recall bias for asset ownership is smaller than

for income. Fourth, although wealth fails to take account of short-run or temporary shocks, it is more reflective of longer-run household living standards. In the former communist context, asset-based wealth is particularly important as high-level officials and members of the Communist Party were often given supplements or bonuses in the form of goods or housing rather than cash.[2] Ultimately income and wealth are complementary outcomes and future analyses should consider how the inequality of opportunity ranking may differ for the two outcomes.

The asset index is constructed using principal component analysis (PCA), which yields a weighted average of the assets owned by a household. The weights are taken from the first component of the PCA output. Table 1 shows the list of assets included in the principle component analysis. I run the PCA separately for each country. I do this since I am interested in inequality of opportunity estimates within country. Also, I will use the asset index to look at country-specific wealth decile, and relative wealth position in each country may be defined by a different combination of assets. By definition the asset index has a mean of zero, with negative value capturing wealth of those below the mean and positive values for wealth of those above the mean. Table 2 shows the descriptive statistics for each country's resulting wealth variable. The asset index takes values from -13.15 to 9.88 across countries. Note that the median, minimum and maximum in Table 2 cannot be compared across countries. I list these to give a sense of the wealth distribution in each country. I also show histograms of each country's index in Figure 1.

Even if an asset index succeeds in proxying for levels of well-being, it may not be well-suited to studying inequality if the index suffers from clumping or truncation (McKenzie, 2005). If an insufficient number of asset indicators are used, then households will be clumped together in a small number of groups, which limits the amount of useful information about inequality that can be inferred from the asset index. The second potential issue is that of truncation of the asset index distribution, which can arise if there are not enough indicators that allow one to tell between the poor and the very poor, or between the rich and the upper middle class. In order to avoid clumping and truncation, a sufficient number of indicators must be used.

[2]Turkey and western Europe differ in this sense, but the same analysis was conducted in all countries for purposes of comparison.

I use a large number of common asset indicators to construct our asset indexes, which are mostly free of clumping. But they do display truncation at the top and bottom in many instances. This will limit the extent to which variation in the index will capture the very poor or the very rich. Truncation at the top occurs for wealthier countries, such as those in western Europe (specifically France, Great Britain and Sweden), meaning that many households near the middle of the income distribution in those countries own all the assets in the survey and the index fails to distinguish between the upper middle class and the rich. Since I am more interested in the factors that contribute to the inequality between the poor and the middle class, this is not of concern in our case. Nonetheless, care should be taken when comparing the results from western Europe with the rest of the sample, since the variation being explained by circumstances in these countries is coming almost exclusively from the left tail of the asset distribution. There is also some truncation at the bottom in Tajikistan and Uzbekistan, making it difficult to distinguish between the poor and very poor. Lastly, while Azerbaijan and Georgia suffer from some clumping, the density functions of most of the indexes are relatively smooth (McKenzie, 2005). Thus, while using these indexes for the analysis, I do so with the caveat that they most accurately capture inequality between the poor and the middle class.

Circumstances at birth

The circumstances included in our study are whether a person was born in an urban or rural area and the level of their father's and mother's educational attainment. Summary statistics of the circumstance variables can be found in Table 3. Place of birth incorporates both the opportunities one faced as a child, as well as the exogenous part of where one ultimately resides and the opportunities therein. Place of birth and place of residence as an adult are highly correlated in our data; the correlation is 0.63, significant at the 1 per cent level. Parental background proxies for multiple components of an individual's circumstances. The first is the portion of a person's own educational attainment that is essentially determined by parental achievement. These are known to be strongly correlated and using the proxy (rather than own educational attainment) effectively excludes the efforts that go into determining one's own educational attainment. Parental education also incorporates a measure of the professional and social networks that a person's parents

may be a part of due to their own achievement, which can later provide opportunities for a child.[3]

Some circumstance variables available in our data are not included in this analysis. These include ethnicity, mother tongue, religion and whether a respondent's parents were members of the Communist Party. In this sample, the interpretation of these variables differs considerably across countries and generations. For example, in some transition countries, speaking only Russian is sufficient for access to good jobs, but in others, not speaking the local language may severely restrict good employment opportunities. Regarding parental political affiliation, in former communist countries, party membership was often required for admission into specific schools and professions. In many cases, those serving in such professions received payment in assets in addition to income, which may have affected asset distribution in the older generation (parents of respondents or older respondents) (Heyns, 2005). I do not include it here because it is not applicable in countries such as Turkey or western European comparator countries, so including it reduces cross-country comparability or our inequality of opportunity measure. That being said, including it does not substantially change the results. See the EBRD's 2013 *Transition Report* (European Bank for Reconstruction and Development, 2013) for a similar analysis that includes this circumstance.

While the household is the relevant unit of analysis to look at accumulation of assets, extending the paradigm of individual circumstances to the household level is not straightforward. This is because each member of the household, with their individual circumstances, potentially contributes to overall household wealth. The LiTS2 only has the relevant data from one person in each household. This analysis, therefore, assumes that the circumstances of the household head serve as a summary statistic for the average circumstance of the contributing household members. Most of the circumstances of the household head can serve as a reasonable summary statistic for circumstances among the rest of the household. Parental education, for example, is known to be highly correlated within households (Blossfeld and Timm, 2003).

[3] In some countries, higher parental education may translate into lower probability of being employed due to luxury unemployment – one can afford to wait for the job that has the desired status and income attributes.

One important limitation applies: because spouses or partners are usually of a different gender, it makes no sense to measure the influence of gender on household wealth. While gender is always a characteristic of the head of the household, it is rarely a characteristic of the household. Hence, it is not considered in the statistical analysis estimating inequality of opportunity. Ideally one would estimate inequality of opportunity separately for male- and female-headed households and compare results. But these groups are not strictly comparable because men are household heads by default, meaning the results for men hold on average for all men in the population. On the other hand, women who are heads are likely not representative of the average and thus the regression results for this group would not be comparable to either the average women in the population or to the average male household head.[4] Moreover, it is impossible to identify the comparable male household heads in our survey data to allow for such a comparison. Lastly, local economic conditions can also determine whether a female is a household head in a way that makes results difficult to interpret. For example, in Tajikistan opportunities at home are poor and many men migrate abroad for work. Here I find female-headed households doing quite well compared with male-headed households. This is not necessarily because women have better economic outcomes but because the women that are household heads in those countries are, by and large, heads because the would-be male head is abroad working. The men working abroad are sending back more money than the comparable male-headed households in domestic jobs are making.

For these reasons I follow the convention in the literature and restrict the estimates of inequality of opportunity to male household heads. The estimate will give a sense of inequality of opportunity overall and will be sufficient for cross-country comparisons, but it will not allow us to say anything about how inequality of opportunity differs by gender within or across countries. For completeness, I include estimates of inequality of opportunity among female household heads in the appendix.

I also exclude age as a circumstance. The year of one's birth is certainly something one has no

[4]There are no matrilineal societies in our sample.

control over and outcomes will vary by age. Using age as a circumstance, however, captures not only an individual's age, but also the policies and economic environments that mark their years and determine outcomes. Consequently, any significant result from including age as a circumstance in the regression cannot be clearly interpreted as the impact of age itself. Also, for the R^2 to be interpreted as a legitimate measure of inequality of opportunity and decomposed inequality of opportunity, it is necessary to exclude controlling variables. I thus exclude *age* and age^2 as controls. As a robustness check, the analyses were also run with *age* and age^2 included. While these controls tend to be significant, they do not explain much additional variation in outcomes; R^2 values are essentially unchanged. Results are available upon request.

Empirical specification for inequality of opportunity

In step two, I estimate how much of the variance in household wealth can be explained by circumstances. Following the convention in the literature, I assume that wealth is a linear function of circumstances, C_{ik}, and effort, E_{ik}.

$$y_{ik} = C_{ik}\alpha_k + E_{ik}\beta_k + u_{ik} \tag{1}$$

Circumstances may also influence an individual's economic success indirectly, through effort.

$$E_{ik} = H_k C_{ik} + v_{ik} \tag{2}$$

Substituting (2) into (1), one obtains

$$y_{ik} = C_{ik}(\alpha_k + \beta_k H_k) + v_{ik}\beta_k + u_{ik} \tag{3}$$

which can be estimated by OLS as

$$y_{ik} = C_{ik}\Psi_k + \varepsilon_{ik} \tag{4}$$

where $\Psi_k = \alpha_k + \beta_k H_k$ and $\varepsilon_{ik} = v_{ik}\beta_k + u_{ik}$. This regression equation gives the reduced form esti-

mate of the overall impact of circumstances on wealth, capturing the direct and indirect (through effort) channels. In our paper, C_{ik} is a vector including place of birth, father's education and mother's education. Error terms are bootstrapped.

In the third step I apply an inequality index to the predicted values from the first stage to get the measure of inequality of opportunity. The inequality index must accommodate the domain of the wealth variable, which theoretically takes values from negative infinity to positive infinity. This means I cannot use conventional indexes of inequality such as the Gini index or the thiel index. Since inequality indices are not translation invariant one cannot simply shift the distribution up and eliminate any negative values. Instead, as is shown in Ferreira, Gignoux, and Aran (2011) the appropriate inequality index in this case is the R^2 from the regression outlined above (Ferreira et al., 2011).

Inequality of opportunity is thus the per cent variation in wealth that is explained by the circumstances. This is a relative measure, such that high overall inequality can co-exist with low inequality of opportunity. The results will show that in some countries with low GDP and high inequality, such as Azerbaijan, the inequality of opportunity is in fact lower than in some wealthier countries. In cases like these, there are so few opportunities to build wealth that there is little variation in outcomes that needs explaining – everyone is suffering equally from lack of opportunity. In this sense inequality of opportunity is not a sufficient statistic to characterise a country's economic situation. Other variables combined with inequality of opportunity, such as GDP per capita and unemployment, are also required to create a more complete picture.

There are also non-parametric methods for quantifying inequality of opportunity. The advantage of the parametric estimation is that it allows us to consider more than one circumstance despite relatively small sample sizes. Also, with the parametric approach one can use a Shapely decomposition to compare the relative importance of each circumstance (from birth) on outcomes.[5]

[5]This model excludes interactions between circumstances. Using data on income from the United States, Marrero and Rodríguez (2011) compare these standard inequality of opportunity estimates with ones that include interaction terms and find that inequality of opportunity estimates do not change substantively. Due to this result and my own small sample sizes, this paper does not consider cross-effects.

The effort/circumstances approach has three main weaknesses, which all stem from the exclusion of potentially important missing circumstances. Missing circumstances may include mother tongue, genetically inherited skill, quality of parents' education or quality of childhood nutrition. If one or more important circumstances are missing, this will result in lower bound estimates of the true inequality of opportunity (Ferreira et al., 2011). If a circumstance added explains zero additional inequality, inequality of opportunity would not change, but there is no case in which it would go down. Also, omitted circumstances mean that individual parameter estimates from the first-stage regressions are also likely to be biased because the omitted variables will be correlated with the included ones. Lastly, omitted variables may undermine cross-country comparability of our inequality of opportunity measures if the set of relevant circumstances, and correlation with the error term, varies from country to country. While using the same set of circumstances across countries makes the models comparable, the inequality of opportunity estimates may not be comparable. In this case, the lower bound estimate of inequality of opportunity reported here falls shorter of capturing the real level of inequality of opportunity in some countries than it does in others. For example, mother tongue may be the most important factor influencing economic opportunities in country A, but not at all important elsewhere. Excluding mother tongue then generates a low estimate of inequality of opportunity and country A comes across as more equal with regards to opportunity compared with other countries, but in fact opportunity is not more evenly spread.

3 Belief estimations

The next stage of the analysis is our main contribution. Here I look at how inequality of opportunity is correlated with beliefs about determinants of success and failure. I estimate these correlations using cross-country regressions, including all household heads (male and female).

Specifically, I want to know if inequality of opportunity is correlated with whether people attribute success and failure to fair or unfair processes. The dependent variables come from two survey questions. The first question asks respondents to pick the most important factor determining success in their country, from a predetermined list. The list includes effort and hard work, intelligence and skills, political connections, breaking the law and "other". The second question asks respondents to identify the main reason why there are people in need in their country. The options focus on individual experiences, such that the question is effectively asking about factors that determine individual failure. The options include being unlucky, laziness and lack of willpower, injustice in society, that it is an inevitable part of modern life and "other".

Each response option to either question can be classified as either a fair process or an unfair process. For the first question, success from effort and hard work or from intelligence and skills may be considered fair. This is consistent with the inequality of opportunity framework discussed above. Correspondingly, gains from crime or political connections may be considered unfair as they do not originate from honest work. For the second question, being in need due to bad luck or injustice is unfair, while being in need due to lack of effort may be considered fair.[6] The last option, people being in need as an inevitable part of modern life, I categorise as a fair process. "Modern life" in former communist countries means a life with free enterprise. In a world with free enterprise, success and failure is strongly linked to one's effort and skills. This is in contrast to the communist regime, where economic success was much less linked to an individual's choices, and outcomes were more equal for reasons not related to effort or technical

[6]Note that while luck may be statistically fair, the colloquial use of the term is to express something that is not fair, or something that is undeserved.

skill. Thus, for the second part of the analysis I recode the questions into binary variables, equal to 1 if the respondent attributes the outcome (that is, success or failure) to fair processes and 0 if they attribute the outcome to unfair processes. Table 5 gives a breakdown of this recoding.

For each of the two dependent variables about perceptions of fairness I estimate two specifications. The first specification includes country fixed effects, σ_k. It tells us the relationship between beliefs and individual characteristics. Characteristics include outcomes for person i in PSU j and country k, Y_{ijk}, and circumstances, C_{ijk}.

I also include in the regression a variable to capture the median (perceived) economic welfare of the place where the respondent lives. This paper uses a question from the 2010 LiTS which asks respondents to place themselves on one rung of a 10-step ladder. The question specifies that the poorest 10 per cent of the population in the country are on the bottom rung and the richest 10 per cent are on the top rung. I take the median response to this question by PSU, excluding household i. The variable is called PSU median decile$_{jk}$. The regression is:

$$\text{fair}_{ijk} = \beta_1 Y_{ijk} + \beta_2 C_{ijk} + \beta_3 \text{PSU median decile}_{jk} + \sigma_k + e_{ijk} \tag{5}$$

where the dependent variable, fair$_{ijk}$, is the binary variable indicating a respondent's opinion about determinants of success or their opinion about determinants of failure. Regressions are probits, with standard errors clustered at the country level.

Measures of economic success, Y_{ijk}, include the respondent's educational attainment, employment status and the decile in which the household falls in the wealth distribution in country k (using the asset measure from section 2.1). As before, circumstances include place of birth, father's education and mother's education. I also control for gender, age, age squared and whether one's parent was a member of the Communist Party. While I did not include parental political affiliation in estimates of inequality of opportunity, I include it here to adjust for the possibility that parents' ideological affiliation influences the next generation's attitudes and perceptions (Alesina and Fuchs-Schündeln, 2007).

The second specification is the same as in Equation 5, but instead of country fixed effects I include country level variables inequality of opportunity, inequality of net income and unemployment as independent variables. Income inequality is measured using the latest Gini index for net income available before 2011 for each country, Gini_k. I use net income because this is what will influence purchasing power and wealth accumulation throughout one's lifetime. I also include a vector of country controls from 2010, X_k, the same year as our survey data. Country controls include region, GDP per capita, inflation and unemployment. Regions are defined as in Table 3. As before, I cluster standard errors at the country level. The regression is:

$$\text{fair}_{ijk} = \beta_1 Y_{ijk} + \beta_2 C_{ijk} + \beta_3 \text{PSU median decile}_{jk} + \beta_4 \text{inequality of opportunity}_k + \beta_5 \text{ Gini}_K + \beta_6 X_k + e_{ijk} \tag{6}$$

I expect that in countries with high inequality of opportunity, people would more often attribute outcomes to unfair processes. Conversely, where inequality of opportunity is low, more people will have experienced outcomes due to fair processes and would then be more likely to attribute success and failure to fair processes. I would thus expect that inequality of opportunity will be negatively correlated with both opinions about success and opinions about failure.

4 Data

The data I use come from the LiTS2, a cross-sectional household survey administered by the EBRD and the World Bank in 30 former communist countries as well as 4 western European comparator countries in 2010. The LiTS2 is an ideal survey for the purpose of this study. It has a full set of relevant circumstance and outcome variables, compared with the literature. It also has a rich set of attitudes and values items that allow for our assessment of how inequality of opportunity correlates with perceptions of success and failure. The LiTS2 sample includes 38,873 households.

For the estimation of inequality of opportunity, I account for variation in policy environments and endogenous household formation by restricting the sample to male household heads aged 18 to 37, excluding students and retired people. This age range is defined by having finished one's compulsory education after the fall of the Berlin wall. This paper assumes that the choice to either obtain a tertiary degree or go into the labour force and begin accumulating wealth occurs at age 18 for most people. Those who were 18 in 1991 for the fall of the Soviet Union were 37 in 2010. I break the groups up as such because the wealth accumulation process may have differed considerably for those who chose to obtain degrees or enter the labour force after the fall of communism. Moreover, the environment that exists during the transition to employment is crucial for economic outcomes down the line. While transition from communism was not immediate and varied by country, moving the cohort definition around by a few years on either side of 1989 does not change results.[7]

Household heads were self-identified at the time the survey was conducted. Each household appears only once in our analysis. Since this is a household survey, inequality of opportunity estimates will not pertain to the homeless population, for whom inequality of opportunity will be most pronounced and important for outcomes. The sample also potentially excludes elites from

[7] See the appendix for estimates of how inequality of opportunity varies by gender age cohort, as well as for inequality of opportunity estimates with respect to education and employment for the different gender age cohorts.

the top of the wealth and income distributions.[8]

Our Gini index data are from the Standardized World Income Inequality Database (SWIID Version 5.0, released October 2014) (Jenkins, 2014; Solt, 2009). The Gini index is not available for all countries in 2010. In those cases I use the most recently available Gini up to and including 2010. Other macro indicators are 2010 values from the IMF World Economic Outlook database (WEO).

[8]Since the survey does not contain an elites screening item or any elite-specific assets, I cannot confirm the absence of elites.

5 Results

5.1 Inequality of opportunity estimations

Results from the estimation of inequality of opportunity appear in Table 4. The table includes coefficient estimates from Equation 4, the estimates of inequality of opportunity and sample size for working age male household heads in each country.

Across countries, I find that inequality of opportunity accounts for between 1.1 and 56.6 per cent of wealth inequality. It is lowest in Sweden and highest in Georgia.[9] This is a wide range, and there is considerable variation within regions, but by and large inequality of opportunity tends to be highest in south-eastern Europe and lowest in western Europe. Central Europe and the Baltic states also display relatively low values of inequality of opportunity when compared with other non-western European countries.

Moving to the coefficient estimates from Equation 4, some patterns emerge. For example, while being born in an urban area is very important for explaining wealth across countries, parental education is mostly insignificant. Also, not all circumstances are important in all countries. Western Europe is an exemplary region where place of birth does not appear to matter for wealth outcomes. The result is also not as strong in CEB as it is in other non-western European regions. Lastly, it is interesting to see that the coefficient of urban birthplace is negative for the Czech Republic, Poland and Slovenia, which means that in these countries wealth accumulation is greater for those who were born in rural areas.

The constant from our regression in Table 4 is also useful to look at because it represents the comparison group of being a young man born in a rural area with uneducated parents. This combination of attributes is significantly negatively correlated with wealth accumulation in 15 of the 34 countries in our data (15 of 29 non-western European countries). In the other half

[9] This range is in fact larger than the range for working age female household heads, which is 0.2 per cent to 49.5 per cent (in Bulgaria and FYR Macedonia, respectively).

of the countries (approximately), being born at the bottom of the socio-economic ladder does not appear to influence asset accumulation. This is particularly true in western Europe, most of central Europe and the Baltic states and most of eastern Europe and the Caucasus.

Figure 2 shows the corresponding Shapley decomposition for each country. The Shapley results reflect the regression results, but more clearly show how each coefficient contributes to total inequality of opportunity. In the chart, the height of the bars is the total calculated inequality of opportunity. The bars are then segmented to show how much each circumstance contributes to total inequality of opportunity. Here again place of birth shows strong importance across countries. It is significant in 20 of 29 non-western European countries, and explains the highest portion of the variance in wealth in all of these. The per cent inequality of opportunity explained by urban birthplace is largest in Belarus and Tajikistan where it explains over 73 per cent of inequality of opportunity in each country, followed by Uzbekistan and Georgia where it explains over 60 per cent. Throughout Central Asia, urban birthplace accounts for at least 45 per cent of inequality of opportunity in each country. Only in Poland, Lativa, Slovenia and Mongolia is birthplace unimportant, while parental education is important. In Mongolia, this is likely to be driven by the recent resource boom that has resulted in an abundance of new jobs in urban areas and a corresponding migration of those born in rural areas to urban areas. Poland, Latvia and Slovenia have advanced relatively well in the transition process and patterns of inequality likely conform to those in western Europe.

Beliefs about success and failure

Results from the regressions on beliefs about success and failure are in Table 6. The first two columns pertain to beliefs about whether success is attributed to fair processes. The last two pertain to beliefs about why people are in need (that is, what processes lead people to fail, economically). Columns (1) and (3) include country fixed effects, while columns (2) and (4) include controls for country characteristics. Note that the coefficient estimates on individual level variables and their significance do not change substantially when I remove the country fixed effects and instead use country controls.

The correlation between inequality of opportunity and beliefs about failure is in the expected direction – higher inequality of opportunity is correlated with a higher likelihood of believing that failure is due to unfair processes. For a marginal increase in inequality of opportunity there is a 45 percentage point decrease in the probability of believing that failure is due to fair processes. This is a strong and sizeable effect that shows inequality of opportunity essentially determines how people perceive failure in their society. The same is not true for beliefs about success, where the coefficient on inequality of opportunity is neither sizeable nor significant. This is in contrast to the findings in Abras et al. (2013) that inequality of opportunity for employment is negatively correlated with beliefs about success being fair. These divergent results are likely due to the fact that wealth accumulation is a long-term process that incorporates successes and failures over time, whereas employment is measured over the short term. The short-term measure is more directly related to concurrent experiences of opportunity, or lack thereof.

Instead, I find that beliefs about success are more strongly linked to individual welfare than with the wealth-based measure of inequality of opportunity. This can be seen from the marginal effect of median perception of income decile in a respondent's PSU on perceptions about success. Thus, while people may correctly infer that being less well-off is in large part due to inequality of opportunity, they do not admit that being more well-off is also a function of unfair advantage.

Other results that are not consistent across the gain and loss domains include the marginal effect of respondent education, gender and parental political affiliation. Higher educational attainment means a higher probability of thinking that failure is due to fair processes. In contrast, women are less likely to assert that failure can be attributed to fair processes than men (but there is no correlation with beliefs about success). This result makes sense as women are more likely to be unfairly discriminated against than men. In particular, women do not get equal pay for equal work in these countries (Pailhe, 2000; United Nations, 2015).

Some results are consistent across gain and loss domains. Employed people in wealthier neighbourhoods and people in countries with more income inequality and less unemployment all have

higher probabilities of believing that both success and failure are due to fair processes. The results on income inequality and unemployment are particularly interesting. Other scholars have speculated that some level of income inequality is good because it allows people to gain from their efforts (Marrero and Rodríguez, 2013; Mirrlees, 1971). Without the chance to achieve more than someone else, there is less incentive to work hard or invest. That higher income inequality leads to a higher probability of believing that outcomes are due to fair processes provides some support for this idea. Lower unemployment also increases belief in fair processes. This suggests that it is not just inequality of opportunity but abundance of opportunities at all levels of the income distribution that give people faith in the fairness of the system. Lastly, in neither domain does parental background strongly influence beliefs.

Taken together, while most of the correlates of beliefs about success have an impact on beliefs about failure in a similar way, the two perspectives appear to be driven by distinct factors overall. This is surprising since processes behind success and processes behind failure are two sides of the same coin – if success can be attributable to effort and hard work, failure is then logically attributable to lack of effort and hard work. Having success (for example, living in a good neighborhood) does appear to make people more positive about the processes behind both success and failure. But beliefs about failure are dominated by inequality of opportunity. People living in countries with higher inequality of opportunity appear to realise that the processes behind failure in their country are unfair. They do not appear to realise this about the processes behind success.

6 Conclusion

Circumstances should not drive outcomes, but in many countries they do. Scholars and policy-makers alike worry about the impact this can have on growth since it implies inefficient access to labour markets and investment opportunities. Since skill can be expected to be evenly distributed across such exogenously determined circumstance groups, a society wherein circumstances drive outcomes, as much as or even more than effort, may be characterised by lack of investment, reduced entrepreneurial activity and reduced productivity. One channel through which inequality of opportunity can limit individual action and achievement is through its impact on perceptions and beliefs. This paper considers the correlation of inequality of opportunity with beliefs about the processes behind success and failure. I study these issues in the former communist countries and, for comparison, in a selection of western European countries.

First, I generate a measure of inequality of opportunity, based on Ferreira et al. (2011). This entails using multivariate regressions to understand the role of circumstances in determining economic outcomes. I find that inequality of opportunity varies dramatically across countries in this region. Countries in western Europe tend to display lower values of inequality of opportunity, while those in south-eastern Europe have the highest values. But the relationship between market development and inequality of opportunity is not linear and low inequality of opportunity can co-exist with high levels of inequality or low GDP per capita. This can be seen in the fact that both early transition countries and countries furthest along the transition path have lower inequality of opportunity scores. Moreover, in the transition region, circumstances are not as widely or as strongly correlated with outcomes as they are reported to be in other parts of the world. Parental education in particular has a weak correlation with own asset accumulation at the country level. Instead, in this sample place of birth is consistently important.

While perhaps not surprising, logically, the result on the relative importance of birthplace is in striking contrast to previous work on other countries, in particular in Latin America (Ferreira and Gignoux, 2011). In that work, the authors find parental educational attainment to be far and away

the most important circumstance. This has important policy implications for the transition region as it suggests that addressing urban/rural differences would go further in addressing inequality than would addressing a legacy of under-educated parents.

This paper also looks at the relationship between inequality of opportunity and beliefs about processes for achieving economic success and failure. I find that while inequality of opportunity is not related to beliefs about what it takes to succeed, it is very important for beliefs about the processes behind failure. Meanwhile, even though inequality of opportunity is definitive for beliefs about failure, the circumstances themselves do not show a strong pattern of influencing beliefs about the processes behind either success or failure. Lastly, I find a negative marginal effect of an increase in unemployment on beliefs – more unemployment appears to make people more pessimistic about the processes that generate their outcomes – and that higher income inequality actually increases the chance people will attribute success to fair processes.

In countries with higher inequality of opportunity, people are more likely to attribute failure to bad luck or injustice (compared with market dynamics and/or laziness). Thus, people seem to recognise that failure in their country can be attributed to unfair disadvantage. The influence of inequality of opportunity on this belief is large and outweighs effects of all other factors, including individual economic outcomes. Note, however, that the analysis cannot rule out the possibility that pessimistic beliefs can also contribute to increases in inequality of opportunity. If people from disadvantaged backgrounds do not perceive fair outcomes from hard work, they may choose not to put forth their highest effort. This will result in higher measurements of inequality opportunity.

The policy implications from the results about processes behind failure are the same regardless of the direction of the causality. Policy-makers must take steps to encourage and empower people to invest in education, human capital and business development. This includes taking steps to improve access to high quality education – in many countries in the sample this can be as simple as adjusting national standards for teacher training. Improving linkages between school and

work can also hasten the realisation of rewards from human capital investment. Lastly, it is important to create conditions where people can save. Healthy household savings reduce the likelihood that bad luck or injustice eliminates a household's opportunities for economic success in the future. For example, with savings, a household can protect itself against shocks from unanticipated unemployment. To enable households to save more, local governments should work to create a comparative advantage in high value industries that attract higher wage jobs. Governments can also use creative savings instruments that reward households for saving, for example by using matching funds.

The lack of correlation between beliefs about success and inequality of opportunity leads to ambiguous policy implications. In countries with more equal opportunity, one would expect more people to express beliefs that success is due to fair processes. That this is not the case implies that decreasing inequality of opportunity may not encourage investment in human capital or business. This problem is compounded by the fact that belief in whether these processes behind success work well is correlated with economic outcomes. Thus, incentives are aligned for only the portion of the population that is already doing well. Nonetheless, perceiving success as a fair result of hard work and skill when it is probably not true means that people will invest, to some extent, despite their country's challenges. In that case, inequality of opportunity may not undermine investment. This is an important feature of resilient economies. But high levels of inequality of opportunity may instead influence *how* people invest. If success is just as likely due to hard work as it is to political connections and breaking the law, then people will probably try to improve the gains they get from hard work by also spending money and time on obtaining political connections and paying bribes. This is relatively unproductive investment that reduces the marginal value of each dollar invested productively. It is important, then, that policies to decrease inequality of opportunity coincide with improvements in governance and contact enforcement.

These results have important implications for how we think inequality of opportunity and income inequality may influence individual choices. It is argued that both high inequality of opportunity and high income inequality can cause mass discontent and civil unrest because people will be

frustrated with their inability to achieve what others achieve in their society. Put a different way, inequality of opportunity may influence how people view their own economic outcomes and, in turn, may influence their actions. Our results suggest that the relationship between inequality of opportunity and perceptions is not straightforward. Processes behind success and failure are two sides of the same coin, but people perceive them differently. This points to different policy implications, with the caveat that a mapping between beliefs and actions is needed to fully conceptualise whether beliefs can serve to accurately inform the need for and potential growth impacts of specific policy interventions.

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7 Tables

Table 1: Measuring wealth – assets available in the Life in Transition Survey, 2010

Type of asset	Asset
Home ownership:	Renter
	Owner
Type of house:	Detached
	Semi-detached
	Apartment
	Part of a commercial/industrial property
	Mobile home
	Improvised housing (e.g. a shack)
Utilities in the dwelling:	Heat*
	Electricity
	Running water
	Fixed telephone line
	Internet
Other assets:	Car
	Second home
	Mobile phone
	Computer
	Bank account
	Debit or credit card

Notes: The asset index in Azerbaijan, Bulgaria, Kyrgyz Republic and Mongolia excludes heat in the home because it is not correlated with either poverty or wealth. For example, wealthy households may get heat piped in from a central plant or they may have private heating unit in the home.

Table 2: Measuring wealth – assets index summary statistics

Country	SD	Median	Minimum	Maximum	
Central Europe and the Baltic states	Croatia	2.076	-0.364	-5.120	3.156
	Czech Republic	1.727	0.156	-5.977	2.972
	Estonia	1.735	0.846	-4.233	2.869
	Hungary	2.079	-1.092	-7.336	2.962
	Latvia	2.141	-0.484	-13.150	1.993
	Lithuania	1.805	-0.283	-3.726	3.200
	Poland	2.136	-0.578	-6.088	3.166
	Slovak Republic	1.686	0.212	-6.664	2.520
	Slovenia	1.691	0.085	-5.804	2.415
South-eastern Europe	Albania	1.812	-0.364	-3.706	5.017
	Bosnia and Herzegovina	1.832	-0.170	-3.018	4.732
	Bulgaria	2.060	-0.742	-6.109	2.511
	FYR Macedonia	1.816	-0.278	-3.028	5.599
	Kosovo	1.681	-0.072	-3.459	2.911
	Montenegro	1.738	-0.192	-3.783	3.981
	Romania	2.250	-0.808	-4.517	3.378
	Serbia	1.840	-0.281	-3.922	3.844
Eastern Europe and the Caucasus	Armenia	1.848	-0.394	-3.221	5.033
	Azerbaijan	1.631	0.143	-3.129	4.820
	Belarus	1.666	0.317	-7.321	2.390
	Georgia	2.031	-0.618	-2.893	4.916
	Moldova	2.018	-1.157	-3.133	5.926
	Ukraine	1.895	-0.370	-4.229	4.805
Central Asia	Kazakhstan	1.784	0.102	-3.853	4.051
	Kyrgyz Republic	1.768	-0.664	-2.312	4.747
	Mongolia	2.096	-0.840	-2.428	4.798
	Tajikistan	1.869	-0.727	-1.535	8.037
	Uzbekistan	1.737	-0.636	-1.333	9.883
Comparator countries	France	1.879	0.357	-6.344	2.122
	Germany	1.983	-0.612	-5.122	3.416
	Great Britain	2.143	0.099	-5.795	2.739
	Italy	1.956	-0.252	-6.935	2.701
	Sweden	1.845	0.078	-4.771	2.559
Without regional classification	Russia	1.613	-0.043	-7.581	2.385
	Turkey	1.882	0.153	-4.148	3.229

Figure 1: Histograms of asset index, by country

Notes: The chart labelled 'Macedonia' refers to FYR Macedonia.

Table 3: Circumstance descriptive statistics for male household heads (the sample used to calculate inequality of opportunity)

Region	**Country**	% of heads with father's education ≥12 years	% of heads with mother's education ≥12 years	% of heads born in an urban area
Central Europe and the Baltic states	Croatia	40.2	32.6	60.4
	Estonia	46.8	39.3	60.1
	Hungary	43.4	40.3	69.3
	Latvia	49.2	42.8	64.4
	Lithuania	55.1	54.3	49.2
	Poland	62.5	65.4	53.4
	Slovak Republic	79.6	76.1	68.6
	Slovenia	52.9	48.7	63.7
South-eastern Europe	Albania	45.6	40.2	61.2
	Bosnia and Herzegovina	42.5	35.3	51.6
	Bulgaria	40.6	39.3	55.2
	FYR Macedonia	41.4	31.0	60.4
	Kosovo	53.7	30.4	43.7
	Montenegro	65.4	57.2	56.8
	Romania	39.0	35.9	49.6
	Serbia	39.5	34.4	51.6
Eastern Europe and the Caucasus	Armenia	46.7	43.2	66.6
	Azerbaijan	45.4	33.9	55.9
	Belarus	610	59.7	64.8
	Georgia	51.0.	48.8	49.6
	Moldova	43.0	43.8	30.8
	Ukraine	46.2	45.5	52.4
Central Asia	Kazakhstan	55.9	54.6	50.0
	Kyrgyz Republic	30.6	26.1	30.4
	Mongolia	43.9	41.8	29.2
	Tajikistan	48.0	33.1	13.3
	Uzbekistan	41.4	34.2	38.6
Comparator countries	Czech Republic	74.3	68.9	76.3
	France	37.2	35.4	73.2
	Germany	28.8	24.8	59.2
	Great Britain	45.5	44.9	78.2
	Italy	40.6	35	54.4
	Sweden	33.9	28.4	76.2
Without regional classification	Russia	57.2	52.9	66.2
	Turkey	14.6	13.0	64.9

Notes: Higher values across columns means there is less chance for inequality of opportunity because more people are starting at the same high starting point.

Table 4: OLS regression of wealth on circumstances, male household heads

Country	Born in urban area		Father's education		Mother's education		Constant		N	Inequality of opportunity
Central Europe and the Baltic States										
Czech Republic	-1.109**	(0.445)	-0.172	(0.216)	0.480*	(0.262)	0.29	(0.537)	54	0.17
Croatia	1.016***	(0.349)	0.251	(0.226)	0.346	(0.278)	-1.564***	(0.443)	63	0.31
Estonia	-0.501	(0.555)	0.277	(0.17)	-0.373**	(0.175)	1.091*	(0.558)	41	0.06
Hungary	0.719	(0.512)	0.343*	(0.191)	-0.322	(0.215)	-0.257	(0.575)	72	0.06
Latvia	-0.222	(0.428)	0.427**	(0.206)	-0.182	(0.238)	-0.028	(0.54)	75	0.07
Lithuania	1.327***	(0.38)	0.103	(0.223)	-0.256*	(0.139)	-0.126	(0.493)	44	0.17
Poland	-1.191***	(0.223)	0	(0.173)	0.248	(0.173)	1.019***	(0.207)	105	0.26
Slovak Republic	0.646	(0.562)	-0.195	(0.199)	0.315	(0.255)	-0.713	(0.744)	79	0.05
Slovenia	-1.543***	(0.538)	-0.041	(0.146)	0.105	(0.181)	0.703	(0.66)	51	0.19
South-eastern Europe										
Albania	-0.312	(0.515)	0.327	(0.212)	0.181	(0.345)	-0.956	(0.725)	59	0.10
Bosnia and Herzegovina	1.146**	(0.45)	0.561	(0.343)	-0.166	(0.307)	-1.185**	(0.556)	86	0.20
Bulgaria	1.587**	(0.71)	0.246***	(0.095)	-0.214	(0.132)	-1.017	(0.714)	47	0.25
FYR Macedonia	1.093*	(0.604)	0.305	(0.225)	1.329***	(0.389)	-3.616***	(0.767)	38	0.47
Montenegro	0.372	(0.511)	0.108	(0.137)	0.375**	(0.165)	-1.237*	(0.723)	98	0.10
Romania	3.419***	(0.567)	0.306	(0.196)	-0.023	(0.234)	-2.806***	(0.5)	82	0.55
Serbia	1.082***	(0.393)	0.293	(0.195)	0.21	(0.198)	-1.517***	(0.518)	79	0.25
Turkey	0.916**	(0.418)	0.477***	(0.163)	0.538	(0.475)	-1.398	(0.928)	114	0.09
Eastern Europe and the Caucasus										
Armenia	0.601	(0.561)	0.544***	(0.136)	0.019	(0.251)	-0.807	(0.88)	38	0.17
Azerbaijan	1.001	(0.847)	0.32	(0.224)	-0.241	(0.308)	-1.146	(0.837)	73	0.11
Belarus	1.665***	(0.5)	0.046	(0.176)	-0.075	(0.162)	-0.814	(0.578)	120	0.20
Georgia	2.828***	(0.743)	-0.115	(0.404)	0.548*	(0.321)	-2.643**	(1.302)	22	0.57
Moldova	1.770***	(0.528)	0.18	(0.393)	0.593**	(0.298)	-1.344	(0.841)	60	0.25
Ukraine	1.486**	(0.601)	-0.036	(0.197)	0.141	(0.147)	-0.873	(0.623)	97	0.12

Continued on next page

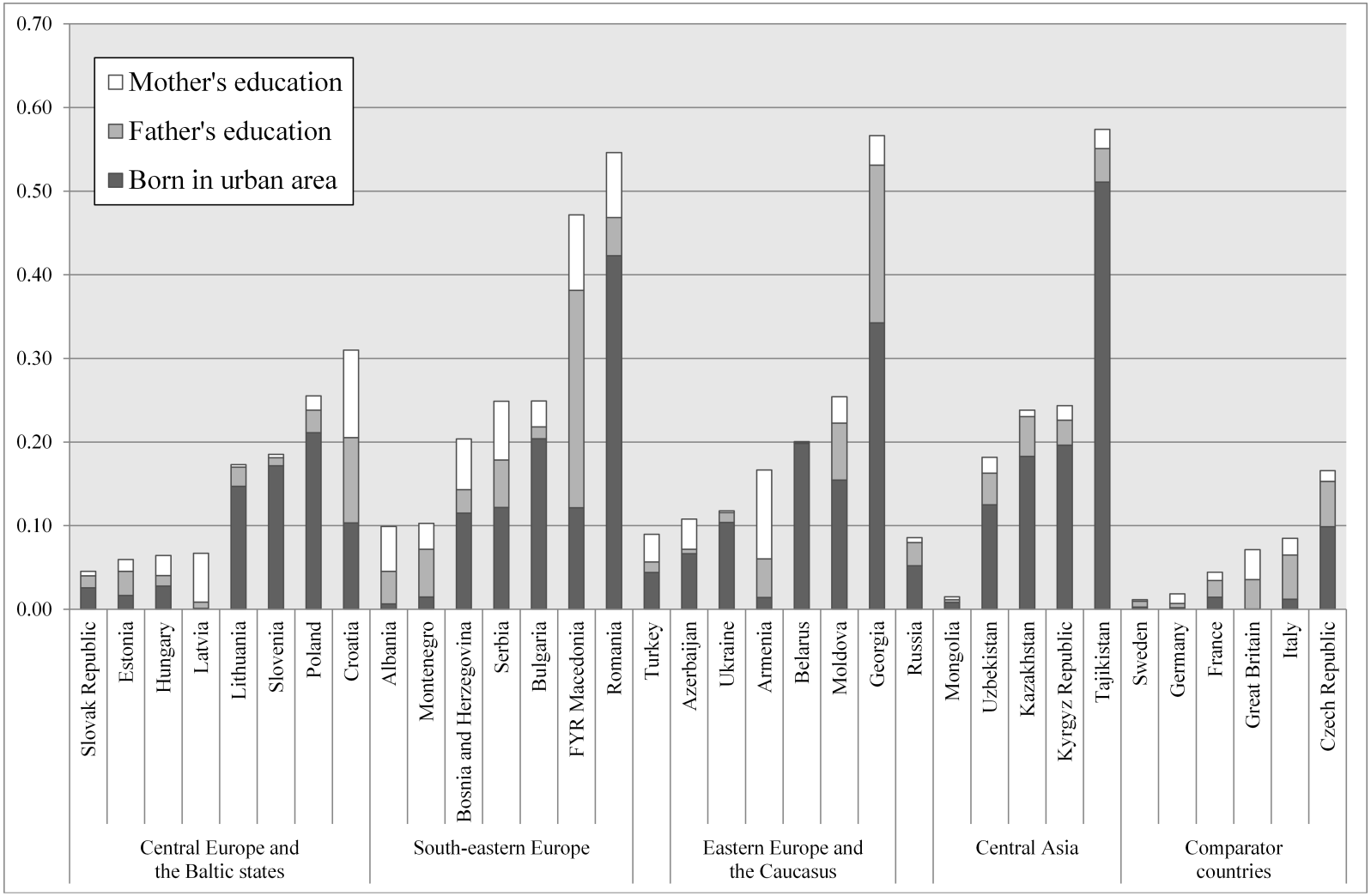
Notes: Standard errors in parentheses. *** (**,*) indicates significance at 1% (5%, 10%) level.

OLS regression of wealth on circumstances, male household heads; *continued from previous page*

Country	Born in urban area		Father's education		Mother's education		Constant		N	Inequality of opportunity
Russia	0.708**	(0.333)	-0.004	(0.073)	0.185***	(0.056)	-0.621*	(0.363)	144	0.09
Central Asia										
Kazakhstan	1.551***	(0.473)	-0.216	(0.211)	0.318**	(0.149)	-1.142**	(0.463)	65	0.24
Kyrgyz Republic	1.646**	(0.642)	0.168	(0.272)	0.127	(0.276)	-1.243**	(0.544)	39	0.24
Mongolia	0.443	(0.485)	0.127	(0.368)	0.092	(0.359)	-0.235	(0.58)	82	0.02
Tajikistan	3.124***	(0.593)	0.179	(0.155)	0.265	(0.343)	-1.598***	(0.425)	42	0.57
Uzbekistan	1.980**	(0.852)	-0.098	(0.231)	-0.800**	(0.389)	1.266	(0.943)	87	0.18
Comparator countries										
France	-0.965	(0.652)	-0.072	(0.183)	-0.191	(0.216)	0.68	(0.758)	78	0.04
Germany	-0.131	(0.356)	-0.209	(0.166)	0.039	(0.146)	-0.218	(0.467)	105	0.02
Great Britain	0.021	(0.499)	0.208*	(0.116)	0.205*	(0.122)	-1.469**	(0.591)	95	0.07
Italy	-0.521	(0.528)	-0.074	(0.247)	0.429*	(0.23)	-0.831**	(0.384)	58	0.08
Sweden	0.243	(0.491)	-0.002	(0.129)	-0.097	(0.127)	-0.399	(0.58)	81	0.01

Notes: Standard errors in parentheses. *** (**,*) indicates significance at 1% (5%, 10%) level.

Figure 2: Shapley decomposition of inequality of opportunity among male household heads



Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Table 5: Survey items on beliefs about determinants of success and failure

Survey question	Response options	Fair process variable code
In your opinion, which of the following factors is the most important to succeed in life in our country now?	Effort and hard work	1
	Intelligence and skills	1
	By political connections	0
	By breaking the law	0
	Other	missing
In your opinion, what is the main reason why there are some people in need in our country today?	Because they have been unlucky	0
	Because of laziness and lack of willpower	1
	Because of injustice in our society	0
	It is an inevitable part of modern life	1
	Other	missing

Table 6: Correlates of beliefs about success and failure, probit marginal effects

	Is success due to fair processes?		Is failure due to fair processes?	
	(1)	(2)	(3)	(4)
Own economic success variables				
Median decile choice, by PSU	0.024***	0.031***	0.018	0.024***
	(0.010)	(0.010)	(0.010)	(0.010)
Wealth decile	-0.002	-0.002	0.004	0.003
	(0.000)	(0.000)	(0.000)	(0.000)
Respondent education	-0.003	-0.002	0.023***	0.020***
	(0.000)	(0.000)	(0.010)	(0.010)
Employed	0.066***	0.064***	0.071***	0.072***
	(0.010)	(0.010)	(0.010)	(0.010)
Circumstance variables				
Female	0.022*	0.013	-0.031**	-0.035***
	(0.010)	(0.010)	(0.010)	(0.010)
Age	0.000	0.000	-0.002**	-0.002**
	(0.000)	(0.000)	(0.000)	(0.000)
Father's education	0.001	0.002	0.011*	0.012*
	(0.010)	(0.010)	(0.010)	(0.010)
Mother's education	0.006	0.004	0.000	-0.001
	(0.010)	(0.010)	(0.010)	(0.010)
Urban birthplace	0.004	0.004	0.000	-0.001
	(0.010)	(0.010)	(0.010)	(0.020)
Parent in Communist Party	-0.043**	-0.047***	0.016	0.013
	(0.010)	(0.020)	(0.020)	(0.020)
Region and country variables				
Inequality of opportunity		-0.040		-0.451***
		(0.140)		(0.140)
Net income Gini		0.010***		0.010***
		(0.000)		(0.000)
GDP per capita		-0.001		-0.001
		(0.010)		(0.000)
Unemployment		-0.007***		-0.012***
		(0.000)		(0.000)
Inflation		0.004		0.007
		(0.010)		(0.010)
Region controls	no	yes	no	yes
Country controls	yes	no	yes	no
N	10,649	10,574	10,386	10,312

Notes: Standard errors are in parentheses. *** (**,*) indicates significance at 1% (5%, 10%) level. *Age* and age^2 are both in the regressions, with net marginal effect reported here. The sample includes only household heads. The Gini indexes are mostly 2010 values from the SWIID database (Solt, 2009). All other macro variables are 2010 values from the IMF World Economic Outlook database.

8 Appendix

For comparison with inequality of opportunity estimates for working-age male household heads presented in the main text, I include here results from the same analysis done with the other age-gender cohorts: young female, older male and older female household heads. I also report results that use education and employment as economic outcomes, instead of wealth. All tables are presented with their corresponding Shapley decompositions. All inequality of opportunity estimates from these calculations appear in Table 7 and Table 8.

For circumstances driving inequality of opportunity among younger women, place of birth patterns in this sample look similar to patterns in the sample of older women, though for young women it is now significant in Lithuania and the Slovak Republic (marginally in Hungary) and not in Croatia, France, Montenegro and Slovenia. Place of birth coefficient is negative for Great Britain and Sweden, possibly due to middle class and upper middle class families moving out of the cities. Father's education is almost immaterial in this cohort for inequality of opportunity. It matters in three countries and only in Turkey does it also matter for older women. The mother's education is more often important than the father's, though this is infrequently significant and significant across generations only in Croatia and Montenegro. As with younger men, being a young woman born in a rural area with uneducated parents does not appear to be as big a disadvantage for wealth accumulation as it is for the older generation. For the most part, when the constant matters for wealth, younger women and younger men are both disadvantaged. In a few countries, younger women in the comparison group are worse off than other younger women, while comparison group men are not worse off than their peers (Albania, Armenia, Belarus, Moldova and Ukraine). In other countries the male comparison group is disadvantaged where the female comparison group is not (Kazakstan, Kyrgyz Republic, Romania and Tajikistan).

Even where the circumstance variables are not significantly correlated with outcome, the combination of circumstances represented by the comparison group (parents with no education, born in a rural area) is very important in the wealth regressions. With respect to inequality of opportunity among older men, in no country are the mother and father's education both significant. Results for older women are similar to those for older men, but place of birth for the older cohort is not important across all countries and parental education is more often significant. The father's education and urban birthplace are both negative in France for older women, and the comparison group (born in a rural area, poorly educated parents) in that country tends to have higher asset indices than others in the cohort. As with older men, Slovenia's coefficient for older women being born in an urban area is significant and negative. In Montenegro and Croatia, both parents' education matters for wealth of older women, but not other countries or cohorts. With the exception of Moldova, parental education is not significant in the same countries for younger men as it is for older men.

Table 7: Inequality of opportunity for wealth, education and employment, by country, working-age household heads

Country	Younger men			Younger women		
	Wealth	Education	Employment	Wealth	Education	Employment
Central Europe and the Baltic states						
Croatia	0.31	0.30	0.31	0.43	0.18	0.52
Estonia	0.06	0.43	0.14	0.06	0.30	0.09
Hungary	0.06	0.29	0.29	0.07	0.16	0.23
Latvia	0.07	0.18	0.26	0.04	0.18	0.09
Lithuania	0.17	0.11	0.28	0.21	0.35	0.25
Poland	0.26	0.19	0.11	0.10	0.24	0.12
Slovak Republic	0.05	0.21	0.08	0.07	0.26	0.06
Slovenia	0.19	0.29	0.34	0.06	0.25	0.20
South-eastern Europe						
Albania	0.10	0.35	0.10	0.19	0.53	0.29
Bosnia and Herzegovina	0.20	0.23	0.32	0.44	0.54	0.25
Bulgaria	0.25	0.17	0.08	0.00	0.16	0.19
FYR Macedonia	0.47	0.22	0.27	0.50	0.60	0.48
Montenegro	0.10	0.24	0.14	0.30	0.31	0.13
Romania	0.55	0.29	0.35	0.13	0.27	0.24
Serbia	0.25	0.11	0.15	0.39	0.34	0.32
Turkey	0.09	0.17	0.16	0.05	0.13	0.04
Eastern Europe and the Caucasus						
Armenia	0.17	0.18	0.45	0.10	0.34	0.11
Azerbaijan	0.11	0.26	0.31	0.03	0.38	0.13
Belarus	0.20	0.12	0.22	0.13	0.09	0.07
Georgia	0.57	0.42	0.48	0.21	0.31	0.16
Moldova	0.25	0.12	0.31	0.33	0.30	0.30

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Notes: The inequality of opportunity for wealth columns report the R^2, while the inequality of opportunity for education and employment columns report the D*Index (dissimilarity index), which equals the average distance of predicted outcomes from the actual mean in outcomes.

Table 7 – Inequality of opportunity for wealth, education and employment, by country, working-age household heads; *continued from previous page*

Country	Younger men			Younger women		
	Wealth	Education	Employment	Wealth	Education	Employment
Ukraine	0.12	0.16	0.10	0.21	0.10	0.12
Russia	0.09	0.10	0.11	0.10	0.11	0.04
Central Asia						
Kazakhstan	0.24	0.37	0.10	0.06	0.10	0.11
Kyrgyz Republic	0.24	0.34	0.14	0.33	0.63	0.13
Mongolia	0.02	0.08	0.14	0.08	0.15	0.11
Tajikistan	0.57	0.10	0.33	0.03	0.27	0.32
Uzbekistan	0.18	0.05	0.17	0.06	0.09	0.12
Comparator countries						
Czech Republic	0.17	0.08	0.09	0.03	0.23	0.08
France	0.04	0.26	0.05	0.01	0.20	0.16
Germany	0.02	0.08	0.08	0.03	0.07	0.15
Great Britain	0.07	0.28	0.22	0.08	0.15	0.11
Italy	0.08	0.39	0.09	0.11	0.16	0.11
Sweden	0.01	0.13	0.07	0.11	0.26	0.26

Notes: The inequality of opportunity for wealth columns report the R^2, while the inequality of opportunity for education and employment columns report the D*Index (dissimilarity index), which equals the average distance of predicted outcomes from the actual mean in outcomes.

Table 8: Inequality of opportunity for wealth, education and employment, by country, older household heads

Country	Older men			Older women		
	Wealth	Education	Employment	Wealth	Education	Employment
Central Europe and the Baltic states						
Croatia	0.36	0.36	0.43	0.31	0.26	0.32
Estonia	0.08	0.18	0.30	0.02	0.18	0.03
Hungary	0.06	0.14	0.25	0.14	0.19	0.25
Latvia	0.04	0.07	0.12	0.03	0.21	0.15
Lithuania	0.08	0.16	0.24	0.05	0.10	0.17
Poland	0.12	0.10	0.11	0.04	0.15	0.08
Slovak Republic	0.18	0.09	0.19	0.08	0.16	0.10
Slovenia	0.11	0.21	0.26	0.11	0.29	0.14
South-eastern Europe						
Albania	0.25	0.28	0.10	0.16	0.25	0.22
Bosnia and Herzegovina	0.29	0.16	0.30	0.15	0.12	0.36
Bulgaria	0.14	0.26	0.09	0.05	0.25	0.10
FYR Macedonia	0.45	0.25	0.27	0.24	0.25	0.29
Montenegro	0.43	0.18	0.28	0.47	0.26	0.56
Romania	0.26	0.34	0.25	0.14	0.34	0.16
Serbia	0.31	0.22	0.12	0.34	0.29	0.27
Turkey	0.15	0.11	0.04	0.07	0.03	0.02
Eastern Europe and the Caucasus						
Armenia	0.04	0.19	0.11	0.08	0.29	0.18
Azerbaijan	0.11	0.17	0.12	0.06	0.28	0.28
Belarus	0.11	0.05	0.03	0.15	0.11	0.05
Georgia	0.32	0.27	0.23	0.40	0.24	0.17
Moldova	0.30	0.27	0.13	0.23	0.08	0.21

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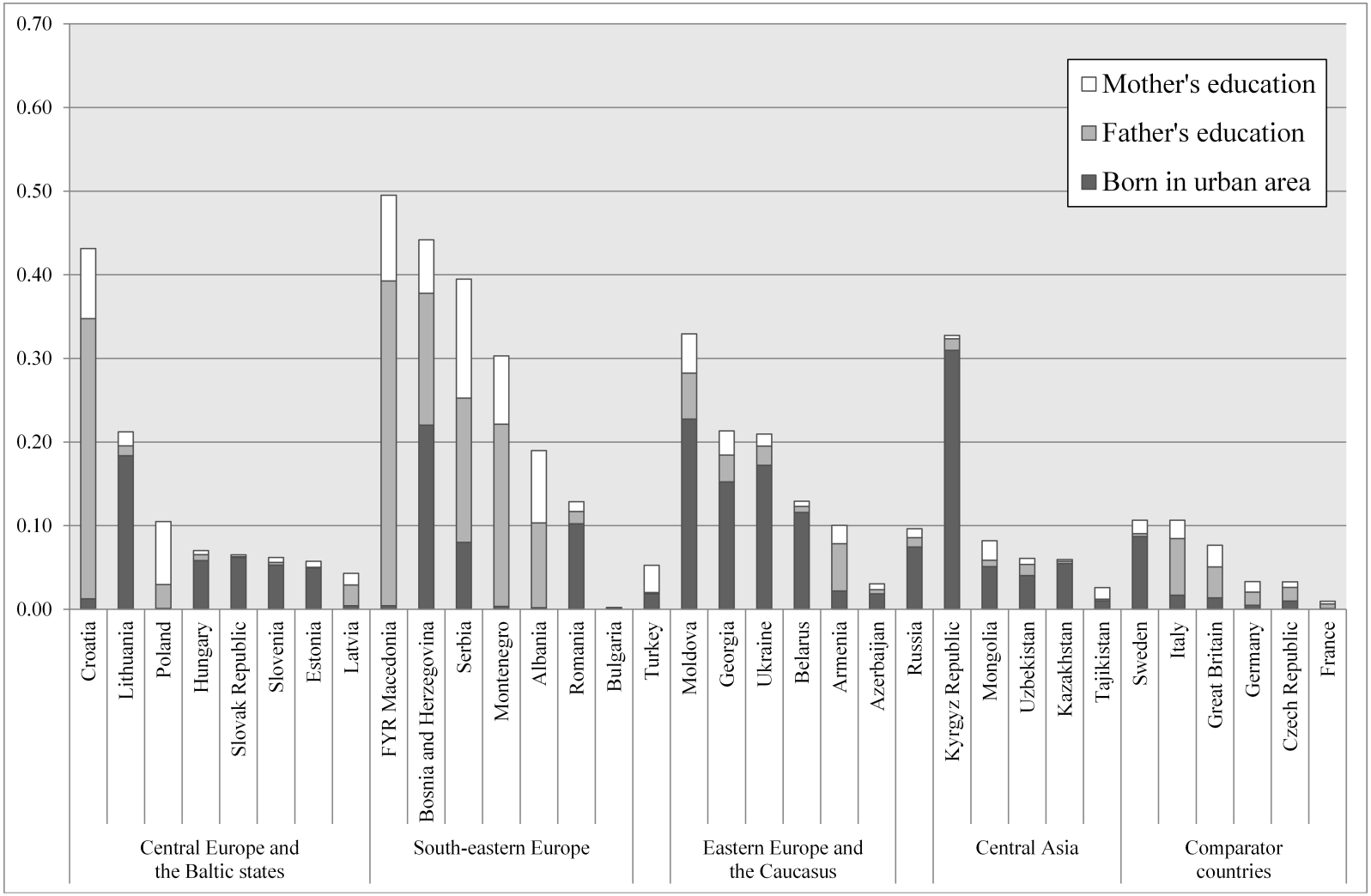
Notes: The inequality of opportunity for wealth columns report the R^2, while the inequality of opportunity for education and employment columns report the D*Index (dissimilarity index), which equals the average distance of predicted outcomes from the actual mean in outcomes.

Table 8 – Inequality of opportunity for wealth, education and employment, by country, older household heads; *continued from previous page*

Country	Older men			Older women		
	Wealth	Education	Employment	Wealth	Education	Employment
Ukraine	0.27	0.23	0.05	0.17	0.27	0.18
Russia	0.14	0.08	0.07	0.07	0.12	0.09
Central Asia						
Kazakhstan	0.09	0.14	0.18	0.05	0.05	0.15
Kyrgyz Republic	0.17	0.16	0.27	0.39	0.49	0.29
Mongolia	0.11	0.08	0.08	0.03	0.19	0.26
Tajikistan	0.53	0.09	0.15	0.51	0.33	0.35
Uzbekistan	0.04	0.12	0.09	0.11	0.25	0.23
Comparator countries						
Czech Republic	0.08	0.22	0.15	0.03	0.12	0.14
France	0.01	0.24	0.04	0.05	0.31	0.09
Germany	0.02	0.15	0.03	0.01	0.12	0.10
Great Britain	0.08	0.15	0.21	0.06	0.24	0.10
Italy	0.01	0.21	0.10	0.06	0.21	0.05
Sweden	0.00	0.25	0.03	0.01	0.14	0.06

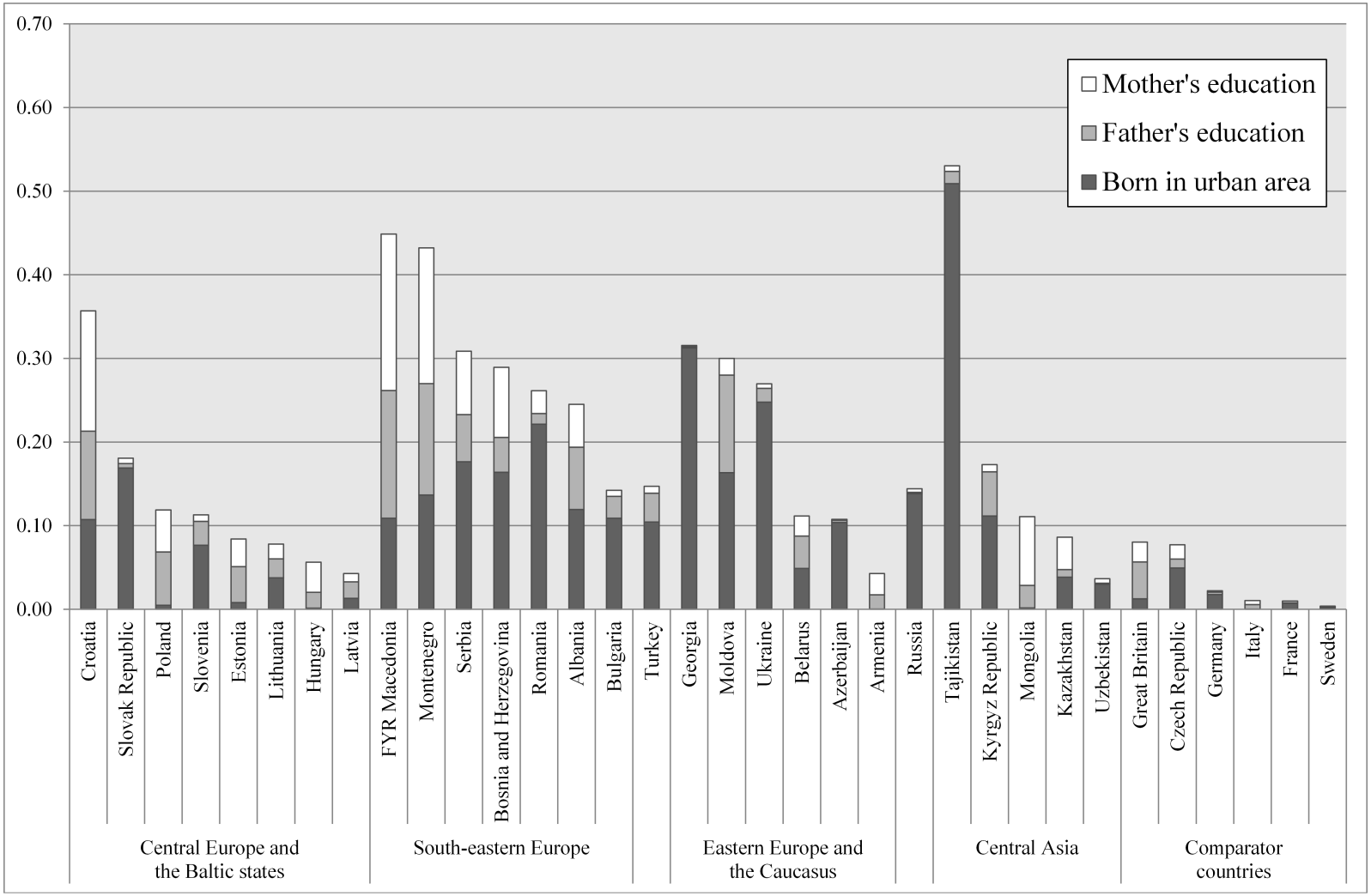
Notes: The inequality of opportunity for wealth columns report the R^2, while the inequality of opportunity for education and employment columns report the D*Index (dissimilarity index), which equals the average distance of predicted outcomes from the actual mean in outcomes.

Figure 3: Shapley decomposition of inequality of opportunity for wealth, among younger women



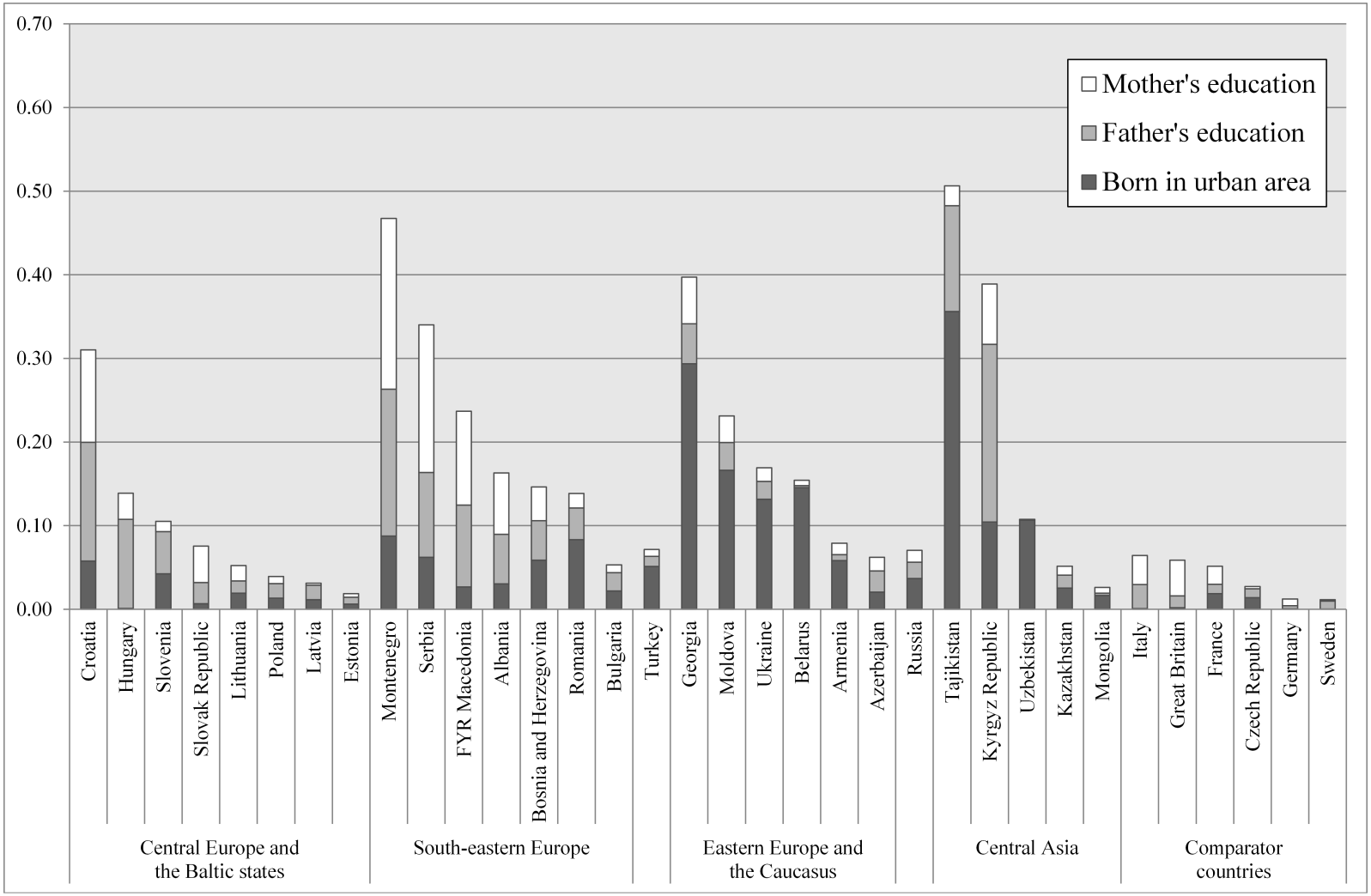
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 4: Shapley decomposition of inequality of opportunity for wealth, among older men



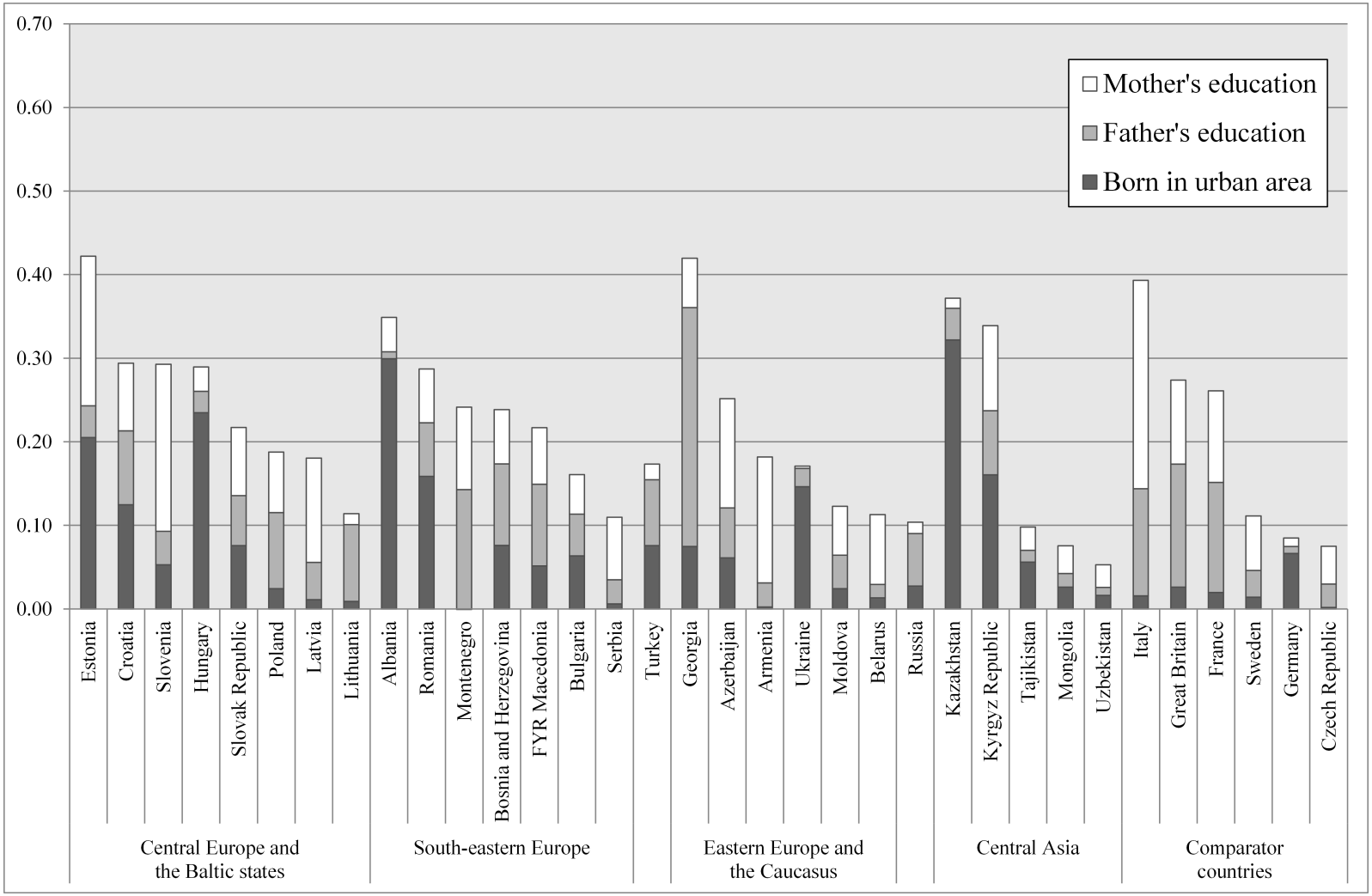
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 5: Shapley decomposition of inequality of opportunity for wealth, among older women



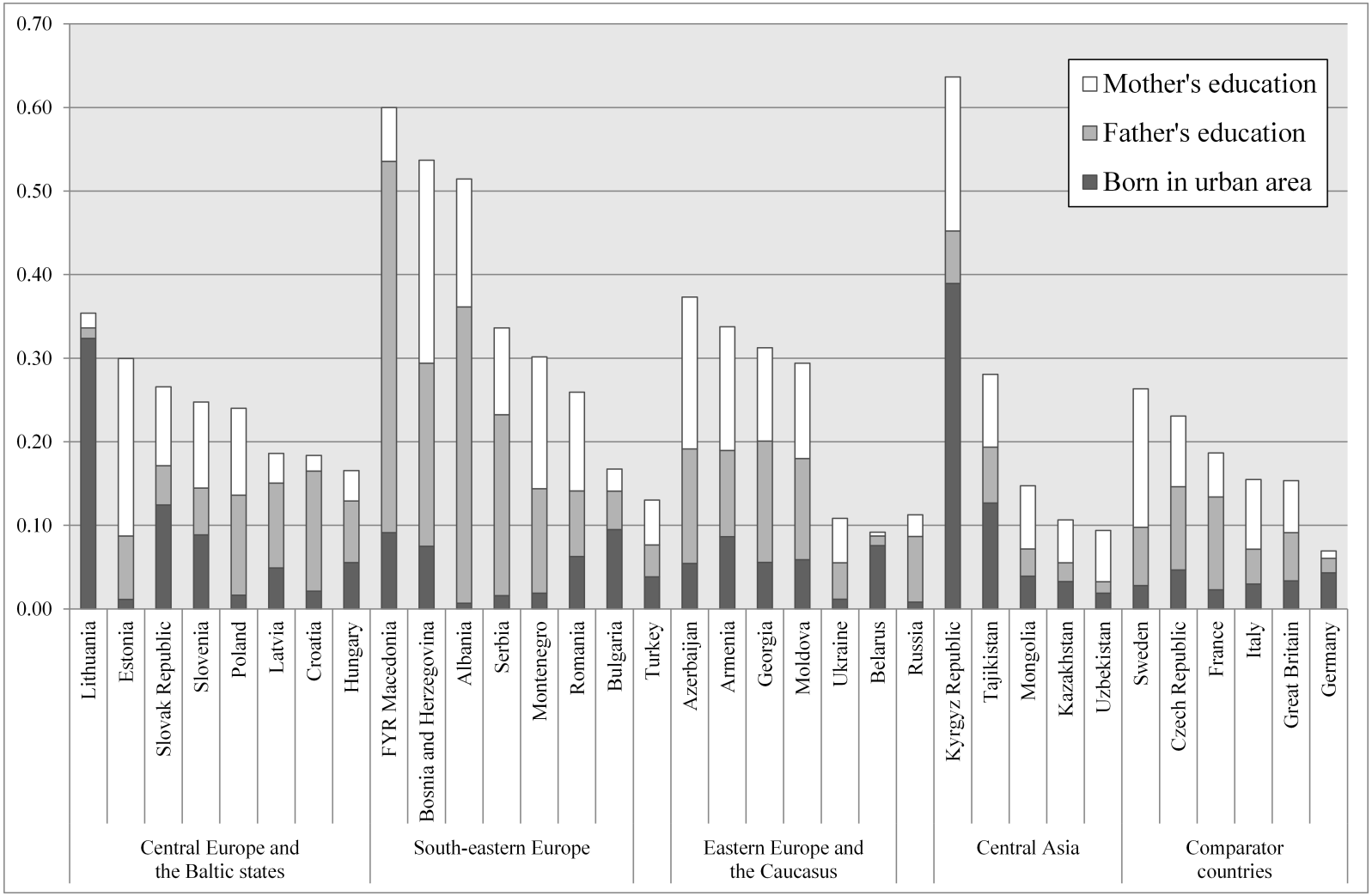
Notes: The height of the shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 6: Shapley decomposition of inequality of opportunity for education, among younger men



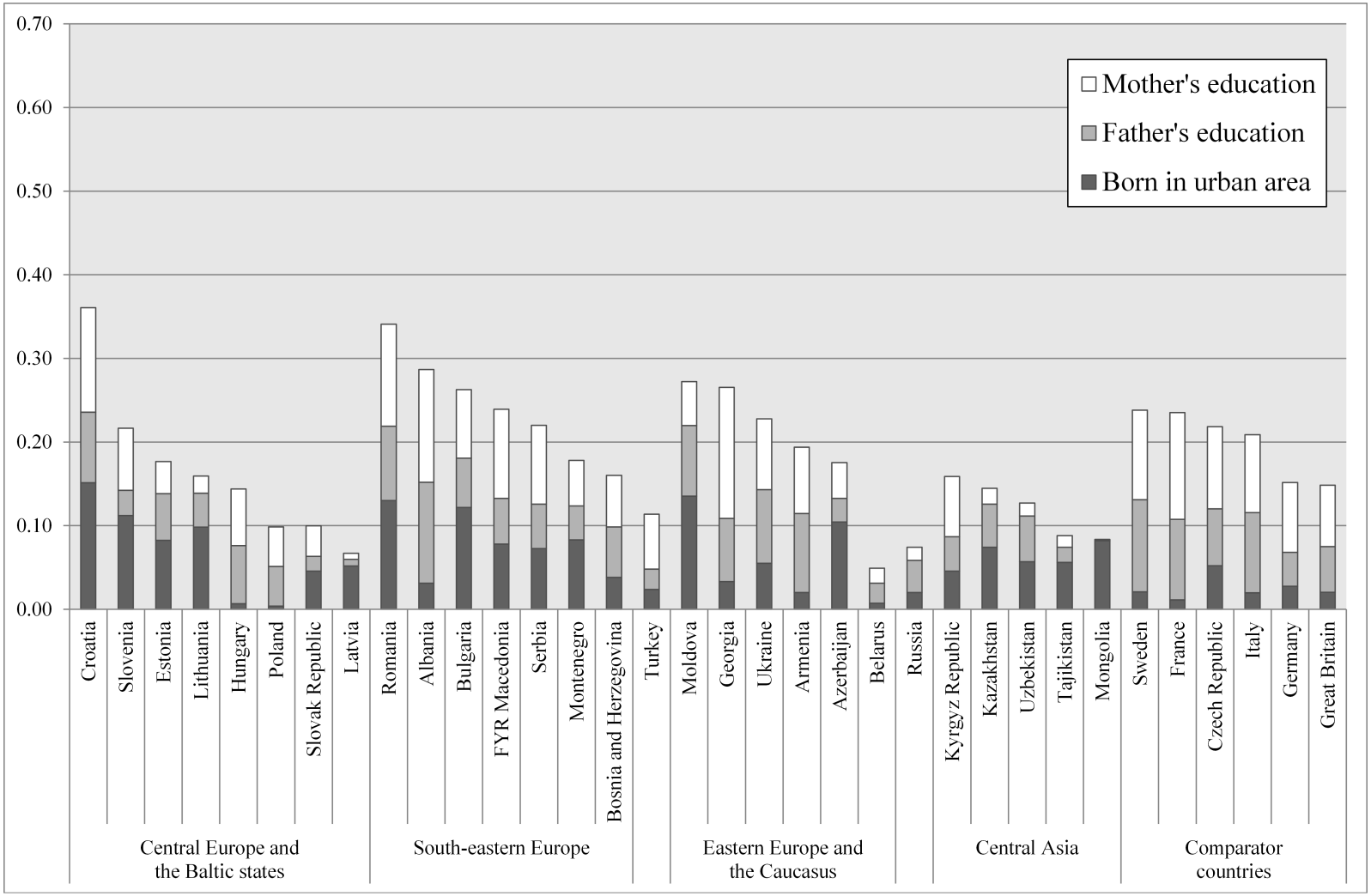
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 7: Shapley decomposition of inequality of opportunity for education, among younger women



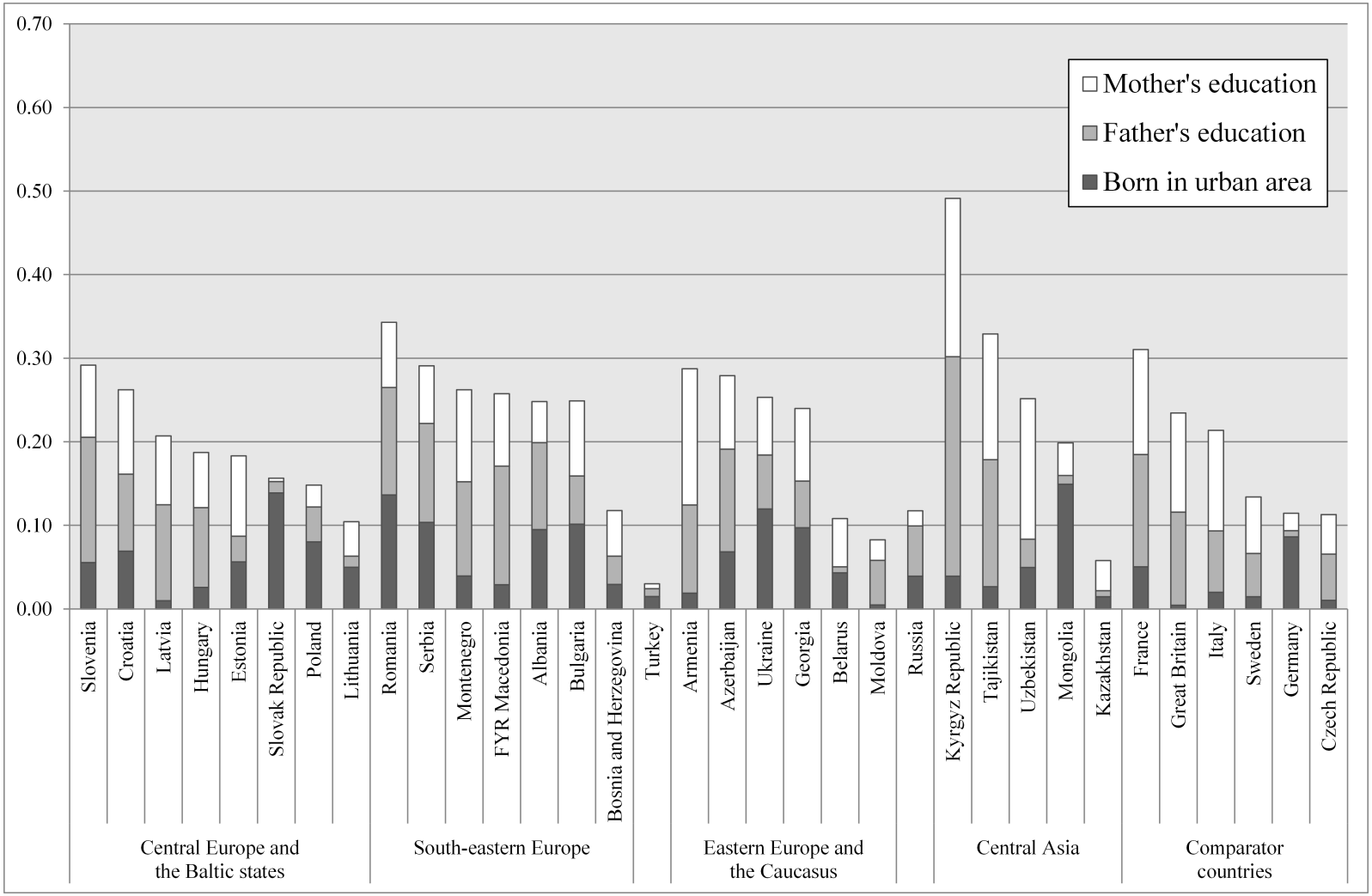
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 8: Shapley decomposition of inequality of opportunity for education, among older men



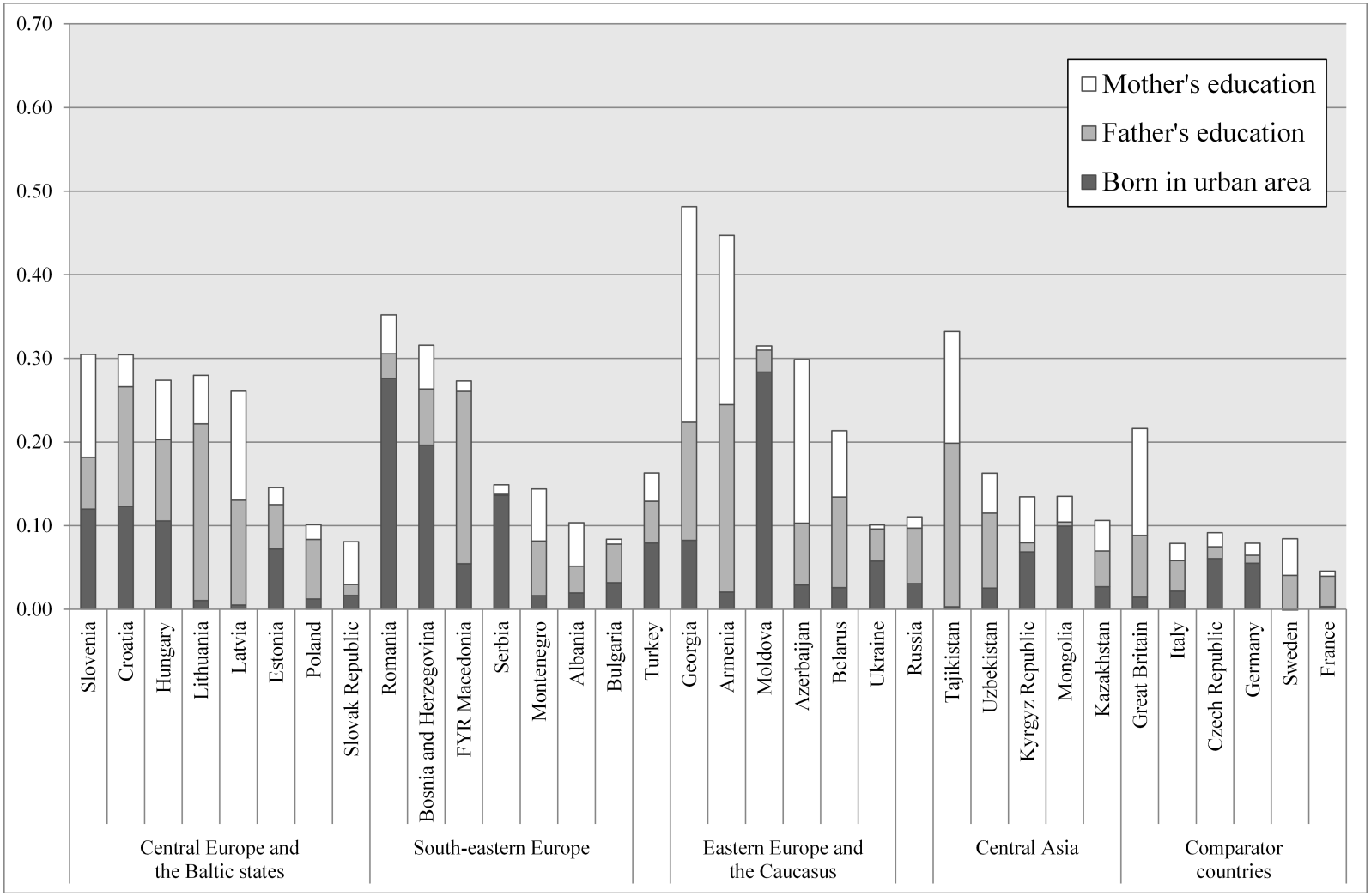
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 9: Shapley decomposition of inequality of opportunity for education, among older women



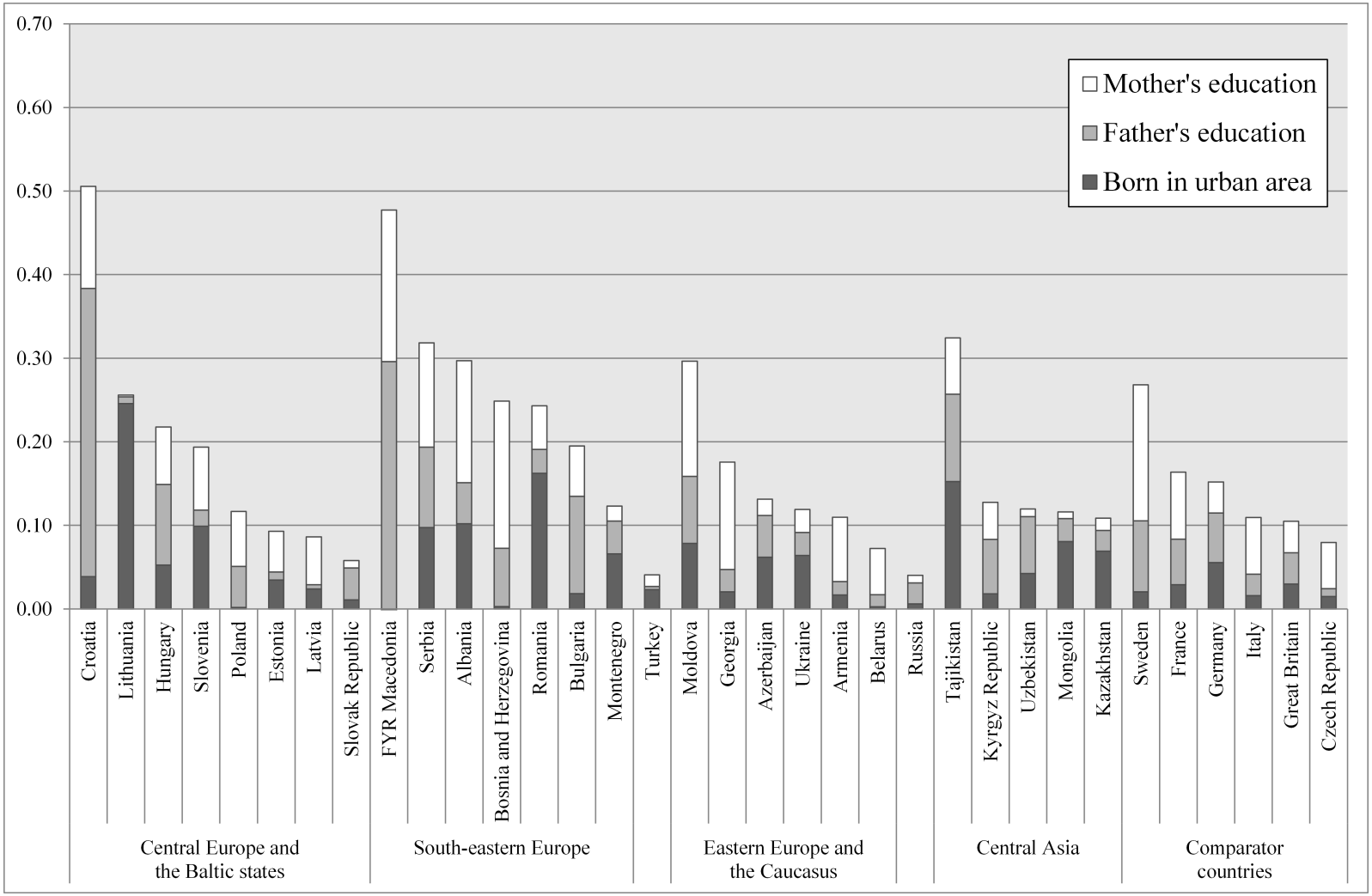
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 10: Shapley decomposition of inequality of opportunity for employment, among younger men



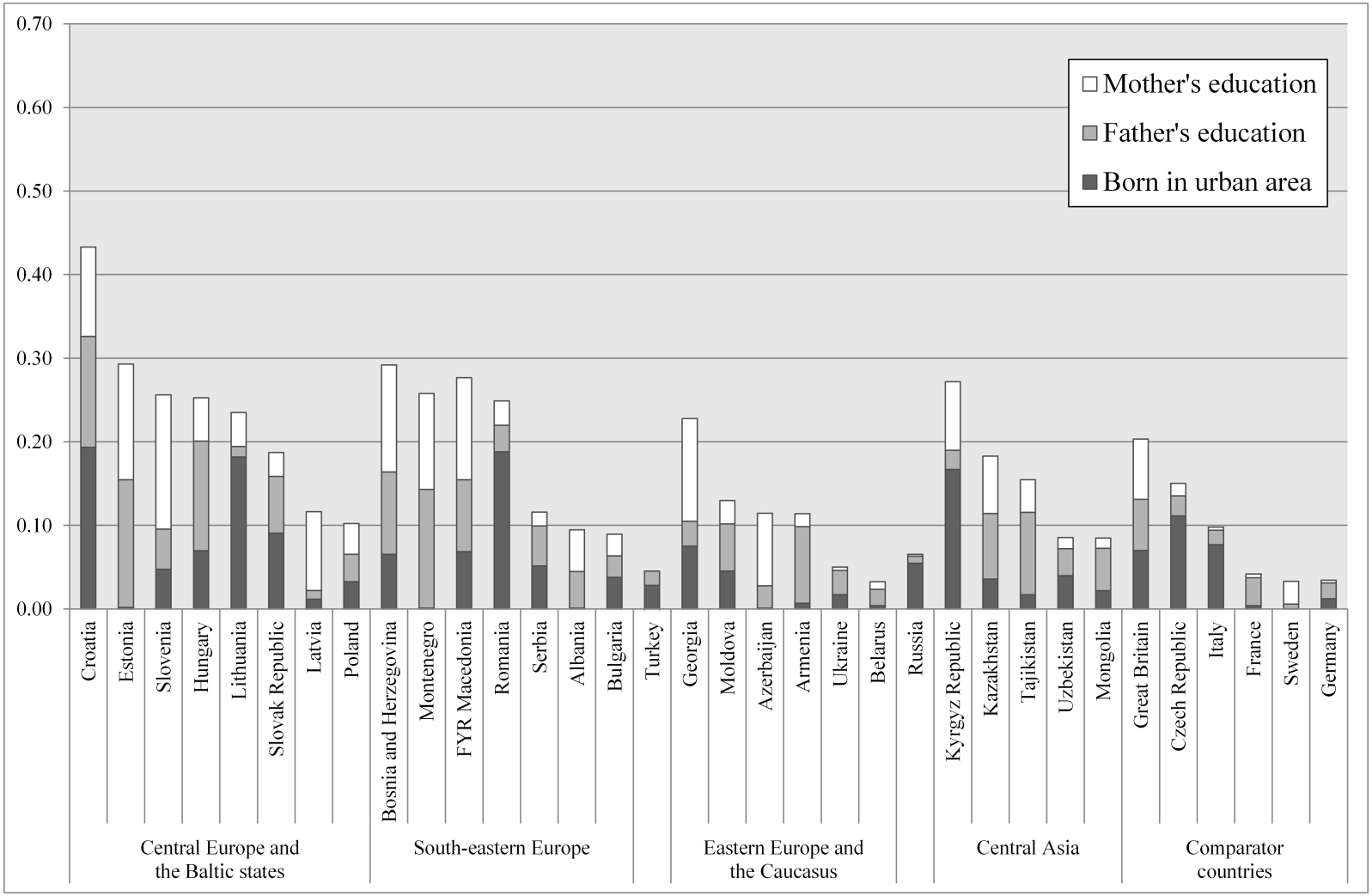
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 11: Shapley decomposition of inequality of opportunity for employment, among younger women



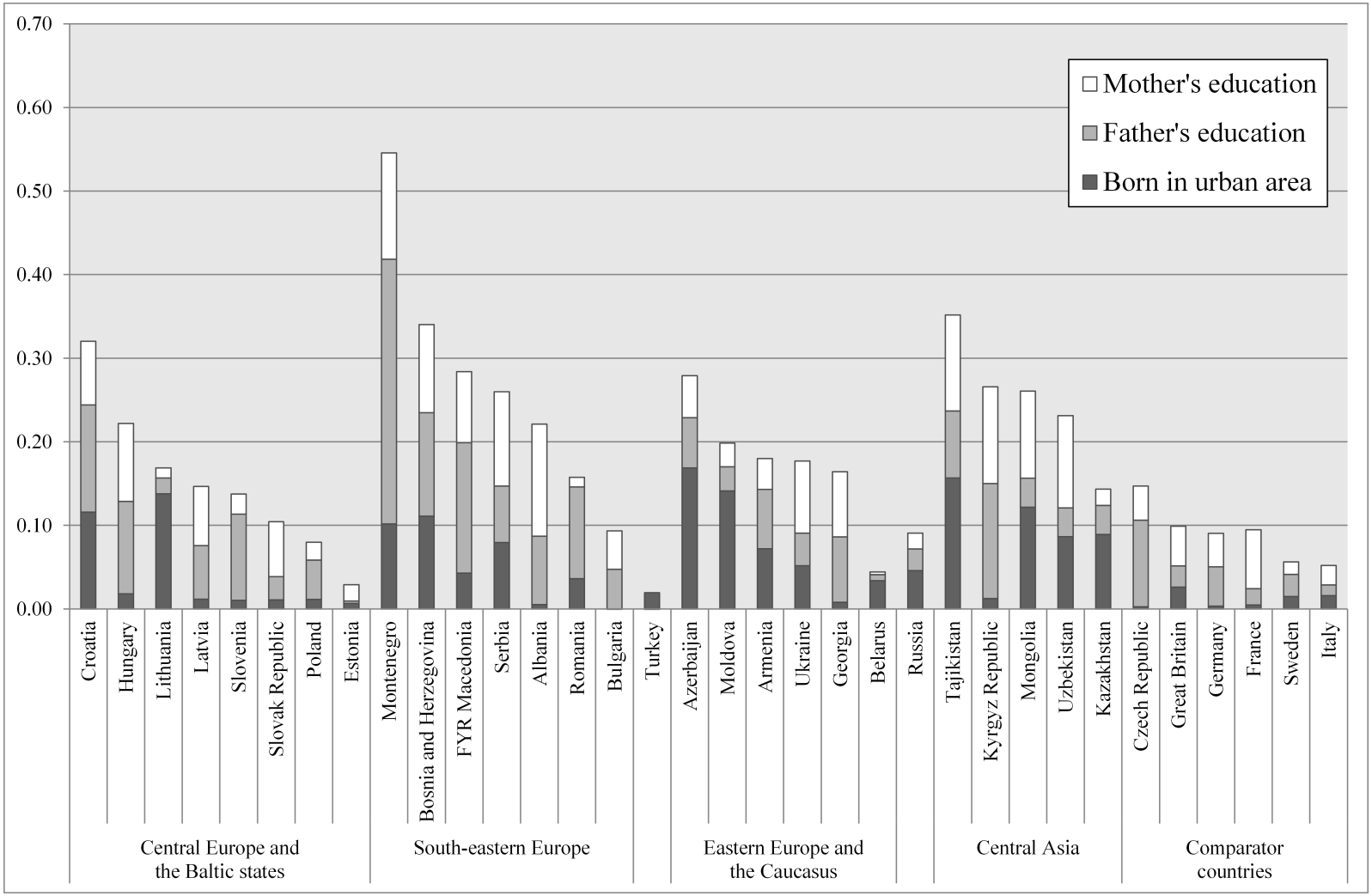
Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 12: Shapley decomposition of inequality of opportunity for employment, among older men



Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.

Figure 13: Shapley decomposition of inequality of opportunity for employment, among older women



Notes: The height of the bars shows the inequality of opportunity for each country. Within each region, countries are ordered from the highest to the lowest inequality of opportunity. The division of the bars indicates the percentage of inequality attributed to each of the circumstances.