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### Abstract

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## 1 Introduction

> The year was 2081, and everybody was finally equal. They weren't only equal before God and the law. They were equal every which way. Nobody was smarter than anybody else. Nobody was better looking than anybody else. Nobody was stronger or quicker than anybody else. All this equality was due to the 211th, 212th, and 213th Amendments to the Constitution, and to the unceasing vigilance of agents of the United States Handicapper General.

-Kurt Vonnegut, Jr., Harrison Bergeron, 1961.

High levels of economic inequality are widely recognized as among the defining problems of our time; they are detrimental to poverty reduction and economic growth, impede socio-economic mobility, and are a key source of social discontent in many countries. Reducing inequality within and among countries is one of the United Nations Sustainable Development

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Goals (SDGs). It is also widely understood, at the same time, that observed inequalities in economic outcomes such as education, health or incomes are a complex interplay of factors such as effort, luck and opportunities, and that differences generated by some of these factors, such as effort, may be less objectionable from a normative point of view relative to some others, such as unequal opportunities (Sen, 1980).

There is a large literature, both theoretical and empirical, that tries to define the space of inequalities that should be the subject of normative judgments and measure the magnitude of these inequalities. A number of studies in the distributive justice literature argue that the relevant space over which inequalities matter (for justice) should be resources (Rawls, 1971; Dworkin, 1981), opportunity for welfare (Arneson, 1989), access to advantage (Cohen, 1989), opportunities for a good life (Arneson, 2000); capabilities (Sen, 1980), or opportunities (Roemer, 2000). A number of empirical studies, building on the work of Roemer (2000), take the observed inequalities between individuals, such as those in incomes, and try to apportion a share of those overall inequalities to differences in efforts and, respectively, opportunities, by constructing a set of population groups, or types, defined by a common set of characteristics that are out of individual control (e.g. parental education, parental socio-economic status, gender, ethnic minority status) and defining inequalities between these types as indicative of inequality of opportunity and inequalities within each type as indicative of inequality of effort (Bourguignon et al., 2003; Roemer et al., 2003; Ooghe et al., 2007; Checchi and Peragine, 2010; Cogneau and Mesple-Somps, 2008; Ferreira et al., 2008, 2010; Lefranc et al., 2008, Lefranc et al., 2009; Ferreira and Gignoux, 2011).[1]

A common thread in this body of empirical literature is that it assumes everyone to have homogeneous preferences; this is what allows for the disentangling of inequality due to merit from inequality of opportunity (Brunori, 2016). Against this background, Joseph Fishkin, in his 2014 book *Bottlenecks: A new theory of equal opportunity*, argues that the inequality of opportunity literature focuses too narrowly on equalizing opportunities for a particular advantage, whereas in order to promote human flourishing, one needs to focus on advancing societies towards a more pluralistic opportunity structure, one that allows for many paths to pursue life goals different individuals may value (Fishkin, 2014). Fishkin's opportunity pluralism thus echoes Amartya Sen's capability approach focus on expanding the sets of functionings (doings and beings) people may have reason to value (Sen, 1999). Furthermore, Fishkin also notes that it is impossible, at the end of the day, to meaningfully separate individual characteristics into a set that requires compensation and ones that do not, because of the complex way in which the influences of parents, neighbors, teachers, genetic endowments, personal traits, and effort all interact dynamically through the life cycle (Maniquet, 2017).

A key ingredient of Fishkin's theory is the notion of a bottleneck, or a narrow place in the opportunity structure through which one must pass in order to successfully pursue a wide range of valued goals. These bottlenecks are problematic, because their mere existence shapes the incentives and resources of individuals towards successfully passing these bottlenecks, in a way that does not permit for the development of a plurality of life goals. Fishkin divides key opportunity bottlenecks into three main categories: (i) qualifications bottlenecks, such as educational credentials one may require to pursue some path toward valued ends; (ii) developmental bottlenecks, such as language acquisition, cultural exposure and the like, that do not have to confer formal credentials but are critical for human capital

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[1]This is a simplified summary of the approach. In practice, within-type inequalities capture differences in both effort, as well as luck, other unobserved circumstances or other random factors. For a detailed discussion, see Lefranc et al. (2009).

formation and tend to be correlated with socio-economic status; and (iii) instrumental-good bottlenecks, which are present when a person needs some instrumentally valuable good, such as money, in order to achieve other valued goods (Fishkin, 2014: pp. 156-158). Fishkin argues that these bottlenecks, to the extent that they are severe, will constrain opportunity pluralism by pressing the opportunity structure in a unitary direction. As Brunori (2016) notes in his review of Fishkin's book, the focus on the structure of opportunity widens our understanding of the meaning of equality of opportunity, but "[t]he most intriguing question for economists is whether it will be possible to formalize and measure the degree of pluralism of a society."

This study aims to provide a first (partial) empirical illustration of Fishkin's theory of opportunity pluralism. It is partial because measuring analytically and quantifying empirically a multitude of different bottlenecks of different types, as well as the complex ways in which they interact over the course of people's lives with the opportunities they have, and the preferences they shape, would indeed be daunting. This study focuses, rather, on documenting a more focused – but arguably critical – set of instrumental-good bottlenecks related to the need to have personal connections in order to have access to key opportunities in life, such as a good job or access to university education. To do so, it takes advantage of the data from the Life in Transition survey (LiTS) – a large and nationally representative attitudinal survey covering a large number of countries in the Europe and Central Asia region, representing a population of some 500 million adults. The survey is unique in that it captures key aspects of personal connections that are important in establishing their function as a bottleneck: (i) the importance of connections for a particular opportunity; and (ii) the availability of connections.

To my knowledge, this is the first empirical application of Fishkin's theory of opportunity bottlenecks in a large multi-country setting. The only other empirical study that uses Fishkin's framework explicitly is Friedensen et al. (2021), which examines learning barriers encountered by students with disabilities in STEM, based on 16 qualitative interviews with students at a US university. However, this study is related to a broader empirical literature that, while not explicitly relying on Fishkin's framework, documents how disadvantaged socio-economic backgrounds are constrained in college admissions (Hoxby and Avery, 2013) or socio-economic mobility more broadly (Chetty et al., 2014), or how labor market opportunities are constrained by factors such as lack of education or skills (Goldin and Katz, 2008), racial discrimination (Bertrand and Mullainathan, 2004; Browne, 2010), or the existence of a criminal record (Pager, 2003; Western, 2006). This analysis also extends the earlier study by Cojocaru (2023), which focused more narrowly on the link between informal connections and social mobility, and did not adopt Fishkin's opportunity pluralism framework in its analysis.

The empirical analysis in this study pursues two main goals. First, the study aims to document the severity of these bottlenecks in the countries of Europe and Central Asia. Second, the analysis aims to investigate whether these bottlenecks have a negative impact on welfare, by comparing important dimensions of people's well-being such as their satisfaction with their jobs and life more generally, and people's expectations of future socio-economic mobility between those who are and those who are not constrained by the connections bottleneck.

I find that in the region comprised of upwards of 500 million adults, 56 percent report that informal connections are either very important or essential to access good government or private sector jobs, or to access university education. Moreover, some 40 percent of adults lack such connections, and the availability of connections is higher among households with

higher socio-economic status. This constrained access, when connections are not available, is associated with lower satisfaction with one's job and life, and with lower expectations of future social mobility. Moreover, it is also correlated with actual employment outcomes – those without connections who believe informal connections to be important to secure a good job in the government sector are less likely to have a government sector job, while those with informal connections available to them are more likely to be employed in the government sector when access to the latter is perceived to be connections-constrained. In other words, the need for informal connections functions in ways that are consistent with Fishkin's concept of opportunity bottlenecks. Finally, I find that these negative associations between mobility expectations and satisfaction with jobs or life on the one hand, and the importance of connections on the other, are fully undone by the availability of such connections.

The rest of the paper is structured as follows. The next section reviews the concept of opportunity bottlenecks and discusses the challenges of empirical measurement. Section 3 provides an overview of the survey data used in the analysis. Section 4 documents the extent of the importance of connections in Europe and Central Asia and the relevance of bottlenecks to individual assessments of job and life satisfaction, and to social mobility. Sensitivity analysis is discussed in Section 5, while Section 6 provides concluding remarks.

## 2 Opportunity bottlenecks: concept and proposed measurement

All bottlenecks – whether qualification, developmental, or instrumental-good – can be described, according to Fishkin's theory, in terms of three key underlying dimensions: their legitimacy, severity, and the number of individuals they affect. The legitimacy (or arbitrariness) of the bottleneck concerns the strength of the justification for a given bottleneck to exist. For example, an instrumental good such as a stellar credit score may be viewed as a legitimate bottleneck when it is required to obtain a business loan, but is arbitrary as a requirement for a job. The severity of the bottleneck captures the degree to which it constrains the structure of opportunities and is the product of its pervasiveness, or breadth of paths towards valued forms of human flourishing that are affected by the bottleneck, and its strictness, whether an absolute requirement or a preference of varying strength. For example, if one's race impacts one's ability to pursue a wide range of jobs, this is a pervasive bottleneck, but it need not be strict. Fishkin argues that the case for ameliorating bottlenecks may be most acute when bottlenecks are both severe and arbitrary, albeit from the point of view of opportunity pluralism it is also worthwhile to tackle arbitrary bottlenecks that may not be severe, as well as severe bottlenecks that may be legitimate. Finally, the third important consideration is the number of people affected by the bottleneck. For example, discrimination against an ethnic minority may be a severe bottleneck that may affect a small group of people; other bottlenecks may affect a very large group of people, but need not be severe. It is thus the interplay between the severity of the bottleneck and its incidence in the population that matters from a policy standpoint (Fishkin, 2014: 170-171).

This study focuses on a set of instrumental-good bottlenecks related to the need for informal connections to access key opportunities in life, such as a good job or university education. Needing connections to get into university, or to get a good job, is clearly a bottleneck, in Fishkin's sense, akin to needing to score well on an entrance test, or needing money to finance one's education. Not everyone may have the necessary connections, and even those who do will be affected by the bottleneck in the sense of being influenced in

their decisions in the direction of the bottleneck. For example, one may wish to have a particular profession, or go to a university that may allow her to pursue that profession, but if connections are only available in some other profession, or at some other university, and are important for clearing the bottleneck, it may be rational to alter one's preferences accordingly. It is also a particularly pernicious bottleneck on the legitimacy spectrum in the sense that it is entirely arbitrary, and opposed to any meritocratic principle one can imagine. For instance, it is inconsistent with the notion of fair equality of opportunity underlying the 2nd principle of justice put forth by Rawls (1971), which requires that citizens with the same talents should have equal educational and economic opportunities irrespective of their background.

In terms of severity, having constrained access to university education and good jobs can have a significant impact on the breadth of paths toward valued forms of human flourishing. In the US, median earnings of those with a college degree are some 60 percent higher compared to those with only a high school diploma (US Department of Commerce, 2023). Beyond earnings, those without a college degree are also more prone to deaths of despair, morbidity and emotional distress (Case and Deaton, 2022). Staiger (2023) finds that working for a parent's employer increases earnings in the first job by almost one fifth, as parents use their connections to provide access to higher paying jobs. In a sluggish labor market those without connections may be locked out of many jobs, if personal connections are a prevalent hiring practice, while those with connections may be directed toward particular jobs on account of existing connections, even if those jobs would not be their first choice otherwise. This is a crucial feature of the theory of opportunity pluralism, the fact that the existence of a bottleneck affects not only those who fail to pass through it, but also those who successfully pass through the bottleneck, by requiring that they mold their preferences and efforts with the goal of passing through the bottleneck.

It is fair to say, therefore, that the informal connections bottlenecks are important from a normative and a policy point of view on account of being both severe and arbitrary. What about the incidence of these bottlenecks in the overall population? There is a rich literature documenting the widespread use of information networks, including informal contacts, in the process of job search, finding that the use of friends, relatives and acquaintances to search for jobs is both widespread, and productive, in the sense of resulting in receipt and acceptance of more job offers, and in improving the quality of matches between firms and workers (see Ioannides and Loury, 2004 for a detailed review of both the economic and sociological literature). For instance, Loury (2006), using data from the 1979 National Longitudinal Survey of Youth (NLSY) finds that more than half of the respondents relied on family and friends to find jobs in 1982. Corak and Piraino (2011) find that about 40 percent of young Canadian men have been employed at some time with an employer for which their father also worked. Elliott (1999) documents that individuals with lower levels of education, residing in high-poverty neighborhoods, were more likely to use informal contacts in searching for jobs. Pellizzari (2010), using data from the European Community Household Panel (ECHP) documents varied, but oftentimes widespread reliance on personal contacts across a sample of 14 European countries, with a third or more of respondents reporting the use of personal contacts in countries such as France, Germany, Greece, Luxembourg, Portugal, and Spain. Cojocaru (2017) finds that close to 60 percent of firms in Kosovo rely on informal channels of recruitment, based on the World Bank's STEP skills measurement survey of employers.

Note, however, that the use of informal connections to search for jobs is not, in itself, evidence of these connections being an opportunity bottleneck. Existing studies document some advantages that informal connections may present in terms of finding jobs and ex-

tracting better pay, but this is different from a situation in which one is prevented from accessing good jobs, unless connections are available to facilitate this access. The goal of this study is to document the latter – the extent to which individuals form beliefs that accessing key opportunities in life is difficult without connections.

Toward that end, the study employs a unique set of questions in the 2010 round of the Life in Transition survey, harmonized for a large set of 35 countries in the Europe and Central Asia region, In particular, the respondents are asked the following question: "Some people, because of their job, position in the community or contacts, are asked by others to help influence decisions in their favour. In general, how important is it in our country to have the support of such people to influence decisions in the following situations?", where the situations include "to get a good job in the government sector", "to get a good job in the private sector" and "to get into University". For each of these situations the responses are coded of a 5-step Likert scale ranging from "Not important at all" to "somewhat important", "moderately important", "very important" and "essential". Note that these responses correspond to the degree of strictness of the bottleneck, using Fishkin's terminology. Informal connections being essential would correspond to a very strict character of the bottleneck, thus increasing its severity, other responses indicating a reduction in strictness of varying degree.

In addition to the question related to the perceived importance of informal connections, respondents are also asked "Do you know anyone whom you could ask for such help if you needed it?" possible answers being friends, relatives, classmates, local boss and "other". This question allows me to compare across groups of individuals who differ in their access to connections. Recall that both of these groups are important from the point of view of opportunity pluralism because both those for whom the bottleneck is binding (here, individuals without connections) and those for whom it is not binding (here, individuals with connections) may be affected by the mere existence of a bottleneck (here, the belief that connections are essential, for instance). Taken together, these two questions allow me to document the severity of the connections bottlenecks and their prevalence in the population.

Fishkin argues that bottlenecks, to the extent that they are severe and prevalent, constrain the breadth of paths towards valued forms of human flourishing. The available data do not allow me quantify empirically this constraining effect. However, to the extent that the need for connections to gain access to education and jobs may prevent one from having the job she really wants, we may expect this to be reflected in lower levels of job satisfaction. Given the importance of education and a good job for overall life evaluation, the presence of bottlenecks may similarly be reflected in lower overall life satisfaction. Furthermore, the bottlenecks may also dampen people's expectations of future socio-economic mobility., as having access to key opportunities like good jobs is key to fostering advancement on the socio-economic ladder. In the second part of the analysis I examine the linkages between bottlenecks and these subjective evaluations of well-being as indirect evidence of negative well-being impacts that bottlenecks may impose.

## 3   Data description and empirical strategy

The study relies on data from the 2010 Life in Transition Survey implemented by the European Bank for Reconstruction and Development. The LiTS survey provides harmonized data for all of post-socialist economies except Turkmenistan, as well Mongolia, Turkey

and five Western European countries (France, Germany Italy, Sweden, and the United Kingdom). For each of the countries, the LiTS survey provides a nationally-representative sample of households; in each household the responses are based on a face-to-face interview with a randomly-selected adult member of the household.[2] I rely on data from the 2010 survey round, because this is the only wave of the LiTS survey that asks critical questions about the availability of informal connections.

The key variables examined in this study are those described in the previous section, relating to the degree of importance of connections for securing access to jobs or university education, and the availability of these connections. I consider the three bottleneck domains (government jobs, private sector jobs, and university education) both individually, as well as by creating a variable that combines all three domains. To do this, for ease of interpretation, I first create, for each domain, a dummy variable that evaluates to 1 for categories "very important" and "essential" and zero otherwise, and then create a similar dummy variable defined as the union of the three domains, meaning that it evaluates to 1 if connections are deemed to be "very important" or "essential" in any of the three domains, and zero otherwise.

Job satisfaction and life satisfaction are both measured based on responses to the question "All things considered, I am satisfied with my job as a whole (respectively, life now), where the responses range from "strongly disagree" to "strongly agree" on a 5-step ordinal Likert scale, with "neither agree nor disagree" as the middle category.

Expectations of mobility are based on two questions. Respondents are first asked to "[i]magine a ten-step ladder where on the bottom, the first step, stand the poorest 10% people in our country, and on the highest step, the tenth, stand the richest 10% of people in our country. On which step of the ten is your household today?", followed by "And where on the ladder do you believe your household will be 4 years from now?". Responses to these questions generate respondent's subjective placement on a 10-step income ladder today and four years hence. I take the difference between the expected future ladder position and the current ladder position as a measure of future intra-generational social mobility expectations, ranging from -9 to +9.

Based on these definitions of key variables, the empirical analysis proceeds by first describing the severity of bottlenecks across the three domains of opportunity – government jobs, private sector jobs, and university education – across the countries of Europe and Central Asia, and the profile of the individuals who are affected by these bottlenecks. The key distinction to be made is between the group of people who have access to informal connections, and those who do not. While Fishkin argues that the mere existence of the bottlenecks will affect the choices of both those who are able to pass through the bottlenecks and those who cannot, there is still an important distinction between these two groups, particularly to the extent that access to connections is correlated with socio-economic status.

The second step in establishing the need for informal connections as an opportunity bottleneck is to establish whether the belief that these bottlenecks are present and severe affects one's choices – for instance, going for a job that connections can secure rather than for a different job one would actually want to have, absent the bottleneck. While we do not observe the counterfactual choices people would have made, it is plausible that making choices about jobs and education in a bottleneck-constrained environment could lead to lower levels of satisfaction with one's job, or one's life more broadly, or affect one's

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[2]The details of the sampling methodology can be found on the EBRD website at
http://www.ebrd.com/downloads/research/surveys/LiTS2eh.pdf

expectations of future socio-economic mobility, which can be observed in the LiTS data. More formally, let:

$$S_i = \beta_1 B_i + \beta_2 A_i + \beta_3 B_i A_i + \mathbf{X}'\boldsymbol{\gamma} + \epsilon_i \tag{1}$$

where $S_i$ is a measure of satisfaction with one's job, or life, or a measure of expected future mobility. $B_i$ is a dummy variable that evaluates to 1 if a bottleneck is severe and zero otherwise, where a bottleneck is deemed to be severe if informal connections are deemed to be either "very important" or "essential", and zero otherwise. $A_i$ is a binary indicator that evaluates to 1 if the respondent has access to informal connections and zero otherwise. $\mathbf{X_i}$ is a set of socio-demographic controls, including a set of country dummies, such that the coefficients are identified from within-country variation. Finally, $\epsilon_i$ are idiosyncratic errors, allowed to cluster at the level of primary sampling units.

In this setup the omitted reference category is the group that does not believe connections to be vital, nor has access to them, such that the coefficient $\beta_1$ measures the effect of the bottleneck among those who do not have access to connections relative to the group who similarly do not have access to informal connections, but who do not identify severe opportunity bottlenecks as being present. Similarly, the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$ compares the effect on the dependent variable of the existence of bottlenecks combined with connections to overcome them, compared to the no-bottlenecks and no-connections baseline.
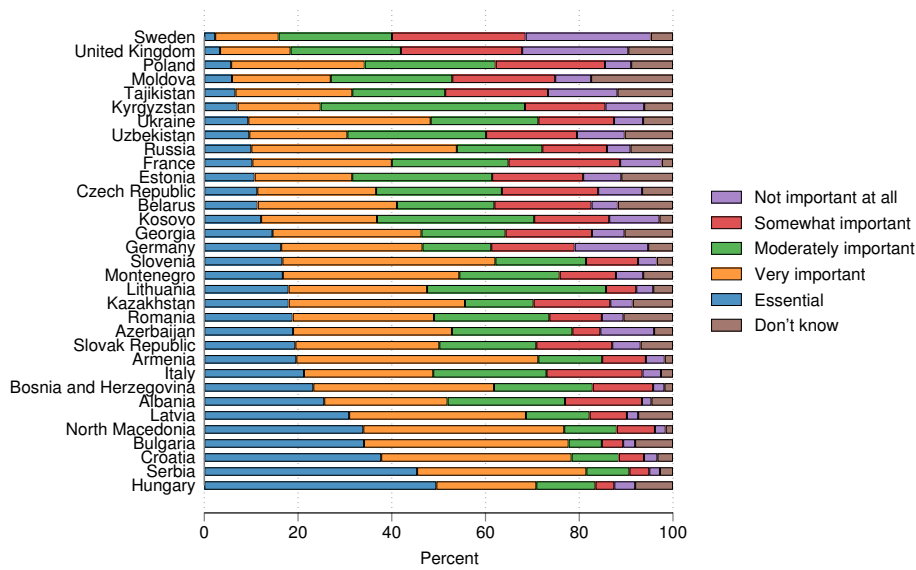
## 4    Main results

How severe are opportunity bottlenecks in Europe and Central Asia? I begin by documenting how widespread are beliefs that informal connections are very important for accessing key opportunities. Overall, 45 percent of adults in the region believe informal connections to be either very important or essential to access a good government job, 40 percent in the case of accessing a private sector job. In both cases, less than 10 percent of adults think that having informal connections to access good jobs is not important at all. In other words, access to good jobs is believed to be quite constrained, on average, with some heterogeneity across countries, as shown in Figures 1 and 2. For instance, the share of adults who think that informal connections are essential to get a good government job varies from just 2 percent in Sweden to 50 percent in Hungary.

The picture is somewhat better in the case of needing connections to get into university, with 22 percent of adults reporting that informal connections are either very important or essential to get into university, and 32 percent of adults reporting that connections are not needed to access university education. Again, the severity of the bottleneck varies across countries in the region, as shown in Figure 3.
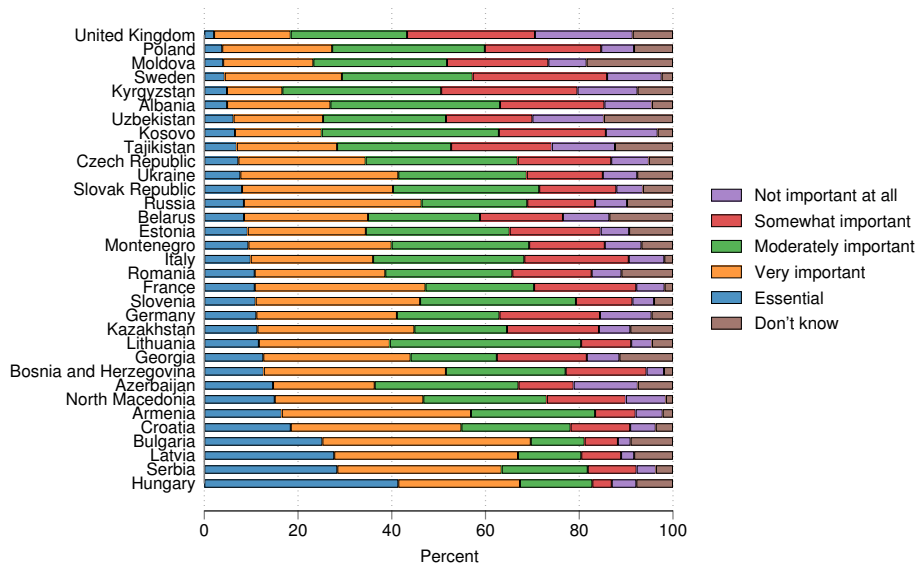
If we wanted to think broadly of access to opportunities as spanning multiple dimensions, such as access to jobs and education, we can construct a union indicator that evaluates to 1 if connections are deemed to be important for any of the three domains, and zero otherwise. This union indicator is also relevant because the question about availability of connections is not asked separately for each domain, so we have to assume that reported lack of connections applies to all of the domains. Based on this definition, 56 percent of adults in the region deem informal connections to be very important or essential, ranging from a third or less in United Kingdom and Sweden to over 80 percent in Bulgaria, Croatia, North Macedonia, and Serbia.

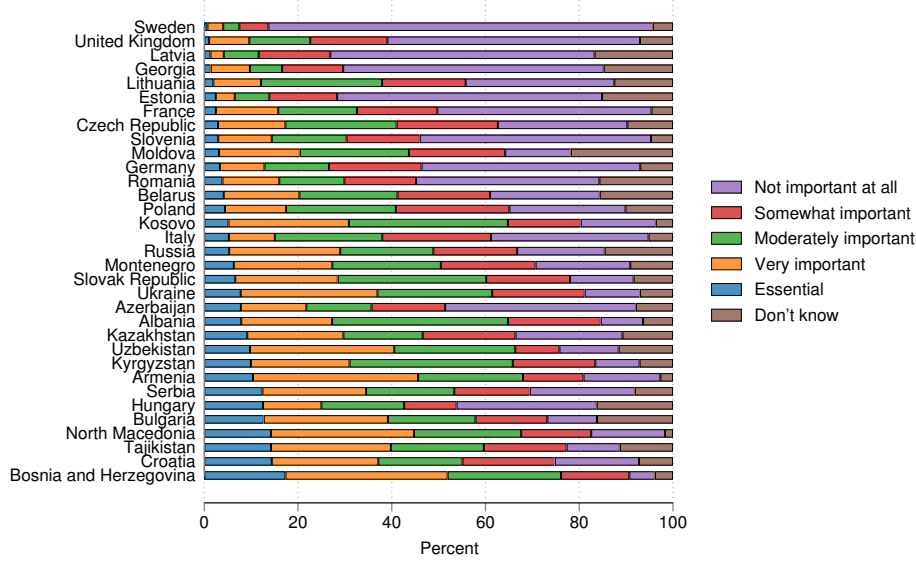Figure 1: Importance of informal connections to get a government job



Notes: Distribution of responses to the question "Some people, because of their job, position in the community or contacts, are asked by others to help influence decisions in their favour. In general, how important is it in our country to have the support of such people to influence decisions in the following situations? [To get a good job in the government sector]"

Figure 2: Importance of informal connections to get a private sector job



Notes: Distribution of responses to the question "Some people, because of their job, position in the community or contacts, are asked by others to help influence decisions in their favour. In general, how important is it in our country to have the support of such people to influence decisions in the following situations? [To get a good job in the private sector]"

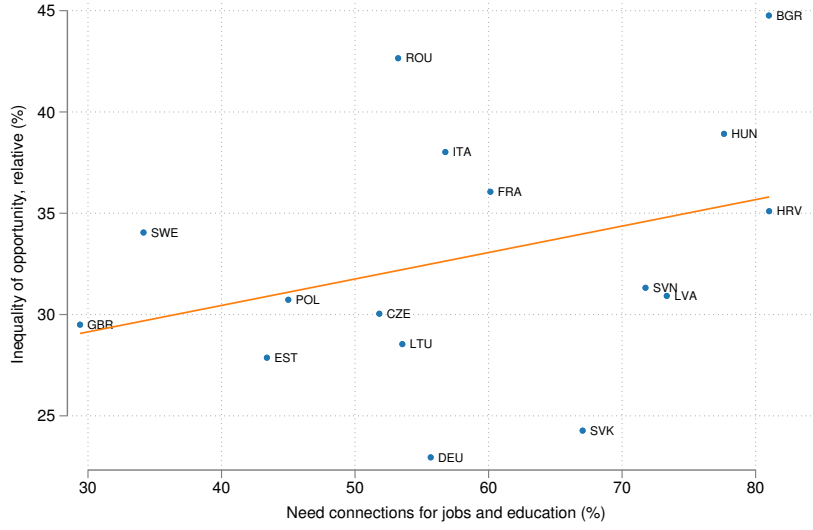Figure 3: Importance of informal connections to access university education



Notes: Distribution of responses to the question "Some people, because of their job, position in the community or contacts, are asked by others to help influence decisions in their favour. In general, how important is it in our country to have the support of such people to influence decisions in the following situations? [To get into university]"

We can also check how the severity of bottlenecks is related with existing measures of inequality of opportunity. Figure 4 plots the union indicator of the need for connections against the ex-ante relative inequality of opportunity measure for a subset of countries for which both are available. The inequality of opportunity estimates are drawn from the global database of opportunity and mobility (GEOM)[3] and are for 2011, which is aligned with the LiTS survey data used in this study. The inequality of opportunity indicator measures the share of overall income inequality that is due to inequality of opportunity (as opposed to inequality in effort or luck), and is based on an ex-ante measure of inequality of opportunity, in which individuals are divided into types based on a set of characteristics that are outside of their control (e.g. the education of their parents or their gender), and inequality of opportunity measures the inequality in opportunity sets across types, represented by average incomes for each type. Estimates in Figure 4 suggest that the concepts of inequality of opportunity and that of bottleneck severity are correlated, but distinct, with a pairwise correlation of only 0.33. Countries like Sweden and Croatia have similar estimates of inequality of opportunity, but opportunity bottlenecks are much more severe in Croatia, for instance.

Not everyone has informal connections they can rely upon to access key opportunities in life. In the overall sample, 40 percent of adults report not having access to informal connections who can facilitate access to opportunities. A key feature of access to connections is that they are not uniformly distributed in the population. Among those with primary education or less, only 47 percent report having access to connections, compared to 68 percent among those with tertiary education. Across self-reported income ladders, access to

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[3]For more details related to the data and definitions of main concepts, see https://geom.ecineq.org/about/

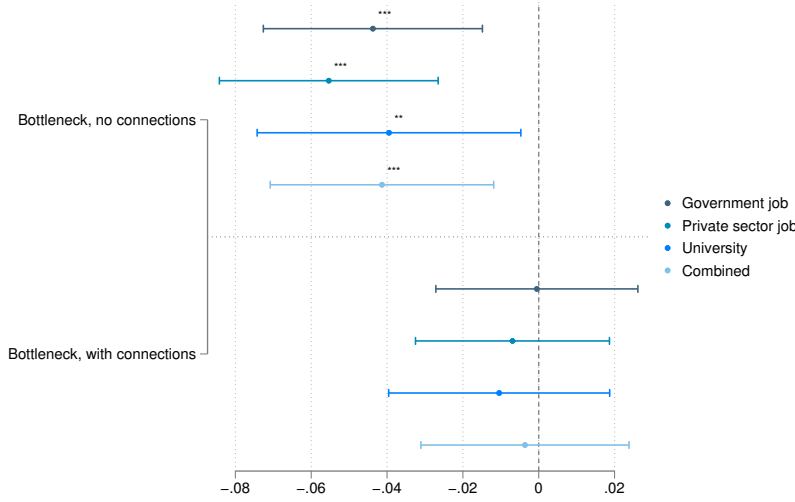Figure 4: Relative ex-ante inequality of opportunity and bottlenecks



Notes: The X axis plots the share of adults reporting that informal connections are either "very important" or "essential" in any of the three domains: government sector job, private sector job, or university. The Y axis plots the share of overall income inequality that is due to inequality of opportunity, from the Global Estimates of Opportunity and Mobility (GEOM) database.

informal connections increases from 43 percent for the bottom rung of the income ladder to 69 percent for the top rung of the income ladder. More importantly, the availability of connections tends to be higher among those whose parents have more years of education . These patterns echo the socio-economic gradient related to the developmental and instrumental-good bottlenecks described by Fishkin in his study.

The opportunity bottlenecks in key areas related to jobs and university education thus appear to be quite strict in the Europe and Central Asia region, as measured by the importance attributed by the population to having informal connections who can facilitate access. Moreover, these bottlenecks are also quite widespread in the population – at the bottom of the socio-economic gradient more than half of the population do not have access to such connections. Recall from the discussion in Section 2 that even among those who do have these connections, bottlenecks may still exert a constraining effect from the point of view of opportunity pluralism advocated by Fishkin in the sense of the type of available connections shaping the preferences and choices of individuals in ways that may differ from unconstrained preferences that individuals would have had if, for example, connections to access either university education or good jobs were entirely unnecessary.

The second step in establishing that the need for informal connections to access jobs and university education functions as an opportunity bottleneck is to examine whether an environment constrained by the need for informal connections affects outcomes individuals may have reasons to value. As noted in the previous section, ideally we would want to observe choices of vocation or jobs being affected by the presence of the bottleneck, but such counter-factual data would be almost impossible to compile, because of the complex way in which the influences of parents, neighbors, teachers, genetic endowments, personal traits, and effort all interact dynamically through the life cycle. To make progress, in this study I conjecture that one should feel less satisfied with the outcomes of optimization in a

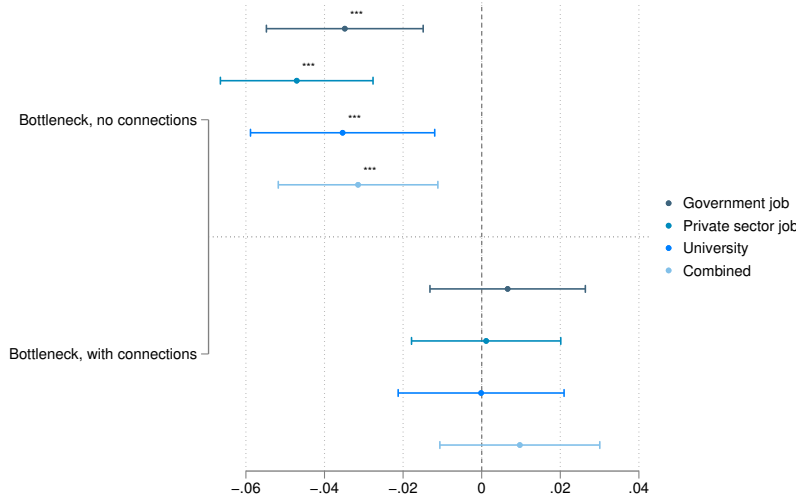Figure 5: Opportunity bottlenecks and job satisfaction



Notes: Coefficient estimates and 95% confidence intervals from the regression in (1), based on 4 regressions with job satisfaction as dependent variable and the importance of connections for government sector job, private sector job, university admission, and a union indicator of connections importance, as well as the availability of connections as key independent variables of interest. Sample restricted to employed adults. "Bottleneck, no connections" corresponds to the the hypothesis $\beta_1 = 0$, and "Bottleneck, with connections" corresponds to the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$. Significance: * p<0.1, ** p<0.05, *** p<0.01.

bottleneck-constrained environment, i.e. the education and job one actually obtained, and other life circumstances framed by those choices. In other words, lower levels of satisfaction with one's chosen job, or with life more broadly, or with expectations of future mobility, in the presence of the need for connections to facilitate access, would be consistent with the need for connections having the characteristics of an opportunity bottleneck.

First, I examine the relationship between the severity of the need for informal connections for jobs or education and the availability of connections on the one hand, and job satisfaction on the other, based on the model specification in (1). This model is estimated over the universe of adults who are currently working, and it is conditional on a set of socio-demographic characteristics that may determine the degree of one's job satisfaction, including the respondent's age, gender, level of education, civil status, religion and area of residence, as well we salient job characteristics, such as the type of occupation the respondent has and the industry that she is working in. The model includes a set of country dummies, such that the coefficients are identified out of within-country variation.

The results in Table 2 suggest that the patterns of job satisfaction in the region conform to analytical priors. Thus, job satisfaction tends to be lower among older individuals, for whom it may have been more challenging to adapt their knowledge and skills to the modern exigences of the labor market. Similarly, job satisfaction is higher among those with tertiary education, who may have more intrinsically rewarding jobs. Job satisfaction is also higher among those who live in wealthier households, which may be reflective of better remuneration. Finally, as we would expect, individuals in most of the occupational categories have lower job satisfaction in comparison with the reference category of professional occupations, whereas among industrial sectors, job satisfaction tends to be lower in agriculture and higher

Figure 6: Opportunity bottlenecks and life satisfaction



Notes: Coefficient estimates and 95% confidence intervals from the regression in (1), based on 4 regressions with life satisfaction as dependent variable and the importance of connections for government sector job, private sector job, university admission, and a union indicator of connections importance, as well as the availability of connections as key independent variables of interest. Sample includes all adults. "Bottleneck, no connections" corresponds to the the hypothesis $\beta_1 = 0$, and "Bottleneck, with connections" corresponds to the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$. Significance: * $p<0.1$, ** $p<0.05$, *** $p<0.01$.
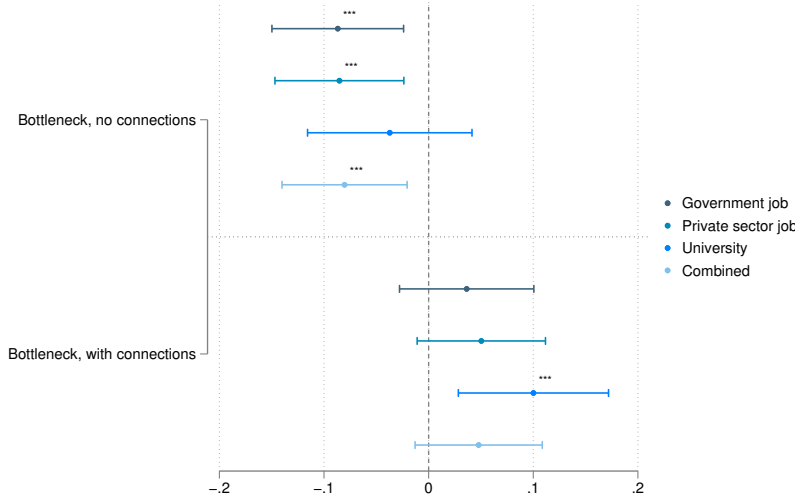
in sectors such as transport and communications, finance, insurance and real estate, as well as community, social and personal services, which again may the due to the combined effect of job content and remuneration differences across sectors.

Turning to the main hypotheses of this analysis, the need to have informal connections to gain access to opportunities appears to be associated with lower job satisfaction, which is consistent with it being an opportunity bottleneck. In particular, among those who do not have access to informal connections, the share of those reporting satisfaction with their jobs is 4.4 percentage points lower among those who believe that connections are vital to secure a good government job and 5.5 percentage points lower among those who believe that connections are vital to secure access to a good private sector job. The patterns are similar if I combine the beliefs about the importance of connections for government jobs, private sector jobs, and university education into a union variable that evaluates to 1 if connections are vital in any of the 3 domains, and zero otherwise.

Moreover, access to informal connections fully undoes the negative drag of the opportunity bottleneck. Job satisfaction among those who believe that connections are vital to gain access to jobs or university education, but who have informal connections they can rely upon, is not statistically different from the population who do not believe that informal connections are necessary (Figure 5). It may still be the case, as Fishkin argues, that the need for connections may have shaped earlier preferences of this group in a way that is shaped by the type of connections available to them and the types of jobs or education these connections may be able to help access, but it does not appear to impact significantly the level of satisfaction with the actual jobs they have.

Figure 6 reports estimates from the same set of regressions, but having overall life

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Figure 7: Opportunity bottlenecks and expectations of future social mobility



Notes: Coefficient estimates and 95% confidence intervals from the regression in (1), based on 4 regressions with expected future mobility as dependent variable and the importance of connections for government sector job, private sector job, university admission, and a union indicator of connections importance, as well as the availability of connections as key independent variables of interest. Sample includes all adults. "Bottleneck, no connections" corresponds to the the hypothesis $\beta_1 = 0$, and "Bottleneck, with connections" corresponds to the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$. Significance: * p<0.1, ** p<0.05, *** p<0.01.

satisfaction in place of job satisfaction as the dependent variable. Unlike in Figure 5, however, the models are estimated over the set of all adults, not only among those who are currently employed. The results are similar to the ones from the job satisfaction models. Lack of connections, when these are deemed to be vital, is negatively correlated with overall life satisfaction, while, at the same time, availability of informal connections fully cancels the constraining effects of the opportunity bottleneck.

The final set of models, reported in Figure 7, examines whether the existence of opportunity bottlenecks is associated with lower expectations of future socio-economic mobility, defined as the difference in the expected income ladder position 4 years in the future and the current position of today's income ladder.[4] As before, lack of meritocratic access to jobs or university education appears to be an opportunity bottleneck. The need for informal connections to access government or private sector jobs is associated with lower expectations of future social mobility, but only in the case when such informal connections are not available; otherwise, there is no reduction in expected future mobility, and in the case of needing connections to access university education, future mobility expectations are even higher, when connections are available.

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[4]Given the construction of the mobility variable, I also include the current ladder position in the models to account for the fact that it is mechanically difficult to move up from the top ladder rungs, and likewise to move down from the bottom ladder rungs.
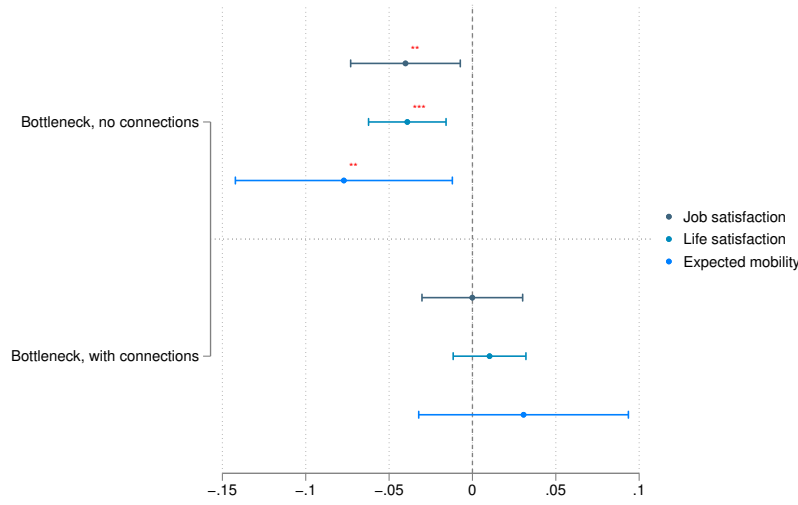
# 5    Sensitivity analysis

Several concerns can be raised with respect to the results presented in Section 4, related in particular to the estimated relationship between opportunity bottlenecks, as proxied by the need for, and availability of, informal connections, and a set of outcomes such as job or life satisfaction. A key limitation is the cross-sectional nature of the LiTS survey, which does not provide readily-available sources of exogenous variation that would allow me to substantiate claims that the existence of opportunity bottlenecks is not only correlated with lower perceptions of job and life satisfaction, and future mobility expectations, but actually has a causal impact on the latter. It is also possible that the empirical models are mis-specified, in the sense that some of the assumptions they impose may be unwarranted, or not hold. This section discusses some sensitivity analyses probing some of the model assumptions, with the recognition that some concerns, related in particular to omitted variable bias, cannot be resolved fully.

The first robustness check aims to address the concern that in estimating predicted differences in, for instance, job satisfaction, between the four population groups defined by the connections beliefs and connections availability dummies in (1), I am constraining the vector $\gamma$ associated with the control variables like education or type of job to be constant across these four population groups. This assumption can be relaxed if the model is estimated separately for each of the four population groups, and predictions are then computed for the whole sample for each of the estimated coefficient vectors. This is known in the causal inference analysis literature as potential outcome means (POM) setup. Differences in the means can then be used as an estimate of what in the treatment literature is defined as the average treatment effect (ATE), although we do not adopt the formal causal inference treatment framework here. In Figure 8, I report, for brevity, the results of potential outcome means models using the combined indicator of connections need for the three outcome variables of interest – job satisfaction, life satisfaction, and expectations of mobility. The estimates suggest that relaxing the assumption of constant slopes in the empirical model does not alter the conclusions of the analysis.

Omitted variable bias presents an even more fundamental challenge in this cross-sectional setting. While responses to the question related to availability of connections are plausibly factual on part of the respondents, it is possible that the subjective beliefs about the degree to which informal connections are needed, and, simultaneously, the main dependent variables in our models are both correlated with some latent psychological traits that are difficult to measure, and thus omitted in the empirical model. For example, one can imagine that someone who is generally ill-disposed may report a more negative assessment of job and life satisfaction, and more negative assessments of future mobility expectations. The same ill-disposition can also result in a more pessimistic assessment of the degree of meritocracy in society, leading to omitted variable bias in the estimated coefficient on the bottleneck variable.
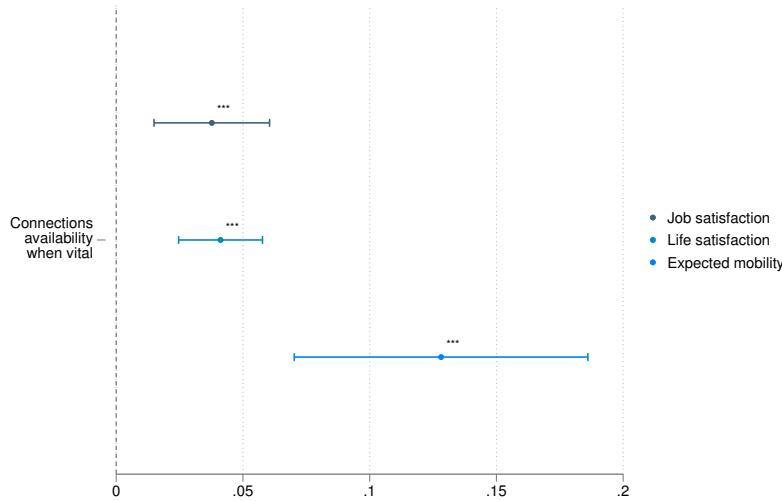
While data limitations do not allow me to fully rule out such endogeneity concerns, one way to test a relatively "cleaner" version of one of the hypotheses from Section 4 is to compare individuals who share the same belief type, but differ in the availability of connections. Recall that in the baseline model (1) the coefficient $\beta_1$ measured the effect of the bottleneck among those who do not have access to connections relative to the group who similarly do not have access to informal connections, but who do not identify severe opportunity bottlenecks as being present. Similarly, the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$ compared the effect on the dependent variable of the existence of bottlenecks combined with connections

Figure 8: Robustness analysis – potential outcome means model estimates



Notes: Graph reports average treatment effects (ATEs) and 95% confidence intervals from 3 separate potential outcome means (POM) models with dependent variables given in the graph's legend. Vector of control variables is the same as in baseline models. "Bottleneck, no connections" corresponds to the the hypothesis $\beta_1 = 0$, and "Bottleneck, with connections" corresponds to the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$. Significance: * p<0.1, ** p<0.05, *** p<0.01.

Figure 9: Robustness analysis – comparisons within the same belief type



Notes: Coefficient estimates and 95% confidence intervals from the regression in (1), separately for each of the 3 outcome variables. Estimates correspond to the hypothesis $\beta_2 + \beta_3 = 0$. Significance: * p<0.1, ** p<0.05, *** p<0.01.

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Figure 10: Falsification exercise: connections and satisfaction with postal services
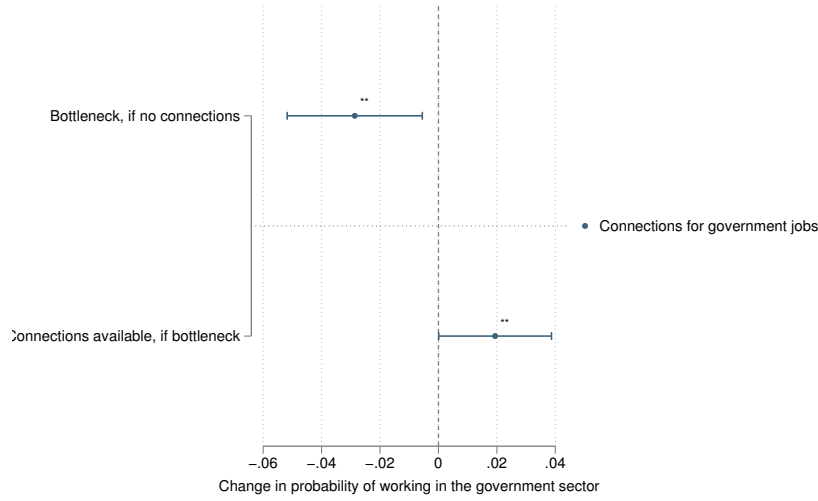


Notes: Coefficient estimates and 95% confidence intervals from the regression in (1), based on 4 regressions with satisfaction with postal services as dependent variable and the importance of connections for government sector job, private sector job, university admission, and a union indicator of connections importance, as well as the availability of connections as key independent variables of interest. Sample restricted to employed adults. "Bottleneck, no connections" corresponds to the the hypothesis $\beta_1 = 0$, and "Bottleneck, with connections" corresponds to the hypothesis $\beta_1 + \beta_2 + \beta_3 = 0$. Significance: * p<0.1, ** p<0.05, *** p<0.01.

to overcome them, compared to the no-bottlenecks and no-connections baseline. Both of these hypotheses would be problematic in the presence of omitted variables such as "latent ill-disposition" or similar, because they rely on comparisons between those who think that connections are vital and those who think that they are not, and unobserved psychological biases can influence the beliefs that inform these subjective survey responses. However, the hypothesis $\beta_2 + \beta_3 = 0$, on the other hand, compares the group who believe that connections are vital but do not have them, with the group who similarly believe that the connections are vital, but do have access to such connections. Here, if there are unobserved psychological traits that affects one's subjective assessments of meritocracy, these unobserved traits would not affect differences in outcomes within the same belief type. Figure 9 reports the estimated differences, for each of the 3 outcome variables, between those with connections and those without connections, conditional on both groups believing that such connections are vital to gain access to opportunities. The results are consistent with the the evidence presented in Section 4. Given the need for informal connections to gain access to opportunities, the availability of such connections is associated with statistically higher levels of reported job and life satisfaction, and with more positive expectations of future social mobility.

Another way of testing whether the correlations between the importance and availability of connections and outcomes which may depend on such connections are spurious or not is to undertake a falsification exercise. For instance, the LiTS survey elicits respondents' views on their satisfaction with the postal service, which can similarly range from very dissatisfied to very satisfied on a 5-step Likert scale. Access to postal services is universal, and the services are standardized and there is no reason why one's satisfaction with postal services should correlate with the degree to which connections are needed to access jobs or

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Figure 11: Informal connections current sector of employment

education. The results of this falsification exercise are reported in Figure 10, which is based on the same regression as in Figure 5, with the only difference being that the dependent variable is replaced with satisfaction with postal services (a dummy variable that evaluates to 1 if the respondent is satisfied or very satisfied, and zero otherwise). The regressions with satisfaction with postal services do not produce the same patterns as other outcomes such as job satisfaction, life satisfaction, or expectations of upward mobility. Existence of bottlenecks generally does not affect satisfaction with postal services, with the exception the education sphere, and, unlike in previous cases, the availability of such connections is not correlated with higher levels of satisfaction with this particular outcome. If anything, in the case of the union belief variable, those with connections are more dissatisfied with postal services. These patterns are consistent with the claim that the correlations between connections beliefs and their availability on the one hand, and outcomes that such connections may affect, are not spurious.

As a final robustness test, it is also possible to check whether the need for, and availability of, connections is correlated with the actual employment outcomes. In particular, the survey records the sector of employment, whether state or private (domestic or foreign), for those employed for wages. This makes it possible to investigate whether, for instance, the need for informal connections to get a good government sector job and the availability of such connections affects the probability of someone having ended up working in the government sector. To do that, I re-run the regression reported in Figure 5, replacing the dependent variable with an indicator variable that evaluates to 1 if the respondent has a government sector job and zero if the respondent has a private sector job Figure 11 reports two hypotheses tests from this regression. Bottleneck, if no connections estimate (coefficient $\beta_1$) implies a 3pp lower probability of having a government sector job if connections are vital to obtain a job in the government sector, but such connections are not available. Meanwhile, the connections available, if bottleneck is present hypothesis ($\beta_2 + \beta_3 = 0$) suggests that

relative to the group that believes connections to be vital to get a government sector job but does not have such connection, those who similarly believe connections to be vital to access government sector jobs and have such connections available to them have a 2pp higher probability of actually being in a government sector job presently. These patterns are also consistent with reliance on informal connections in hiring decisions serving as an opportunity bottleneck because it appears to be material to people's actual employment choices.

# 6    Concluding remarks

The goal of this study was to offer an empirical application of Fishkin's theory of opportunity bottlenecks. A full empirical representation of opportunity pluralism, and even more narrowly, of opportunity bottlenecks in their totality, would clearly be impossible, given the complex nature of the concepts and the difficulty of capturing valued outcomes for different individuals and how these may be constrained by the existence of opportunity bottlenecks. This study focused only on the concept of instrumental good bottlenecks related to access to some key opportunities in life, since it was empirically more tractable. Understanding the extent, and the constraining effects of other bottleneck types, such as qualifications bottlenecks and developmental bottlenecks, which may act even earlier in a person's life, would be important directions for future empirical work.

Another limitation of the analysis is the cross-sectional nature of the data, and the endogeneity concerns that are common to such empirical settings. While the results of the robustness analysis undertaken in Section 5, inclusively aimed at limiting the effects of omitted variable bias, reinforce the main conclusions of the study, the data do not allow me to address these concerns fully, lacking sources of exogenous variation that could be exploited. As such, the reported negative associations between opportunity bottlenecks and satisfaction with one's job or life, or with mobility aspirations, or with employment outcomes, should be interpreted as correlations, rather than causal estimates.

With these caveats in mind, the evidence presented in this study is consistent with the need for informal connections to access jobs or university education being a severe bottleneck in the countries of Europe and Central Asia, affecting a large number of people. While we do not observe the complex paths that led to the current job and life circumstances of each survey respondent, it is clear that lack of informal connections to facilitate access to key opportunities in life is associated with lower levels of satisfaction with the current job and life in general, and lower social mobility aspirations. Even more importantly, connections bottlenecks appear to be material for the types of jobs individuals hold. Furthermore, the fact that the availability of informal connections is a way around the opportunity bottleneck, is a negative outcome from a normative and policy point of view, as it would diminish incentives, on the part of those with connections, to support reforms that aim to strengthen formal meritocratic institutions in society and work toward leveling the playing field for all.

A number of studies show the perceptions of inequality in countries of Europe and Central Asia are quite negative, despite the fact that standard indices of overall income inequality in these countries tend to be low by global standards (Bussolo et al., 2018; Cojocaru, 2021). One of the possible reasons for this discrepancy, as argued by Bussolo et al. (2018) is that standard inequality indices do not capture dimensions of inequality that people care about and are confronted by in their daily lives, such as persistent unfairness in the way incomes and opportunities are distributed in society. The results in this study contribute to

our understanding of this gap between actual and perceived inequality by shining a spotlight on an important facet of inequality of opportunity in the form of opportunity bottlenecks that are typically not captured explicitly by mainstream approaches to measuring inequality of opportunity.

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Table 1: Summary statistics

|  | mean | sd | min | max |
|---|---|---|---|---|
| Connections needed for government job | 0.49 | 0.50 | 0.00 | 1.00 |
| Connections needed for private sector job | 0.40 | 0.49 | 0.00 | 1.00 |
| Connections needed for university | 0.25 | 0.43 | 0.00 | 1.00 |
| Union indicator of need for connections | 0.59 | 0.49 | 0.00 | 1.00 |
| Connections availability | 0.63 | 0.48 | 0.00 | 1.00 |
| Satisfied with job | 0.57 | 0.50 | 0.00 | 1.00 |
| Satisfied with life | 0.46 | 0.50 | 0.00 | 1.00 |
| Expectations of future mobility | 0.45 | 1.45 | -9.00 | 9.00 |
| Current placement on income ladder | 4.44 | 1.66 | 1.00 | 10.00 |
| Age | 46.29 | 17.39 | 18.00 | 99.00 |
| Female | 0.60 | 0.49 | 0.00 | 1.00 |
| Education: tertiary | 0.20 | 0.40 | 0.00 | 1.00 |
| Religion: Non-Orthodox | 0.65 | 0.48 | 0.00 | 1.00 |
| Civil status: Not married | 0.41 | 0.49 | 0.00 | 1.00 |
| Location: Rural | 0.40 | 0.49 | 0.00 | 1.00 |
| Ln(HH expenditures, USD) | 4.98 | 1.36 | 0.00 | 11.08 |
| ISCO professional categories | ref. | | | |
| Professional | 0.22 | 0.42 | 0.00 | 1.00 |
| Managerial | 0.07 | 0.25 | 0.00 | 1.00 |
| Clerical | 0.10 | 0.30 | 0.00 | 1.00 |
| Sales workers | 0.12 | 0.33 | 0.00 | 1.00 |
| Farmers, fishermen and related | 0.08 | 0.27 | 0.00 | 1.00 |
| Transport and communications workers | 0.06 | 0.24 | 0.00 | 1.00 |
| Craftsmen | 0.11 | 0.31 | 0.00 | 1.00 |
| Production workers | 0.07 | 0.25 | 0.00 | 1.00 |
| Service and recreation workers | 0.12 | 0.32 | 0.00 | 1.00 |
| Other | 0.05 | 0.21 | 0.00 | 1.00 |
| ISIC industry categories | ref. | | | |
| Agriculture, fishing | 0.09 | 0.29 | 0.00 | 1.00 |
| Mining and quarrying | 0.12 | 0.32 | 0.00 | 1.00 |
| Manufacturing | 0.07 | 0.25 | 0.00 | 1.00 |
| Electricity, gas and water | 0.14 | 0.35 | 0.00 | 1.00 |
| Construction | 0.09 | 0.28 | 0.00 | 1.00 |
| Trade, restaurants and hotels | 0.09 | 0.29 | 0.00 | 1.00 |
| Transport and communications | 0.06 | 0.24 | 0.00 | 1.00 |
| Finance, insurance, real estate | 0.10 | 0.30 | 0.00 | 1.00 |
| Community, social and personal services | 0.08 | 0.27 | 0.00 | 1.00 |
| Other | 0.16 | 0.37 | 0.00 | 1.00 |

Note: Unweighted estimates. Mean of each variable with standard deviation in parentheses.

Table 2: Importance of connections for job satisfaction

| | Job: government | Job: private | University | Combined |
|---|---|---|---|---|
| Connections are vital | -0.044*** | -0.055*** | -0.039** | -0.041*** |
| | (0.015) | (0.015) | (0.018) | (0.015) |
| Connections available | 0.002 | 0.007 | 0.024** | 0.003 |
| | (0.013) | (0.012) | (0.010) | (0.014) |
| Connections*availability | 0.041** | 0.042** | 0.005 | 0.035** |
| | (0.017) | (0.017) | (0.021) | (0.017) |
| Age | -0.005*** | -0.005*** | -0.005*** | -0.005*** |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| Age squared | 0.000*** | 0.000*** | 0.000*** | 0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Female | -0.000 | -0.000 | 0.000 | -0.000 |
| | (0.008) | (0.008) | (0.008) | (0.008) |
| Post-secondary education | 0.047*** | 0.047*** | 0.046*** | 0.047*** |
| | (0.010) | (0.010) | (0.010) | (0.010) |
| Non-Orthodox religion | 0.001 | 0.001 | 0.002 | 0.002 |
| | (0.015) | (0.015) | (0.015) | (0.015) |
| Civil status: Not married | -0.056*** | -0.055*** | -0.055*** | -0.056*** |
| | (0.009) | (0.009) | (0.009) | (0.009) |
| Rural area | -0.003 | -0.003 | -0.003 | -0.003 |
| | (0.012) | (0.012) | (0.012) | (0.012) |
| Ln(household per capital expenditures, USD) | 0.032*** | 0.032*** | 0.032*** | 0.032*** |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Occupation: Professionals | ref. | ref. | ref. | ref. |
| Managerial | 0.021 | 0.021 | 0.021 | 0.021 |
| | (0.017) | (0.017) | (0.017) | (0.017) |
| Clerical | 0.018 | 0.018 | 0.018 | 0.018 |
| | (0.015) | (0.015) | (0.015) | (0.015) |
| Sales workers | -0.064*** | -0.063*** | -0.064*** | -0.063*** |
| | (0.018) | (0.018) | (0.018) | (0.018) |
| Farmers, fishermen and related | -0.077** | -0.076** | -0.079** | -0.077** |
| | (0.033) | (0.033) | (0.033) | (0.033) |
| Transport and communications workers | -0.053** | -0.052** | -0.053** | -0.053** |
| | (0.021) | (0.021) | (0.021) | (0.021) |
| Craftsmen | -0.093*** | -0.092*** | -0.092*** | -0.092*** |
| | (0.018) | (0.018) | (0.018) | (0.018) |
| Production workers | -0.093*** | -0.092*** | -0.093*** | -0.092*** |
| | (0.020) | (0.020) | (0.020) | (0.020) |
| Service and recreation workers | -0.080*** | -0.079*** | -0.080*** | -0.080*** |
| | (0.016) | (0.016) | (0.016) | (0.016) |
| Other | -0.065*** | -0.065*** | -0.066*** | -0.065*** |
| | (0.021) | (0.021) | (0.021) | (0.021) |
| Industry: Electricity, gas and water | ref. | ref. | ref. | ref. |
| Agriculture, fishing | -0.068** | -0.069** | -0.065** | -0.067** |
| | (0.031) | (0.031) | (0.031) | (0.031) |
| Mining and quarrying | 0.041** | 0.041** | 0.040** | 0.041** |
| | (0.017) | (0.017) | (0.018) | (0.017) |
| Manufacturing | 0.013 | 0.011 | 0.011 | 0.012 |
| | (0.021) | (0.021) | (0.021) | (0.021) |
| Construction | 0.020 | 0.020 | 0.020 | 0.020 |
| | (0.020) | (0.020) | (0.020) | (0.020) |
| Trade, restaurants and hotels | 0.033* | 0.033* | 0.032* | 0.033* |
| | (0.018) | (0.018) | (0.018) | (0.018) |
| Transport and communications | 0.074*** | 0.072*** | 0.073*** | 0.073*** |
| | (0.021) | (0.021) | (0.021) | (0.021) |
| Finance, insurance, real estate | 0.048** | 0.048** | 0.047** | 0.048** |
| | (0.020) | (0.020) | (0.020) | (0.020) |
| Community, social and personal services | 0.061*** | 0.062*** | 0.061*** | 0.061*** |
| | (0.020) | (0.020) | (0.020) | (0.020) |
| Other | 0.035** | 0.035** | 0.034** | 0.035** |
| | (0.017) | (0.017) | (0.017) | (0.017) |
| R-squared | 0.100 | 0.101 | 0.101 | 0.100 |
| Obs | 16271 | 16271 | 16271 | 16271 |

Notes: Dependent variable - job satisfaction. Robust standard errors, clustered at primary sampling unit level in parentheses. Country dummies included but not reported. Significance: * p<0.1, ** p<0.05, *** p<0.01.