



Poverty & Equity Global Practice Working Paper 161

INEQUALITY IN EARNINGS AND ADVERSE SHOCKS IN EARLY ADULTHOOD

Bienvenue N. Tien
Franck M. Adoho
August 2018

ABSTRACT

The inequality of opportunity theory postulates that achievement gaps arising because of factors beyond the individual's control are morally unacceptable and should therefore be compensated by society. These factors or circumstances range from the individual's social background to adverse shocks. Most studies have focused on the contribution of social background and genetic and other childhood-related circumstances to inequality of opportunity. Borrowing insights based on the impressionable years hypothesis in social psychology, this paper tests how exposure to adverse shocks, such as war, in early adulthood (ages 18–25) affects the individual's future labor earnings and subsequently contributes to earnings inequality. The application to the Democratic Republic of Congo is associated with two significant takeaways. First, all else equal, individuals who experience intensely violent conflict at a young age earn significantly less than their counterparts. Second, after controlling for the individual's social background, the share of overall inequality in earnings accounted for by the experience of adverse shocks in early adulthood is not negligible, ranging from 2.5 to 3.5 percent. These insights broaden our understanding in the discussion on inequality of opportunity and represent a new path in the design of allocation policies that seek to reduce inequality and poverty.

This paper is a product of the Poverty and Equity Global Practice Group. It is part of a larger effort by the World Bank to provide open access to its research and contribute to development policy discussions around the world. The authors may be contacted at fadoho@worldbank.org and btien@worldbank.org.

The Poverty & Equity Global Practice Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

– Poverty & Equity Global Practice Knowledge Management & Learning Team

Inequality in Earnings and Adverse Shocks in Early Adulthood

Franck M. Adoho

World Bank

Bienvenue N. Tien

World Bank

The World Bank

JEL Codes: D31, D63, Z13, N37

Keywords: Inequality of opportunity, Adverse shocks, Early Adulthood, Africa

I. Introduction

The question addressed in this study is as follows: To what extent do adverse shocks, such as violent conflicts, experienced in early adulthood (18–25 years) contribute to inequality of opportunity in earnings?

Equality of opportunity as formulated by Roemer (1998) requires that the opportunities of individuals in society be independent of the circumstances of these individuals.¹ Circumstances are defined in this context as matters imposed on individuals in ways that they could not have influenced or controlled (Roemer 1993, 1998). This includes, for instance, race, gender, place of birth, family background, and adverse shocks. Thus, there is equality of opportunity if the positions of individuals in an outcome distribution are independent of individual circumstances and are influenced only by personal effort (Roemer 1993, 1998). The implication is that, for the purposes of justice or equity, the achievement gap resulting from the circumstances of individuals is ethically unacceptable and must be compensated by society (Anerson 1989; Ferreira and Gignoux 2008, 2011; Ferreira and Peragine 2015; Lefranc, Pistoiesi, and Trannoy 2009; Peragine 2004; Roemer 1998). Although stimulating, this implication is associated with two essential practical issues that pundits on the subject must face. The first is related to the way to implement equality of opportunity, and the second revolves around the way to measure the degree of inequality in society (Kanbur and Wagstaff 2016; Pignataro 2012).

On the first issue, Roemer (1998) proposes in his seminal work that, for meaningful allocation policy, social planners must partition the influences on the chosen outcomes individuals face into circumstances and effort; effort is the only choice variable over which an individual may be held accountable. On the second issue, Ferreira and Peragine (2015) find that, over the years, the array of contributions on the subject is sizable, and the issue has been raised in various spheres of human activity and across various domains of public policy. Brunori, Ferreira, and Peragine (2013); Ferreira and Peragine (2015); Fleurbaey and Peragine (2013); Ramos and Van de gaer (2016); and Roemer and Trannoy (2016) provide substantial reviews of the literature on the subject.

Overall, emerging evidence across studies, mostly on income inequality in advanced economies, concludes that the share of inequality attributable to circumstances ranges from 10 percent to 30 percent (Ferreira and Peragine 2015; Hufe et al. 2017). Some authors characterize this share of inequality arising because of circumstances as surprisingly small and argue that one reason for this is the lack of data on circumstance variables in empirical studies (Hufe et al. 2017; Roemer 2017). This data limitation may explain why most studies have examined parental backgrounds (the educational attainment and labor status of parents), sex, race, and birthplace as circumstances:

¹ Ferreira and Peragine (2015) state that this discussion has its root in political philosophy and in normative economics through such notable thinkers as John Rawls (1971), Ronald Dworkin (1981a, 1981b), and Amartya Sen (1980). However, Roemer (1998) was the first to formalize this issue in applied economics.

information on these variables is usually available in household survey data (Bourguignon, Ferreira, and Menéndez 2007; Checchi and Peragine 2010; Cogneau and Mesplé-Somps 2008; Ferreira and Gignoux 2008, 2011; Hassine 2012; Lefranc, Pistoiesi, and Trannoy 2008; Pistoiesi 2009; Singh 2012).

Nonetheless, recent analyses strive to incorporate other circumstances deemed relevant. A notable example is the inclusion of circumstances related to the childhood environment. In a recent paper, Hufe et al. (2017) argue that all measurable achievements and behaviors of children before the age of consent should be considered as the results of their circumstances.² Therefore, the children should not be responsible for any of their accomplishments before that age. Examples of circumstance variables related to childhood environment include school support from parents, playing with parents, perceived quantity of time with the mother, and so on. Using two data sets, the National Longitudinal Survey of Youth 1979 and the 1970 British Cohort Study that capture data on childhood environment, Hufe et al. (2017) find that, in the U.S. sample (the longitudinal survey), the share of income inequality attributable to circumstances rises from 27 percent to 43 percent, while, in the U.K. sample, it rises from 18 percent to 27 percent. Making a similar argument (but with no empirical application), Roemer (2017) posits that all achievements of children before the age of consent (14 or 16 years of age), such as birthweight, nutritional measures, health status, and test scores, should be attributed to nature and nurture and should therefore be categorized as circumstances.

Using microdata on Germany, Peichel and Ungerer (2016) analyze how inequality of opportunity estimates are affected if a partner or spouse's circumstance or effort variables are factored in as if they were one's own circumstances. They consider selected sets of circumstance variables (gender, year of birth, place of birth, and so on) and effort variables (work experience, working hours, education, industry) among individuals ages 25–55 in their analysis. Their results indicate that, including spouse's variables can increase inequality of opportunity measures by more than 20 (35) percent of gross (net) earnings.

Across all these studies, a common trait is the extensive focus on the use of mostly genetic and social backgrounds (including childhood environment) as circumstance variables. This paper therefore examines whether, beyond genetic and social backgrounds, there are other circumstantial factors that may contribute to inequality of opportunity. Answering this question requires an understanding of various circumstantial factors that are relevant for inequality of opportunity analysis. Ramos and Van de gaer (2016) label factors that affect individual outcomes, say earnings, as luck and list four categories of luck: social background luck (factors related to the family or social background one happens to inherit), genetic luck (constituent characteristics of the individual), brute luck (situations in which the individual cannot alter the probability that an event

² The authors define age of consent as the age at which a child is legally considered an adult, which they indicate may vary across countries.

takes place), and option luck (risks that individuals might deliberately take that are assumed to be calculated, isolated, anticipated, and avoidable).³ This characterization of factors based on the concept of luck undoubtedly provides a useful orientation in gathering relevant circumstance variables for measuring the magnitude of inequality of opportunity in a given context. Yet, most empirical analyses of inequality of opportunity do not explicitly consider luck as a factor (Peichel and Ungerer 2016).⁴ The current state of the empirical literature on inequality of opportunity has mostly and at best documented factors related to genetic and social backgrounds and, more recently, has included investigations of childhood environment.

However, taking the individual's life as a continuum, Lundberg and Wuermli (2012) emphasize that the developmental stage at which certain events, such as adverse shocks, occur matters and may have long-lasting effects. This emphasis on the lasting impact of certain events that happen at a specific developmental stage supports the impressionable years hypothesis in social psychology. According to this hypothesis, economic and political beliefs are formed mostly during early adulthood (ages 18–25) and change only slowly thereafter (Krosnick and Alwin 1989). Krosnick and Alwin argue that the historical environment in which young people become active participants in society shapes their basic values, attitudes, and worldviews during that time span. Once this socialization process has been completed, the core orientations remain constant throughout the rest of their lives.⁵ To the extent possible, the adversities that individuals experience during this sensitive period should therefore be factored into the analysis of future outcomes, such as earnings, in the inequality of opportunity debate because individuals do not have control over these experiences. However, the impressionable years hypothesis has not been tested in the economic literature on inequality of opportunity.

Against this background, this paper suggests two related hypotheses. First, it anticipates that individuals who have experienced intense adverse shocks at a young age will earn less than others in their age-group who have not had such experiences. Second, the intensity of the adverse shocks experienced during this sensitive period of life will contribute significantly to inequality in labor earnings. The study uses insights derived from social psychology to test the contribution of adverse shocks among the young to inequality in earnings. The relevant adverse shocks may include natural

³ The terms brute luck and option luck were coined by Dworkin (1981b). Ferreira and Peragine (2015) suggest that the brute feature of luck may be revealed either initially or later. According to them, initial brute luck encompasses social background luck and genetic luck, while brute luck that emerges later includes unexpected, random events that might take place later in life, such as natural disasters, wars, accidents, and so on. Throughout this paper, brute luck refers to events related to brute luck that emerge later, while initial brute luck, such as an individual's social background, is explicitly considered in this paper among the separate circumstantial variables of inequality.

⁴ Lefranc, Pistoletti, and Trannoy (2009) and Lefranc and Trannoy (2016) provide a discussion on the inclusion of luck in the analysis of inequality of opportunity.

⁵ "The impressionable years hypothesis proposes that individuals are highly susceptible to attitude change during late adolescence and early adulthood and that susceptibility drops precipitously immediately thereafter and remains low throughout the rest of the life cycle" Krosnick and Alwin (1989, 416).

disasters (floods, earthquakes), economic recession, war, and so on. The analysis is applied to the Democratic Republic of Congo with a special focus on episodes of violent conflict in that country. Two main data sources are used. The paper relies on the Polity IV data set measuring the major episodes of political violence (MEPVs) in the country. The MEPV is used as a proxy to construct an index that captures the intensity of adverse shocks that individuals experienced in their early adulthood. To maintain consistency with earlier studies on inequality of opportunity, the socioeconomic characteristics of individuals are included using the 2012/13 wave of the 1-2-3 Household Survey.

Estimates from both parametric and nonparametric approaches offer important insights. The first takeaway is that intense exposure to adverse shocks, such as MEPVs, in young adulthood is negatively correlated with future labor earnings. These results are robust after controlling for other factors, such as social background, educational attainment, sector of occupation, and current area of residence. Second, experiencing violent conflicts in early adulthood contributes between 2.5 percent and 3.5 percent of the inequality in earnings in the Democratic Republic of Congo, and this is mostly prevalent among men in urban areas. These results expand the knowledge of other relevant circumstance variables that should be factored in during the discussion on inequality of opportunity. The findings also invite greater attention to adverse shocks that individuals experience during early adulthood, especially in designing social policies aimed at reducing inequality and poverty.

The remainder of the paper proceeds as follows. Section II sets out the analytical framework of the measurement of the intensity of adverse shocks experienced during young adulthood in an environment of recurrent MEPVs. Section III describes the data and estimation techniques. The estimation results are discussed in section IV, and section V concludes.

II. Shocks in early adulthood and inequality in labor earnings: An analytical framework

The impressionable years hypothesis motivates the analysis on how shocks experienced in early adulthood affect inequality in earnings. In general, according to the hypothesis, adverse events, such as recession, civil wars, and natural disasters, can have long-lasting psychological impacts on affected populations, and the impacts depend on the development stage of the individuals affected (Lundberg and Wuermli 2012). Two sets of findings have emerged through this analysis. First, the emphasis is on the long-term impact of shock occurrences at specific points in time. Second, a focus of interest is the developmental stage of the individuals affected by the shocks.

On the former, Burgess et al. (2003), Kahn (2010), Oreopoulos, Vonwachter, and Heisz (2012), and Stevens (2008), for instance, indicate that entering the labor force during a recession can result in long-term unemployment and lower lifetime earnings. Oyer (2006, 2008) also finds that adverse

initial labor market conditions can have important long-term effects on the earnings of college graduates. In addition, some studies look at the link between historical events, such as economic shocks, and beliefs. The underlying idea is that historical events shape people's beliefs and perceptions. For instance, Friedman and Schwartz (1963) find that the Great Depression basically shattered the depression generation's confidence in the future of capitalism. In similar fashion, Cogley and Sargent (2008) define macroeconomic shocks, such as the Great Depression, as belief-twisting events. According to them, the effects of these shocks can be long-lasting because it takes time to correct the pessimistic perceptions induced precisely by the shocks. On taxation, Piketty (1995) argues that shocks can alter people's beliefs about the relative importance of luck versus effort as a driver of success and therefore on the amount of taxes they vote for. Most importantly, on income inequality, Piketty (1995) shows that, when people are young and start with the same beliefs, they put forth the same effort. Therefore, inequality only results from the shocks people experience. Piketty basically argues that, as time passes, people who have experienced negative shocks may become discouraged and, as a consequence, supply less effort. Less effort may take the form, for instance, of less labor supply, which eventually translates into low earnings.

In addition to the long-term impact of shocks, other studies emphasize the developmental stage of the affected individuals at the time the shocks occur. Thus, Elder (1999), in an analysis of the Great Depression in the United States, finds that the effect depended partly on the developmental stage of the individual at the time of the economic shock. Furthermore, in applying the impressionable years hypothesis to economics, Giuliano and Spilimbergo (2014) examine whether experiencing a recession during early adulthood permanently alters one's preference for redistribution.⁶ They use pooled cross-sectional data from the 1972–2010 General Social Survey, along with other data sets, and find that individuals who experienced a recession when young (ages 18–25) come to believe that success in life depends more on luck than effort.⁷ These individuals also had a statistically significant preference for redistribution. Following Giuliano and Spilimbergo (2014), one may wonder how exposure to adverse shocks in early adulthood may contribute to inequality in outcomes among individuals, say income.

Taken together, these findings imply not only that adverse experiences shape people's beliefs and have long-lasting impacts on outcomes among individuals, but also the development stage of these individuals at the time of the shocks is equally important. As a consequence, shocks associated with brute luck, such as civil wars, and the development stage of the affected individuals should be jointly accounted for in analyses of inequality of opportunity. The paper aims to document the extent to which the experience of violent conflict (associated with brute luck) in early adulthood contributes to inequality in labor earnings in the Democratic Republic of Congo, which represents

⁶ Giuliano and Spilimbergo (2014) are among the first to explicitly apply the impressionable years hypothesis to economic issues.

⁷ The other data sets are the National Longitudinal Survey of the High School Class of 1972 and the WVS (World Values Survey) (database), King's College, Old Aberdeen, United Kingdom, <http://www.worldvaluessurvey.org/wvs.jsp>.

an ideal case because the country has, since its independence on June 1, 1960, undergone several tumultuous periods, from “independence to anarchy” (Turner 2009, 346). Data from the Polity IV data set indicate that MEPVs occurred in 36 of the years between 1960 and 2012. Figure 1 shows the various MEPVs registered in the country between 1960 and 2012. Over these years, there were three distinct periods of MEPVs: 1960–67, 1977–84, and 1992–2012; each episode can be assigned a value of intensity on a scale from 1 (lowest) to 10 (highest). The durations of the MEPVs also varied, ranging from 7 years in both 1960–67 and 1977–84 to 20 years in 1992–2012.⁸

Figure 1: Magnitudes of (Societal and Interstate) MEPVs, the Democratic Republic of Congo, 1960–2012

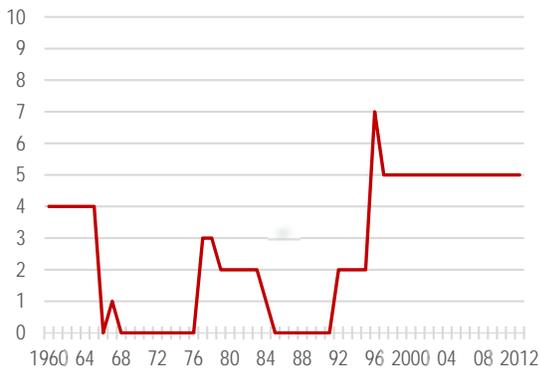
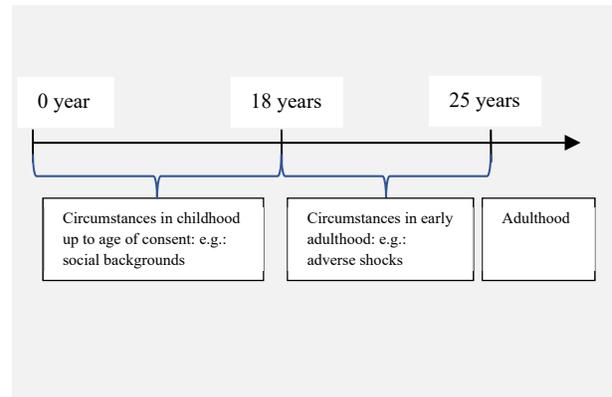


Figure 2: Circumstances and Developmental Stages



Source: Polity IV data, MEPV version, May 2016.

Note: Scale: 0 = no episode; 1 (lowest) to 10 (highest).

Analyzing these MEPVs in the light of the impressionable years hypothesis suggests that individuals in the 18–25 age-group may experience different frequencies and degrees of MEPV in the Democratic Republic of Congo. For instance, some individuals may have experienced MEPVs during one to seven years, and, in extreme cases, some may never have experienced MEPVs, while others may have experienced MEPVs over their entire early adulthood, that is, for up to eight years.

To put this into perspective in terms of circumstances relevant to discussions on the inequality of opportunity, figure 2 displays developmental stages among individuals ages 0–25, along with probable circumstances associated with each stage. The first segment portrays the stage from childhood to the age of consent (up to age 18). The literature on inequality of opportunity mostly emphasizes circumstances related to genetic and social backgrounds during this stage. The second segment, the focus of this paper, is early adulthood (ages 18–25). During this phase, factors related to later brute luck are of interest. An example is the exposure of individuals to adverse shocks, such as violent conflicts. The third phase, adulthood, is beyond the scope of this analysis.

⁸ The cutoff year in the sample is 2012 because the macrodata can be linked with the household survey that was conducted in 2012. Nonetheless, this should not be taken to mean the country has not registered any MEPVs since then. For more on MEPVs in recent years, see “INSCR Data Page,” Center for Systemic Peace, Vienna, VA, <http://www.systemicpeace.org/inscrdata.html>.

That the experience of exposure to MEPVs during early adulthood differs among individuals leads one to conclude that the intensity of the shocks experienced also varies. The frequency of shocks is therefore an important parameter in modeling the dynamics of the intensity of MEPVs. It therefore matters whether an individual experiences eight years or only one year of MEPVs during this period.

Likewise, following the literature on resilience and coping mechanisms in fragile contexts, one must factor in the possibility that individuals who are experiencing MEPVs in early adulthood may become more resilient or used to shocks (Cherewick et al. 2016; Russo et al. 2012; Rutter 2012; Southwick and Charney 2012; Wu et al. 2013). Because the aim is to approximate, to the extent possible, the intensity of shocks, one must not fail to include the resilience factor.

Against this background, a model is now outlined that captures the intensity of MEPVs experienced in early adulthood. One aim is to distinguish across individuals who experienced MEPVs in early adulthood by the intensity of their exposure. Some individuals may have experienced more exposure than others. This will help in the construction of the typology of individuals in early adulthood according to the intensity of their respective exposure to MEPVs when they were young in the Democratic Republic of Congo, thereby contributing to the inequality decomposition analysis.

It is assumed that the intensity of MEPV exposure I to violent conflicts S , is increasing in MEPV frequency N , $\frac{dI}{dN} > 0$, and decreasing in individual's age A ⁹, $\frac{dI}{dA} < 0$. Moreover, the intensity of MEPV exposure should be 0 if an individual never experienced an MEPV during early adulthood.

Formally, the intensity of MEPV exposure I is approximated as follows:

$$I = S \left(1 - e^{-\frac{N}{A}} \right), I \in \mathbb{R}_+ \quad (1)$$

Therefore, (1) is the approximation of the intensity of MEPV exposure during young adulthood, where $e^{-\frac{N}{A}}$ can be understood as a resilience factor. Furthermore, the intensity of MEPV in (1) experienced in early adulthood is normalized for the remaining analysis¹⁰. This index ranges from

⁹ The fact that the outcome among individuals, actual earnings for example, is associated with age A of the individuals at the time of the survey leads to the use of this age as a discounted factor. Actual age in the sample is calculated based on the survey year, 2012. The median magnitude of violent conflict, S , during the early adulthood of each individual is used. This ensures that the assumption $\frac{dI}{dN} > 0$ holds for every individual.

¹⁰ $I_z = (I - I_{min}) / (I_{max} - I_{min})$ where I_{max} is the maximum of I and I_{min} is the minimum of I .

0 (no or low-intensity exposure) to 1 (high-intensity exposure). The next section outlines the estimation methods as well as the variable construction for the analysis.

III. Estimation Methods, Data, and Variable Construction

a) Estimation Methods

This section describes the methodology used to compute measures of inequality of opportunity in this paper. The framework upon which the choice of estimation method rests is first briefly described. Roemer's idea of opportunity egalitarianism, which focuses on reducing inequalities that are deemed unfair (leveling the playing field), guides the choice of estimation techniques in this paper.¹¹ The literature highlights that two welfare criteria are within the egalitarian view: the compensation principle and the reward principle. Basically, the reward principle addresses how to reward efforts among individuals experiencing identical circumstances, while the compensation principle demands that inequalities associated with circumstances be eliminated (Ferreira and Peragine 2015; Fleurbaey 1995; Ramos and Van de gaer 2016). The compensation principle can be formulated according either to an ex post version or an ex ante version (Roemer 1993; Van de gaer 1993). The ex ante version argues that there is inequality of opportunity if individuals face different sets of opportunities because of their circumstances. The ex post view is concerned with differences among individuals exerting the same level of effort, independently of their circumstances. In other words, in the ex ante version, compensation is due prior to the realization of effort, while, in the ex post version, compensation is due after the efforts are realized (Ferreira and Peragine 2015; Ramos and Van de gaer 2016).

Taken separately, the ex ante and ex post views of compensation each embody two measurement approaches (Ferreira and Peragine 2015). In the ex ante view, these are the between-types inequality approach and the direct unfairness approach, while the within-tranche inequality approach and the fairness gap approach make up the pair in the ex post view of compensation. The authors extensively discuss the pros and limits of these measurement approaches. Brunori, Ferreira, and Peragine (2013) and Ferreira and Peragine (2015) also document that, in practice, although empirical applications of all four approaches exist, most measures of inequality of opportunity have followed the ex ante between-types approach; except Checchi and Peragine (2010), who compute ex ante between-types measures as well as ex post within-tranche measures. Brunori, Ferreira, and Peragine (2013) review eight papers that use the ex ante between-types measure. These papers cover 41 countries, ranging from Guinea to Luxembourg, and therefore allow an international comparison. In line with the standard practice of estimating the degree of inequality of opportunity in an outcome, such as labor earnings, this paper therefore follows the frameworks of Bourguignon, Ferreira, and Menéndez (2007) as extended by Checchi and Peragine (2010) and Ferreira and Gignoux (2008, 2011). Thus, the paper relies on both ex ante between-

¹¹ This section does not formally review existing approaches in the literature. Ferreira and Peragine (2015) and Ramos and Van de gaer (2016) provide extensive discussion about all existing approaches.

types measures and ex post within-tranche measures.¹² Roemer (1998) proposes that factors affecting outcomes such as earnings be categorized into circumstances and effort variables. Accordingly, the earning function can be specified as follows:

$$y_i = f(C_i, E_i, u_i) \quad i: 1 \dots N, \quad (2)$$

where y_i are an individual's earnings; C_i denotes a vector of circumstance variables; E_i denotes a vector of effort variables; and u_i are unobserved factors. Recall that the circumstance variables are outside an individual's control and are therefore exogenous. The effort variables, however, are endogenous because they may depend on circumstances (that is, parental background, ethnicity, region of birth, and so on) and other unobserved determinants. Equation (2) can therefore be rewritten as follows:¹³

$$y = f[C, E(C, v), u] \quad (3)$$

Romer's concept of equality of opportunity requires that $F(y|C) = F(y)$.¹⁴ Therefore, to measure inequality of opportunity is to measure the extent to which $F(y|C) \neq F(y)$. The following subsections describe how to compute inequality of opportunity using both nonparametric and parametric approaches.

Nonparametric Approach

The nonparametric approach, as elaborated by Checchi and Peragine (2010), is based on two alternative partitions of the entire sample that are based on two alternatives for computing inequality of opportunity. The first partition divides the population into groups by circumstance categories; the members of each group, named types, are endowed with similar circumstances. The second partition, based on effort, splits the population into subsets (tranches) of individuals who exert the same degree of effort. Because effort cannot be observed, a person's effort is measured, following Roemer (1998), by his or her quantile in the income or earnings distribution of the subgroup of the individual's type. So, all individuals in the same quantile of the type distribution of earnings are considered to exert the same level of effort. The present analysis provides estimates using both methods. The decomposition using both the types and the tranche methods follow.

Types. In this partition, inequality of opportunity is given by inequality between types. This inequality can be assessed by applying a smoothing transformation using a constant reference value of effort, \bar{E} , namely, $f(C_i, \bar{E}) \forall i$. The smoothed distribution can be represented by the

¹² Recent studies, such as Hassine (2012) and Singh (2012), use the frameworks of Bourguignon, Ferreira, and Menéndez (2007) and extended by Checchi and Peragine (2010) and Ferreira and Gignoux (2008, 2011). The elaboration and notation here follow these papers closely. This paper takes no credit for the exposition of the framework hereafter.

¹³ For simplicity, subscripts for individual elements of the circumstance and effort vectors are omitted, but are kept whenever necessary to avoid misunderstanding.

¹⁴ Ferreira and Gignoux (2008, 6) discuss the conditions that this concept implies.

average income, $\{\mu_c\}$, of a given type, identified by c . All within-type inequality is eliminated in the smoothed distribution $\{\mu_c\}$ by replacing each individual's earnings with type-specific mean earnings $\{\mu_c\}$. Thus, the inequality in $\{\mu_c\}$ captures the inequality associated with circumstances only. Then, given an inequality measure I , the opportunity share of earnings inequality can be defined as follows:

$$\theta_{types}^d = \frac{I(\{\mu_c\})}{I(F(y))} \quad (4)$$

A standardized distribution is also suggested as another way to measure inequality of opportunity indirectly. This is obtained by replacing each person's earnings, y_i^c , with $z_i^c = \frac{\mu}{\mu_c} y_i^c$, where y_i^c is the earnings of individual i in type c , and μ is overall mean earnings. One advantage of the standardization is that it removes all between-types inequality, leaving only within-type inequality, or inequality arising because of effort. Hence, the share of inequality associated with unequal opportunities can be computed residually as follows:

$$\theta_{types}^r = 1 - I(\{z_i^c\})/I(F(y))^{15} \quad (5)$$

Tranches. In the second partition, inequality of opportunity can be assessed by focusing on inequality within groups with similar effort levels. As previously, a smoothing transformation is applied to eliminate all inequality within tranches. The part of inequality arising because of unequal opportunities can be expressed as follows:

$$\theta_{tranches}^r = 1 - \frac{I(\{\mu_e\})}{I(F(y))}, \quad (6)$$

where $\{\mu_e\}$ is a smoothed distribution in which each individual's earnings is replaced by tranche-specific mean earnings. Inequality of opportunity can also be computed directly by suppressing all between-tranche inequality. As previously, a standardized distribution is obtained by reweighting all tranche distributions to equalize the means of the different effort groups. Each person's earnings within a tranche, e , of a type, c , $y_i^{e,c}$ is replaced by $z_i^{e,c} = \frac{\mu}{\mu_e} y_i^{e,c}$. Inequality of opportunity can then be captured directly as follows:

$$\theta_{tranches}^d = I(\{z_i^{e,c}\})/I(F(y)) \quad (7)$$

¹⁵ The direct and residual methods can yield different results; the only inequality measure for which the two methods give the same result is the mean log deviation (MLD) method, (GE(0)), which is associated with a path-independent decomposition if the arithmetic mean is used as the reference income or earnings (Ferreira and Gignoux 2008, 2011; Foster and Shneyerov 2000; Hassine 2012).

Parametric Approach

The idea behind the parametric analysis is to estimate inequality of opportunity as the difference between observed earnings inequality and the inequality that would prevail if there were no differences in circumstances (Hassine 2012). Consider a counterfactual distribution, $\{\tilde{y}_i\}$, corresponding to $F(y|C)$, as the distribution that arises if y_i is replaced with $\tilde{y}_i = f[\bar{C}, E(\bar{C}, v_i), u_i]$ in (3), where C is the vector of the sample mean circumstances. To generate this counterfactual distribution, a specific model of equation (3) needs to be estimated. Following Bourguignon, Ferreira, and Menéndez (2007) and Ferreira and Gignoux (2008, 2011), a log-linear of the following form can be specified:

$$\ln(y) = C\alpha + E\beta + u \quad (8)$$

$$E = BC + v \quad (9)$$

The reduced form of the structural model (8) – (9) is $\ln(y) = C(\alpha + \beta B) + v\beta + u$, which can be estimated using ordinary least squares as follows (Ferreira and Gignoux 2008, 11; Singh 2012, 87):

$$\ln(y) = C\varphi + \varepsilon \quad (10)$$

Under the assumptions regarding the functional form, the counterfactual distribution is given as follows:

$$\tilde{y}_i = \exp[\bar{C}\hat{\varphi} + \hat{\varepsilon}_i] \quad (11)$$

The overall opportunity share of outcome inequality (say, earnings) can now be given as follows:

$$\theta_I = \frac{I\{y_i\} - I\{\tilde{y}_i\}}{I\{y_i\}} \quad (12)$$

This is the difference between the inequality in the actual distribution of outcomes and the inequality in the counterfactual distribution of outcomes as a proportion of the inequality in actual distribution outcomes.

The estimation of the partial effects of one (or a subset) of the circumstance variables, controlling for the others, can be obtained by constructing alternative counterfactual distributions, such as follows:

$$\tilde{y}_i^J = \exp[\bar{C}^J \hat{\varphi}^J + C_i^{J \neq J} \hat{\varphi}^{J \neq J} + \hat{\varepsilon}_i] \quad (13)$$

Therefore, the circumstance J -specific share of inequality of opportunity can be given as follows:

$$\theta_I^J = \frac{I[\{y_i\}] - I[\{\tilde{y}_i^J\}]}{I[\{y_i\}]} \quad (14)$$

b) Data, Variable Construction, Identification, and Summary Statistics

Data, Variable Construction, and Identification

Two data sources are used for the analysis. First, the paper relies on the 2012/13 wave of the nationally representative 1-2-3 Household Survey, which covered all 11 of the provinces into which the Democratic Republic of Congo was divided until 2015. It provides information on individual characteristics (gender, education, occupation, sector of activity, earnings, and so on) and the family background of individuals, such as father's occupation, sector of activity, and education.

The sample is restricted to working men and women in the 20–64 age-group in urban and rural areas with known sector of employment and positive total monthly labor earnings.¹⁶ In addition, the sample is further restricted to those individuals whose fathers were working when they were 15 years old and who had never migrated outside the country. The latter restriction is added to ensure that the results are not driven by migration effects. This resulted in a final sample of 11,609 individuals of whom 6,561 (5,048) were men (women), and 6,219 (5,390) were living in urban (rural) areas.

Following Cogneau and Mesplé-Soms (2008), information on the occupation and educational attainment of fathers is combined to define four social origins of the individual, as follows: (i) farmers with no education or with primary education, (ii) farmers with secondary or tertiary education, (iii) nonfarmers with no education or with primary education, and (iv) nonfarmers with secondary or tertiary education. The positions of individuals (the sons and daughters) are also defined in the same way as those of the fathers. However, contrary to Cogneau and Mesplé-Soms (2008), the unemployed, students, and retirees are not included because the outcome variable here is the labor earnings of individuals, that is, the sample captures only individuals who, at the time of the survey, reported they were employed.

The second data source is the Polity IV data set measuring the MEPVs in the country. The MEPV variable of interest is the magnitude of all societal MEPVs. This includes episodes of civil and ethnic violence as well warfare involving the country during a year. The scale of the magnitude

¹⁶ Total labor earnings is defined here as the sum of all income derived from primary and secondary employment and self-employment for individuals. In the construction of the labor earnings aggregates, the bottom 1 percent and top 1 percent were trimmed to correct for outliers.

ranges from 1 (lowest) to 10 (highest), and is represented by 0 if, in a year, there was no MEPV registered. The data set covers 1960 to 2012.

One aim is to categorize individuals, in a reasonable fashion, based on the intensity of their exposure to MEPVs in early adulthood using equation (1). However, the paper first addresses the fact that the intensity of MEPV exposure in young adulthood, by construction, may be endogenous. The median share of the urban population in the country is therefore used over the early adulthood years of individuals as an instrument to circumvent this potential endogeneity.¹⁷ (This issue is discussed in appendix A.) The data for the urban population share in the country are from the World Development Indicators database.¹⁸ Once the endogeneity issue has been addressed, the intensity of MEPV exposure index is computed residually.¹⁹ To categorize individuals based on the intensity of their exposure, the sample is split into terciles, and t-tests are performed. The t-statistics indicate there is no significant difference between the two lower terciles. Therefore, individuals with (residually computed) MEPV exposure indexes in the upper tercile are considered to have experienced MEPVs at a high intensity in young adulthood, while the result is a 0 (no or low-intensity MEPV exposure in young adulthood) among those in the two lower terciles. The residually defined MEPV index for those in the upper tercile is between 0.74 and 1.00.²⁰

For the parametric and nonparametric analysis, the circumstance variables include the social background of the fathers of the individuals and a dummy for the intensity of MEPV exposure in early adulthood. The set of circumstances therefore identifies eight types, that is, the results of four father social backgrounds, times two MEPV exposure intensities. As noted by Ferreira and Gignoux (2008, 2011), the number of categories for each circumstance (here, the social background of fathers and the intensity of MEPV exposure in early adulthood) is restricted to four or fewer to reduce the number of types exhibiting zero or few observations in the sample. This is highly relevant for the nonparametric analysis, which relies on the precision of the estimates of conditional means for each type (or cell of the partition). A description of the sample, along with summary statistics on earnings (the main dependent variable) and the circumstance variables, is presented in the next subsection.

Summary Statistics

Appendix B, table B.1 presents the breakdown of the final sample by the social backgrounds of fathers, the social characteristics of the individuals, and the circumstance categories. A look at the

¹⁷ The rationale for using the share of the median urban population over the individual's early adulthood years is in line with the argument laid out above, that is, to ensure that $\frac{dI}{dN} > 0$ in equation (1) holds for every individual.

¹⁸ See WDI (World Development Indicators) (database), World Bank, Washington, DC, <http://data.worldbank.org/products/wdi>.

¹⁹ The fractional logit estimation technique is used because the dependent variable, the intensity of MEPV exposure, is bounded between 0 and 1 (Papke and Wooldridge 1996).

²⁰ Rankings of individuals in the initial MEPV index compared with rankings using the residually determined MEPV index, with the respective cutoff measures (upper tercile versus two lower terciles), are stable. The kappa coefficient is about 0.9, indicative of an almost perfect agreement (Viera and Garrett 2005).

social background of fathers reveals that most fathers were farmers with no education or with only primary education (41.1 percent), followed by nonfarmers with no education or with only primary education (29.3 percent). Most in the children’s generation are nonfarmers with secondary or tertiary educational attainment (45.5 percent), and about a quarter (24.8 percent) are farmers with no education or with some primary education. The increased share of nonfarmers among the children’s generation may indicate an overall rise in school enrollment in the country. Regarding the circumstance categories, the sample is skewed toward individuals with parents who did not have any formal education and who experienced low exposure to MEPVs when young (table B.1). For instance, 48.2 percent of the individuals had parents with no formal education and who had experienced low MEPV exposure. Independently of the social background of fathers, the share of individuals who experienced a high level of MEPV exposure in early adulthood ranged between 3.4 percent and 13.4 percent (table B.1).

Figure 3, panels a and b display, respectively, the distribution of labor earnings conditional on the background of the father and the intensity of MEPV exposure in early adulthood. Two patterns may be observed. First, the earnings of individuals rise with the social status of the fathers. Thus, individuals with fathers who were in nonfarm occupations and who had secondary or tertiary educational attainment earn more than their counterparts whose fathers undertook agricultural activities and who had no formal education. In other words, having a farmer father is always the most disadvantageous social background. Cogneau and Mesplé-Somps (2008) document similar findings in five countries (Côte d’Ivoire, Ghana, Guinea, Madagascar, and Uganda) in Sub-Saharan Africa. Moreover, individuals who experienced high-intensity MEPVs in early adulthood appear to earn less in the labor market than their counterparts who had no or little experience with even low-intensity MEPVs.

Figure 3, panel a: Distribution of earnings conditional on the background of the father

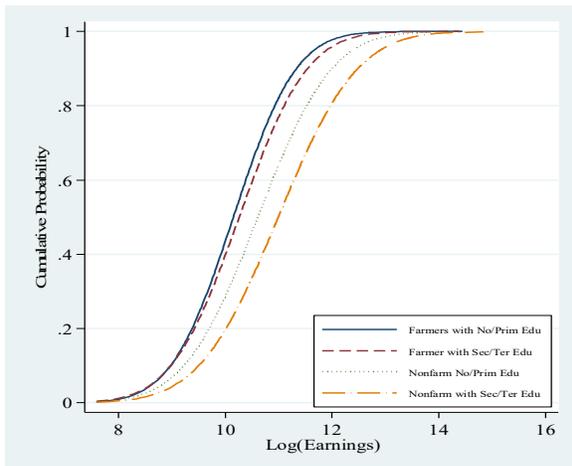
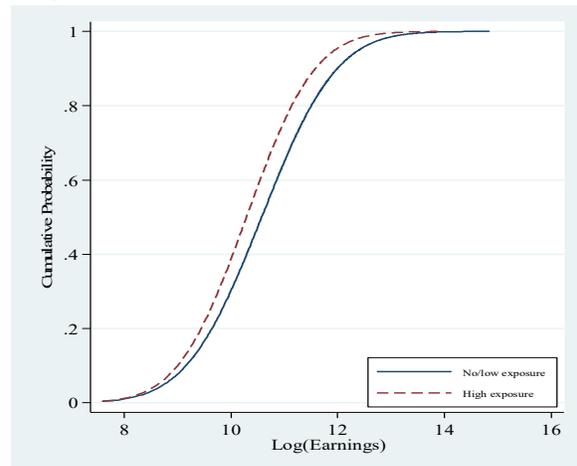


Figure 3, panel b: Distribution of earnings conditional on intensity of MEPV exposure in early adulthood



Appendix B, table B.2 displays the mean labor earnings across areas of residence and gender within each of the eight types (the various social backgrounds of fathers and intensity of MEPV exposure in early adulthood), along with the respective number of observations. On average, the earnings of individuals increase as the social background of fathers improves and decrease with the intensity of MEPV exposure. For instance, at the national level, the highest earnings (CGF 138,820) are among individuals whose fathers were in nonfarm activities, were more well educated, and had experienced low MEPV exposure in young adulthood. By contrast, the lowest average earnings (CGF 33,823) were among individuals whose fathers were in farm activities, had no formal education, and had experienced high MEPV exposure in early adulthood. Thus, having a father with low social background, combined with a high intensity of MEPV exposure in early adulthood, is always the most disadvantageous circumstance. This pattern holds across the gender and residence dimensions (table B.2) and is also in line with the description in figure 3, panels a and b.

IV. Results

Both the nonparametric and parametric methods are applied to measure the degree of inequality of opportunity in labor earnings in the Democratic Republic of Congo. Given the difference between the two estimation methods, the results are presented separately. The nonparametric analysis and parametric analysis have also been done separately in urban and rural areas. The rationale behind this disaggregation is that the nature of jobs and subsequent sources of earnings in these two areas may differ. Indeed, results at the aggregate level, which show the averages in the two areas, may fail to capture the contrast between the areas. Tables illustrating each estimation technique display the results on overall earnings inequality and the degree of inequality of opportunity using the mean log deviation (MLD), which is the only inequality measure characterized by a path-independent decomposition.

a) Nonparametric Results

Table 1 reports the nonparametric results. The level of overall earnings inequality in the Democratic Republic of Congo, based on the MLD measure, is 63.5 percent. Analysis based on both the tranche approach and the types approach indicates that more than 14 percent of this inequality is associated with only two circumstance variables, namely, the social background of the fathers of individuals in the sample and the intensity of the individual's exposure to MEPV in early adulthood.

Table 1: Estimates of earning inequality and inequality of opportunity

| | <i>Overall earnings inequality</i> | <i>Tranches approach</i> | | <i>Types approach</i> | |
|---------------------|------------------------------------|-------------------------------|--------------------------|-------------------------------|--------------------------|
| | | <i>Opportunity inequality</i> | <i>Opportunity share</i> | <i>Opportunity inequality</i> | <i>Opportunity share</i> |
| | (1) | (2) | (3) | (4) | (5) |
| Full sample | | | | | |
| All | 0.635*** (0.014) | 0.0901*** (0.002) | 0.142*** (0.003) | 0.0911*** (0.001) | 0.144*** (0.004) |
| Male | 0.618*** (0.019) | 0.0954*** (0.002) | 0.154*** (0.005) | 0.0932*** (0.002) | 0.151*** (0.006) |
| Female | 0.567*** (0.022) | 0.0828*** (0.002) | 0.146*** (0.005) | 0.0881*** (0.002) | 0.155*** (0.007) |
| Urban sample | | | | | |
| All | 0.618*** (0.016) | 0.0900*** (0.003) | 0.146*** (0.004) | 0.0560*** (0.001) | 0.0907*** (0.004) |
| Male | 0.556*** (0.021) | 0.0938*** (0.005) | 0.169*** (0.007) | 0.0561*** (0.002) | 0.101*** (0.006) |
| Female | 0.581*** (0.029) | 0.0838*** (0.003) | 0.144*** (0.006) | 0.0551*** (0.002) | 0.0948*** (0.005) |
| Rural sample | | | | | |
| All | 0.393*** (0.009) | 0.0641*** (0.001) | 0.163*** (0.005) | 0.00721*** (0.000) | 0.0184*** (0.001) |
| Male | 0.386*** (0.011) | 0.0669*** (0.002) | 0.173*** (0.007) | 0.00731*** (0.000) | 0.0189*** (0.001) |
| Female | 0.333*** (0.012) | 0.0603*** (0.002) | 0.181*** (0.008) | 0.00703*** (0.000) | 0.0211*** (0.001) |

Note: Bootstrapped standard errors in parentheses based on 99 replications. * $p < .10$ ** $p < .05$ *** $p < .001$

Table 1 also shows that earnings inequality is greater in urban areas (61.8 percent) than in rural areas (39.3 percent). In urban areas, according to both the tranche and types approaches, inequality of opportunity as a share of overall earnings inequality ranges from 9.5 percent (table 1, column 5) to 16.9 percent (table 1, column 3) across the gender spectrum; the averages across gender in urban areas are 9.1 percent (table 1, column 5) and 14.6 percent (table 1, column 3). The difference in inequality of opportunity between men and women in urban areas is highly significant at the 1 percent level. In rural areas, however, the contribution of unequal opportunity to earnings inequality is greater among women according to the tranche approach. The nonparametric tranche approach yields relatively larger shares of inequality of opportunity than the nonparametric types approach. This might derive from the large sampling variance and the small cells (Ferreira and Gignoux 2008; Hassine 2012). Independently of the decomposition employed, the results should be treated as lower-bound estimates (Ferreira and Peragine 2015, Hassine 2012).

b) Parametric Results

The second part of the analysis revolves around the parametric estimates. First, to obtain the overall opportunity share of earnings, the reduced form equation (10) has been estimated. Table 2 reports the results of the reduced form for all. Overall, the circumstance variables have the expected effects on earnings. Here again, the social background of fathers matters, especially for individuals with

fathers at a higher social status compared with fathers who were farmers with no education or only primary education. Most importantly and as conjectured, individuals who have experienced high MEPV exposure in early adulthood earn, on average, between 22 percent and 29 percent less than their counterparts who have not had this experience, after controlling for other circumstances and other relevant covariates. This confirms the descriptive patterns described in section 3.

Table 2: OLS Reg. of individual earnings on observed circumstances and other covariates, dep. var.: ln(income)

| | <i>Reduced-form specification</i> | | | <i>Including other covariates</i> | | |
|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|-----------------------|-----------------------|
| | <i>(1)</i> | <i>(2)</i> | <i>(3)</i> | <i>(4)</i> | <i>(5)</i> | <i>(6)</i> |
| Father social origin (Ref.: Farmer with No/Prim Edu) | | | | | | |
| Farmers with Sec/Ter Edu | 0.133*** (0.0400) | | 0.193*** (0.0397) | 0.0224 (0.0369) | 0.00257 (0.0367) | -0.0169 (0.0364) |
| Nonfarm No/Prim Edu | 0.417*** (0.0234) | | 0.400*** (0.0233) | 0.153*** (0.0225) | 0.0663** (0.0227) | 0.0201 (0.0223) |
| Nonfarm with Sec/Ter Edu | 0.766*** (0.0260) | | 0.782*** (0.0256) | 0.405*** (0.0260) | 0.297*** (0.0261) | 0.215*** (0.0257) |
| Binary for MEPV intensity (1=high exposure) | | -0.284*** (0.0208) | -0.297*** (0.0203) | -0.257*** (0.0190) | -0.240*** (0.0188) | -0.223*** (0.0184) |
| Male | | | | 0.410*** (0.0189) | 0.439*** (0.0188) | 0.430*** (0.0183) |
| Son social origin (Ref.: Farmer with No/Prim Edu) | | | | | | |
| Farmers with Sec/Ter Edu | | | | 0.124*** (0.0279) | 0.0898** (0.0277) | 0.116*** (0.0275) |
| Nonfarm No/Prim Edu | | | | 0.273*** (0.0298) | 0.137*** (0.0306) | 0.121*** (0.0303) |
| Nonfarm with Sec/Ter Edu | | | | 0.777*** (0.0238) | 0.595*** (0.0257) | 0.536*** (0.0256) |
| Urban area | | | | | 0.386*** (0.0213) | 0.291*** (0.0212) |
| Constant | 10.15*** (0.0137) | 10.55*** (0.0126) | 10.24*** (0.0155) | 9.759*** (0.0193) | 9.688*** (0.0195) | 10.23*** (0.0377) |
| Observations | 11609 | 11609 | 11609 | 11609 | 11609 | 11609 |
| Adj. R ² | 0.078 | 0.015 | 0.094 | 0.226 | 0.247 | 0.290 |
| Province dummies (Ref.: Kinshasa) | No | No | No | No | No | Yes |

Note: OLS = ordinary least squares.

Robust standard errors in parentheses. * $p < .10$ ** $p < .05$ *** $p < .001$

The results in table 2, column 3 represent the reduced form estimates (equation 10), whereby only circumstance variables are included. These coefficients capture not only the direct effect of observed circumstances on earnings, controlling for effort (such as the educational attainment of individuals), but also the indirect effect through effort. These estimates are used to calculate the overall share of (observed) opportunities in earnings inequality as defined in equation (12). Using these estimates, the counterfactual distribution specified in equation (11) is simulated.

Table 3 presents the MLD coefficients on the actual observed and counterfactual earnings distribution for the full sample as well for urban and rural areas. It also reports the corresponding estimates of overall inequality of opportunity. At the national level, the overall opportunity share

in total observed earnings inequality ranges from 14 percent to 16 percent across the gender spectrum; the national average is 15.6 percent (table 3, column 4). In urban areas, the overall opportunity share in total earnings inequality ranges from 7 percent to 10 percent across gender, and the average in urban areas is 9.4 percent (table 3, column 4). Based on the parametric method, it appears that inequality of opportunity in earnings in rural areas is marginal; the average in rural areas is less than 2 percent. Inequality of opportunity in earnings therefore appears, at least in the case of the Democratic Republic of Congo, to be an urban phenomenon.

Table 3: The contribution of unequal opportunities to earnings: MLD and Ratios

| | <i>Total observed inequality (MLD, factual)</i> | <i>MLD estimate (CFD)</i> | <i>Inequality of opportunity level</i> | <i>Share in Total observed inequality</i> |
|--------------|---|---------------------------|--|---|
| | (1) | (2) | (3) | (4) |
| Full sample | | | | |
| All | 0.635*** (0.014) | 0.535*** (0.012) | 0.0991*** (0.007) | 0.156*** (0.009) |
| Male | 0.618*** (0.019) | 0.515*** (0.014) | 0.103*** (0.010) | 0.167*** (0.012) |
| Female | 0.567*** (0.022) | 0.487*** (0.016) | 0.0796*** (0.009) | 0.140*** (0.013) |
| Urban sample | | | | |
| All | 0.618*** (0.016) | 0.559*** (0.016) | 0.0583*** (0.008) | 0.0944*** (0.011) |
| Male | 0.556*** (0.021) | 0.501*** (0.020) | 0.0549*** (0.010) | 0.0987*** (0.016) |
| Female | 0.581*** (0.029) | 0.537*** (0.028) | 0.0446*** (0.010) | 0.0767*** (0.016) |
| Rural sample | | | | |
| All | 0.393*** (0.009) | 0.386*** (0.010) | 0.00659*** (0.002) | 0.0168*** (0.004) |
| Male | 0.386*** (0.011) | 0.379*** (0.012) | 0.00698** (0.002) | 0.0181** (0.006) |
| Female | 0.333*** (0.012) | 0.331*** (0.012) | 0.00211 (0.002) | 0.00633 (0.007) |

Note: MLD = mean log deviation. CFD = counterfactual distribution.

Bootstrapped standard errors in parentheses based on 99 replications. * $p < .10$ ** $p < .05$ *** $p < .001$

Table 4 assesses the roles of individual circumstance variables in the preceding results. It basically presents the MLD coefficients for factual earnings and counterfactual earnings, obtained by equalizing each circumstance variable in turn, while controlling for others as elaborated in equation (13). In a similar fashion as in the case of the estimates in table 3, the shares of each circumstance-specific opportunity in total observed inequality are also reported. The estimates of the shares of circumstance-specific opportunity in total inequality should be interpreted as descriptive evidence. Because of the fact that, if any unobserved circumstance variable is correlated with the individual (observed) circumstance variables, then the estimates are likely to be biased (Ferreira and Gignoux 2011; Singh 2012).

Table 4: Contribution of individual circumstance variables to earnings inequality: MLD (and Ratio)

| | <i>Total observed inequality (MLD, factual)</i> | <i>Equalizing father social origin</i> | | | <i>Equalizing MEPV exposure in early adulthood</i> | | |
|--------------|---|--|--|---|--|--|---|
| | | <i>MLD estimate (CFD)</i> | <i>Inequality of opportunity level</i> | <i>Share in Total observed inequality</i> | <i>MLD estimate (CFD)</i> | <i>Inequality of opportunity level</i> | <i>Share in Total observed inequality</i> |
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| Full sample | | | | | | | |
| All | 0.635*** (0.014) | 0.550*** (0.013) | 0.0850*** (0.006) | 0.134*** (0.008) | 0.619*** (0.013) | 0.0159*** (0.003) | 0.0251*** (0.004) |
| Male | 0.618*** (0.019) | 0.530*** (0.015) | 0.0880*** (0.008) | 0.142*** (0.011) | 0.600*** (0.017) | 0.0178*** (0.003) | 0.0287*** (0.005) |
| Female | 0.567*** (0.022) | 0.492*** (0.017) | 0.0747*** (0.009) | 0.132*** (0.012) | 0.562*** (0.024) | 0.00476 (0.006) | 0.00839 (0.007) |
| Urban sample | | | | | | | |
| All | 0.618*** (0.016) | 0.579*** (0.018) | 0.0385*** (0.007) | 0.0624*** (0.011) | 0.599*** (0.016) | 0.0191*** (0.004) | 0.0310*** (0.007) |
| Male | 0.556*** (0.021) | 0.521*** (0.022) | 0.0352*** (0.009) | 0.0633*** (0.016) | 0.537*** (0.019) | 0.0193*** (0.004) | 0.0347*** (0.006) |
| Female | 0.581*** (0.029) | 0.544*** (0.027) | 0.0378*** (0.009) | 0.0650*** (0.015) | 0.576*** (0.032) | 0.00520 (0.008) | 0.00894 (0.014) |
| Rural sample | | | | | | | |
| All | 0.393*** (0.009) | 0.390*** (0.010) | 0.00321** (0.001) | 0.00816** (0.003) | 0.390*** (0.009) | 0.00313** (0.001) | 0.00796** (0.003) |
| Male | 0.386*** (0.011) | 0.383*** (0.012) | 0.00354** (0.001) | 0.00917** (0.004) | 0.383*** (0.011) | 0.00322* (0.002) | 0.00833** (0.004) |
| Female | 0.333*** (0.012) | 0.332*** (0.012) | 0.00123 (0.001) | 0.00371 (0.004) | 0.332*** (0.012) | 0.000511 (0.002) | 0.00153 (0.006) |

Note: MLD = mean log deviation. CFD = counterfactual distribution.

Bootstrapped standard errors in parentheses based on 99 replications; * $p < .10$ ** $p < .05$ *** $p < .001$

The analysis of the effect of each individual circumstance starts with the individual's social background. The sample estimates show that the social background of the individual's father is associated with the largest share of inequality in earnings. Overall, the share of earnings inequality accounted for by the social background of the individual's father is between 13 percent and 14 percent across gender; the overall average is 13.4 percent. In the urban sample, the social status of the father is associated with 6 percent to 7 percent of total earnings inequality. However, in rural areas, the social background of the individual's father is associated with less than 1 percent of earnings inequality (table 4, column 4). On parental social background, the results are in line with earlier studies. For instance, using household income as outcome, Ferreira and Gignoux (2008, 2011) document that the mother's educational attainment is associated with 9 percent to 12 percent of total inequality in six Latin American countries (Brazil, Colombia, Ecuador, Guatemala, Panama, and Peru). In the case of urban India, Singh (2012) finds that the father's educational attainment is associated with 11 percent to 18 percent of total labor earnings inequality across the cohort. In the Egyptian context, Hassine (2012) documents that the relative shares of earnings

inequality associated with both the educational attainment and labor market backgrounds of the mother and the father are between a low of 0 percent to 4.1 percent.

The shares of earnings inequality accounted for by MEPV exposure in early adulthood ranges from 2.5 percent to 3.5 percent (table 4, column 7). These results are highly significant and reveal some key insights. First, the contribution of MEPV exposure in young adulthood to earnings inequality appears to be more prevalent in urban areas and among men. Second, these results are not negligible. In fact, the relative shares of other circumstances besides parental backgrounds (educational attainment or labor status), such as gender or birthplace by urban or rural area or region in earlier studies, are within similar ranges as the estimates of MEPV exposure in early adulthood here. For example, in Latin America, Ferreira and Gignoux (2011, 2008) find that inequality in income related to gender ranges from a low of 0 percent to 5 percent. In the case of the Arab Republic of Egypt, Hassine (2012) shows that inequality in earnings related to birthplace by urban or rural area or region is 1.7 percent to 3.0 percent.

V. Conclusion

The concept of egalitarianism in opportunity argues that unequal outcomes resulting from the circumstances of individuals are unfair and should therefore be compensated by society. According to this view, circumstances are factors that are beyond the individual's control, such as gender, place of birth, social background, and adverse shocks. In analyzing inequality of opportunity, most studies have extensively focused on circumstantial factors related to sex, gender, place of birth, social background, and childhood environment.

This paper therefore asks whether, beyond genetic factors and social background, there are other circumstantial elements that may contribute to inequality of opportunity that have not yet been documented empirically. For instance, the non-inclusion of factors related to adverse shocks, such as civil conflicts, represents the departure point of this paper. Borrowing insights based on the impressionable years hypothesis in social psychology, the paper argues that adverse shocks, such as wars, experienced by individuals in early adulthood (ages 18–25) should be considered as a consequence of circumstance. Social policies that seek to reduce inequalities should thus account for the exposure of individuals to shocks during this sensitive developmental stage.

Against this background, this paper develops an analytical framework to measure the intensity of adverse shocks experienced in early adulthood. Both parametric and nonparametric approaches are used to measure the inequality of opportunity in labor earnings in the country. The first takeaway is that intense exposure to adverse shocks, that is, to MEPV, in young adulthood is negatively correlated with future labor earnings. The estimates range from 22 percent to 29 percent. These results are robust after controlling for other factors, such as the social background of the fathers of individuals in the sample, the educational attainment of the individuals, the sector of

occupation, and the area of residence. The second takeaway is that the level of overall earnings inequality in the Democratic Republic of Congo, based on the MLD measure, is 63.5 percent.

Across the parametric and nonparametric decompositions, the two circumstance variables (the social background of the fathers of the individuals in the sample and the intensity of the individuals' exposure to MEPV in early adulthood) account for between 14 percent and 16 percent of total earnings inequality among all workers in the country. Similarly, these two circumstance variables account for between 9 percent and 15 percent of total earnings inequality among urban workers. However, in rural areas, the two circumstance variables account for less than 2 percent of earnings inequality among workers.

The results on the circumstance-specific opportunity shares of inequality in labor earnings in the country offer insights. The estimates show that the social background of the fathers of the individuals in the sample is associated with the largest share of inequality in earnings, ranging from 13 percent to 14 percent across the gender spectrum. The overall average is 13.4 percent. These results are in line with the findings of earlier studies (Ferreira and Gignoux 2008, 2011; Singh, 2012 and Hassine, 2012).

The second important takeaway from the circumstance-specific analysis is the shares of the contribution of exposure to MEPVs in early adulthood. After controlling for the other circumstances (the social background of the individual's father), the share of overall inequality in earnings accounted for by exposure to MEPVs in early adulthood is not negligible, ranging from 2.5 percent to 3.5 percent. To put this into perspective, the relative shares of other circumstances besides parental social backgrounds (educational attainment or labor status), such as gender, birth in urban or rural area, or by region in earlier studies are within similar ranges to the estimates of MEPV exposure in early adulthood here. For example, in Latin America, Ferreira and Gignoux (2008, 2011) find that inequality in income related to gender ranges from a low of 0 percent to 5 percent. In the case of Egypt, Hassine (2012) shows that inequality in earnings related to birth area and to birth region is between 1.7 percent and 3.0 percent.

This contribution, applied to a fragile state (but not limited to such a context), complements existing empirical studies on inequality of opportunity. It also invites greater attention on the shocks that individuals experience during early adulthood, especially in the design of social policies that seek to reduce inequality and poverty.

References

- Anerson, R. J. 1989. "Equality of Opportunity for Welfare." *Philosophical Studies* 56 (1): 77–93.
- Bourguignon, François, Francisco H. G. Ferreira, and Marta Menéndez. 2007. "Inequality of Opportunity in Brazil." *Review of Income and Wealth* 53 (4): 585–618.
- Brunori, P., Francisco H. G. Ferreira, and Vito Peragine. 2013. "Inequality of Opportunity, Income Inequality, and Economic Mobility: Some International Comparisons." IZA Discussion Paper 7155, Institute for the Study of Labor, Bonn, Germany.
- Burgess, S., C. Propper, H. Rees, and A. Shearer. 2003. "The Class of 1981: The Effects of Early Career Unemployment on Subsequent Unemployment Experiences." *Labour Economics* 10 (3): 291–309.
- Checchi, D., and Vito Peragine. 2010. "Inequality of Opportunity in Italy." *Journal of Economic Inequality* 8 (4): 429–50.
- Cherewick, M., W. Tol, G. Burnham, S. Doocy, and N. Glass. 2016. "A Structural Equation Model of Conflict-Affected Youth Coping and Resilience." *Health Psychology and Behavioral Medicine* 4 (1): 155–74.
- Cogley, T., and T. Sargent. 2008. "The Market Price of Risk and the Equity Premium: A Legacy of the Great Depression." *Journal of Monetary Economics* 55 (3): 454–76.
- Cogneau, Denis, and Sandrine Mesplé-Soms. 2008. "Inequality of Opportunity for Income in Five Countries of Africa." In *Inequality and Opportunity: Papers from the Second ECINEQ Society Meeting*, vol. 16, edited by John Bishop and Buhong Zheng, 99–128. Bingley, UK: Emerald Group Publishing.
- Dworkin, Ronald. 1981a. "What Is Equality? Part 1: Equality of Welfare." *Philosophy and Public Affairs* 10: 185–246.
- . 1981b. "What Is Equality? Part 2: Equality of Resources." *Philosophy and Public Affairs* 10: 283–345.
- Elder, G. 1999. *Children of the Great Depression: Social Change in Life Experience*. Boulder, CO: Westview Press.
- Ferreira, Francisco H. G., and J. Gignoux. 2008. "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America." Policy Research Working Paper 4659, World Bank, Washington, DC.
- . 2011. "The Measurement of Inequality of Opportunity: Theory and an Application to Latin America." *Review of Income and Wealth* 57 (4): 622–57.
- Ferreira, Francisco H. G., and Vito Peragine. 2015. "Equality of Opportunity: Theory and Evidence." Policy Research Working Paper 7217, World Bank, Washington, DC.
- Filmer, D., and L. Fox. 2014. *Youth Employment in Sub-Saharan Africa*. Africa Development Series. Washington, DC: World Bank.
- Fleurbaey, Marc. 1995. "Three Solutions for the Compensation Problem." *Journal of Economic Theory* 65 (2): 505–21.

- Fleurbaey, Marc, and Vito Peragine. 2013. "Ex Ante Versus Ex Post Equality of Opportunity." *Economica* 80 (317): 118–30.
- Foster, J. E., and A. A. Shneyerov. 2000. "Path Independent Inequality Measures." *Journal of Economic Theory* 91 (2): 199–222.
- Friedman, M., and A. Schwartz. 1963. *A Monetary History of the United States, 1867–1960*. Princeton, NJ: Princeton University Press.
- Giuliano, P., and A. Spilimbergo. 2014. "Growing Up in a Recession." *Review of Economic Studies* 81: 787–817.
- Hassine, B. N. 2012. "Inequality of Opportunity in Egypt." *World Bank Economic Review* 26 (2): 265–95.
- Hufe, Paul, Andreas Peichel, John E. Roemer, and Martin Ungerer. 2017. "Inequality of Income Acquisition: The Role of Childhood Circumstances." *Social Choice and Welfare* 49 (3–4): 499–544.
- Kahn, Lisa B. 2010. "The Long-Term Labor Market Consequences of Graduating from College in a Bad Economy." *Labour Economics* 17 (2): 303–16.
- Kanbur, Ravi, and Adam Wagstaff. 2016. "How Useful Is Inequality of Opportunity as a Policy Construct?" In *Concepts and Analysis*, vol. 1 of *Inequality and Growth: Patterns and Policy*, edited by Kaushik Basu and Joseph E. Stiglitz, 131–50. London: Palgrave Macmillan.
- Krosnick, Jon A., and Duane F. Alwin. 1989. "Aging and Susceptibility to Attitude Change." *Journal of Personality and Social Psychology* 57 (3): 416–25.
- Lefranc, Arnaud, and Alain Trannoy. 2016. "Equality of Opportunity: How to Encompass Fifty Shades of Luck." ECINEQ Working Paper 394, Society for the Study of Economic Inequality, Department of Economics, University of Verona, Verona, Italy.
- Lefranc, Arnaud, Nicolas Pistolesi, and Alain Trannoy. 2008. "Inequality of Opportunity vs. Inequality of Outcomes: Are Western Societies All Alike?" *Review of Income and Wealth* 54 (4): 513–46.
- . 2009. "Equality of Opportunity and Luck: Definitions and Testable Conditions, with an Application to Income in France." *Journal of Public Economics* 93 (11): 1189–1207.
- Lundberg, Mattias K. A., and Alice Wuermli, eds. 2012. *Children and Youth in Crisis: Protecting and Promoting Human Development in Times of Economic Shocks*. Directions in Development: Human Development Series. Washington, DC: World Bank.
- Oreopoulos, P., T. Vonwachter, and A. Heisz. 2012. "The Short- and Long-Term Career Effects of Graduating in a Recession: Hysteresis and Heterogeneity in the Market for College Graduates." *American Economic Journal: Applied Economics* 4 (1): 1–29.
- Oyer, Paul. 2006. "The Macro-Foundations of Microeconomics: Initial Labor Market Conditions and Long-Term Outcomes for Economists." NBER Working Paper 12157, National Bureau of Economic Research, Cambridge, MA.
- . 2008. "The Making of an Investment Banker: Stock Market Shocks, Career Choice, and Lifetime Income." *Journal of Finance* 63 (6): 2601–28.

- Papke, L. E., and J. M. Wooldridge. 1996. "Econometric Methods for Fractional Response Variables with an Application to 401(k) Plan Participation Rates." *Journal of Applied Econometrics* 11: 619–32.
- Peichel, Andreas, and Martin Ungerer. 2016. "Accounting for the Spouse When Measuring Inequality of Opportunity." *Social Choice and Welfare* 47 (3): 607–31.
- Peragine, Vito. 2004. "Ranking Income Distribution according to Equality of Opportunity." *Journal of Economic Inequality* 2 (1): 11–30.
- Pignataro, G. 2012. "Equality of Opportunity; Policy and Measurement Paradigms." *Journal of Economic Surveys* 26 (5): 800–34.
- Piketty, Thomas. 1995. "Social Mobility and Redistributive Policies." *Quarterly Journal of Economics* 110: 551–84.
- Pistolesi, Nicolas. 2009. "Inequality of Opportunity in the Land of Opportunities, 1968–2011." *Journal of Economic Inequality* 7: 411–33.
- Ramos, Xavier, and Dirk Van de gaer. 2016. "Empirical Approaches to Inequality of Opportunity: Principles, Measures, and Evidence." *Journal of Economic Surveys* 30 (5): 855–83.
- Rawls, John A. 1971. *Theory of Justice*. Cambridge, MA: Harvard University Press.
- Roemer, John E. 1993. *Theories of Distributive Justice*. Cambridge, MA: Harvard University Press.
- . 1998. *Equality of Opportunity*. Cambridge, MA: Harvard University Press.
- . 2017. "On the Importance of Circumstances in Explaining Income Inequality." *Revue Économique* 68 (1): 35–56.
- Roemer, John E., and Alain Trannoy. 2016. "Equality of Opportunity: Theory and Measurement." *Journal of Economic Literature* 54 (4): 1288–1332.
- Russo, S. J., J. W. Murrough, M. H. Han, D. S. Charney, and E. J. Nestler. 2012. "Neurobiology of Resilience." *Nature Neuroscience* 15: 1475–84.
- Rutter, M. 2012. "Resilience as a Dynamic Concept." *Development and Psychopathology* 24 (2): 335–44.
- Sen, Amartya. 1980. "Equality of What?" In *The Tanner Lectures on Human Values*, edited by Sterling M. McMurrin, 195–220. Salt Lake City: University of Utah Press.
- Singh, Ashish. 2012. "Inequality of Opportunity in Earnings and Consumption Expenditure: The Case of Indian Men." *Review of Income and Wealth* 58 (1): 79–106.
- Southwick, S. M., and D. S. Charney. 2012. "The Science of Resilience: Implications for the Prevention and Treatment of Depression." *Science* 338: 79–82.
- Stevens, K. 2008. "Adverse Economic Conditions at Labour Market Entry: Permanent Scars or Rapid Catch Up?" Job Market Paper, University of Sydney, Sydney.
- Turner, Barry, ed. 2009. *The Statesman's Yearbook 2010: The Politics, Cultures, and Economies of the World*. London: Palgrave Macmillan.
- Van de gaer, Dirk. 1993. "Equality of Opportunity and Investment in Human Capital." PhD Dissertation, Katholieke Universiteit Leuven, Leuven, Belgium.

- Viera, J. A., and J. M. Garrett. 2005. "Understanding Interobserver Agreement: The Kappa Statistic." *Family Medicine* 37 (5): 360–63.
- Wu, G., A. Feder, H. Cohen, J. J. Kim, S. Calderon, D. S. Charney, and A. A. Mathé. 2013. "Understanding Resilience." *Frontiers in Behavioral Neuroscience* 7 (10): 1–15.

Appendix A. Identification Strategy

To explore the relative impact of the intensity of political violence (MEPV) experienced in early adulthood on earnings, a model of the following form is first estimated:

$$y_i = \beta_0 + \beta_1 \text{Father}_i + \beta_2 \text{Intensity}_i + \mathbf{X}_i \boldsymbol{\Phi} + \varepsilon_i, \quad (\text{A.1})$$

where y_i is the individual's earnings. Following the literature on circumstance variables to assess the inequality of opportunities in earnings, Father_i , captures the social origin of the individual's father (see Bourguignon, Ferreira, and Menéndez 2007; Checchi and Peragine 2010; Ferreira and Gignoux 2008, 2011). In equation (A.1), Intensity_i represents the intensity of MEPV that the individual experienced in young adulthood (ages 18–25). This measure is the variable of interest. It ranges from 0 (no intensity) to 1 (high intensity). Equation (A.1) also includes personal attributes of the individual, such as gender, educational attainment, sector of employment, location of residence, and spatial controls at the provincial level. These control variables are represented by vector X .

The estimation of equation (A.1) is, however, complicated because the intensity of MEPV experienced in young adulthood may be endogenous. Indeed, ε encompasses all factors other than controls in equation (A.1) that determine earnings. One such factor in ε is labor market condition. However, a country's labor market conditions that determine employment opportunities and therefore earnings may be correlated with political violence. An example of key elements in labor market conditions is demographic pressure, say, through large youth cohorts entering the labor market every year. Indeed, high demographic pressures, often called time bombs, may trigger or intensify MEPVs (Filmer and Fox 2014). Moreover, by construction, the intensity of MEPV depends on the age of the individual which is a correlate of individual earning at the time of survey. To circumvent this potential endogeneity issue, one instruments the intensity of MEPV. As an instrument for MEPV intensity, the median share of the urban population in the country in young adulthood is used here to capture demographic and labor market pressures. Equation (A.1) is therefore estimated as follows:

$$\text{Intensity}_i = \alpha_0 + \alpha_1 \text{Father}_i + \alpha_2 \text{UrbanPop}_i + \mathbf{X}_i \boldsymbol{\Gamma} + \mu_i, \quad (\text{A.2})$$

where the intensity of MEPV in early adulthood, Intensity_i , is instrumented with the share of the urban population in the country, in young adulthood, represented by UrbanPop . Table A.1 presents the estimation of the baseline model with labor earnings as the dependent variable.

Table A.1: Individual Earning's Equation; dep. var.: Ln(income)

| | <i>OLS</i> | <i>2SLS</i> |
|---|-----------------------|-----------------------|
| | (1) | (2) |
| MEPV intensity Index | -0.189*** (0.0240) | -0.262*** (0.0330) |
| Father social origin (Ref.: Farmers with No/Prim Edu) | | |

| | | |
|---|----------------------|----------------------|
| Farmers with Sec/Ter Edu | -0.0358 (0.0364) | -0.0249 (0.0372) |
| Nonfarm No/Prim Edu | 0.0241 (0.0224) | 0.0226 (0.0226) |
| Nonfarm with Sec/Ter Edu | 0.213*** (0.0260) | 0.219*** (0.0258) |
| Male | 0.435*** (0.0184) | 0.431*** (0.0183) |
| Individual social origin (Ref.: Farmers with No/Prim Edu) | | |
| Farmers with Sec/Ter Edu | 0.116*** (0.0275) | 0.119*** (0.0284) |
| Nonfarm No/Prim Edu | 0.120*** (0.0303) | 0.122*** (0.0309) |
| Nonfarm with Sec/Ter Edu | 0.539*** (0.0257) | 0.542*** (0.0264) |
| Urban area | 0.296*** (0.0213) | 0.293*** (0.0214) |
| Constant | 10.25*** (0.0391) | 10.28*** (0.0398) |
| Observations | 11609 | 11609 |
| Adj. R ² | 0.285 | 0.284 |
| F | 243.962 | 244.149 |
| P-value | 0.000 | 0.000 |
| Province dummies (Ref.: Kinshasa) | Yes | Yes |

Note: MEPV intensity index instrumented in specification 2. OLS = ordinary least squares.
Robust standard errors in parentheses. * $p < .10$ ** $p < .05$ *** $p < .001$

Appendix B. Sample Description

Table B.1: Sample description

| | <i>Residence</i> | | <i>Gender</i> | | <i>Total</i> |
|--|------------------|--------------|---------------|---------------|--------------|
| | <i>Urban</i> | <i>Rural</i> | <i>Male</i> | <i>Female</i> | |
| Sample size | 6,219 | 5,390 | 6,561 | 5,048 | 11,609 |
| Father social origin (%) | | | | | |
| Farmers with No/Prim Edu | 23.4 | 61.5 | 40.0 | 42.5 | 41.1 |
| Farmers with Sec/Ter Edu | 5.1 | 8.0 | 6.8 | 5.9 | 6.4 |
| Nonfarm No/Prim Edu | 37.3 | 20.0 | 29.1 | 29.5 | 29.3 |
| Nonfarm with Sec/Ter Edu | 34.2 | 10.6 | 24.1 | 22.0 | 23.2 |
| <i>Total</i> | 100 | 100 | 100 | 100 | 100 |
| Individual social origin (%) | | | | | |
| Farmers with No/Prim Edu | 9.2 | 42.7 | 17.9 | 33.7 | 24.8 |
| Farmers with Sec/Ter Edu | 9.3 | 24.9 | 22.0 | 9.5 | 16.6 |
| Nonfarm No/Prim Edu | 15.3 | 10.6 | 7.8 | 20.0 | 13.1 |
| Nonfarm with Sec/Ter Edu | 66.1 | 21.8 | 52.2 | 36.8 | 45.5 |
| <i>Total</i> | 100 | 100 | 100 | 100 | 100 |
| Dummy index MEPV exposure (0=no/low) (1=high) | | | | | |
| Not/Low exposure | 68.6 | 64.5 | 69.0 | 63.6 | 66.7 |
| High exposure | 31.4 | 35.5 | 31.0 | 36.4 | 33.3 |
| <i>Total</i> | 100 | 100 | 100 | 100 | 100 |
| Father social origin and MEPV exposure | | | | | |
| Farmers with No/Prim Edu and Low MEPV Exposure | 16.3 | 40.9 | 27.6 | 27.9 | 27.7 |
| Farmers with No/Prim Edu and High MEPV Exposure | 7.1 | 20.6 | 12.4 | 14.6 | 13.4 |
| Farmers with Sec/Ter Edu and Low MEPV Exposure | 2.6 | 3.6 | 3.4 | 2.6 | 3.0 |
| Farmers with Sec/Ter Edu and High MEPV Exposure | 2.5 | 4.4 | 3.5 | 3.3 | 3.4 |
| Nonfarm No/Prim Edu and Low MEPV Exposure | 27.5 | 14.5 | 22.3 | 20.5 | 21.5 |
| Nonfarm No/Prim Edu and High MEPV Exposure | 9.8 | 5.4 | 6.8 | 9.1 | 7.8 |
| Nonfarm with Sec/Ter Edu and Low MEPV Exposure | 22.1 | 5.5 | 15.8 | 12.6 | 14.4 |
| Nonfarm with Sec/Ter Edu and High MEPV Exposure | 12.0 | 5.1 | 8.3 | 9.4 | 8.8 |
| <i>Total</i> | 100 | 100 | 100 | 100 | 100 |

Table B.2: Descriptive Statistics by Types

| Types | Current Area of Residence | | | | | | Gender | | | | | | All | | |
|---|---------------------------|----------------|-------------|---------------|---------------|-------------|---------------|----------------|-------------|---------------|---------------|-------------|---------------|----------------|--------------|
| | Urban | | | Rural | | | Male | | | Female | | | | | |
| | Mean | Sd | N | Mean | Sd | N | Mean | Sd | N | Mean | Sd | N | Mean | Sd | N |
| Farmers with No/Prim Edu and Low MEPV Exposure | 67,141 | 100,548 | 1015 | 35,503 | 35,827 | 2206 | 51,290 | 68,422 | 1813 | 30,487 | 36,814 | 1408 | 42,317 | 57,898 | 3221 |
| Farmers with No/Prim Edu and High MEPV Exposure | 49,286 | 46,493 | 443 | 30,545 | 28,538 | 1108 | 39,486 | 36,153 | 812 | 27,222 | 27,911 | 739 | 33,823 | 33,165 | 1551 |
| Farmers with Sec/Ter Edu and Low MEPV Exposure | 103,611 | 194,190 | 161 | 34,926 | 32,770 | 192 | 63,334 | 75,373 | 220 | 49,702 | 167,919 | 133 | 58,039 | 120,057 | 353 |
| Farmers with Sec/Ter Edu and High MEPV Exposure | 52,408 | 64,453 | 154 | 34,654 | 34,613 | 238 | 46,458 | 43,677 | 227 | 31,103 | 46,428 | 165 | 39,560 | 45,521 | 392 |
| Nonfarm No/Prim Edu and Low MEPV Exposure | 107,646 | 143,253 | 1711 | 41,704 | 45,043 | 783 | 101,102 | 138,171 | 1461 | 52,182 | 74,363 | 1033 | 80,735 | 118,417 | 2494 |
| Nonfarm No/Prim Edu and High MEPV Exposure | 71,788 | 95,740 | 610 | 34,276 | 33,989 | 293 | 71,172 | 93,580 | 446 | 42,456 | 58,534 | 457 | 56,279 | 78,688 | 903 |
| Nonfarm with Sec/Ter Edu and Low MEPV Exposure | 161,486 | 209,281 | 1377 | 50,396 | 48,593 | 295 | 167,871 | 215,274 | 1035 | 93,000 | 140,583 | 637 | 138,820 | 193,245 | 1672 |
| Nonfarm with Sec/Ter Edu and High MEPV Exposure | 92,818 | 120,470 | 748 | 35,424 | 33,405 | 275 | 87,744 | 110,055 | 547 | 63,223 | 100,363 | 476 | 76,071 | 106,210 | 1023 |
| All | 105,683 | 152,918 | 6219 | 36,151 | 36,883 | 5390 | 83,099 | 127,897 | 6561 | 46,943 | 81,377 | 5048 | 67,346 | 111,519 | 11609 |



Poverty & Equity Global Practice Working Papers (Since July 2014)

The Poverty & Equity Global Practice Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

This series is co-published with the World Bank Policy Research Working Papers (DECOS). It is part of a larger effort by the World Bank to provide open access to its research and contribute to development policy discussions around the world.

For the latest paper, visit our GP's intranet at <http://POVERTY>.

- 1 **Estimating poverty in the absence of consumption data: the case of Liberia**
Dabalen, A. L., Graham, E., Himelein, K., Mungai, R., September 2014
- 2 **Female labor participation in the Arab world: some evidence from panel data in Morocco**
Barry, A. G., Guennouni, J., Verme, P., September 2014
- 3 **Should income inequality be reduced and who should benefit? redistributive preferences in Europe and Central Asia**
Cojocaru, A., Diagne, M. F., November 2014
- 4 **Rent imputation for welfare measurement: a review of methodologies and empirical findings**
Balcazar Salazar, C. F., Ceriani, L., Olivieri, S., Ranzani, M., November 2014
- 5 **Can agricultural households farm their way out of poverty?**
Oseni, G., McGee, K., Dabalen, A., November 2014
- 6 **Durable goods and poverty measurement**
Amendola, N., Vecchi, G., November 2014
- 7 **Inequality stagnation in Latin America in the aftermath of the global financial crisis**
Cord, L., Barriga Cabanillas, O., Lucchetti, L., Rodriguez-Castelan, C., Sousa, L. D., Valderrama, D. December 2014
- 8 **Born with a silver spoon: inequality in educational achievement across the world**
Balcazar Salazar, C. F., Narayan, A., Tiwari, S., January 2015

- 9 **Long-run effects of democracy on income inequality: evidence from repeated cross-sections**
Balcazar Salazar, C. F., January 2015
- 10 **Living on the edge: vulnerability to poverty and public transfers in Mexico**
Ortiz-Juarez, E., Rodriguez-Castelan, C., De La Fuente, A., January 2015
- 11 **Moldova: a story of upward economic mobility**
Davalos, M. E., Meyer, M., January 2015
- 12 **Broken gears: the value added of higher education on teachers' academic achievement**
Balcazar Salazar, C. F., Nopo, H., January 2015
- 13 **Can we measure resilience? a proposed method and evidence from countries in the Sahel**
Alfani, F., Dabalen, A. L., Fisker, P., Molini, V., January 2015
- 14 **Vulnerability to malnutrition in the West African Sahel**
Alfani, F., Dabalen, A. L., Fisker, P., Molini, V., January 2015
- 15 **Economic mobility in Europe and Central Asia: exploring patterns and uncovering puzzles**
Cancho, C., Davalos, M. E., Demarchi, G., Meyer, M., Sanchez Paramo, C., January 2015
- 16 **Managing risk with insurance and savings: experimental evidence for male and female farm managers in the Sahel**
Delavallade, C., Dizon, F., Hill, R., Petraud, J. P., et al., January 2015
- 17 **Gone with the storm: rainfall shocks and household well-being in Guatemala**
Baez, J. E., Lucchetti, L., Genoni, M. E., Salazar, M., January 2015
- 18 **Handling the weather: insurance, savings, and credit in West Africa**
De Nicola, F., February 2015
- 19 **The distributional impact of fiscal policy in South Africa**
Inchauste Comboni, M. G., Lustig, N., Maboshe, M., Purfield, C., Woolard, I., March 2015
- 20 **Interviewer effects in subjective survey questions: evidence from Timor-Leste**
Himelein, K., March 2015
- 21 **No condition is permanent: middle class in Nigeria in the last decade**
Corral Rodas, P. A., Molini, V., Oseni, G. O., March 2015
- 22 **An evaluation of the 2014 subsidy reforms in Morocco and a simulation of further reforms**
Verme, P., El Massnaoui, K., March 2015

- 23 **The quest for subsidy reforms in Libya**
Araar, A., Choueiri, N., Verme, P., March 2015
- 24 **The (non-) effect of violence on education: evidence from the "war on drugs" in Mexico**
Márquez-Padilla, F., Pérez-Arce, F., Rodríguez Castelan, C., April 2015
- 25 **"Missing girls" in the south Caucasus countries: trends, possible causes, and policy options**
Das Gupta, M., April 2015
- 26 **Measuring inequality from top to bottom**
Diaz Bazan, T. V., April 2015
- 27 **Are we confusing poverty with preferences?**
Van Den Boom, B., Halsema, A., Molini, V., April 2015
- 28 **Socioeconomic impact of the crisis in north Mali on displaced people** (Available in French)
Etang Ndip, A., Hoogeveen, J. G., Lendorfer, J., June 2015
- 29 **Data deprivation: another deprivation to end**
Serajuddin, U., Uematsu, H., Wieser, C., Yoshida, N., Dabalen, A., April 2015
- 30 **The local socioeconomic effects of gold mining: evidence from Ghana**
Chuhan-Pole, P., Dabalen, A., Kotsadam, A., Sanoh, A., Tolonen, A.K., April 2015
- 31 **Inequality of outcomes and inequality of opportunity in Tanzania**
Belghith, N. B. H., Zeufack, A. G., May 2015
- 32 **How unfair is the inequality of wage earnings in Russia? estimates from panel data**
Tiwari, S., Lara Ibarra, G., Narayan, A., June 2015
- 33 **Fertility transition in Turkey—who is most at risk of deciding against child arrival?**
Greulich, A., Dasre, A., Inan, C., June 2015
- 34 **The socioeconomic impacts of energy reform in Tunisia: a simulation approach**
Cuesta Leiva, J. A., El Lahga, A., Lara Ibarra, G., June 2015
- 35 **Energy subsidies reform in Jordan: welfare implications of different scenarios**
Atamanov, A., Jellema, J. R., Serajuddin, U., June 2015
- 36 **How costly are labor gender gaps? estimates for the Balkans and Turkey**
Cuberes, D., Teignier, M., June 2015
- 37 **Subjective well-being across the lifespan in Europe and Central Asia**
Bauer, J. M., Munoz Boudet, A. M., Levin, V., Nie, P., Sousa-Poza, A., July 2015

- 38 **Lower bounds on inequality of opportunity and measurement error**
Balcazar Salazar, C. F., July 2015
- 39 **A decade of declining earnings inequality in the Russian Federation**
Posadas, J., Calvo, P. A., Lopez-Calva, L.-F., August 2015
- 40 **Gender gap in pay in the Russian Federation: twenty years later, still a concern**
Atencio, A., Posadas, J., August 2015
- 41 **Job opportunities along the rural-urban gradation and female labor force participation in India**
Chatterjee, U., Rama, M. G., Murgai, R., September 2015
- 42 **Multidimensional poverty in Ethiopia: changes in overlapping deprivations**
Yigezu, B., Ambel, A. A., Mehta, P. A., September 2015
- 43 **Are public libraries improving quality of education? when the provision of public goods is not enough**
Rodriguez Lesmes, P. A., Valderrama Gonzalez, D., Trujillo, J. D., September 2015
- 44 **Understanding poverty reduction in Sri Lanka: evidence from 2002 to 2012/13**
Inchauste Comboni, M. G., Ceriani, L., Olivieri, S. D., October 2015
- 45 **A global count of the extreme poor in 2012: data issues, methodology and initial results**
Ferreira, F.H.G., Chen, S., Dabalen, A. L., Dikhanov, Y. M., Hamadeh, N., Jolliffe, D. M., Narayan, A., Prydz, E. B., Revenga, A. L., Sangraula, P., Serajuddin, U., Yoshida, N., October 2015
- 46 **Exploring the sources of downward bias in measuring inequality of opportunity**
Lara Ibarra, G., Martinez Cruz, A. L., October 2015
- 47 **Women's police stations and domestic violence: evidence from Brazil**
Perova, E., Reynolds, S., November 2015
- 48 **From demographic dividend to demographic burden? regional trends of population aging in Russia**
Matytsin, M., Moorty, L. M., Richter, K., November 2015
- 49 **Hub-periphery development pattern and inclusive growth: case study of Guangdong province**
Luo, X., Zhu, N., December 2015
- 50 **Unpacking the MPI: a decomposition approach of changes in multidimensional poverty headcounts**
Rodriguez Castelan, C., Trujillo, J. D., Pérez Pérez, J. E., Valderrama, D., December 2015
- 51 **The poverty effects of market concentration**
Rodriguez Castelan, C., December 2015
- 52 **Can a small social pension promote labor force participation? evidence from the Colombia Mayor program**
Pfütze, T., Rodriguez Castelan, C., December 2015

- 53 **Why so gloomy? perceptions of economic mobility in Europe and Central Asia**
Davalos, M. E., Cancho, C. A., Sanchez, C., December 2015
- 54 **Tenure security premium in informal housing markets: a spatial hedonic analysis**
Nakamura, S., December 2015
- 55 **Earnings premiums and penalties for self-employment and informal employees around the world**
Newhouse, D. L., Mossaad, N., Gindling, T. H., January 2016
- 56 **How equitable is access to finance in turkey? evidence from the latest global FINDEX**
Yang, J., Azevedo, J. P. W. D., Inan, O. K., January 2016
- 57 **What are the impacts of Syrian refugees on host community welfare in Turkey? a subnational poverty analysis**
Yang, J., Azevedo, J. P. W. D., Inan, O. K., January 2016
- 58 **Declining wages for college-educated workers in Mexico: are younger or older cohorts hurt the most?**
Lustig, N., Campos-Vazquez, R. M., Lopez-Calva, L.-F., January 2016
- 59 **Sifting through the Data: labor markets in Haiti through a turbulent decade (2001-2012)**
Rodella, A.-S., Scot, T., February 2016
- 60 **Drought and retribution: evidence from a large-scale rainfall-indexed insurance program in Mexico**
Fuchs Tarlovsky, Alan., Wolff, H., February 2016
- 61 **Prices and welfare**
Verme, P., Araar, A., February 2016
- 62 **Losing the gains of the past: the welfare and distributional impacts of the twin crises in Iraq 2014**
Olivieri, S. D., Krishnan, N., February 2016
- 63 **Growth, urbanization, and poverty reduction in India**
Ravallion, M., Murgai, R., Datt, G., February 2016
- 64 **Why did poverty decline in India? a nonparametric decomposition exercise**
Murgai, R., Balcazar Salazar, C. F., Narayan, A., Desai, S., March 2016
- 65 **Robustness of shared prosperity estimates: how different methodological choices matter**
Uematsu, H., Atamanov, A., Dewina, R., Nguyen, M. C., Azevedo, J. P. W. D., Wieser, C., Yoshida, N., March 2016
- 66 **Is random forest a superior methodology for predicting poverty? an empirical assessment**
Stender, N., Pave Sohnesen, T., March 2016
- 67 **When do gender wage differences emerge? a study of Azerbaijan's labor market**
Tiongson, E. H. R., Pastore, F., Sattar, S., March 2016

- 68 **Second-stage sampling for conflict areas: methods and implications**
Eckman, S., Murray, S., Himelein, K., Bauer, J., March 2016
- 69 **Measuring poverty in Latin America and the Caribbean: methodological considerations when estimating an empirical regional poverty line**
Gasparini, L. C., April 2016
- 70 **Looking back on two decades of poverty and well-being in India**
Murgai, R., Narayan, A., April 2016
- 71 **Is living in African cities expensive?**
Yamanaka, M., Dikhanov, Y. M., Rissanen, M. O., Harati, R., Nakamura, S., Lall, S. V., Hamadeh, N., Vigil Oliver, W., April 2016
- 72 **Ageing and family solidarity in Europe: patterns and driving factors of intergenerational support**
Albertini, M., Sinha, N., May 2016
- 73 **Crime and persistent punishment: a long-run perspective on the links between violence and chronic poverty in Mexico**
Rodriguez Castelan, C., Martinez-Cruz, A. L., Lucchetti, L. R., Valderrama Gonzalez, D., Castaneda Aguilar, R. A., Garriga, S., June 2016
- 74 **Should I stay or should I go? internal migration and household welfare in Ghana**
Molini, V., Pavelesku, D., Ranzani, M., July 2016
- 75 **Subsidy reforms in the Middle East and North Africa Region: a review**
Verme, P., July 2016
- 76 **A comparative analysis of subsidy reforms in the Middle East and North Africa Region**
Verme, P., Araar, A., July 2016
- 77 **All that glitters is not gold: polarization amid poverty reduction in Ghana**
Clementi, F., Molini, V., Schettino, F., July 2016
- 78 **Vulnerability to Poverty in rural Malawi**
Mccarthy, N., Brubaker, J., De La Fuente, A., July 2016
- 79 **The distributional impact of taxes and transfers in Poland**
Goraus Tanska, K. M., Inchauste Comboni, M. G., August 2016
- 80 **Estimating poverty rates in target populations: an assessment of the simple poverty scorecard and alternative approaches**
Vinha, K., Rebolledo Dellepiane, M. A., Skoufias, E., Diamond, A., Gill, M., Xu, Y., August 2016

- 81 **Synergies in child nutrition: interactions of food security, health and environment, and child care**
Skoufias, E., August 2016
- 82 **Understanding the dynamics of labor income inequality in Latin America**
Rodriguez Castelan, C., Lustig, N., Valderrama, D., Lopez-Calva, L.-F., August 2016
- 83 **Mobility and pathways to the middle class in Nepal**
Tiwari, S., Balcazar Salazar, C. F., Shidiq, A. R., September 2016
- 84 **Constructing robust poverty trends in the Islamic Republic of Iran: 2008-14**
Salehi Isfahani, D., Atamanov, A., Mostafavi, M.-H., Vishwanath, T., September 2016
- 85 **Who are the poor in the developing world?**
Newhouse, D. L., Uematsu, H., Doan, D. T. T., Nguyen, M. C., Azevedo, J. P. W. D., Castaneda Aguilar, R. A., October 2016
- 86 **New estimates of extreme poverty for children**
Newhouse, D. L., Suarez Becerra, P., Evans, M. C., October 2016
- 87 **Shedding light: understanding energy efficiency and electricity reliability**
Carranza, E., Meeks, R., November 2016
- 88 **Heterogeneous returns to income diversification: evidence from Nigeria**
Siwatu, G. O., Corral Rodas, P. A., Bertoni, E., Molini, V., November 2016
- 89 **How liberal is Nepal's liberal grade promotion policy?**
Sharma, D., November 2016
- 90 **Pro-growth equity: a policy framework for the twin goals**
Lopez-Calva, L. F., Rodriguez Castelan, C., November 2016
- 91 **CPI bias and its implications for poverty reduction in Africa**
Dabalen, A. L., Gaddis, I., Nguyen, N. T. V., December 2016
- 92 **Building an ex ante simulation model for estimating the capacity impact, benefit incidence, and cost effectiveness of child care subsidies: an application using provider-level data from Turkey**
Aran, M. A., Munoz Boudet, A., Aktakke, N., December 2016
- 93 **Vulnerability to drought and food price shocks: evidence from Ethiopia**
Porter, C., Hill, R., December 2016
- 94 **Job quality and poverty in Latin America**
Rodriguez Castelan, C., Mann, C. R., Brummund, P., December 2016
- 95 **With a little help: shocks, agricultural income, and welfare in Uganda**
Mejia-Mantilla, C., Hill, R., January 2017

- 96 **The impact of fiscal policy on inequality and poverty in Chile**
Martinez Aguilar, S. N., Fuchs Tarlovsky, A., Ortiz-Juarez, E., Del Carmen Hasbun, G. E., January 2017
- 97 **Conditionality as targeting? participation and distributional effects of conditional cash transfers**
Rodriguez Castelan, C., January 2017
- 98 **How is the slowdown affecting households in Latin America and the Caribbean?**
Reyes, G. J., Calvo-Gonzalez, O., Sousa, L. D. C., Castaneda Aguilar, R. A., Farfan Bertran, M. G., January 2017
- 99 **Are tobacco taxes really regressive? evidence from Chile**
Fuchs Tarlovsky, A., Meneses, F. J., March 2017
- 100 **Design of a multi-stage stratified sample for poverty and welfare monitoring with multiple objectives: a Bangladesh case study**
Yanez Pagans, M., Roy, D., Yoshida, N., Ahmed, F., March 2017
- 101 **For India's rural poor, growing towns matter more than growing cities**
Murgai, R., Ravallion, M., Datt, G., Gibson, J., March 2017
- 102 **Leaving, staying, or coming back? migration decisions during the northern Mali conflict**
Hoogeveen, J. G., Sansone, D., Rossi, M., March 2017
- 103 **Arithmetics and Politics of Domestic Resource Mobilization**
Bolch, K. B., Ceriani, L., Lopez-Calva, L.-F., April 2017
- 104 **Can Public Works Programs Reduce Youth Crime? Evidence from Papua New Guinea's Urban Youth Employment Project**
Oleksiy I., Darian N., David N., Sonya S., April 2017
- 105 **Is Poverty in Africa Mostly Chronic or Transient? Evidence from Synthetic Panel Data**
Dang, H.-A. H., Dabalén, A. L., April 2017
- 106 **To Sew or Not to Sew? Assessing the Welfare Effects of the Garment Industry in Cambodia**
Mejía-Mantilla, C., Woldemichael, M. T., May 2017
- 107 **Perceptions of distributive justice in Latin America during a period of falling inequality**
Reyes, G. J., Gasparini, L. C., May 2017
- 108 **How do women fare in rural non-farm economy?**
Fuje, H. N., May 2017
- 109 **Rural Non-Farm Employment and Household Welfare: Evidence from Malawi**
Adjognon, G. S., Liverpool-Tasie, S. L., De La Fuente, A., Benfica, R. M., May 2017

- 110 **Multidimensional Poverty in the Philippines, 2004-13: Do Choices for Weighting, Identification and Aggregation Matter?**
Datt, G., June 2017
- 111 **But ... what is the poverty rate today? testing poverty nowcasting methods in Latin America and the Caribbean**
Caruso, G. D., Lucchetti, L. R., Malasquez, E., Scot, T., Castaneda, R. A., June 2017
- 112 **Estimating the Welfare Costs of Reforming the Iraq Public Distribution System: A Mixed Demand Approach**
Krishnan, N., Olivieri, S., Ramadan, R., June 2017
- 113 **Beyond Income Poverty: Nonmonetary Dimensions of Poverty in Uganda**
Etang Ndip, A., Tsimpo, C., June 2017
- 114 **Education and Health Services in Uganda: Quality of Inputs, User Satisfaction, and Community Welfare Levels**
Tsimpo Nkengne, C., Etang Ndip, A., Wodon, Q. T., June 2017
- 115 **Rental Regulation and Its Consequences on Measures of Well-Being in the Arab Republic of Egypt**
Lara Ibarra, G., Mendiratta, V., Vishwanath, T., July 2017
- 116 **The Poverty Implications of Alternative Tax Reforms: Results from a Numerical Application to Pakistan**
Feltenstein, A., Mejia-Mantilla, C., Newhouse, D. L., Sedrakyan, G., August 2017
- 117 **Tracing Back the Weather Origins of Human Welfare: Evidence from Mozambique?**
Baez Ramirez, J. E., Caruso, G. D., Niu, C., August 2017
- 118 **Many Faces of Deprivation: A multidimensional approach to poverty in Armenia**
Martirosova, D., Inan, O. K., Meyer, M., Sinha, N., August 2017
- 119 **Natural Disaster Damage Indices Based on Remotely Sensed Data: An Application to Indonesia**
Skoufias, E., Strobl, E., Tveit, T. B., September 2017
- 120 **The Distributional Impact of Taxes and Social Spending in Croatia**
Inchauste Comboni, M. G., Rubil, I., October 2017
- 121 **Regressive or Progressive? The Effect of Tobacco Taxes in Ukraine**
Fuchs, A., Meneses, F., September 2017
- 122 **Fiscal Incidence in Belarus: A Commitment to Equity Analysis**
Bornukova, K., Shymanovich, G., Chubrik, A., October 2017

- 123 **Who escaped poverty and who was left behind? a non-parametric approach to explore welfare dynamics using cross-sections**
Lucchetti, L. R., October 2017
- 124 **Learning the impact of financial education when take-up is low**
Lara Ibarra, G., Mckenzie, D. J., Ruiz Ortega, C., November 2017
- 125 **Putting Your Money Where Your Mouth Is Geographic Targeting of World Bank Projects to the Bottom 40 Percent**
Öhler, H., Negre, M., Smets, L., Massari, R., Bogetić, Z., November 2017
- 126 **The impact of fiscal policy on inequality and poverty in Zambia**
De La Fuente, A., Rosales, M., Jellema, J. R., November 2017
- 127 **The Whys of Social Exclusion: Insights from Behavioral Economics**
Hoff, K., Walsh, J. S., December 2017
- 128 **Mission and the bottom line: performance incentives in a multi-goal organization**
Gine, X., Mansuri, G., Shrestha, S. A., December 2017
- 129 **Mobile Infrastructure and Rural Business Enterprises Evidence from Sim Registration Mandate in Niger**
Annan, F., Sanoh, A., December 2017
- 130 **Poverty from Space: Using High-Resolution Satellite Imagery for estimating Economic Well-Being**
Engstrom, R., Hersh, J., Newhouse, D., December 2017
- 131 **Winners Never Quit, Quitters Never Grow: Using Text Mining to measure Policy Volatility and its Link with Long-Term Growth in Latin America**
Calvo-Gonzalez, O., Eizmendi, A., Reyes, G., January 2018
- 132 **The Changing Way Governments talk about Poverty and Inequality: Evidence from two Centuries of Latin American Presidential Speeches**
Calvo-Gonzalez, O., Eizmendi, A., Reyes, G., January 2018
- 133 **Tobacco Price Elasticity and Tax Progressivity In Moldova**
Fuchs, A., Meneses, F., February 2018
- 134 **Informal Sector Heterogeneity and Income Inequality: Evidence from the Democratic Republic of Congo**
Adoho, F., Doumbia, D., February 2018
- 135 **South Caucasus in Motion: Economic and Social Mobility in Armenia, Azerbaijan and Georgia**
Tiwari, S., Cancho, C., Meyer, M., February 2018

- 136 **Human Capital Outflows: Selection into Migration from the Northern Triangle**
Del Carmen, G., Sousa, L., February 2018
- 137 **Urban Transport Infrastructure and Household Welfare: Evidence from Colombia**
Pfutze, T., Rodriguez-Castelan, C., Valderrama-Gonzalez, D., February 2018
- 138 **Hit and Run? Income Shocks and School Dropouts in Latin America**
Cerutti, P., Crivellaro, E., Reyes, G., Sousa, L., February 2018
- 139 **Decentralization and Redistribution Irrigation Reform in Pakistan's Indus Basin**
Jacoby, H.G., Mansuri, G., Fatima, F., February 2018
- 140 **Governing the Commons? Water and Power in Pakistan's Indus Basin**
Jacoby, H.G., Mansuri, G., February 2018
- 141 **The State of Jobs in Post-Conflict Areas of Sri Lanka**
Newhouse, D., Silwal, A. R., February 2018
- 142 **"If it's already tough, imagine for me..." A Qualitative Perspective on Youth Out of School and Out of Work in Brazil**
Machado, A.L., Muller, M., March 2018
- 143 **The reallocation of district-level spending and natural disasters: evidence from Indonesia**
Skoufias, E., Strobl, E., Tveit, T. B., March 2018
- 144 **Gender Differences in Poverty and Household Composition through the Life-cycle A Global Perspective**
Munoz, A. M., Buitrago, P., Leroy de la Briere, B., Newhouse, D., Rubiano, E., Scott, K., Suarez-Becerra, P., March 2018
- 145 **Analysis of the Mismatch between Tanzania Household Budget Survey and National Panel Survey Data in Poverty & Inequality Levels and Trends**
Fuchs, A., Del Carmen, G., Kechia Mukong, A., March 2018
- 146 **Long-Run Impacts of Increasing Tobacco Taxes: Evidence from South Africa**
Hassine Belghith, N.B., Lopera, M. A., Etang Ndip, A., Karamba, W., March 2018
- 147 **The Distributional Impact of the Fiscal System in Albania**
Davalos, M., Robayo-Abril, M., Shehaj, E., Gjika, A., March 2018
- 148 **Analysis Growth, Safety Nets and Poverty: Assessing Progress in Ethiopia from 1996 to 2011**
Vargas Hill, R., Tsehaye, E., March 2018
- 149 **The Economics of the Gender Wage Gap in Armenia**
Rodriguez-Chamussy, L., Sinha, N., Atencio, A., April 2018

- 150 **Do Demographics Matter for African Child Poverty?**
Batana, Y., Cockburn, J., May 2018
- 151 **Household Expenditure and Poverty Measures in 60 Minutes: A New Approach with Results from Mogadishu**
Pape, U., Mistiaen, J., May 2018
- 152 **Inequality of Opportunity in South Caucasus**
Fuchs, A., Tiwari, S., Rizal Shidiq, A., May 2018
- 153 **Welfare Dynamics in Colombia: Results from Synthetic Panels**
Balcazar, C.F., Dang, H-A., Malasquez, E., Olivieri, S., Pico, J., May 2018
- 154 **Social Protection in Niger: What Have Shocks and Time Got to Say?**
Annan, F., Sanoh, A., May 2018
- 155 **Quantifying the impacts of capturing territory from the government in the Republic of Yemen**
Tandon, S., May 2018
- 156 **The Road to Recovery: The Role of Poverty in the Exposure, Vulnerability and Resilience to Floods in Accra**
Erman, A., Motte, E., Goyal, R., Asare, A., Takamatsu, S., Chen, X., Malgioglio, S., Skinner, A., Yoshida, N., Hallegatte, S., June 2018
- 157 **Small Area Estimation of Poverty under Structural Change**
Lange, S., Pape, U., Pütz, P., June 2018
- 158 **The Devil Is in the Details; Growth, Polarization, and Poverty Reduction in Africa in the Past Two Decades**
F. Clementi F., Fabiani, M., Molini, V., June 2018
- 159 **Impact of Conflict on Adolescent Girls in South Sudan**
Pape, U., Phipps, V., July 2018
- 160 **Urbanization in Kazakhstan; Desirable Cities, Unaffordable Housing, and the Missing Rental Market**
Seitz, W., July 2018
- 161 **SInequality in Earnings and Adverse Shocks in Early Adulthood**
Tien, B., Adoho, F., August 2018
- 162 **Eliciting Accurate Responses to Consumption Questions among IDPs in South Sudan Using “Honesty Primes”**
Kaplan, L., Pale, U., Walsh, J., August 2018

163 **What Can We (Machine) Learn about Welfare Dynamics from Cross-Sectional Data?**
Lucchetti, L., August 2018

164 **Infrastructure, Value Chains, and Economic Upgrades**
Luo, X., Xu, X., August 2018

165 **The Distributional Effects of Tobacco Taxation; The Evidence of White and Clove Cigarettes in Indonesia**
Fuchs, A., Del Carmen, G., August 2018

For the latest and sortable directory,
available on the Poverty & Equity GP intranet site. <http://POVERTY>

WWW.WORLDBANK.ORG/POVERTY