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Inequality and Migration: A Behavioral Link

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Institute for Advanced Studies
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178

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Founded in 1963 by two prominent Austrians living in exile – the sociologist Paul F. Lazarsfeld and the economist Oskar Morgenstern – with the financial support from the Ford Foundation, the Austrian Federal Ministry of Education and the City of Vienna, the Institute for Advanced Studies (IHS) is the first institution for postgraduate education and research in economics and the social sciences in Austria. The **Economics Series** presents research done at the Department of Economics and Finance and aims to share “work in progress” in a timely way before formal publication. As usual, authors bear full responsibility for the content of their contributions.

Das Institut für Höhere Studien (IHS) wurde im Jahr 1963 von zwei prominenten Exilösterreichern – dem Soziologen Paul F. Lazarsfeld und dem Ökonomen Oskar Morgenstern – mit Hilfe der Ford-Stiftung, des Österreichischen Bundesministeriums für Unterricht und der Stadt Wien gegründet und ist somit die erste nachuniversitäre Lehr- und Forschungsstätte für die Sozial- und Wirtschafts-wissenschaften in Österreich. Die **Reihe Ökonomie** bietet Einblick in die Forschungsarbeit der Abteilung für Ökonomie und Finanzwirtschaft und verfolgt das Ziel, abteilungsinterne Diskussionsbeiträge einer breiteren fachinternen Öffentlichkeit zugänglich zu machen. Die inhaltliche Verantwortung für die veröffentlichten Beiträge liegt bei den Autoren und Autorinnen.

Abstract

We provide an analytical-behavioral explanation for the observed positive relationship between income inequality, as measured by the Gini coefficient, and the incentive to migrate. We show that a higher total relative deprivation of a population leads to a stronger incentive to engage in migration for a given level of a population's income; that total relative deprivation is positively related to the Gini coefficient; and that, consequently, the Gini coefficient and migration are positively correlated, holding the population's income constant.

Keywords

Income inequality; Relative deprivation; The Gini coefficient; The incentive to migrate

JEL Classification

A13; A14; D31; D63; F22; J61

Contents

1. Prelude

"A house may be large or small; as long as the surrounding houses are equally small, it satisfies all social demands for a dwelling. But if a palace arises beside the little house, the house shrinks into a hut." Karl Marx. 1849. *Wage Labour and Capital*. Chapter 6. Quoted from the edition: New York: International Publishers, 1933, p. 30.

2. Motivation and a stylized fact

There are not many topics that have so attracted the attention and consumed the passion of economists as inequality (of incomes) and its interactions with other variables of interest. It is somewhat surprising then that the relationship between migration and inequality at origin or at destination has not been studied intensively. Certainly, key issues such as how the repercussions of migration, especially migrants' remittances, impinge on the inequality in the distribution of income by size at origin, or how the degree of income inequality at destination renders a destination differentially attractive to workers of different skill levels, were studied closely some time ago, both theoretically and empirically. (Several chapters in Stark (1993) address the first of these topics, Borjas (1987) studies the second.) Yet evidence as to whether, ceteris paribus, a higher degree of income inequality promotes or hinders migration is not easy to come by, and no analytical-behavioral foundation is at present available that could lead us to expect the evidence to unveil one type of a relationship or another.

A recent data set and a new study that builds on the data set contribute significantly to our sparse knowledge. The 1995 International Social Survey Programme (ISSP) conducted a survey of approximately 28,000 individuals in 23 countries that included the question "Would you be willing to move to another country to improve your work or living conditions?" Liebig and Sousa-Poza (2004) ingeniously related the responses to this question to a battery of country variables including income inequality, as measured by the standard Gini coefficient. An important finding of Liebig and Sousa-Poza's analysis is that "controlling for GNP per capita …, the Gini coefficient always has a positive and highly significant impact [on the propensity to migrate]. A higher income inequality thus leads *ceteris paribus* to higher incentives to migrate." (Liebig and Sousa-Poza, p. 137). Why such a

relationship? Why, *ceteris paribus*, would there be more migration from an economy where the incomes are 1 and 3 than from an economy where the incomes are 2 and 2? The notion that the incentive to migrate of the individuals whose incomes rise from 2 to 3 is attenuated by less than the incentive to migrate of the individuals whose incomes decline from 2 to 1 is amplified, is a description, not an analytical-behavioral explanation. The purpose of this note is to propose such an explanation.

3. An explanation

In a series of articles, we have argued that relative deprivation impinges positively on the propensity to migrate. Briefly summarized, the argument is that individuals care about their relative position, and that a change in group affiliation is a response to a low relative position in a group (or in a population). Of course, this is not the only feasible response. Given the group of individuals with whom comparisons are made, discontent that arises from having an income that is lower than the income of other members of the group could induce harder work without exiting the group (Stark, 1990). Yet it could also induce a departure for work elsewhere where incomes are higher without changing the set of individuals with whom comparisons are made, or it could prompt severing of the ties with the offensive set, leaving it in order to associate with another set even if incomes are held constant. These latter two responses - holding the reference group constant with migration conferring a gain in income and thereby reducing relative deprivation, or holding incomes constant with migration conferring a lowering-of-relative-deprivation gain through a substitution of reference groups have been modeled theoretically and tested empirically (Stark 1993; Stark and Wang 2000, 2005).

A measure of relative deprivation developed in our earlier work, indeed a definition of relative deprivation, is the proportion of those in the individual's group whose incomes are higher than the individual's times their mean excess income. It can be shown[1] that the relative deprivation of an individual whose income is w, is

$$RD(w) \equiv [1 - F(w)]E(x - w \mid x > w) = \int_{w}^{\infty} [1 - F(x)]dx,$$

[1] The proof is in Appendix 1.

where *F(x)* is the cumulative distribution of income in the reference group of the individual whose income is *w*. Given that the propensity to migrate by an individual whose relative deprivation is high is stronger than the propensity to migrate by an individual whose relative deprivation is low, we would naturally anticipate that a group (a population) exhibiting a high aggregate level of relative deprivation will be more inclined to engage in migration (more likely to produce migrants) than a group (a population) exhibiting a low aggregate level of relative deprivation. It is possible to sum up the individual relative deprivations in order to obtain a measure of the population-wide level of relative deprivation, *TRD*. And it is further possible to show that this measure is *positively* related to the Gini coefficient of inequality of the distribution of income, G.[2] Specifically, it is shown in Appendix 2 that

$$G = \frac{TRD}{\sum_{i=1}^{n} w_i}$$

where w_i is the level of income of individual *i*, *i=1,…,n*.

In the example of two individuals whose incomes are (2,2), *TRD=G=0*, whereas if the incomes of the two individuals are (1 , 3), *TRD=1* and $G = \frac{1}{4}$.When incomes are (1 , 3), the individual whose income is 1 rather than 2 is relatively deprived while previously he was not, the individual whose income is 3 rather than 2 was not, and is not, relatively deprived, and the group as a whole exhibits more relative deprivation, a higher Gini coefficient, and, we expect, a stronger inclination to migrate.

Our finding is further exemplified upon considering a setting of three individuals wherein the total level of income of the group is constant. Let there be the following three configurations of income:

$$P_1 = (1/10, 45/100, 45/100);$$
$$P_2 = (1/10, 4/10, 5/10);$$
$$P_3 = (1/10, 3/10, 6/10).$$

[2] The proof is in Appendix 2.

Since $\sum_{i=1}^{3} w_i = 1 \ \ \forall P_i$, we have that $G=TRD= {}^{7}/_{30}$ for P_1; $G=TRD= {}^{8}/_{30}$ for P_2; and $G=TRD= {}^{10}/_{30}$ for P_3. In all three configurations, the individual with income $^{1}/_{10}$ is equally relatively deprived and hence will have the same propensity to migrate. But the Gini coefficient is not equal across all configurations. As constructed, there is a higher Gini coefficient in P_3 than in P_2 and, indeed, a higher relative deprivation for the second individual in P_3 than in P_2 – hence a stronger inclination by him to migrate. Thus, we infer that a higher Gini coefficient is associated with a stronger inclination to migrate in order to reduce relative deprivation for the group as a whole, even though the higher *TRD* does not arise from a higher relative deprivation for all the individuals concerned. Since a higher *TRD* reflects a stronger incentive to engage in migration for a given level of a population's income, it follows that the Gini coefficient and migration will be positively correlated, holding the population's income constant.

4. Alternative explanations and an empirically-verifiable distinction

The argument of this note differs in its perspective and prediction from an argument that conditions the negative selectivity of migration on a comparison between the degree of income inequality at origin and the degree of income inequality at destination (cf. Borjas). The present argument is that as a consequence of the prevalence of relative deprivation at origin, migration will be negatively selected, *independently* of the said comparison. Specifically, Borjas argues that if "the [destination country] has a more unequal income distribution than the home country" "[a] positive selection [will] take place" (pp. 551-552). The implication of the argument advanced in this note, however, is that negative selection, prompted by relative deprivation at origin, will not be reversed upon the incorporation of such a ranking of the income distributions. Similarly, while Borjas maintains that "If the income distribution in the sending country *is more unequal than that of the [destination country]* … emigrants will be chosen from the *lower* tail of the income distribution in the country of origin" (p. 552, first emphasis added), this note advances the view that the negative selectivity arises from the inequality of the income distribution at origin *per se*, not from the inequality of the income distribution at origin being higher or lower than the inequality of the income distribution at destination.

An implication of the argument of this note is that an observed negative selectivity will become more pronounced upon the income distribution at origin becoming more unequal *given* the destination country's income distribution. Or equivalently, that the income distribution at destination becoming more equal while the origin income distribution remaining as unequal as before will not dampen the relative deprivation inducement to migrate of low-income members of the origin population.

To illustrate, let the income distributions at origin and destination be $(1-\varepsilon, 4+\varepsilon)$, $\varepsilon > 0 \;\; \varepsilon \to 0$, and (2 , 8), respectively. Incomes at origin are more unequally distributed than incomes at destination (assuming that the degree of income inequality is measured by the Gini coefficient). The relative deprivation theory postulates an incentive to migrate for the individual whose income is $1-\varepsilon$. Suppose that the incomes at origin are redistributed such that the new income distribution is (1 , 4). There is no difference now in the degrees of income inequality across the two distributions. The "conditional selectivity" theory is silent with regard to the sign of the selectivity; the relative deprivation approach is not: while at the wake of the substitution of a more equal income distribution for a less equal income distribution at origin the relative deprivation incentive of the low-income individual to migrate is weakened, migration will continue to be from the lower tail of the distribution (in spite of the income distribution at origin not being more unequal than the income distribution at destination).

Thus, there is an empirically-verifiable distinction between the relative deprivation approach and the "conditional selectivity" theory.

5. The underlying research

The idea that externalities impinge *asymmetrically* on individuals' wellbeing and behavior has been with us for many years. Early proponents of this idea were of the opinion that the wellbeing of individuals rose in what they had and declined in what more prosperous people had. References of pioneering works that come readily to mind are Duesenberry (1949) who argued that individuals look up but not down when making comparisons, Stouffer et al. (1949) who, in spite of studying a quite different behavior, independently argued likewise,

and Davis (1966) who observed that in choosing higher performance career fields, which generally require graduate training, students in colleges and universities in the US were heavily influenced by their subjectively assessed relative standing in their college or university rather than by the subjective quality of the institution, and that they adjusted their career choices in a manner corresponding to their subjective (relative) standing in their college or university, tilting towards the low performance fields as their relative standing declined.[3] (As social psychologists, Stouffer et al. and Davis have carefully searched for the relevant set of individuals with whom comparisons are made – the reference group.) A recent manifestation of the asymmetric externalities idea takes the diametrically opposite view that while the utility of an individual rises in his own consumption, it declines in the consumption of any of his neighbors if that consumption falls below some minimal level; individuals are adversely affected by the material wellbeing of others in their reference group when this wellbeing is sufficiently lower than theirs (Andolfatto, 2002). Our impression though is that in the course of the intervening five decades, the bulk of the theoretical work has held the view that individuals look up and not down, and that the evidence has overwhelmingly supported the "upward comparison" view.[4] (Helpful references are provided and reviewed in Frey and Stutzer (2002), in Walker and Smith (2002), and in Luttmer (2004).). The argument of this note draws on this perspective.

[3] Notably, students judged themselves by their "local standing" in their own college or university (that is, standing within their reference group) rather than across colleges or universities (that is, across reference groups). This self-assessment and the resulting response implied that being a "big frog in a small pond" or a "small frog in a big pond" mattered even when the absolute size of the "frog" did not change. Davis concluded that when parents who aspire their son to opt for a higher-performance career field send their son to a "fine" college or university, "a big pond," they face a risk of him ending up assessing himself as a "small frog" thereby ending up not choosing a desirable career path.

[4] For example, it has been argued that given the set of individuals with whom comparisons are made, an unfavorable comparison could induce harder work. This idea is captured and developed in the literature on performance incentives in career games and other contests. (Early studies include Lazear and Rosen (1981), Rosen (1986), and Stark (1990).) Loewenstein, Thompson, and Bazerman (1989) provide evidence that individuals strongly dislike being in an income distribution in which "comparison persons" earn more. Clark and Oswald (1996) present evidence that "comparison incomes" have a significant negative impact on overall job satisfaction.

Appendix 1

We provide a proof that relative deprivation, *RD*, can be written either as $\int_w^\infty [1-F(x)]dx$ or as $[1-F(w)]\cdot \mathrm{E}(x-w \mid x>w)$.

From integration by parts we obtain that

$$\int_w^\infty [1-F(x)]dx = [1-F(x)]x\,|_w^\infty + \int_w^\infty xf(x)dx.$$

Since, as shown below, $\lim_{x\to\infty}[1-F(x)]x = 0$ and since $f(x \mid x>w) = \frac{1}{1-F(w)} f(x)$, it follows that

$$\int_w^\infty [1-F(x)]dx = -[1-F(w)]w + [1-F(w)]\int_w^\infty xf(x \mid x>w)dx$$

$$= [1-F(w)]\cdot[\mathrm{E}(x \mid x>w) - w]$$

$$= [1-F(w)]\cdot \mathrm{E}(x-w \mid x>w).$$

In order to show that $\lim_{x\to\infty}[1-F(x)]x = 0$, we note that

$$1-F(x) = P(X \geq x) \leq P(|X| \geq x) \leq \frac{VarX}{x^2},$$

where the last inequality is Chebyshev's inequality. Upon multiplying the end sides by x and taking limits we obtain that for a finite variance:

$$0 \leq \lim_{x\to\infty} x[1-F(x)] \leq \lim_{x\to\infty} \frac{VarX}{x} = 0. \quad \square$$

Appendix 2

We provide a proof that the aggregate, population-wide relative deprivation, *TRD*, is equal to the population's income times the Gini coefficient of inequality of the distribution of income. We refer to the discrete case.

Let the levels of income of the *n* individuals who constitute the population be ordered:

$$W = \{w_1 \leq w_2 \leq ... \leq w_n\}.$$

Define the relative deprivation of an individual whose income level is w_i, $i = 1, 2, ..., n-1$ as

$$RD(w_i) = \frac{1}{n} \sum_{j=i+1}^{n} (w_j - w_i)$$

where it is understood that $RD(w_n) = 0.$

Therefore, the aggregate relative deprivation is

$$TRD = \frac{1}{n} \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} (w_j - w_i).$$

The Gini coefficient is defined as

$$G = \frac{\frac{1}{2n^2} \sum_{i=1}^{n} \sum_{j=1}^{n} | w_i - w_j |}{\overline{w}}$$

where $\overline{w} = \frac{1}{n} \sum_{i=1}^{n} w_i.$

Since

$$\sum_{i=1}^{n}\sum_{j=1}^{n}|\, w_i - w_j \,| = 2\sum_{i=1}^{n-1}\sum_{j=i+1}^{n}(w_j - w_i),$$

it follows that

$$\overline{w}G = \frac{1}{2n^2}\,2\sum_{i=1}^{n-1}\sum_{j=i+1}^{n}(w_j - w_i)$$

$$= \frac{1}{n^2}\sum_{i=1}^{n-1}\sum_{j=i+1}^{n}(w_j - w_i),$$

or that

$$\left(\sum_{i=1}^{n} w_i\right)G = \frac{1}{n}\sum_{i=1}^{n-1}\sum_{j=i+1}^{n}(w_j - w_i) = TRD\,. \quad \square$$

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