COMMENTS ON "FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: KNOWN KNOWNS, KNOWN UNKNOWNS, AND UNKNOWN UNKNOWNS"

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Jean-Louis Arcand[1]

1 INTRODUCTION

Development Economics is essentially one long succession of specific theories of the second best, starting with Rosenstein-Rodan (1943) and Lewis (1954), and going all the way to Stiglitz, with the occasional rebellion by what might be termed "Walrasians" – think of the classic Schultz (1964) "poor but efficient" hypothesis. As such, Development Economics has long been centred on deviations with respect to the first-best optimum, and on a plethora of situations in which the Fundamental Theorems of Welfare Economics do not hold. In this comment on Ugo Panizza's excellent presentation, I wish to make two obvious, and one slightly less obvious, points.

First, adding or "deepening" markets (especially financial markets) is not necessarily Pareto-improving. To put it bluntly, received general equilibrium theory tells us that more is not necessarily better than less when it comes to markets. Second, adverse selection is rampant in credit markets in poor countries. This implies, contrary to conventional wisdom, that credit market

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development may exacerbate the funding of *riskier* activities, at the expense of other, more conventional, productive investments. This is, in fact, the standard Stiglitz and Weiss (1981) result. The third, and less obvious point I wish to make is that alternative, less restrictive preference axiomatics – in particular, eschewing the standard Independence of Irrelevant Alternatives (IIA) axiom – leads us to a world, which is probably a much better representation of human behavior, in which all bets are off and our standard Walrasian understanding of things breaks down.

2   THE THEORY OF THE SECOND BEST

Financial market development or deepening is a sacred cow of many development practitioners. Banking the "unbanked poor" is seen (incorrectly) by some as almost a panacea and has led to an unhealthy infatuation with microfinance initiatives. Surprisingly (and obviously, when one recalls the elementary theory of the second best), the theoretical underpinnings of these position are tenuous, at best.

A classic paper by Oliver Hart on the effect of introducing securities when they do not hitherto exist (Hart 1975) provides the perfect illustration to my point. In Hart's elementary example, consider a world in which there are 2 consumers, 2 goods, 3 time periods, and 2 states of nature (SON) in period 3. Consumer 1 gets no endowment in period 1 but gets an endowment in period 2, with the opposite holding for consumer 2. Consumer 1's (2's) utility does not depend on period 2 (1) consumption, with the specific example being given by:

$$U^1 = \{x_{11}^1\} + \left\{ (x_{11}^1 + 1)^{\frac{1}{4}} \left(x_{31}^1(1) \right)^{\frac{1}{4}} + \left(x_{32}^1(1) \right)^{\frac{1}{4}} \right\} +$$
$$\beta^1 \left\{ 2^{\frac{1}{4}} \left(x_{11}^1(2) \right)^{\frac{1}{4}} + \left(x_{31}^1(2) \right)^{\frac{1}{4}} \right\}$$

$$U^2 = \{x_{21}^2\} + \beta^2 \left\{ 2^{1/4} \left(x_{31}^2(1) \right)^{1/4} + \left(x_{32}^2(1) \right)^{1/4} \right\} +$$
$$\left\{ (x_{21}^2 + 1)^{1/4} \left(x_{31}^2(2) \right)^{1/4} + \left(x_{32}^2(2) \right)^{1/4} \right\}$$

where $x_{tj}^i(k)$ denotes consumption of good j, in period t, by consumer i, in SON k. It should be obvious that there are substantial trading opportunities

between the two consumers in period 3. In the initial configuration there are no securities markets, and there is no trade in periods 1 and 2, and large gains from trade in period 3.

Now introduce a security that allows one to transfer endowments from period 1 to period 2. Consumers 1 and 2 will simply exchange endowments (between periods 1 and 2) using the security. This eliminates gains to trade in period 3 because the marginal rates of substitution are now the same in period 3. If consumers are sufficiently patient ($\beta \uparrow$), the second equilibrium with the security will be Pareto-dominated by the first without it. This point should be obvious: adding a "missing market" when that one market is missing leads to an Arrow-Debreu complete markets world in which the two Fundamental Welfare Theorems hold. Adding one missing market to a situation in which more than one market is missing can lead to a Pareto-deterioration in the outcome.

3 ADVERSE SELECTION IN CREDIT MARKETS

For my second point, consider the standard Stiglitz and Weiss (1981) model with limited liability. The return to the borrower is given by $\tilde{\pi} = max[\theta - iD, \ 0]$, where θ is the (random) realisation of the investment project, i is the interest rate, and D is the size of the loan. Let $F(\theta, \rho)$ denote the *cdf* according to which $\theta \in [\underline{\theta}\overline{\theta}]$ is distributed (with associated $f(\theta, \rho)$), where ρ will denote the Rothschild and Stiglitz (1970) parameter of increasing risk. Taking expectations:

$$\Pi(iD, \rho) = E[\pi] = \int_{iD}^{\overline{\theta}} (\theta - iD) f(\theta, \rho) d\theta = \overline{\theta} - iD - \int_{iD}^{\overline{\theta}} F(\theta, \rho) d\theta$$

The crux of Stiglitz-Weiss is given by the standard comparative statics result that:

$$\frac{\partial \Pi(iD, \rho)}{\partial \rho} = -\int_{iD}^{\overline{\theta}} F_\rho(\theta, \rho) d\theta = \int_{\underline{\theta}}^{iD} F_\rho(\theta, \rho) d\theta \geq 0$$

where the sign of the inequality follows from the Fundamental Theorem of Risk. Translation: the expected return to the borrower is increasing in the riskiness of the project. An important consequence of this is that, as interest rates rise, low risk borrowers drop out of the market.

Is this just elegant theory, or does it have real world relevance for the poor? Consider Senegal. Fieldwork that I have carried out there strongly suggests that it is very easy to access (informal) credit for illegal migration attempts, which are extremely risky and involve a high probability of death. Conversely, it is extremely difficult for borrowers to access (even informal) credit for entrepreneurial activities, which represent merely plain vanilla risk. This seemingly paradoxical situation is easily explained by the Stiglitz-Weiss model: ρ is manifestly much higher for illegal migration attempts than for conventional entrepreneurial activities. As a result, the Stiglitz-Weiss model predicts that credit markets for the latter activities will dry up, whereas the credit market for high risk activities will thrive. A simple back of the envelope calculation suggests that this phenomenon could account for a 5% shortfall in private domestic investment in Senegal.

4 ALTERNATIVE AXIOMATICS

My final (and less obvious) point concerns non-expected utility axiomatics, which constitute a thriving subfield of Mathematical Economics at the intersection with Psychology. From the theoretical standpoint, and despite most mainstream economists being largely unaware of its existence, this theoretical literature is very rigourous, better fits the experimental evidence, and is based on much weaker assumptions concerning human behavior than those imposed by our standard Von Neumann and Morgenstern (1944) orthodoxy. In particular, when IIA does not hold, utility functionals are no longer linear in probabilities, and in many leading cases the latter are replaced by "capacities" (in the Choquet (1953) sense, not that of Amartya Sen) which do not add up to 1 over all states of nature. Some special cases such as disappointment-aversion and simple incarnations of prospect theory (Kahneman and Tversky 1979) have made a timid appearance in applications. Others, such as Rank Dependent Expected Utility (Quiggin 1982, Decidue and Wakker 2001), or Ambiguity Aversion (Klibanoff, Marinacci, and Mukerji 2005), have remained largely untapped by the applied side of the profession.

My basic point here is that a whole research program on finance and development could be developed by going back to the basics and condering alternative axiomatics. Among other advantages, the potential gains in insights are that these models allow one to rigorously incorporate psychological phenomena such optimism and pessism depending upon how people "distort" (objective or subjective) probabilities. An example of how our standard intuition is

modified by these more general models of decision under risk (or, more generally, Knightian uncertainty) is that full insurance is no longer necessarily the Pareto optimal configuration. Moreover, a large body of experimental evidence from both the developed and the developing worlds rejects Expected Utility axiomatics. Of course, we have known this since at least the 1960s (between Ellsberg (1961) and the work of Kahneman, we have no excuses), but economists are extremely conservative animals. It is high time to shift the burden of proof and develop models of financial development and growth that consider the world in terms of agents that behave in a manner that is consonant with empirical evidence on human behavior.

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