On the Theory and Measurement of Relative Poverty Using Durable Ownership Data

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LITERATURE APPENDIX

Introduction

This literature appendix lists the extensive literature from which we have drawn ideas, but (several of) which could not be included in the bibliography immediately following the manuscript of 'On the Theory and Measurement of Relative Poverty using Durable Ownership Data'.

1. On developing the conceptual approach

The main ideas in this paper – both conceptual and methodological – developed over the course of writing the following papers (Maitra (2006, 2011, 2016, 2017, 2018)). Maitra (2006) uses a similar methodological approach to that used here, viz. they outline a theoretical model as the foundation of a data-generating process from which synthetic data are drawn and compared with patterns in survey data. This approach is expanded into a macro framework in Maitra (2018) – here, a dynamic general equilibrium model with overlapping generations is explicitly formulated, in which parameter calibrations are motivated by stylized empirical facts. On the purely empirical side, Maitra (2011) applies the durables' based mixture model to examine the size and characteristics of the middle class in India in 1999-00, revealing "middle class characteristics" similar to assumptions in Banerjee and Duflo (2008). Maitra (2016, 2017) applies the mixture model approach to identifying relative poverty.

2. On related literature on poverty

A large body of work by Banerjee and Duflo (2007, 2011, 2019; and the references therein) has influenced several ideas deeply embedded in the current paper. Banerjee and Duflo (2007) look at distinct durables (radios, televisions and bicycles) owned in very poor communities of various populations. That poor households often appear to

make 'myopic' choices of less saving (or education) in favour of more consumption has been documented and explained in alternative settings (Banerjee and Mullainathan (2010, 2008), Mullainathan and Shafir (2013), Bernheim, Ray and Yeltekin (2013)). Various explanations for this phenomenon have been modeled in the literature – e.g. the role of temptation goods, limited attention, self-control, and poor 'mental' bandwidth that plague households experiencing persistent scarcity.

There is an underlying implication of a poverty trap – which has inspired a vast literature in development – embedded in the findings of our model. Ghatak (2015) provides a well examined conceptual overview of poverty traps at the individual level. Balboni et al (2020) conduct an experiment and estimate parameters of a structural model to conclude that poverty traps are caused by a lack of opportunities rather than by low productivity levels of the poor. There are interesting parallels between the approach used in Balboni et al (2020) and the one we propose, albeit in a completely micro setting.

3. On the concept of relative deprivation or relative poverty

Our concept of relative poverty draws from Runciman (1966): "We can roughly say that [a person] is relatively deprived of X when (i) he does not have X, (ii) he sees some other person or persons, which may include himself at some previous or expected time, as having X (whether or not this is or will be in fact the case), (iii) he wants X, and (iv) he sees it as feasible that he should have X [op. cit. p. 10]. Yitzhaki (1979) formalizes the concept of relative deprivation in terms of income. In our paper, the concept of relative poverty is formalized as the lowest cluster in durable consumption data.

Sen (1983) discusses how a criterion for relative poverty drawn from commodities

may be translated to a criterion of absolute poverty in capabilities. The mixture approach does precisely the former, i.e. identify relative poverty using a criterion dictated by the data, viz. clusters of commodities (durables). (Our ongoing research asks if there is a way to translate the relative poverty criterion using commodities to a criterion using capabilities (viz. income).

The concept of vulnerability to poverty – as captured by the likelihood of falling into (or remaining in) poverty – is discussed in Sen (2000), also in Abraham et al (2008). In our paper as well, vulnerability to relative poverty is conceptualized as the danger of being confined to the lowest consumption class owing to a lack of access to education or a social network.

4. On measuring poverty using assets/durables

Montgomery et al (2000) lists several studies where durables ownership is used to measure living standards, viz. when income data is hard to obtain. Stifel and Christiaensen (2007) use an asset index to predict and track aggregate poverty in Kenya. Several of these studies use a regression approach to predict micro-level poverty using suitable explanatory variables. The mixture approach uses clusters in the distribution of durable ownership to predict relative poverty status, viz. probability of membership in the lowest cluster or class.

The connection between poverty and durable assets – through direct consumption benefits and the potential for cash exchange – is discussed at length by Shapiro and Wolff (2001).

5. On conspicuous/observable consumption

Multiple studies (e.g. Friedman and Ostrov (2008), Arrow and Dasgupta (2009) and references therein) have modeled conspicuous consumption in a dynamic setup. The principal difference between most of these studies and our own is that, in the former, social status – or the return to conspicuous consumption – has largely been assumed to influence agents' utility functions. In our model, social status has a direct effect on income, and enters utility through the added consumption that this income provides.

Friedman and Ostrov (2008) formalize "conspicuous" consumption as alternative forms of interdependent preferences, viz. preferences with "envy" and "pride'. They show the possibility of existence of a "moving, growing "middle class"..." when envy (i.e. agents find a shortfall of consumption relative to others' consumption more painful than an excess) is stronger than pride (when an excess of consumption matters more than a shortfall).

Arrow and Dasgupta (2009) consider the trade off between having high relative consumption versus in the future. They study the structure of "felicity functions" when the two effects exactly offset each other.

6. On social network effects – "wealth begets wealth"

Cole, Mailath and Postlewaite (1998) demonstrate that classes may emerge in a society with socially inefficient competition, where self-enforcing social norms control the inefficient competition, viz. when individuals with "little left to lose" find the benefits of deviation greater than the cost of sanctions from deviating from norms. Their model involves an optimization problem similar in flavour to ours (albeit where agents live for one period only). here, each generation chooses how much to consume

versus how much to bequeath to the next generation. The next generation values the bequest for two reasons – (1) it determines their consumption level and (2) it affects the quality of their mate.

Luke, Munshi and Rosenzweig (2004) find evidence that networks formed around marriage shape career choices and labour market outcomes in Kenya and Mumbai, India.

The studies above have motivated the assumption (in our model) that a marriage partner brings an increase in household income based on their "quality".

7. On status and social signaling based on information and related to quality of mates

Moav and Neeman (2010) present an overlapping generations model in which preferences are defined over consumption, transfers to offspring and social status associated with income. Their treatment of a threshold on conspicuous consumption (which the very poor engage in to appear to be of high status) is similar in flavour to our paper.

The idea of social status determining the outcome of marital matching is also used in Cole, Mailath and Postlewaite (1992, 1998). Their analyses use the idea that parents may be willing to reduce current consumption if it sufficiently increases the quality of their offspring's (in their case, son's) mate. "Our model is meant to illustrate an essential interdependence between social and economic concerns and how that interdependence can support class systems;..." (Cole, Mailath, Postlewaite (1998), pg 30, last paragraph).

Corneo and Jeanne (1999) model social status as a function of social contact with other members who are able validate their social status. In our paper, the mode

of contact is marriage. In our model, the probability of matching with a high-income partner is assumed to be the normal CDF, $\Phi(\beta, \sigma^2)$ – where β is a social standard for durable wealth, and σ^2 measures the skepticism around the belief around this social standard. Our model does not delve into the general equilibrium effects of matching in the marriage market (as in Maitra (2018)); however, in a general equilibrium extension of our model, the probability of finding a high-income partner would be endogenously determined among agents of the economy, all of whom choose education and/or durable wealth based on the relative returns to either.

Bilancini and Boncinelli (2012) study the impact of redistributive policies when agents can signal their social status with conspicuous consumption. See Section 2 for an interesting discussion (and additional references) of social status and its relevance to economic behaviour.

8. On dynamic (OLG) models with conspicuous consumption and social status

Moav and Neeman (2010) use an overlapping generations model with consumption, inter-generational transfers and social status tied to income. The fundamental difference between theirs and our model is the role of the marriage market in propagating notions of social status.

9. On data generating processes and simulated endogenous outcomes

Maitra (2006) uses a similar methodological approach to that used here, viz. outline a theoretical model as the foundation of a data-generating process from which synthetic data is drawn and compared with patterns in survey data.

Rengs and Scholz-Wackerle (2019) build an evolutionary macroeconomic model

with conspicuous consumption, signalling and endogenously changing social class. They perform computational simulation experiments with diferent household consumption behaviour to demonstrate various endogenous macroeconomic outcomes.

Demombynes and Hoogeveen (2004) simulate changes in consumption (poverty paths) by employing per capita GDP growth rates to household survey data. The simulations do not employ a theoretical model of economic behaviour.

10. On poverty in India in the 1990s

See Datt and Ravallion (2002) and Kijima and Lanjouw (2003) for discussion of trends in poverty in India in the 1990s, post liberalization. Deaton and Kozel (2005) summarize the debate surrounding poverty measurement using NSS data in the 1990s.

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