WHAT WE CAN LEARN FROM ASSET-BASED APPROACHES TO POVERTY*

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Abstract

While a number of studies have used asset indicators to provide a richer characterization of who the poor are, this paper concentrates on approaches that use asset information in conjunction with insights from economic theory to gain additional insight into why the poor are poor and whether their material situation is likely change over time. The paper also argues that the same analytical devices that permit insight into these questions can be used for the design of durable and cost-effective anti-poverty policy. There is still much to be done to realize the full potential of asset-based approaches, it is hoped that this paper will help motivate the needed investigation.

* The topic of this paper was suggested by questions raised at the Brookings Workshop on Asset-Based Approaches to Poverty in a Globalized Context. It is a deliberative reflection on a body of collaborative work undertaken over the years with a number of people, especially Christopher Barrett, Menobu Ikegami, Julian May and Fred Zimmerman. While it draws liberally on work with these individuals, none of them should be held responsible for the interpretations here.

What We Can Learn from Asset-based Approaches to Poverty

Poverty is most frequently measured and analyzed in terms of income flows, or the stream of consumption expenditures financed by those income flows. While these flow measures permit calculation of a suite of indicators that variously count up the number of people whose standard of living fall short of a pre-determined poverty line, they do not tell us much about who the poor are, why they are poor, nor whether their material situation is likely change over time.

Information on the asset stocks that underlie and generate income and consumption flows can be used to help answer these questions.[1] At a descriptive level, information on assets can provide a richer picture of who the poor are. Asset pentagons are one example of this descriptive use of asset data, permitting insight into the dimensions along which the poor and the non-poor are different. The work by Attanasio and Székely (2000) is another example. A complementary approach is taken by Moser and Felton (2006) in a dynamic setting as they are able to describe how the asset positions of households evolve over time, giving important insights into the nature of the pathways from poverty.

While these uses of assets are instructive, they do not explicitly take advantage of the fact that there are well-developed bodies of economic theory that relate to the constraints that shape how people are able to use assets they have, and how they accumulate assets over time. And yet, these are precisely the *structural* determinants of why people are poor and whether they stay poor.

[1] Assets are used here to denote the general class of factors that can be used to generate livelihood, including human capital, land, machinery and social capital.

This paper considers three specific domains where an asset-based approach—armed with theory—can offer insights into the nature and persistence of poverty. It draws on recent work and work in progress. As will be seen, there is still much to be learned about asset-based approaches, and the intent of this paper is in part programmatic, laying out a set of ideas and issues that warrant further investigation.

The remainder of this paper is organized as follows. Section 1 considers a problem that appears in longitudinal or panel data when significant numbers of households are observed to transition from poor to non-poor status (and vice versa) over time. Information on asset stocks (in conjunction with theory-guided insights on the relationship between assets and income) can be used to decompose observed transitions into structural poverty change (*e.g.*, a household has successfully built up productive business assets and moved to a higher standard of living) versus a "churning" around that is being driven by short-term shocks, and recovery from them. Such a decomposition underwrites a much deeper diagnostic of why and how poverty levels change over time.

Section 2 of this paper describes how insights from the economics of asset accumulation and poverty traps can be used with panel data on household living standards to identify asset dynamics and create forward-looking measures of chronic poverty. While subject to a number of methodologically challenges, this use of an asset-based approach to poverty provides insights into one of the most important questions about the nature of poverty. Finally, section 3 suggests ways in which insights from asset based approaches to poverty can be used as the foundation for the design of social protection policies that get and maintain families in asset positions from which they can be expected to accumulated and move ahead.

Section 1 Using Asset Stocks to Distinguish "Churning" from Structural Changes in Poverty

Longitudinal or panel living standards surveys that repeatedly interview the same respondent households over time offer important insights in comparison to consecutive cross-sectional surveys that interview different respondents with each survey. While both can types of surveys can tell us that, say, the aggregate poverty rate has held constant at 35%, panel surveys permit us to know whether it is the same 35% of the population that is persistently poor, or whether there is large movement into and out of poverty. Clearly a society where the same households are poor year after year would be very different, economically and politically, from a society with more mobility (see for example the study by Grooteart and Kanbur, 1995, as well as the various studies reported in the volume edited by Baulch and Hoddinott, 2001). In their recent overview paper on approaches to poverty, Carter and Barrett (2006) refer to such approaches as 'second generation poverty analysis.

While using panel data to characterize persistent versus transitory poverty is highly informative, it is subject to several limitations. First, as a number of authors have noted, data measurement error will lead to an overstatement of the amount of mobility and transitory poverty. In a recent paper, Paul Glewwe (2005) proposes a way to characterize the degree to which measurement error leads to an overstatement of mobility.

Without underplaying the significance of measurement error, there is a second difficulty with standard mobility analysis. As stressed by Carter and May (2001), this

second generation analysis does not distinguish between mobility that is driven by temporary shocks and set-backs (and recovery from these same things), and mobility that has a more structural foundation (*e.g.*, accumulation of new productive assets that predict a continuing non-poor standard of living into the future). Note that shocks, and recovery from them, are not the same thing as measurement error. A household in which a key earner is beset by a temporary illness could indeed slip into poverty when its expenditures (or income) are measured without error. A subsequent survey round could again accurately find that this household had transitioned to non-poor status. Transitions driven by these kinds of events are what Carter and May call "stochastic mobility." In contrast, Carter and May label as structural mobility instances where (accurately measured) changes in poverty status are driven by changes in asset holdings, or in the general set of prices that reflect the economic returns to assets.

Building on their 1999 work, Carter and May suggest that structural can be distinguished from stochastic mobility by making reference to the asset poverty line (APL). As illustrated in Figure 1, the APL is the level of assets (denoted $\underline{A}$ in Figure 1) that predicts a level of well-being equal to the poverty line, $\underline{u}$. In order to identify the APL, it is necessary to estimate the expected relationship between assets and income (the function $\hat{u}(A)$ in Figure 1, or what Carter and May call the livelihood mapping from asset stocks to expenditure flows).

While there are a number of challenges to estimating the APL, economic theory provides a number of very useful insights on the nature of the livelihood mapping. As discussed by Carter and May (1999), in the economist's mythical world of full and complete markets, the livelihood map will simply be linear in all dimensions. However,

as was long ago noted by Chayanov in his *Theory of Peasant Economy* (and has been subsequently amplified by models of multiple market imperfections[2]), missing markets adds curvature and non-linearities to the livelihood map. That is, more and less poor households will be able to make different use of their assets and effectively attain different returns to their factors of production. For example, the livelihood function will be flat—indicating low marginal returns—for poorer households without access the finance needed to adequately capitalize a production process. It will be steeper for wealthier households, or households with better access to financial markets. Estimation of the livelihood map, and identification of the APL, requires attention to these non-linearities.

For illustrative purposes, Figure 1 assumes that there is only one asset (so we can draw the picture easily) and that the non-linearities suggested by economic theory have been captured. Purely for expositional purposes, assume for the moment that the livelihood function does not change over time.[3] Then in any time period, a household is stochastically poor if it holds assets worth at least $\underline{A}$ yet its realized income or expenditure falls stochastically below $\underline{u}$. Conversely, the household is structurally poor if its stock of assets is less than $\underline{A}$ and its realized income or expenditure level falls, as expected, below $\underline{u}$.

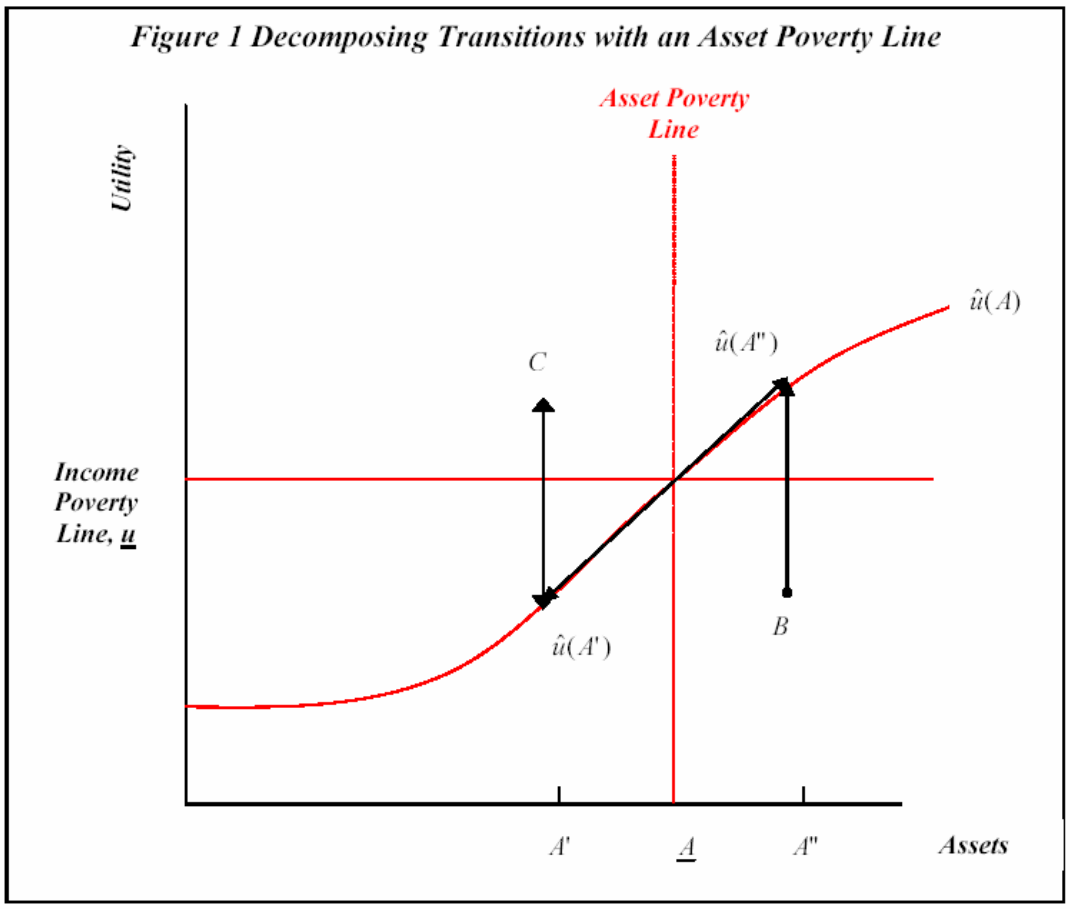
A household that moved over time from above to below the standard expenditure-based poverty line could be said to have made a stochastic transition back to its expected status if the household's assets still mapped into an expected standard of living below the

[2] See for example Eswaran and Kotwal (1986) and Carter and Zimmerman (2000) and Finan et al. (2005).
[3] In general, we would expect the livelihood function, and therefore the asset poverty line, to move as rates of return change due, for example, to price changes or to technological change that affects productivity. We address this possibility shortly, as illustrated by the dashed livelihood function, $\tilde{u}(A)$ in Figure 1.

poverty line. In Figure 1, this transition is illustrated as the movement from point C back to the point $\hat{u}(A')$. Alternatively, a household that moves from $\hat{u}(A'')$ to $\hat{u}(A')$ would have made a structural transition below the poverty line due to a loss of assets from A'' to A'. A similar decomposition can be made for households that are observed over time to move from below the standard poverty line.

This asset based approach thus opens the door to a much richer understanding of the nature of poverty and how and why it is changing over time.[4] Carter and May (2001), for example, estimate that less than half of the observed transitions out of poverty in South Africa over the 1993 to 1998 period are structural, as 60% of the households who made the transitions had initial period assets that strongly predicted well-being in excess of the standard poverty line. In terms of downward mobility, Carter and May find that only a small fraction (15%) clearly fell into poverty for stochastic reasons, while fully 51% of those who fell behind suffered asset losses that left them structurally poor in the latter survey period. While there is ample room for improvement in estimation and other methods needed to use the APL to decompose poverty transitions, it does illustrate the possibilities attached to asset-based approaches to poverty.

[4] As discussed in greater detail by Carter and May (2001), using the APL to decompose transitions requires attention to the fact that we only have (imprecise) estimates of household's level of well-being.



Source: Adopted from Carter and May (2001)

Section 2 Using Asset Dynamics to Measure Chronic Poverty

Asset-based approaches to poverty have the potential to contribute to our understanding of chronic poverty and poverty traps. Conventional quantitative poverty analysis invariably looks backwards to the most recent living standards survey to enumerate (the past) extent and nature of poverty. By construction, such approaches are ill-equipped to answer questions about the future persistence of observed poverty status: Are the observed poor chronically poor, or are they in a transitory status? Note that this

question applies even to those identified as structurally poor using an approach based on the APL.

Others have struggled with this question. One approach is empirical and relies on panel data. With numerous repeated observations of the same households, the chronically poor can be identified as those who have been 'frequently' poor in the observed past (for example see CPRC, 2005 and Hulme and Shepherd 2004). While this approach has much to recommend it, it is expensive and has an *ad hoc* element (how frequently must an individual be observed to be poor in order to be classified as chronically poor). It is also backward-looking.

This section summarizes new work that takes a rather different approach to the definition and measurement of chronic poverty (Carter and Barrett 2006). Using guidance from the increasingly sophisticated microeconomic theory of poverty traps, this work uses the past to identify structural patterns of change--asset dynamics--rather than past levels of poverty. The statistical identification of these patterns then permits the creation of forward-looking poverty measures that tell us about where we expect the poor to be in the future, not where they have been in the past. These new measures do not obviate the need for other approaches. Indeed, when combined with standard approaches they promise a more complete poverty diagnostic for a particular economy.

Building on the theoretical work of Buera (2005), Carter *et al.* (in progress) construct a dynamic model of asset accumulation when individuals are heterogeneous in the sense that they have distinct innate skills or abilities. Individuals have access to two livelihood strategies: a low potential and a high potential strategy. The low potential strategy can be run with very little accumulated capital assets, whereas the high potential

strategy requires a minimum level of capital before it is effective. Higher skill levels boost the returns to both strategies. The key question asked by the model is whether individuals who begin with low asset levels will be willing and able to accumulate assets over time so that they can eventually switch to the high potential strategy and reach a non-poor standard of living.

Analysis of this model shows that the answer to this question depends on the individual's ability level and how far they are from having the assets required to switch to the high return strategy. More precisely, the model shows that the structurally poor--even those who are observed to be frequently poor over a short term time horizon—are potentially of three types with distinct future prospects and possibilities:

1. *The Economically Disabled* are those of relatively low skill and possibilities who are inevitably trapped in a poor, low level equilibrium trap;
2. *The Multiple Equilibrium Poor* are a middle ability group that will move to the high potential strategy if they are not too far away from the needed minimum capital; otherwise they remain with the low potential strategy; and,
3. *The Upwardly Mobile* are those of relatively high ability who will always try to steadily accumulate the capital needed to switch strategies and are expected to surmount a poor standard of living given a sufficiently long period of time.

Figure 2, which was created through the numerical analysis of the dynamic model, illustrates these three classes. Along the horizontal axis are skill levels, ranging from least to most able. The vertical axis measures the stock of productive assets. The dashed line labeled $\hat{k}(\alpha)$ denotes the asset levels needed to switch to the high potential strategy. The key question of the model, then, is whether individuals located below $\hat{k}(\alpha)$ will be willing to sacrifice consumption over time, accumulating assets until they crossover $\hat{k}(\alpha)$ and can adopt the high potential livelihood strategy. The individual's choice is

further complicated by risk, meaning that there is no guarantee that consumption sacrifice will payoff as negative shocks can destroy accumulated assets.

Analysis of this choice problem identifies the solid curve, $\tilde{k}(\alpha)$, shown in Figure 2. An individual who begins life with an skill-asset combination right on curve is just indifferent between staying with the low potential strategy and trying to build up stocks of assets such that a transition to the high potential strategy eventually becomes feasible. An individual *i* with initial assets in excess of that amount ($k_0 > \tilde{k}(\alpha_i)$) will attempt to accumulate and move out of poverty. Otherwise, she will only pursue the low technology, accumulating the modest levels of capital that it requires. Note that this frontier is a generalization of what Carter and Barrett (2006) call the Micawber Threshold as it divides those who have the wealth needed to accumulate from those who do not.[5] We will label $\tilde{k}(\alpha)$ as the Micawber Frontier (MF).

As Figure 2 shows, high skill individuals with $\alpha > \alpha_2$ will always move toward the high equilibrium as $\tilde{k}(\alpha) = 0 \; for \; all \; \alpha > \alpha_2$, even if they find themselves with a zero stock of initial assets. These are the *Upwardly Mobile*, perhaps poor over some extended period as they move toward their steady state value, but eventually non-poor. In contrast, those with ability below the critical level α_1 will never move toward the high potential livelihood strategy. These are the *Economically Disabled* individuals who suffer a fundamental disability and lack the ability to achieve a non-poor standard of living in

[5] As discussed by Carter and Barrett, the phrase Micawber Threshold was first used by Michael Lipton, and was then subsequently adopted by Zimmerman and Carter (2003) who give it a meaning similar to that used here.

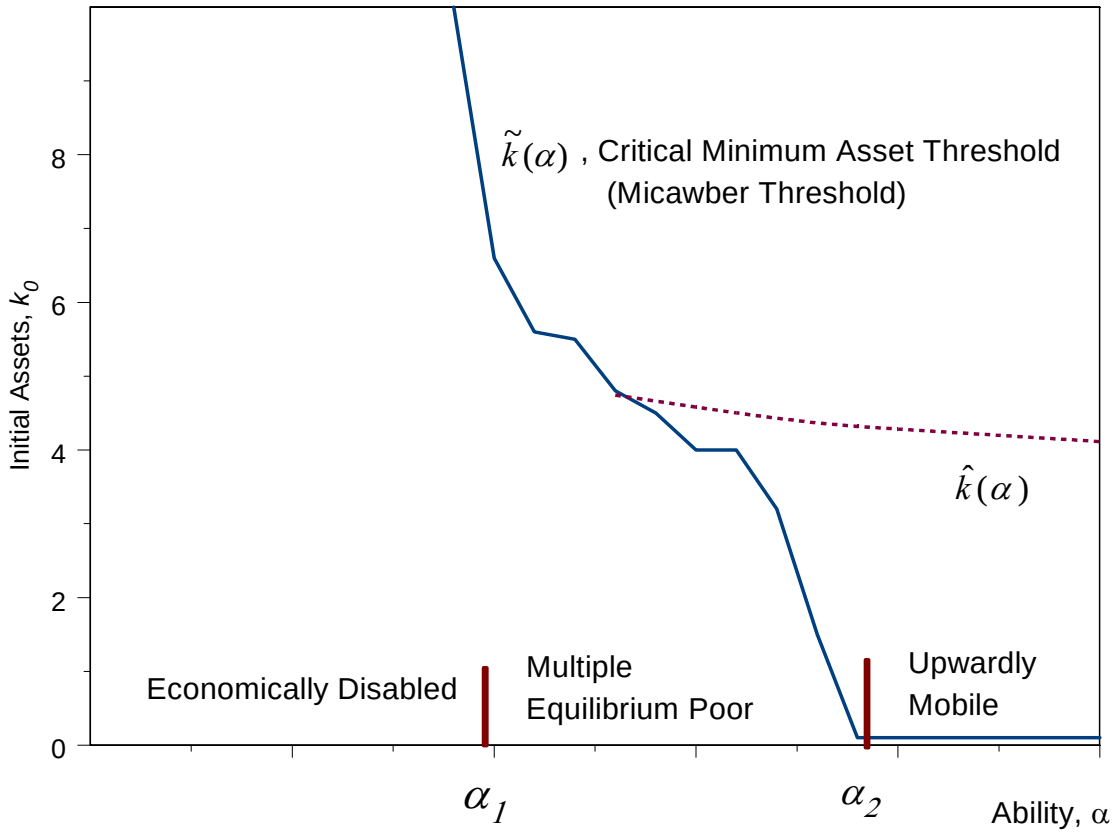
their existing economic context (CPRC, 2004 gives examples of individuals who suffer such fundamental disabilities).

Finally, and most interestingly, the intermediate group with skills between α_1 and α_2 have positive but finite values $\tilde{k}(\alpha)$. If sufficiently well-endowed with initial assets ($k_0 > \tilde{k}(\alpha_i)$), these individuals—the *Multiple Equilibrium Poor*—will accumulate additional assets over time, and eventually adopt the high potential strategy technology and reach a non-poor standard of living. If they begin with assets below $\tilde{k}(\alpha_i)$, these individuals will no longer find the high equilibrium attainable and will settle into a low standard of living. Like the Economically Disabled, this subset of the Multiple Equilibrium Poor will be chronically poor.

This theoretical perspective on asset accumulation suggests that an asset based approach can potentially be used to decompose the poor into those who are expected to escape poverty and those who are not. However, practically this first requires estimation of the MT. Under the strong assumption that $\tilde{k}(\alpha)$ is the same for everyone, several recent studies have used panel data to estimate patterns of asset dynamics and thereby identify the MT (Barrett *et al.*, 2006 and Adato *et al*., 2006). With this threshold empirically identified, the analyst can count up the number of people who are below the threshold, giving a forward-looking headcount of the chronically poor. As discussed by Carter and Barrett (2006), a fuller suite of poverty measures can also be constructed based on the distance between individuals' asset positions and the MT. In conjunction with the standard poverty measures, and the measures based on the asset poverty line discussed earlier, which describe conditions in the recent past and the near future, respectively, measures offer a longer-term perspective on the likely evolution of well-

being, and thereby flesh out the dynamics of well-being at the lower tail of the wealth distribution.

Figure 2: The Micawber Threshold and Asset Accumulation



Source: Carter *et al.* (in progress)

Section 3 Using Asset Thresholds to Design Social Protection Policy

While the prior two sections have suggested that asset-based approaches can generate new insights on the nature and persistence of poverty, this section explores the idea that these same approaches can be used to design and structure anti-poverty policy interventions.

The theory outlined in the prior section has two very powerful implications for individuals in the middle skill category:

1. Individuals below the MT will need a discrete asset transfer to lift them to a position from which they have a feasible accumulation strategy to eventually reach a non-poor standard of living. Barrett refers to these transfers as "cargo net" policies.

2. Individuals who are above the MT, but are in danger falling below it because of random shocks, can be assisted by a productive safety net that keeps from falling below the critical threshold.

The social returns to both cargo and safety nets are potentially quite high as they put and keep individuals in positions where they can help themselves. Failure to do so can mean an ever-increasing number of chronically poor people. To the extent that these individuals become claimants on conventional forms of relief and disaster assistance, a failure to design proper policies to keep individuals out of poverty traps can itself place aid and public expenditures into a relief trap in which ever larger budget shares are soaked up such assistance. Carter *et al.* (in progress) using simulation analysis of the model outline in Section 2 to illustrate the high returns to modest investment in productive safety nets. While illustrating the potential of an asset-based approach, much still needs to be done to move these ideas to the stage of policy implementation.

Section 4 Conclusion

This paper has laid out an ambitious agenda for asset-based approaches to poverty. While a number of studies have used asset indicators to provide a richer characterization of the poor, this paper has concentrated on approaches that use asset information in conjunction with insights from economic theory to decompose poverty into its stochastic versus structural components in the short term and its transitory versus chronic components in the long-term. Each of these approaches can be used to create new classes of poverty measure, which in conjunction with conventional flow-based poverty measure promise a fuller characterization of an economy, its income distribution

and for whom it is working. Finally, these same analytical devices that can be used to create more complete poverty measures offer themselves as key components for the design of durable and cost-effective anti-poverty policy.

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