

Poverty Traps and Social Protection

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Introduction

- ① Multiple equilibrium poverty traps command attention:
 - Moral urgency of chronic poverty
 - 'Unnecessary' deprivation; foregone potential
 - Economically costly
- ② Implications of poverty traps for social protection policies?
- ③ Explore this question with dynamic programming model of agents with heterogeneous ability
 - Not all agents are subject to poverty traps
 - Ex ante risk & ex post shocks especially pernicious, increasing unnecessary poverty
- ④ Conduct policy simulations:
 - Unanticipated relief programs: Needs- vs. threshold-based
 - Systematic (anticipated) social protection: Harnessing dynamic moral hazard

Key Elements of Model

- 1 Heterogeneity in skills & abilities (α_i) that is unrelated to risk aversion
- 2 Fixed costs barriers to moving ahead

$$f(\alpha_i, k_{it}) = \begin{cases} f_L(\alpha_i, k_{it}) = \alpha_i k_{it}^{\gamma_L} & \text{under the low technology} \\ f_H(\alpha_i, k_{it}) = \alpha_i k_{it}^{\gamma_H} - E & \text{under the high technology} \end{cases}$$

- 3 Borrowing constraints (autarchic accumulation if move ahead)

$$c_t + i_t \leq f(\alpha_i, k_{it}),$$

- 4 Negative asset shocks, but no insurance (formal or informal)

$$k_{it+1} = \theta_t [i_t + (1 - \delta)k_{it}],$$

Dynamic Choice Problem

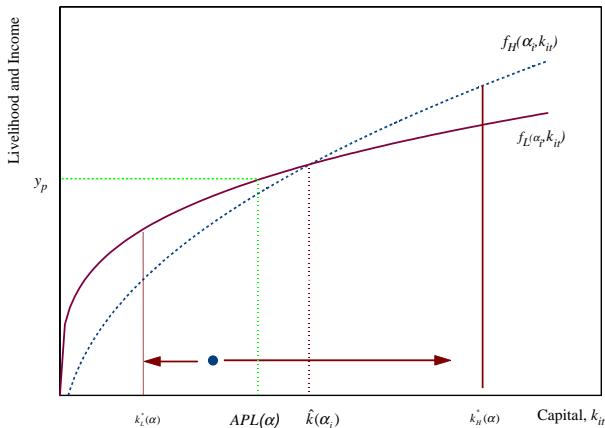
$$\max E_t \sum_{t=\tau}^{\infty} \beta^{t-1} u(c_t)$$

$$\text{s.t. } c_t + i_t \leq f(\alpha_i, k_{it})$$

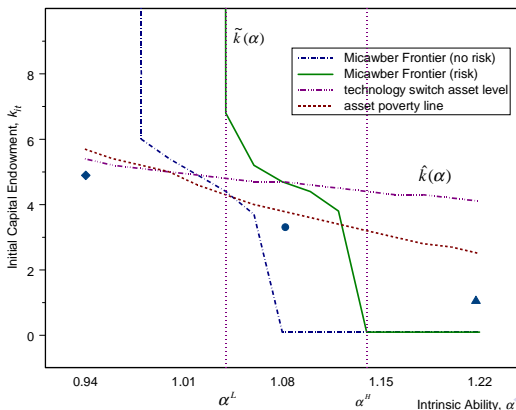
$$k_{it+1} = \theta_t [i_t + (1 - \delta)k_{it}]$$

k_{it} given

Is There a Minimum Asset Threshold?



The Micawber Frontier & the Dimensions of Chronic Poverty



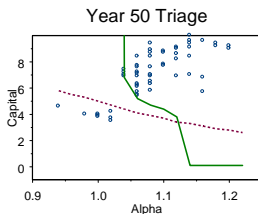
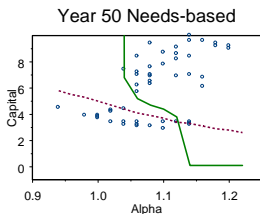
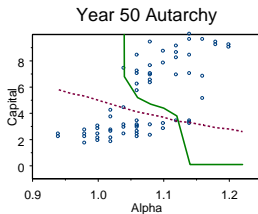
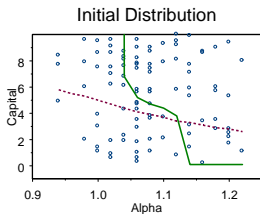
Risk and Shocks

- 1 Ex-post effects of realized shocks
 - Costly for all; irreversible effects for middle ability group
- 2 Ex-ante effects of risk (anticipation of shocks)
 - “sense of insecurity, of potential harm people must feel wary of—something bad can happen and ‘spell ruin,’” [Calvo and Dercon]
 - Isolate effect on Micawber Frontier (previous figure)
 - Effects again pronounced for middle ability group
- 3 Risk & shocks can thus increase unnecessary deprivation;
- 4 This motivates search for social protection strategies
 - Prevent growth in unnecessary deprivation
 - Exploit the centrality of risk through productive social insurance (crowd-in private accumulation)

A Stylized Economy for Exploring Social Protection & Poverty Traps

- 1 A number of challenges to the design of social protection in the presence of poverty traps
- 2 Establish a stylized economy that we can use to study these issues
 - Comprised of 100 individuals who behave according to model of dynamic choice
 - All shocks idiosyncratic
 - Random (experimental!) initial distribution
- 3 Let's examine evolution of this stylized economy in the absence of social protection

Evolution of Stylized Economy Absent Social Protection



Characterizing Economic Evolution

- Unique feature of multiple equilibrium poverty traps is that they create unnecessary deprivation
- Standard poverty measures offer lens for seeing deprivation:

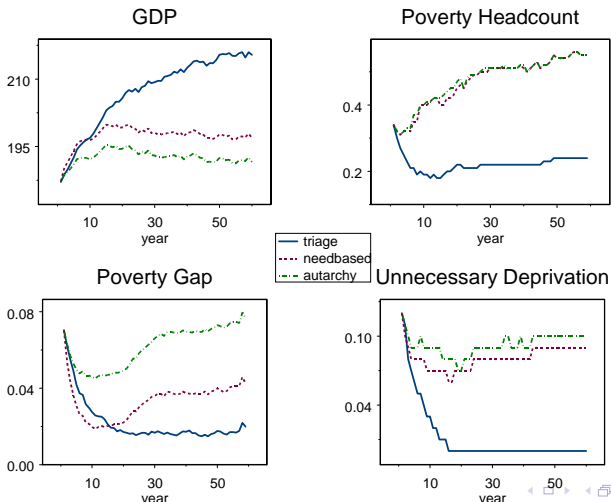
$$P_{\gamma}^y = \frac{1}{n} \sum_{y_i < y_p} \left(\frac{y_p - y_i}{y_p} \right)^{\gamma}$$

- Alternative, consider the more focused measure based on 'unnecessary deprivation gap:'

$$D^y = \frac{1}{n} \sum_{y_i < y_p \ \& \ y_i < f(\alpha_i, k_H^*(\alpha_i))} \left(\frac{f(\alpha_i, k_H^*(\alpha_i)) - y_i}{f(\alpha_i, k_H^*(\alpha_i))} \right)$$

- Will also look at evolution of GDP as another window into unnecessary deprivation (and its economic costs)
- Chronic poverty measures would also be informative

Evolution of Unnecessary Deprivation



Unanticipated and Anticipated Social Protection

We will consider two general types of social protection:

- 1 Unanticipated Social Relief
- 2 Anticipated, Systematic Social Protection

Needs-based Targeting

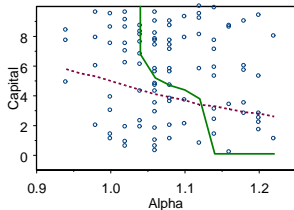
- 1 After each production cycle, the government calculates the total poverty shortfall for the economy, $S = \sum_{y_i < y_p} (y_p - y_i)$.
- 2 If the available budget, B , exceeds the shortfall ($\frac{B}{S} > 1$), then all poor individuals are given transfers to increase their income to the level of the poverty line.
- 3 If $\frac{B}{S} < 1$, then each poor individual is given transfers that move them to an income level equal to $\frac{B}{S} y_p$.
- 4 This targeting methods makes the largest transfers to the least well-off.

Threshold Targeted Relief

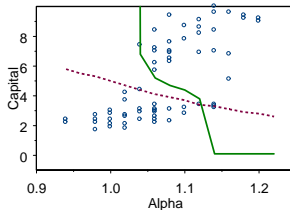
- 1 The budget, B , is first allocated to individuals pushed below the Micawber Frontier. Denote these transfers as *productive safety net*, or *PSN* transfers. If the budget is insufficient, then funds are first allocated to those closest to the Micawber Frontier so as to minimize the increase in the headcount of needless poverty.
- 2 If $B > PSN$, then mid-ability individuals already below the Micawber Frontier are given *cargo net*, or *CN* transfers that lift them over the Micawber Frontier. If $CN > B - PSN$, then the budget is again used to help those closest to the Micawber Frontier.
- 3 If $B > PSN + CN$, then the residual budget is allocated according to the needs-based formulation discussed above.

Asset Evolution under Alternative Relief Policies

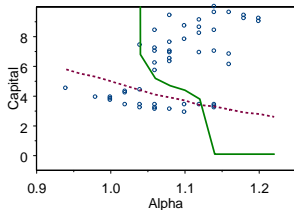
Initial Distribution



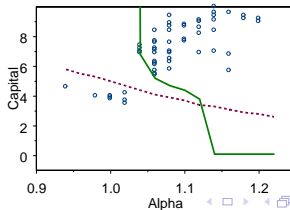
Year 50 Autarchy



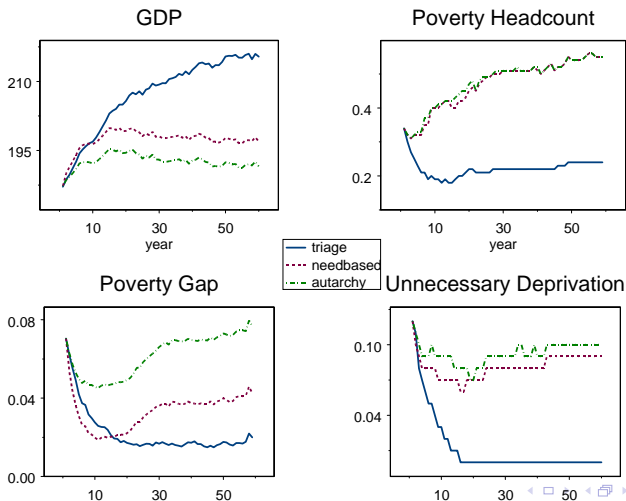
Year 50 Needs-based



Year 50 Triage

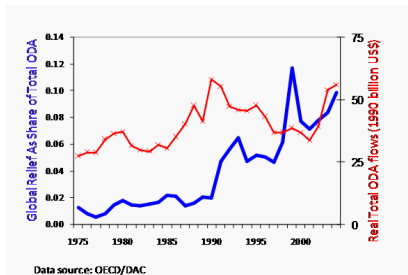


Deprivation under Alternative Relief Policies



Aid Traps under Needs-based Relief

The paradox of pro-poor targeting of limited relief budgets:



- Initially favorable for the poorest
- But as non-poor suffer shocks and collapse into poverty, increases competition for transfers
- Relief budgets then must grow, individual transfers shrink, or both.
- Poor can be worse off longer-term

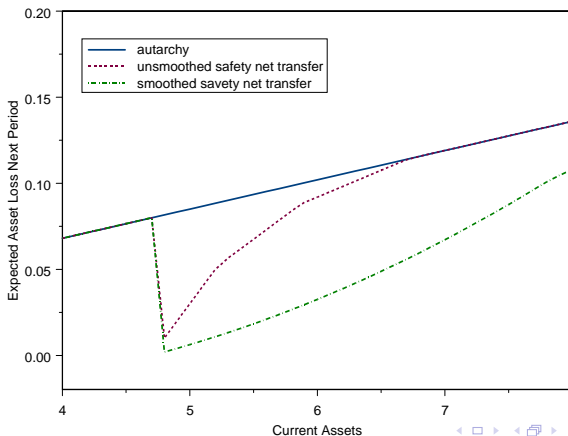
Moral Hazard: Negative and Positive

- 1 Previous analysis treated agents as myopic. But surely there will be a behavioral response (moral hazard):
 - *Positive Moral Hazard*: reverse the effect of ex ante risk by encouraging accumulation of risky assets. Social protection can crowd in asset accumulation and technology adoption.
 - *Negative Moral Hazard*: Safety net transfers conditional on pre- and post-shock asset stocks change the marginal incentives to invest, inducing some to accumulate fewer assets than they otherwise would.
- 2 The balance between these effects depends on the design of the safety net instrument. The key is the effective marginal tax rate on asset accumulation.

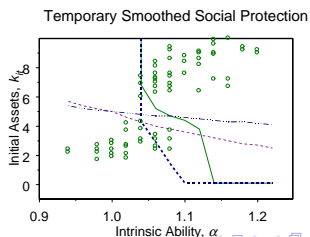
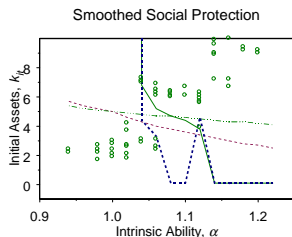
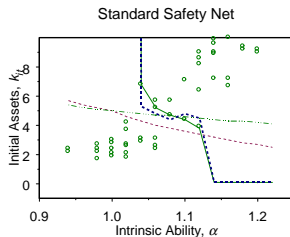
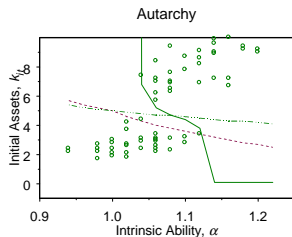
Smoothed Safety Net to Reduce Negative Moral Hazard

- 1 By modifying the safety net so that (i) the transfer scheme is “smoothed”, and perhaps (ii) temporary, the negative moral hazard can be attenuated or even eliminated in the longer-run.
- 2 The aim of “smoothing” is to lower the marginal tax rate on investment above the safety net threshold. Do this by creating a variable transfer to a point that varies from the post-shock wealth to the pre-shock holdings.

Smoothed Safety Net to Reduce Negative Moral Hazard



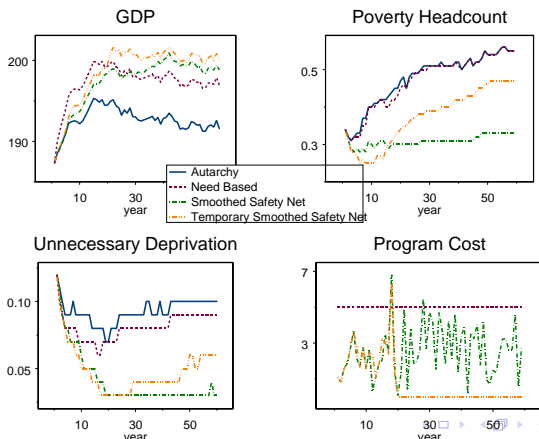
Asset Evolution under Smoothed Safety Nets



Sunset Clause helps even more

- 1 Smoothing can largely eliminate the negative moral hazard effect.
- 2 A sunset clause maximizes the positive moral hazard effects while the policy is active, expanding the basin of accumulation and escape from needless poverty.

By virtually any criterion smoothed safety nets outperform autarchy or needs-based relief policies. NPV cost of (temporary) smoothed safety net is only 46%(29%) of the needs-based transfers.



Conclusions

- 1 In a poverty trap economy, social protection can have quite high payoffs.
- 2 In the absence of any social relief or protection, much unnecessary poverty emerges because of weak initial endowments, bad luck, or both.
- 3 In this setting, conventional needs-based relief can give rise to aid traps over time.
- 4 Policies based on productive safety nets can largely eliminate needless poverty and boost growth, even allowing for moral hazard.
- 5 There remains a trade-off among the poor and over time, but different safety net designs can dampen this.

Looking Forward

- Potentially large returns to developing and using knowledge about critical asset thresholds to target assistance in poverty trap economies.
- Identifying Micawber Frontiers and careful evaluation of related policy experiments.

Thank you very much for your time, attention and
comments!!