Asset Protection and Disaster Risk Financing to Improve Shock-responsive Social Protection in Latin America and the Caribbean[1]

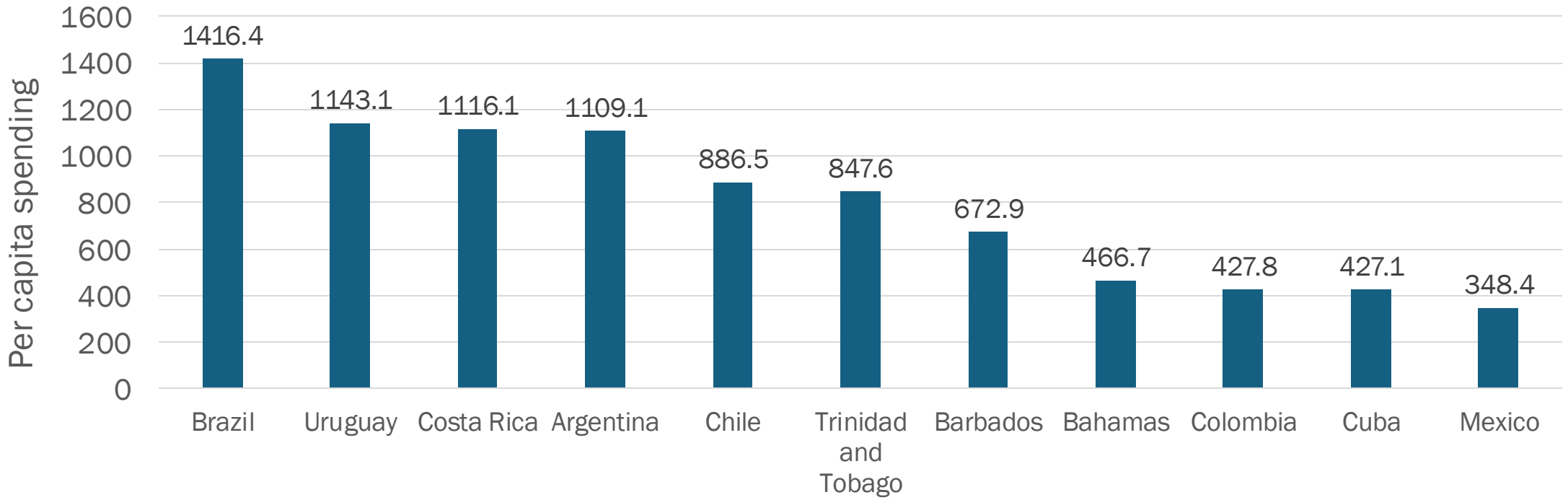
Marcos M. Sugastti, *University of California-Davis*

Michael R. Carter, *University of California-Davis*

February 2024

[1] This is a background paper for the *Regional Study on Climate and Poverty in Latin America and the Caribbean,* supported by the Climate Support facility Whole-of-Economy Program, administered by the World Bank

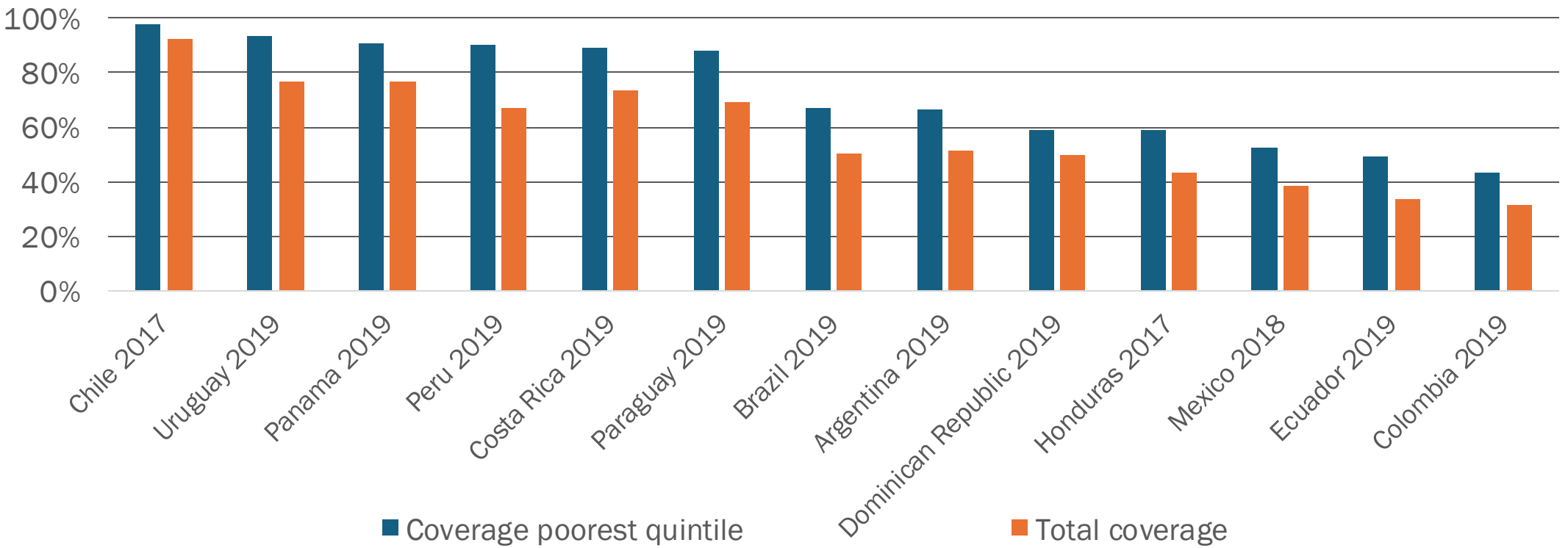
Status of Social Protection in LAC: Spending



Per capita spending on social protection by select countries in Latin America and the Caribbean ($USD)

Source: Isik-Dikmelic (2022)

Status of Social Protection in LAC: Coverage



Coverage of social protection program by select countries in LAC

Source: World Bank (2023) and ASPIRE (Atlas of Social Protection Indicators of Resilience and Equity)

The Challenge of Climate Change and Social Protection in LAC

- Climate-related shocks will worsen with climate change
  - Among all global regions, LAC ranks as the second-most susceptible to climate-induced disasters (Bagolle *et al.*, 2023)
- Climate-related shocks disproportionately affect poor countries and people in various ways, either through natural disasters or long-term trends (Hallegatte *et al.*, 2016)
  - Poor people are more vulnerable to spikes in food prices and fluctuations in food consumption
  - Setbacks in the agricultural sector can drive vulnerable individuals into poverty
  - Poor people are particularly susceptible to diseases and health issues that climate change is likely to exacerbate
  - Poor people are more exposed to and often more vulnerable to natural hazards, partly due to the quality and type of assets they own

Exposure to Climate Risk via Assets

- Poor people are more exposed to and often more vulnerable to natural hazards, partly due to the quality and type of assets they own
  - Local land markets often drive poorer people to settle in riskier yet more affordable areas (Daniel, Florax, and Rietveld, 2009)
  - At times, poor people may choose to settle in high-risk areas due to the availability of economic opportunities, public services, or direct amenities like cheaper transportation or higher agricultural productivity resulting from regular floods (Hallegatte *et al.*, 2016)
  - In relative terms, after a natural disaster, poor people lose more of their income and assets than their wealthier counterparts—the poor often hold assets that are vulnerable to natural hazards instead of saving at financial institutions and the overall quality of their assets is usually lower than average (Hallegatte *et al.*, 2020)

Social Protection in LAC: Income Maintenance versus Income Subsidization

- In LAC, the poorest and most vulnerable households often lack access to social safety net programs that protect households from the impacts of shocks
  - The livelihoods of households in the lowest quintile of the income distribution (Q1) are traditionally based on informal work, self-employment, or petty entrepreneurship
  - Approximately half of the employed population in LAC is informal (World Bank, 2023)
- Q1 households are rarely eligible for income maintenance programs such as wage subsidies or unemployment insurance, which protect basic levels of consumption, particularly in times of adversity (Costella *et al.*, 2023)
  - Instead, they mostly receive income subsidization programs that aim to reduce poverty and improve living standards by facilitating investments in human and productive capital, regardless of whether a shock happens
  - Common examples are conditional cash transfers and asset-building programs

Cash Transfers versus Asset-building Programs

- Overall, CCTs are much more prevalent in the region than asset-building economic inclusion programs
- CCTs can be inadequate in dealing with structural poverty more broadly and specifically with climate-related shocks
- A newer generation programs aim to tackle structural poverty more directly, but there are few in the region and they have limited coverage
- For instance, in Paraguay:
  - Tekopora (traditional CCT): started in 2005, covered 180.000 households in 2022
  - Tenondera (economic inclusion or “graduation” program which combines a seed capital grant for purchasing assets and training in business and like skills): started in 2014, covered 9.000 households in 2022

Making Current Social Protection Efforts More Shock-responsive

- There has been some progress toward making cash transfer schemes shock-responsive (Beazley *et al.*, 2019)
  - Ecuador after 2016 earthquake: piggybacking on their Ministry for Economic and Social Inclusion
  - El Salvador after 2018 drought: vertical and horizontal expansion of an existing voucher, shadow alignment of a WFP cash response
  - Dominica, Mexico, Peru in 2017: vertical and horizontal expansion
- But effective social protection for this population must extend beyond scalable cash payments and offer customizable asset protection schemes tailored to individual asset exposure
  - Increased exposure to shocks represents an opportunity to go beyond only protecting people's assets and incentivize further investment in them

Challenges of Scalable/Shock-responsive Social Protection

- Regardless of the form of scalable social protection, scaling itself creates a contingent liability for the government
  - In principle, government could leverage parametric disaster risk financing instruments of the sort already present in the region to meet this contingent liability and provide predictable, reliable, and customizable support to the target population
  - Country assessments by the World Bank (2023) on the adaptiveness of social protection systems in the region deemed finance to be the weakest building block of such systems.
  - Marcos will come back in a moment and offer our thoughts on optimal reliance on parametric disaster risk financing
- First, however, let's focus on how to make making asset-building programs shock-responsive and consider the economics of why this can be good public policy

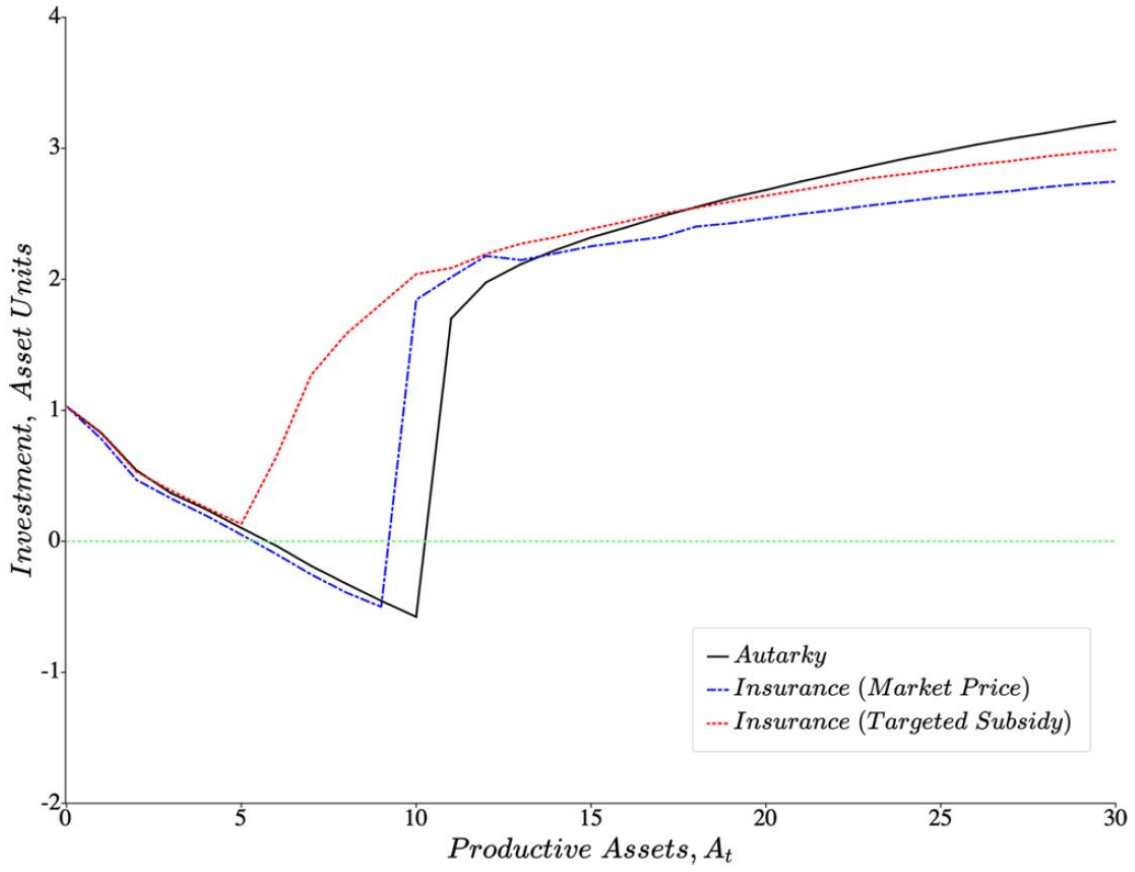
The Poorest Quintile as Active Economic Agents, not Just as Passive Recipients

- As Marcos mentioned, the poorest quintile in Latin America have livelihoods built around small-scale entrepreneurship, which puts them beyond the reach of standard income maintenance programs, which are directed at wage earners
- To motivate our thinking, consider a story from the early days of Peru's Seguro Agrario Catastrófico (SAC):
  - SAC functions as a parametric or index-based scalable income subsidy program
  - Targeted at poor regions and all farmers who met some loose means test received a standard payment when the index triggered
  - In 2013, then Minister of Agriculture Milton von Hesse commented that the single payment under the SAC undercut incentives for farmers to invest, since the farmer who took more chances by investing more in her farm would receive the same blanket payment as those who did not invest
- Treating poor farmers as active agents (investors) opens the door to thinking about Milton's logic and ultimately the public finance case for making social protection both
  - *Scalable*, meaning shock-responsive
  - *Customizable*, meaning it can be adjusted to levels of investment and risk exposure

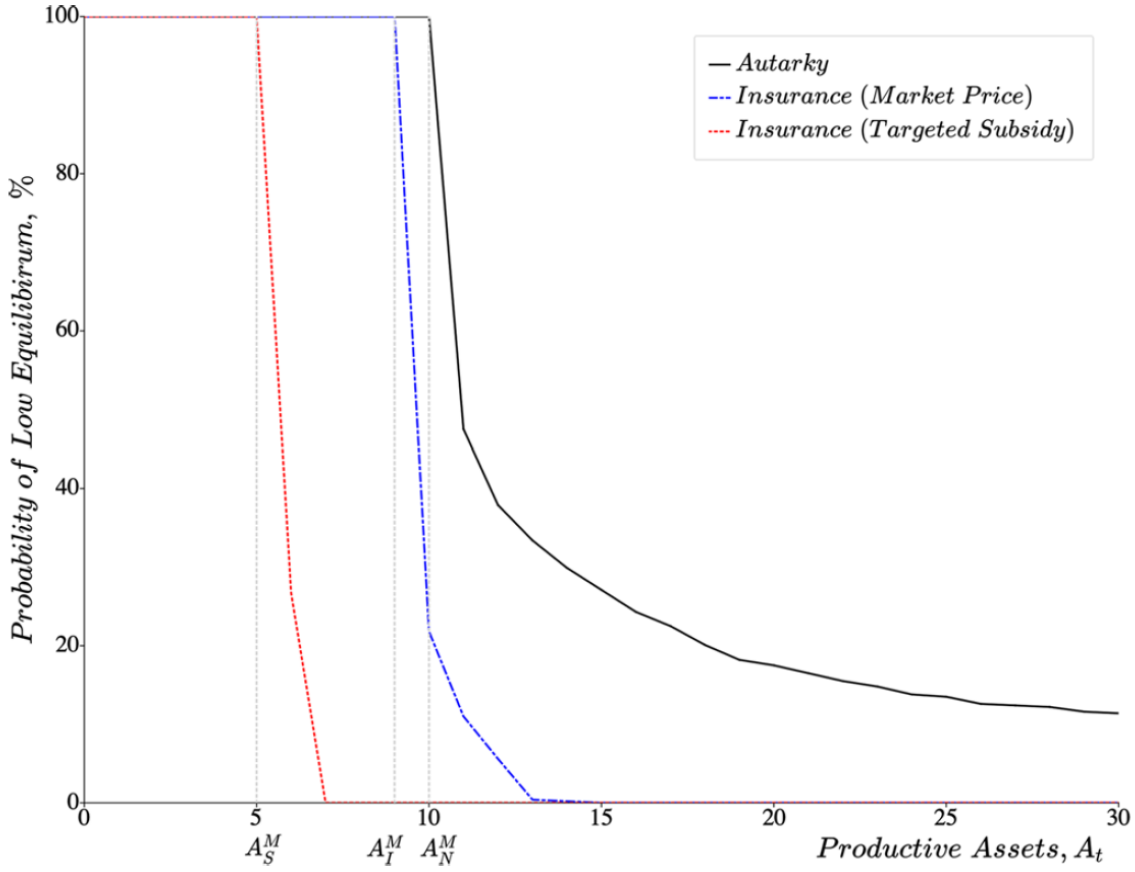
The Dynamics of Social Protection when the Poor & Vulnerable are Small-scale Entrepreneurs

- Draw here on dynamic optimization analysis of Janzen *et al.* (2021) who consider optimal investment by small-scale entrepreneurs who face liquidity constraints & face substantial environmental risk
- In the base case, they consider the public finance implications of a standard scalable social protection scheme that *reacts* to shocks by transferring income to those hit by the shock (raising them up to a consumption poverty line).
- In contrast, they show how a (publicly subsidized) index insurance scheme can be used to make social protection not only scalable but also customizable
- Under alternative scenarios, show that this scheme reduces the extent and depth of poverty in the long-term and reduces the present value of total government social protection spending relative to the standard scalable social protection case (6-18% depending on the scenario)
- The benefits of this augmented scheme stem from:
  - Vulnerability Reduction Effect
  - Investment Incentive Effect
  - Budget Stretching Effect (when insurance subsidy is partial)

The Poor & Vulnerable as Small-scale Entrepreneurs (why scalable & customizable social protection works)

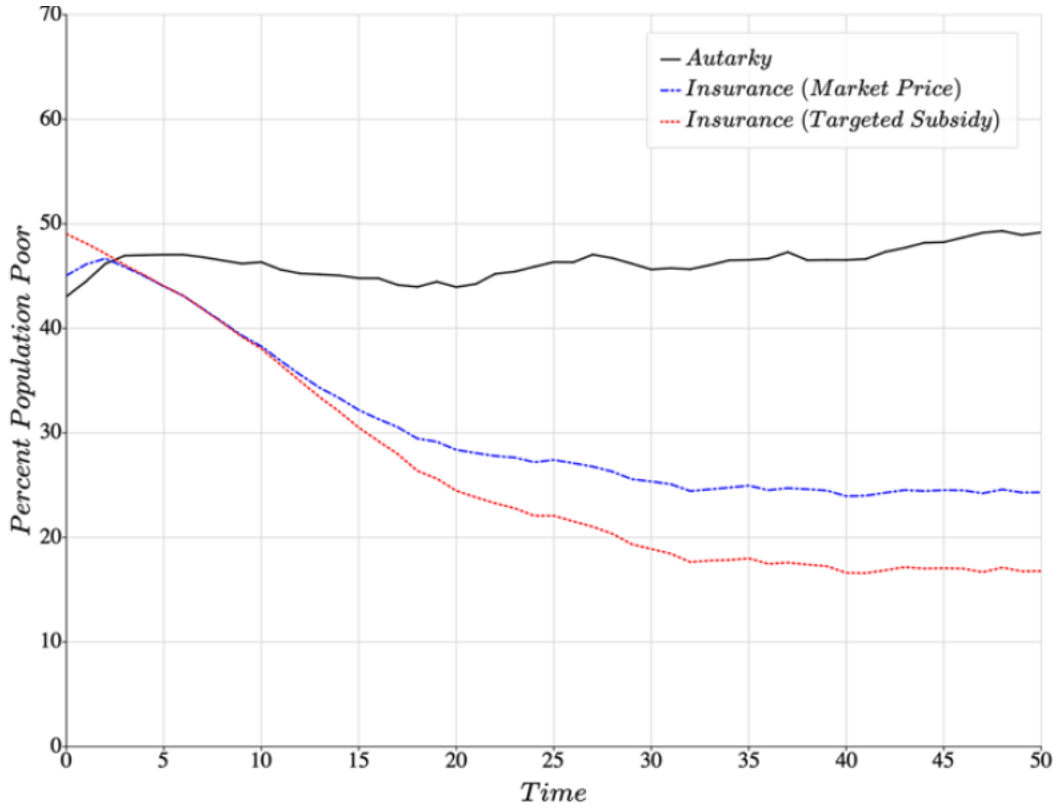


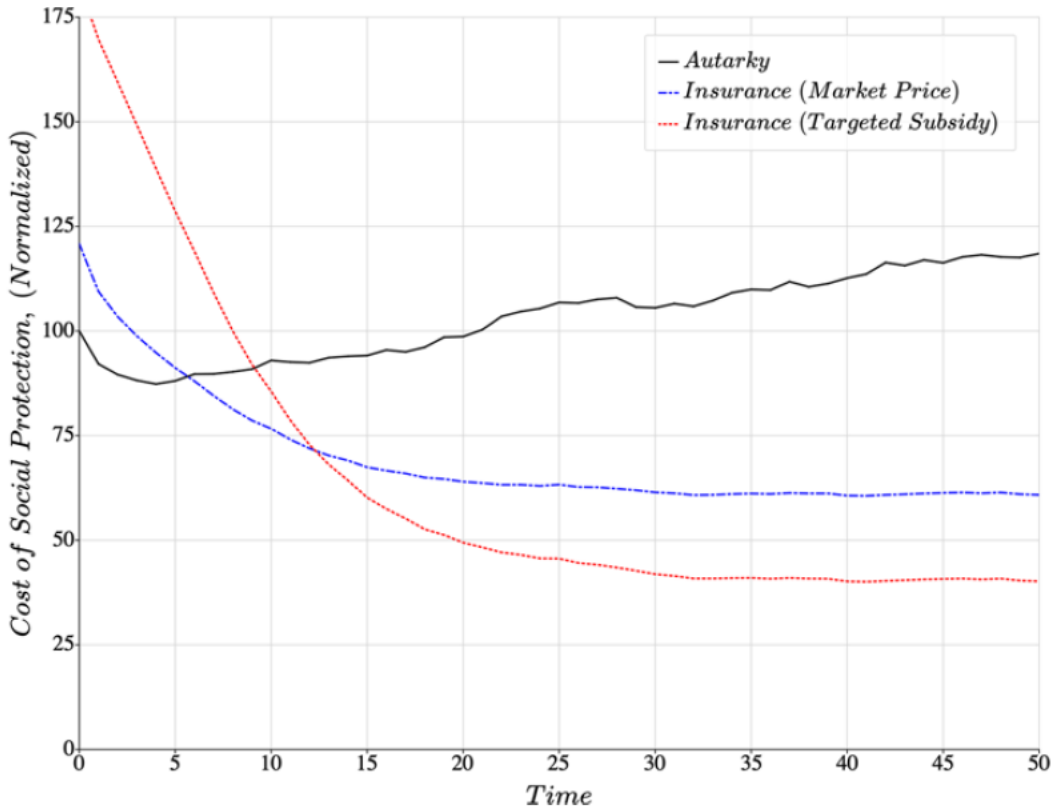
Optimal Investment Policy Function



Probability of Chronic Poverty

Poverty Dynamics & the Cost of Social Protection





The Economics of Scalable & Customizable Social Protection

- In summary, it seems that the Peruvian Ag Minister von Hesse was on to something important in terms of the economic benefits of making shock-responsive social protection customizable for poor populations that exercise entrepreneurial livelihoods
- While there has been work on both sovereign parametric insurance and individual index insurance, there is an opportunity to combine these two types of insurance into a single product.
- While we would be happy to discuss more, let's return to fundamental questions about reliance on parametric products to underwrite contingent public social protection liabilities, irrespective of the precise form of the scalable social protection scheme

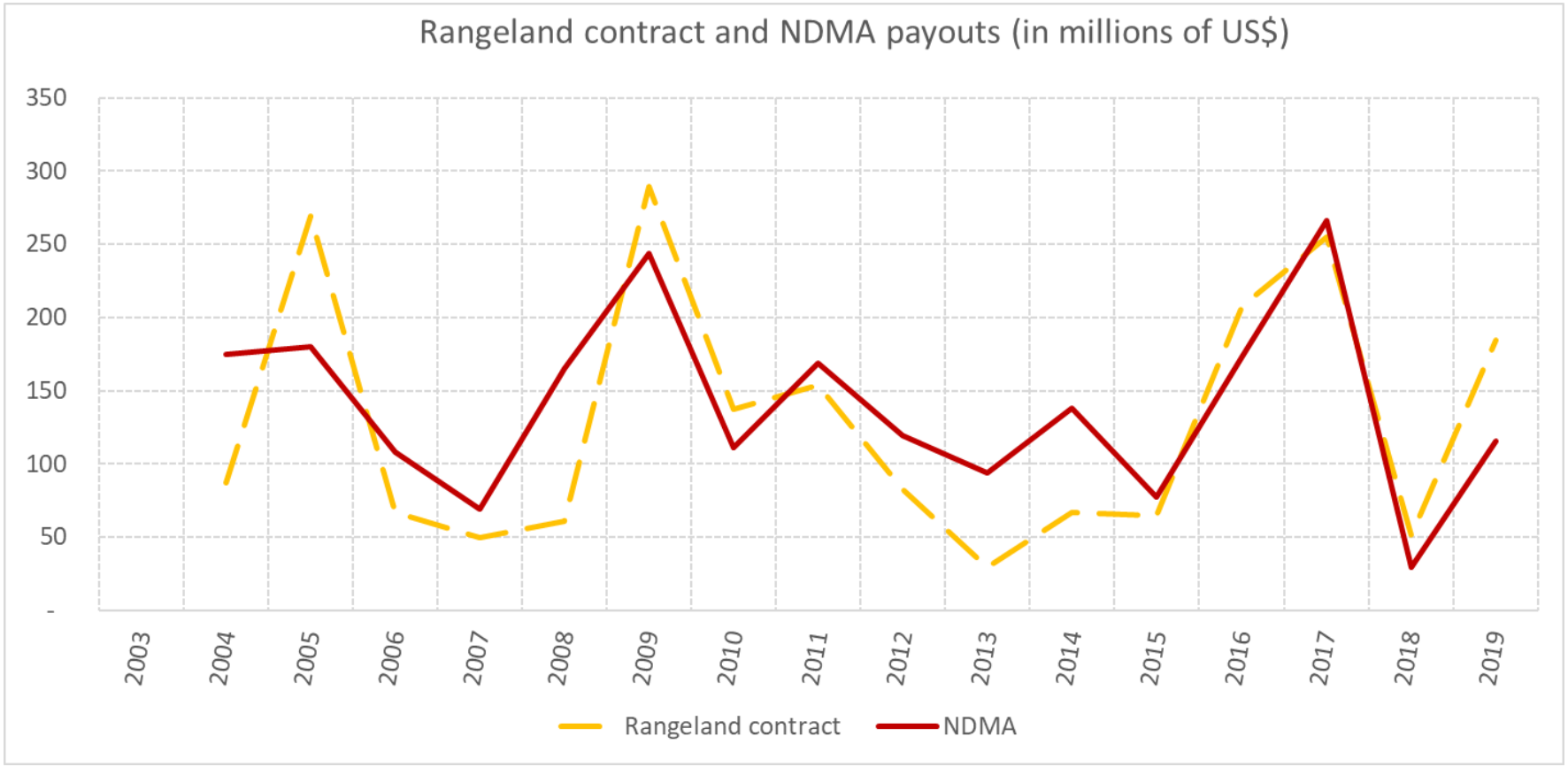
Financing Shock-responsive Social Protection

- Various disaster risk financing instruments (DRF) available
  - Budgetary tools: contingency or reserve funds
  - Contingent credit
  - Market-based risk-transfer solutions: insurance
- The potential advantages of linking DRF instruments with social protection systems are mutual (Solórzano and Goode, 2023)
- Recommendation is to combine different instruments using a risk-layering approach (Clarke *et al.*, 2017)
  - Consider the fixed and opportunity costs of the various instruments, then use each instrument until exhausted before engaging the next one
  - But the presence of basis risk (systematic patterns of failure of parametric insurance products) could complicate the optimal strategy

Optimal Choice of Financing Mechanism under Basis Risk

- The government's goal of alleviating poverty for its citizens in the aftermath of a shock can be framed in two different ways from a public finance perspective (Carter and Sugastti, 2024)
- Minimizing the cost of fully meeting the contingent social protection obligation
  - Government must mobilize any funds necessary to close the poverty gap completely for all its citizens
- Maximizing the social welfare benefits of alleviating poverty within a fixed social protection budget
  - Likely more realistic framework considering potential constraints in access to financing
- We consider both scenarios using historical drought data from Kenya between 2004 and 2019
  - Three different possible levels of basis risk (low, medium, high)

Example: Basis Risk under Sovereign Parametric Insurance Contract

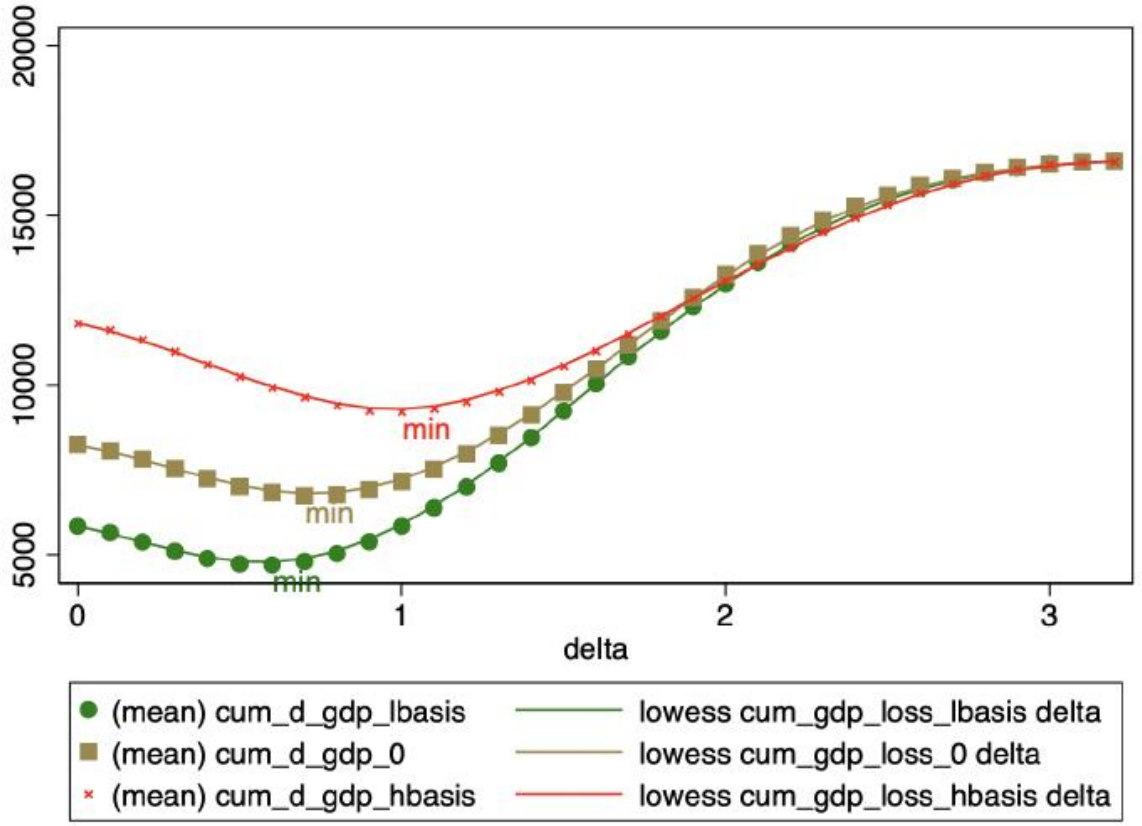


Source: Carter and Sugastti (2024)

Minimizing the Cost of Fully Meeting the Contingent Social Protection Obligation

- Insurance can mitigate costs by preventing the government from having to divert or mobilize substantial funds when drought or other events drive up spending
- Pursuing an insurance contract is worthwhile if it delivers full social protection at a lower economic cost relative to not purchasing insurance
  - The optimal contract will be the one that fulfills the social protection obligation at the lowest possible cost
- The government covers the social protection need using three instruments: ex ante budget allocation (reserve fund), insurance, and emergency ex post budget reallocation
  - Initially, the government uses money from a reserve fund fed by a fixed endowment
  - As a second layer of financing, the government purchases an insurance contract with a deductible $\delta \geq 0$ ($\delta = 0$ signifies full coverage of the social protection need, and as δ grows, the indemnity payout covers less and less of the estimated need
  - The third layer of financing comes in the form of emergency ex post budget reallocation, for which we assume the government can use funds from its public investment budget
- We measure the economic cost of implementing these policies in terms of expected GDP loss
  - Government chooses an insurance contract based on the δ that minimizes GDP loss

Minimizing the Cost of Fully Meeting the Social Protection Obligation



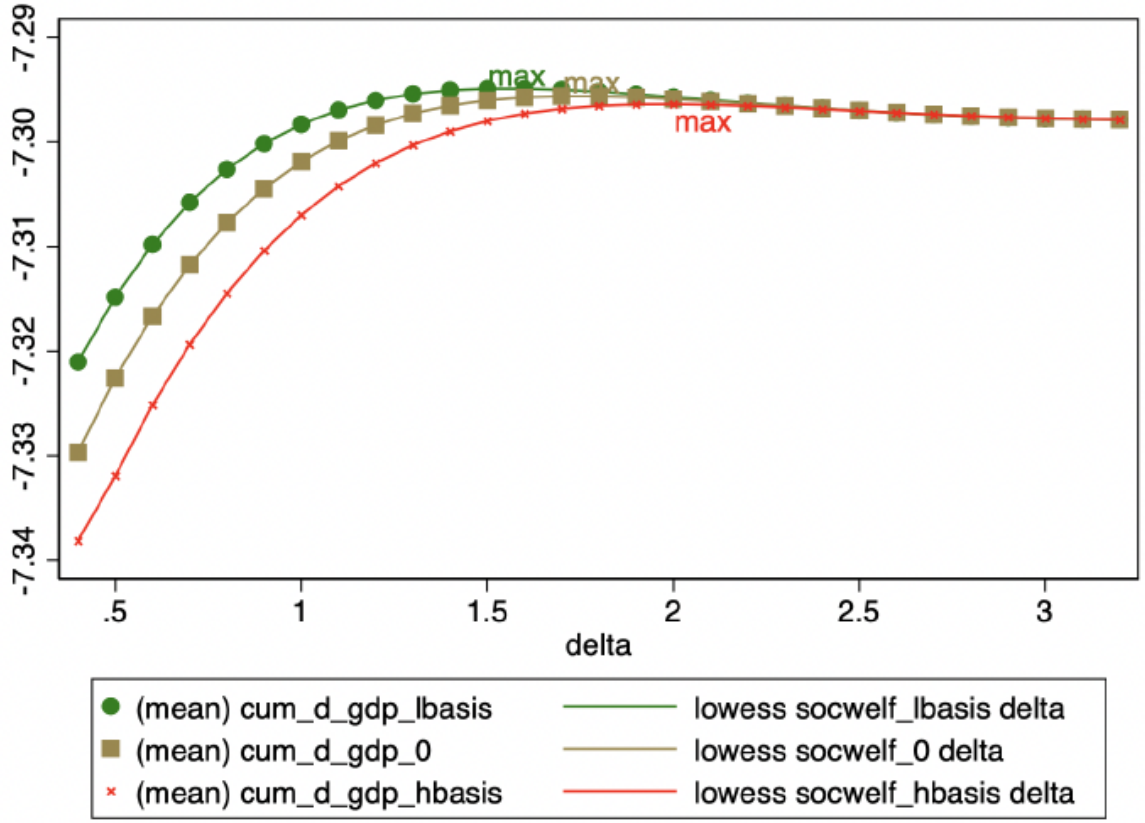
Cumulative expected GDP loss as a function of the insurance contract deductible

Source: Carter and Sugastti (2024)

Maximizing Social Welfare within a Fixed Social Protection Budget

- The government lacks the flexibility to expand its budget when the number of poor people increases due to stochastic factors
  - In particular, it might not get to cover the entirety of the social protection need in each period
- An index insurance contract passes the quality standard if offers higher social welfare than a no insurance, pay-as-you-go policy with the same total budget
  - Index insurance may or may not improve government performance, depending on its pattern of failure
  - The optimal contract will be the one that yields the most social welfare given said budget
- The government covers the social protection need using two instruments on which it wholly spends its fixed social protection budget: ex ante budget allocation (reserve fund) and insurance
  - Choice of the deductible δ (as defined above) fully determines the size of the reserve fund
- Performance is assessed using a social welfare function, defined as the sum of utilities of the target population of vulnerable people
  - Government chooses an insurance contract based on the δ that maximizes social welfare

Maximizing Social Welfare within a Fixed Social Protection Budget



Social welfare as a function of the insurance contract deductible

Source: Carter and Sugastti (2024)

Implications of Basis Risk

- In both scenarios, well-functioning insurance provides value compared to a government strategy of self-financing
  - Optimal government strategy for covering post-disaster needs varies depending on the quality of the contract
  - This result offers a cautionary perspective on the conventional logic about the important role that parametric insurance products can play as a form of stochastic government support

Implementation Mechanisms

- There seems to be promise in combining a macro-level shock-response risk-transfer system with the option for individuals to customize the assistance they receive via micro-level insurance top-ups
  - With a sovereign index insurance product, the government can guarantee a minimum level of protection against shocks to poor and vulnerable households
  - The government also finances some of the fixed costs of private firms, enabling them to offer private contracts at the micro level, which can be partly subsidized with public funds
  - Private top-ups would help households reach their preferred level of coverage according to their own assets and needs
  - Recent experience of World Food Programme in Nicaragua (Gonçalves *et al.*, 2023)

Final Remarks

- Making social protection programs shock-responsive requires recognizing low-income households as active economic actors who need to build and protect the assets that are key to their livelihood and resilience
  - Effective social protection for this population must extend beyond scalable cash payments and offer customizable asset protection schemes tailored to individual asset exposure
  - Payoffs to such schemes could be substantial in terms of improved asset accumulation incentives and long-term poverty reduction and resilience
  - These schemes could leverage parametric disaster risk financing instruments of the sort already present in the region to provide predictable, reliable, and customizable support to the target population
- Parametric or index insurance products can play an important role in underwriting scalable social protection obligations of governments
  - The degree of reliance on these products depends critically on the reliability of the underlying parametric index

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