

How Much Can Asset Portfolios of Rural Households Benefit from Formal Financial Services?

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How do you answer this question?

We construct stylised household asset portfolios that are stratified based on source of income (primary and secondary).

A large, hollow, orange-outlined arrow pointing downwards, connecting the first box to the second.

Using Modern Portfolio Theory (MPT), we then compare the performance of the stylised portfolios over time with the performance of a hypothetical portfolio that offers these households access to a suite of financial instruments.

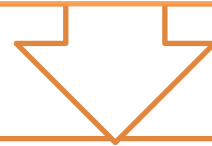
A large, hollow, orange-outlined arrow pointing downwards, connecting the second box to the third.

Finally, we quantify the financial gain to five stylised occupational categories from a limited suite of seven financial assets.

Agenda

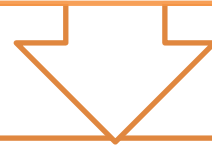
Background

Motivation and review of existing literature



Section 1

What is the extant composition of asset portfolios of rural households?



Section 2

How much can these asset portfolios benefit from the introduction of financial assets

Motivation

Households face long but finite planning horizons

Household asset portfolios are typically composed of non-tradeable and illiquid assets such as housing and human capital

Households often face significant constraints on borrowing

Review of Literature

There are discrepancies between ideal and observed financial behaviour of households

Investment in housing crowds out investment in financial assets

Household asset portfolios are diverse, simple, and predominantly invested in low-risk assets

Households actively manage their asset portfolios, even in the absence of access to formal financial markets

Section 1

Extant Asset Portfolios

Dataset

1,43,632
customers

201 branches

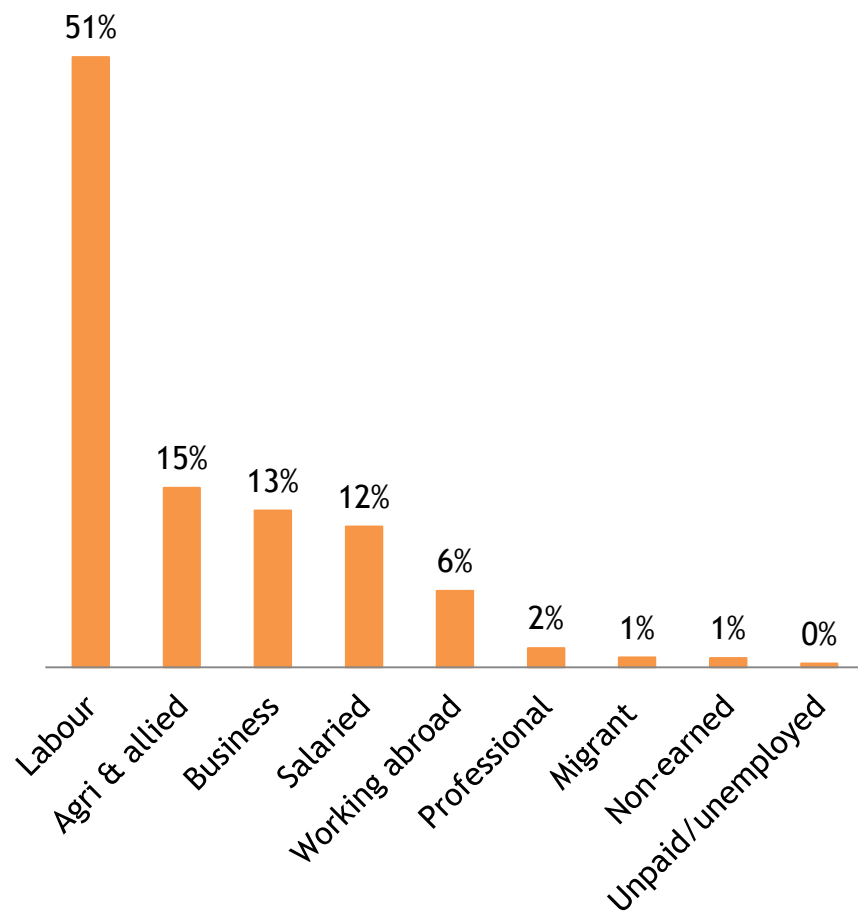
5 districts
in Tamil Nadu,
Uttarakhand, and
Odisha

Stylised Asset Portfolios

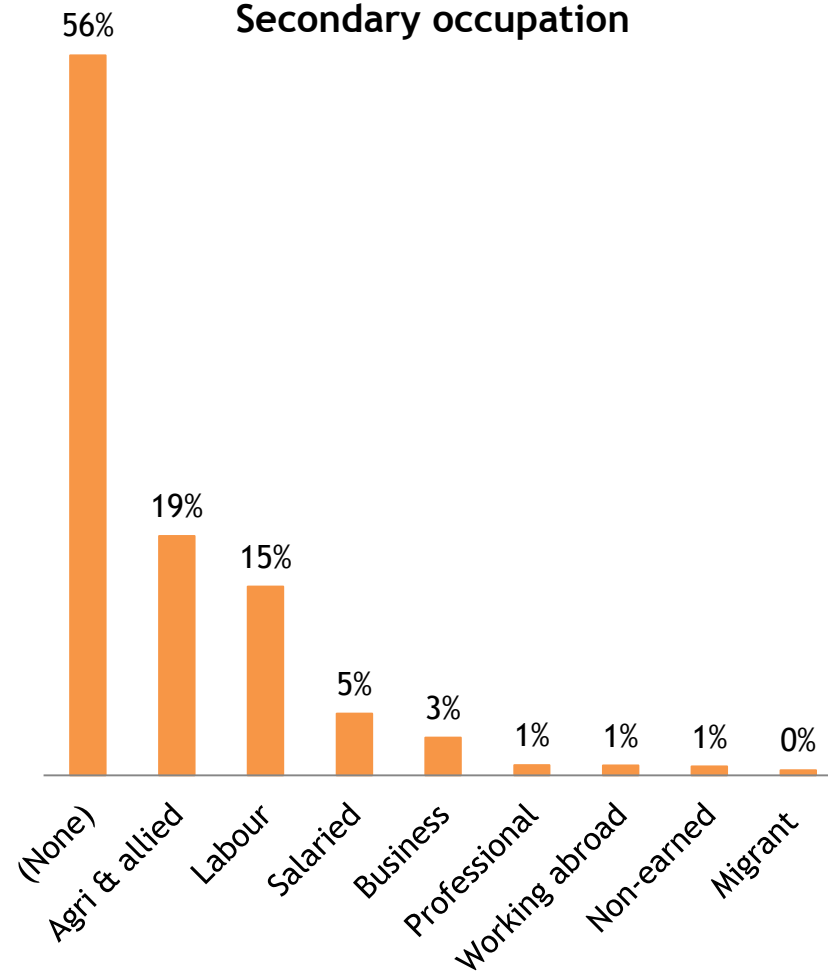
Asset Category	Median Value (in INR)	Percentage of Total Assets
Electronics	7,000	3%
House	99,000	49%
Vehicle	1,250	0.6%
<i>Consumption assets (total)</i>	107,250	53%
Agricultural equipment	500	0.25%
Investment	-	0%
Jewellery	88,320	44%
Land	-	0%
Livestock	4,500	2%
Shop	-	0%
<i>Investment assets (total)</i>	93,320	46%
All assets (total)	200,570	100%

Occupational Classification

Primary occupation



Secondary occupation



Household Typologies



Portfolio Risk-Return on Physical Assets: Estimation Methodology

Land

Rs. 14,535 output per acre of a basket of 44 crops for 17 states in India

Income per acre is 20-35% of the value of the output

Source of risk - 1% deviation from mean historical rainfall leads to a 1% decline in output

Drought or Flood event - If rainfall varies in excess of one standard deviation above or below mean rainfall

Hold for a 50-year period

Portfolio Risk-Return on Physical Assets: Estimation Methodology

Livestock

Revenue streams- Milk, Manure & Calf

Costs- Purchase price, Fodder, Medical expenses & Insemination

Purchase price of the cow- Rs. 20,000 (Ongole breed)

Assumed life expectancy- 10 years

Sources of risk - (1) Morbidity (incidence of foot and mouth disease; (2) Mortality (death of the animal during its 10-year lifetime)

Mortality and morbidity rates- Primary research conducted by Bangar et al. (2013)

Risk-Returns of Physical Assets

	Jewellery (Gold)	Land	Livestock
Annual Returns	14.64%	2.35%	10.26%
Standard Deviation	18.70%	0.21%	17.86%

Portfolio Risk-Return on Physical Assets



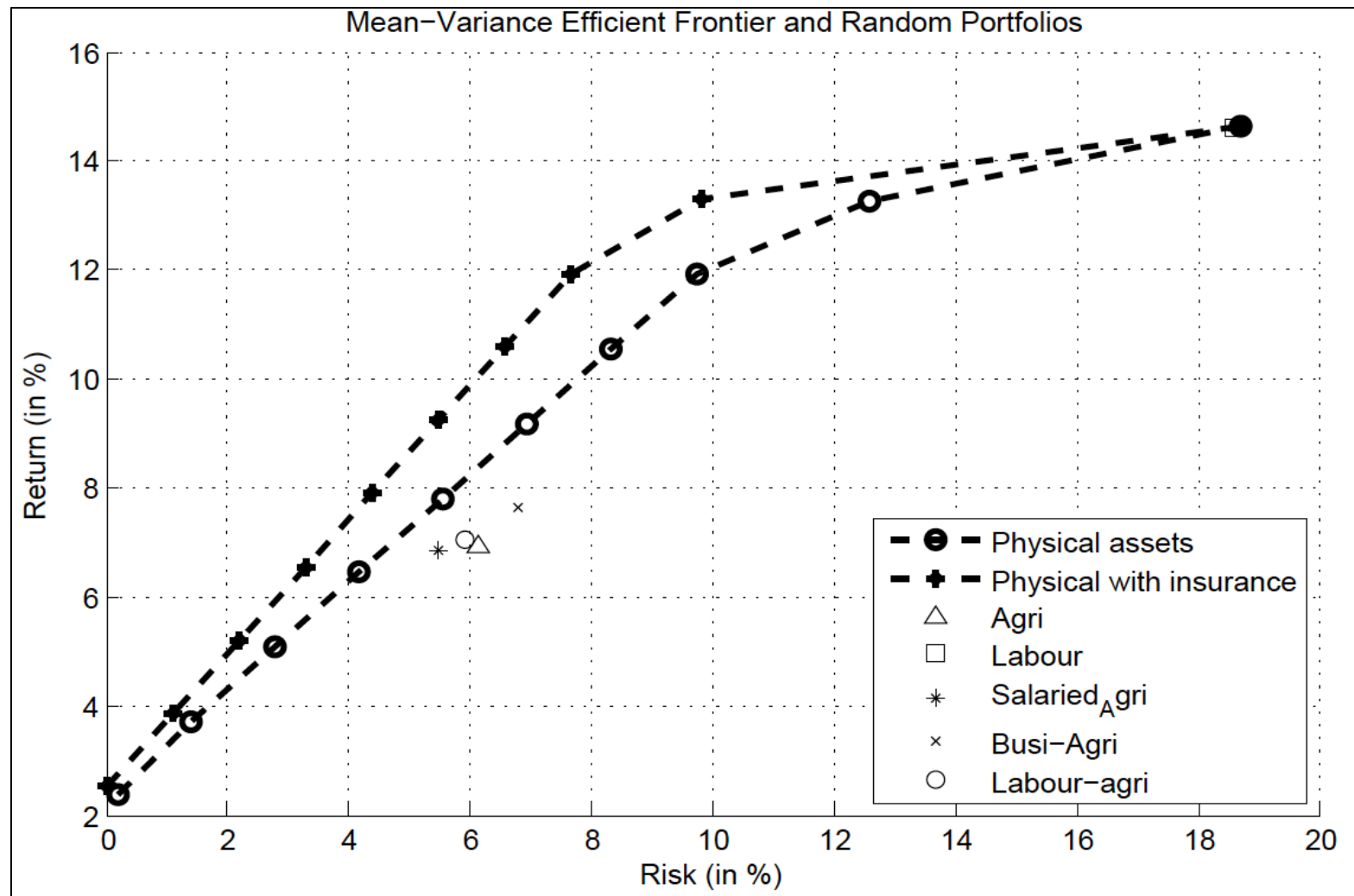
Section 3

Introduction of Financial Assets

Risk-Return of Physical Assets (with insurance)

	Land	Livestock
Annual Returns	2.52%	12.06%
<i>Change in Returns</i>	<i>0.17%</i>	<i>1.80%</i>
Standard Deviation	0.00%	9.12%
<i>Change in Risk</i>	<i>-0.21%</i>	<i>-8.74%</i>

Portfolio Risk-Return (with insurance)



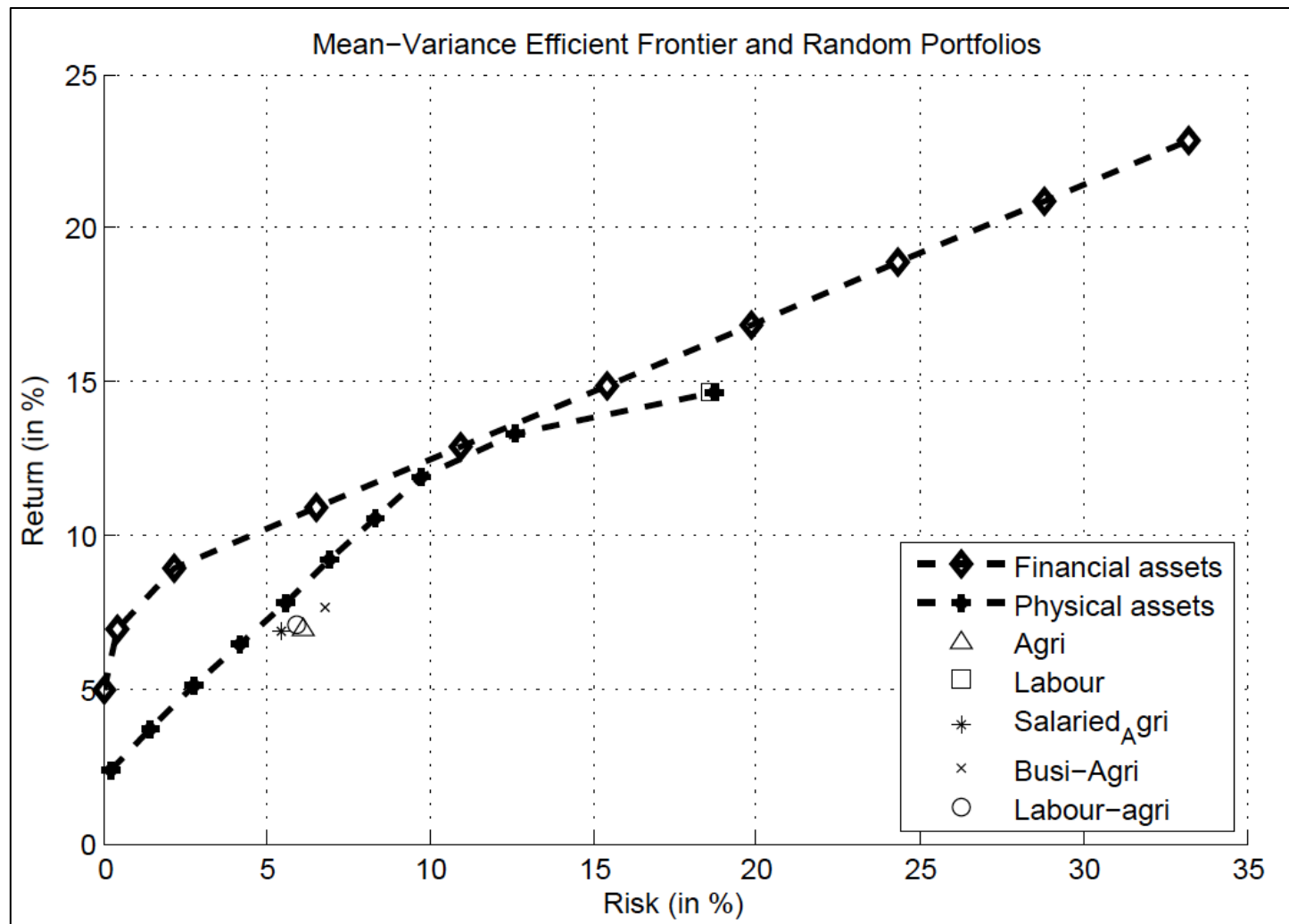
Suite of Replacement Financial Assets

	Return	Risk
BSE Top 100	22.82%	33.24%
Equity-ETF	20.77%	30.43%
Savings Bank Account	5.00%	0.00%
G-Sec (3 year)	7.17%	0.98%
G-Sec (9 year)	7.61%	0.79%
G-Sec (15 year)	7.97%	0.70%

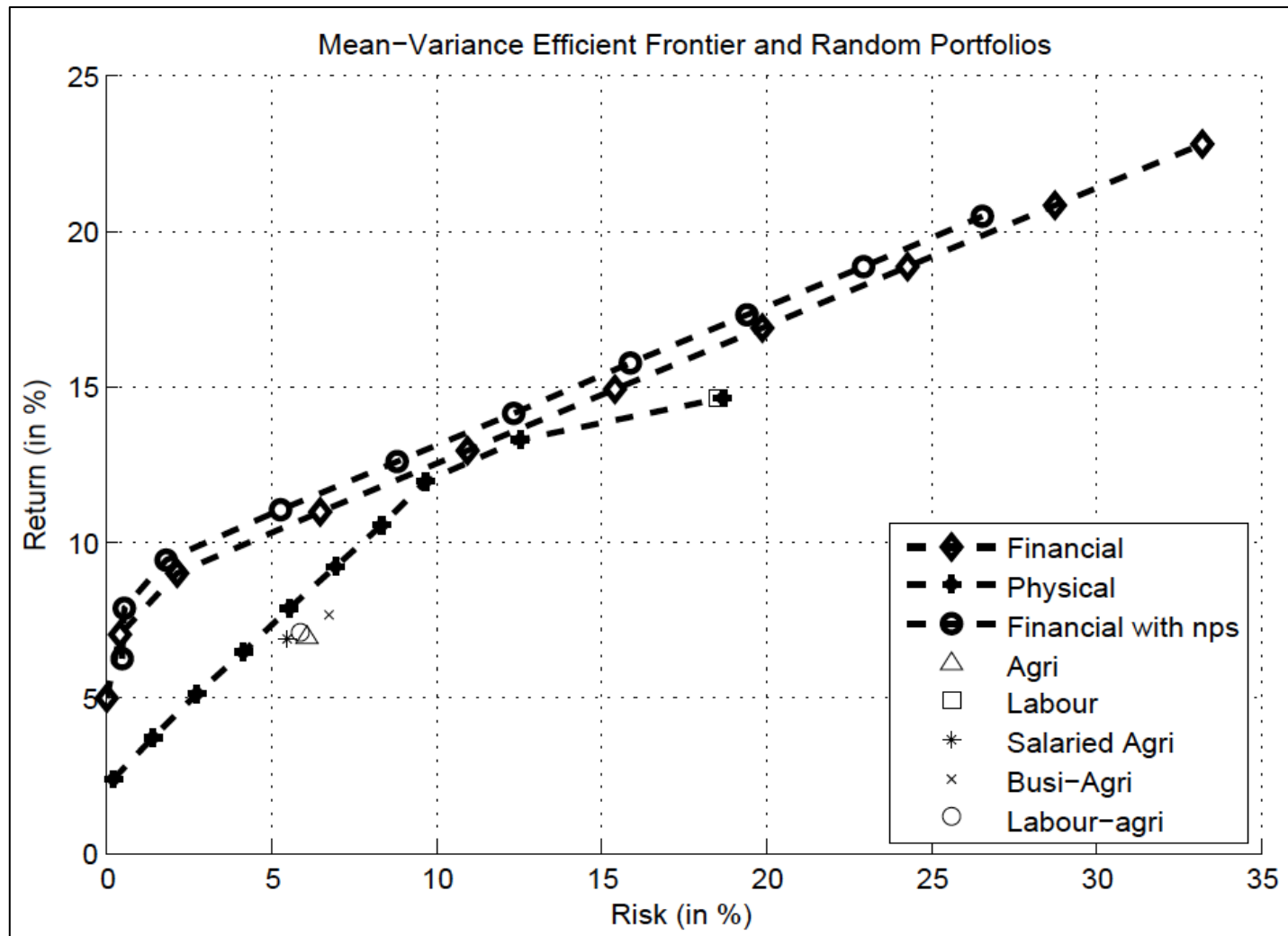
Effect of Replacement Financial Assets

	Agriculture- Only	Labour- Only	Salaried- Agriculture	Business- Agriculture	Labour- Agriculture
Nominal Returns on Portfolio of Physical Assets	6.93%	14.62%	6.86%	7.64%	7.07%
Real Returns on Portfolio of Physical Assets	-1.11%	6.58%	-1.18%	-0.40%	-0.97%
Real Returns on Portfolio of Financial Assets	2.50%	8.60%	2.01%	3.05%	2.34%
<i>Change in Returns</i>	<i>3.61%</i>	<i>2.02%</i>	<i>3.19%</i>	<i>3.45%</i>	<i>3.31%</i>
Standard Deviation	6.13%	18.60%	5.48%	6.79%	5.92%

Efficiency Frontier: Replacement Financial Assets



Efficiency Frontier: Replacement Financial Assets with NPS



Policy Implications

Products

- Mutual Funds
- National Pension Scheme - Swavalamban (NPS-S)

Distribution Channels

- Banking designs
- Economies of scope
- KYC norms
- Small-ticket transactions
- Universal bank accounts

Conclusion

Modern finance is a central pillar of civilised society, and for society to fully realise its promise, finance “has to be expanded, democratized and humanized...by giving people the ability to participate in the financial system as equals.”

- Robert J. Shiller, *Finance and the Good Society*