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Elucidating the Invisible: Financial Assets in the Real Asset Dominated Wealth-holdings of Indian Households (1991-2013)

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Abstract

Indian households, even in urban areas, show an aversion to financial assets, such as shares, debentures, deposits, insurance, and others, in favor of real assets, including land, buildings, and bullion. This paper assesses factors that influence Indian households to hold financial assets. Using repeated cross-sectional data from the latest three rounds of the National Sample Survey Organization's Debt and Investment survey, we use logistic regression to investigate the household's choice to hold financial assets. The study finds that households with higher proportions of wealth invested in land and buildings are less likely to own financial assets, while households with more wealth in gold and ornaments, more education, salary earners in the family, and higher than average land prices have a greater tendency to hold financial assets. The results of the study can be helpful in understanding the relationship between financial asset and physical asset holdings in Indian context.

Keywords: household wealth, financial assets, real estate, bullion, India

JEL Codes: G5; G11; G51

1. Introduction

"Thanks to its love for real estate investments, India is in a curious position of having more houses than it has households."

The Making of India: Gamechanging Transitions (Tilotia, 2015)

The Indian economy appears to have its fundamentals right, with its young population and corresponding low dependency ratio, healthy savings and investment rates, and increasing integration into the global economy. Crucial to the processes of financial intermediation and investments driving productive enterprises in the economy is the pattern of saving and investment by the households. Are Indian households holding their assets in the right way? According to the Global Wealth Report 2020, household wealth in India continues to be dominated by property and other real assets, with most wealth of Indian households in the form of land and buildings (Credit Suisse Research Institute, 2020). This is not unusual in less developed countries which places significant importance on real assets, particularly land, while financial assets are more important in rich countries (Davies et al., 2011, 2017). Worldwide from 2000 to 2008, the share of financial assets in gross wealth, fell from 55.2% to 50.2%, before climbing to 55.0% in 2014 (Davies et al., 2011, 2017). Comparatively, the investment patterns in financial assets by Indian households has been pretty conservative. As per the estimates of the Global Wealth Report, financial assets have grown over time, now forming 22% of India's gross assets (Credit Suisse Research Institute, 2020). The latest round of the National Sample Survey Organization's (NSSO) Debt and Investment survey in 2013 finds that 11% of household assets are held in gold and only 5% are held in financial assets, including deposits and savings accounts, publicly traded shares, mutual funds, life insurance, and retirement accounts (NSSO, 2014). Financial assets are significantly more important in urban than in rural areas (Jayaraj & Subramanian, 2008). Among financial assets owned, savings accounts are favored in transition economies and some higher income Asian

countries, while share-holdings and other types of financial assets are more evident in high-income Western countries (Credit Suisse Research Institute, 2020).

Theoretically, the benefits of participating in formal financial markets are well documented. As financial assets provide better liquidity and diversification opportunities than physical assets, they can facilitate efficient household lifecycle portfolio management (Badarinza et al., 2016; Campbell, 2006). Using detailed micro-level data from the latest three waves of the National Sample Survey Organization's Debt and Investment survey (also known as NSSO-AIDIS, 1991-2013) conducted in 1991-92, 2003, and 2013, our study attempts to understand household-level determinants of Indian financial assets holdings (shares, debentures, insurance, and deposits) in general and shares in particular. We employ a series of regression methods to understand the role of household asset structure – especially preferences for real estate and bullion assets, debt position, wealth position, interest rates, land prices, and other covariates – in explaining household demand for financial assets, particularly the choice of investing in financial assets, proportion of total assets in financial assets, and the overall value of financial assets. The regressions are performed for the entire national sample, rural and urban sub-samples, and sub-samples of households with farmers and salaried workers. To solve the problem of a large number of zeros in the dependent variable due to non-participation in financial asset investment, further analysis using a two-stage regression is performed to check the robustness of the basic models.

The rest of the paper is organized as follows. Section 2 reviews the literature on household portfolio choice in India. It first discusses current household investment patterns in India and then presents a simple conceptual and empirical framework to explain the role of household asset portfolio structure and other risk-return related factors in determining the demand for financial assets. Section 3 introduces the dataset employed in our analysis and outlines the econometric models. Section 4 presents the patterns emerging from the regression analysis and interprets the results. Finally, we conclude and bring out the broad inferences in Section 5.

2. Background and Conceptual Framework

The latest debt and investment survey (NSSO 70th round, 2013) reports that an average Indian household holds nearly 77% of its total assets in real estate, including buildings and rural and urban land. Cumulatively, 84% of household wealth is hoarded in real estate and durable assets. The largest portion of wealth for Indian household's approaching retirement is held in land and housing. On the other hand, while 11% of assets are in gold, only a meager 5% are held in financial assets, such as deposits and savings accounts, publicly traded shares, mutual funds, life insurance, and retirement accounts (NSSO, 2014). There is a high demand for gold in southern states as compared to rest of India (Badarinza et al., 2016, 2019). Unmasking these patterns are important, so as to better understand reluctance to hold financial assets in the Indian context.

The comprehensive data exercise by Subrahmanian and Jayaraj (2006) using microdata from the All-India Debt and Investment Surveys (AIDIS 1991-2013) conducted by the National Sample Survey Organization (NSSO) (and Reserve Bank of India in earlier years) gives us a good disaggregated picture of the composition of household assets. Their analyses for 1971-72 (26th round), 1981-82 (37th round), 1991-92 (48th round), and 2002-03 (59th round) of AIDIS presents a case for inter-temporal stability of asset composition in India. Land and buildings occupy around 62% to 66% and 18% to 24%, respectively, of rural asset-holdings over the four survey rounds from 1971 to 2002. On the other hand, buildings occupied 35% to 38% of urban asset-holdings, while land occupied 32% to 38% of asset shares for households surveyed in three decennial surveys in 1981 to 2002. Thus, the patterns are different between rural and urban India.

The work of Subrahmanian and Jayaraj (2006) shows that wealth in rural India is heavily land-dominated. Rural India has a typical pattern in which asset diversification is a declining function of aggregate wealth. Land and buildings account for the majority of wealth for rural households, but there is

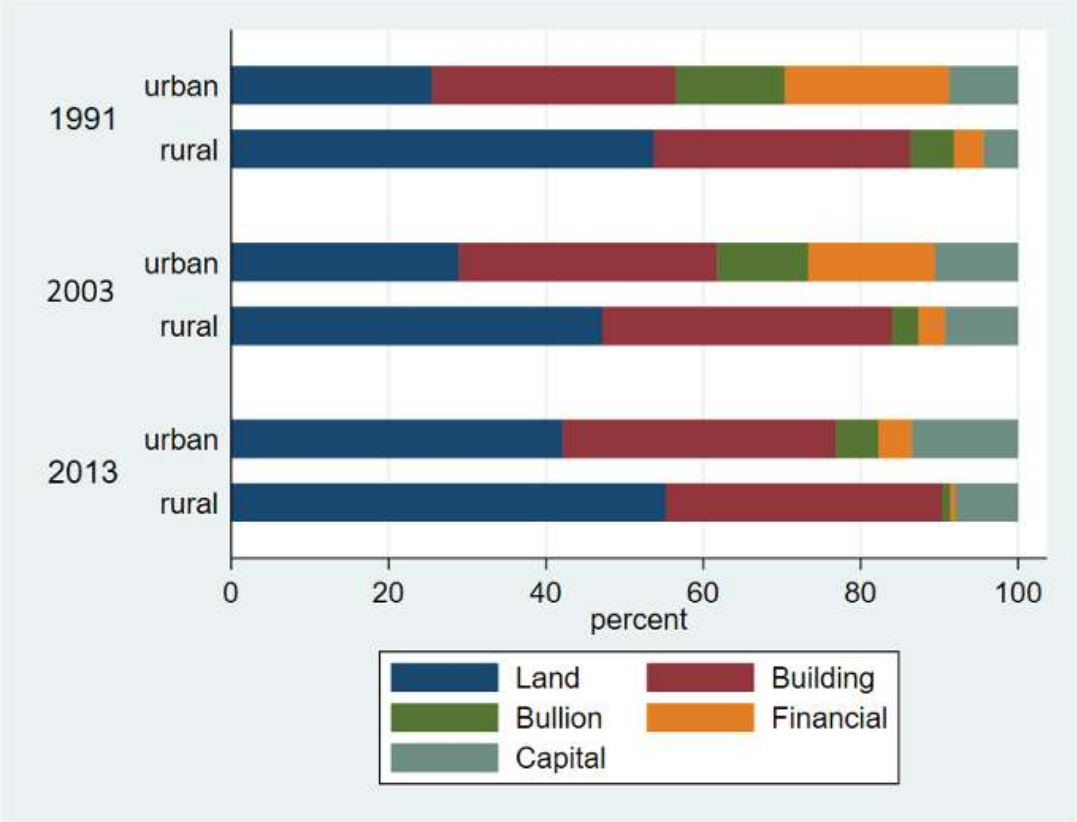
a greater emphasis on landholdings for rural households in the richest wealth quintiles. This pattern of asset diversification is in contrast with the patterns found in developed countries where diversification tends to increase with wealth (King & Leape, 1987). The share of assets held in capital equipment, non-farm business equipment, and transport equipment has increased over time, but their overall weight remains small.

In urban areas, land and buildings comprise of between two-thirds and three-fourths of the total value of assets, with buildings being somewhat more dominant than land. The third most important asset component in urban areas is durable household assets, followed by financial assets, though the latter has overtaken the former in 2002-03. Between 1981-82 and 2002-03, the shares of durable household assets and financial assets have declined in favor of land and buildings. Between 1991-92 and 2002-03, the share of financial assets has risen from 3.6 per cent to 5 per cent at the national level, but given the large weight of the rural population in total population, the overall picture is still very heavily biased in favor of physical assets, especially land (Subramanian & Jayaraj, 2006).

To visualize the patterns of household asset portfolio allocation of Indian households across the three decades under study, we graph the percentage allocations of each asset type in stacked percentage charts (see Figure 1). We find substantial differences between the rural and urban segments. There is a marked growth in the percentage value of real estate assets (land and building) in Indian household portfolios, on average. This change, which goes against the expected pattern even in urban households, is surprising during a period that has witnessed increased financial sector penetration, growth of financial institutions, and availability of a wider variety of financial instruments. The pattern takes an unexpected a U-turn between the 2003 and 2013 rounds of the survey where the share of financial assets in asset-holdings seems to have decreased. This can be attributed to a change in the methodological approach towards valuing assets between the 59th and 70th rounds of the Debt and Investment Surveys. While the basic questionnaire remained the same for all

three rounds, some changes have been made over the years. In the 70th round, the values of land and buildings were recorded as per their normative values, whereas in the previous rounds, the values were recorded as reported by the informants (NSSO, 2014). This had made substantial impact on the relative valuation of land and building assets.

Figure 1: Household Asset Portfolios - Stacked percent charts



Source: NSSO-AIDIS, 1991-2013.

Over and above these patterns indicating a limited role of financial assets and dominance of physical assets in Indian household portfolio, we too witness heterogeneity in Indian household asset portfolios. Asset structures vary across regions and different groups of households. These structures are found to be varying according to occupation, land ownership, home ownership, household size, number of earners, age of chief earners, and assets class (Temel Nalın, 2013). Wealth and income are good determinants of demand

for assets (King & Leape, 1987; Lahiri, 1978; NCAER, 1975). Education is also a significant determinant, where households with higher educated members lead to lower shares of real estate and higher shares of financial wealth. Using a multinomial logit model with data from Turkey's 2002-2006 Household Budget Survey, Temel Nalın (2013) finds that higher education is associated with more investments in capital market instruments than other investment options. Several other empirical studies exploring the influence of financial literacy and financial advice on portfolio diversification see a similar pattern (Cole et al., 2000; Gaudecker, 2015). Employment status and household size have also been found to have significant impacts on ownership of financial assets (Uhler & Cragg, 1971).

Several studies explore the relationships between household attitudes towards risk, wealth, and income with holding financial assets. For example, Bertaut (1998) finds that factors such as increased risk aversion, income risk, and lower resource levels can reduce utility gains from market participation and reduce the level of information costs that would be sufficient to deter households from stock investment, while lower risk aversion, higher education, and greater wealth increase the probability of holding stocks. Work by Dimmock and Kouwenberg (2010) show that higher wealth and higher income can have positive effects on equity ownership. Kullmann and Siegel (2005) show that the ratio of housing worth to total net worth is another factor found to be negatively associated with equity ownership. While some others find that home ownership exhibits a sizeable positive impact on owning riskier financial assets, generally the case differs (Cardak & Wilkins, 2009). Other barriers to holding equity faced by some households are the costs – especially fixed costs – of participating in equity markets (Uhler & Cragg, 1971; Vissing-Jorgensen, 2002). An interesting exposition of the interdependence of household liabilities and financial assets using empirical analysis of data from the Euro-system Household Finance and Consumption Survey (HFCS) posits that an increasing volume of household debt leads to lower incentives to keep financial assets (Kukk, 2017).

We bring together these different determining factors and propose a simple conceptual model to explain the choice and mix of financial assets in Indian households, especially shares and debentures. The conceptual framework depicted in Figure 2 highlights the significant factors that influence household demand for financial assets and variables that to map these constructs. The factors identified in the conceptual framework are mapped into variables available from the NSSO-AIDIS, 1991-2013 in Table 1.

Figure 2. Conceptual framework

Source: Authors' compilation from the literature.

Table 1. Mapping the conceptual framework into NSSO-AIDIS, 1991-2013

Construct	Definition	Mapping to NSSO-AIDIS, 1991-2013
Risk of income volatility	Risk associated with uncertainty or instability of income flows of the household	Earners (*E*) Self-Employed-Agri (SE_A; *Farmer*) Self-employed Urban (SE_U) Casual (*Ca*) Salaried (*Sal*)
Opportunity Cost	Price of land as the price of second-best use of wealth- land, primary real asset	Land prices (Pr_L)
Committed expenditure risk	Ratio of liabilities to assets	Real estate assets (*RE*)
Credit constraints	Households which are indebted and do not usually pay off most of debt	Debt-Assets (*L*) Average Loan size (*AvLoan*)
Liquidity	Liquid assets in the asset-holdings	Deposits (*Dep*) Bullion (*Bul*)
Risk aversion	Real estate assets in the asset-holdings	Real estate assets (*RE*)
Productive Investments	Capital assets in the asset-holdings	Capital Assets (*Cap*)
Financial Savings	Precautionary demand for deposits as financial savings in asset-holdings	Deposits (*Dep*)
Returns	Rate of interest for financial transactions with respect to deposits and credit in banks and financial institutions	Interest rates (*RoI*)

3. Data and Empirical Approach

We use data from three repeated cross-sections of the All-India Debt and Investment Survey collected during the 48th (1991), 59th (2003), and 70th rounds (2013) of the AIDIS conducted by the NSSO. The AIDIS collects information on physical assets like land, livestock, buildings, agricultural machinery, and transport equipment, as well as financial assets like shares, deposits, and amount receivable by the household. We assembled a pooled

cross-sectional household-level dataset of variables constructed based on the conceptual framework in Figure 2. The variables include the incidence, percentages, and log-centered ratio values of different categories of real and financial assets and liabilities, household characteristics, district-level proxies for rates of interest, land prices, and other control variables for over 300,000 Indian households in the years 1991, 2003, and 2013. We present summary statistics in Table 2.

Table 2. Summary statistics

Variable	Measurement	Obs.	Mean	Std. Dev.
Dependent Variables				
Choice of Shares (*shares*)	1 if holding shares or debentures; 0 otherwise	309,026	0.063	0.243
Choice of financial asset (*fin*)	1 if holding any of the 4 financial assets (shares, debentures, insurance, or deposits); 0 otherwise	309,026	0.843	0.364
Share value	Rupee value of shares and debentures	309,026	1,009	43,396
Financial asset value	Rupee value of financial assets	309,026	42,089	240,358
Percentage shares	Percentage of assets in shares and debentures	309,026	0.001	0.016
Percentage financial assets	Percentage of assets in financial assets	309,026	0.060	0.182
Explanatory Variables				
Log-Deposits (*Dep*)	Log value of deposits	257,738	7.534	2.643
Log-Real estate (*RE*)	Log value of land and buildings (real estate)	269,988	14.146	3.179
Log-Bullion (*Bul*)	Log value of bullion (gold and ornaments)	241,793	9.061	1.721
Log-Capital Equipment (*Cap*)	Log value of livestock, agricultural capital equipment, non-farm equipment and transport equipment	255,825	10.455	10.455

Debt-Assets (*L*)	Ratio of value of liabilities to gross worth of all household assets in the asset-holding	309,026	0.428	23.816
Land prices (Pr_L)	Average land prices in the district	308,972	11,500,000	45,900,000
Interest Rates (*RoI*)	Rate of returns in financial transactions measured as average interest rate on loans taken by households in the district	162,978	1,182.494	1,104.231
Loan size (*AvLoan*)	Average size of loans taken by households in the district	308,718	65,062	107,548
Scheduled Caste/ Scheduled Tribes (*SCST*)	1 if household belongs to most backward social group (scheduled caste (SC) or scheduled tribe (ST)); 0 otherwise	308,931	0.293	0.455
Other Backward Classes (*OBC*)	1 if household belongs to other backward class; 0 otherwise	308,931	0.309	0.462
Forward (*Fwd*)	1 if household belongs to highest social groups in the caste hierarchy or caste/social groups; 0 otherwise	308,931	0.398	0.489
Salaried (*Sal*)	Regular salary earning members in the Household	308,988	0.160	0.367
SE Agri (SE_A)	Farmer or self-employed in agricultural	308,988	0.264	0.441
SE Urban (SE_U)	Self-employed in urban area (running industrial, service, or commercial business)	308,988	0.146	0.353
Earners (*E*)	Number of earning members in the house-hold	308,988	1.814	1.198
Household Size (*HHS*)	Number of members in the household	308,988	4.937	2.547

Wealth Deciles (*Dec*)	Decile of gross worth of all asset holdings in the household asset holding (by rural/urban)	309,026	5.500	2.872
Educational Groups (*Edu*)	Ordinal categorical groups representing increasing levels of education	308,975	5.848	3.216

Source: Calculated by the authors from NSSO-AIDIS, 1991-2013.

Our study envisages to understand the role of factors (delineated in the conceptual model in Figure 2) in explaining the incidence and patterns of financial asset ownership of Indian households. Based on the conceptual model, we develop an empirical model and identify the dependent and explanatory variables that measure these constructs. Equations 1 and 2 specify the logistic regression equations for explaining the probability of participation in shares or debentures (*shares*) and any type of financial asset (*fin*), respectively. Here we are interested in explaining the choice of investing in shares and debentures specifically, and any financial asset more generally, across different segments of the population.[1]

[1] Deposits as an explanatory variable is dropped when the dependent variable is all financial assets. It is included only when the dependent variable is shares and debentures or insurance.

$$ln\left(\frac{Pr(shares)}{(1-Pr(shares))}\right) = \alpha_0 + \alpha_1 Dep + \alpha_2 RE + \alpha_3 Bul + \alpha_4 Cap + \alpha_5 Pr_L + \alpha_6 Roi + \alpha_7 AvLoan + \alpha_8 E + \alpha_9 Dec + \alpha_{10} Fwd + \alpha_{11} SCST + \alpha_{12} SE_A + \alpha_{13} SE_U + \alpha_{14} Sal + \alpha_{15} HHS + \alpha_{16} Edu + \alpha_{17} t_{59} + \alpha_{18} t_{70} + \varepsilon \quad (1)$$

$$ln\left(\frac{Pr(fin)}{(1-Pr(fin))}\right) = \beta_0 + \beta_1 RE + \beta_2 Bul + \beta_3 Cap + \beta_4 Pr_L + \beta_5 Roi + \beta_6 AvLoan + \beta_7 E + \beta_8 Dec + \beta_9 Fwd + \beta_{10} SCST + \beta_{11} SE_A + \beta_{12} SE_U + \beta_{13} Sal + \beta_{14} HHS + \beta_{15} Edu + \beta_{16} t_{59} + \beta_{17} t_{70} + \varepsilon \quad (2)$$

We hypothesize that there is a significant relationship between demand for financial assets and debt, where debt is measured using the value of household liabilities and the debt-asset ratio. Another key independent variable to capture opportunity costs and return-risk premiums is the log of average land prices in the district. The rate of interest is computed as the mean of interest rates charged for loan transactions to both institutional and non-institutional agencies in the district. Most of the controls for household characteristics used in the study are binary (forward caste, scheduled caste/scheduled tribe, farmer, businessowner, and salaried worker). Household size and the number of earners in the household are count variables. Moreover, we control for household living standards by creating deciles of household wealth (gross value of all asset holdings) and using it alternatively with the log value of household asset-holdings. This categorical variable denoting the wealth decile enters into the regression equation linearly and is treated as a control variable.

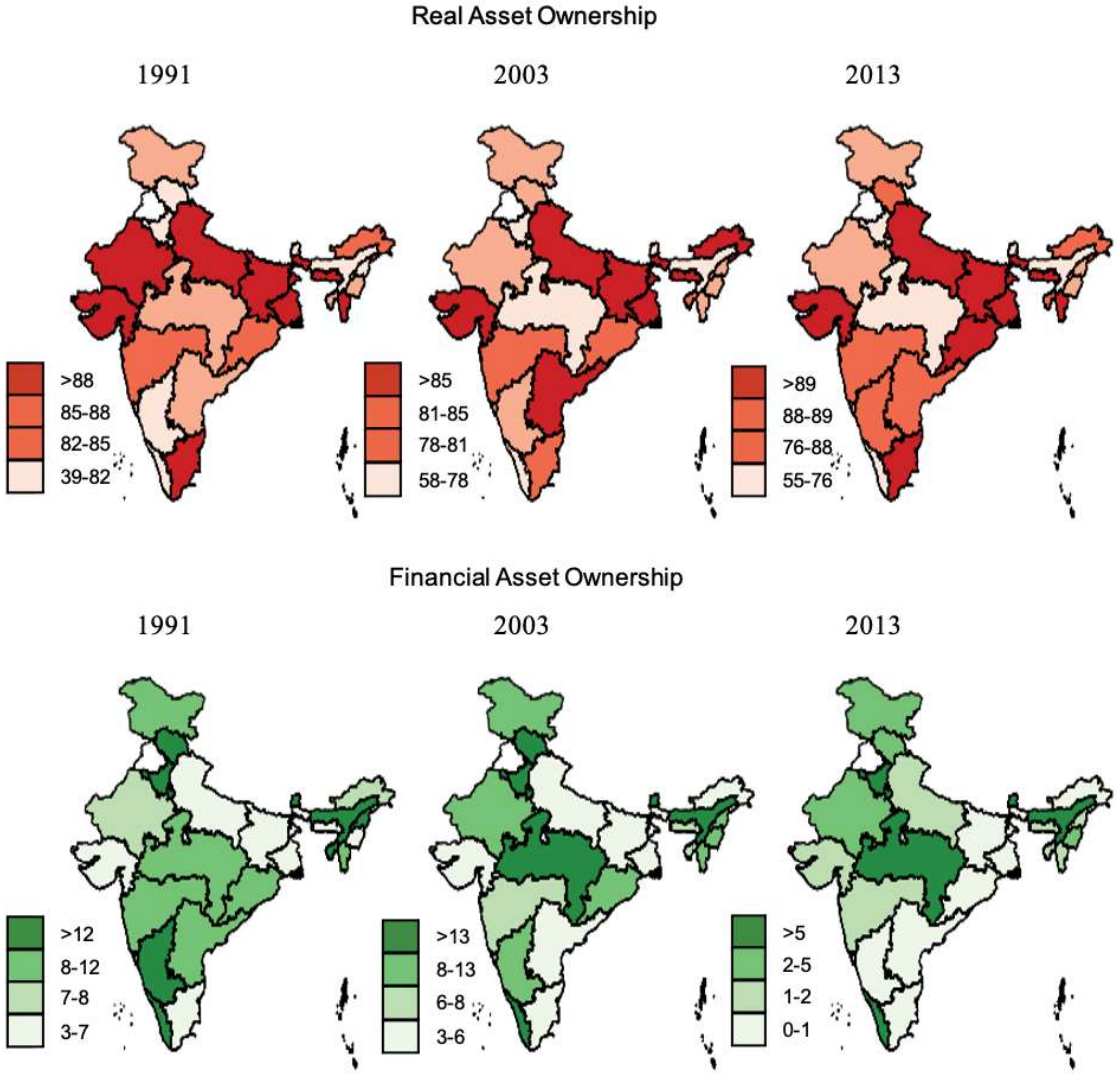
Our main analysis uses simple logistic regression to explain the binary choice of holding financial assets generally, and shares and debentures more specifically. We also recognize that in estimating the financial asset distribution we are interested not only in the event of financial asset ownership,

but also the amount of financial assets held. To this end, we perform a robustness analysis by employing a two-part regression model described by Belotti et al. (2015). A probit model is fit for the probability of owning a financial asset in the first stage, while the share of assets held in financial assets is used as the dependent variable in the second stage.

4. Results

Our first exploratory exercise is to measure variations in patronage of financial assets across Indian states. Real assets, such as land, buildings, and bullion, dominate asset holdings, regardless of which state households belong (see the choropleth map in Figure 3 below). On the other hand, financial assets have been waning in importance over the years and that is where the significance of the current study emerges. The western states and the urban states seem to have slightly higher incidence of financial asset ownership while BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh) show general indifference to financial assets.

Figure 3. Incidence (%) of Real and Financial Asset Holdings in Indian Households: 1991, 2003, and 2013



Source: Compiled by authors from NSSO-AIDIS, 1991-2013.

We run regressions on the pooled cross-sectional dataset with variables constructed from three rounds of the nationally representative AIDIS surveys. We seek to understand the relationships between the hypothesized factors discussed above on a household's choice of financial asset ownership. We measure participation in a binary choice framework using a composite measure of financial assets, as well as a more select group of financial assets

held in shares and debentures or insurance. We model the determinants of the incidence of holding financial assets in household asset-holdings using logistic regression.[2] We weight the regressions with survey sample weights (multipliers provided by National Sample Survey known as NSS multipliers) and cluster the standard errors at the state level. Logistic regression results are reported in Tables 3 and 4. Table 3 reports regression results for household choice of financial assets for the pooled dataset, rural and urban sub-samples, and sub-samples disaggregated by household type.

Table 3. Coefficient estimates from logistic regressions of household choice of financial assets based on AIDIS rounds:1991-2013

	(1)	(2)	(3)	(4)	(5)	(6)
	All rounds	Rural	Urban	Salaried	1991+2002 rounds	2013
	Dependent Variable: Financial Asset Ownership					
Log value land/ building assets	-0.049***	-0.069***	-0.027***	-0.054***	-0.134***	-0.024***
	(0.009)	(0.017)	(0.008)	(0.015)	(0.015)	(0.006)
Log value gold/ ornaments	0.123***	0.128***	0.092***	0.091***	0.111***	0.129***
	(0.007)	(0.007)	(0.009)	(0.020)	(0.009)	(0.011)
Log value capital equipment	0.032***	0.042***	0.032***	0.028***	0.027***	0.031***
	(0.005)	(0.005)	(0.004)	(0.011)	(0.009)	(0.005)
Debt to asset ratio	0.001	0.007	0.000	0.001	0.000	0.005
	(0.002)	(0.010)	(0.002)	(0.001)	(0.000)	(0.016)

[2] Households with zero values for the three asset classes used as independent variables are necessarily dropped from the analysis. This implies that the analysis only considers household decision-making on asset holdings in cases where households have non-zero values for all three asset classes.

Avg. interest rate in district	0.000	0.000	0.000	0.000	0.000	-0.009
	0.000	0.000	0.000	0.000	0.000	-0.011
Average land price in district	0.137***	0.155***	0.108**	0.155***	0.287***	-0.013
	(0.044)	(0.056)	(0.047)	(0.053)	(0.079)	(0.042)
Max education in household	0.138***	0.139***	0.171***	0.175***	0.080***	0.162***
	(0.013)	(0.014)	(0.017)	(0.022)	(0.019)	(0.016)
Household size	-0.061***	-0.065***	-0.094***	-0.150***	-0.054***	-0.057***
	(0.011)	(0.012)	(0.012)	(0.018)	(0.012)	(0.017)
No. of earners in household	0.058*	0.084**	0.062**	0.054	0.063*	0.043
	(0.033)	(0.037)	(0.030)	(0.040)	(0.038)	(0.047)
Forward	0.107	0.021	0.231***	0.150*	-0.059	0.265***
	(0.067)	(0.090)	(0.061)	(0.081)	(0.099)	(0.071)
Most backward community	0.12	0.108	0.069	0.313***	0.098	0.043
	(0.079)	(0.091)	(0.089)	(0.081)	(0.086)	(0.078)
Self-employed in agriculture	0.150**				0.121**	0.150
	(0.070)				(0.059)	(0.104)
Salaried household	0.531***				0.333***	0.673***
	(0.087)				(0.083)	(0.143)
Rural	-0.050				-0.193**	0.074
	(0.062)				(0.076)	(0.085)
Number of observations	308,634	188,902	119,732	49,543	199,055	109,579
Log-Likelihood	-1.21	-0.94	-0.27	-0.09	-0.71	-0.49

Notes: *** p<0.01 ** p<0.05 * p<0.1. Standard errors clustered at the state level. Other controls: wealth decile and time dummies.

Source: Authors' calculations from NSSO-AIDIS, 1991-2013.

Table 3 reports the log-odds as the coefficients of the logistic regression. Across all samples, Table 3 shows that while households with a higher proportion of wealth held in land and building assets have lower odds of owning financial assets, households with higher values of bullion have increasing odds of owning financial assets. More specifically, when all other factors are held constant, a 1% increase in the value of land and building assets owned by a household leads on average to a 0.05% decrease in the odds of owning a financial asset.[3] On the other hand, a 1% increase in the value of gold owned by a household leads to .12% increase in the odds of owning a financial asset. This confirms a preference among Indian households for real estate assets in lieu of financial investments. Although there is a preference for real estate assets over financial assets, local land prices are positively associated (at a rate of 0.14%) with the odds of investing in financial investments by the household. From this finding, we can infer that even though there is a general preference for real estate assets, there is likely to be a substitution into financial assets when property gets too expensive. However, we do not find any significant relationship between interest rates or higher household debt vis-à-vis assets on the log-odds of owning financial assets. The propensity to invest in financial assets increases with higher levels of education and more earning members in the household. However, larger households seem to be less likely to invest in financial assets. Salaried households have significantly higher odds of owning a financial asset over non-salaried households.

Do these estimates change over time? Columns 5 and 6 in Table 3 show intertemporal variations in the effect of the explanatory variables between the earlier rounds and the 2013 round. There was a change in the methodology of valuation of land and building assets between these rounds. This change could be a reason for a lower estimated impact of real estate assets on financial assets. Higher land prices have increased the odds of financial investment in the 48th

[3] We interpret the log-odds coefficients as percentage change in odds of the outcome. This interpretation is applicable when natural logs are used on both sides of the equation and $|\beta|$ is close to zero.

and 59th (1991 and 2002) rounds, but it seems to be lowering the odds in the 70th (2013) round. Rural households and forward castes seem averse to financial assets in 1991/2002, but apparently are more in favour of holding them during the latter round. The odds of salaried households owning a financial asset has substantially increased over time.

We further explore household asset holdings by looking at households' choices between specific financial products. Table 4 below shows the differential patterns in which the explanatory variables influence households in choosing to buy shares/debentures and insurance products. A 1% increase in a household's deposit holdings is associated with a 0.88% increase in the odds of owning an insurance product, while this is just 0.11% for owning shares or debentures. We speculate that this pattern exists because of the growth of bancassurance products and insurance-based tax exemptions, resulting in a preference for investing in insurance over shares in India. This might also explain lower trust and awareness about shares and debentures among Indian citizens. Furthermore, forward castes seem to be averse to insurance products, and in the urban subsample, higher land prices are negatively related to holding financial assets. The most backward communities (Scheduled Castes and Scheduled Tribes) have lower odds of owning any of these financial assets compared to households from Other Backward Castes (OBC).

Table 4. Coefficient estimates from logistic regressions of household choice of shares and debentures and insurance products in 48th (1991), 59th rounds (2002-03) and 70th round (2013)

	Pooled	Urban	Pooled	Urban
	Dependent Variable: Choice of Shares or Debentures		Dependent Variable: Choice of Insurance Products	
Log value deposits	0.109***	0.185***	0.876***	0.755***
	(0.019)	(0.033)	(0.031)	(0.020)
Log value land/ building assets	-0.021*	-0.028***	-0.006	-0.011
	(0.013)	(0.010)	(0.009)	(0.009)

Log value gold/ ornaments	0.066***	0.064***	0.036***	0.028***
	(0.017)	(0.019)	(0.008)	(0.005)
Log value capital equipment	0.007	-0.002	0.024***	0.021***
	(0.012)	(0.010)	(0.005)	(0.005)
Debt to asset ratio	0.000***	0.000***	0.001***	-0.004
	(0.000)	(0.000)	(0.000)	-0.003
Avg. interest rate in district	0.000	0.000	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Average land price in district	0.138*	-0.139**	0.003	-0.038
	(0.075)	(0.067)	(0.039)	(0.043)
Max education in household	0.088***	0.019	-0.017**	-0.032***
	(0.018)	(0.018)	(0.008)	(0.011)
Household size	-0.097***	-0.063***	-0.013	-0.003
	(0.015)	(0.020)	(0.010)	(0.012)
No. of earners in household	0.217***	0.130***	0.079***	0.087***
	(0.037)	(0.042)	(0.025)	(0.024)
Forward	0.099	-0.087	-0.200***	-0.176***
	(0.155)	(0.172)	(0.068)	(0.057)
Most backward community	-0.267**	-0.262	-0.242***	-0.137*
	(0.120)	(0.178)	(0.069)	(0.079)
Self-employed in agriculture	-0.14	-0.075	0.194**	0.519***
	(0.150)	(0.193)	(0.077)	(0.111)
Salaried household	0.189	0.196	0.089	0.530***
	(0.211)	(0.200)	(0.092)	(0.096)
Rural	0.595***			
	(0.109)			
Number of observations	308634	119732	308634	119732
Log-Likelihood	-0.59	-0.17	-0.6	-0.28

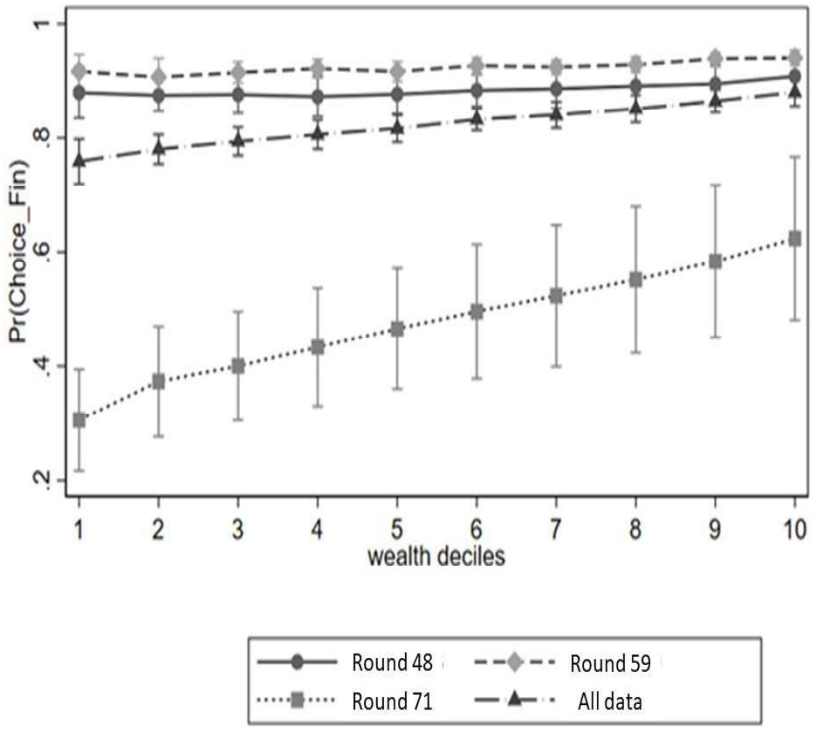
Notes: *** p<0.01 ** p<0.05 * p<0.1

Source: Authors' calculations from NSSO-AIDIS, 1991-2013. Standard errors clustered at the state level. Other controls: wealth decile and time dummies.

To further explore the relationship between total wealth and financial asset holdings, Figure 4 plots the predicted margins by wealth decile after running the logistic regression with a full set of controls (consistent with Column (1) in Table 3). We find that even though there is a secular rise in the propensity to invest in financial assets with an increase in a household's economic conditions as measured by household gross wealth decile (total value of asset-holdings), there is a consistent large difference in the predicted probabilities between earlier rounds and the latest 2013 round in all wealth deciles. This difference is attributed to a change in measuring fixed and financial assets in the 70th round survey and may be ignored. However, there is a sharp increase in the predicted probability of holding financial assets with higher wealth deciles for the 2013 round, a pattern that is missing in the earlier rounds. This implies that the wealthier households have become more trustful of financial assets and are ready to take risks for a better return compared to poorer households.

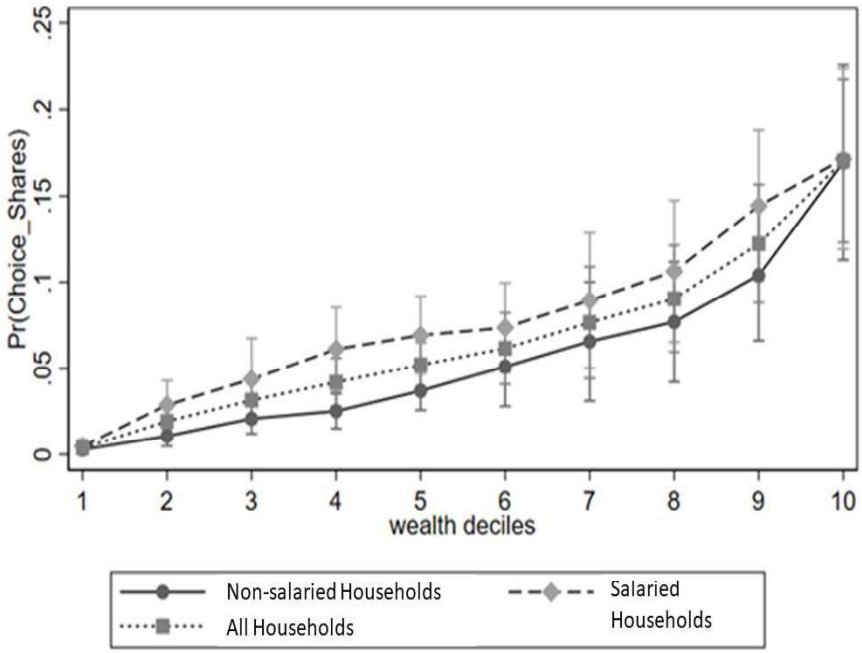
As an additional analysis, we also investigate the relationship between total wealth and financial asset holdings for salaried and non-salaried urban households. In Figure 5, we plot the predicted margins (dy/dx) after the running logistic regressions by wealth deciles for salaried versus non-salaried urban households. It shows a sharp increase in the predicted probabilities of urban households owning financial assets with increasing wealth. We also clearly observe that salaried households have a higher propensity to invest in financial assets across all deciles over non-salaried urban households. These findings show an emerging pattern among urban households signalling the need for the financial systems to target these categories more particularly.

Figure 4. Predicted margins (dy/dx) of choice of financial assets by wealth deciles and time periods(rounds) (Pooled Sample)



Source: Authors' calculations from NSSO-AIDIS, 1991-2013.

Figure 5. Predicted Margins(dy/dx) of choice of financial assets by wealth deciles and salaried versus non-salaried households (Urban Sample)



Source: Authors' calculations from NSSO-AIDIS, 1991-2013.

The final analysis considers not only the choice, but also the amount of investment in financial assets. The results from the two-part regression model are employed to solve the nonlinearity issues arising from an OLS specification are reported in Table 5. These regressions serve as robustness checks to the main logistic regressions reported in Tables 3 and 4. The first stage models the choice of holding financial assets using a probit model, and the second stage regression models the fraction of assets owned by the household owning financial assets using an Ordinary Least Squares model. Table 5 compiles the coefficient estimates from the two-part regression model where the outcome in the second stage is the household's percentage composition of financial assets. The results show that higher values of real estate assets in the portfolio and higher land prices in the district are associated with less financial asset ownership, which is consistent with the main analysis. From

the second stage results, we can infer that salaried urban households seem to be the group with the strongest preference for financial assets. Specifically, urban salaried households on average hold a 0.12 higher share of total assets in financial assets than urban non-salaried households.

Table 5. Two-stage regressions on share of gross household asset-holdings held as financial assets, 1991-2013

	Pooled Sample		Rural		Urban	
	Second Stage Dependent Variable: Percentage of Assets in Financial Assets					
	1st Stage	2nd Stage	1st Stage	2nd Stage	1st Stage	2nd Stage
Log value land/building assets	-0.037***	-0.028***	-0.029***	-0.195***	-0.028***	-0.071***
	(0.001)	(0.000)	(0.006)	(0.001)	(0.007)	(0.001)
Log value gold/ ornaments	0.073***	-0.006***	0.016***	-0.011***	0.016***	-0.019***
	(0.001)	(0.000)	(0.003)	(0.001)	(0.004)	(0.001)
Log value capital equipment	0.020***	-0.006***	-0.011***	-0.020***	-0.012***	-0.015***
	(0.001)	(0.000)	(0.003)	(0.001)	(0.004)	(0.001)
Debt to asset ratio	0.000	0.001***	0.000	0.013***	0.000	0.002***
	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
Avg. interest rate in district	-0.000*	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Average land price in district	0.066***	-0.006***	-0.094***	-0.054***	-0.085***	-0.043***
	(0.003)	(0.000)	(0.012)	(0.003)	(0.016)	(0.002)
Max education in household			0.070***	0.041***	0.052***	0.021***
			(0.005)	(0.001)	(0.008)	(0.001)

Household size	-0.027***	-0.002***	-0.048***	-0.016***	-0.031***	-0.018***
	(0.001)	(0.000)	(0.006)	(0.001)	(0.008)	(0.001)
No. of earners in household	0.034***	0.000	0.106***	0.017***		
	(0.003)	(0.000)	(0.010)	(0.002)		
Forward	0.079***	0.010***	0.185***	0.060***		
	(0.008)	(0.001)	(0.033)	(0.007)		
Most backward community	0.069***	0.005***	0.074**	0.018***	-0.113**	-0.008
	(0.008)	(0.001)	(0.030)	(0.006)	(0.047)	(0.007)
Self-employed in agriculture	-0.002	-0.026***			0.257***	
	(0.020)	(0.002)			(0.069)	
Self Employed in urban area						0.042***
						(0.012)
Salaried household	0.290***	0.057***			0.053	0.122***
	(0.020)	(0.002)			(0.072)	(0.011)
Rural	-0.114***	-0.019***				
	(0.019)	(0.002)				
Number of observations	308,647		37,422		13,690	
Log-Likelihood	22,015		-215,384		-143,348	

Source: Authors' calculations from NSSO-AIDIS, 1991-2013. Authors' calculations from NSSO-AIDIS, 1991-2013. Standard errors clustered at the state level. Other controls: wealth decile and time dummies.

5. Conclusions and Discussion

Household wealth in India continues to be dominated by real assets in the forms of land, buildings, and bullion. It is not unusual in less developed countries to place significant importance on real assets, particularly land, while financial assets are more important in developed countries. Indian households, even urban ones, have historically shown an aversion to financial assets, including shares, debentures, deposits, insurance, and others. The present pattern of household asset-holdings is not beneficial for the growth and development of the Indian financial sector and the economy as a whole. If the current status quo is maintained, it would imply additional pressure on the demand side for assets such as gold, land, and real estate.

Against this backdrop, we investigate the Indian household's choice of financial assets broadly, and more specifically the demand for shares (or debentures) and the proportion of household wealth invested in these financial assets using logistic regression model and a two-part model. In the main analysis, we use logistic regression to investigate the choice of financial assets i.e., the decision to hold or not to hold financial assets. Further, for explaining the proportion of asset holdings held as financial assets, we employ a two-part model with the first stage being a probit regression to take into account the many households report holding "0" financial asset in the data. We find from the analysis of data from the three latest decennial rounds of the National Sample Survey's All India Debt and Investment Surveys in 1991 (48th round), 2002-03 (59th round), and 2013 (70th round), that the monetary value of real estate assets and bullion is a significant factor determining whether households hold financial assets or not. We also show that preferences for real estate assets are negatively associated with demand for financial assets and insurance in all subsamples. Logistic regressions show that households have lower odds of owning financial assets with increasing land and building assets in their portfolios, but higher odds with increasing value of bullion in their wealth-holdings. Increasing local land prices drives the probability of owning financial investments positively as households tend to invest more in financial

assets when land prices are very high. The case for rural India shows a typical pattern in which asset diversification is a declining function of aggregate wealth, with specialization in land rising with wealth. The emphasis on investment in land and buildings is clear, and is highlighted when there was a change in the methodology for land and building asset valuation in the most recent round of the NSO-AIDIS survey. In the 2013 round, the values of land and buildings were recorded as per their normative values, whereas in the previous rounds, the recorded values were self-reported by the informants (NSSO, 2014). We acknowledge that the change in the land and building asset valuation method could be a reason why real estate assets have a weaker relationship to financial assets in the most recent round.

Higher land prices increased the odds of financial investment in 48th and 59th (1991 and 2002) rounds, but it seems to have lowered the odds in the 70th (2013) round. Rural households and forward castes (compared to OBC) seem averse to financial assets in 1991/2002, but were more likely to hold them during the latest round. Salaried households when compared to non-salaried urban households clearly have a higher propensity to invest in financial assets across all wealth deciles. We do not find any significant impact of interest rates or higher household debt vis-à-vis assets on the odds of owning financial assets. Households holding deposits have higher odds of owning an insurance products than a share or debenture. Education does not drive demand for insurance products, but it influences the tendency to own other financial assets. The two-part regression model validates most of the effects established in the logistic regressions. With increased real estate assets, there is a sharpe decline in the percentage of financial assets in household asset portfolios. This clearly demonstrates the preference for real estate assets and its effect on household financial investments in India. Salaried classes are the the group with the most interest in financial investments in shares, debentures, and deposits. Household size and even the number of earning members have negative influences on the percentage value of financial assets in the household asset portfolios. The Most Backward Communities (Scheduled Castes and Scheduled Tribes) are also averse to any of the financial instruments.

This paper, using econometric techniques and reliable nationally representative micro-data, elucidates the micro underpinnings of India's growing financial sector. The study is one of the first to leverage unique microdata on household-level assets, liabilities, and investments from the AIDIS surveys. However, the study does suffer from a few limitations. We do not include all assets constituting a household's wealth as regressors due to issues associated with multi-collinearity and compositional data. We also have a limited set of explanatory variables confined to the questionnaires in the household-level survey that are common across the three waves. Despite the limitations, the study provides substantial evidence that can be used for policy guidance. The study reveals relatively high preferences for financial assets among urban salaried workers and educated households, which is a positive development. As the Indian economy moves towards a digital economy, shifts towards financial assets is much needed. At present there is an evident bias towards physical assets. The need of the hour is an increase in confidence in financial institutions and regulatory and enforcement agencies in the country, which could instill trust and confidence into potential investors. Education and the dissemination of information on financial assets should be increased. It is clear that Indian households may potentially reap significant benefits from shifting their preferences to financial assets in their asset holdings. A shift away from the current pattern of bulk investments in real assets reduces additional pressure on the demand for assets such as gold and real estate in the coming decades. Reallocating assets towards financial markets and away from gold can greatly benefit Indian households.

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