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Household finance and the welfare state: a case study of the United States, 1980-2010

Working paper

Household Finance and the Welfare State:

A case study of the United States, 1980-2010

Eddie Gerba and Waltraud Schelkle[1]

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Abstract:

The sharp rise in household finance, both in debt and in assets, is one of the striking empirical facts about the US economy of the last two decades. But it is still not clear what caused it. Economists, both mainstream and heterodox, seek an explanation in financial market innovation and liberalization. But it is hard to find systematic evidence for this link. Our paper takes up another line of inquiry. Political economists have started to ask how the restructuring of the welfare state may have affected household finance. We use SVAR analysis to establish whether there is a link between the retrenchment of public social spending and the expansion of tax-incentivised private social spending, on the one hand, and household finance variables on the other. More specifically, we ask whether the transformation of the US welfare state over the last 30 years has affected household finances through the channel of debt, leverage, or asset formation. Our findings suggest that the asset channel is empirically the most likely candidate and we point to some welfare state reforms that can support the operation of this channel since the mid-1990s.

Keywords: Balance sheets, social spending, welfare reforms, financialisation, leverage cycles

JEL codes: E21, E62, G21, H31, H55

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[2] See Chadha et al (2013), Gerali et al (2010), or Kiyotaki et al (2011) for examples of theoretical models incorporating non-

I. Introduction

The sharp rise in household finance, both in debt and in assets, is one of the striking empirical facts of the last two decades. There were a number of economists who studied this, notably in the context of behavioural finance (Campbell 2006) or in the heterodox 'financialization' literature that takes off from Hyman Minsky's work on the inherent instability of capitalism. The financial crisis has given this line of research great impetus.[2] These economists became aware that their models with financial frictions, with sophisticated and naïve investors could explain partial market failure but not a systemic crisis with serious macroeconomic consequences.[3] The term 'financialization', which is used to denote the increasing dependence of the economy on financial transactions, has made it into the mainstream vocabulary and heterodox economists have published an Oxford Handbook around it (Wolfson and Epstein 2013). Databases on household wealth and debt are now created, for instance by the European Central Bank (ECB 2013) and the World Bank (Beck et al 2010). This economic literature tries to find the explanation for household leverage cycles in financial innovation and to evaluate their effect on the business cycle and on macroeconomic stability.

Another track starts from noting that at the same time as we could observe the rise in household finance, there was also a sustained attempt at 'ending welfare as we know it' under way. Paul Pierson (1994) started the new politics of welfare literature that was based on the premise that the retrenchment of the welfare state follows a different logic than the previous expansion. For a start, it may be much more hidden, substituting visible transfers for tax expenditures that benefit different households (Howard 1997, Hacker 2002). Welfare economists began to take the theory of market imperfections seriously and questioned a pervasive equity-efficiency tradeoff, given that social policy interventions may help to mend insurance market failures (Barr 1992). Along those lines, political economists and social policy researchers have recently gone beyond the study of the privatisation of old age security. They ask how partial welfare state retrenchment, eg in social housing, and the expansion of the hidden welfare state through tax expenditures may have contributed to the expansion of homeownership and personal pensions but also to the rise in mortgage debt (Ansell 2014, Schelkle 2012, Schwartz and Seabrooke 2009).

Our paper addresses alternative explanations that arise in these two thematically related but largely separated strands of the literature on household finances: to what extent was this *household* financial crisis caused by failing markets and underregulated banks, and to what extent by ill-conceived policies, notably of privatising social safety nets? We simultaneously use the timing of financial liberalization, hidden welfare state retrenchment and financial innovation to find an answer. Our approach is to apply a structural vector autoregression (SVAR) analysis that can establish structural relations and causality even when it is not possible to write a fully specified model. It can also be used to narrow down the timing of a structural change in a relationship between, in our case, social spending and indicators of household finances. For reasons of data availability, we can undertake this research only for the United States although we have tested the approach with one household finance variable on a comparative OECD dataset (Gerba and Schelkle 2013).

Our paper is structured as follows: in the next section, we prepare the ground for our SVAR analysis by showing that financial liberalization cannot fully account for the rise in household finance. Since we conclude that the timing allows at best a 'necessary but not sufficient' role for liberalization, in section III we try to determine whether the retrenchment of public social spending and the expansion of private social spending can be held responsible for households increasing indebtedness

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[2] See Chadha et al (2013), Gerali et al (2010), or Kiyotaki et al (2011) for examples of theoretical models incorporating non-standard household finance.

[3] Robert Shiller's work is the obvious exception that proves the rule, rewarded with the Nobel Prize in 2013. See Gerba (2014) for a full analysis and evaluation of the current financial frictions literature for its relevance to macroeconomics.

and/ or increasing investment in private social security. Section IV relates our findings from the SVAR analysis to specific reforms of the US tax-transfer system in the 1990s. Section V concludes.

II. What role for financial liberalization in the rise in household finance?

The spectacular increase in household debt reflected a wider rise in household finances. After all, households typically acquired homes or corporate shares with their credit. The following graph shows just how spectacular this rise was.

Graph 1: Evolution of key household finance variables as share of GDP between 1980-2010.
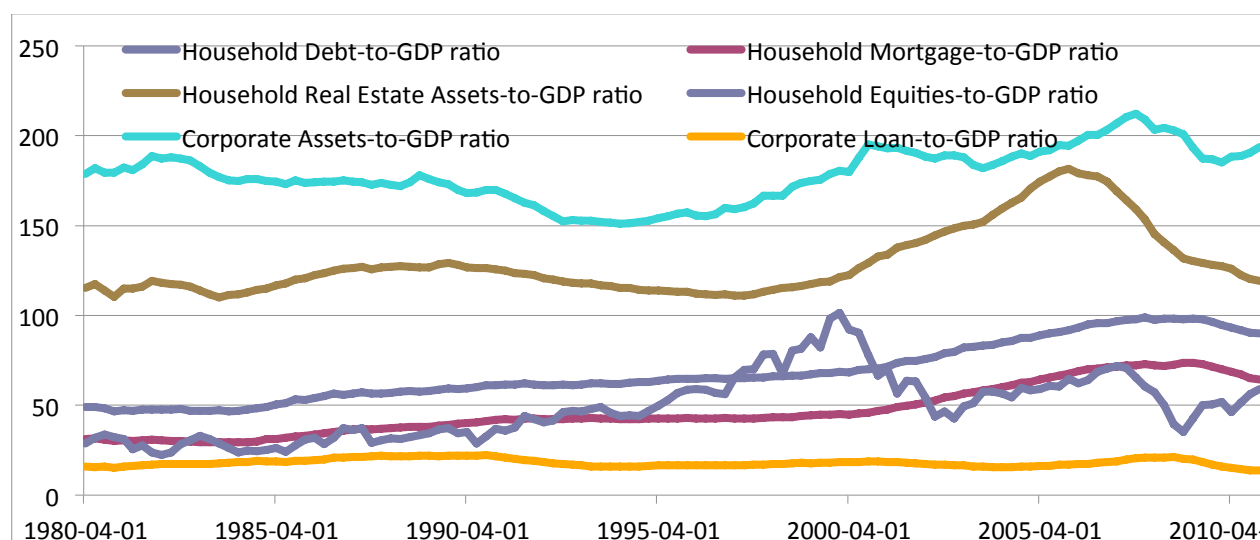
Note: The vertical axis represents (household and corporate) balance sheet variables as percentage of nominal GDP. The variables we use are Home mortgages of households (HMLBSHNO), Real Estate Assets at Market Value (REABSHNO), Household debt (HNOTOLQ027S), Assets of corporates (NCBTSTQ027S), and Corporate loans (NCBLILQ027S) from the Federal Reserves St. Louis Database. Data on Equities Held by Household (ew:usa12000169) is downloaded from Reuter's EcoWin.

While real estate assets as a share of GDP increased more than threefold between 1980 and 2007, both household debt-side variables increased by a factor of 5 during the same period. The same is true for (corporate) equities held by households. Taking into account that real GDP grew by 134% during the same period, this is a remarkable rise in household balance sheets. Note also that while equities held by households experienced a temporary setback following the dot.com bust in 2000/01, the other household balance sheet variables continued to rise. Finally, the growth and level of household balance sheet was much higher than in the corporate balance sheet. Taking into account that we report total assets of corporates, while we split household assets into multiple categories, the level of total household assets (adding the various categories up) was higher than the counterpart in the corporate sector from late-1980's onward. The difference in the two asset levels peaked around mid-2000.

But what exactly caused this take-off in household finance? Financial economists, mainstream and heterodox, tend to look for financial innovations and market liberalization to explain it. Financial economists would point to the innovations that gave wider sections of households' access to credit and made the risks involved more bearable for the lender at the same time (eg Dynan et al 2006). The financialization literature sees this increased access to credit as less beneficial, leading 'from financial exclusion to exploitative financial inclusion' (Kotz 2013: 418). What are the specific reforms that these scholars could point to, from their very different perspectives?

The first major financial reform that had consequences for household finances was the so-called 'Regulation Q', which gradually removed ceilings on the interest rates for deposits. This instrument

of financial repression was phased out between 1979 and 1986. It was followed by the Tax Reform Act of 1986 when all interest-related personal deductions were removed except for mortgages and home equity loans (Gilbert 1986). While these policy changes could explain a rise in household balance sheet variables, simple visual inspection of graph 1 suggests that the take-off took place later. Moreover, the phasing out of Regulation Q should have led to increasing savings off-setting the tax subsidies for real estate borrowing.

The second wave of financial reforms during the 1980's concerned the market structure in the financial industry. Commercial banks were increasingly allowed to enter new areas of business. The (de-)regulation initiatives that had most profound impact on the industry structure was the Riegele-Neal-Interstate-Banking and Branching Efficiency Act of 1994 (FDIC, 1997). The bill eliminated previous restrictions on interstate banking and branching, which ultimately lead to both a greater consolidation and concentration of credit providers in the US. Between 1990 and 1998, the number of banking institutions decreased by 27 percent as banks continued to merge. The final demolition of Glass-Steagall came in 1999 when the Congress passed the Gramm-Leach-Bliley Act (or the Financial Modernization Act), which repealed all restrictions against the combination of banking, securities and insurance operations for financial intermediaries (Sherman, 2009).

These regulatory changes can certainly explain why there was such an increase in liquidity and complexity in the financial industry. But they cannot account for the fact that household finances experienced such growth around mid-to-late 90's, and that this increase exceeded that of the corporate sector balance sheet (see graph 1 and Gerba 2014). If changes in the regulation of the financial industry are a plausible explanation, than we should have seen very similar paths for household and corporate balance sheets but the one for households rises much more steeply.

Financial innovation in mortgages, which account for 70% of total household debt, is another possibility. Interest-only mortgages and option Adjustable-Rate Mortgages (ARMs), for instance, gave household more flexibility, and greater control over the amount they borrowed and refinanced. Homeowners could postpone repayment of their principal almost indefinitely, or even choose negative-amortisation products that increased their principal over time. With the explosive rise of house prices over time, home-equity loans and lines of credit allowed households to draw liquidity from what used to be equity tied up in their homes. The consequence was that the supply of household borrowing increased, and consumers took greater responsibility for the design and repayment of their debt (Ryan et al, 2011). However, in a recent study on the reasons behind the heavy built-up of household debt prior to 2007, Justiniano et al (2013) find that the observed leveraging and deleveraging cycle cannot be simply explained by the liberalisation and subsequent tightening of mortgage credit standards. Nor can changes in household preferences, interest rates, or households' expected incomes (Dynan and Kohn, 2007). Justiniano et al (2013) point instead to factors that impacted house prices more directly as possible candidates. They do not answer the question what these factors could have been.

We conclude that changes in financial innovation and deregulation cannot quite explain what we saw in graph 1. The financial liberalization/ financialization strand of the literature leaves underspecified when these changes led banks to discover household finances as a profitable source of income and households in turn felt the need to take on more debt or became ready or to acquire more assets relative to their income, depending on the theoretical perspective.

Political economists working on the restructuring of welfare states since the early 1980s have recently started to link their research with the transformation of household finances.[4] They reckon that the retrenchment of public spending on households' safety nets has led households to seek commercial substitutes while tax expenditures, such as tax subsidies for mortgages and pensions,

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[4] A pioneering edited volume is Schwartz and Seabrooke (2009).

directly incentivised private social spending. The OECD started to look into these two sources of social spending some time ago (Adema et al 2010) and confirmed that the United States has a vast 'hidden welfare state' that qualitative research had discovered earlier (Hacker 2002; Howard 1997). Private social spending refers to spending on purposes as defined in the OECD social expenditure database, such as health and old-age security. Combined with the public welfare state, this makes the US one of the biggest spenders on social policy as a share of GDP. The following graph shows the evolution of public and private spending on household safety nets in the US.

Graph 2: Public and Private Social Spending as a share of GDP between 1980-2010.
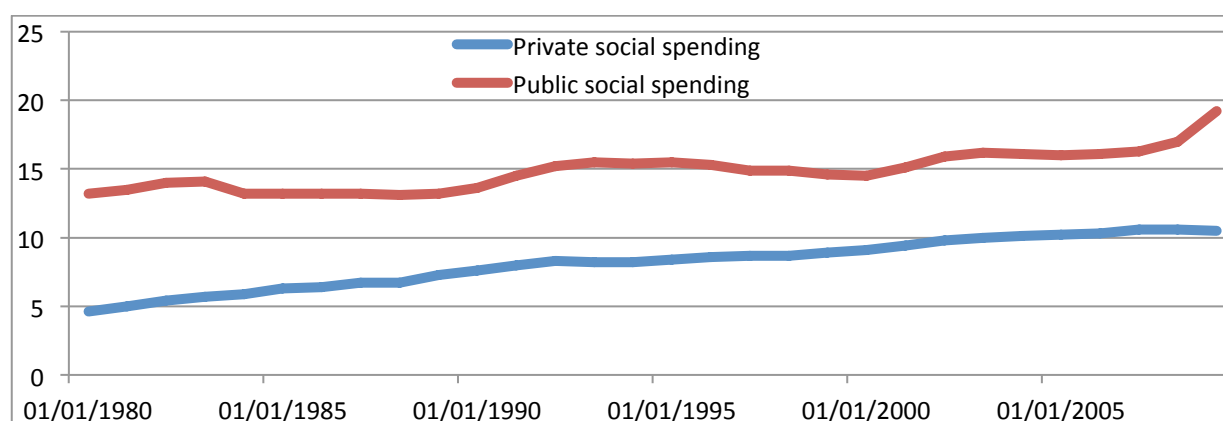
Note: The vertical axis represents social spending variables as percentage of GDP. The data was downloaded from the OECD Social Data.

Total welfare spending has increased from just-under 20 percent of the GDP in 1980 to almost 30 percent in 2010. However, while the share of public social spending has risen only marginally from under 15% to over 15% by 2007, the share of private social spending has more than doubled during this period, albeit from a lower level of under 5%. It amounts now to 40% of all social spending. Only during the latest recession has the share of public spending increased significantly.

We explore the two possible explanations for what we observe in graph 1 but start with social spending and take account of financial liberalization only indirectly. First of all, we try to locate a structural change in the relationship of household finances to social spending that is hard to track by visual inspection of graph 2. This is to establish whether welfare state transformations that began in the Reagan era are possible drivers of changes in household finances in the mid-to-late 1990s. We also explore whether the retrenchment of public social spending (that we observe throughout the 1990s in graph 2) or the rise in private social spending have the expected sign: public spending should have a negative relationship with variables of household finance as personal pensions and real estate assets act as substitutes for state pensions (Kemeny 1980, Castles 1998). Private spending, by contrast, should be positively related, stimulating directly the growth of household finances. Finally, we try to identify the channels through which this is happening primarily: have welfare state transformations pushed households into incurring more debt or, even worse, did they push them into leveraging, ie incurring more debt based on rising values of their assets, notably homes? A somewhat more benign possibility would be that the effect on asset formation was stronger, leading only some households to incur more debt while others saved more? All of these channels – debt, leverage, or asset – of social spending on household finances are in principle compatible with what we observe in graph 1. In order to answer these questions, we use an econometric technique that allows us to establish causalities where most explicit models would be overtaxed.

III. What is the relationship between social spending and household finances?

Our empirical approach is to use SVAR analysis to determine which changes in welfare state provisions can account for the transformation of household finances since the early days of financial liberalisation in the 1980s. To this end, we apply a standard unrestricted VAR(p) model:

$$y_t = \phi_0 + \Phi_1 y_{t-1} + \ldots \Phi_p y_{t-p} + \varepsilon_t$$

where y_t is a vector of length K, p is the order of the VAR, ε_t is a sequence of serially uncorrelated random vectors with concurrent full rank covariance matrix Σ, ϕ_0 is a ($Kx1$) vector of constants, and Φ are (KxK) coefficient matrices. A recursive scheme is applied.[5] We run models with public and private social spending as the starting variable pairwise: they have all household disposable income as the intermediary variable but each pair differs as regards the specifications of household finance variables (liabilities, assets, and both liabilities and assets). We order the social spending variables first because we have shown in the previous section that household finance took off some time after financial liberalization. Hence, we hypothesize that changes in the welfare state may have been a factor that made households take recourse to commercial finance and banks respond to household demand for credit and asset formation. However, there is flexibility in our econometric framework that allows us to detect any (non-contemporaneous or lagged) impact of household finances on social welfare provision, in other words to take into account the converse relation which supports the financial innovation/ liberalization strand of the literature.

Corroborating evidence for the hypothetical influence of welfare state changes on household finance could come from structural breaks in the relationship between social spending and financial variables that coincide with significant welfare state reforms. We do indeed find such structural breaks and they all cluster in only 5 years in the mid-1990s. This is encouraging for our hypothesis that welfare state changes contributed to the rise in household finance, but only the first step.

Then we go through the various models to establish whether any observable causation on household finances works more strongly through public or private spending. The financialization literature as well as comparative political economy studies of the welfare state hypothesize that the withdrawal of public social spending may force households into private substitutes while the increase in private social spending incentivizes the take-up of commercial alternatives to welfare state provisions. The two social spending variables should therefore have an opposite influence on household finance variables, ie negative for public and positive for private spending. The strength and direction of public and private social spending on household finances is also relevant for the debate of how important the creation of a 'hidden welfare state' (Howard 1997, Hacker 2002) is for the 'dismantling [of the] welfare state' (Pierson 1994). If the substitution of public benefits for private provisions is as important as in particular Hacker (2002) claims, we would expect at least as strong an influence of the private social spending variable, mindful of the fact that its volume is between one third and two thirds of public spending.

Another question that the literature review raised is whether changes in the welfare state have driven households directly into debt or, even more concerning, have made households to 'leverage up'. In other words, the leverage channel looks at how (public or private) social spending affects household liabilities and through that real asset formation. An alternative is to hypothesize that changes in the welfare state drove households to seek close private substitutes such as homeownership for less secure old age security, a mechanism that works through asset formation and underlies the endogenous preferences models of Schwartz (2012) and Ansell (2014). This would

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[5] For readers who are unfamiliar with the method, we refer to Sims (2002) or Christiano (2012) for a nice introduction and background on the method. Standard time-series handbooks will also have thorough explanations and extension of the method.

tell us how immediate the responsibility of welfare state transformations is for the private debt debacle that unfolded in 2007-08.

Our models are summarised in the following table. For instance, model 1 formulates a debt channel through the order: public social spending – disposable personal income – household financial obligations.

Table 1: SVAR model specifications

| | Public social spending | Private social spending |
	Disposable personal income	Disposable personal income
Debt channel	1. household financial obligations	2. household financial obligations
Leverage channel	3. household financial obligations - real estate assets of households	4. household financial obligations - real estate assets of households
Asset channels	5. pension fund assets of households	6. pension fund assets of households
	7. real estate assets of households	8. real estate assets of households
	9. firm equity held by households	10. firm equity held by households

All variables (except for household financial obligations) are expressed in their annual log levels. Household financial obligations are expressed as a share of GDP, and thus were kept as percentages. The sample stretches from 1980 to 2010. The shocks are identified using the standard Cholesky decomposition method, and are normalized. We can also infer the qualitative direction of this effect, namely whether the impulse response of the household finance variable to a 1% increase in the social spending variable is negative or positive, thus revealing a substitutive or complementary relationship, respectively. The relationship may even change over the 10 periods following the introduction of the shock. The *variance decomposition* looks at how much of the variance of a variable (eg a household finance variable like pension assets) is driven or explained by the variance of the other variables in the model (we are particularly interested in public and private social spending). Our time horizon of 10 periods means over ten years as we use annual data. Based on the results from standard lag tests, we choose 2 lags for our specifications, ie a change in social spending in 1990 would show a change in household finances in 1992 at the earliest.

A. Structural change in the relations between social spending and household finance

The identification of a structural break is based on how strongly both the impulse response functions and variance decompositions differ. If we find that the impulse responses and the contribution of shocks jointly differ considerably from one period to another, we interpret this as a significant alteration in the structural relation between the model variables, and thus a structural break. This is very similar to a traditional subsampling estimation strategy. We acknowledge that this is not a formal way of checking for structural breaks, but due to the limited number of observables in our sample, we found this method to be the most convincing when balancing statistical rigour with limited data samples.[6]

The first significant observation to note is that we find a structural change (break) in relations for most models between the years 1995 and '97 and for all in just five years in the mid-to-late 1990s (table 2). Moreover, we find that the structural change in the specifications with public social

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[6] There are other methods to identify the shocks, such as the zero restrictions, or the sign restrictions. However, since there is a lack of a strong theory to guide the imposition of restrictions in this literature, there is a high risk of misspecification, and thus misinterpretation of results. We therefore opt for an agnostic and empirically driven approach.

spending occur 1 to 3 years prior to the counterparts with private social spending, except for the debt channel model where the break occurs earlier for private social spending. That is, the break in model 2 occurs a year before the break in model 1. This is a potentially interesting finding to which we come back below, once we also know whether the effects of public and private social spending have the 'right' signs.

Table 2: Structural changes in the model specifications 1-10

Year of break	Specification
1994	5
1995	7, 3
1996	2, 9
1997	1, 6, 10, 4
1998	8

Notes: Red – debt channel; brown – leverage channel ; blue – models of an asset channel; uneven numbers order public social spending first, even order private first.

The following sections compare pairs of model specifications that have public and private social expenditure as the determining variable by ordering them first in the specifications (model 1 with 2, model 3 with 4 and so on). This is to see whether they have opposite effects on the specific household finance variable (debt, pension assets etc). We evaluate the effects by looking at the impulse responses and the variance decompositions before and after each break. Finally, we ask for noticeable feedback effects from household finance variables on social expenditure.

B. The debt channel of social spending on household finances

Models 1 and 2 look at how public and private social spending, respectively, affected household financial obligations measured as a percentage of disposable personal income.[7] A 1% increase in public spending (PS) leads to a strong fall in financial obligations of (–)0.4% before the break in 1997, and a weak positive, then negative response afterwards. PS explains a high share of the variance in this household liabilities variable before and after the break. In model 2, a 1% increase in private spending (PRS) has first a slightly positive (0.01%) and then strongly negative effect of (-)0.7% by year 5 on households financial obligations before the break. After 1995, the effect of a rise in PRS is strongly positive (0.3% in year 3) and then falls off to become strongly negative towards the end of the impulse response horizon. Between 40% and 60% of the variation in financial obligations is explained by PRS. There is a weak feedback effect from household financial obligations to PRS, positive before the break (turning negative towards the end of the horizon) and negative after the break.

Thus, the two social spending variables seem to have a rather different effect on households' obligation ratio: it is negative before the break and then weaker for PS after the mid-1990s while it is significant and positive for PRS for the earlier horizons. This means that PRS seems to first incentivize additional obligations and later to force households into savings. These results lends some but not overwhelming support to a debt channel that was triggered by welfare state changes in the 1990s.
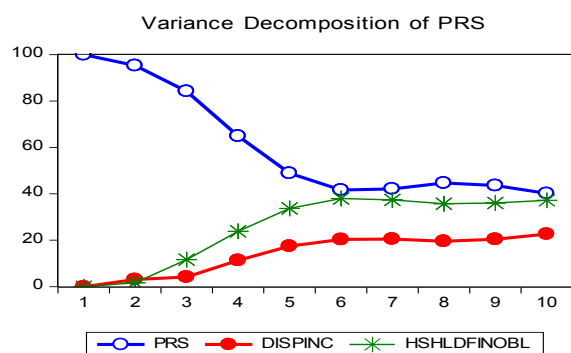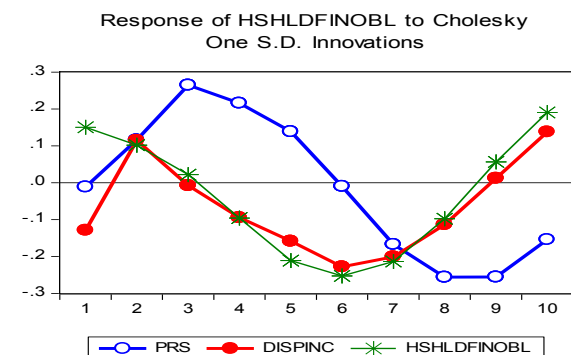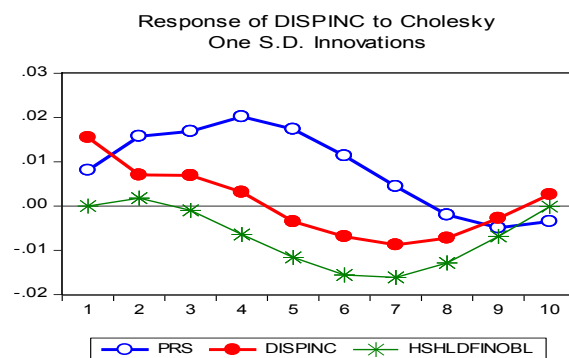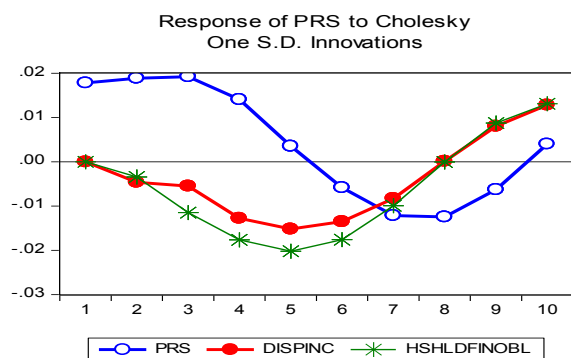
Model 1 - Public Social Spending (*PS*), Disposable Personal Income (*DISPINC*), Household Financial Obligations (*HSHLDFINOBL*)

Sample (1982-1997)

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[7] This is a broad measure of household liabilities that the Federal Reserve Bank introduced in 2003 only (Dynan et al 2003). We experimented also with the narrower household debt variable (log of levels) and report the result in the Appendix.

Response of PS to Cholesky
One S.D. Innovations

Response of DISPINC to Cholesky
One S.D. Innovations

Response of HSHLDFINOBL to Cholesky
One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of HSHLDFINOBL

9

Sample (1998-2010)

Response of PS to Cholesky
One S.D. Innovations

Response of DISPINC to Cholesky
One S.D. Innovations

Response of HSHLDFINOBL to Cholesky
One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

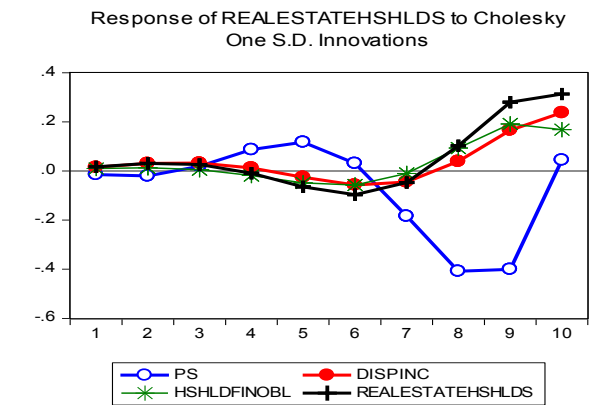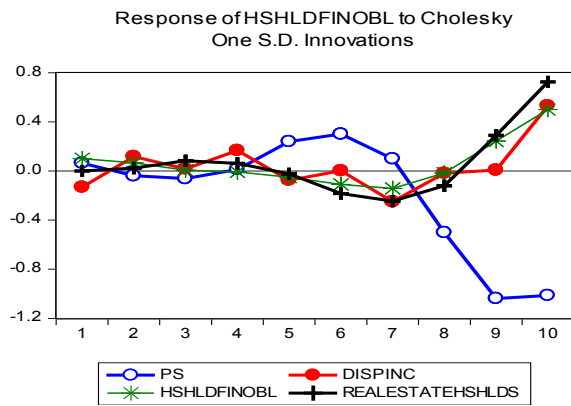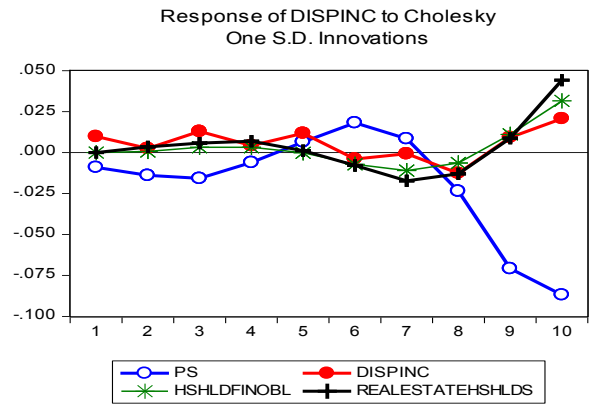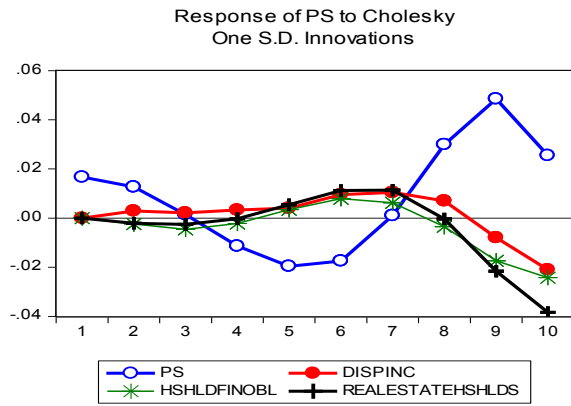Variance Decomposition of HSHLDFINOBL

End of model 1

Model 2 - Private Social Spending (*PRS*), Disposable Personal Income (*DISPINC*), Household Financial Obligations (*HSHLDFINOBL*)

Sample (1982-1995)

Sample (1996-2010)

Response of PRS to Cholesky
One S.D. Innovations

Response of DISPINC to Cholesky
One S.D. Innovations

Response of HSHLDFINOBL to Cholesky
One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of HSHLDFINOBL
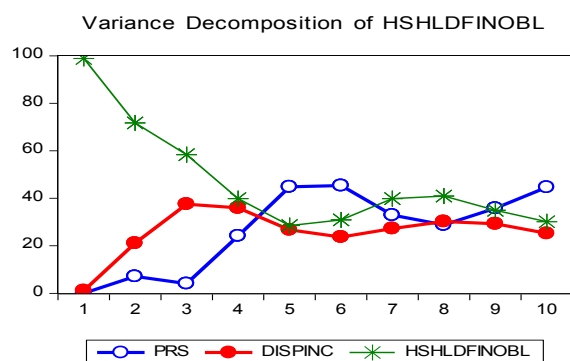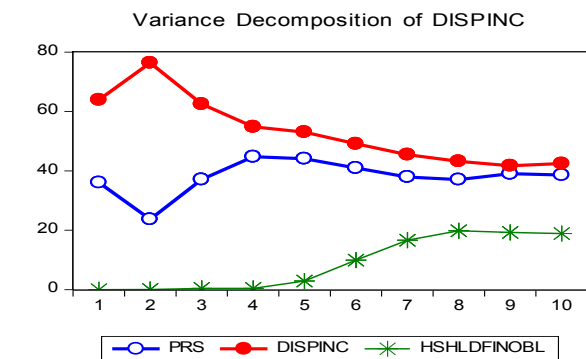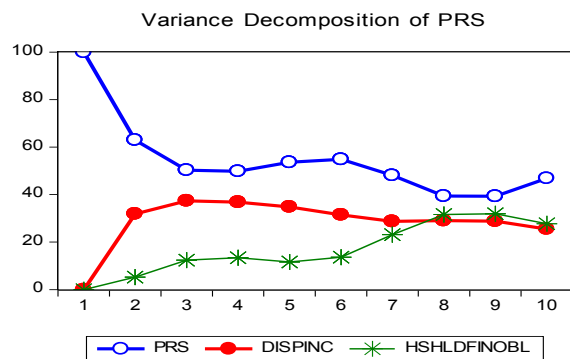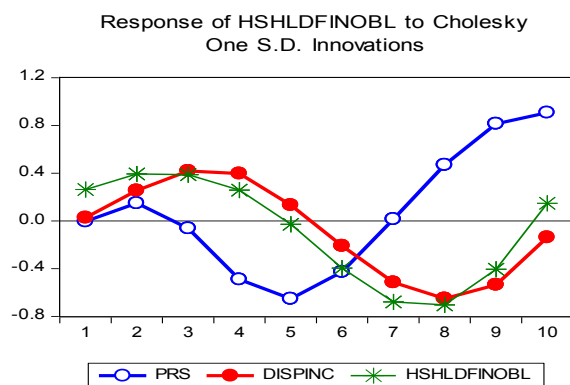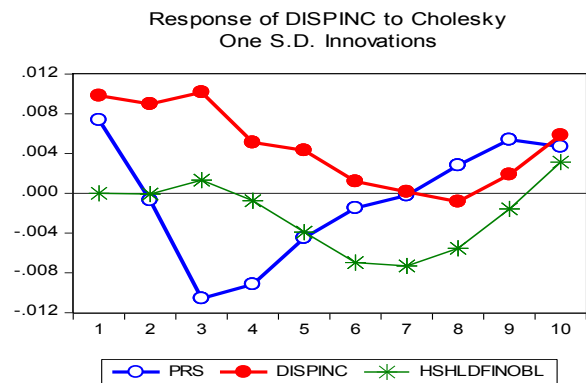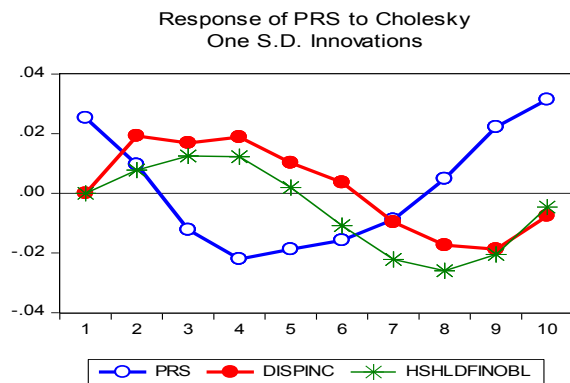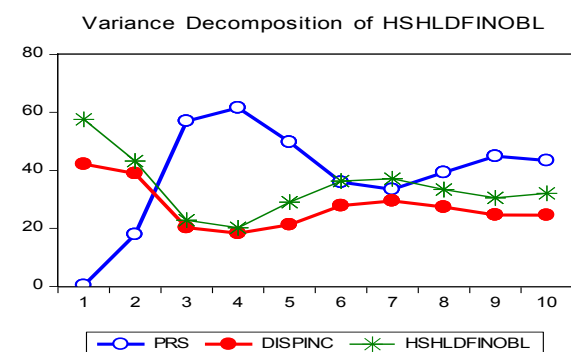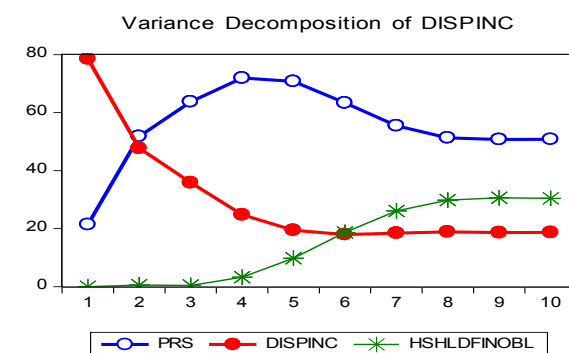
End of model 2

We also experimented with another variable for household debt (see appendix for details) and the two debt channel models concur in that PS has the expected negative effect on households' liabilities, although with some delay after the break. It also shows a much weaker causal role for PS after the break in the 1990s. The weaker post-break role coincides with a somewhat weaker explanatory power for the variance. PRS incentivizes households to take on more liabilities and, as in model 2, causes them later to reduce their liabilities, in other words to save. In sum, it seems to be a robust finding that welfare state retrenchment did not immediately push households into debt although we cannot exclude a delayed effect. Moreover, our results do not suggest that the

expansion of tax subsidies for private welfare provisions sustained ever higher levels of household indebtedness but had a teendency to reverse its earlier positive impulse on household liabilities.

C. The leverage channel of social spending on household finances

The changes in welfare states may of course had a role in what observers saw as the immediate shocking revelation of the (subprime) crisis, namely that something had incentivised households to leverage on the basis of real estate collateral. A house price bubble could thus feed on itself because rising credit raised prices for real estate which thus became more valuable as collateral (Justiniano et al 2013).

Models 3 and 4 test this leverage channel by ordering PS and PRS first, with disposable income as the intermediate variable, and financial obligations and real estate assets last. We find that a 1% rise in PS leads to a fall of financial obligations and real estate before the break but to a weakly positive response after the break. So retrenchment of public welfare as such leads to a *decline* in household indebtedness and homeownership after the break. The explanatory power for the variance of either indicator increases on average after the break. In stark contrast is the response of financial obligations to PRS, that first rises to a sizeable 0.4% and then falls to (-)0.4% in year 7 before the break, with a similar but weaker pattern for real estate. After the break in 1996, the direction of causation is the opposite: first negative on both (and again much stronger for financial obligations than real estate) and then positive half-way through the impulse response horizon. The share of PRS in the explanation of variance of both variables reaches 50% with some delay; after the break, this contribution is slightly smaller, but nevertheless significant at around 30-40%. There is a slight positive feedback effect of both financial obligations and real estate holdings over the first half of the horizon on PRS only.

The evidence for leverage effect is therefore not overwhelming as far as the social spending variables are concerned: PS has a weakly positive effect on financial obligations and real estate assets after the break and PRS reverses its ('corect') positive effect half-way through the horzon of 10 years. If we look at effects between financial obligations and real estates in their respective impulse responses more directly, we do not find them to be strong in model 3 with PS ordered first. This is in contrast to model 4 after the break in 1995. Here, the effect of real estate on household financial obligations is much stronger, worth 0.2%, than that of financial obligations on real estate with 0.02%. This is some support for a leverage effect of PRS after the break.
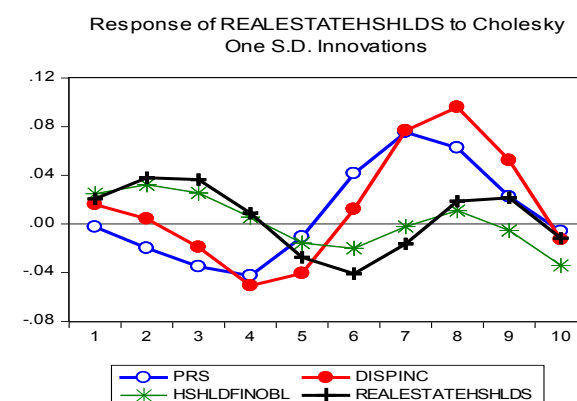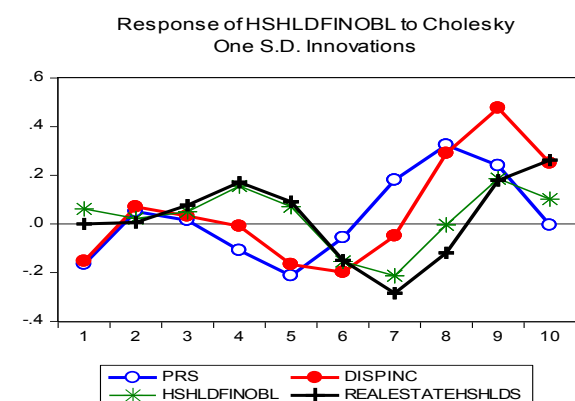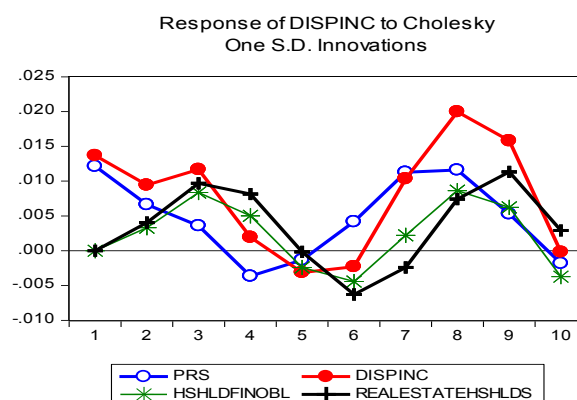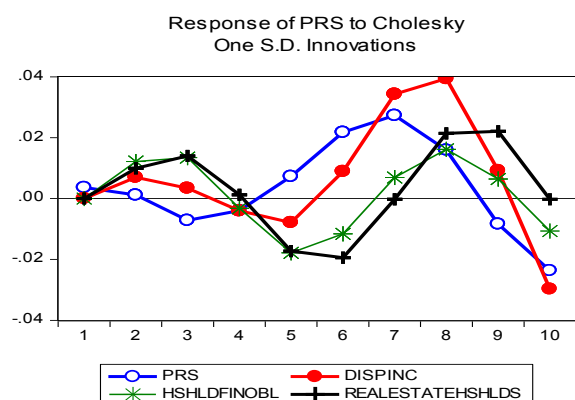
Model 3 - Public Social Spending (*PS*), Disposable Personal Income (*DISPINC*), Household Financial Obligations (*HSHLDFINOBL*), Real Estate Assets held by households (*REALESTATEHSHLDS*)

Sample (1982-1994)

Sample (1995-2010)

Response of PS to Cholesky
One S.D. Innovations

Response of DISPINC to Cholesky
One S.D. Innovations

Response of HSHLDFINOBL to Cholesky
One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky
One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of HSHLDFINOBL

Variance Decomposition of REALESTATEHSHLDS

End of model 3

15
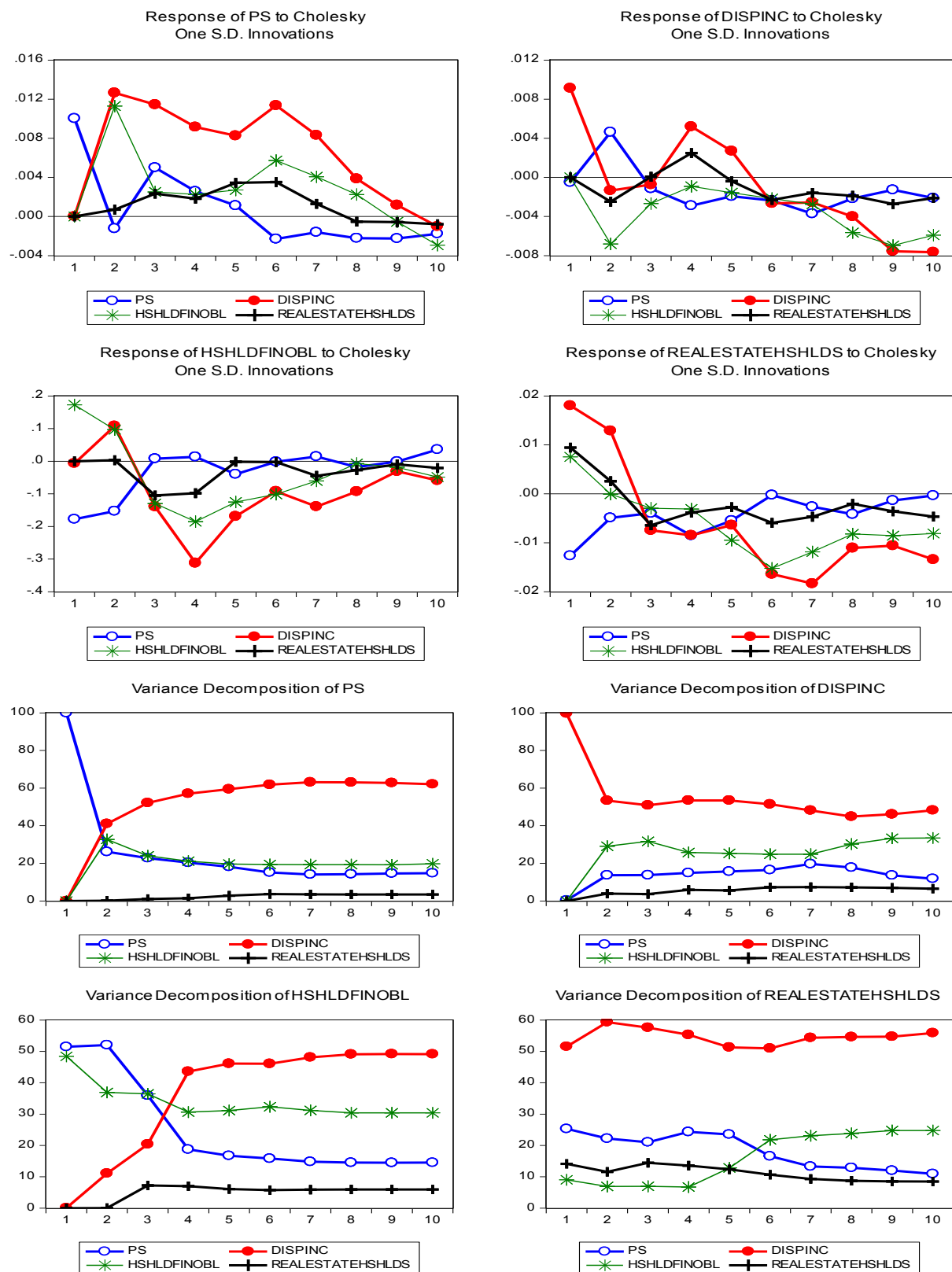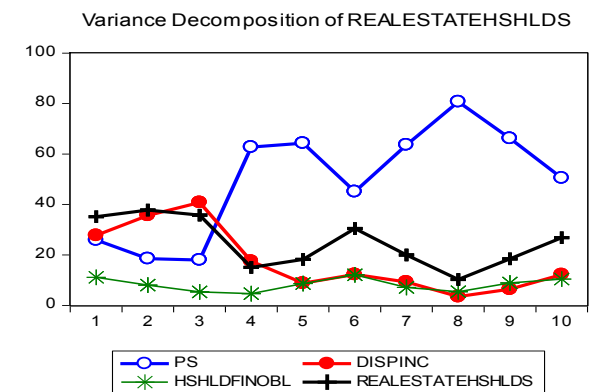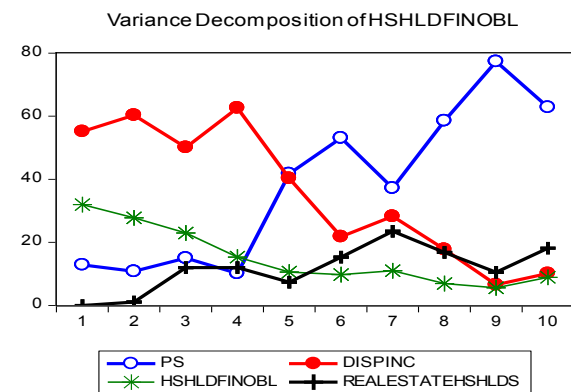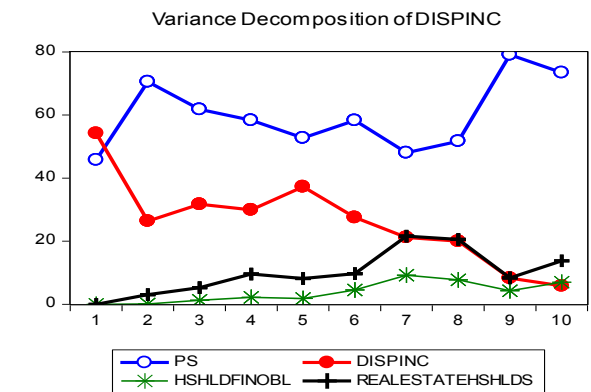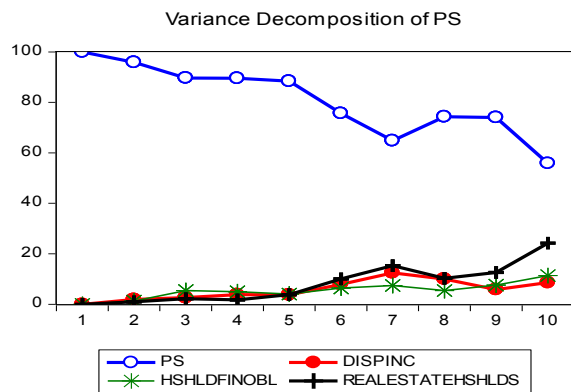
Model 4 - Private Social Spending (*PRS*), Disposable Personal Income (*DISPINC*), Household Financial Obligations (*HSHLDFINOBL*) Real Estate Assets held by households (*REALESTATEHSHLDS*)

Sample (1982-1996)

Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of HSHLDFINOBL to Cholesky One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of HSHLDFINOBL

Variance Decomposition of REALESTATEHSHLDS

Sample (1997-2010)

Response of PRS to Cholesky
One S.D. Innovations

Response of DISPINC to Cholesky
One S.D. Innovations

Response of HSHLDFINOBL to Cholesky
One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky
One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of HSHLDFINOBL

Variance Decomposition of REALESTATEHSHLDS

End of model 4

Again, we experimented with another variable for household liabilities (see Appendix for details). The findings from these models for a leverage channel were consistent with the results of model 3, namely that welfare state retrenchment as measured by PS did not obviously contribute to

household leveraging, ie increasing their indebtedness based on the real estate collateral they acquire with credit. The findings on PRS, however, are not entirely consistent with model 4, hence the qualified evidence for a leverage effect we found in model 4 is not robust and seems to differ with the indicator used.

D. The asset channel of social spending on household finances

We explore three pairs of models on the asset channel that differ according to the types of assets in each specification. We wish to test the hypothesis that welfare state transformations (retrenchment of public spending and expansion of the hidden welfare state) has given a boost to private finance by forcing households to save and seek commercial substitutes. Models 5 and 6 have pension entitlements (assets) as the household finance variable that is determined by public and private social spending, the latter for instance through tax subsidies for occupational and personal pensions.

We find in model 5 that a 1% increase in PS leads to a small fall in pension assets of (-)0.02% before the break in 1993 while after the break the fall is initially stronger (-0.08%) but shows no consistent effect after year 3. While the share of PS explaining the volatility in pension assets increases from 0 to 40% over time, the share decreases from 40% to 20% after the break. The effect of a rise in PRS is initially very weak and turns, counterintuitively, negative in year 3 before the break. After 1997, a rise in PRS has the expected positive effect on pension asset formation of households, of 0.07% initially, then falling to 0 and rising again to 0.04%. PRS explains less than 20% of the variation in pension assets before the break in 1996 but between 20% and 40% afterwards. The feedback effects of an impulse from pension assets on PS are negative before the break and unstable afterwards while there is hardly any feedback on PRS. In other words, the increasing relevance of PRS mirrors the decreasing relevance of PS, and they both have the expected sign after the break. This lends support to the asset channel of social spending on pensions while there is no evidence of reverse causation, ie that changes in pension finance caused the welfare state to change.

Model 5 - Public Social Spending (*PS*), Disposable Personal Income (*DISPINC*), Pension Funds held by households (*PNSNFUNDRSRVHSHLDS*)
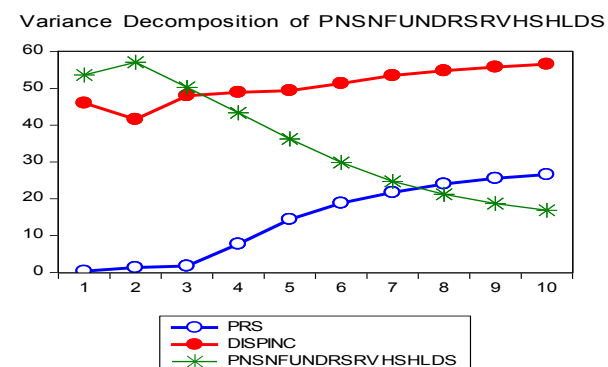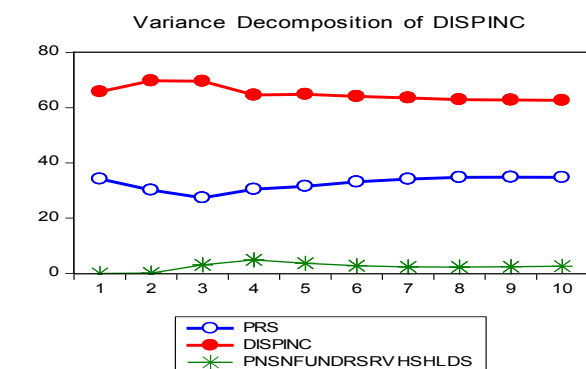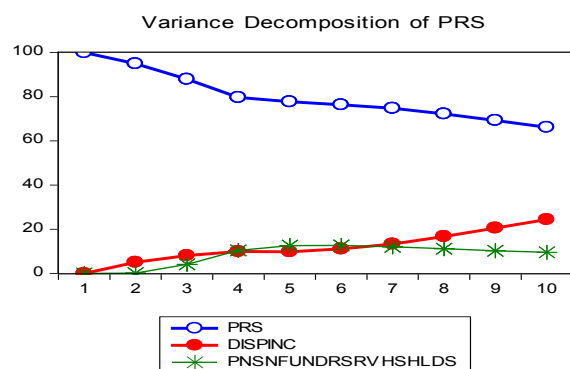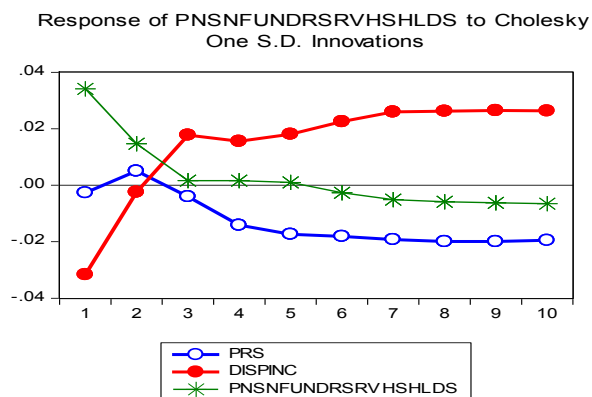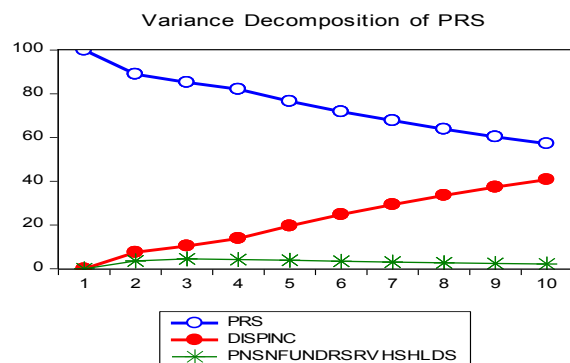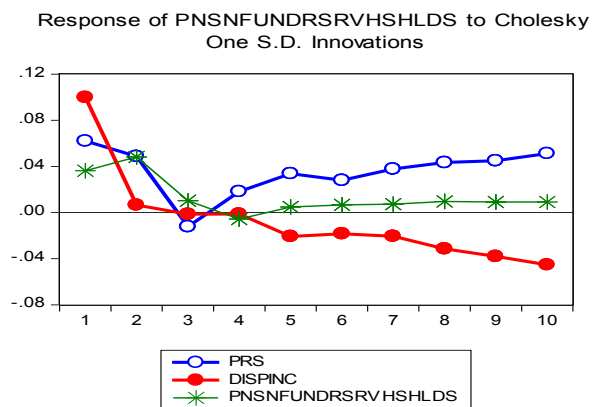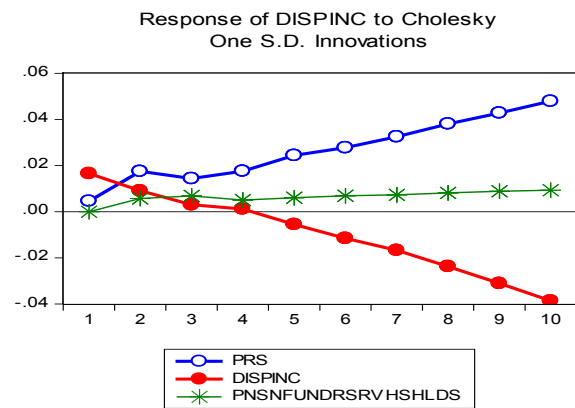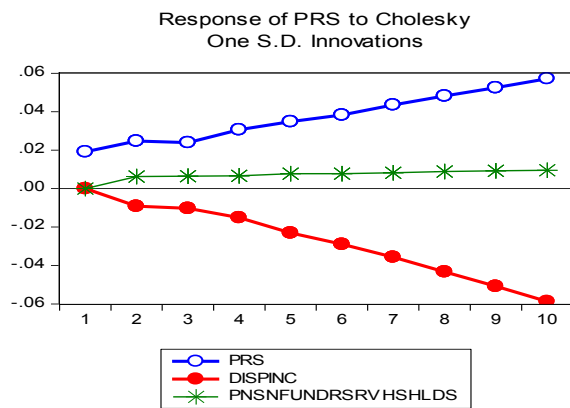
Sample (1982-1993)

Response of PS to Cholesky One S.D. Innovations
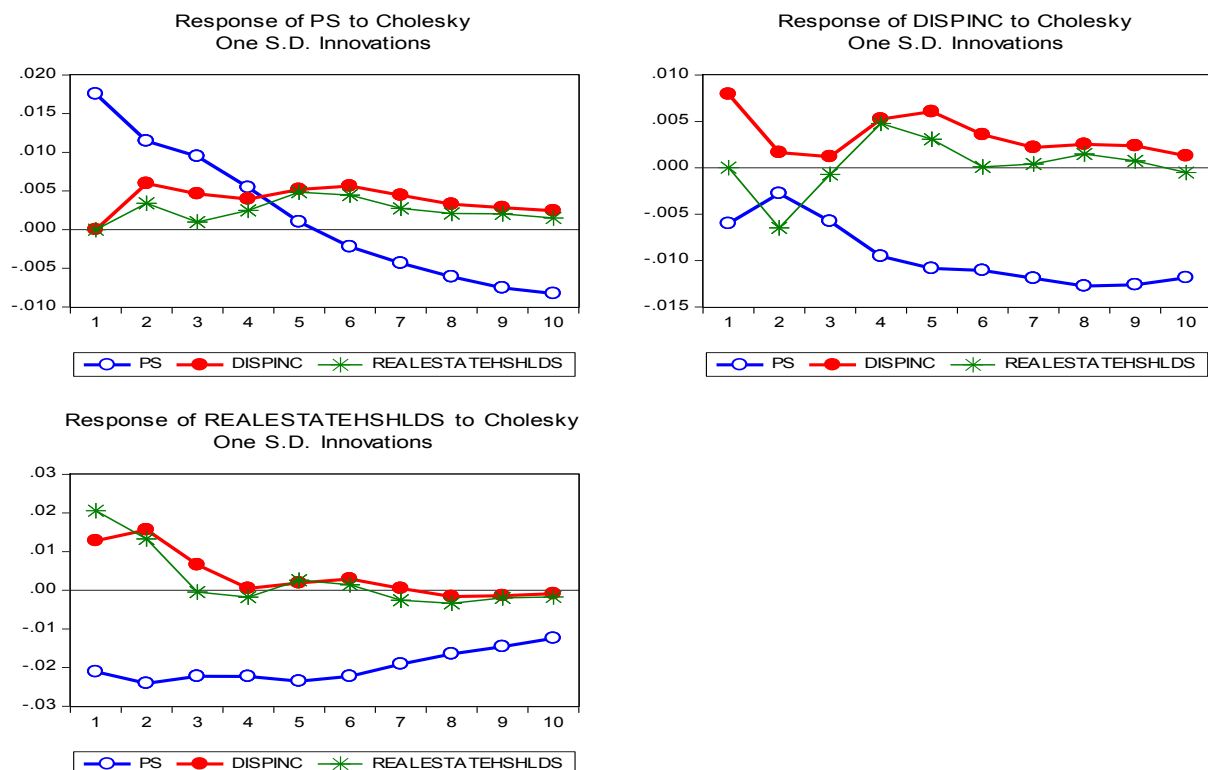

Response of DISPINC to Cholesky One S.D. Innovations

Response of PNSNFUNDRSRVHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of PNSNFUNDRSRVHSHLDS

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Sample (1994-2010)

Response of PS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of PNSNFUNDRSRVHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of PNSNFUNDRSRVHSHLDS

End of model 5

20

Model 6 - Private Social Spending (*PRS*), Disposable Personal Income (*DISPINC*), Pension Funds held by households (*PNSNFUNDRSRVHSHLDS*)

Sample (1982-1997)

Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of PNSNFUNDRSRVHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of PNSNFUNDRSRVHSHLDS

Sample (1997-2010)

Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of PNSNFUNDRSRVHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of PNSNFUNDRSRVHSHLDS

End of model 6

Models 7 and 8 look at the effect of changes in social spending on real estate assets, ie whether we can discern a 'nest-egg-effect' of rising homeownership in response to welfare state transformations: as before, PS should have a negative and PRS a positive effect on real estate

holdings after the break. We find that before 1995 a 1% rise in PS leads to a weak but sustained fall of (-)0.02% of real estate held by households and afterwards a slowly rising positive effect of 0.1% in year 5, turning strongly negative afterwards (-0.4% in year 8). This points to a delayed negative net effect that we also found (more weakly) in model 5 with pensions. The explanatory power of PS for the variance of the real estate time series is 40% and rising steadily to 80% before the break, which after the break becomes weaker and fluctuating afterwards but is still high at 60% on average. In model 8, a rise in PRS has a discernible and persistent positive effect on real estate holdings before the break, reaching 0.03% in year 2, that is of similar size and direction after the break. The variance decomposition shows that PRS explains between 40 and 50% of the variance in real estate assets before the break in 1997, but decreases to between 20% and 40% afterwards. There is a small but discernible feedback effect of real estate holdings on PRS which is positive over the first half of the horizon, which is consistent with the interpretation that rising homeownership may create a constituency for, or change in preferences in favour of more privatised welfare provisions. Feedback effects on PS are negligible.

It is thus noticeable that the PS variable supports a nest-egg effect from retrenching public welfare provisions although more strongly and clearly before the break. The findings on PRS are also consistent with the hypothesis that the rise of the hidden (subsidised private) welfare state has fuelled increasing homeownership.

Model 7 - [Public Social Spending (*PS*), Disposable Personal Income (*DISPINC*), Real Estate Assets held by households (*REALESTATEHSHLDS*)]
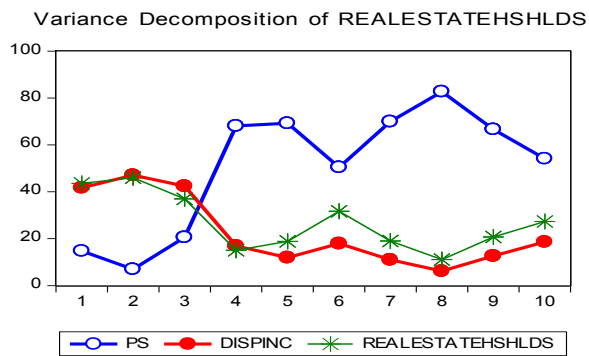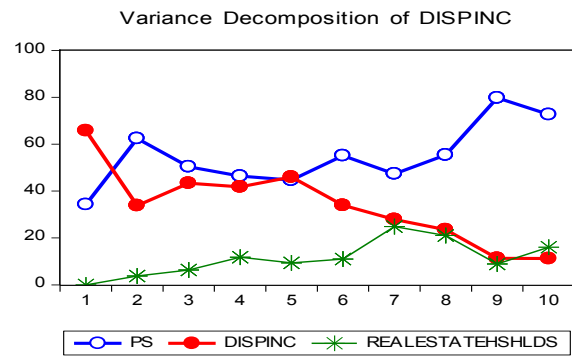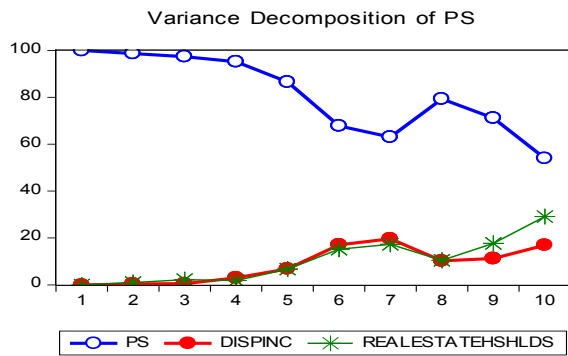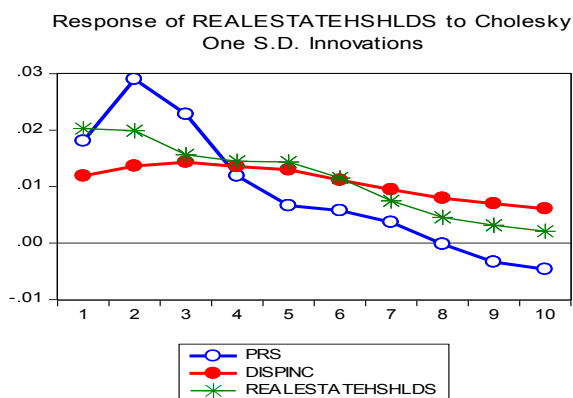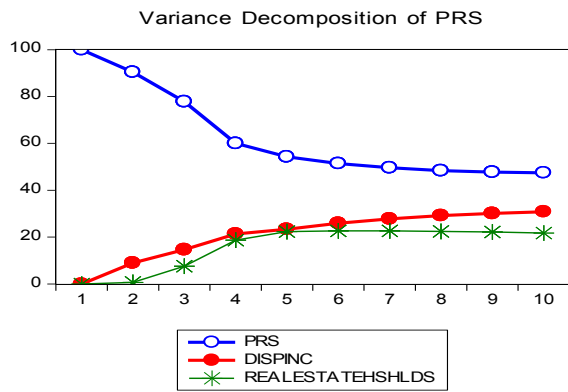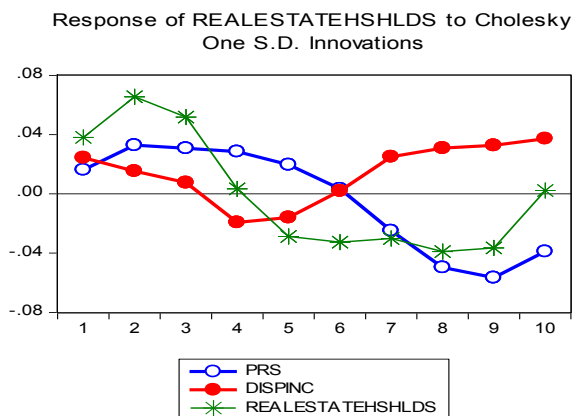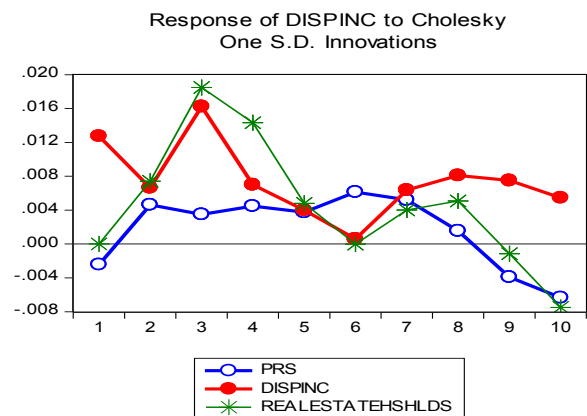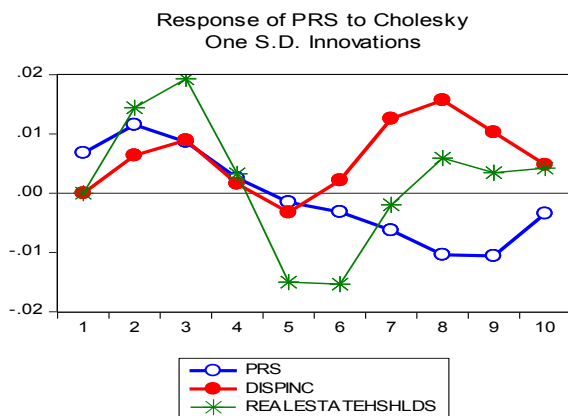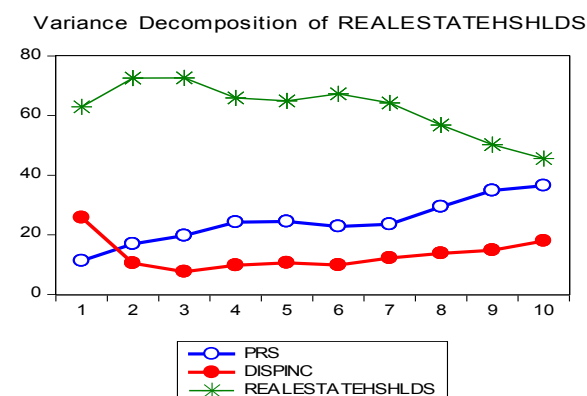
Sample (1982-1994)

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of REALESTATEHSHLDS

Sample (1995-2010)

Response of PS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky One S.D. Innovations

24

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of REALESTATEHSHLDS
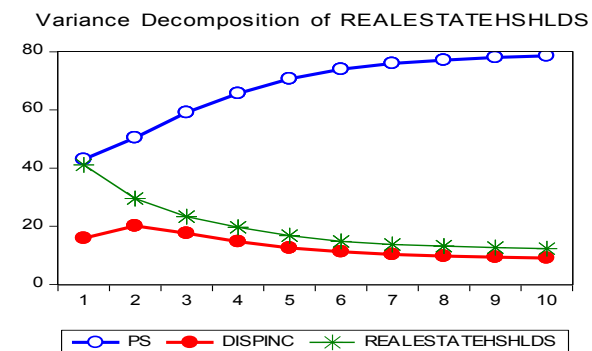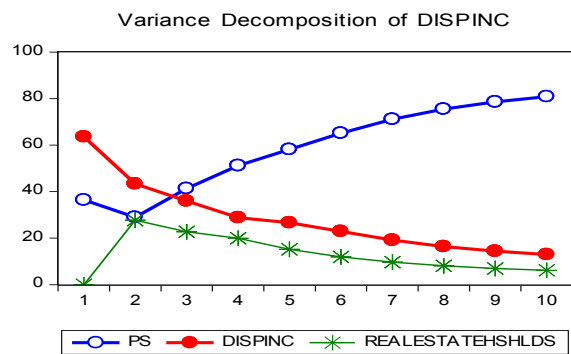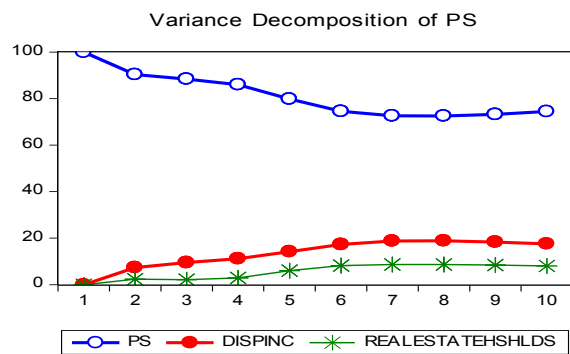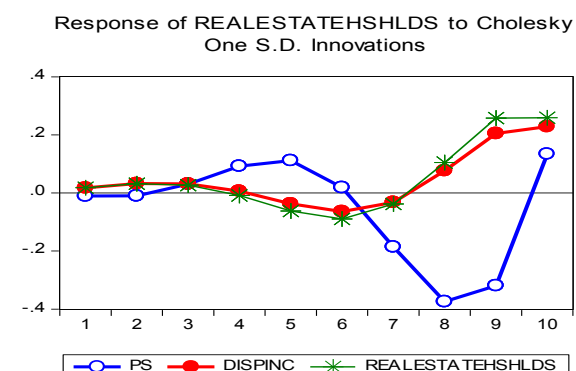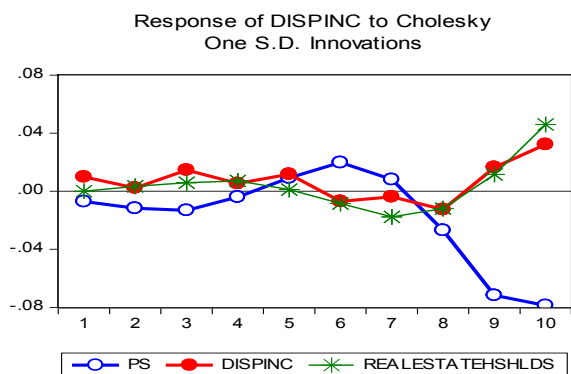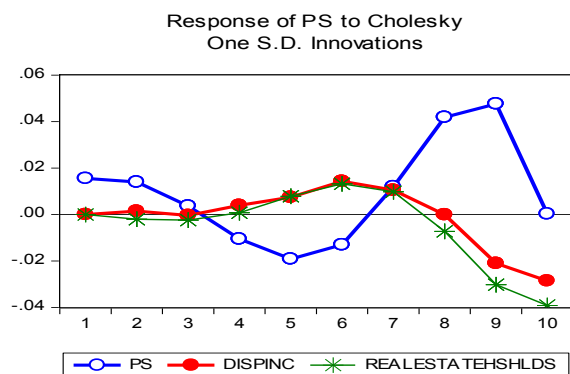
End of model 7

Model 8 - Private Social Spending (*PRS*), Disposable Personal Income (*DISPINC*), Real Estate Assets held by households (*REALESTATEHSHLDS*)
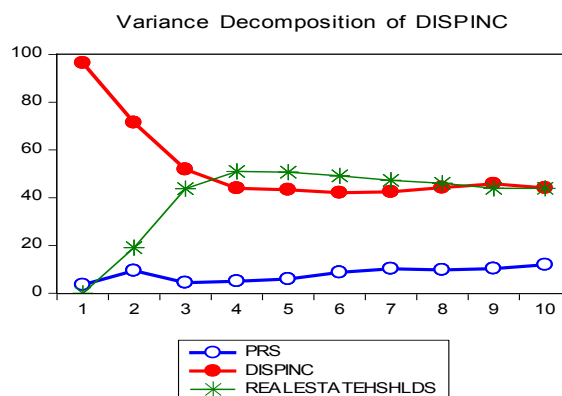
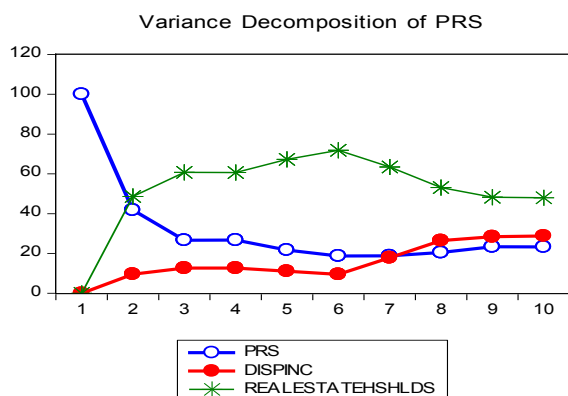Sample (1982-1997)

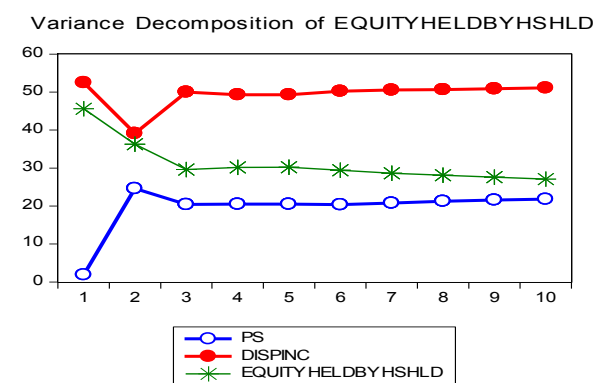### Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of REALESTATEHSHLDS

Sample (1998-2010)

Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of REALESTATEHSHLDS to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

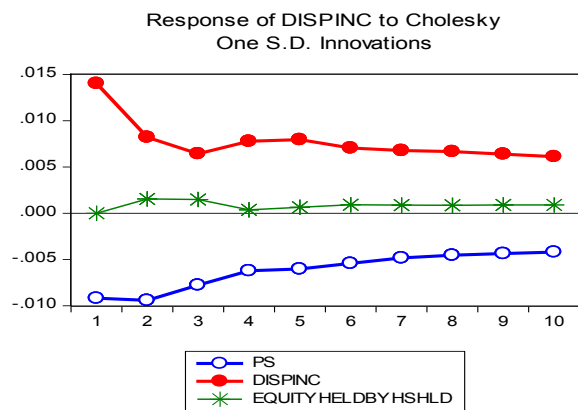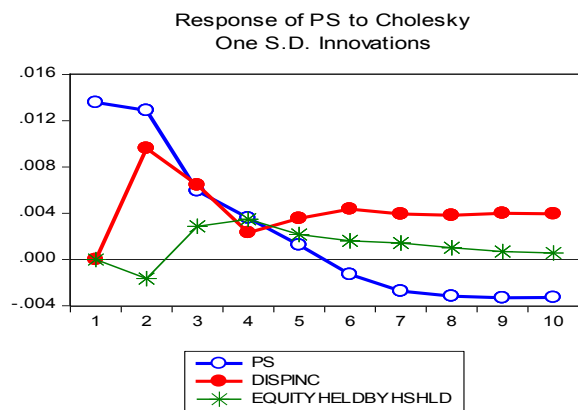Variance Decomposition of REALESTATEHSHLDS

End of model 8

Finally, in models 9 and 10 we look at a household finance variable that seems to be more remote from the influence of welfare state transformations, namely households' ownership of corporate equity. The distribution of these assets is skewed towards the upper income distribution and a significant effect would bolster the financialization literature that sees both the changes in welfare states and in household finances as part of larger secular shift towards the dominance of finance and regressive commercialization. In model 9, we find before the break that a 1% rise in PS has a weak short-lived effect of 0.04% on equity holdings (but falls to around 0 by year 3); after 1996, this temporary effect is much stronger and negative at (-)0.2% in year 1 (rising to 0 by year 3). The explanatory power of PS for the variance in equity holdings of 20% before the break increases to between 30 and 40% afterwards. In model 10, a weak negative response of equity holdings (-0.08%) to a 1% rise in PRS before the break turned to a strong positive, albeit short-lived response of almost 0.2% after 1997. The explanatory power of PRS for the volatility in equities decreases however, from around 60% of the variance of equity holdings to around 40% after the break in 1996. There are no feedback effects of equity holdings on PS and on PRS.

The findings on the two social spending variables lend some support to the hypothesis in the financialization literature: first of all, that we find any relationship between social spending and equity holdings is remarkable; second, the rising significance for and the expected sign of a change in PS after the break indicates a regime shift; and last but not least, the strong positive impulse of PRS after the break is consistent with the view that welfare state transformations and the prominence of financial markets for households are part of one big change. The only caveat is that the declining explanatory power of PRS for equity holdings does not entirely fit this interpretation.
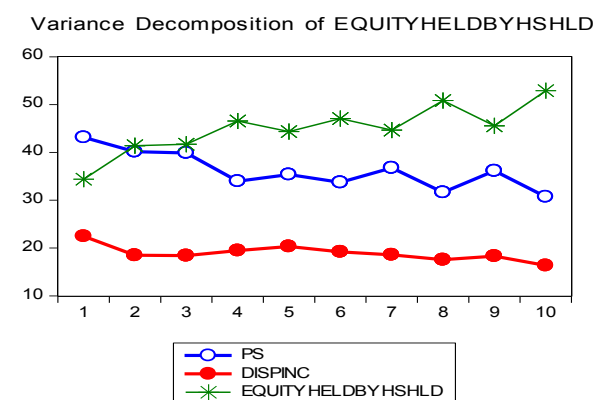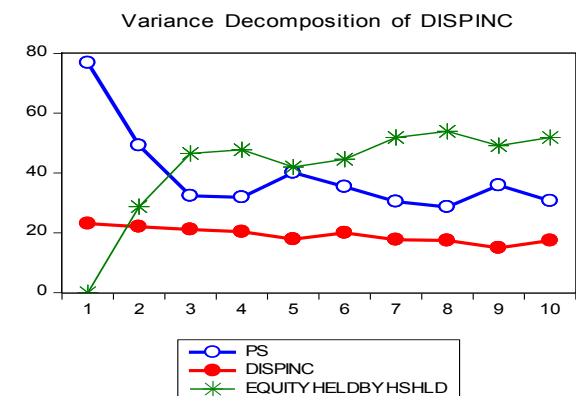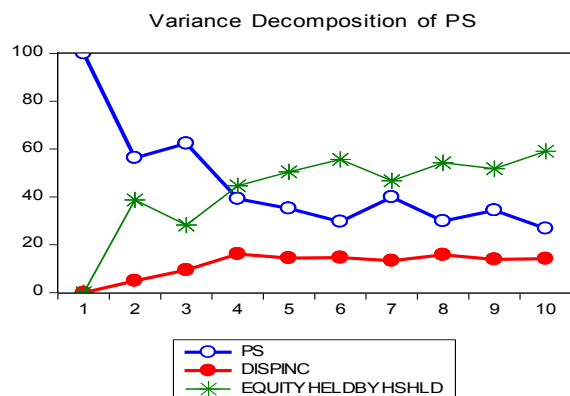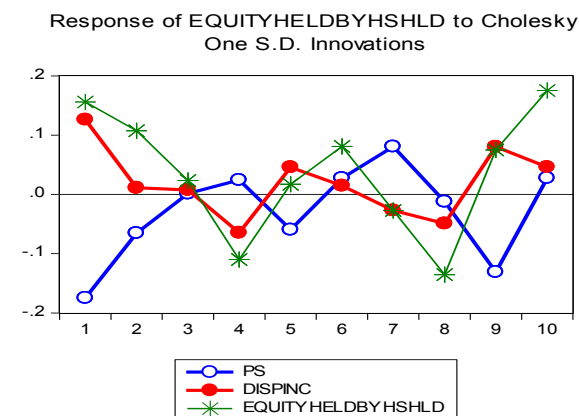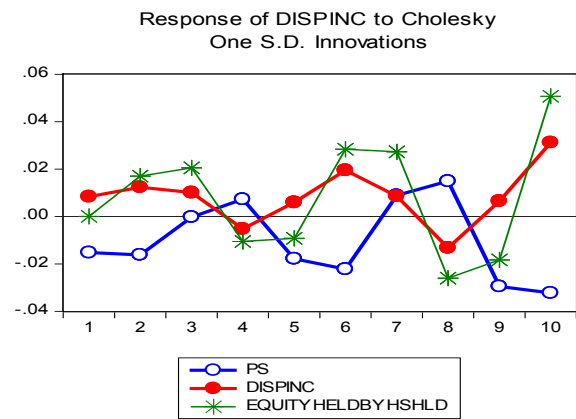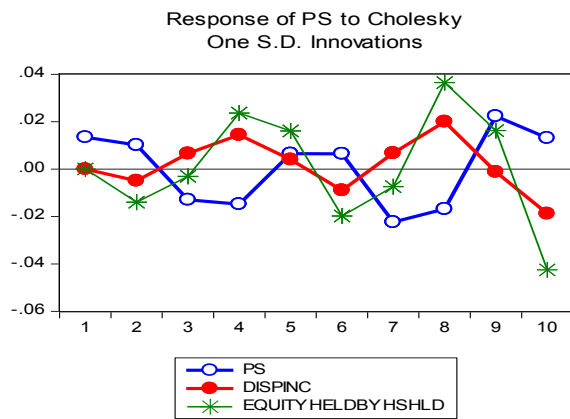
Model 9 - Public Social Spending (*PS*), Disposable Personal Income (*DISPINC*), Equity held by households (*EQUITYHELDBYHSHLD*)

Sample (1982-1995)

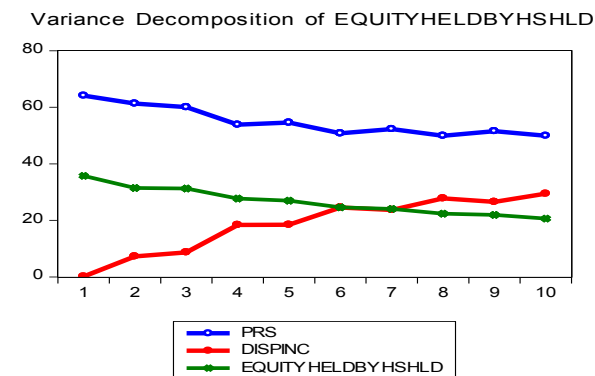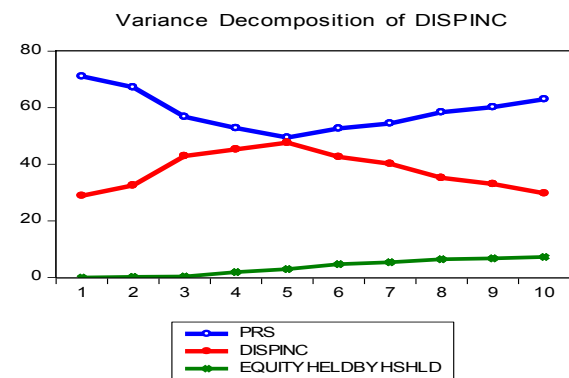Response of PS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of EQUITYHELDBYHSHLD to Cholesky One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of EQUITYHELDBYHSHLD

Sample (1996-2010)

Response of PS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of EQUITYHELDBYHSHLD to Cholesky One S.D. Innovations

Variance Decomposition of PS

Variance Decomposition of DISPINC

Variance Decomposition of EQUITYHELDBYHSHLD

End of model 9.

Model 10 - Private Social Spending (*PRS*), Disposable Personal Income (*DISPINC*), Equity held by households (*EQUITYHELDBYHSHLD*)

Sample (1982-1996)

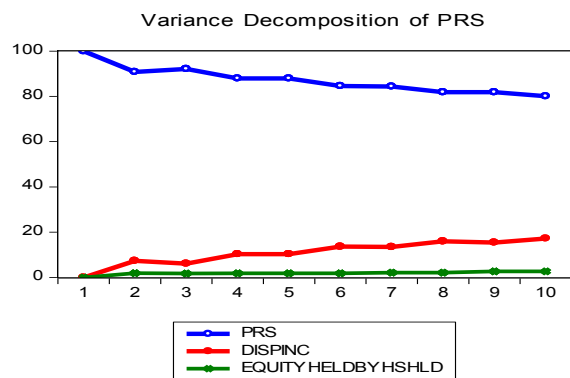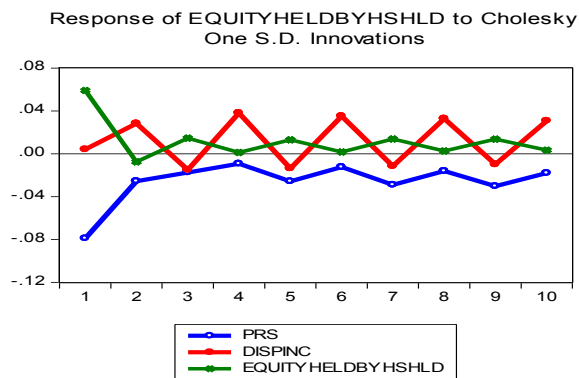Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of EQUITYHELDBYHSHLD to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of EQUITYHELDBYHSHLD

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Sample (1997-2010)

Response of PRS to Cholesky One S.D. Innovations

Response of DISPINC to Cholesky One S.D. Innovations

Response of EQUITYHELDBYHSHLD to Cholesky One S.D. Innovations

Variance Decomposition of PRS

Variance Decomposition of DISPINC

Variance Decomposition of EQUITYHELDBYHSHLD

End of model 10

Our asset channel models have a fairly consistent message: our findings on models with PS suggest that the retrenchment of public provisions has contributed to households seeking private substitutes. In both pension entitlements and household real estate we find a delayed negative effect supporting the asset channel. On equity holdings, we find that PS has an unexpected strong negative effect. Even if short-lived, this is consistent with the hypothesis that financialization has led to a commercialization of households' social safety. Last but not least, we find that the 'hidden

welfare state', ie the incentivised expansion of PRS, contributed as expected to the expansion of pension assets, real estate holdings and equity investments of households.

In sum, we consider our evidence on the asset channel to be strongest. The next section tries to link the findings here to evidence about changes in the tax-transfer system that could account for this channel.

IV. Changes in the US tax and transfer system since the later 1980s

Changes in the tax system and the ways how transfers were delivered ever have transformed the US welfare state since the 1970s. For the explanation of the structural break noted in sub-section III.A, we would look for reforms under the Bush senior government onwards and into the early years of the Clinton administration.

First, the pension system was significantly reformed, but again, somewhat early for the break we found above. The Revenue Act of 1978 introduced pension tax subsidies for occupational pension plans, under Section 401(k) of the US tax code. Further reforms in 1981 allowed employees to borrow against their plans and receive their accumulated pension savings as a lump sum when they left their job (Hacker 2002: 164-165). This could explain a delayed effect because obviously it requires some time to elapse before enough contributions have accumulated that can be used as collateral for, say, a mortgage. Employers took up this opportunity for cutting their taxes much more vigorously than anticipated. Subsequently, they also shifted from defined-benefit (DB) to defined-contribution (DC) pension plans whereby employees were given broad latitude to determine the amount and types of investments they would make, but bearing the risk of inadequate retirement funds. While in 1985 35 percent of workers were in DC plans, by 1996 the share of DC plans had surpassed that of the DB plans. By 2009, 61 percent of the aggregate pension funds were held in DC, and only 39 percent in DB (Ryan et al, 2011).

In a similar vein, the years following the 1993 tax increases lead to a further proliferation of tax vehicles to promote purpose-specific saving. For instance, an Education Individual Retirement Account (IRA) and the Section 529 Qualified Tuition Program were created to help taxpayers pay for future education expenses. Medical Savings Accounts were promoted to facilitate saving for medical expenses. Roth IRA was also enacted, providing a new form of retirement savings by allowing contributions to be made in after-tax dollars (unlike the traditional IRA and employer-based 401(k) plans) and tax-free distributions (US Department of the Treasury, 2003). What is relevant for our context is that these vehicles could explain the dominance of an asset channel over a debt channel: households were incentivized to first save and then take on debt on the basis of a down-payment.

The changes in taxation that took place in the early years of the Clinton administration are complex[8] and cannot entirely be reconciled with the idea of a structural break. Marginal tax rates on incomes were increased in both the 1990 and the 1993 budgets, reinstating the tax progressivity that was abolished under Republican administrations. Top tax rates increased from 28% in 1989 to almost 40% in 1993; Medicare contributions also increased significantly for high-income earners. Capital gains taxes, by contrast, were significantly reduced in the 1997 bill. This is somewhat too late for our findings of an asset channel that works through corporate equity held by households.

V. Conclusion

Our paper contributes to an increasing literature that tries to explain what caused the surge in household finance that ended in the Great Recession since 2008. We draw attention to the fact that ill-conceived social policy changes, notably retrenchment of public provisions and expansion of tax subsidies for private provision, stimulated households to take recourse to financial products. A first

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[8] http://www.americanprogress.org/issues/tax-reform/report/2012/04/19/11404/the-federal-tax-code-and-income-inequality/

finding is that there is a structural break in the relationship between social spending and various household finance variables in the mid 1990s.

We established that private social spending has the expected effect of stimulating household finance. We also find that it is not so much that either public retrenchment or the hidden welfare state of tax expenditures pushes households directly into debt or leveraging up on their homes. Rather, it works through an asset channel, ie the changes in social spending seem to cause an expansion of pension assets, real estate and even corporate equity held by households.

We tried to relate these findings to changes in the tax-transfer system since the mid-1980s until the early years of the Clinton administration. While some connections can be drawn, we cannot claim what really can be made responsible for the structural change. More research is needed.

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URL: http://www.policyalmanac.org/economic/archive/tax_history.shtml accessed on April 28th 2014

Appendix

A1. Description of the data

Variable name	Description	Sample period	Source
Disposable Income	Disposable Personal Income	1950-2010	Federal Reserve St Louis database
Equities	Corporate equities –Assets-Households	1952-2010	Federal Reserve St Louis database
Household Financial Obligations	Household Financial Obligations as a percent of Disposable Personal Income	1980-2010	Federal Reserve St Louis database
Pension Funds	Pension Fund Reserves – Assets - Households	1952-2010	Federal Reserve St Louis database
Private Social Spending	Private Social Spending in terms of 2000 prices	1980-2010	OECD Social Expenditure Database
Public Social Spending	Public Social Spending at constant 2000 prices	1980-2010	OECD Social Expenditure Database
Real Estate Assets	Real Estate – Assets-Households	1952-2010	Federal Reserve St Louis database

The data is expressed in annual terms. Natural logarithms were applied to the data (except for household financial obligations) before they were used in the estimations. The main summary statistics follow below:

Variable name	Minimum	Maximum	Mean	Stnd. dev	Median
Disposable Income	7.57	9.30	8.56	0.52	8.59
Equities	6.56	9.23	8.09	0.85	8.17
Household Financial Obligations	15.45	18.76	17.14	0.93	17.18
Pension Funds	6.71	9.47	8.42	0.84	8.54
Private Social Spending	7.06	8.44	7.91	0.42	7.94
Public Social Spending	8.12	9.03	8.54	0.27	8.56
Real Estate Assets	8.05	10.12	9.14	0.61	9.06

A2. Robustness analysis

For robustness purposes, we estimated a set of specifications to check whether the results obtained in section III are consistent. More specifically, we calculated the confidence intervals, estimated the specifications in first differences, and checked whether the results alter significantly when we use other proxies for household indebtedness and asset variables.
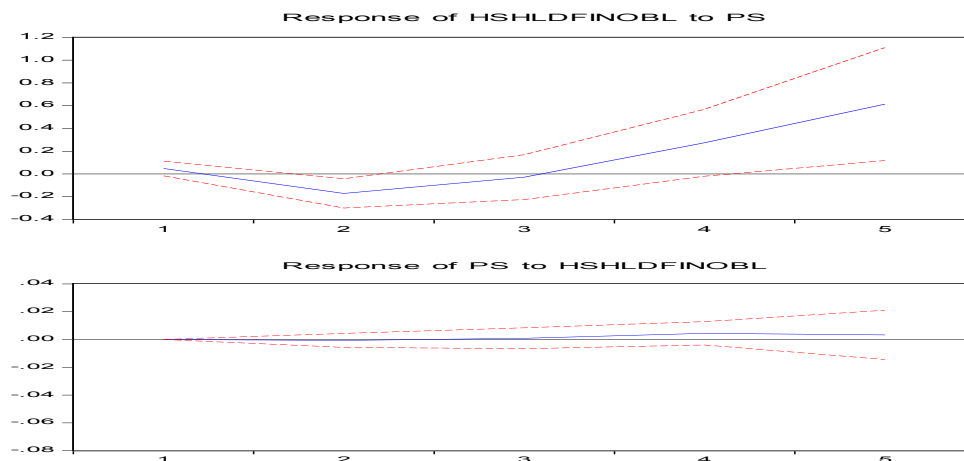
Confidence Intervals

In first instance, we calculated the confidence intervals for our results in models 1-10 above. The intervals are based on the 2 standard error band of the (median) impulse response. The IR horizons are expressed in annual terms. We only report the confidence intervals for the variables of interest

in the models, the household finance and social spending variables. The confidence intervals for the other variables are available upon request.
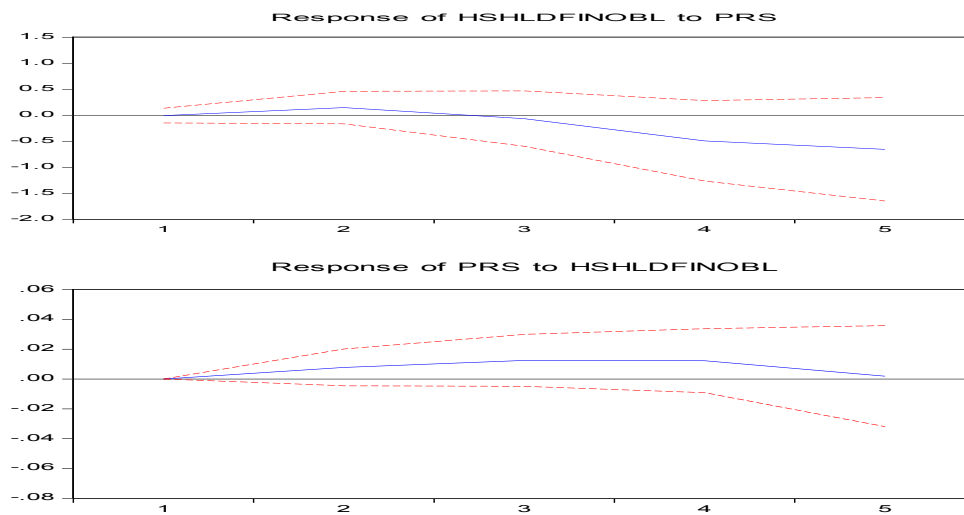
Model 1: (1982-1997)

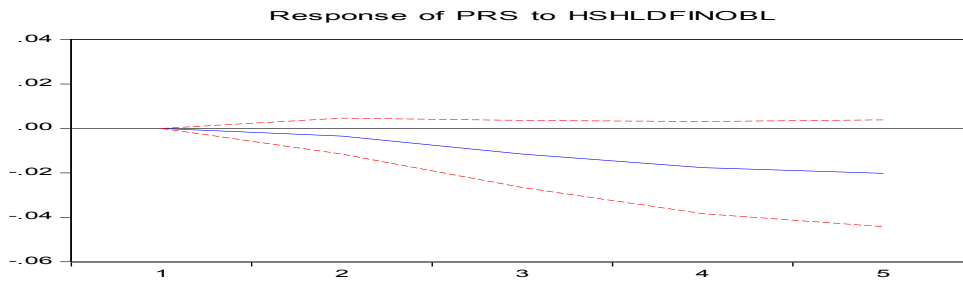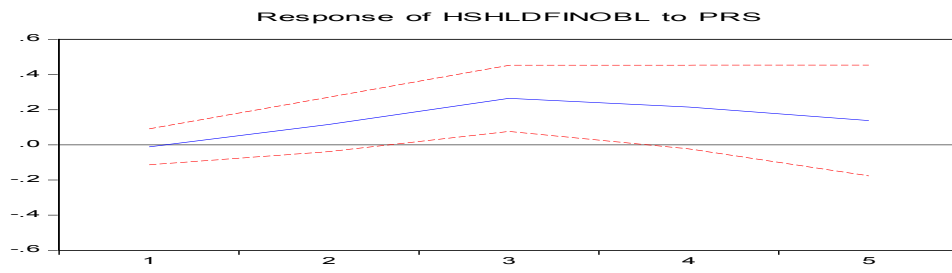Response of HSHLDFINOBL to PS

Response of PS to HSHLDFINOBL

(1998-2010)

Response of HSHLDFINOBL to PS

Response of PS to HSHLDFINOBL

Model 2: (1982-1995)

Response of HSHLDFINOBL to PRS

Response of PRS to HSHLDFINOBL

Response of HSHLDFINOBL to PRS

Response of PRS to HSHLDFINOBL

Model 3:   (1982-1994)

Response of HSHLDFINOBL to PS

Response of REALESTATEHSHLDS to PS

Response of PS to HSHLDFINOBL

Response of PS to REALESTATEHSHLDS

(1995-2010)

Response of HSHLDFINOBL to PS

Response of REALESTATEHSHLDS to PS

Response of PS to HSHLDFINOBL

Response of PS to REALESTATEHSHLDS

Model 4:   (1982-1996)

Response of HSHLDFINOBL to PRS

Response of REALESTATEHSHLDS to PRS

Response of PRS to HSHLDFINOBL

Response of PRS to REALESTATEHSHLDS

(1997-2010)

Response of HSHLDFINOBL to PRS

Response of REALESTATEHSHLDS to PRS

Response of PRS to HSHLDFINOBL

Response of PRS to REALESTATEHSHLDS

Model 5:   (1982-1993)

Response of PNSNFUNDRSRVHSHLDS to PS

Response of PS to PNSNFUNDRSRVHSHLDS

(1994-2010)

Response of PNSNFUNDRSRVHSHLDS to PS

Response of PS to PNSNFUNDRSRVHSHLDS

Model 6: (1982-1997)

Response of PNSNFUNDRSRVHSHLDS to PRS

Response of PRS to PNSNFUNDRSRVHSHLDS

(1998-2010)

Response of PNSNFUNDRSRVHSHLDS to PRS

Response of PRS to PNSNFUNDRSRVHSHLDS

Model 7:   (1982-1994)

Response of REALESTATEHSHLDS to PS

Response of PS to REALESTATEHSHLDS

(1995-2010)

Response of REALESTATEHSHLDS to PS

Response of PS to REALESTATEHSHLDS

Model 8: (1982-1997)

Response of REALESTATEHSHLDS to PRS

Response of PRS to REALESTATEHSHLDS

(1998-2010)

Response of REALESTATEHSHLDS to PRS

Response of PRS to REALESTATEHSHLDS

Model 9: (1982-1995)

Response of EQUITYHELDBYHSHLD to PS

Response of PS to EQUITYHELDBYHSHLD

(1996-2010)

Response of EQUITYHELDBYHSHLD to PS

Response of PS to EQUITYHELDBYHSHLD

Model 10:   (1982-1996)

Response of EQUITYHELDBYHSHLD to PRS

Response of PRS to EQUITYHELDBYHSHLD

(1997-2010)

Response of EQUITYHELDBYHSHLD to PRS

Response of PRS to EQUITYHELDBYHSHLD

SVAR in first differences

Next we wanted to check whether trends in the data were driving the results of the VAR coefficients. In particular, we were suspecting that the household asset variables, as well as private social spending might be an I(1) process. Indeed, following the unit root tests for our variables, we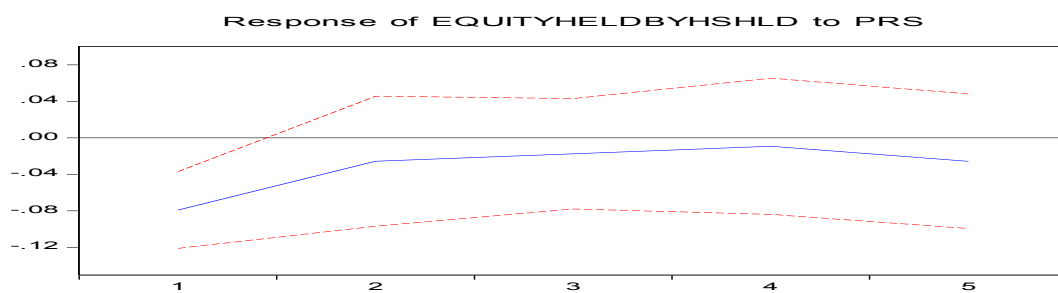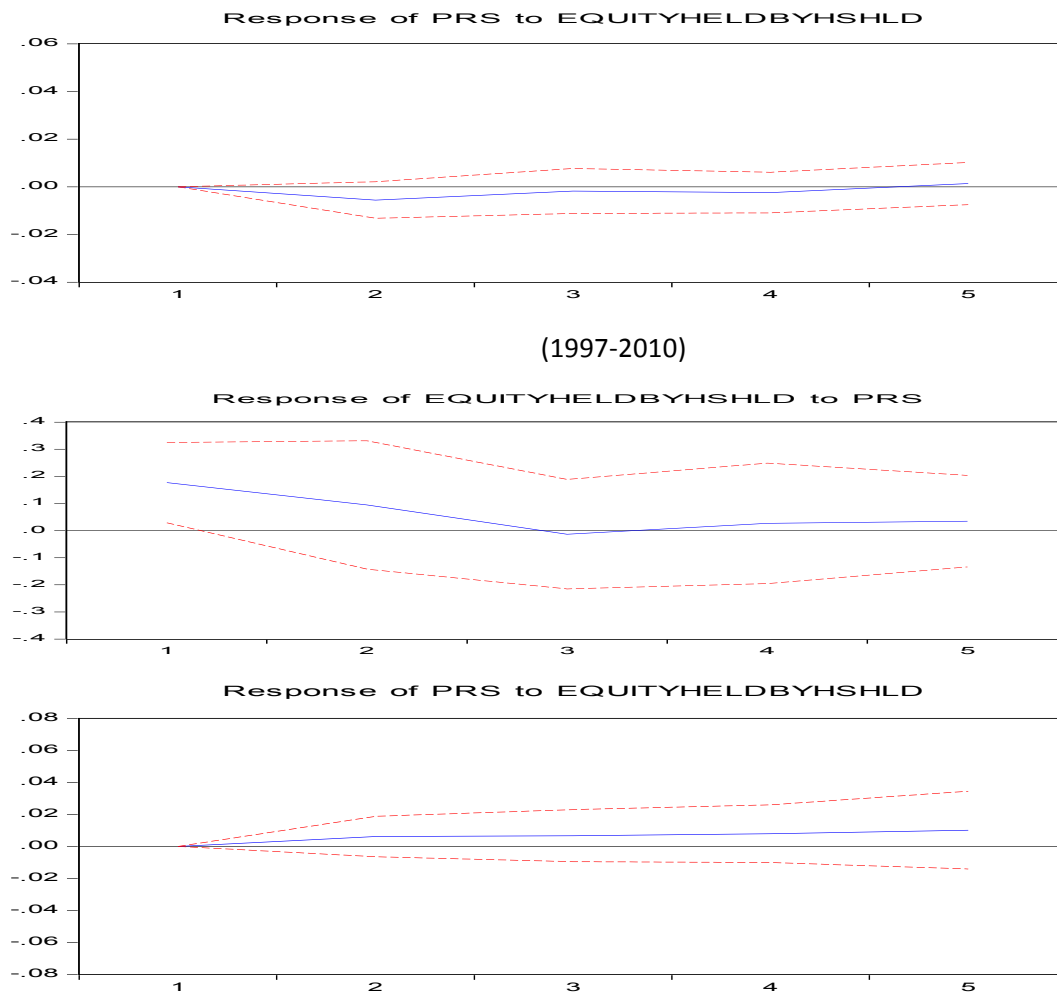 found that all variables, except household financial obligations were a I(1) process. Therefore, we re-estimated all the specification in first differences. Our new sample stretched from 1983-2010 (including any possible break within the sample).

Overall our (qualitative and quantitative) results do not change when we run the model in first-differences, both in terms of impulse responses and variance decomposition. The only exceptions are: models 2, 4 and 6 before the break, and 8 and 10 after the break, where the impulse responses are qualitatively the same, but have higher magnitudes. Not only does this confirm our previous findings, but it also makes our results on private social spending even more appealing and re-assuring.

Alternative specifications for household finances

Lastly, we wanted to test whether our findings change when we use alternative definitions of household debt and assets. In particular, we wanted to see what the outcomes on the debt and leverage channels (models 1-4) are when we first use a more standard and narrower definition of household debt (instead of household financial obligations), and second when we use pension funds and equity (instead of real estate assets) in the leverage specifications.

Starting with the debt and leverage specifications, where household debt was included instead of financial obligations, the results look very similar to the benchmark case. The PS has a negative

impact on households' liabilities in both cases, although with some delay after the break for the alternative specification. Also in both cases, PS explains less of the variation in household liabilities after the break. For PRS, the only difference between the two specifications is that the incentive to reduce liabilities comes slightly later in the specification with household debt (horizon 6) compared to the specification with financial obligations (horizon 2).[9] Also, the contribution of public spending in explaining the volatility of household debt after the break is lower than for household financial obligations (10-20% versus 80%). The opposite is true for private social spending, but again only before the break (60% versus 40%).

Lastly, we wanted to check whether the results obtained for models 3 and 4 were significantly different when we exchanged real estate assets for pension fund assets as collateral (ordered last in the models). In sum, the impulse responses of the debt measures (both household debt and household financial obligations) to a shock in (public or private) social spending do not change significantly to the benchmark case above. Moreover, the contribution of private welfare spending in explaining the volatilities of the debt measures is very similar to the benchmark case (30-70%). For the public welfare spending, it is nevertheless lower after the break compared to the benchmark case with real estate assets included in the model (10-20% versus 80%).

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[9] In other words, the impulse response of household debt to a normalized shock in private social spending turns negative in horizon 6, compared to horizon 2 for financial obligations.