

What causes escalating household debt in OECD countries?

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Structure of presentation

1. Motivation and contribution
2. Brief look into household debt : trends and composition
3. Nine testable hypotheses on the causes of household indebtedness
4. Empirical analysis
5. Conclusion

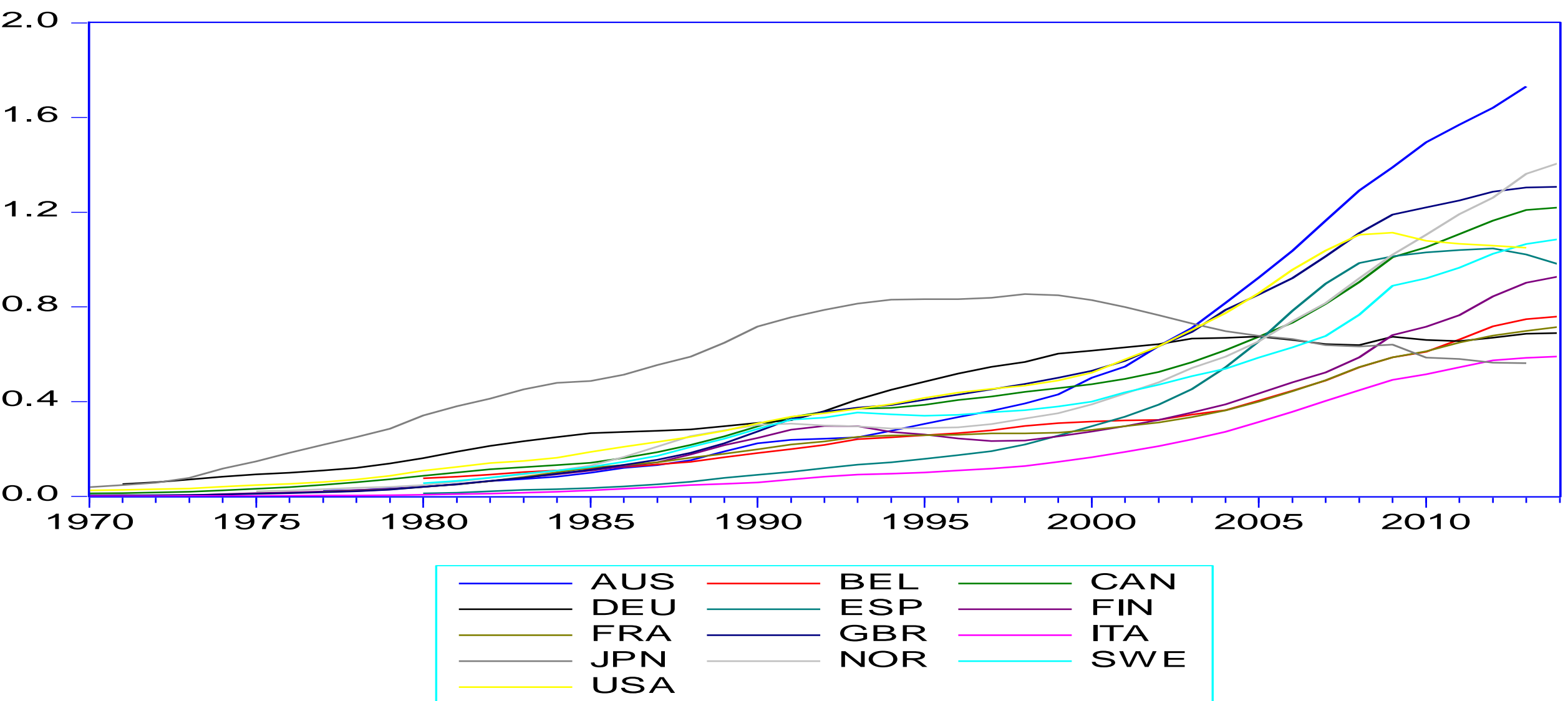
Motivation

- HHD is evidenced as a fundamental cause of the recent Global Financial Crisis and plays a key role in the ongoing Great Recession.
- HHD important for financialisation of households and of housing
- Extensive macroeconomic research on the consequences of HHD, but substantially less on the causes of HHD accumulation
- Contemporary macroeconomics doesn't have a central role for housing (although this is now beginning to change)

Contribution

- Understanding the macroeconomic drivers of household indebtedness is crucial for designing policies which keep households' balance sheets in check, and which in turn maintain financial and macroeconomic stability
- Knowing the drivers of household debt allows for evidence-based policy
- Test six hypotheses which have not yet been tested together in empirical work on HHD

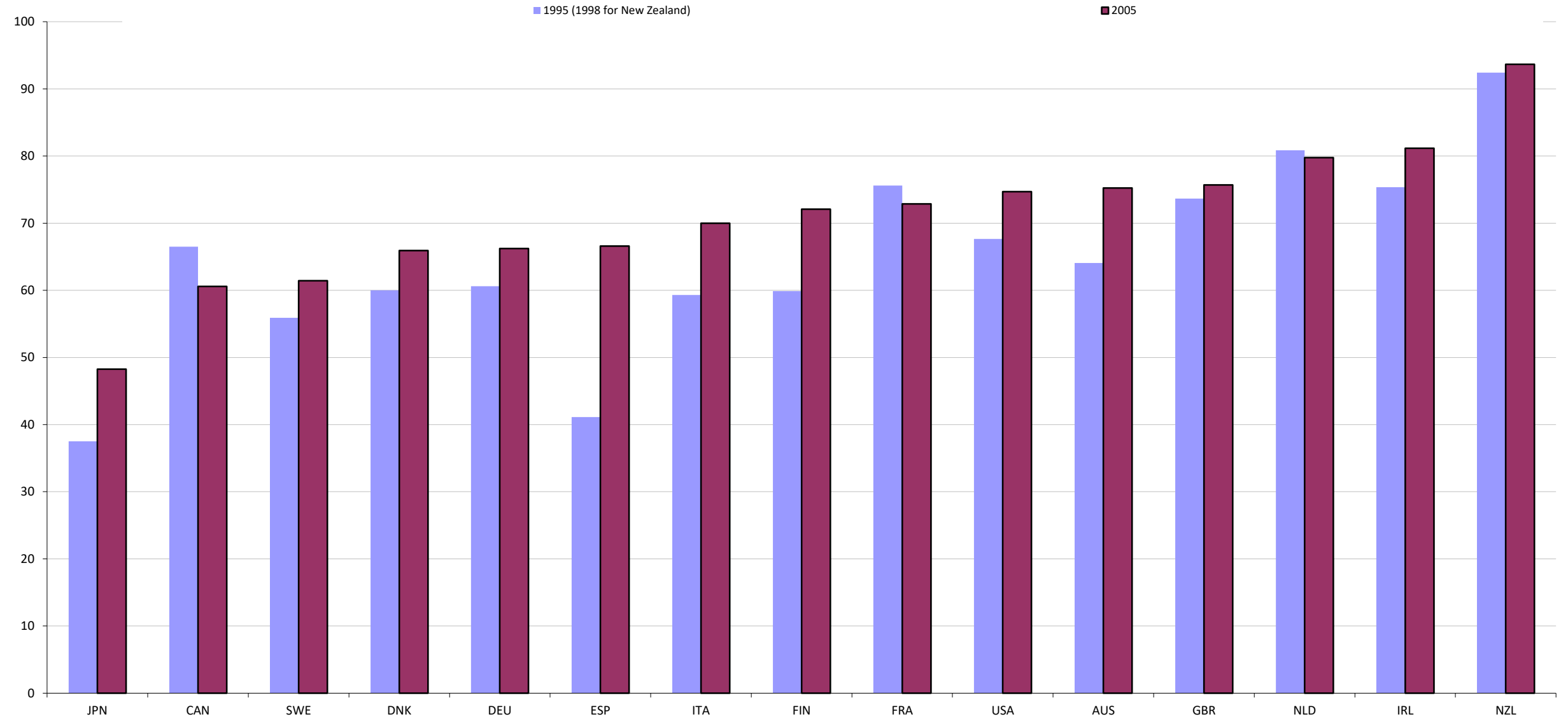
Trends in household debt



trends in household debt

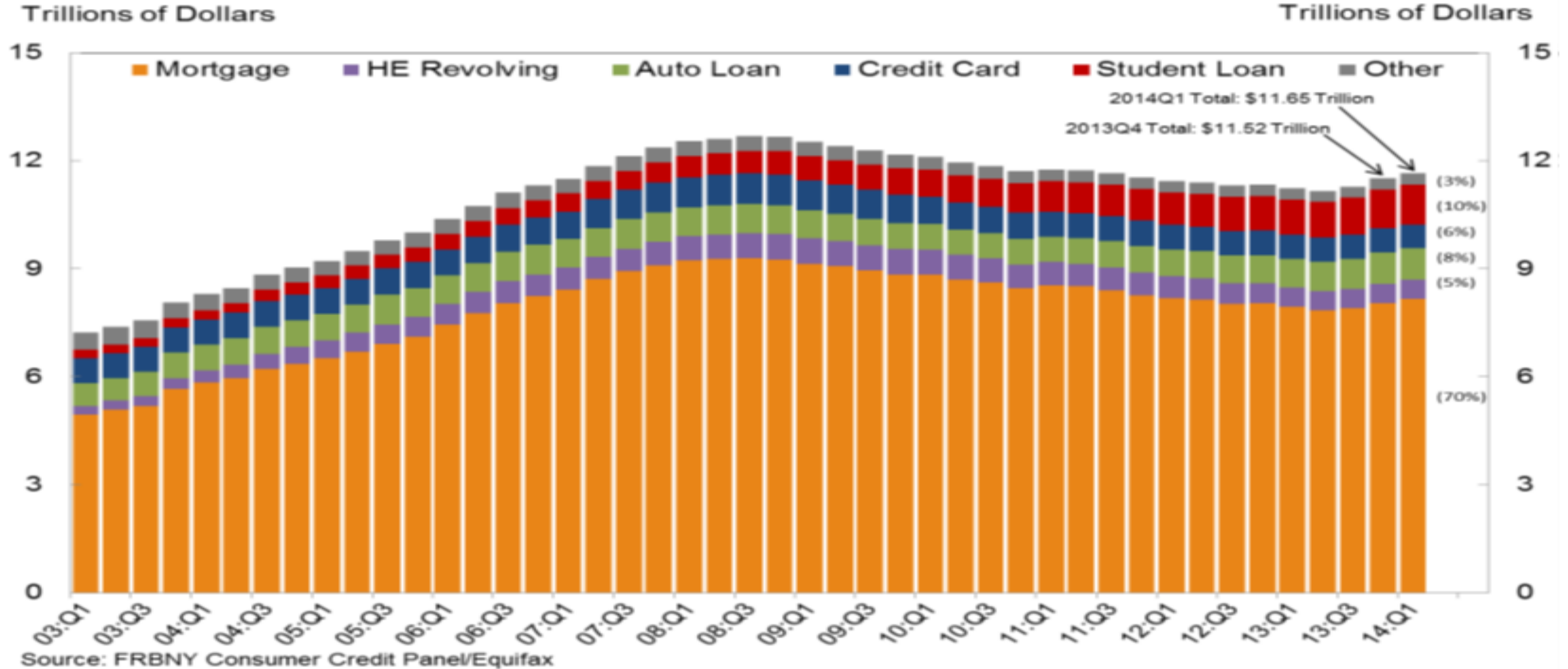
Country	Total percentage change 1991 -2007	Total percentage change 1991 to 2011
Australia	129.78 %	138.05 %
Belgium	35.86 %	-58.74 %
Canada	39.67 %	66.26 %
Germany	23.15 %	13.57 %
Spain	163.43 %	170.42 %
Finland	15.52 %	39.02 %
France	37.33 %	64.10 %
U.K.	50.09 %	46.39 %
Italy	107.21 %	142.86 %
Japan	-5.21 %	-5.28 %
Norway	8.63 %	22.03 %
Sweden	21.52 %	46.06 %
USA	59.13 %	43.21 %

HHD characteristics : mostly mortgage debt



HHD characteristics : details from the U.S.

Total Debt Balance and its Composition



Hypotheses

Tested

1. house price hypothesis
2. expenditure cascades hypothesis
3. falling wages hypothesis
4. age structure hypothesis
5. financial asset hypothesis
6. low interest rate hypothesis

Unable to test due to lack of data

7. welfare state retrenchment hypothesis
8. savings hypothesis
9. credit supply hypothesis

Hypothesis	Theoretical argument	Corresponding variable and expected sign
1 House price hypothesis	Household debt is driven by house prices, as higher house prices relax credit constraints via the collateral effect, which fuel borrowing, and create capital gains, which are realised by borrowing.	house prices (HP) $\frac{\partial HHD}{\partial HP} > 0$
2 Expenditure cascades hypothesis	An increase in the income distribution of households at the top end of the distribution drives household debt, because households at the lower end of the distribution take on debt in order to emulate the consumption of richer households.	top 1% share of income (TOP1) $\frac{\partial HHD}{\partial TOP1} > 0$
3 Falling wages hypothesis	Households use debt as a substitute for reduced wage income in order to maintain path-dependent, backward looking consumption norms.	average wages (AVG WAGES) $\frac{\partial HHD}{\partial AVG WAGES} < 0$

	Hypothesis	Theoretical argument	Corresponding variable and expected sign
4	Age structure hypothesis	The age structure of the population determines household debt because the young accumulate debt while the elderly dissave.	fraction of population aged 65 and older (AGE) $\frac{\partial HHD}{\partial AGE} < 0$
5	Financial asset hypothesis	Upward movements in stock prices drive households to take on debt as leverage to purchase stocks.	stock prices (SP) $\frac{\partial HHD}{\partial SP} > 0$
6	Low interest rate hypothesis	A low short-term interest rate drives household indebtedness because borrowing becomes cheaper.	Short-term interest rate (i) $\frac{\partial HHD}{\partial i} < 0$

	Hypothesis	Theoretical argument	Corresponding variable and expected sign
7	Welfare state retrenchment hypothesis	Reduced welfare spending causes households to take on debt for spending on their basic welfare needs.	state welfare spending (WELFARE) $\frac{\partial HHD}{\partial WELFARE} < 0$
8	Savings hypothesis	Households' stock of savings determines household debt because households borrow only if they have depleted their savings.	household savings (SAVINGS) $\frac{\partial HHD}{\partial SAVINGS} < 0$
9	Credit supply hypothesis	Banks supply more loans to households, allowing households to take on more debt than previously permitted.	credit supply (CRED SUPPLY) $\frac{\partial HHD}{\partial CRED SUPPLY} > 0$

Empirical study

Six hypotheses are estimated together in the following baseline estimation equation :

$$\Delta HHD/GDP_{it} = \alpha_i + \beta_1 \Delta \log HP_{it} + \beta_2 \Delta AVG\ WAGES_{it} + \beta_3 \Delta TOP1 + \beta_4 \Delta \log SP_{it} + \beta_7 \Delta AGE_{it} + \beta_8 \Delta i_{it} + \mu_{it}$$

we apply panel single equation error correction model (ECM) estimations with period effects (PE) and fixed effects (FE) to test the six hypothesis for an unbalanced panel of 13 OECD countries - Australia, Belgium, Canada, Germany, Spain, Finland, France, United Kingdom, Italy, Japan, Norway, Sweden and the US - from 1991-2011

specification	1 baseline FE, PE, PCSE	2 d(hhd/gdp)>0 FE, PE, PCSE	3 d(hhd/gdp)<0 FE, PE, PCSE	4 d(hp)>0 FE, PE, PCSE	5 d(hp)<0 FE, PE, PCSE
sample period	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011
adjustment speed	-0.077085*** (-4.976814)	-0.037798** (-2.282061)	-0.000141 (-0.002557)	-0.100733*** (-4.303069)	-0.083541*** (-3.820409)
long-run coefficients					
loghp(-1)	0.034391*** (3.892914)	0.026876*** (3.451238)	0.000854 (0.058076)	0.028796** (2.004481)	0.041617** (2.537841)
avgwages(-1)	-3.68E-08 (-0.540006)	-6.67E-08 (-0.528318)	1.30E-07 (1.127983)	-1.76E-07* (-1.969313)	3.55E-08 (0.303362)
top1(-1)	-0.149683 (-1.137422)	0.031832 (0.227688)	0.320354 (1.053237)	-0.231495 (-1.485636)	-0.370437 (-1.254374)
logsp(-1)	-0.003781 (-0.730956)	-0.004997 (-1.325724)	0.017934 (1.144754)	0.001837 (0.240801)	-0.007033 (-0.777627)
age(-1)	-0.001240* (-1.683170)	-0.001665** (-2.123185)	0.002051 (0.875455)	-0.002066* (-1.969509)	-3.40E-05 (-0.020221)
i(-1)	0.000364 (0.460396)	-0.001063* (-1.890948)	-0.002021 (-1.001726)	0.001684 (1.349874)	0.001427 (0.884502)
d(hhd/gdp) (-1)	0.583246*** (10.48639)	0.358773*** (4.548648)	0.301430 (2.306655)	0.574574*** (6.480080)	0.554101*** (5.457532)

specification	1 baseline FE, PE, PCSE	2 d(hhd/gdp)>0 FE, PE, PCSE	3 d(hhd/gdp)<0 FE, PE, PCSE	4 d(hp)>0 FE, PE, PCSE	5 d(hp)<0 FE, PE, PCSE
sample period	1991-2011	1991-2011	1991-2011	1991-2011	1991-2011
short-run coefficients					
d(loghp)	0.064920*** (3.244017)	0.099309*** (4.497791)	-0.016103 (-0.487270)	0.077499* (1.966378)	0.040015 (0.825180)
d(avgwages)	-8.24E-08 (-0.907337)	-5.63E-07 (-0.593438)	-5.34E-08 (-0.511555)	1.61E-06** (2.301241)	-1.40E-07 (-1.335893)
d(top1)	-0.129900 (-0.825320)	0.092455 (0.504010)	-0.091537 (-0.243994)	-0.154550 (-1.013558)	-0.022670 (-0.057641)
d(logsp)	-0.011219 (-1.258685)	-0.011886** (-2.199862)	0.010965 (0.630448)	0.008307 (0.733340)	-0.050847*** (-2.774484)
d(age)	0.004371 (1.015801)	-0.001543 (-0.359282)	0.010213 (1.048252)	0.015888** (2.363753)	0.004093 (0.564319)
d(i)	0.001476 (1.387656)	-0.002174*** (-2.930458)	-0.002958 (-1.142177)	0.003629** (2.172008)	-0.000973 (-0.588762)
dw	1.894712	1.748771	3.099871	1.983053	2.170704
r ² adj	0.733789	0.523297	0.663634	0.745885	0.712456
obs	257	188	69	159	98
cross-sections	13	13	13	13	13

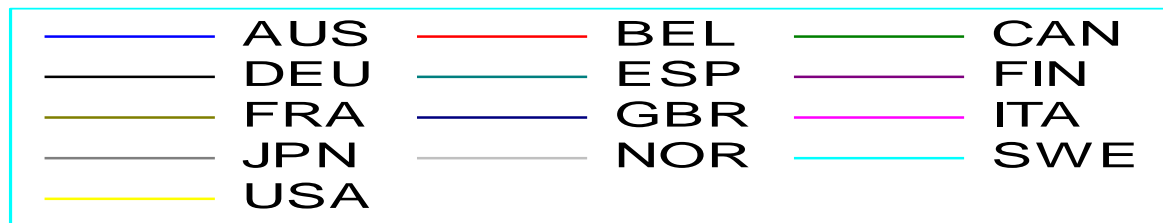
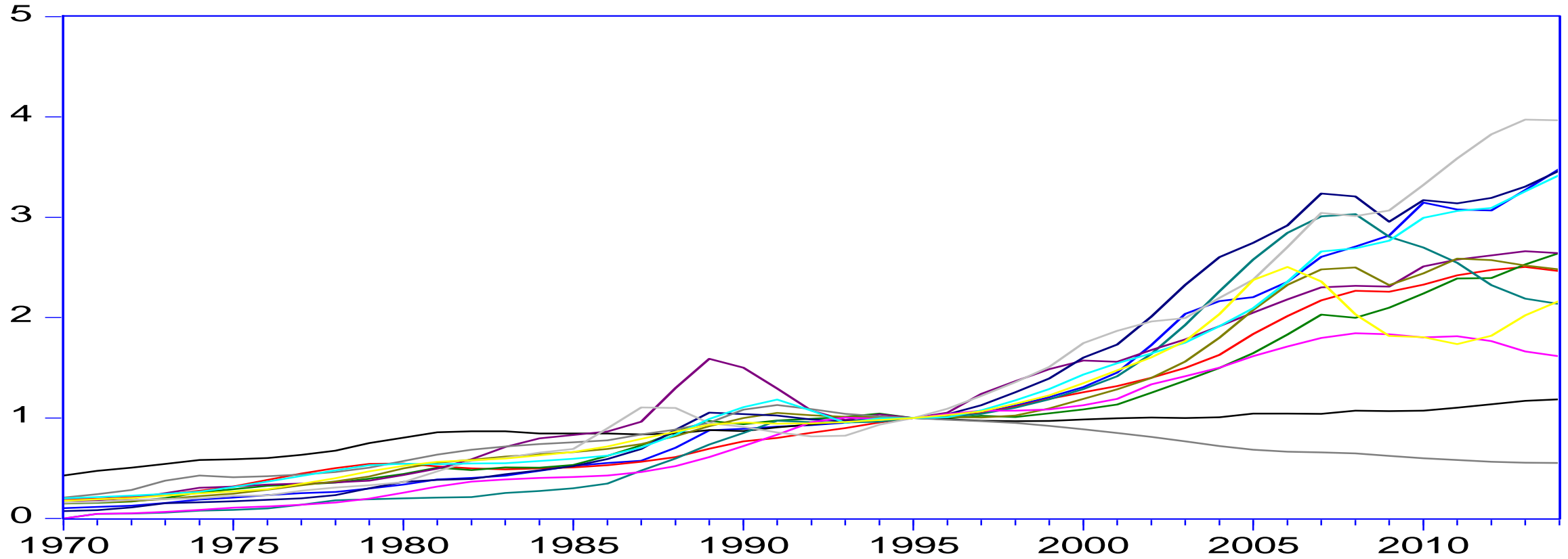
Null hypothesis	Number of lags	Time period	OBS	F-Stat
HHD/GDP does not cause logHP	1	1991 -2011	273	0.07498
logHP does not cause HHD/GDP				12.7398***

Conclusion

- Household borrowing driven mostly by real residential house prices in the both short-run and long-run
 - household debt accumulation is as an outcome of residential real estate transactions
 - macroeconomic models must include the housing market
 - future research should clarify the precise channels through which the real house prices affect household debt accumulation behaviour

THANK YOU

trends in real residential property prices



Empirical study : limitations

- Analysis and results do not reflect country-specific features of HHD accumulation including characteristics of housing and financial markets as well as institutional, policy and regulatory influences on HHD.
- Single-country regressions, complimented by qualitative investigation needed, which will be addressed in future work.
- Inability to include critical data on financial innovation and securitisation, which are thought to be essential features of contemporary HHD. If this data becomes available, it will be used in future work. Important for banks' and financial institutions' behaviour.