

"Saving Rates and House Price Dynamics in Europe: Structural Modeling and Implications for the Future"

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Theme 2:

Factors likely to impact saving behaviors in the next ten years

Key issues to be addressed in the research:

- identification of the main exogenous factors
- quantitative prospects concerning the mechanism
- practical impact of these trends for financial institutions

Our project*

We proposed to combine four elements:

- population ageing
- house price increases
- homeownership rates among the elderly
- innovation in the financial industry (reverse mortgages and similar products) to help the elderly to make their (increased) housing wealth liquid

to perform a cross country analysis of the differential effects of house price dynamics on households' savings

The empirical analysis:

- is backed by a simple life cycle model,
- makes use of both macro and microdata and
- considers five key European Countries: **F, D, I, E, UK**

** Events occurred after the submission have not been taken into account*

Why concentrate on housing wealth?

Four main reasons:

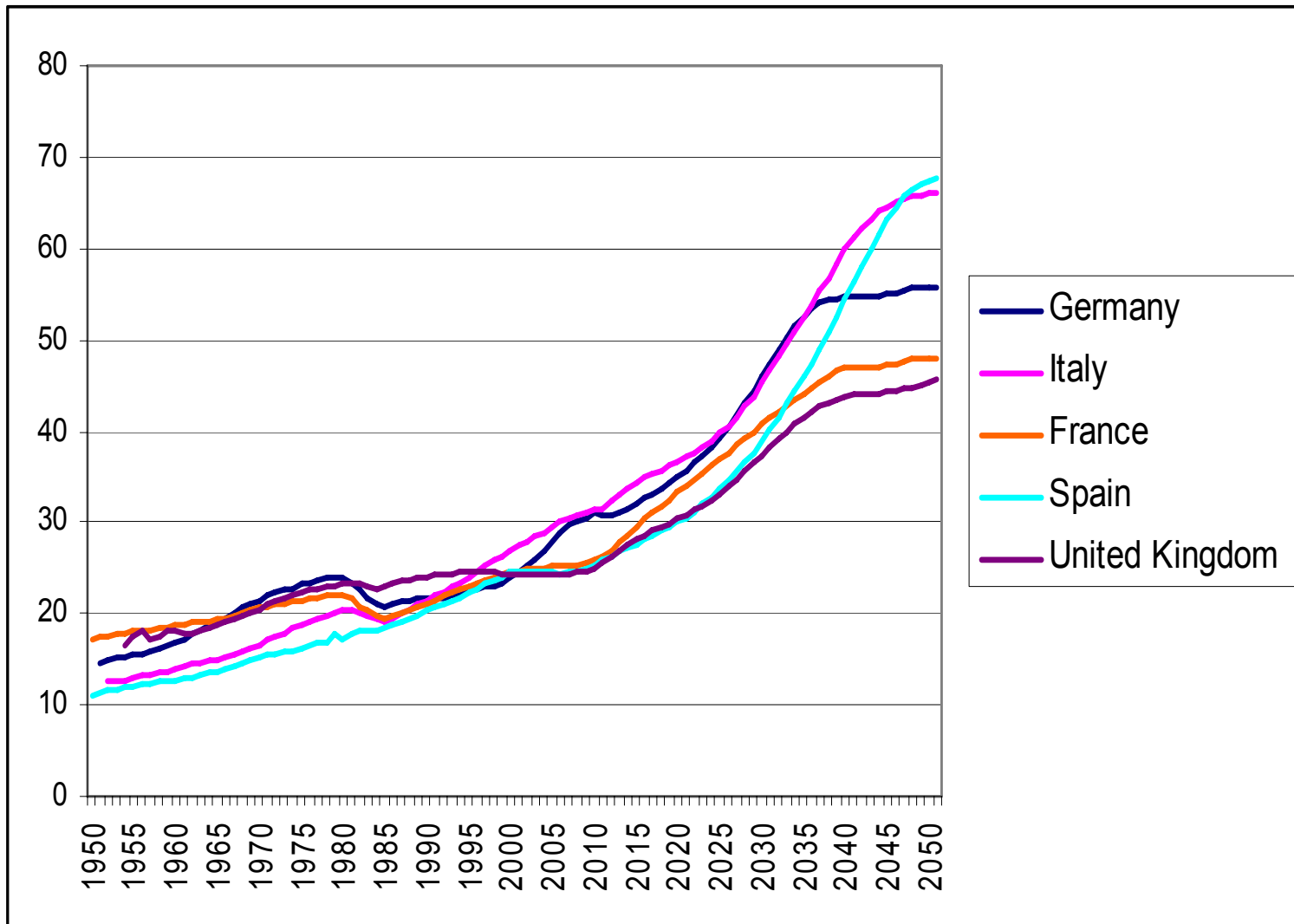
- its weight in households' total assets
- for **homeowners** an increase in **house prices** generates a capital gain, i.e. additional wealth that might be spent in both housing and non-housing goods
- the **elderly** are the main beneficiaries of the increase both because of *higher homeownership rates* and because their *shorter lifetime horizon* makes the increase in housing value less likely to be compensated by the PV of increased future rents
- compared to other assets, house value stands out for its greater illiquidity which, combined with the greater needs of the elderly, could lead to **financial innovations** directed at increasing liquidity

Motivation and background evidence

1. Ageing

- Declining fertility and increasing longevity are expected to hamper economic growth, and to challenge present, still rather generous, welfare states provisions
- The elderly are asked to participate directly in the financing of their increasing longevity by increasing their retirement age
- Could they also participate by using their (increased) wealth?
- Not all the elderly are poor and the possibility to concentrate public resources on those more in need will help increasing the effectiveness of the expenditure.

Old age dependency ratios



Source: National Strategy Reports on Adequate and Sustainable Pension Systems (2005).

2. Real house prices

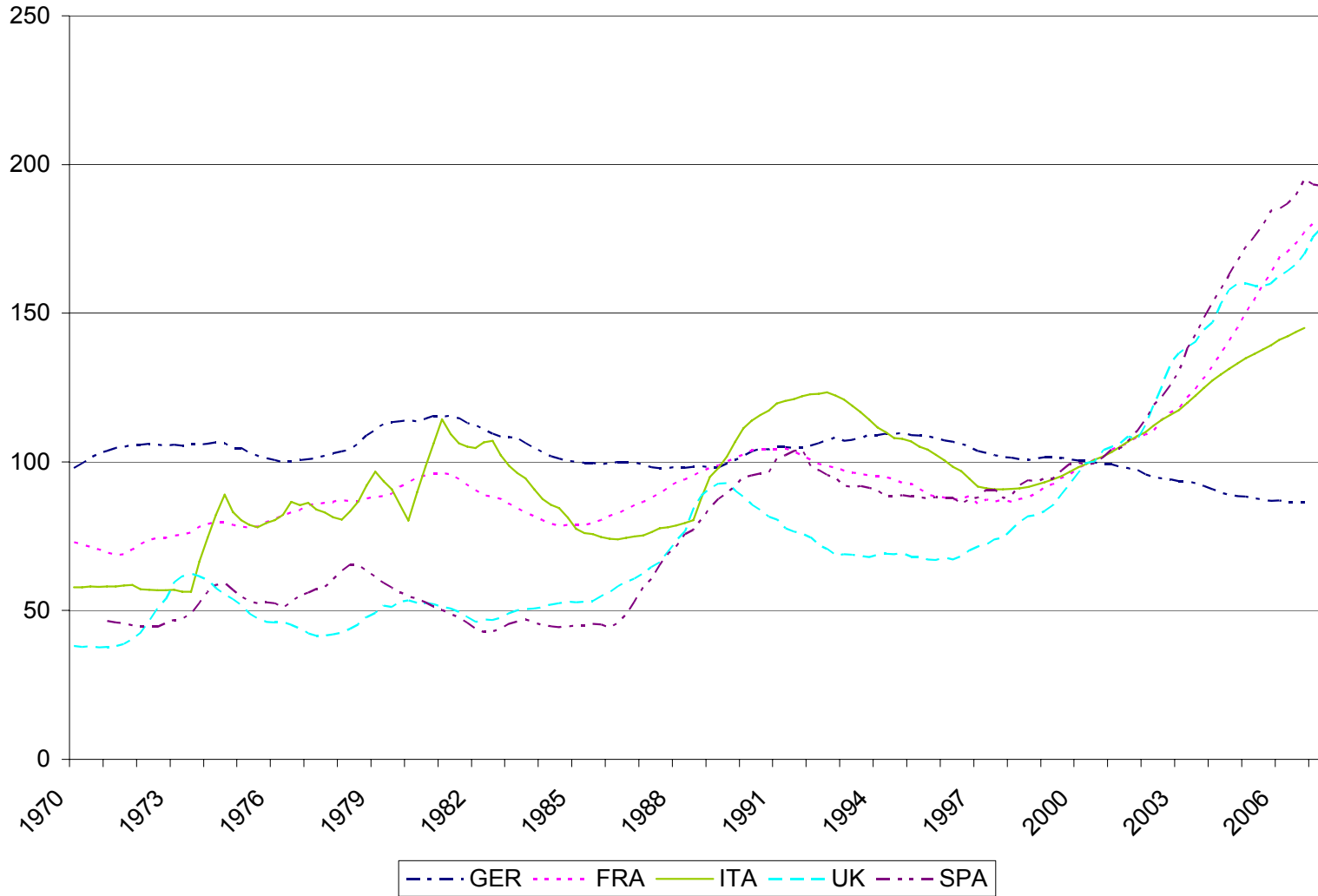
Since 1970, European real house prices have fluctuated around a strong upward trend, more evident after the mid-1990s.

The recent price boom has no historical precedent (Girouard *et al* 2006)

Reasons include:

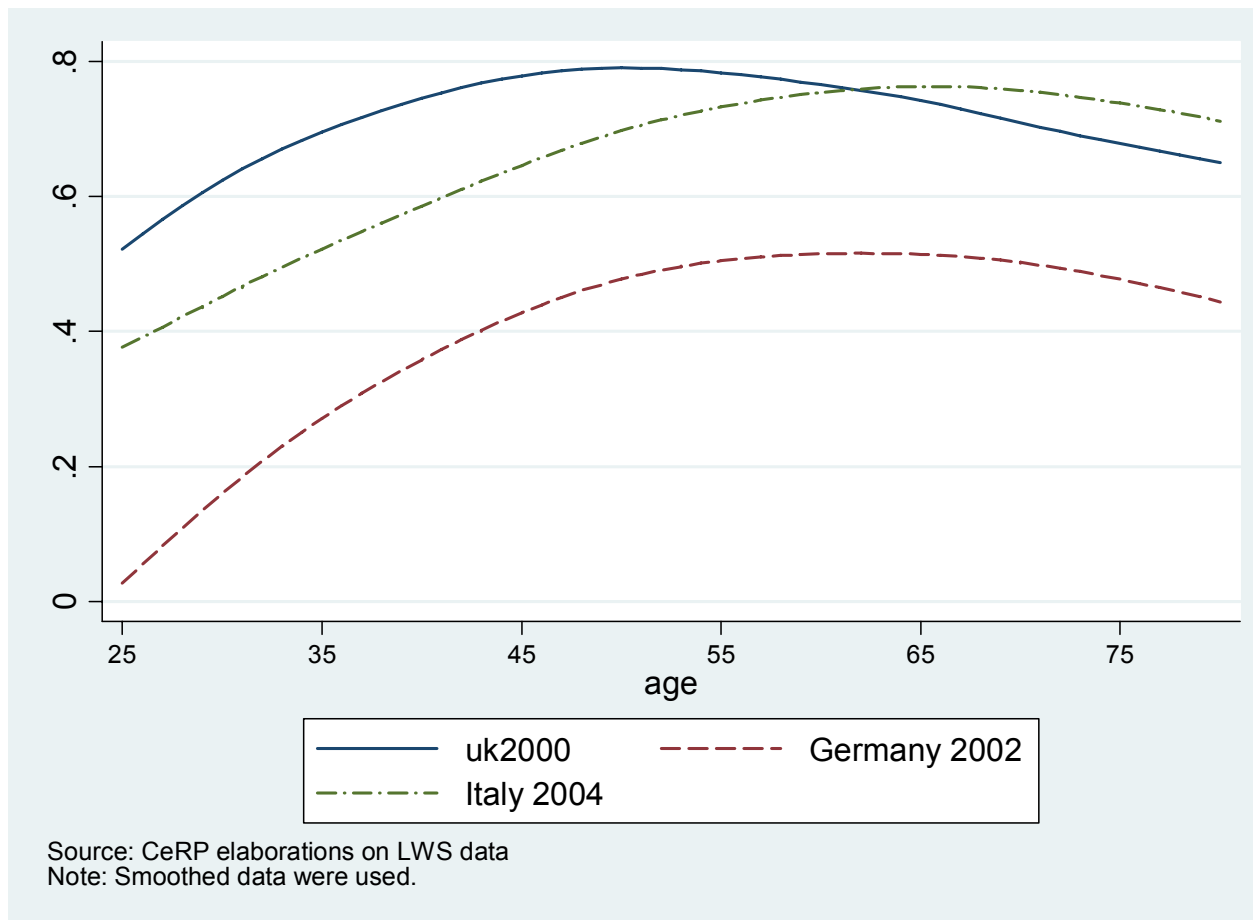
- high income elasticity of housing space demand
- a long phase of comparatively low real interest rates
- demographic trends to smaller (single-unit) households
- increasing scarcity in land availability
- higher average quality of new dwellings
- slow productivity growth in the building industry

Between 2000 and 2006, real house prices the in OECD area – with the exception of Germany - grew at an average annual rate of 6.6 per cent



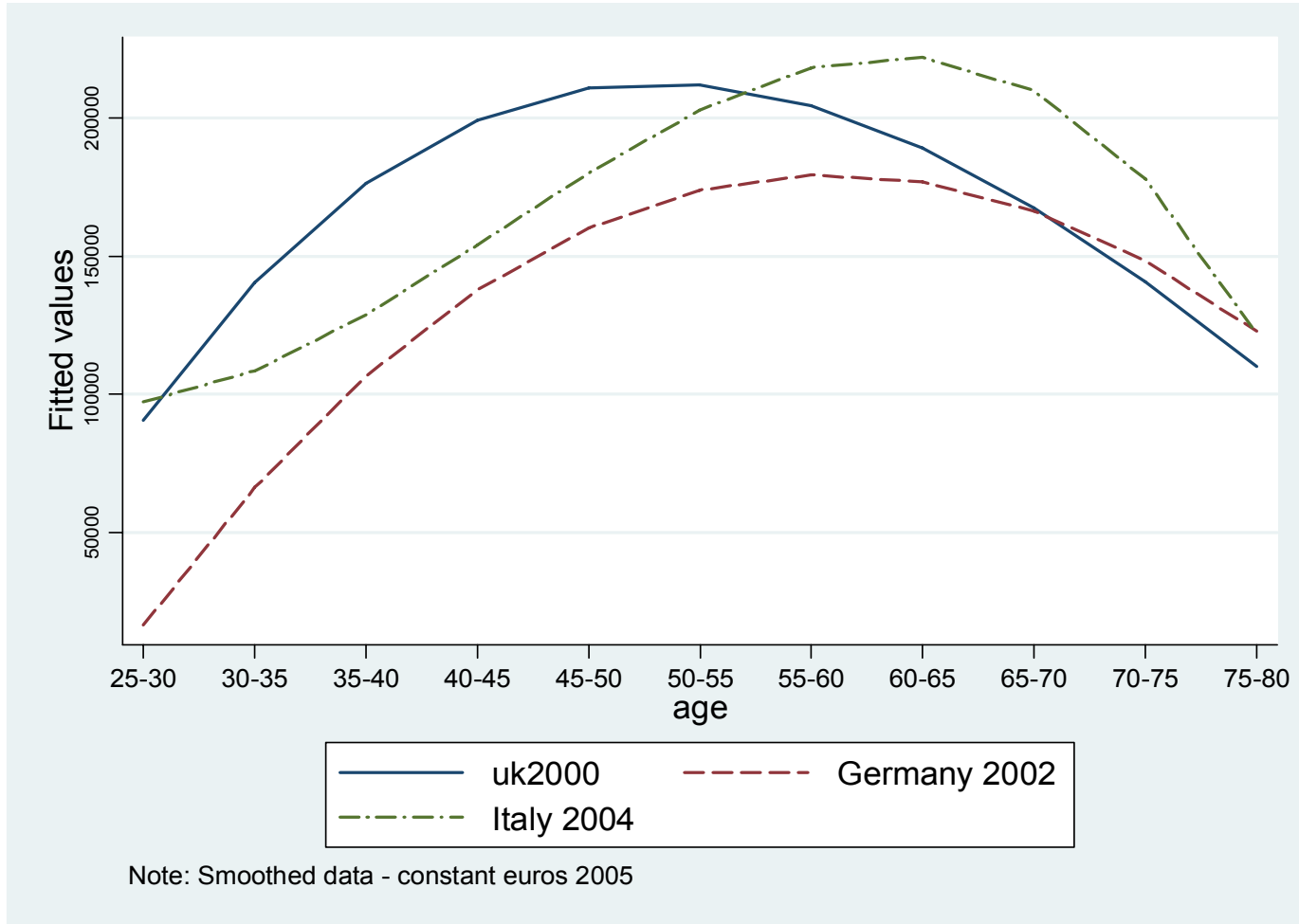
Source: CeRP calculations on OECD data

3. Homeownership rates by age classes



Housing wealth by age: humped shaped?

Total Gross Non-Financial Assets by Age Group of the Households



Source: Luxembourg Wealth Study

The theoretical background

Effects of an increase in house value differ according to whether the household is a renter or a homeowner and to *household's age*

- *Renters:*

- both young and old households are negatively affected

- *Homeowners:*

- young: experience little or no wealth effect (PV of rent increases $\approx \Delta HV$)

- old: experience a **positive wealth effect** (PV of rent increases $< \Delta HV$)

According to standard LCH, this wealth effect should be allocated to both present and future consumption (and possibly to bequeathable assets), depending on remaining expected lifetime

In consequence of the increase in house value, the elderly thus have greater resources to finance their consumption and should effectively use them according to their larger mpc

Empirical evidence:

informal obs of saving rates suggests that Americans, unlike Europeans, have used increased housing wealth to increase consumption

Econometric evidence (Catte et al. 2004): mps is in the narrow range 0.92-0.95 for Australia, Canada, the Netherlands, the UK and the US; in the range 0.98-0.99 for Italy, Japan, and Spain and not significantly different from 1 for France and Germany.

With the exception of the UK, in European countries housing wealth increases translate almost integrally into higher savings

Possible explanations:

- Housing wealth is **illiquid** and markets providing instruments to turn it into liquid assets (reverse mortgages) are either non existent or very thin
 - Households may insure (particularly for LTC) within the family (housing wealth becomes a strategic bequest)
- Is there scope for encouraging markets and products making housing wealth more liquid?

Our research strategy

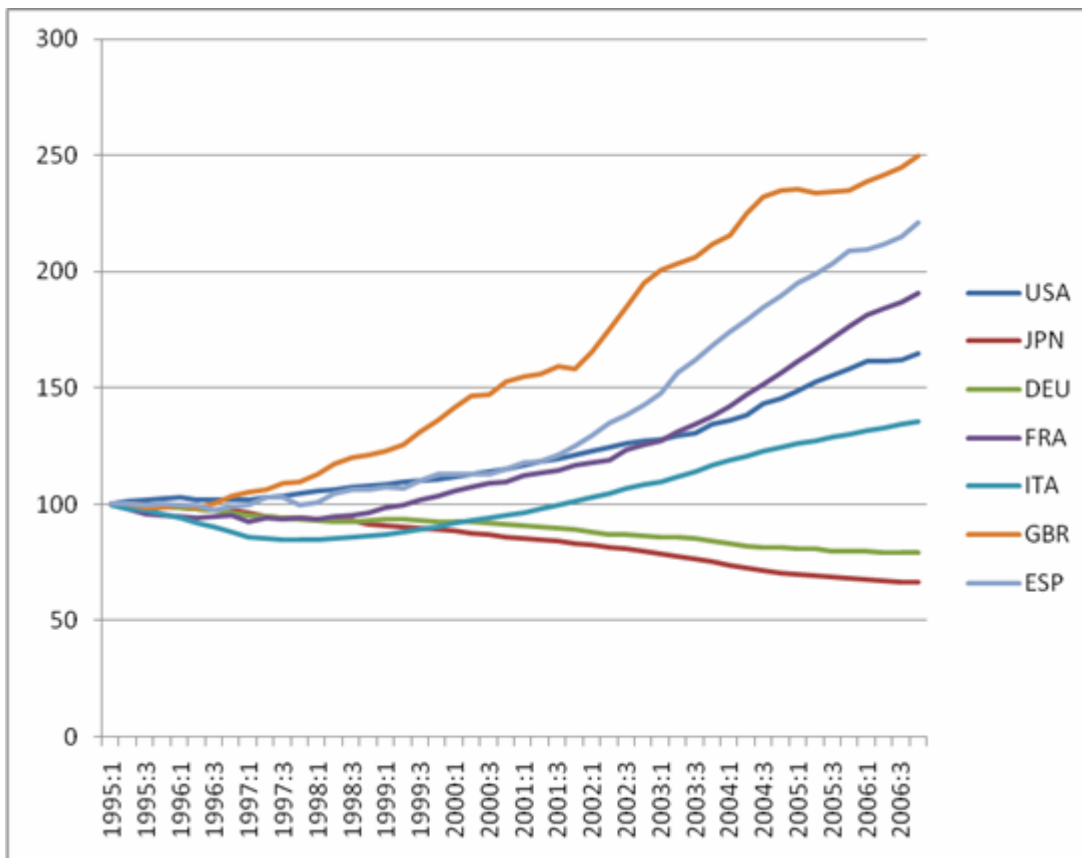
- we develop a **micro-founded, deterministic, optimizing model** at household level to obtain straightforward intuitions of the major factors behind saving decisions
- we then collect and analyze micro (when possible, panel) data from five European countries (F, D, I, E, UK) and estimate empirical models to test the implications of the theoretical framework
- on the assumption that across countries differences in savings may depend on the different role played by ***transitory vs. permanent*** shocks to housing wealth, we:
 - i. separate and measure the two components of housing wealth variations and
 - ii. use time series methods to investigate the consumption response to **permanent** house prices variations
- finally we draw some conclusions and present policy implications

Do Real Estate Capital Gains Affect Savings?

Empirical Analysis.

**France, Germany, Italy, Spain and
the UK**

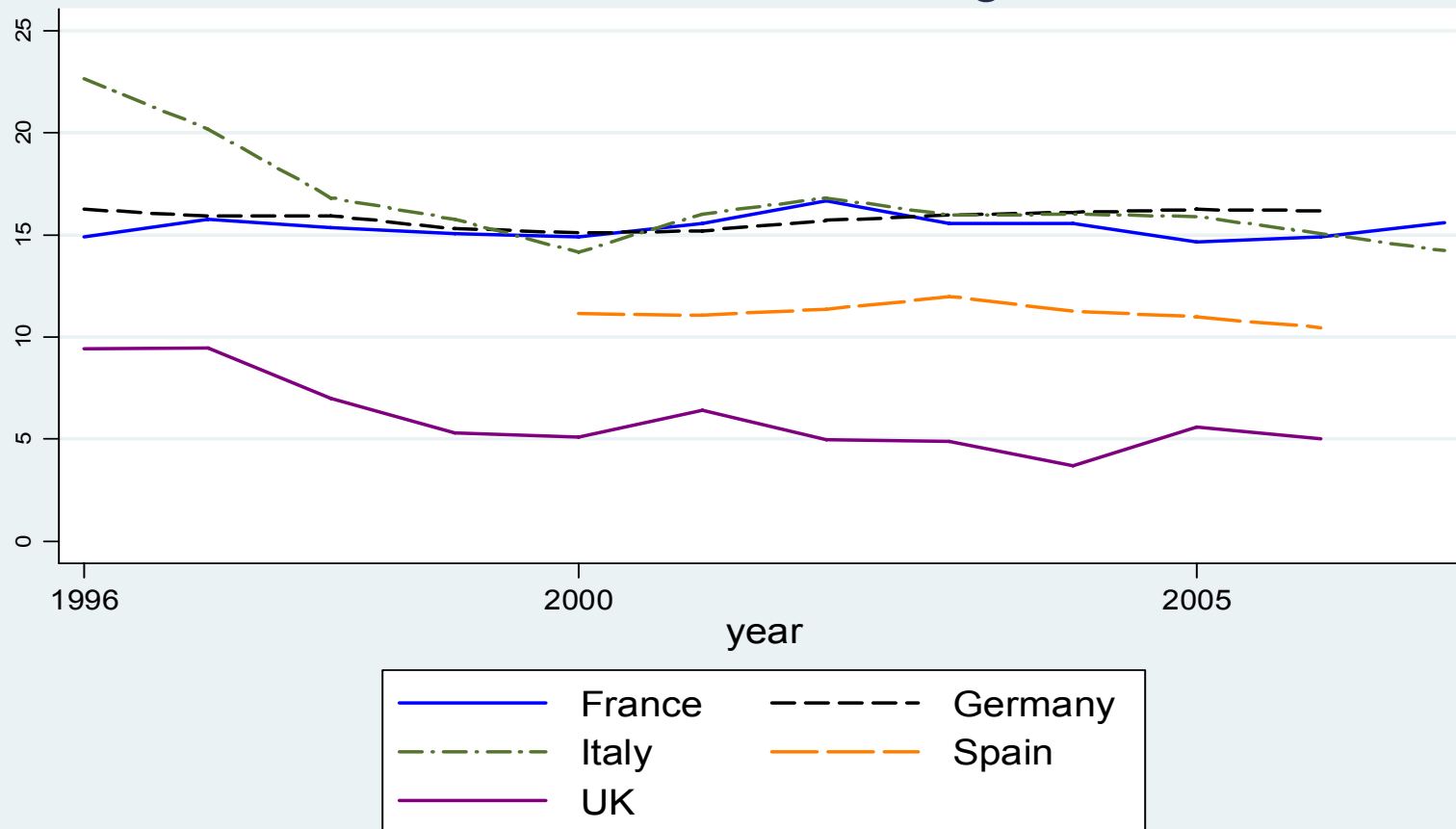
Real House Price Cycles



Source: CeRP calculations on OECD data

Household saving rate

Gross household saving rate



Source : Eurostat Annual Sector Accounts. Last update : June 2008

The research question: how much are savings displaced by real estate appreciation?

- Do households modify their intertemporal decisions due to real estate appreciation?
- Quantify the Marginal Propensity of Savings (MPS) out of non-financial asset for European Households
 - Recent increase in house prices provided large capital gains on real estate investments
- How MPS varies with household's head age

Background information

Household saving rate has been steadily declining in the US, the UK and Canada during the last decade.

- Sustained price increase have characterized those countries (6.6% in real terms since 2001 in OECD countries on average)
- Catte et al. (2006): estimate the MPC out of non-financial asset at aggregated level
 - *it ranges from **0.05** to **0.08** for Australia, Canada, NL, the UK and the US*
 - *it is almost **zero** for Italy, Japan and Spain*
- *Critiques to the macroeconomic approach: Muellbauer (2007) – **spurious relationship***
- ***Our methodology:***
 - Life-cycle model with CRRA utility depending on housing and other goods consumption
 - Estimates on micro data

Theoretical Background

- We draw from Skinner (1993) and build a two period standard life-cycle model where households maximise over housing services and other goods
- Isoelastic utility, separable btw the two goods ,as well as time separable

$$U(c_t, c_{t+1}, h_t, h_{t+1}) = \frac{c_t^{1-\gamma}}{1-\gamma} + \mu \frac{h_t^{1-\gamma}}{1-\gamma} + \frac{1}{1+\delta} \left(\frac{c_{t+1}^{1-\gamma}}{1-\gamma} + \mu \frac{h_{t+1}^{1-\gamma}}{1-\gamma} \right)$$

- According to the life cycle an increase in wealth should raise consumption in both housing services and other goods

The equilibrium price of housing equity is equal to the present value of future rents, net of the transaction costs:

$$P_t = \sum_{j=t+1} \frac{p_{t+j}}{(1+r)^{j-(t+1)}}$$

At the beginning of $t+1$, each household chooses his optimal level of real estate holding, h_{t+1}^*

In the second period the household can liquidate its house through a “reverse mortgage” obtaining a fraction v of total housing value:

$$(P_{t+1} h_{t+1}^*) / (1+r)$$

the discounted value of its housing property at the current price.

The budget constraints in each period are :

$$t : A_t + c_t + \rho_t h_t \leq Y_t + \rho_t \bar{h}_t$$

$$t + 1 : c_{t+1} + \rho_{t+1} h_{t+1} \leq Y_{t+1} + A_t(1+r) + (\bar{h}_t - h_{t+1}^*)P_t + \rho_{t+1} h_{t+1}^* + \frac{P_{t+1}h_{t+1}^*}{1+r}$$

Where

- A_t indicates the net financial wealth of the household at the end of the first period of life
- \bar{h}_t is its initial endowment of housing assets.
- $(\bar{h}_t - h_{t+1}^*)P_t$ is the revenue the household obtains by selling part of its initial real estate endowment $(\bar{h}_t - h_{t+1}^*)$ at the beginning of period $t+1$ at price P_t
- $\rho_{t+1}h_{t+1}^*$ the rent of the new real estate holding and $\frac{P_{t+1}h_{t+1}^*}{1+r}$ is the revenue from the disinvestment of the housing equity.

If there are no liquidity constraints the intertemporal bdg constraint holds:

$$c_t + \rho_t h_t + \frac{c_{t+1} + \rho_{t+1} h_{t+1}}{1+r} = Y_t + \frac{Y_{t+1}}{1+r} + \rho_t \bar{h}_t + \frac{P_t \bar{h}_t}{1+r},$$

Empirical Implications

- Without moving costs and bequests motives, the consumption/savings of the older generations should be more reactive to shocks in rents and/or house prices. All the effects are stronger for households with higher real estate endowments.
- Price increase for homeowners increases available asset, thus increasing consumption possibilities.
- However, housing services become more expensive, as a consequence of house price increase by decreasing available resources: the magnitude of the net wealth effect depends on the age at which price increase materializes
- The older the household head the lower the remaining lifetime and thus the higher the net wealth effect

Summary statistics

Summary Statistics. France

Year	% of home owners			% of households with savings>0		
	Males	Females	Total	Males	Females	Total
1998	67.55	43.49	62.13	51.76	39.92	49.09
2004	65.82	41.70	59.79	17.21	11.88	15.88

Source: Enquete Patrimoine, 1998 and 2004.

Summary Statistics. Germany

Year	% of home owners			% of households with saving>0		
	Males	Females	Total	Males	Females	Total
2003	50.42	40.55	45.96	62.45	57.10	60.03
2005	54.04	49.46	51.73	61.41	55.92	58.65
2006	56.18	50.46	53.26	59.96	52.10	55.95

Source: SAVE dataset.

Summary Statistics, Italy

Year	% of home owners			% of households with saving>0		
	Males	Females	Total	Males	Females	Total
1998	68.93	57.72	65.86	79.09	78.29	78.87
2000	70.73	63.76	68.29	79.60	79.95	79.72
2002	70.72	65.01	68.62	79.12	79.57	79.29
2004	69.67	64.37	67.62	78.37	77.91	78.19

Source: SHIW dataset.

Summary Statistics. Spain

Year	% of home owners			% of households with saving>0		
	Males	Females	Total	Males	Females	Total
2002	89.36	85.30	87.99	97.19	95.80	96.72
2003	87.16	83.92	85.99	97.14	95.70	96.62

Source: Spanish Survey of Households and Finances (EFF)

Summary Statistics. UK

Year	% of homeowners			% of households with saving>0		
	Males	Females	Total	Males	Females	Total
1997-1998	75.23	62.25	69.25	43.96	40.54	42.08
1998-1999	76.32	61.62	69.43	45.14	41.21	42.99
1999-2000	76.03	63.28	70.03	42.09	38.70	40.22
2000-2001	76.20	64.07	70.44	43.98	41.53	42.63
2001-2002	75.92	63.76	70.07	44.39	40.73	42.37
2002-2003	76.09	63.88	70.21	44.16	40.58	42.20
2003-2004	75.95	65.85	71.15	43.29	40.55	41.79
2004-2005	73.90	64.15	69.16	43.37	40.44	41.76
2005-2006	78.86	66.92	73.00	44.01	40.03	41.80

Source: BHPS.

France

- We made use of The *Enquête Patrimoine*, which has the specific purpose to investigate in detail the composition and dynamics of the wealth of French families.
- It is carried out periodically since 1986, by the *INSEE*. There is no panel dimension.
- Two waves, 1998 and 2004, were used for the purpose of our research.
- Our final sample consists of about 9000 household-observations in each wave.

France (2)

- Variable used:

“En définitive, avez-vous au cours des 12 derniers mois “mis de l'argent de côté”, c'est à-dire augmenté vos placements financiers par rapport à il y a un an?”.

- No absolute value of the flow of savings each year was given
- Probit analysis on the probability of displaying positive savings

Germany

- We made use of SAVE, an annual data set that spans the period 2001- 2006
- Panel component
- “How much have you and your partner saved in the last twelve months?” ‘saving’ is left censored to zero and the model used for estimation is a tobit
- Four waves were used: 2001, 2003-2004, 2005, 2006.
- Our final sample consists of about 2000 hh-year observations (thus, interviewed more than once)

Italy

- We made use of The Bank of Italy's first Survey of Household Income and Wealth (SHIW). The survey is conducted every two years.
- There is a core panel dimension.
- Waves 1995-2004 were used for the purpose of our research.
- Our final sample covers the year range 1995-2004 and is composed by 11,517 household-wave observations.
- Saving is constructed as total household income less consumption.

Spain

- The data used for the analysis are obtained from the Spanish Survey of Households and Finances (EFF)
- Only one wave is available, 2002
- Saving has been derived as the difference between total household income and non-durable consumption.
- Results show the MPS out of real asset (as capital gains could not be constructed)

United Kingdom

- The empirical analysis uses British Household Panel Survey data for the period 1996-2004.
- Analysis carried out at individual level
- Respondents are asked the following question: *“Do you save any amount of your income for example by putting something away now and then in a bank, building society, or Post Office account other than to meet regular bills?”* Amount is asked if they answered “yes”
- Left censored variable, Tobit technique used
- Final sample: 70,000 individual-wave observations

Estimation strategy

- Our aim is to estimate the impact of house capital gains on total savings:

$$S_{ht} = X'_{ht} \beta + \gamma \Delta H_{ht} + \varepsilon_{ht}$$

- X is a set of economic and socio-demographic variables at household or head of household level
- Capital gains (ΔH) are calculated as the delta of the perceived value of housing wealth
- γ is our parameter of interest. If capital gains (ΔH) increase, they could displace savings and increase consumption (negative γ)
- Positive effect:
 - House price increases generate positive capital gains for homeowners potentially enhancing consumption
- Negative effect:
 - House prices are correlated to the price of housing service; house price increase affecting both sides of the budget constraint for the homeowners.

Results

	France	Germany	Italy	Spain	UK
Net House Value * (age<40)	-0.051	0.063	-0.0004	-0.004	0.0016
Net House Value * (age 40-55)	0.220	0.031	-0.002	-0.008	0.0014
Net House Value * (age>55)	-0.586	0.042	-0.003	-0.005	0.0007

First column: marginal effect on the $P(\text{saving} > 0) * 10^{-7}$

In bold: significant at 5%

An increase in capital gain by €10,000 decreases savings by €20-80.

An increase in real asset by €100,000 decreases the probability of showing positive savings by 0.006.

Discussion

- An appreciation of real estate assets is associated to lower propensity to save with respect to France, to lower savings with respect to Italy and Spain
- The marginal propensity of dis-saving is about 0.003 for the oldest cohort (older than 55). Thus an increase in capital gains by 10,000 decrease savings by € 30
- The UK does not show any reduction in savings out of housing capital gains
- Germany shows no evidence of impact of real estate capital losses on saving behaviour except for old households, where increase in real estate values are positively associated with savings: possible role of asymmetries?
- In general, the impact of housing capital gains on dissaving is very little, confirming the hypothesis that housing asset is perceived as a shadow asset by the households.
- High potential role of reverse mortgage to make asset liquid

Permanent and Transitory Dynamics in House Prices and Consumption

Cross-Country Evidence

The macroeconomic perspective

- Is there any evidence of wealth effects on consumption from house prices?
- Are these effects permanent or transitory?

- Previous evidence in the literature does point to linkages between house prices and real activity:
 - evidence of an inelastic, yet significant positive impact of house prices on real activity has been found for G-7 countries (Beltratti and Morana, 2008; Case et al., 2005; Chirinko et al., 2004; Carrol et al., 2006);

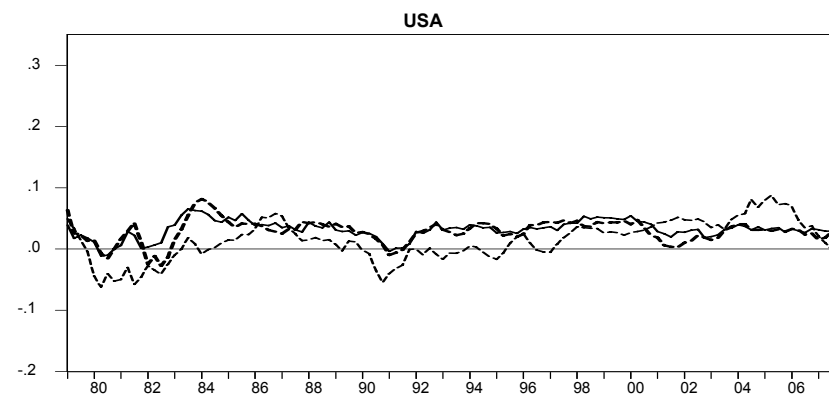
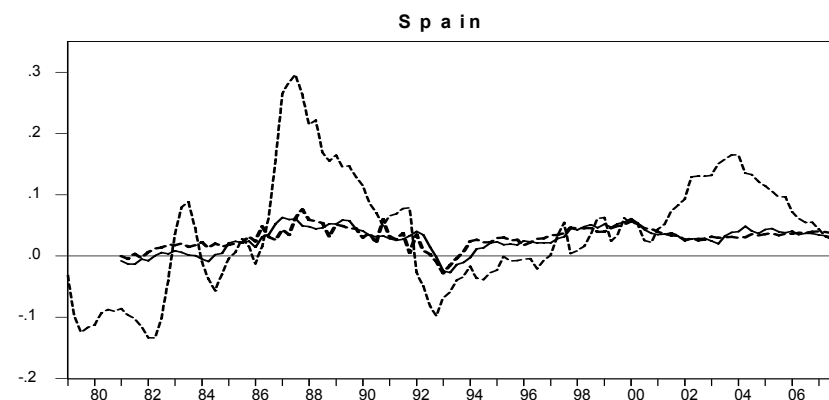
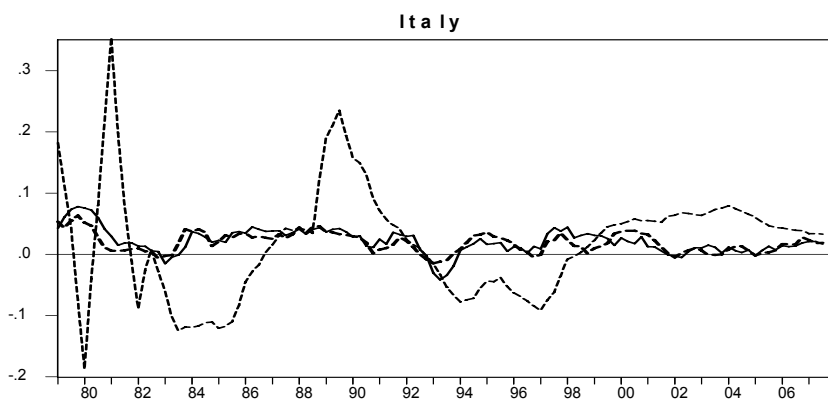
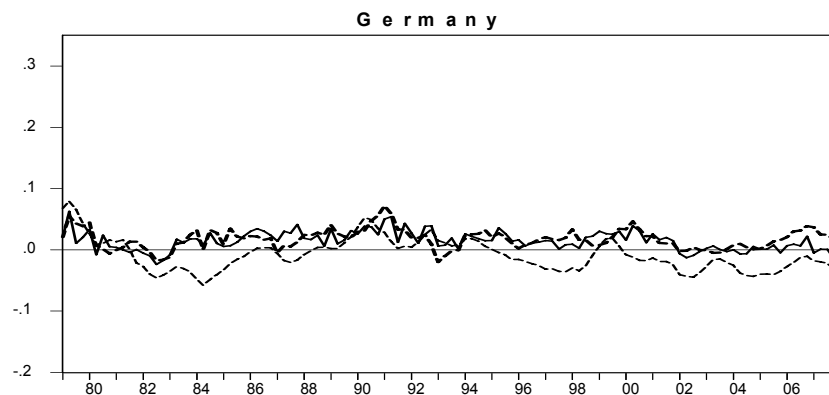
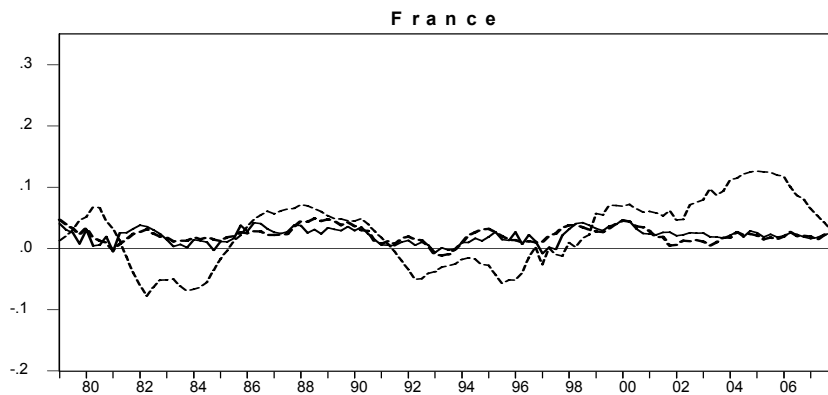
- the effects are in general stronger for investment than for GDP and consumption, and for the US than for the other countries;
- moreover, the effects of house prices on aggregate demand are stronger than those of stock prices.

- To assess empirically the relevance of wealth effects on consumption we focus on some key European countries, i.e. France, Germany, Italy, Spain, the UK, and the US.
- The setting of the analysis is the common trends methodology of King, Plosser, Stock and Watson (1991, KPSW) and Mellander, Vredin and Warne (1992, MVW).

- The approach allows not only to assess the empirical relevance of wealth effects on consumption, but also for additional insights into their permanent or transitory nature.

The data

- Quarterly time series data for France, Germany, Italy, Spain, the UK and the US, over the period 1980:1-2007:4 are employed.
- Three variables for each country have been considered, i.e. real GDP and private consumption, and real house prices.
- Data source: national accounts (private consumption and GDP) and OECD Dept. of Economics (house prices).



— Consumption - - - House prices - · - GDP

Econometric methodology:

- VAR: $x_t = \nu + \Pi(L)x_{t-1} + \varepsilon_t$
- VECM: $\Pi^*(L)\Delta x_t = \nu + \Pi x_{t-1} + \varepsilon_t \quad \Pi = \alpha\beta'$
 $\beta \quad \alpha$
 $(n \times r) \quad (n \times r)$
- VMA: $\Delta x_t = \delta + C(L)\varepsilon_t \quad \varepsilon_t = \Gamma_0 \varphi_t \quad \varphi_t = \begin{pmatrix} \psi_t & P \\ \nu_t & T \end{pmatrix}$
- CT: $x_t = x_0 + \underbrace{\Gamma_g \left(\mu t + \sum_{j=0}^{t-1} \psi_{t-j} \right)}_{\text{PERMANENT COMP.}} + \underbrace{\Gamma^*(L) \begin{bmatrix} \psi_t \\ \nu_t \end{bmatrix}}_{\text{TRANSITORY COMP.}}$

Econometric methodology II :

- Cyclical dynamics:

$$\Gamma^*(L)\varphi_t = \Gamma^*(L) \begin{bmatrix} \psi_t \\ \nu_t \end{bmatrix}$$

- Equilibrium dynamics (along the attractor):

$$\Gamma^*(L)_1 \psi_t$$

- Adjustment dynamics (towards the attractor):

$$\Gamma^*(L)_2 \nu_t$$

Empirical results:

- Cointegration analysis;
- Policy analysis: forecast error variance decomposition and impulse response function;
- Permanent-Transitory decomposition

Cointegration analysis

- Similarities across countries:
single cointegrating vector:
 - for Italy, Spain and the UK no evidence of long-run impact of house prices on private consumption;
 - on the other hand, for France, Germany and the US house prices significantly enter in the cointegrating vector.

Cointegration analysis II

- Similarities across countries:
error correcting behavior:
 - for Italy, Spain and the UK it is private consumption to adjust the long-run disequilibrium;
 - on the other hand, for France, Germany and the US is output to adjust;
 - error correcting behavior of house prices is found for France, Italy and the US.

Cointegration analysis III

- Similarities across countries:
magnitude of long-run elasticities:
 - for Italy, Spain and the UK stationarity or near stationarity of the consumption-output ratio is found;
 - on the other hand, for France, Germany and the US an inelastic response of consumption to house prices is found; point elasticities are 0.13 for France, 0.25 for Germany, and 0.16 for the US.

Identification of shocks

- Given the dimension of the system ($n = 3$), and the finding of a single cointegrating vector, two permanent shocks and a single transitory shock characterize the economy;
- For identification we assume:
 - a supply-side/technological shock exercising a long-run impact on output;
 - a demand-side/interest rate output-neutral shock in the long-run (user costs shock).

Forecast error variance decomposition

- Similarities across countries:
proportion of variance explained by the permanent shocks:
 - the supply-side (technological) shock largely accounts for developments in consumption and output for all the countries (58% to 98% at the 5-year horizon);
 - the output neutral shock largely accounts for house prices for all the countries (33% to 91% at the 5-year horizon);

Forecast error variance decomposition II

- Similarities across countries:
proportion of variance explained by the transitory shock:
 - the transitory shock has a sizeable impact on consumption in Italy, Spain and the UK in the short-term (16% to 86% at the 1-year horizon), but a negligible impact for the other countries.
 - the transitory shock has a sizeable impact on house prices in France and the US in the short-term (35% and 52% at the 1-year horizon), but a negligible impact for the other countries.

FEVD

	<i>hor</i>	<i>France</i>			<i>Germany</i>			<i>US</i>		
		ψ^1	ψ^2	ν	ψ^1	ψ^2	ν	ψ^1	ψ^2	ν
c	4	.75	.19	.06	.94	.04	.01	.83	.02	.16
	12	.65	.28	.07	.85	.15	.01	.83	.11	.06
	20	.58	.39	.04	.81	.19	.00	.82	.15	.03
h	4	.15	.50	.35	.16	.84	.00	.02	.46	.52
	12	.04	.77	.20	.16	.84	.00	.01	.80	.20
	20	.02	.89	.08	.16	.84	.00	.01	.91	.08

FEVD

	<i>hor</i>	<i>Italy</i>			<i>Spain</i>			<i>UK</i>		
		ψ^1	ψ^2	ν	ψ^1	ψ^2	ν	ψ^1	ψ^2	ν
c	4	.65	.09	.26	.12	.01	.86	.76	.08	.16
	12	.85	.04	.11	.52	.02	.46	.90	.04	.06
	20	.90	.03	.07	.73	.02	.25	.94	.02	.03
h	4	.02	.97	.01	.12	.75	.13	.25	.74	.01
	12	.14	.85	.01	.25	.65	.10	.58	.41	.01
	20	.18	.82	.01	.35	.59	.06	.67	.33	.01

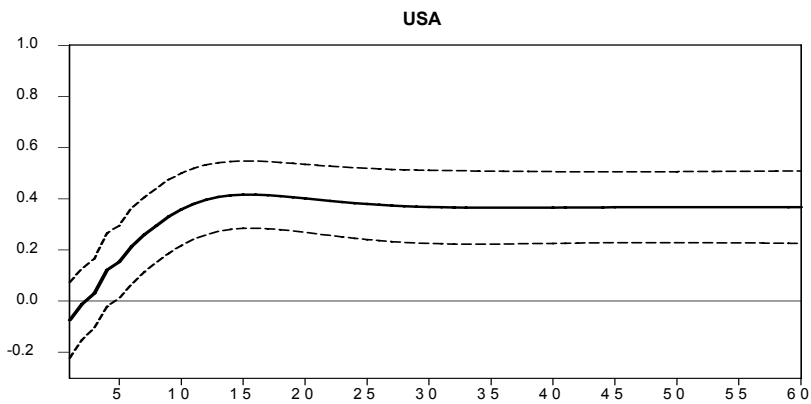
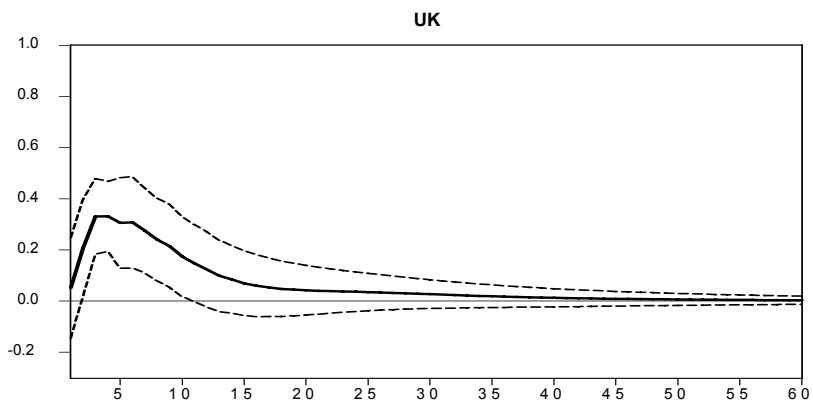
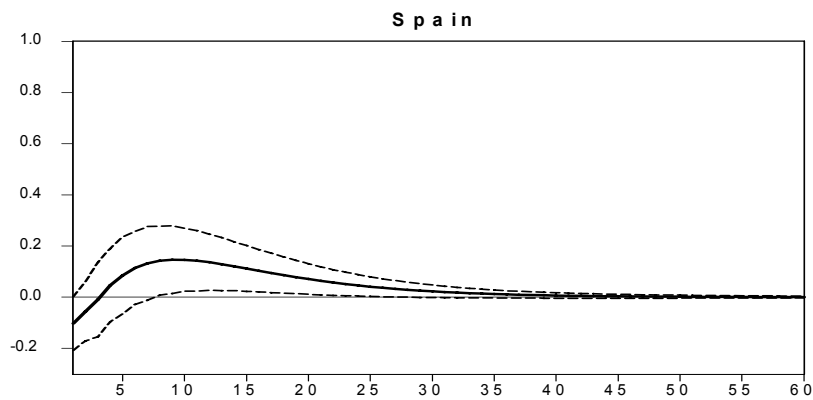
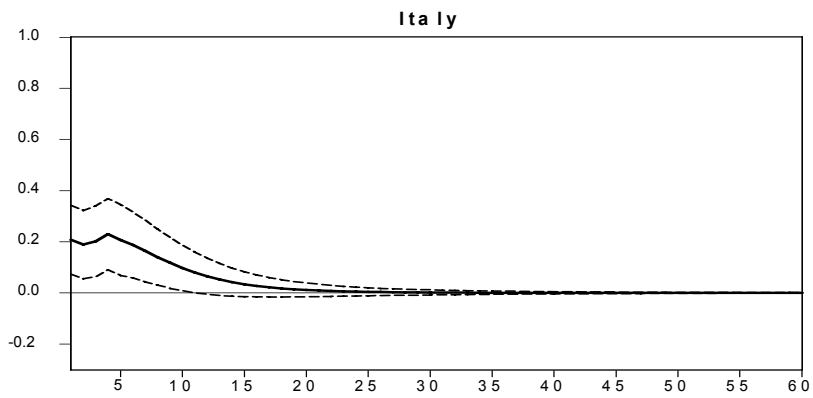
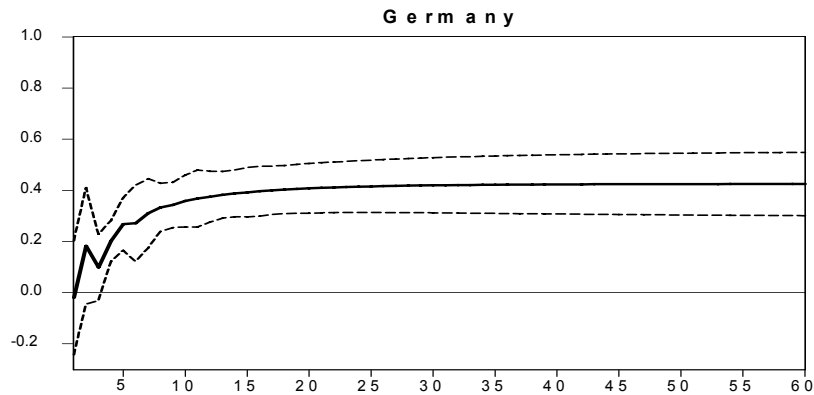
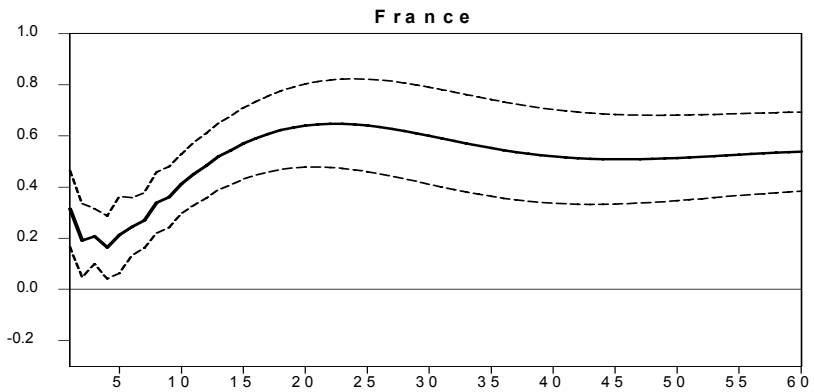
Impulse response functions

- Similarities across countries:

response of consumption to the output-neutral (house price) shock:

- for Italy, Spain and the UK some evidence of positive, but inelastic, short-term impact;

- on the other hand, for France, Germany and the US a positive, yet inelastic, response of consumption to the shock is found at all the horizons.



Response of consumption (%) to a 1% increase in house prices (*: stat. sign.)

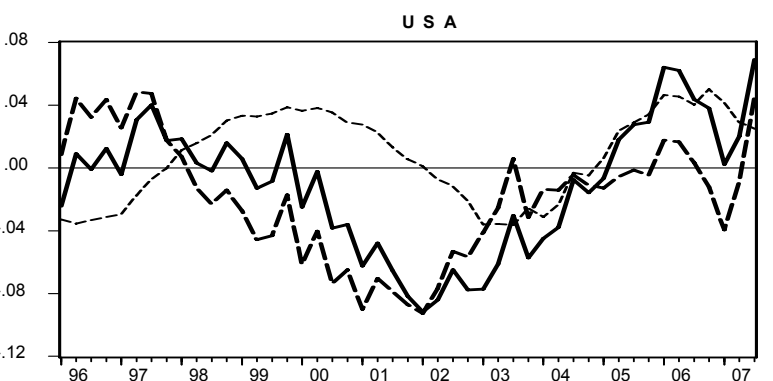
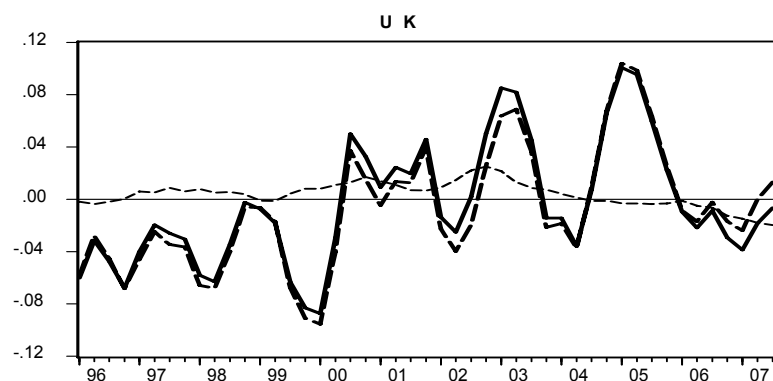
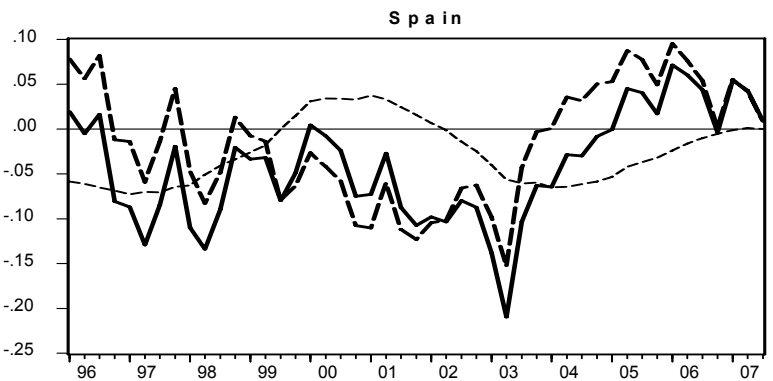
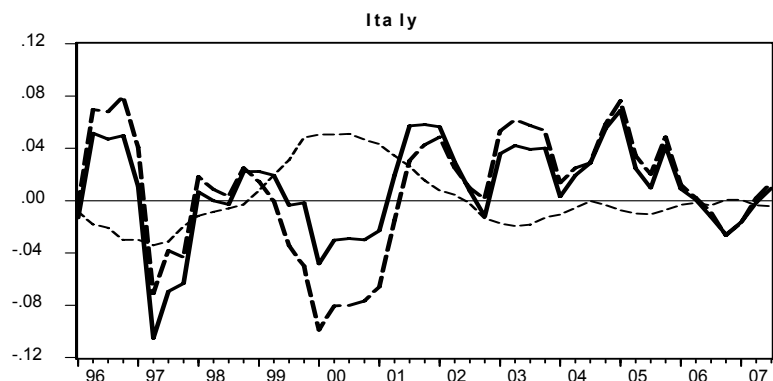
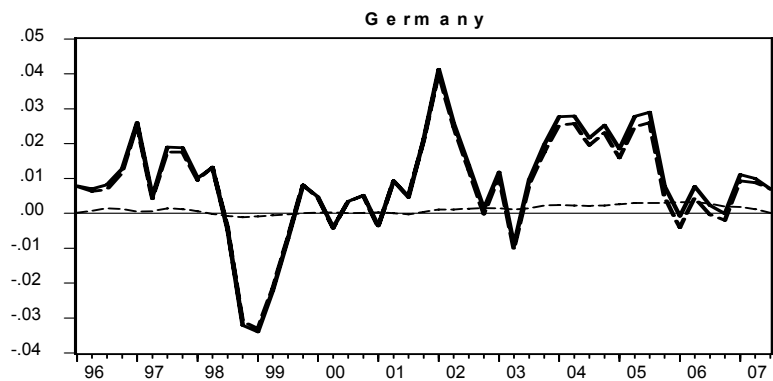
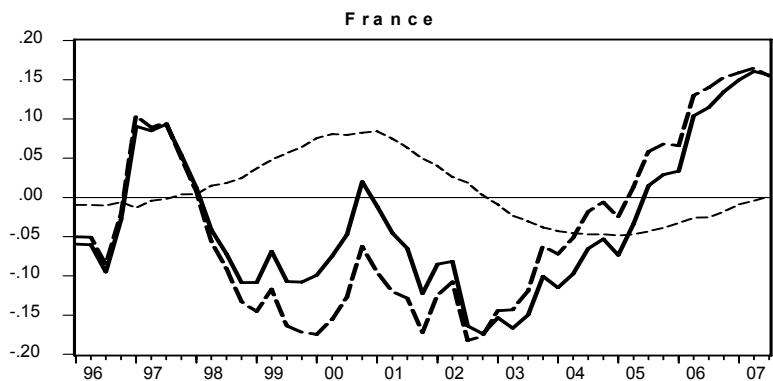
<i>Hor.</i>	4	8	12	16	20
<i>FR</i>	0.13*	0.14*	0.14*	0.13*	0.13*
<i>GE</i>	0.18*	0.23*	0.24*	0.25*	0.25*
<i>US</i>	0.14*	0.19*	0.19*	0.18*	0.17*
<i>IT</i>	0.06*	0.03*	0.01*	0.01	0.00
<i>SP</i>	0.01*	0.04*	0.03*	0.03*	0.02*
<i>UK</i>	0.12*	0.07*	0.04	0.02	0.02

House prices misalignments

- Evidence of a positive misalignment of house prices in the final part of the period (the overall transitory component being positive on average), though the starting date for this process differs across countries (around 2001 in Italy and the UK, 2003 in Germany, and 2005 in France, Spain and the US).
- Yet, already in 2007 misalignments are still present only in France and the US.

House prices misalignments II

- European countries: the misalignment is related to equilibrium fluctuations; on the other hand, for the US disequilibrium dynamics are important.
- Even for the US the findings are not consistent with a bubble interpretation of the house price misalignment. The error correction properties of house prices are in fact in contrast with the explosive dynamics determined by a process of self-fulfilling expectations.



— Overall transitory component - - - Transitory equilibrium dynamics - - - Adjustment dynamics

Discussion I

- Important cross-country differences and similarities in the dynamic links between house prices and economic activity, in accord with recent evidence.
- Most importantly, in the long-run there is no evidence for an effect of real house price fluctuations on consumption in Italy, Spain and the UK, whereas long-term (permanent) wealth effects from housing are found in Germany, France and the US.

Discussion II

- When a long-term impact of house prices on consumption is found (as in France, Germany and the US), this linkage is already evident in the medium-term.
- Differently, when a long-term impact is absent (as in Italy, Spain and the UK), there is evidence of a (temporary) linkage between house prices and consumption over shorter (around one to two years) horizons.

Discussion III

- An interesting difference between Europe and the US is in the source of misalignment of housing prices from trend. While for Europe the misalignment is largely related to equilibrium dynamics (overshooting to permanent/fundamental shocks), for the US the misalignment is largely related to disequilibrium dynamics (error correction mechanics).

Conclusions

- The effects of housing value increases on consumption appear either very limited or non-existent at the micro level and more sizeable and significant at the macro level
- housing wealth is illiquid and possibly perceived as “unavailable” to finance consumption
- more analysis is needed to understand why elderly people do not tap their housing wealth to support their needs in old age
- even in countries (such as those we have studied) where health expenditure is typically covered by public insurance, fear of future catastrophic health contingencies could persuade households to view housing equity as the best hedge against these risks (possibly to be informally exchanged within the family to obtain assistance and care in case of necessity)
- the research points to a high potential role of reverse mortgages
- markets and products making housing wealth more liquid could and should be encouraged
- more research is also needed to understand co-movements in international housing prices and implications for global savings.

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