

Housing finance and monetary policy

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ECB Workshop

The monetary policy transmission mechanism in the euro
area in its first 10 years

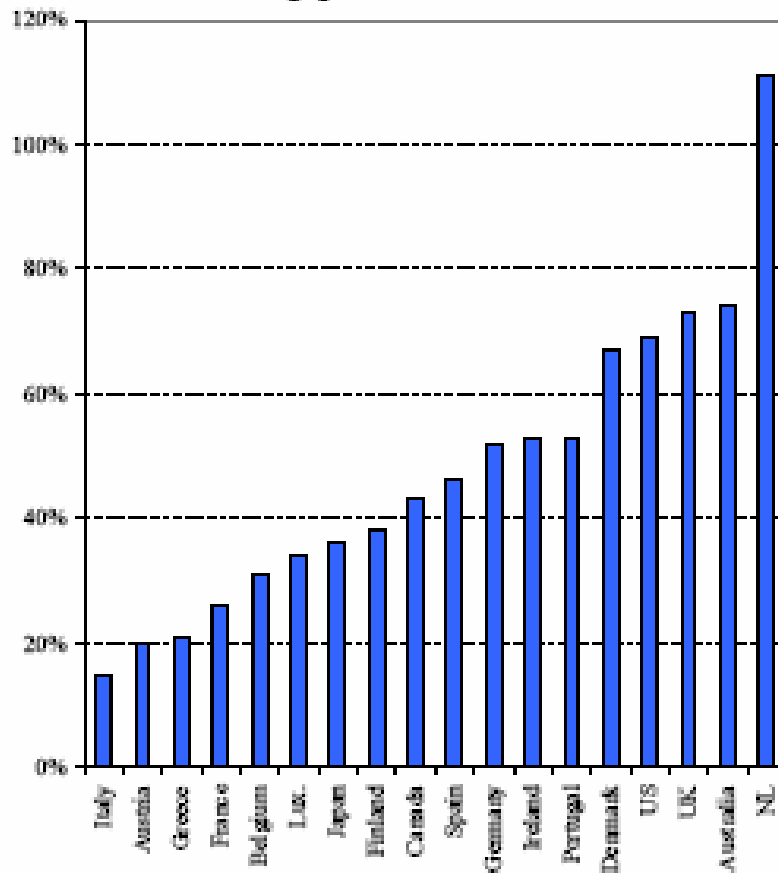
Frankfurt, 28-29 September 2009

Motivation

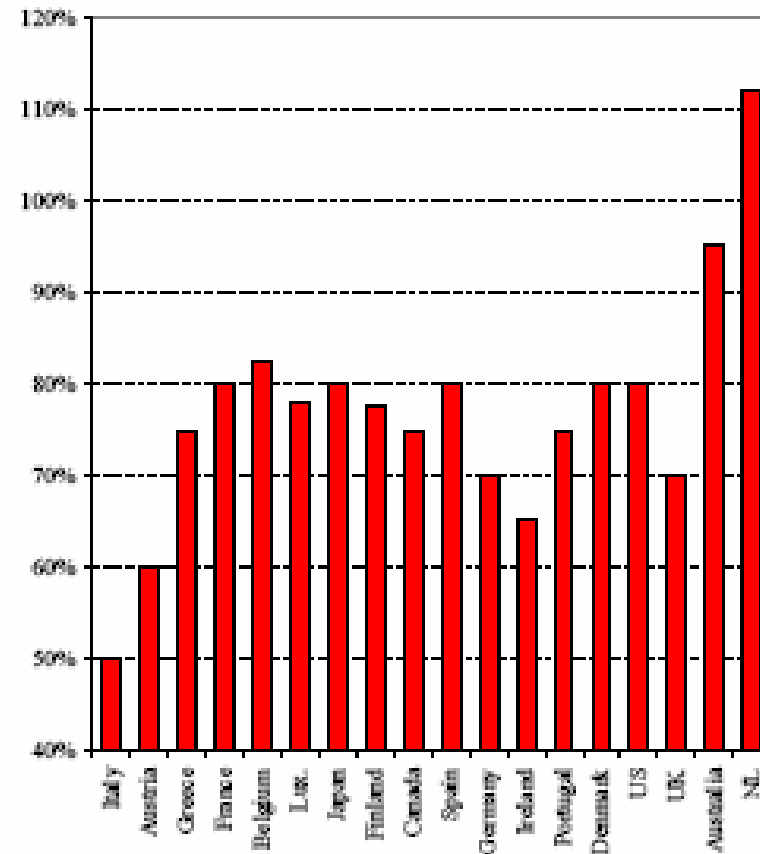
- Housing at the centre of attention, not only due to the financial crisis (e.g. Jackson Hole 2007)
- Monetary policy affects consumption via housing?
- Importance of institutional factors
- Hence focus on cross country heterogeneity

Cross country heterogeneity

Mortgage debt to GDP ratio

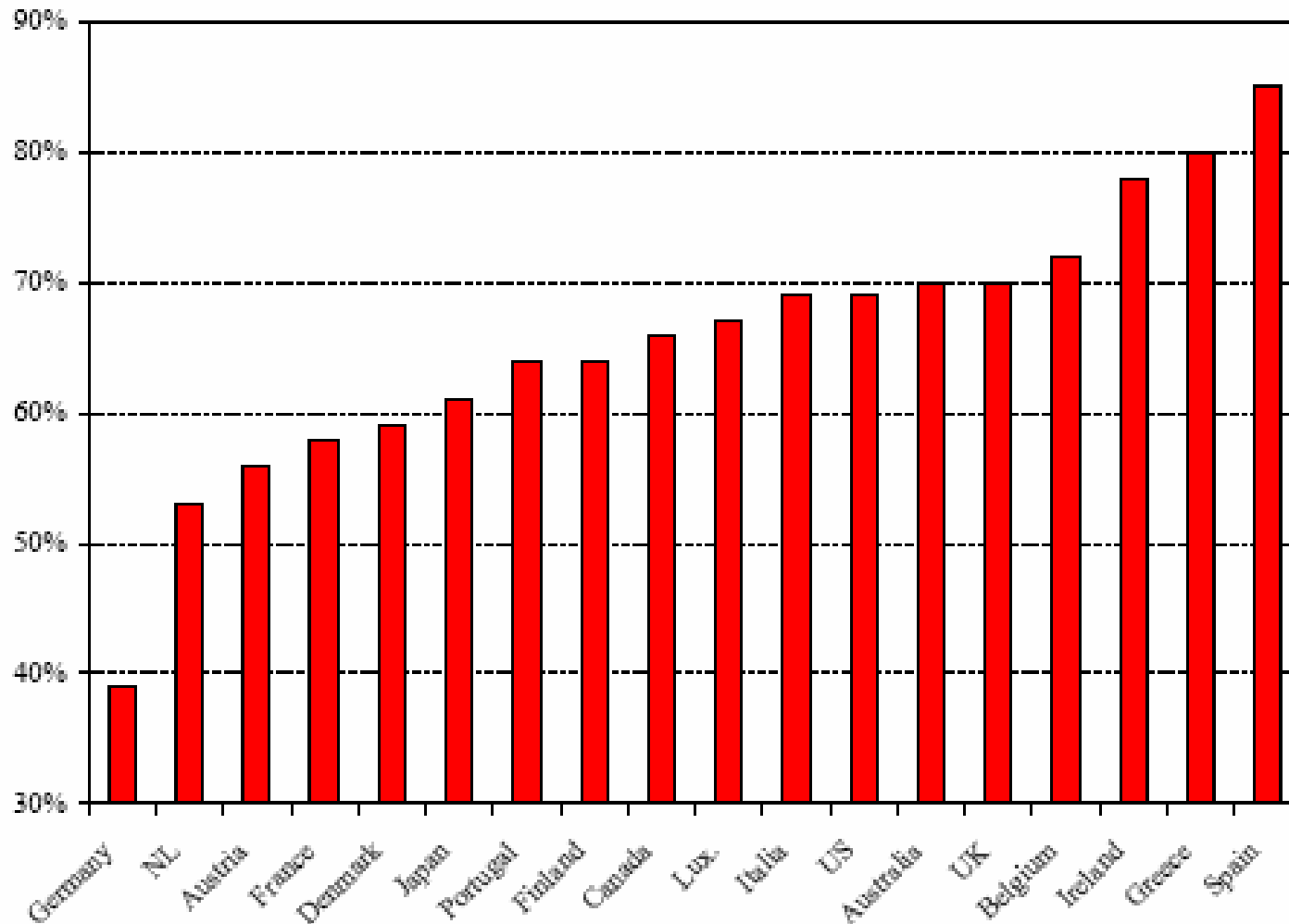


Loan to value ratio



Cross country heterogeneity

Home ownership ratio



Potentially important elements of heterogeneity of mortgage markets

- Loan to value ratios (difficult to measure)
- MEW / refinancing
- interest rate structure
- mortgage debt to GDP
- (tax factors, home ownership)

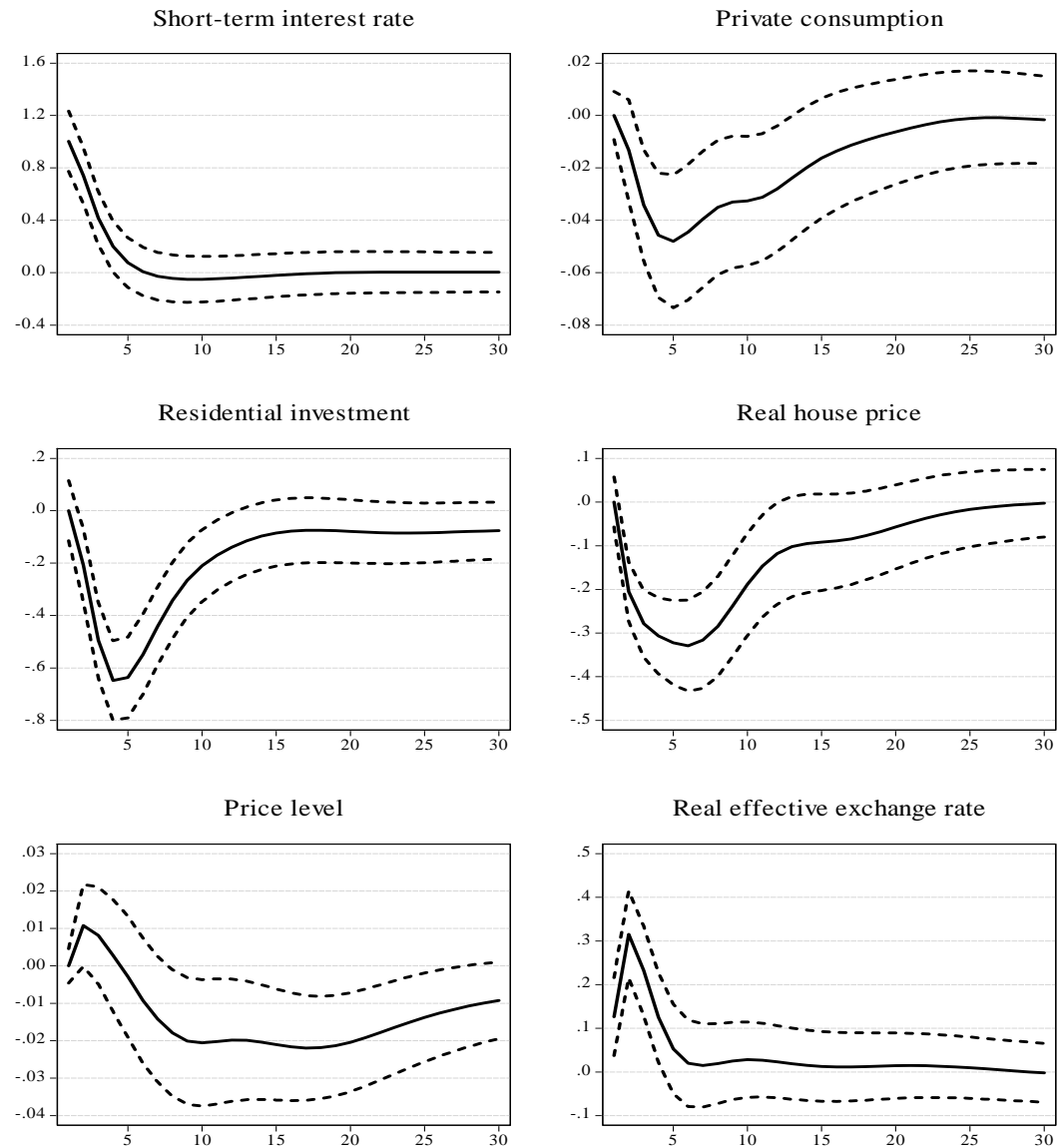
The empirical analysis

- Same VAR estimated on 19 OECD countries, 1980-2008
- Endogenous: private consumption, residential investment, CPI, real house price, short term interest rate, real effective exchange rate
- Exogenous: linear trend, oil price in USD, and (except for US) US consumption and CPI
- Choleski identification + robustness analysis
- Pooling test rejects null → we estimate the model country-by-country

Pooling the cross country information

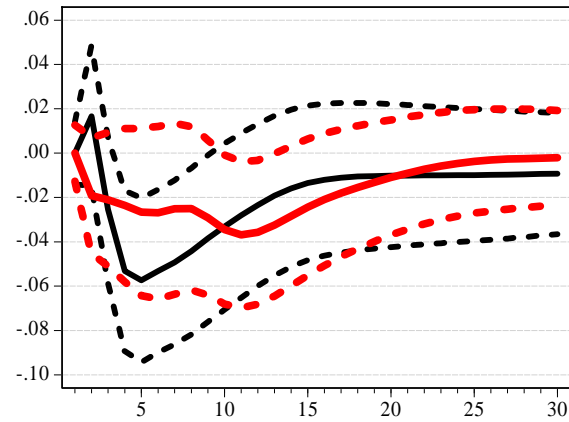
- Same method as in Canova-Pappa (2007)
- Assume that IRF are Normally distributed across countries (prior)
- CP show that under this assumption the average posterior distribution across countries is a weighted average of the countries' IRF weighted by their precision
- We depart from CP on the details (choice of the priors) but the approach is the same
- In the ECB working paper version of the paper, we use a simple average based on bootstraps which has the advantage of catering for cross sectional dependence (while the CP approach doesn't)

Effect of a monetary policy shock

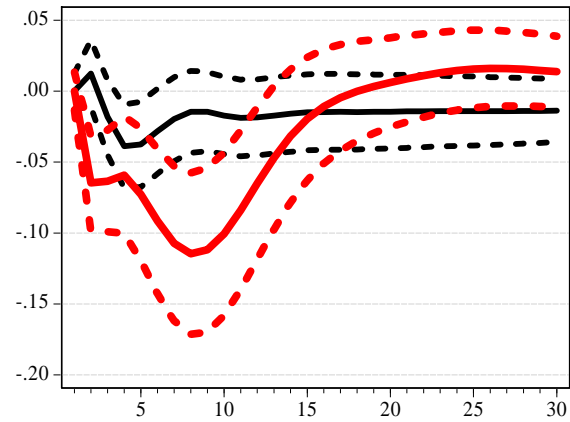


Effect of MP shock on consumption

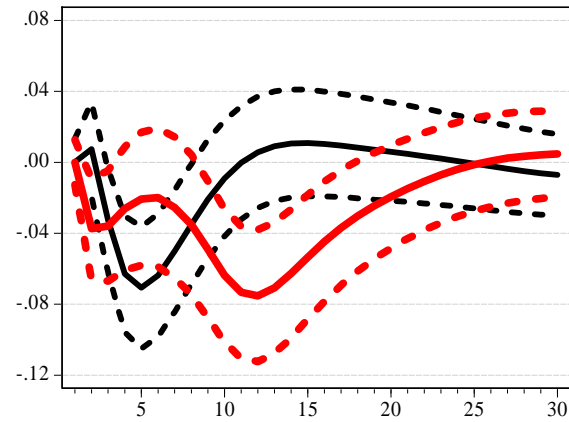
Loan to value ratio



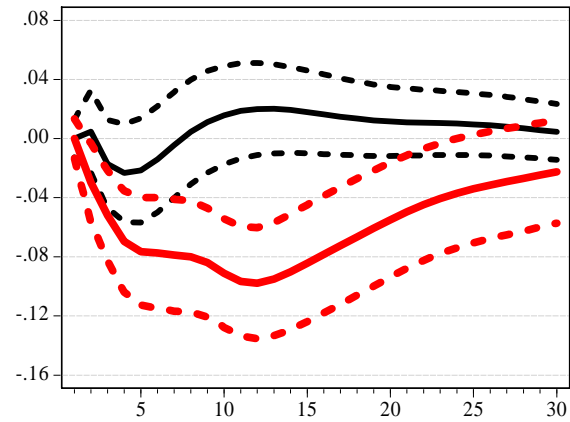
MEW



Mortgage to GDP ratio

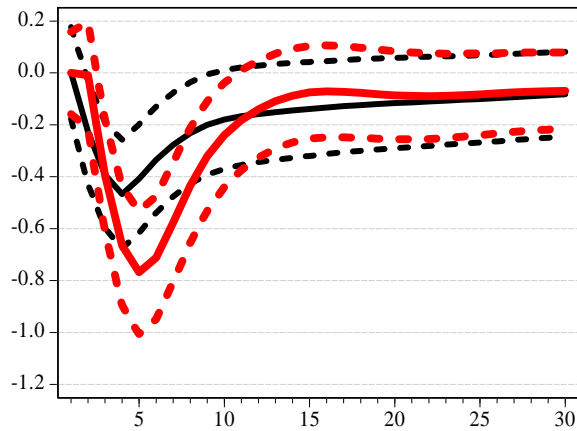


Interest rate adjustment

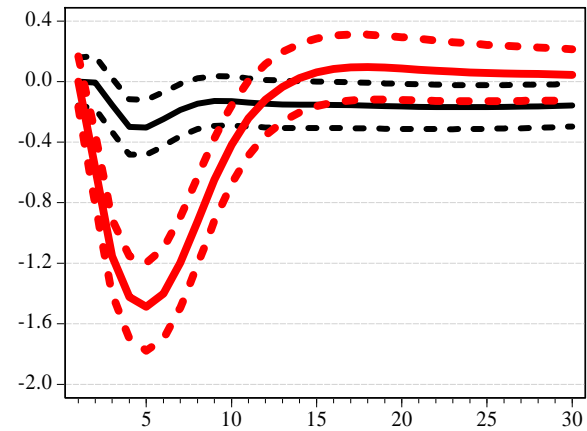


Effect of MP shock on residential investment

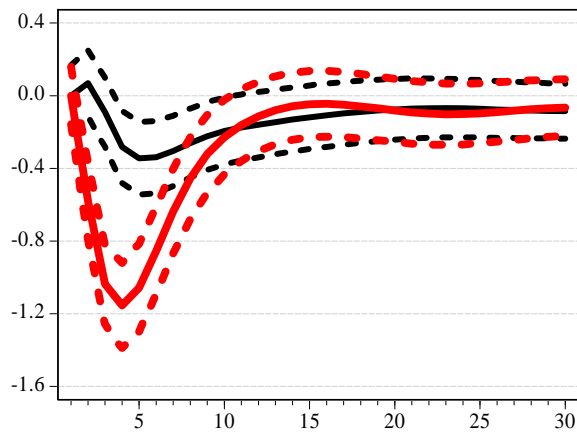
Loan to value ratio



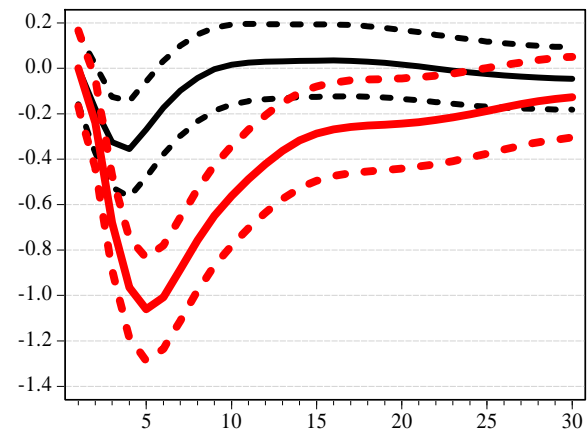
MEW



Mortgage to GDP ratio

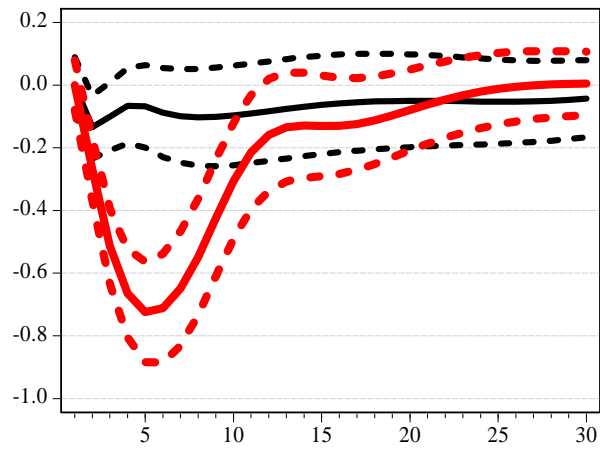


Interest rate adjustment

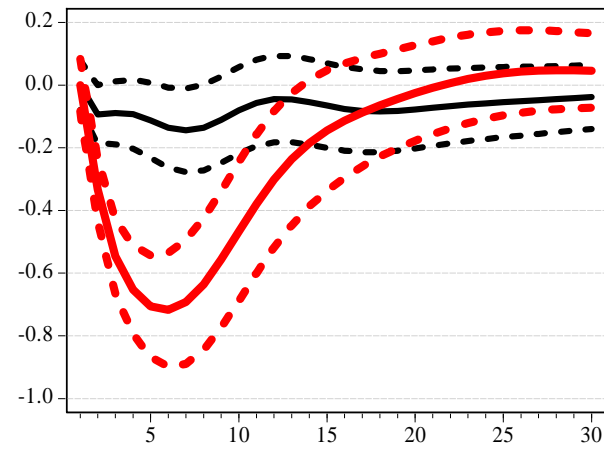


Effect of MP shock on the real house price

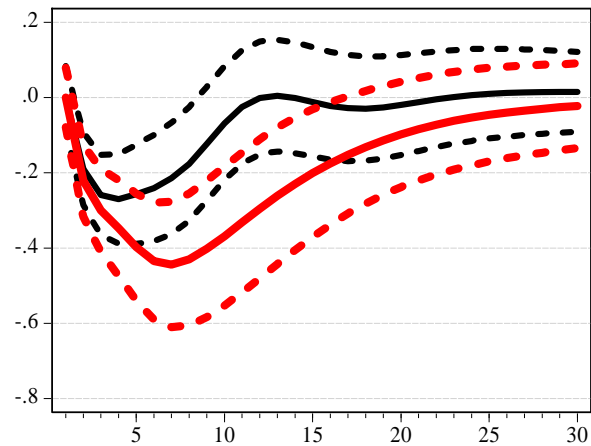
Loan to value ratio



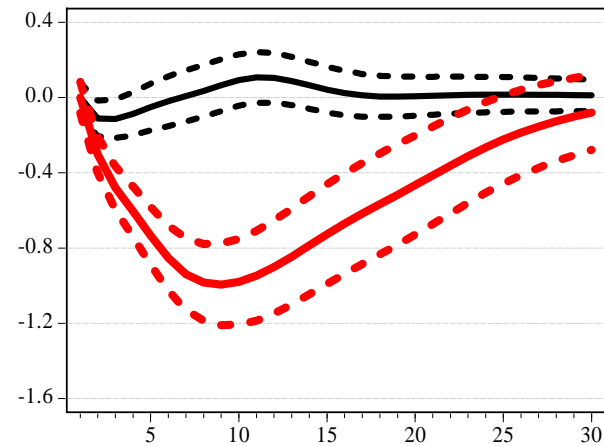
MEW



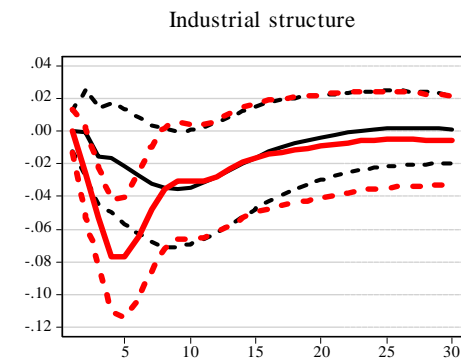
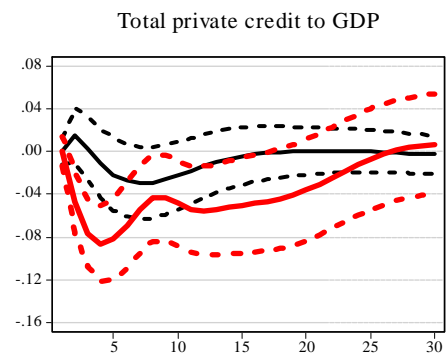
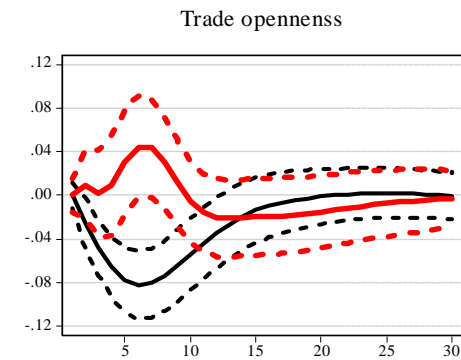
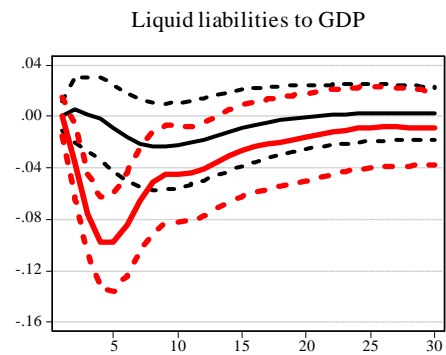
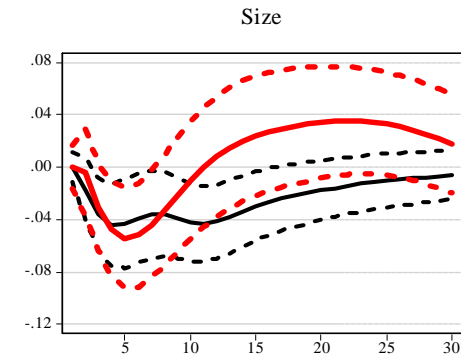
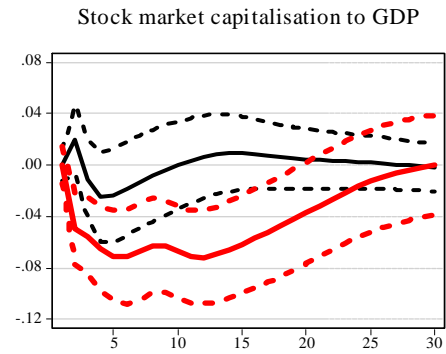
Mortgage to GDP ratio



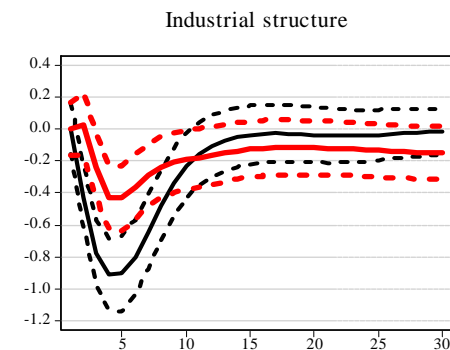
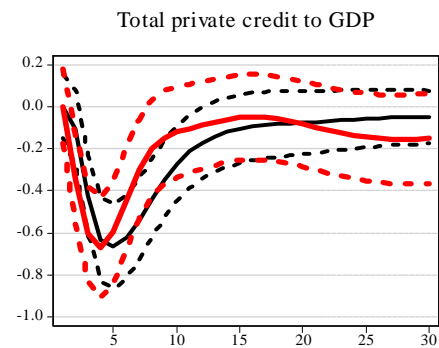
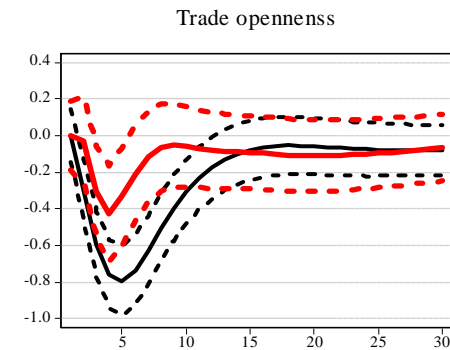
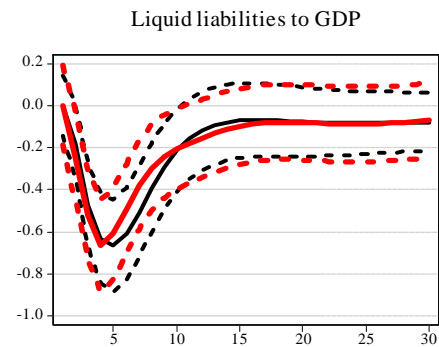
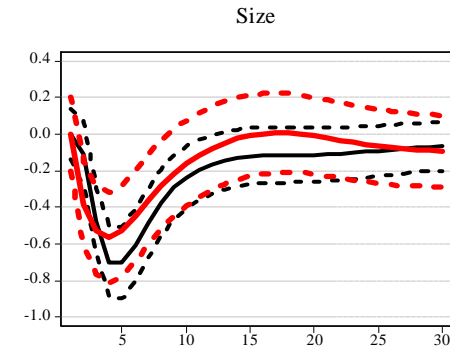
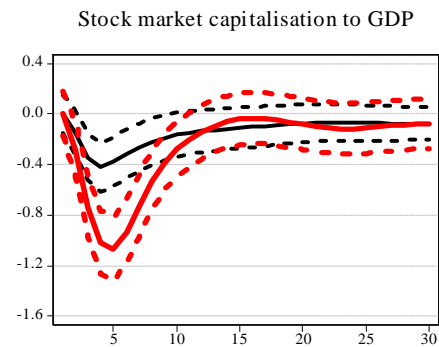
Interest rate adjustment



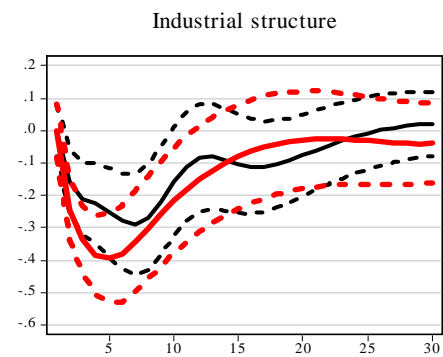
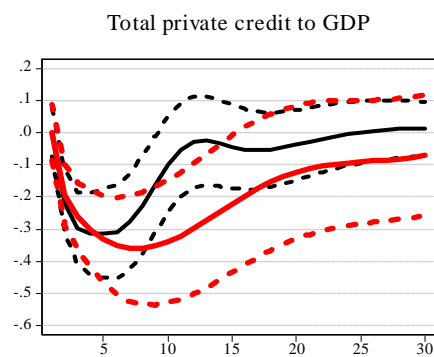
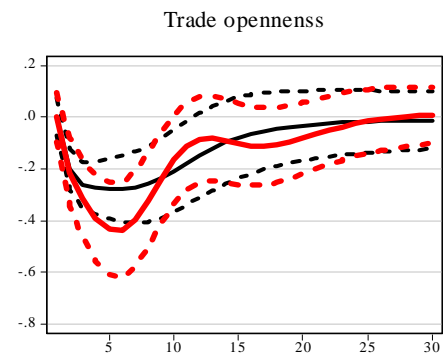
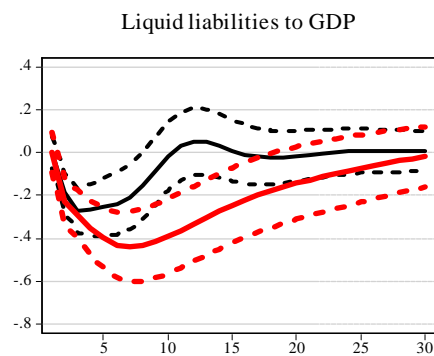
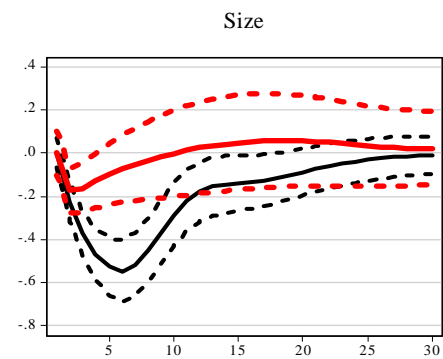
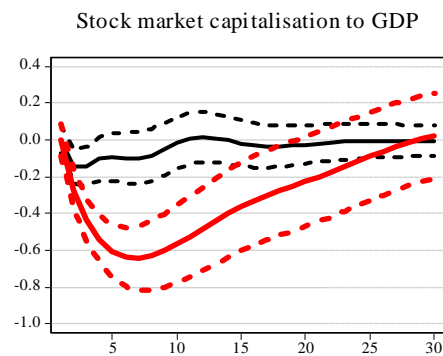
Effect of MP shock on consumption



Effect of MP shock on residential investment



Effect of MP shock on the real house price



Summing up on empirical evidence

- Generally monetary policy more powerful with more developed mortgage markets
- Picture is not very clear for private consumption, while it is quite neat (statistically / economically) for residential investment and the real house price
- puzzling: in a standard model the structure of the mortgage market should be immaterial
- Actually more developed financial markets should allow a representative household to smooth spending inter-temporally *more*, not less in the presence of any shock, including monetary policy shocks
- This requires a model with some form of heterogeneity

The DSGE model: main features

- two groups of households, patient and impatient (as in Iacoviello 2005 and Campbell and Hercowitz 2004)
- two sectors, producing non-durable consumption and new housing
- prices are sticky in the non-durable sector, flexible in housing
- utility is derived from both non-durables and housing
- borrowers are subject to a collateral constraint

Key equations for borrowers

$$X_t \equiv \left[(1 - \alpha)^{\frac{1}{\eta}} C_t^{\frac{\eta-1}{\eta}} + \alpha^{\frac{1}{\eta}} H_t^{\frac{\eta-1}{\eta}} \right]^{\frac{\eta}{\eta-1}}$$

$$P_{o,t} C_t + P_{h,t} I_{h,t} + R_{t-1}^m B_{t-1} = B_t + W_{o,t} N_{o,t} + W_{h,t} N_{h,t} + T_t$$

$$R_t B_t \leq (1 - \chi)(1 - \delta) E_t \{ H_t P_{h,t+1} \}$$

$$E_0 \left\{ \sum_{t=0}^{\infty} \beta^t U(X_t, N_{o,t}, N_{h,t}) \right\}$$

IS curve for the borrowers

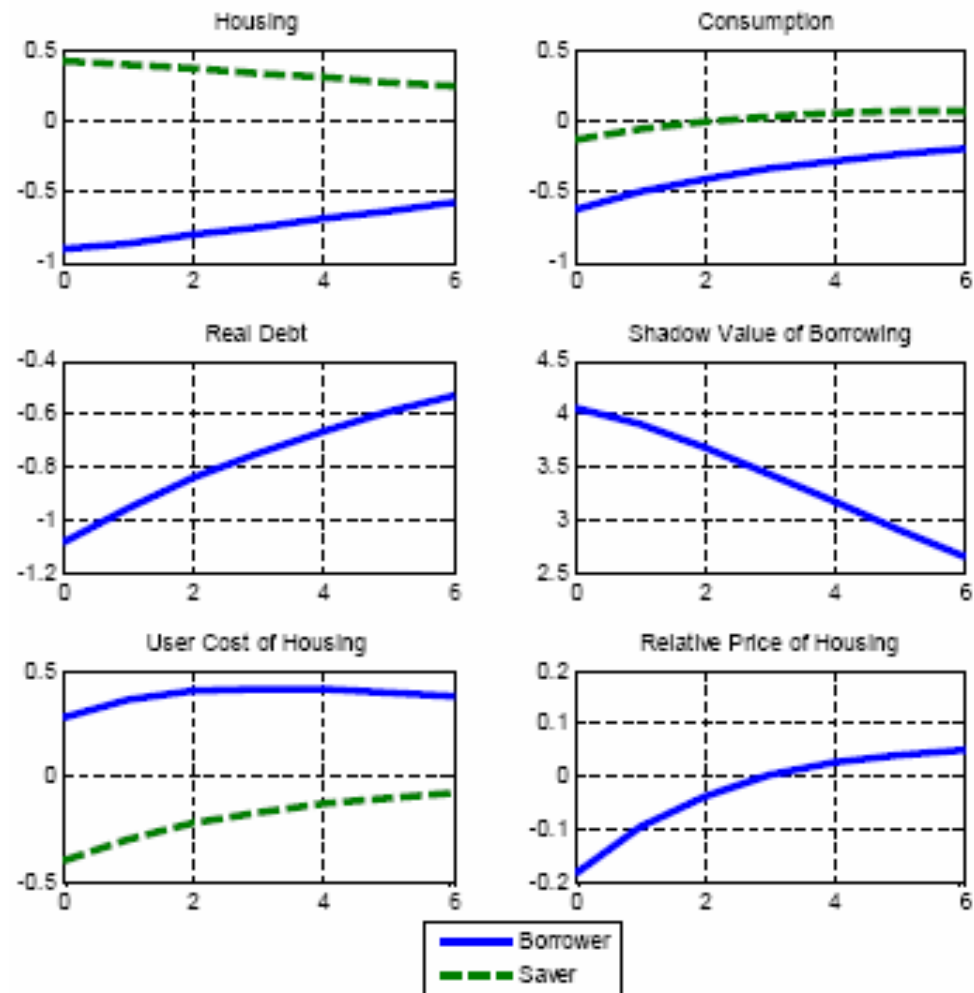
$$q_t U_{a,t} = U_{h,t} + \beta(1 - \delta) E_t \{ U_{a,t+1} q_{t+1} \} + (1 - \chi)(1 - \delta) U_{a,t} q_t \psi_t E_t \{ \pi_{h,t+1} \}$$

$$R_t \psi_t = 1 - \beta E_t \left\{ \frac{U_{a,t+1}}{U_{a,t}} \frac{R_t}{\pi_{a,t+1}} \right\}$$

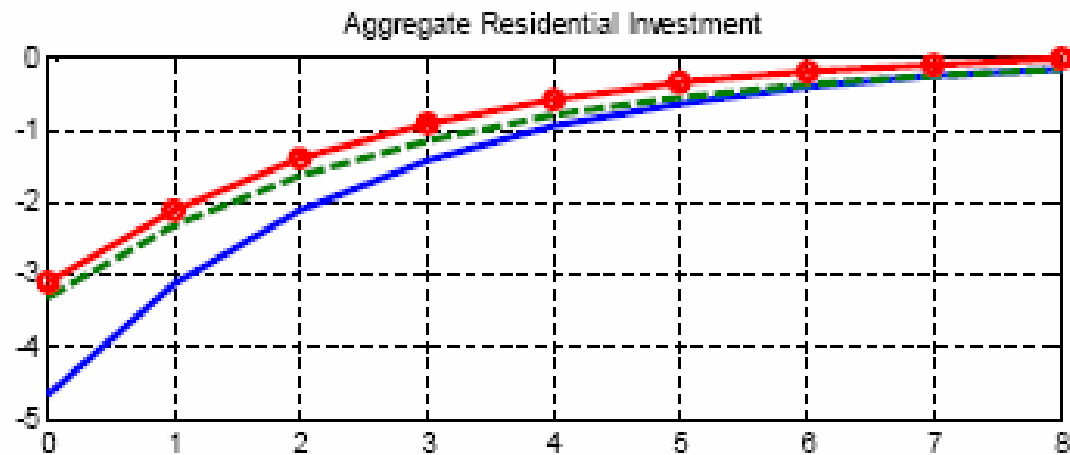
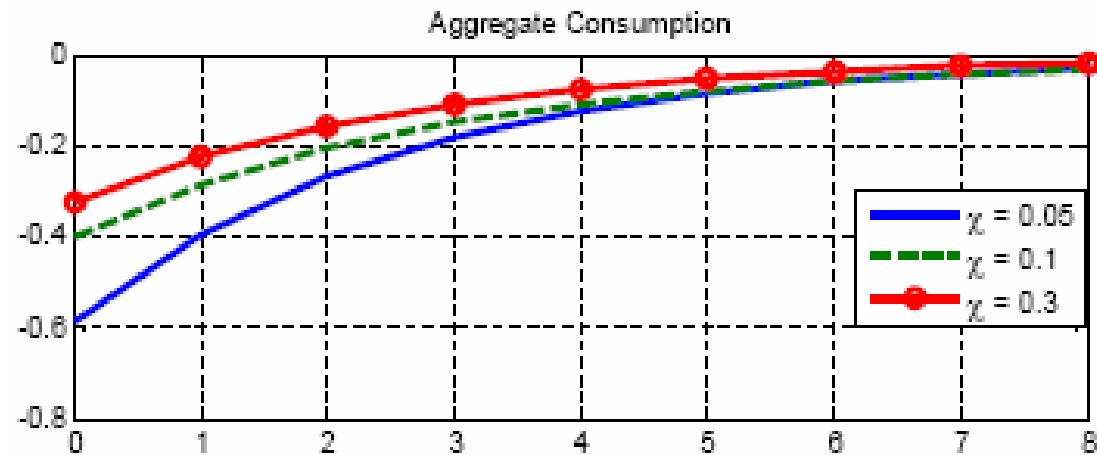
Channels of monetary policy transmission in the model

- **Nominal debt effect** (negative income effect for borrowers or savers)
- **Collateral constraint effect** (affects shadow value of borrowing)
- **Asset price effect**, again with impact on collateral constraint → also impacts if house prices and consumer prices have different degrees of stickiness (debatable)

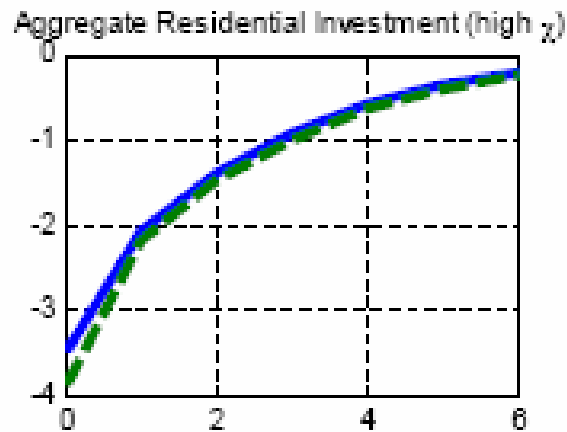
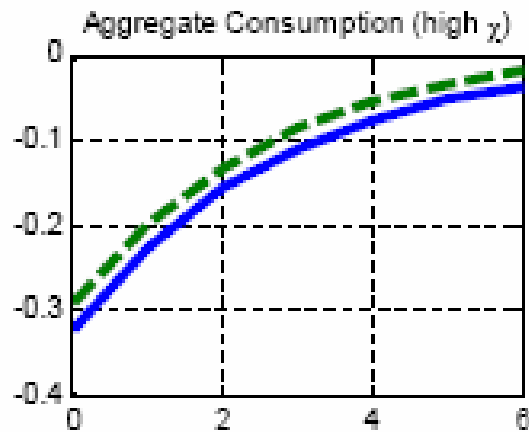
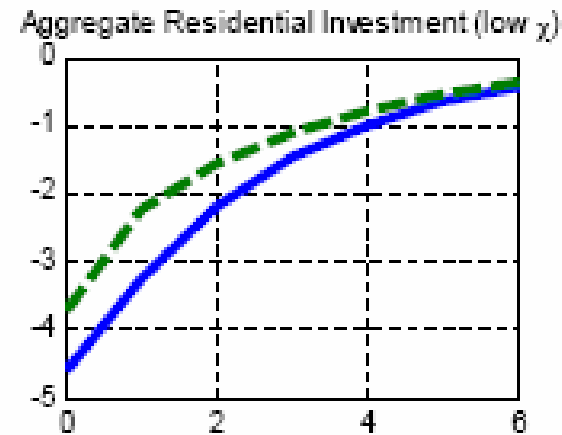
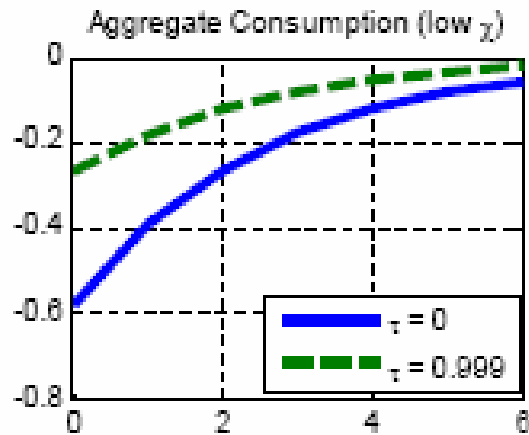
Theoretical impulse responses to a monetary contraction



Theoretical impulse responses to a monetary contraction: downpayment rate



Theoretical impulse responses to a monetary contraction: interest rate structure



Conclusions

- Monetary policy transmission appears to be heterogeneous across countries, systematically correlated with structure of mortgage markets
- VAR empirical evidence: strong link for residential investment and real house price, less clear-cut for consumption
- DSGE models shows how monetary policy transmission is affected by two key institutional parameters, (i) down-payment rate and (ii) interest rate structure
- DSGE simulations generally accord well qualitatively with the empirical evidence