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Households' Indebtedness and Financial Fragility

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Financial fragility

- Lending to households has taken a central role in the functioning of financial and real markets.

- Are highly indebted households **more** “financially fragile”, that is, more likely to default when hit by adverse shocks, e.g. unemployment or interest rates increases?

- Does financial fragility **vary** across countries, as a function of institutional variables, such as bankruptcy law provisions or judicial efficiency?

Previous research: mostly on the US

- Gross and Souleles (2002): increase in insolvencies is due to borrowers' greater willingness to default.
- Mian and Sufi (2007), Dell'Ariccia, Deniz and Laeven (2008), Dick and Lehnert (2007) point to explanations based on lending policies of banks.
- IMF (2006): international comparison of household indebtedness (no insolvencies).

Cross-country, panel & time series data

- **Cross-country data** to study determinants of household **debt** and role of institutions.

- **Panel data** for 11 European countries to study determinants of household **arrears** (controlling for household debt, plus macro and institutional variables).

- Longer **time series data** for household **debt** and **insolvencies** in the UK, US and Germany.

Determinants of household debt and insolvencies: institutions

Better institutions may facilitate collection of credit-relevant information and reduce the likelihood of default.

- **Bankruptcy regulation** determines assets used for repayment and their division among creditors: Gropp, Scholz and White (1997), White (2006).

- **Information sharing** about borrowers' characteristics and indebtedness permits sharper prediction of repayment probabilities and may discipline borrowers: Jappelli and Pagano (2002); Djankov et al. (2007).

These institutions vary considerably across countries.

Determinants of household debt and insolvencies: demand and supply factors

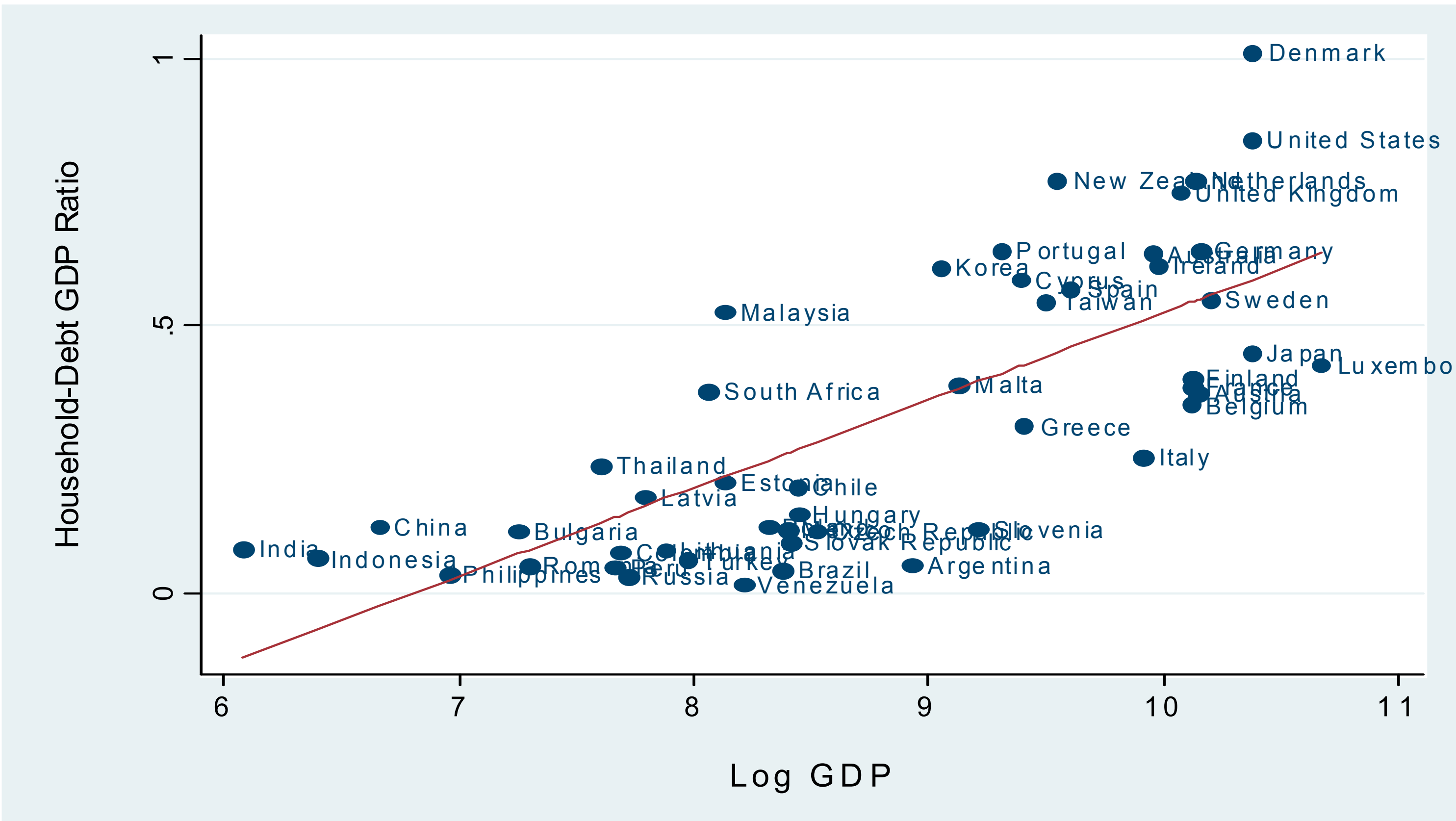
- **Demand factors**:
  - age structure of the population
  - taxation
  - income inequality (to the extent that it reflects transitory income shocks)

- **Supply factors**: credit market competition. Two opposite effects:
  - lower non-competitive rents $\Rightarrow$ more lending
  - harder to sustain relationship lending $\Rightarrow$ less lending

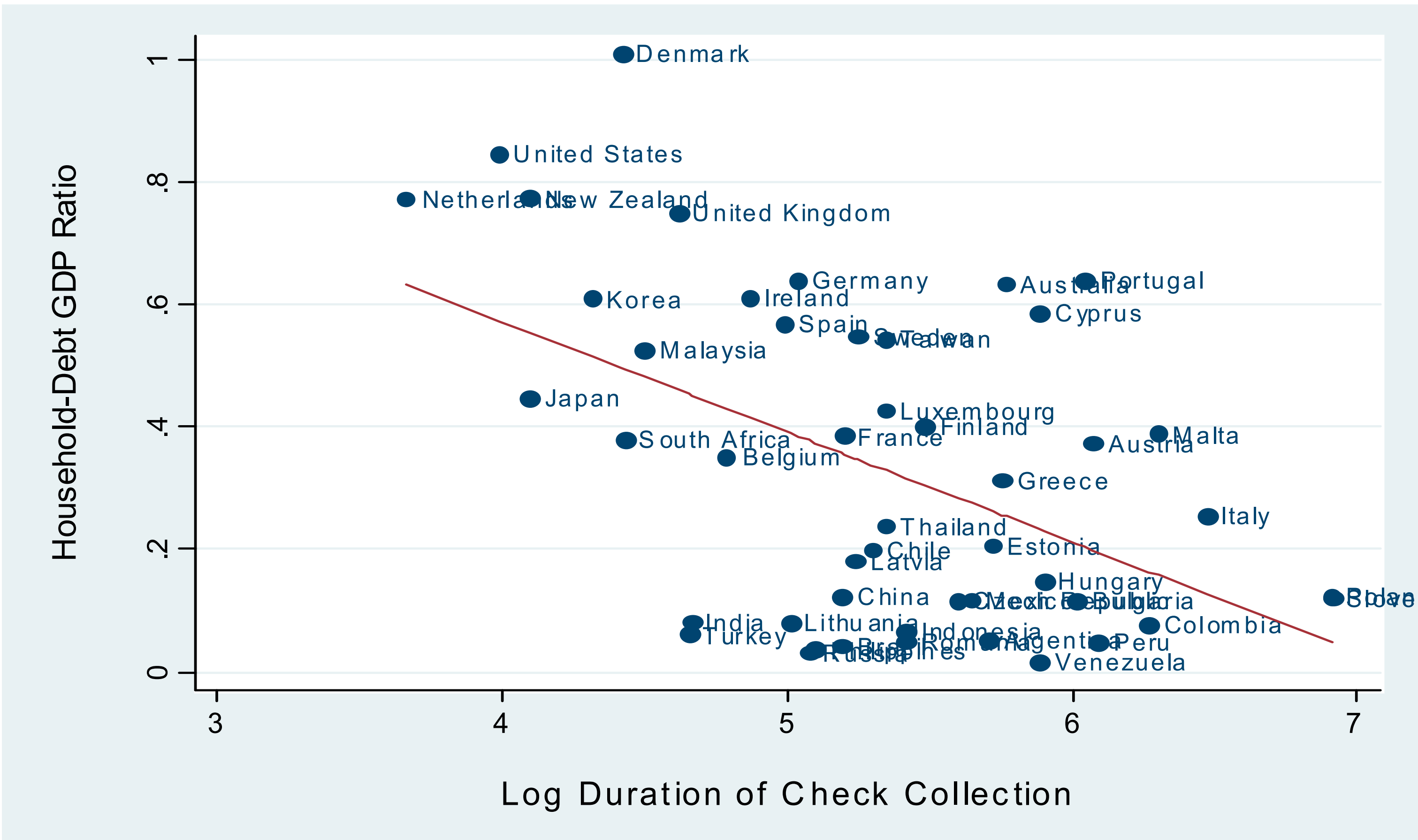
1. Analysis of cross-sectional data

- 45 countries.
- Variables refer to 2005, or closest year.
- *Court efficiency*: measure based on duration of judicial procedures (Lex Mundi project).
- *Information sharing:* coverage, type of information, number of years since inception of credit bureaus and public credit registers.
- *Creditor right protection*.
- *Population growth rate.*
- *Gini income inequality index.*
- *Concentration ratio*: inverse measure of competition.

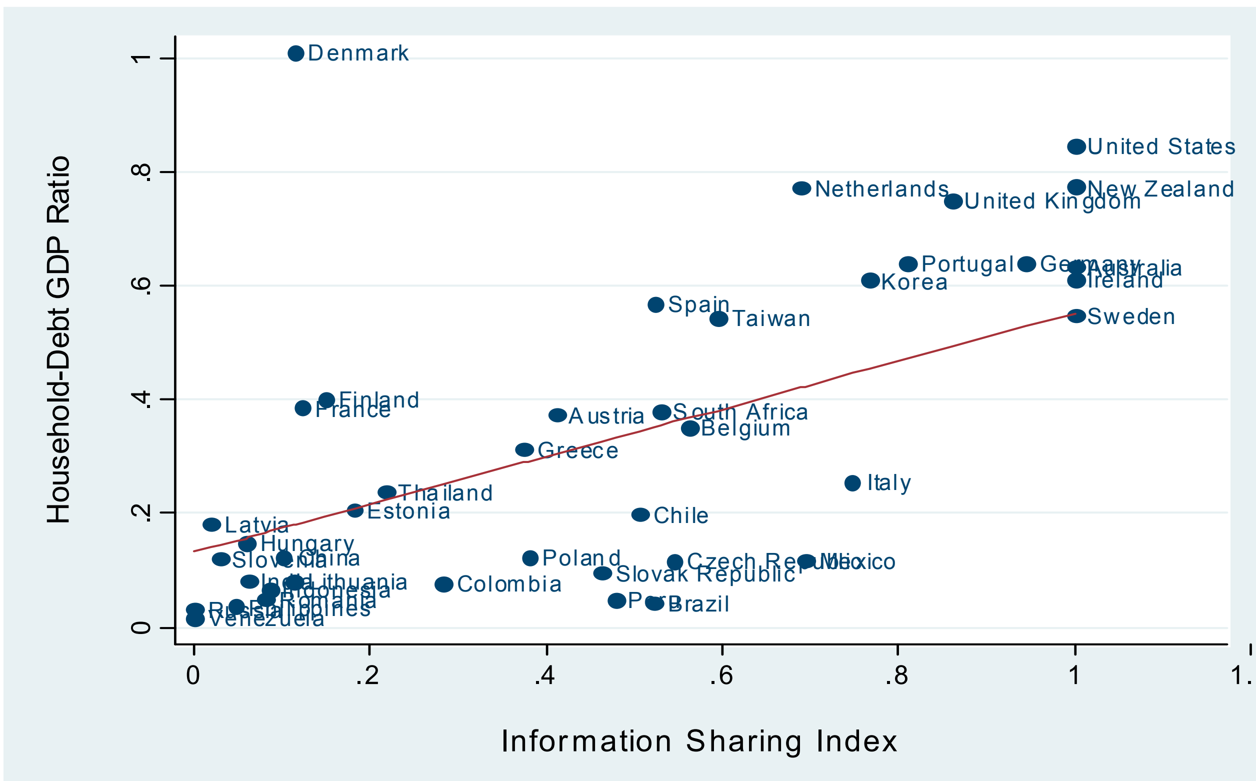
Large international variability in household debt-GDP ratio



Household Debt-GDP ratio is negatively correlated with judicial inefficiency



… and positively correlated with quality and quantity of information shared



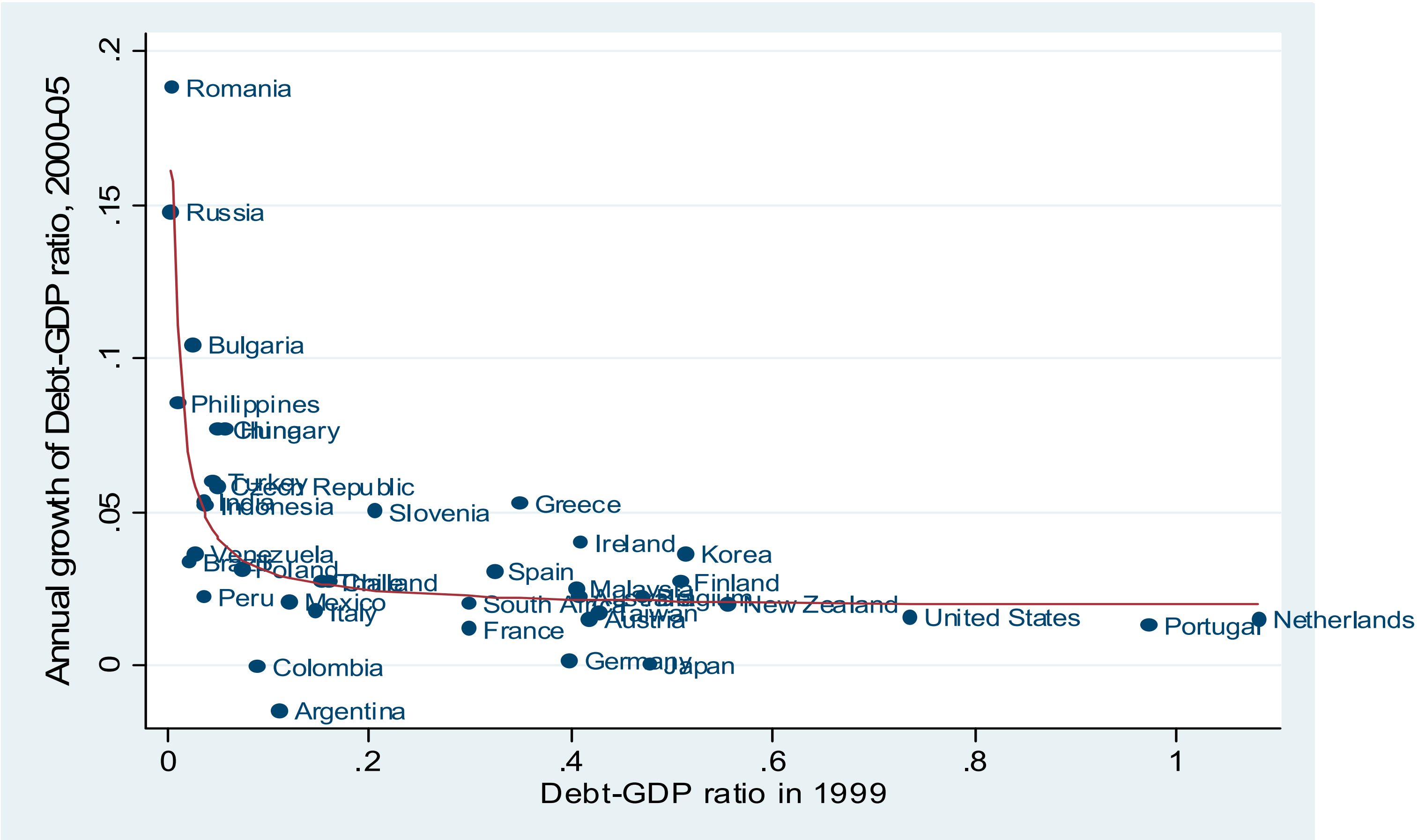
Regression analysis

The size of the household debt market correlates with institutional characteristics:

- efficiency of judicial enforcement;
- development of information sharing mechanisms.

Log of per capita GNP	0.101*** (0.022)
English origin	0.124* (0.061)
Log duration of check collection	-0.119*** (0.027)
Private registry coverage	0.193** (0.072)
Public registry coverage	0.545*** (0.132)
R-squared	0.89

Are cross-country differences persistent, or is there convergence over time?



2. Analysis of EU panel data on arrears

- 11 European countries surveyed in 1994-2004.

- European Community Household Panel (ECHP) and EU Survey of Income and Labor Conditions (SILC):

  Have you been unable to make scheduled mortgage loans / hire purchase installment / other loans in the last 12 months?

- Aggregated by country and year, and merged with macro variables and institutional variables (information sharing, judicial efficiency).

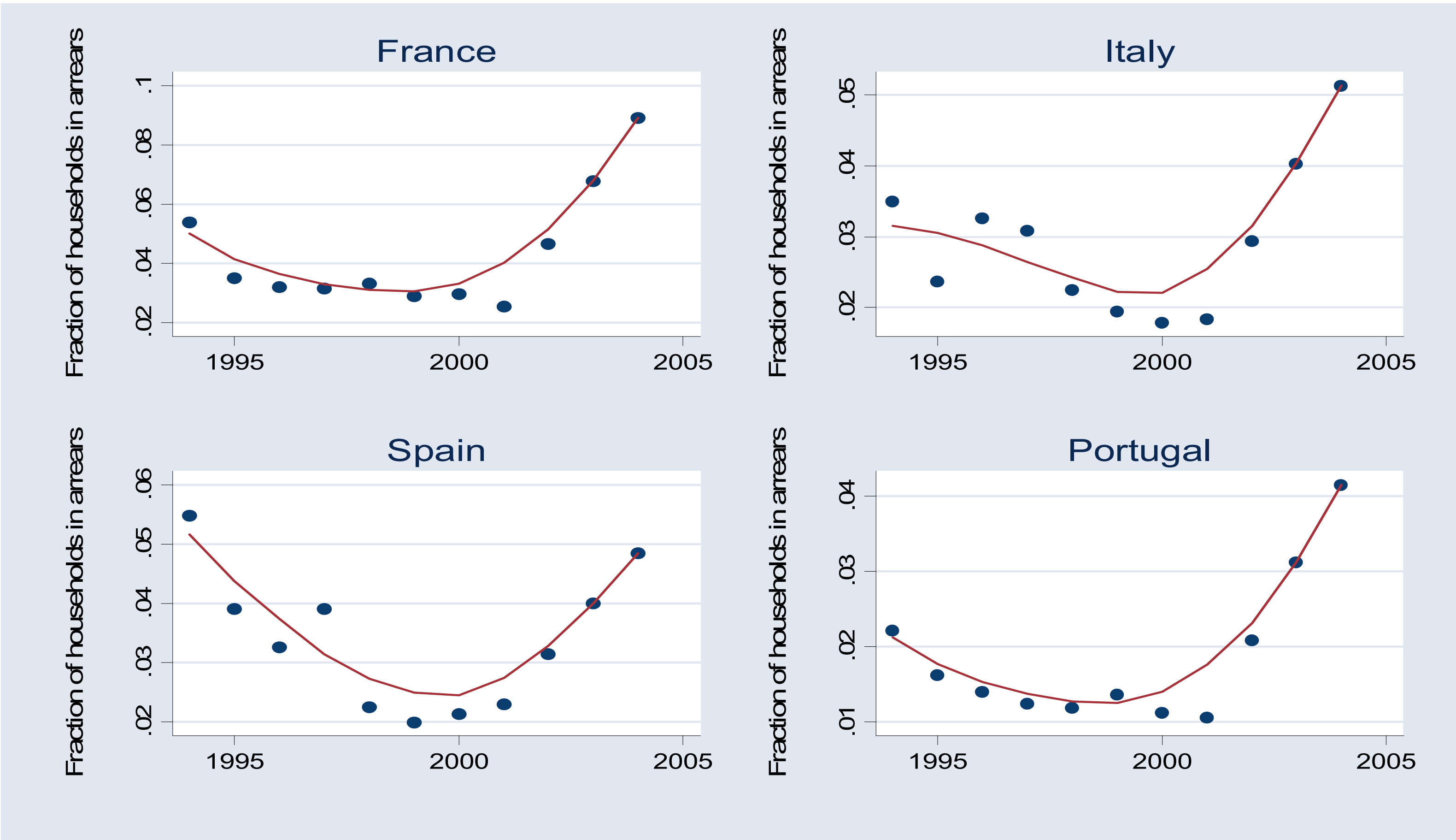
Our hypotheses

(1) Greater debt and higher unemployment are associated with more insolvencies.

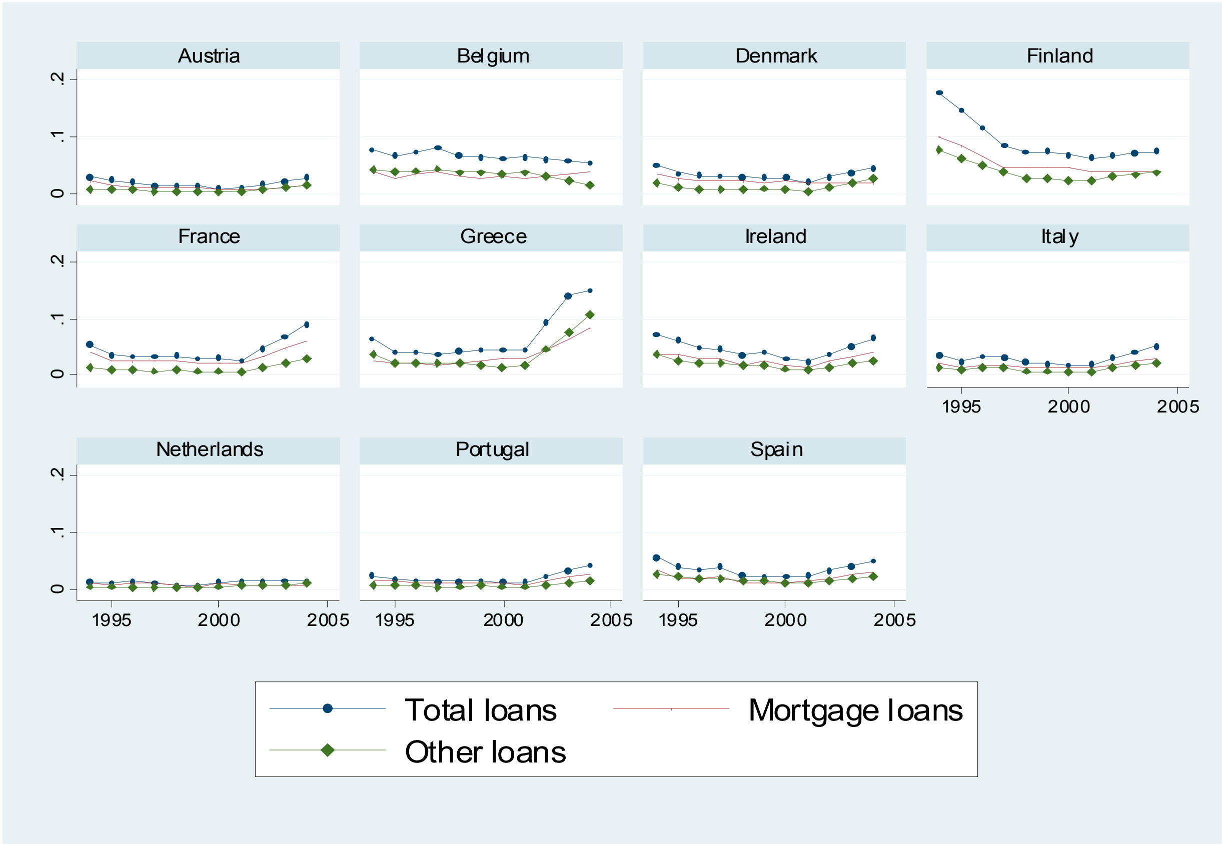
(2) A better contracting environment or enforcement system raises the perceived cost of default.

In these environments, the same increase in household debt and in unemployment is associated with a smaller increase in the default probability.

Large differences in arrears over time and across countries



Arrears for mortgage loans correlate with those for consumer debt

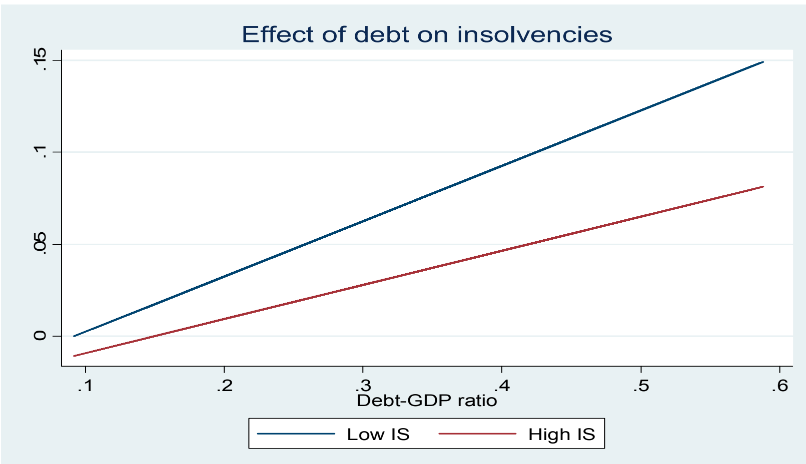


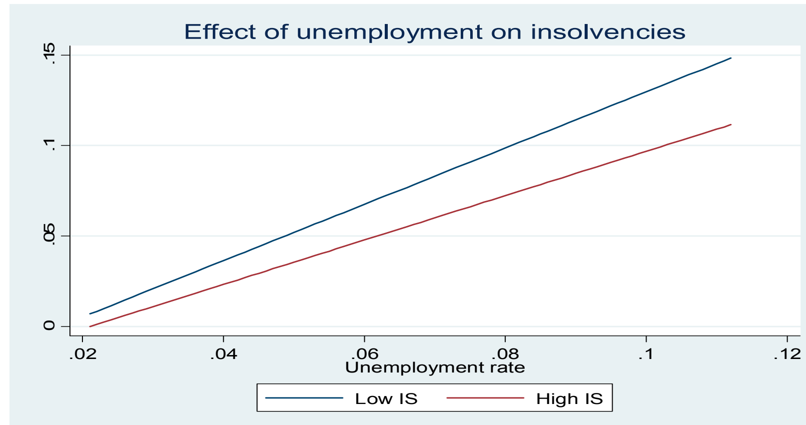
Panel data results: fixed effects estimates

Unemployment rate	+
Debt-GDP ratio	+
Unemployment x Information sharing	-
Unemployment x Time to collect checks	+
Debt-GDP X Information Sharing	-
Debt-GDP x Time to collect checks	+
Debt-GDP x Unemployment	+

- Arrears increase by 0.4 percentage points for each point increase in the unemployment rate,
- and by 1.5 points for each 10-point increase in the debt-GDP ratio.
- Effect of real interest rate not significant.

Debt, unemployment and insolvencies





- The effect of debt and unemployment on insolvencies is stronger in countries with low information sharing (IS).

Interaction effects: information sharing

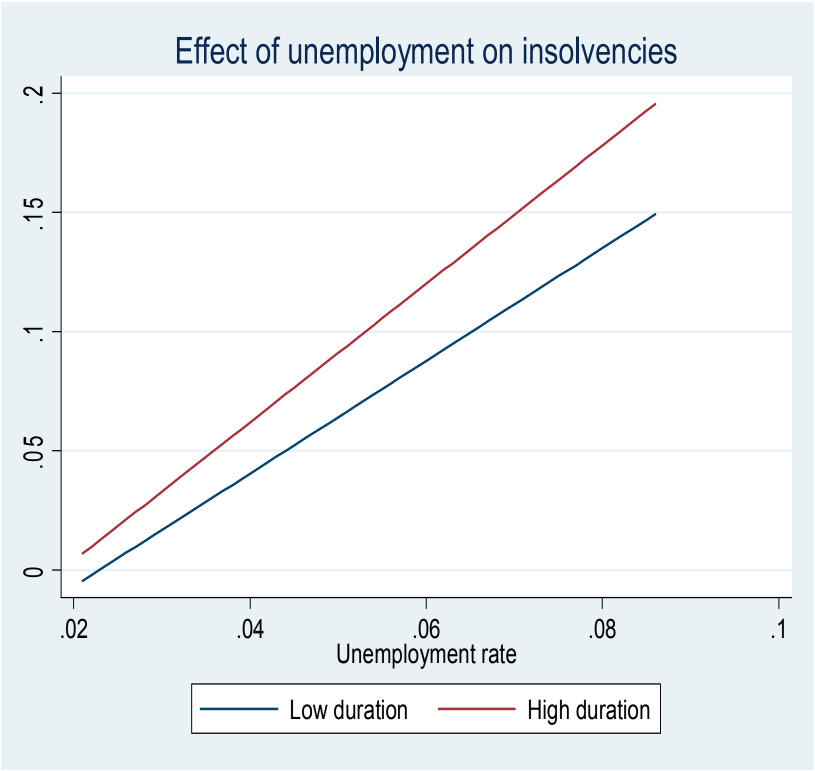
- A 10% increase in Debt-GDP is associated with an increase in arrears that in countries where information sharing covers 40% of the population (Austria) is 1 point larger than in countries where it covers 80% (Netherlands or Italy).

- A 1% increase in the unemployment rate is associated with an increase in arrears that is 2.4 points larger.

Unemployment, insolvencies and duration of judicial procedures

- A 1% increase in unemployment is associated with an increase in arrears that is 2.1 points larger in countries where duration is 180 days (France) than where duration is 680 days (Italy).

- Results for arrears on mortgage loans and other loans are broadly similar.



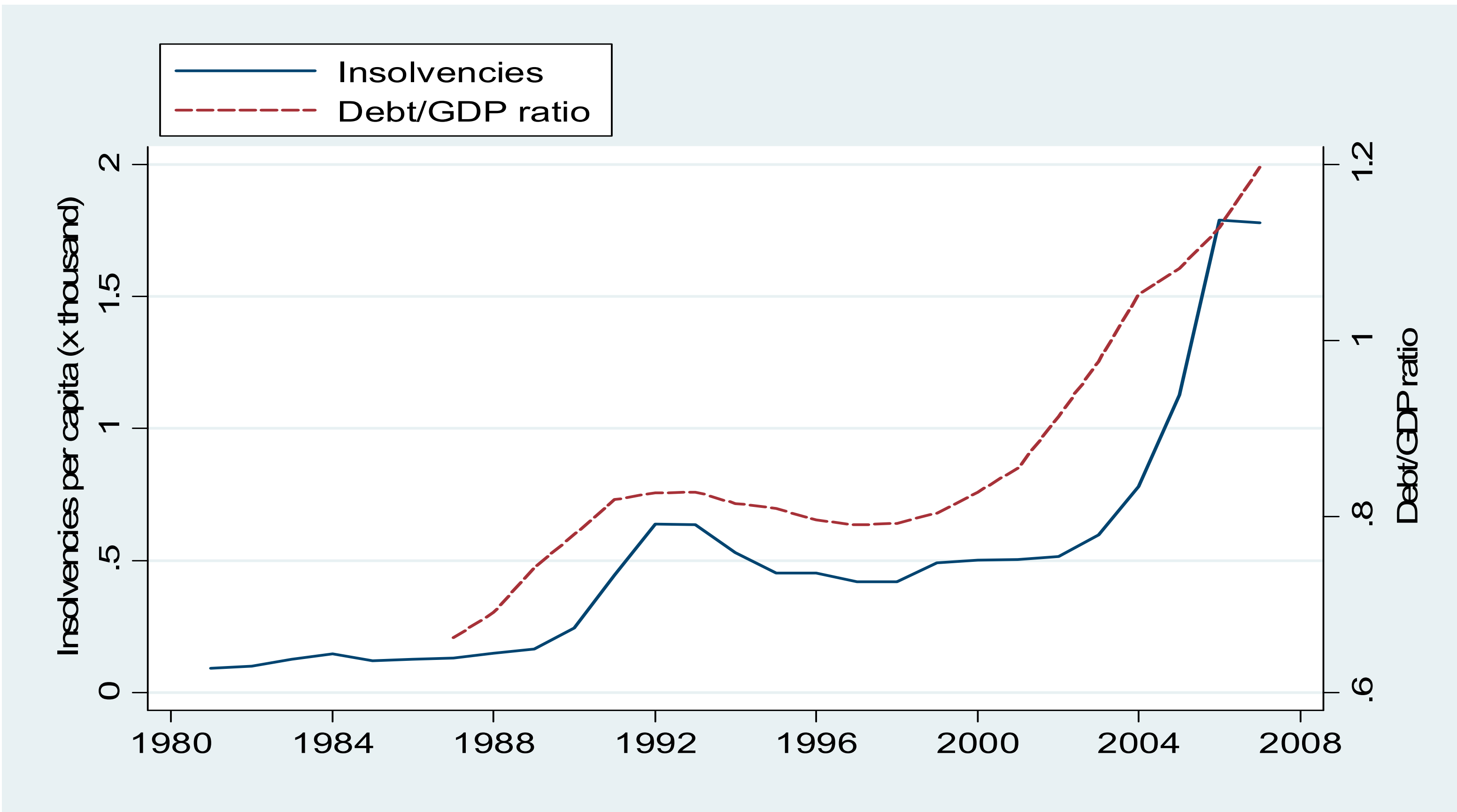
Analysis of time series data for the UK, US and Germany

- We collect time series data on:
  - Insolvencies (different definitions);
  - Debt-GDP ratio;
  - Unemployment rate;
  - Interest rate.

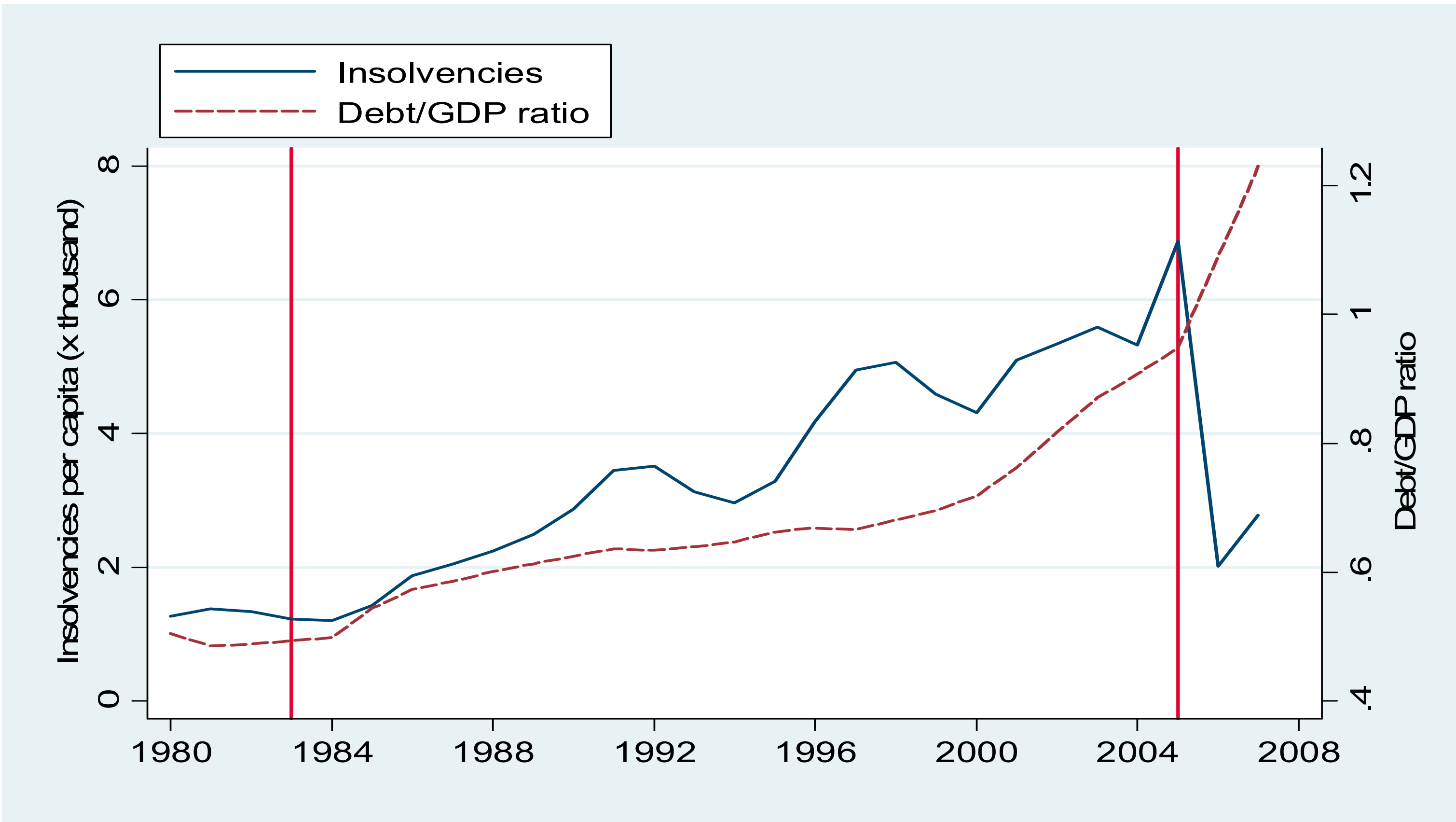
- UK: 1983-2007;
- US: 1981-2007;
- Germany: 1992-2007.

- We estimate the correlation between insolvencies and household debt by VAR analysis.

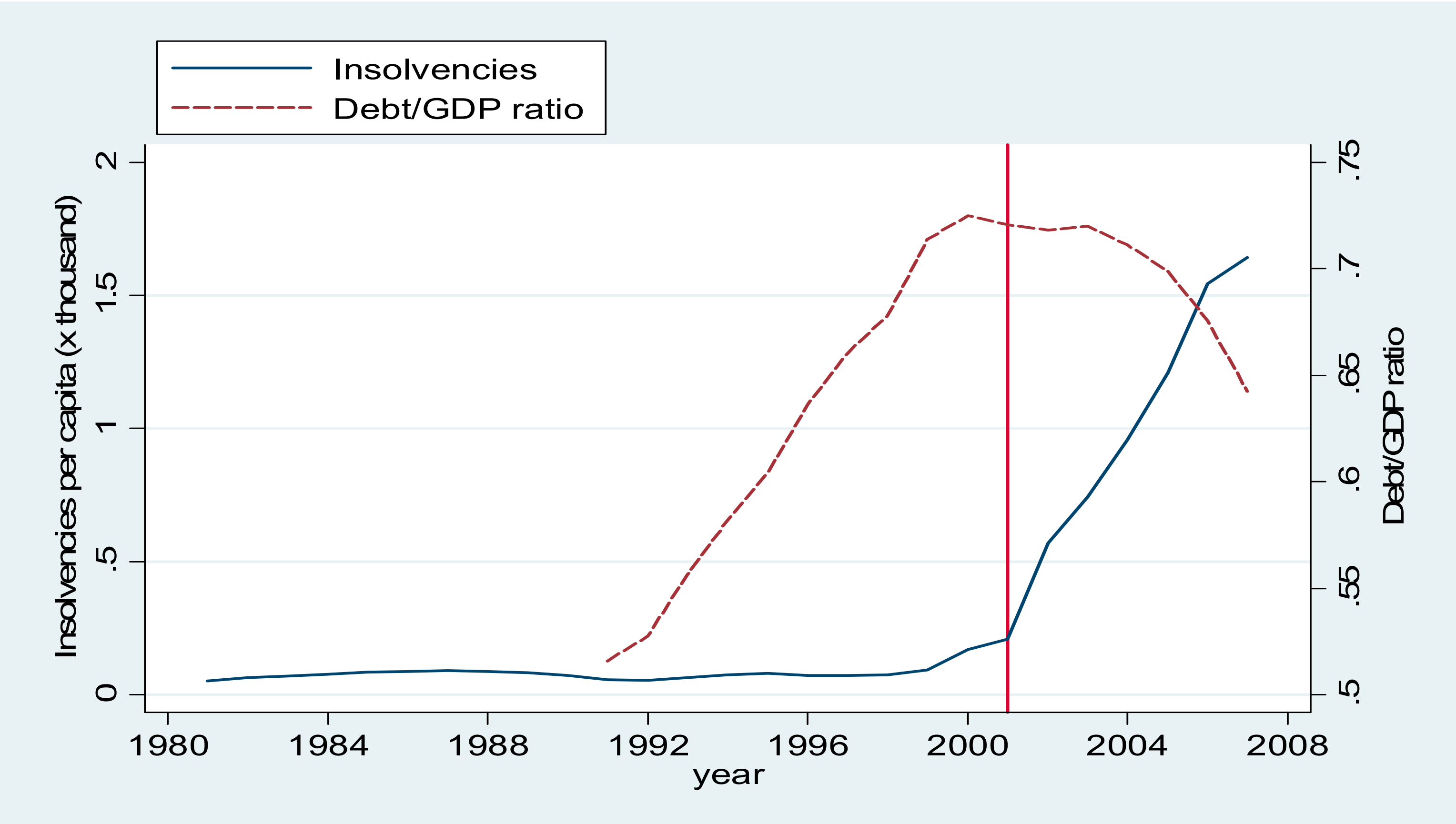
Debt and insolvencies in the UK: 1981-2007



Debt and insolvencies in the US: 1980-2007

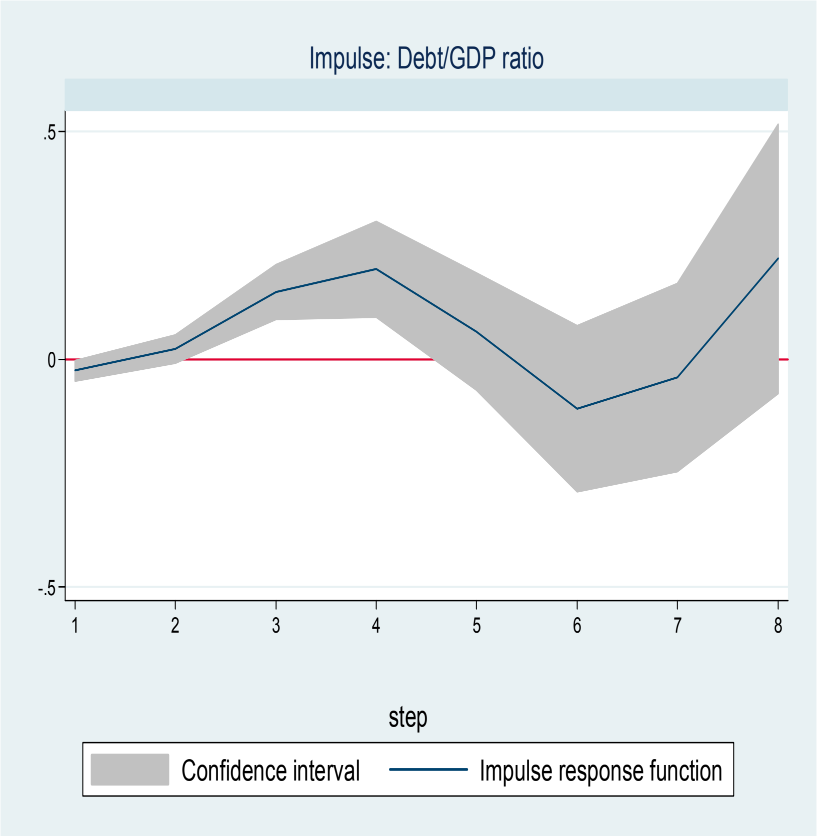


Debt and insolvencies in Germany: 1981-2007



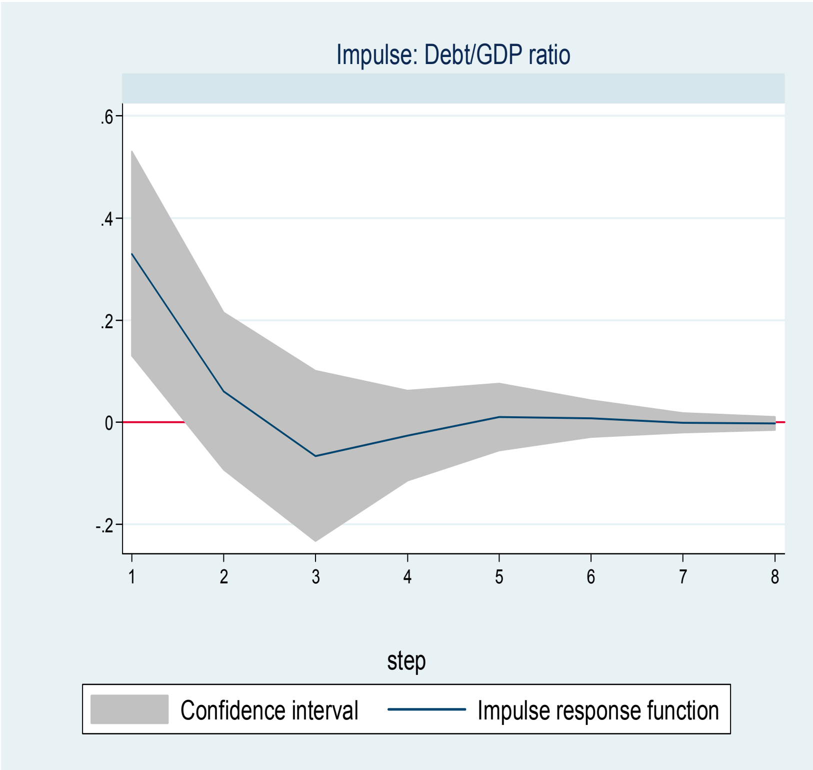
Impulse response function for the UK

- 4-variables VAR with time trend.
- An increase in household debt is followed by greater insolvencies in the subsequent 4 years.
- IRF for unemployment and interest rates are not significant.



Impulse response function for the US

- 4-variables VAR with time trend and dummies for 1983 pro-debtor and 2005 pro-creditor reforms.
- An increase in household debt is followed by greater insolvencies in the subsequent year.
- IRF for unemployment and interest rates are not significant.



Summary: Debt and Insolvencies

- Insolvencies increase and become more sensitive to adverse shocks when households are heavily indebted:
  - **Panel analysis** of insolvencies shows that European countries that experienced relatively fast debt growth also featured larger increases in insolvency rates.
  - **VAR analysis** for the U.K. the U.S. and Germany suggests that insolvencies increase in the wake of large household debt accumulation.

Summary: Insolvencies and quality of institutions

- The relation between insolvencies and debt is affected by the quality of institutions: judicial enforcement and information sharing arrangements.
- **Cross-country estimates**: debt is associated with better enforcement of creditor rights and information sharing arrangements.
- **Panel regressions**: better contract enforcement and information sharing arrangements reduce the financial fragility of households, i.e.
  - the sensitivity of insolvencies to household debt,
  - their sensitivity to shocks, e.g. increases in unemployment.

Summary: Insolvencies and bankruptcy reforms

- Time series evidence for the U.S. and Germany suggests that:
  - pro-debtor reforms are followed by increases in insolvencies (see the 1983 reform in the U.S. and the 2001 reform in Germany);
  - pro-creditor reforms are followed by the opposite outcome (see the 2005 reform in the U.S.).

Implications

- Our data stop short of the sub-prime loan crisis period, but findings help explaining that **even moderate shocks can precipitate a wave of household defaults**, in a situation where households are already heavily indebted.

- **Financial fragility of households can be mitigated** by the design of institutions that reduce the propensity to default, such as improvements in judicial efficiency, bankruptcy regulation and information sharing arrangements.

- Need to collect **comparable data on household debt and insolvencies** across countries (IMF could help).