

Boston College/DIW Summer School

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# Imposing Fiscal Discipline by Financial Markets

Kerstin Bernoth  
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## The European sovereign debt crisis:

- Several European governments have collected huge amounts of public (and private) debt.
- Financial markets started to doubt solvency of several European countries.
  - ⇒ Several countries, i.e. GR, ES, PT, IR have lost access to financial markets and could finance their public debt only in exchange of horrendous interest rates.
- But also the USA has serious debt problems
  - ⇒ The United States Debt Ceiling Crisis in 2011.



## Outline of the lecture

1. Introduction to fiscal policy
2. Explanations for government overspending
3. Implications of excessive debt
4. Fiscal discipline and financial markets
5. Conclusions

## **Fiscal policy** (Hilber, 2004):

- Fiscal policy refers to the government's choice regarding the use of taxation and government spending to regulate the aggregate level of economic activity.
- The use of fiscal policy entails changes in the level or composition of government spending or taxation, and hence in the government's financial position.

- Why do governments spend money at all? What is the economic function of governments?
- a) Microeconomic functions of a government:
  - Provision of public goods and services.
  - Income redistribution.
- b) Macroeconomic function:
  - Consumption and tax smoothing
  - Output and employment stabilization.

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a) Microeconomic functions of a government:

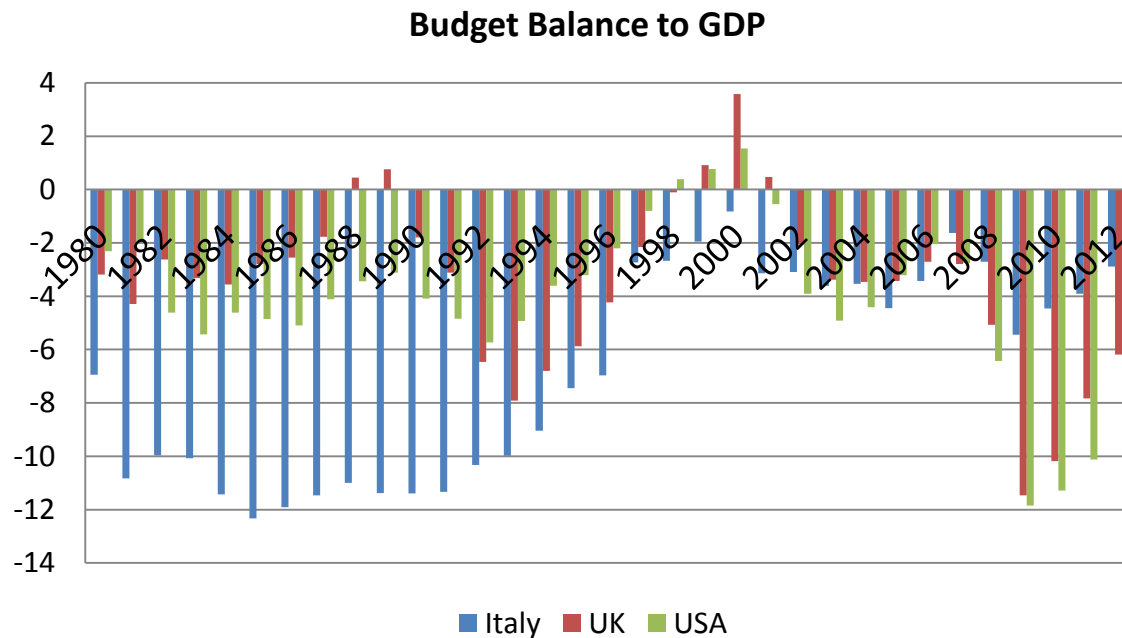
- Provision of public goods and services.
- Income redistribution.

b) **Macroeconomic function:**

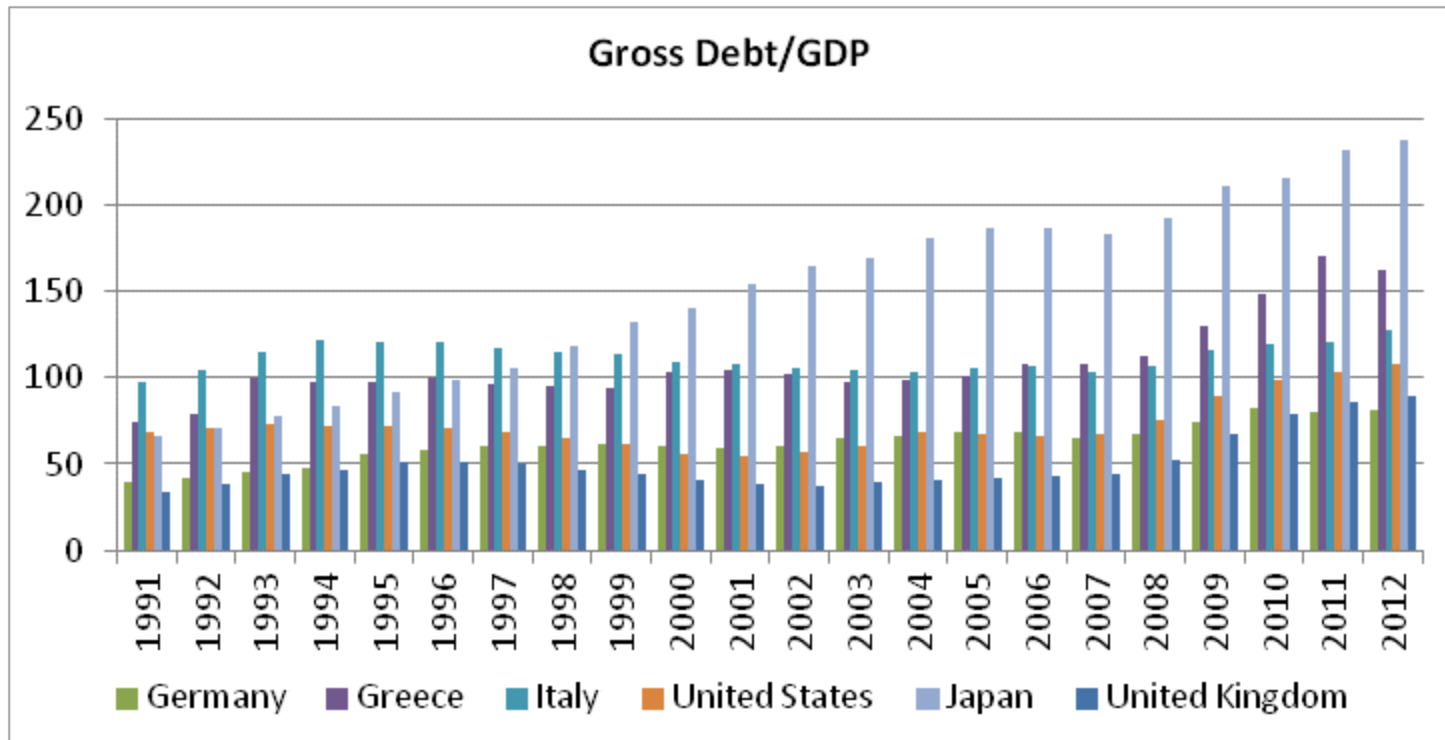
- **Consumption and tax smoothing**
- **Output and employment stabilization.**

⇒ Both macroeconomic function suggest that the budget balance of a government should be cyclical. However, according to this theory, the budget should be balanced over the cycle.

Is the government budget balanced over time?



⇒ We observe a strong deficit bias. Over time, budget balances don't seem to be balanced. The `smoothing' is obviously asymmetric, no savings in good times.



⇒ For most countries, government debt tends to increase over time. In this sample, debt seems to be stable only for Italy (on a high level, though)...



*Why is government debt so persistent?*

- Most explanations can be summarized by: Human beings are myopic or short-sighted:
  - ⇒ Human beings care much more about presence than about the future:
    - Politicians seek to get re-elected and therefore implement expansionary policies (assumes fiscal illusion); this holds especially in the run-up to elections (political business cycle) (empirical validity, however, mixed).
    - Welfare model: As societies are getting wealthier, needs change and become more sophisticated, while at the same time expectations on acquired rights grow.

- ⇒ Human beings do not take into account the long-term/overall consequences/ costs:
- Common pool problem: Politicians do not internalize fully the costs of spending decisions. Reason: Benefits of public spending are usually concentrated, whereas costs are spread across the whole tax-paying community.
  - The larger the social fragmentation and inequality in the society the less politician internalize the full costs: Government have incentive to insist on higher spending for their preferred sectors/constituencies.
- These facts explain, why government debt is so persistent, but why does the speed of debt accumulation has increased over time?

- Potential explanations:
  - Demography: During the last decades, life expectancy has increased and birth rates have decreased  $\Rightarrow$  Increasing welfare-related spending coupled with shrinking revenues lead to growing deficits.
  - Macroeconomic shifts: Most industrial countries have hit their technological frontier. Growth slowed down, productivity began to fall, inflation became more volatile and the structural unemployment increased.

- Implications, when a country has collected excessive government debt:
  - The country is less able to absorb economic shocks in times of recessions or crises → pro-cyclical policy instead of counter-cyclical policy as a result.
  - Inflationary pressures might arise, because the economy shifts from monetary dominance to fiscal dominance and central bank loses control over the inflation rate.
  - Economic growth is dampened.

- Sound fiscal policies are necessary. Broadly speaking, debt reduction can work in two ways:
  - Fiscal consolidation.
  - Debt relief.
- However, even better would be to avoid that governments collect excessive debt at all.
- In principle, governments can be motivated to be fiscally disciplined by in two ways:
  - Introduction of fiscal policy rules: Permanent constraint on fiscal policy through simple numerical limits on budgetary aggregates
  - Market discipline imposed by financial markets.

# Fiscal Discipline and Financial Markets

*Research question: Do financial markets enforce fiscal discipline on governments?*

- The following slides summarize the results of two papers:

Bernoeth, K., von Hagen, J. and Schuknecht, L. (2012): “Sovereign risk premia in the European government bond market”, *Journal of International Money and Finance* 31, pp. 975-995.

Bernoeth, K. and B. Erdogan (2012): “Sovereign bond yield spreads: A time-varying coefficient approach”, *Journal of International Money and Finance* 31(3), pp. 639-659.

- Theory of bond pricing: Bond yields incorporate three different risk premia:
  - Liquidity risk premium
  - Devaluation risk premium
  - Default risk premium
- When comparing bond yields of EMU countries, they all reflect the same devaluation risk premium  $\Rightarrow$  bond yield differentials of EMU countries only reflect:
  - Liquidity risk premium
  - Default risk premium.



- Market discipline hypothesis: Financial markets charge higher interest rates to borrowing countries whom they consider riskier



## Default risk premium

- Because of this default risk premium, governments debt service costs increase and governments have an disincentive to collect further debt.
- Important question: Does markets really impose discipline on governments?
  - Are sovereign bond yield spreads related to the fiscal performance of a country?
  - In how far did the default risk valuing change with the start of the EMU or with the outbreak of the European debt crisis?

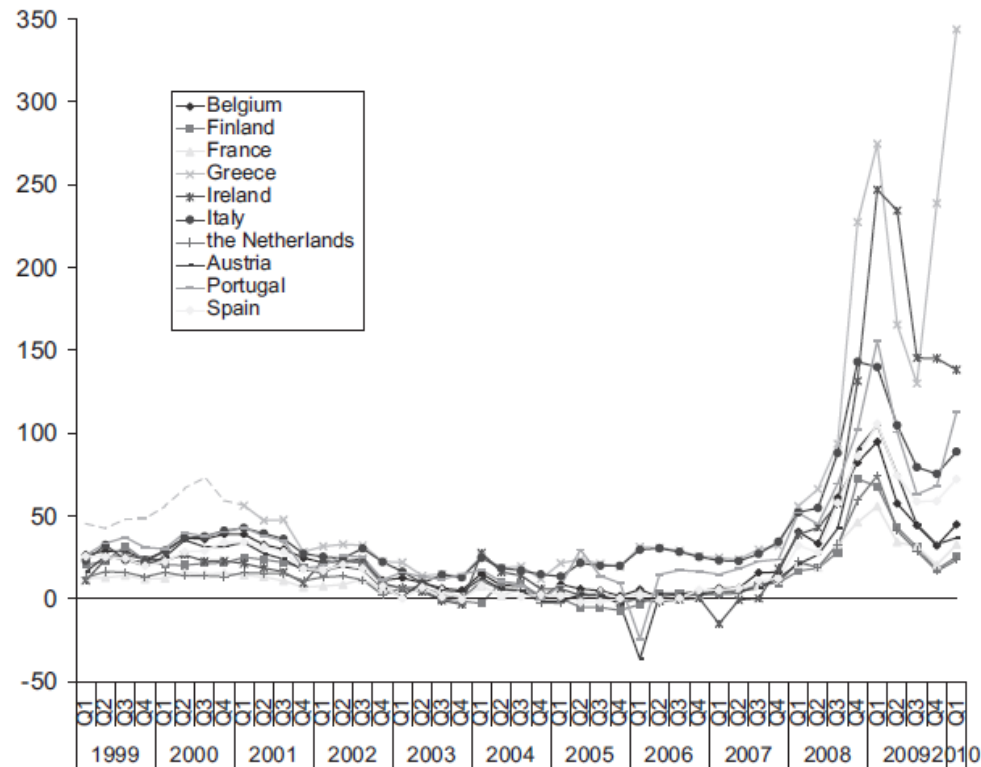


Fig. A1. Ten-year sovereign bond yield spreads in basis points. Note: Yield spreads of Greece adjusted for exchange rate risk premia between Q1/1999-Q4/2000.

What drives the interest differentials between EMU countries?

Evidence from the literature: Determinants of bond yield differentials:

- International factors: General investors' risk aversion affects willingness to invest in risky assets.
  - ⇒ Evidence e.g. Codogno et al. (2003), Favero et al. (2010) and Pozzi and Wolswijk (2008) and Sgherri and Zoli (2009).
- Country-specific factors:
  - Default risk: If the fiscal position of a country deteriorates, markets ask for a higher default risk premium.
    - ⇒ Evidence: e.g. Codogno et al. (2003), Hallerberg and Wolff (2008), Bernoth et al. (2006) and Gomez-Puig (2008).
  - Liquidity risk: Illiquidity is priced due to higher trading costs.
    - ⇒ Mixed evidence: Gomez-Puig (2008), Bernoth et al. (2006) and Barrios et al. (2009).

Considered variables that might influence bond yield spreads:

	Description
<b>Default Risk</b>	
$\Delta$ Debt/GDP	Difference of debt to GDP ratio of an EMU country over that of Germany in EMU country over that of Germany (in%)
$\Delta$ Proj.Deficit/GDP	Difference of projected deficit (1-year ahead) to GDP ratio of an EMU country over that of Germany (in%)
<b>Liquidity Risk</b>	
$\Delta$ Bid-Ask Spread	Spread between bid and ask quotations for the relevant bond in basis points
<b>General Risk Aversion</b>	
Baa Spread	Spread between the yield on US 7-10-year Baa corporate bonds and the yield on 10-year US treasury benchmark bonds in percent, quarterly frequency.

# Determinants of bond yield spreads

- Conventional measure of investors' risk aversion: Risk aversion has increased considerably with the outbreak of the financial crisis.

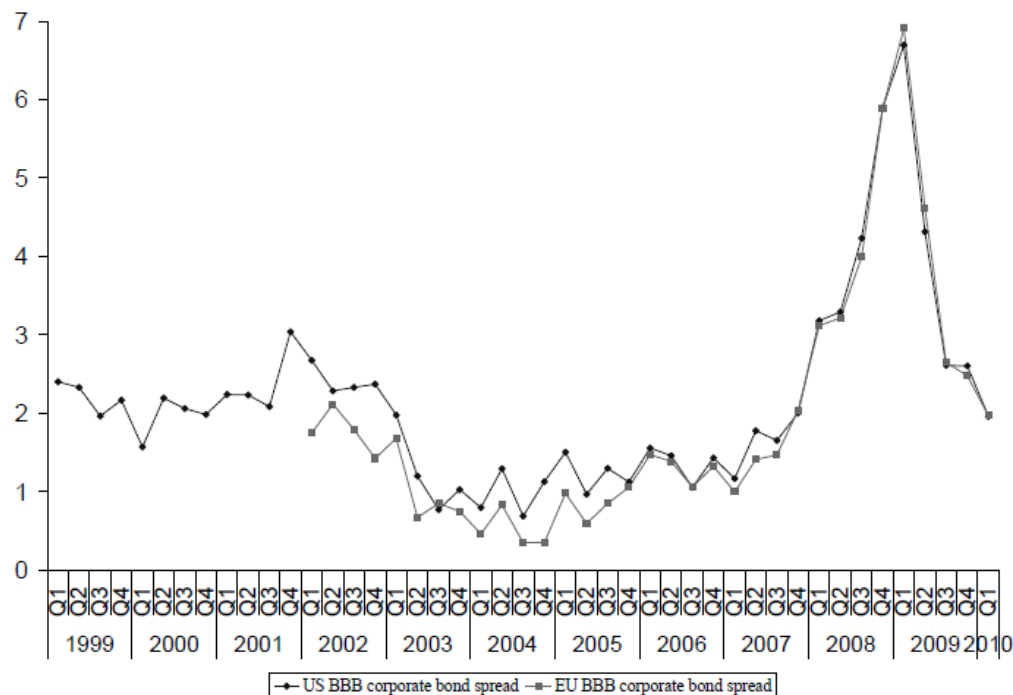


Figure: US and EU BBB corporate bond spreads in percent

Data used for the estimations:

- Yield differential of 10-year benchmark bonds of ten euro area countries relative to the 10-year German Bund.
- Countries considered: Belgium, Finland, France, Greece, Ireland, Italy, the Netherlands, Austria, Portugal and Spain.
- Time period covered: Q1/1999 until Q1/2010.
- In total 440 observations.

Fixed effects panel estimation results:

- Sovereign yield spreads display default, liquidity and global risk premia:

⇒ The higher the investors' risk aversion, the higher the yield spread with respect to Germany: Germany has a safe-haven status.

⇒ The yield spread increases with the debt and deficit differential between the issuing country and Germany.

⇒ The yield spread increases, the less liquid the bond market is.

	Beta	Std. Dev.
US BBB spread	12.25	0.77***
Debt	0.53	0.15***
Debt <sup>2</sup>	0.003	0.00
Proj. Deficit	8.89	0.65***
Proj. Deficit <sup>2</sup>	0.98	0.15***
Bid-ask spread	7.90	1.59***
R <sup>2</sup>	0.70	
N	440	

\*, \*\*, \*\*\* indicate significance at the 10, 5, and 1% significance levels respectively.

Relationship between economic variables and bond yield spreads is not constant over time:

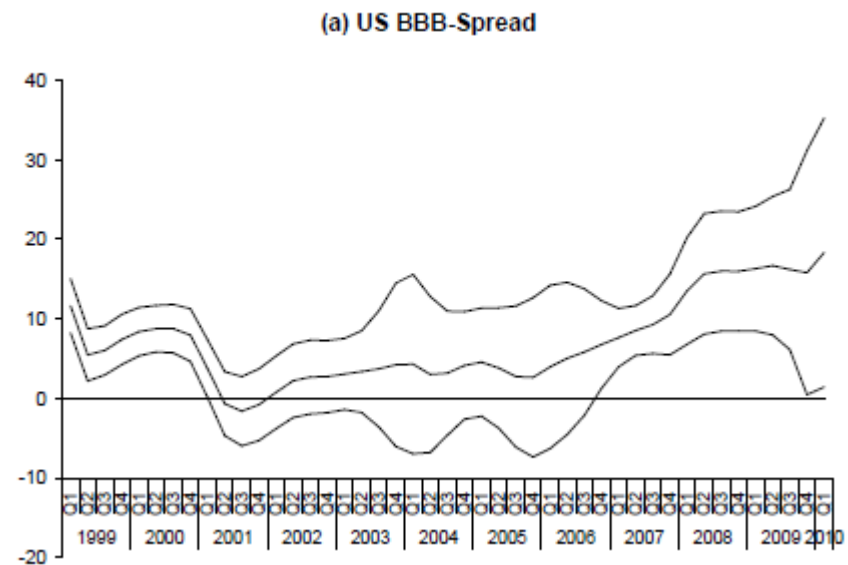
- Bernoth et al. (2010) :
  - ⇒ Weakened impact of debt and deficits after start of EMU.
  - ⇒ Much stronger effect of global risk aversion and fiscal imbalances after outbreak of financial crisis in Aug. 2008.
- Barrios et al. (2009), Sgherri and Zoli (2009) and Haugh et al. (2009):
  - ⇒ General increase in the risk aversion during the financial crisis amplifies the effect of fiscal performance on yield spreads.

⇒ Pricing of risk premiums is time varying!

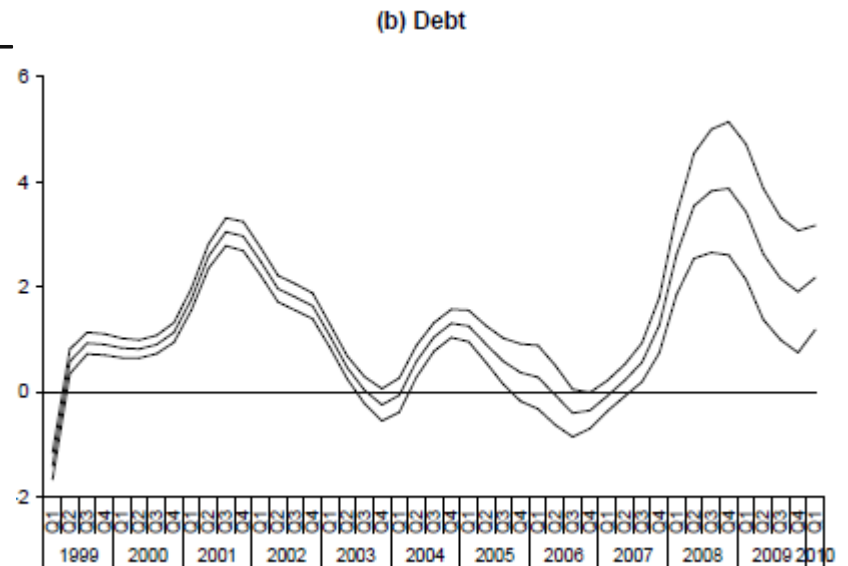


- Estimation of time-varying coefficients in an additive nonparametric fixed-effects panel model framework, which allows to:
    - Identify to what extent an observed change in the yield spread reflects a change in markets' pricing of macroeconomic fundamentals or in the fundamentals themselves.
    - Identify endogenously the timing and patterns of any change in the pricing of the different risk components.
- ⇒ e.g. do yields increase, because the debt level of a country has increased, or because investors risk evaluation of debt has changed?
- ⇒ How does the risk evaluation of investors change over time?

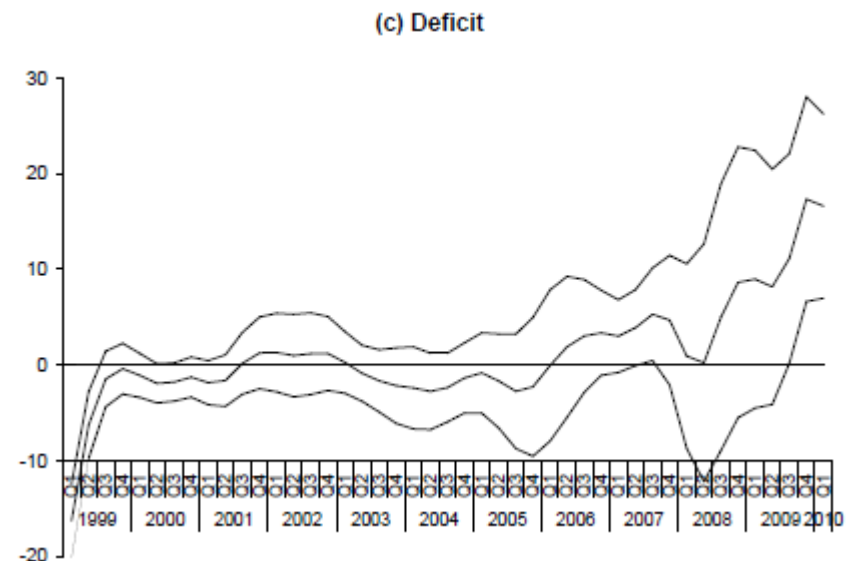
- General investors' risk aversion plays an important role in explaining sovereign bond yield spreads.
- At the beginning of EMU, Germany had an interest advantage compared to other countries: ‚safe haven status‘.
- Between Q1/2001 and Q3/2006 Germany lost its safe haven status.
- From Q4/2006 onwards, two years before the fall of Lehman Brothers, financial markets granted Germany a safe haven status again.



- Yield differentials react positively to an increase in the debt differential of a country.
- During short periods of time – mid 2000 – impact of debt level vanished → financial markets did not differ anymore between countries with different debt ratios.
- With the outbreak of the financial crisis (end 2007), markets began to price fiscal indebtedness harshly.
- With beginning of the European fiscal crisis (beginning 2010), the reaction to debt positions increased again slightly.



- Before the financial crisis, financial markets ignored deficit differentials.
  - Only after the outbreak of the crisis (end 2008) financial markets began to perceive budget deficits.
- Fiscal discipline became stronger, financial markets reassessed the default risk of countries.



- Decomposition of the increase in yield spreads during the financial crisis:
  - A large fraction of yield spread increases stem from an increase in investors' risk aversion and a flight to quality in favor of Germany.
  - In Ireland and Spain, also the worsening of the fiscal performance explains a significant part of the bond yield spread increase.
  - Around 120 basis points of the yield on Greek debt is unexplained by our model.

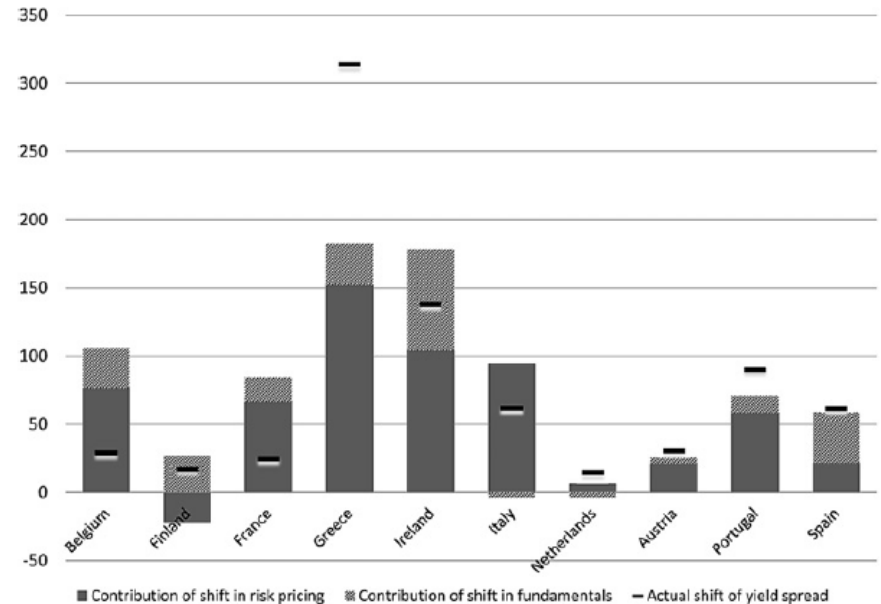


Fig. A3. Decomposition of the change in yield spreads between 2007Q3 and 2010Q1.

- Estimation results support that the financial market values the default risk of high indebted countries in the way that the bond yield differential between two countries depends on the debt and deficit levels → financial markets impose fiscal discipline on governments.
- Impact of fiscal variables and the global risk factor on EMU yield differentials varies considerable over time:
  - Before the financial crisis, financial markets did not pay attention to government deficit ratios.
  - Financial markets monitored the debt to GDP ratio of the individual countries almost continuously.
- Fiscal discipline imposed by financial markets has increased considerably since end of 2008.
- By the end of 2006, Germany's safe haven status revitalized.

- Countries debt service burden will ease:
  - When governments improve their fiscal performance → fiscal consolidation is important.
  - When investors become more confident again and less risk averse → effective crisis management of EU, ECB and IMF important to restore market confidence.