The Role of Financial Markets and Innovation in Productivity and Growth in Europe

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Introduction I

- For a number of years there has been a gap in total factor productivity growth between Europe and the United States
- Much of this gap was measured to be related to productivity differences in the financial sector or particularly finance-dependent sectors
- Improving the working of the financial system(s) in Europe may contribute to higher productivity and growth
- Recently, a lot of attention to "financial integration" and rightly so
- But we need also to consider "financial development" (or modernisation)
- Progress with Lisbon Agenda

Introduction 2

- Large academic literature on finance and growth
  - King & Levine (1993), Rajan & Zingales (1998), Wurgler (2000)
- Complications, esp. from European policy point of view
  - No distinction between industrialised and developing countries
  - Often using historical data
  - Often analysing a very narrow issue
- This paper
  - Adopts a comprehensive view of financial systems
  - Chooses from a large number of indicators and most recent data
    - Updates existing ones
    - Introduces new ones
  - Focuses on industrial countries and Europe/euro area
  - Presents new econometric estimations
  - Ambition to inform European policy

Elements of the analysis

1) Conceptual framework based on an extensive review of the theoretical and empirical literature on finance and growth
   - With a particular eye on what works for industrialised countries
2) Compilation of a comprehensive set of indicators of financial development
   - Embedded in the conceptual framework
   - Firmly grounded in the literature
   - Comprehensively checked for data quality and comparability
3) Econometric analysis of how financial development affects economic efficiency
   - Does a more developed financial system help Schumpeterian process of "creative destruction", i.e. speed up the reallocation of capital from declining to rising industry sectors?
   - What indicators are particularly relevant for this process?

Main results

- Total capital market size is a useful summary statistic
  - Captures overall financial development of an economic region
- Financial market framework conditions could be improved

1) Certain aspects of corporate governance
   - General shareholder rights have improved in Europe
   - But it is still difficult to curb "self-dealing" of corporate insiders
2) Efficiency of legal system in resolving financial disputes
   - Having many formal steps that regulate legal disputes limits the supply of capital
3) Structural features of European bank sectors
   - A small number of countries still have significant levels of ownership of banks by the public sector
   - Do these banks perform better than the average recorded in the literature (e.g. such banks distort competition)?

Less strong results

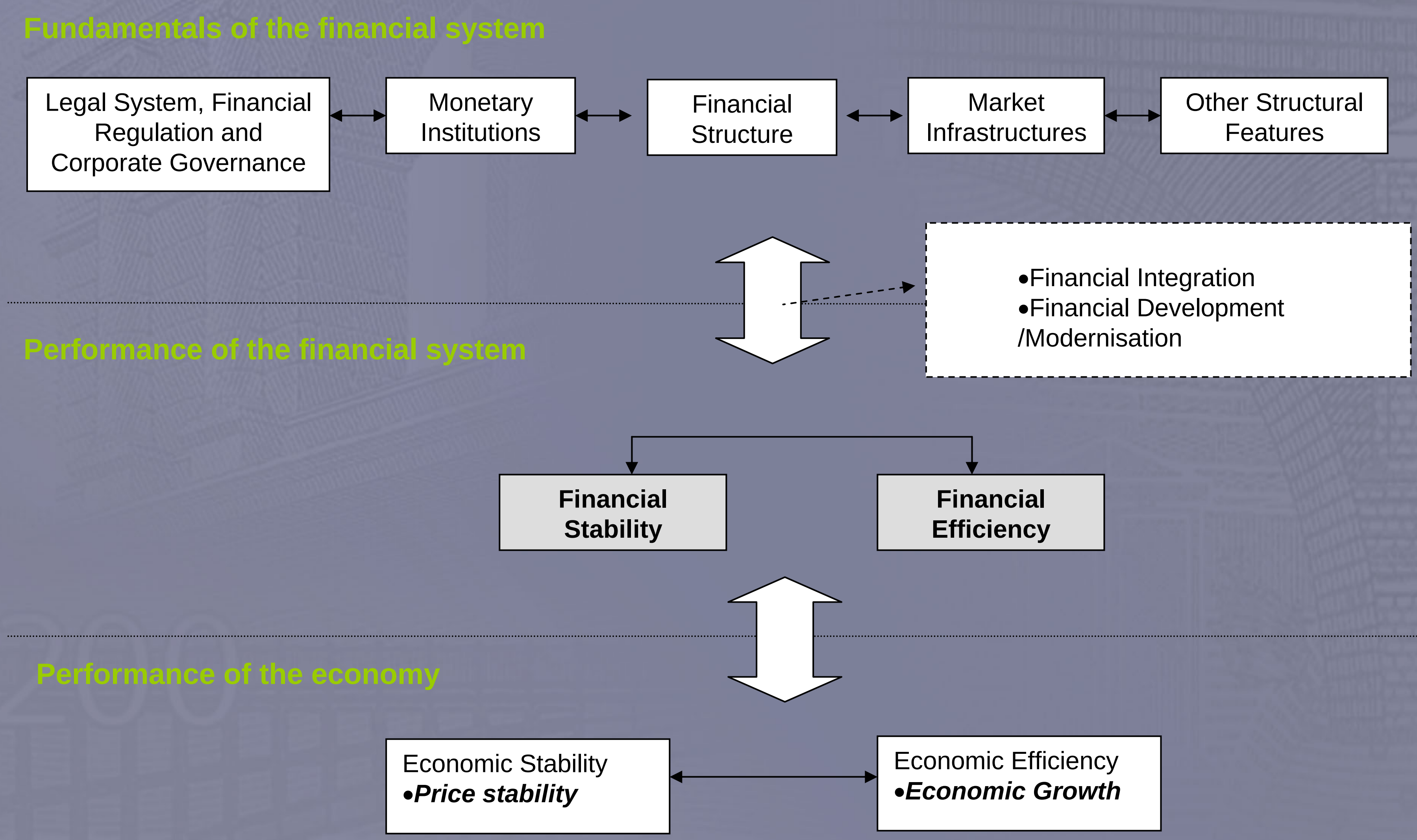
- Information processing capacity of stock markets
  - Less pricing of idiosyncratic risk and greater uncertainty about firm prospects in a few specific European countries
- Creditor rights
  - Bondholders' say in reorganisations and secured creditors' priority increases depth and breadth of capital markets
  - But the overall strength is still unclear
- Ownership structures
  - More dispersed ownership of large publicly traded firms and more institutional shareholders could improve corporate governance
- Financial regulation and supervision
  - Some aspects could be improved w.r.t. incentives for risk taking and management
  - Moral-hazard of deposit insurance and forbearance discretion

Important areas for further research

- Areas in which more research should be undertaken to further substantiate advice for policy-makers
- European risk capital markets should be improved
  - But insufficient information to derive strong policy conclusions
  - What causes the lack of venture capital?
  - How large are the benefits and costs of securitisation?
- There is significant room for further modernisation and development of European financial markets

Financial systems and economic performance: Concepts and literature

Financial system concepts and their interrelation



Dynamic processes influencing performance

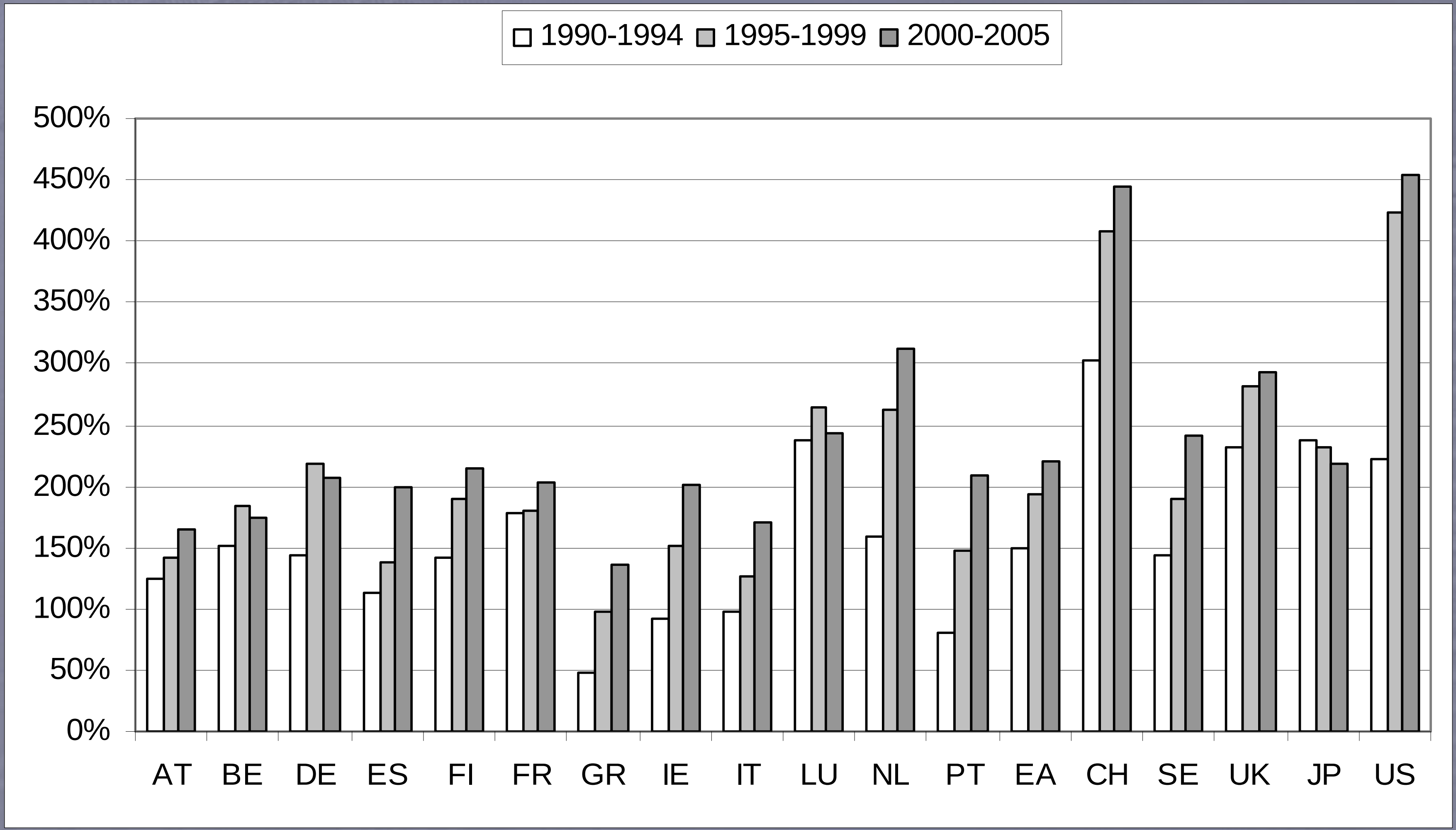
- Financial development/modernisation
  - *Process of financial innovations, institutional and organisational improvements in the financial system that reduces asymmetric information, increases the completeness of markets and contracting possibilities, reduces transaction costs and increases competition*
- Financial integration
  - *The market for a given set of financial instruments and/or services can be regarded as fully integrated if all potential market participants with the same relevant characteristics: 1) face a single set of rules when they decide to deal with those financial instruments and/or services, 2) have equal access to the above-mentioned set of financial instruments and/or services, 3) are treated equally when they are active in the market.*
- Distinct concepts but interrelated
- Both tend to increase financial efficiency
- Relationships to financial stability more complex

Measuring the efficiency of the European financial system

Approach and structure of the analysis

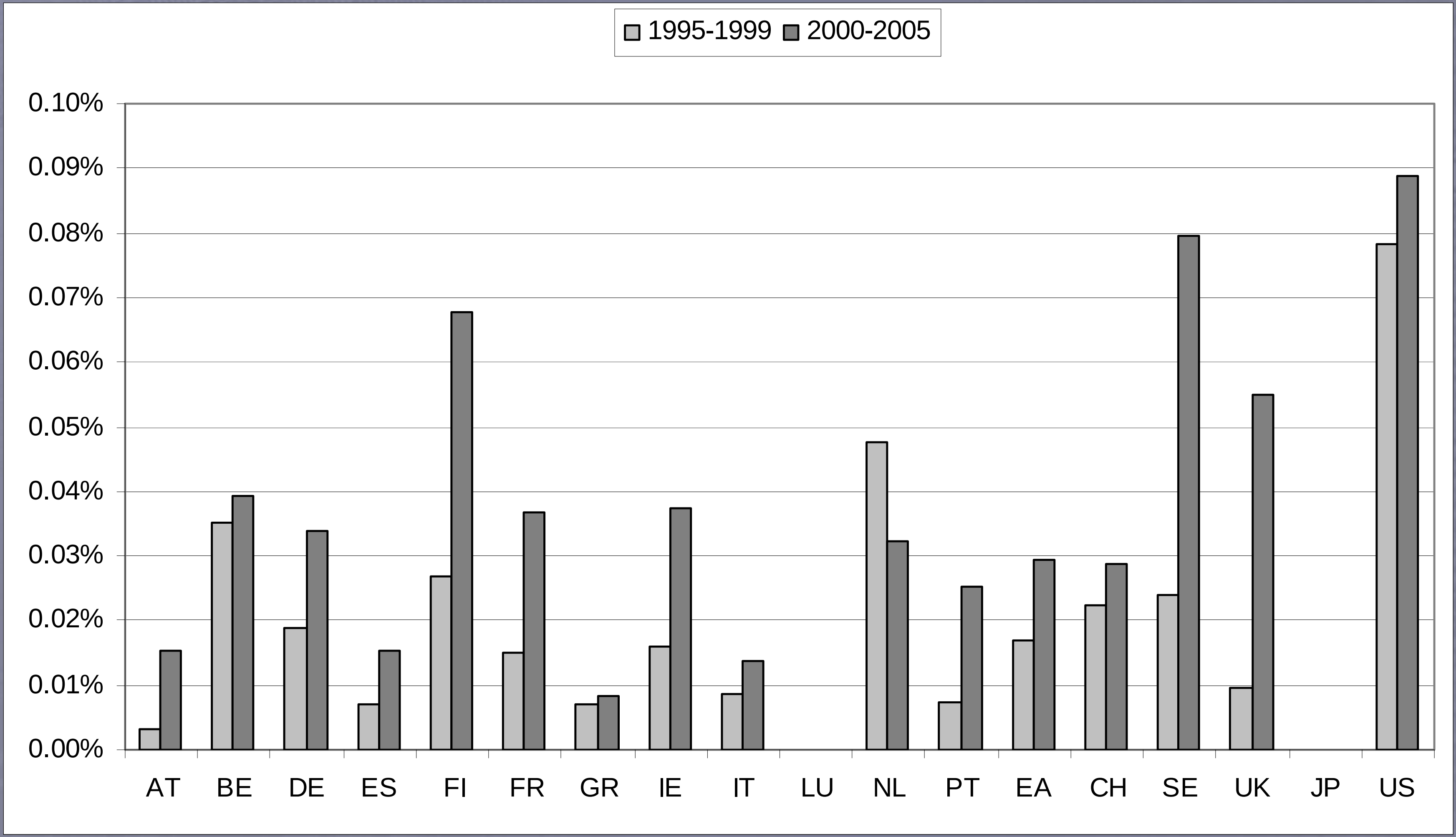
- Identification of indicators of the efficiency and development of relatively advanced financial systems
- Firmly rooted in the economic literature
- Group indicators along 8 dimensions
  - Size of capital markets and financial structure
  - Financial innovation and market completeness
  - Transparency and information
  - Corporate governance
  - Legal system
  - Financial regulation, supervision and stability
  - Competition, openness and financial integration
  - Economic freedom, political and socio-economic factors
- About 2 indicators per group displayed in the paper (out of a total of ca. 50)

Size of capital markets



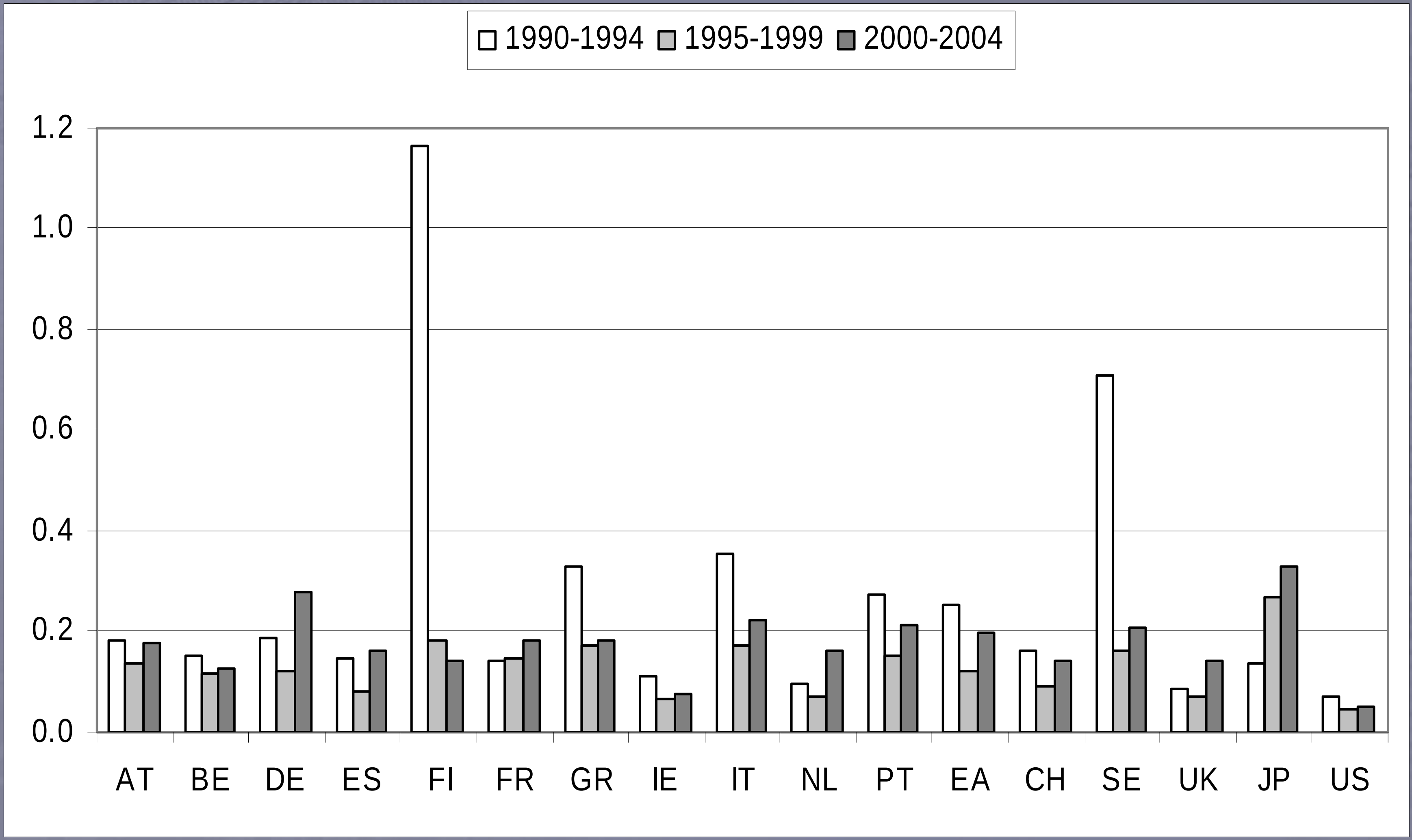
(% of GDP; sum of loans, equity and bonds, BIS, ECB, IMF, Eurostat, WFE)

Venture capital financing (early investment stage)



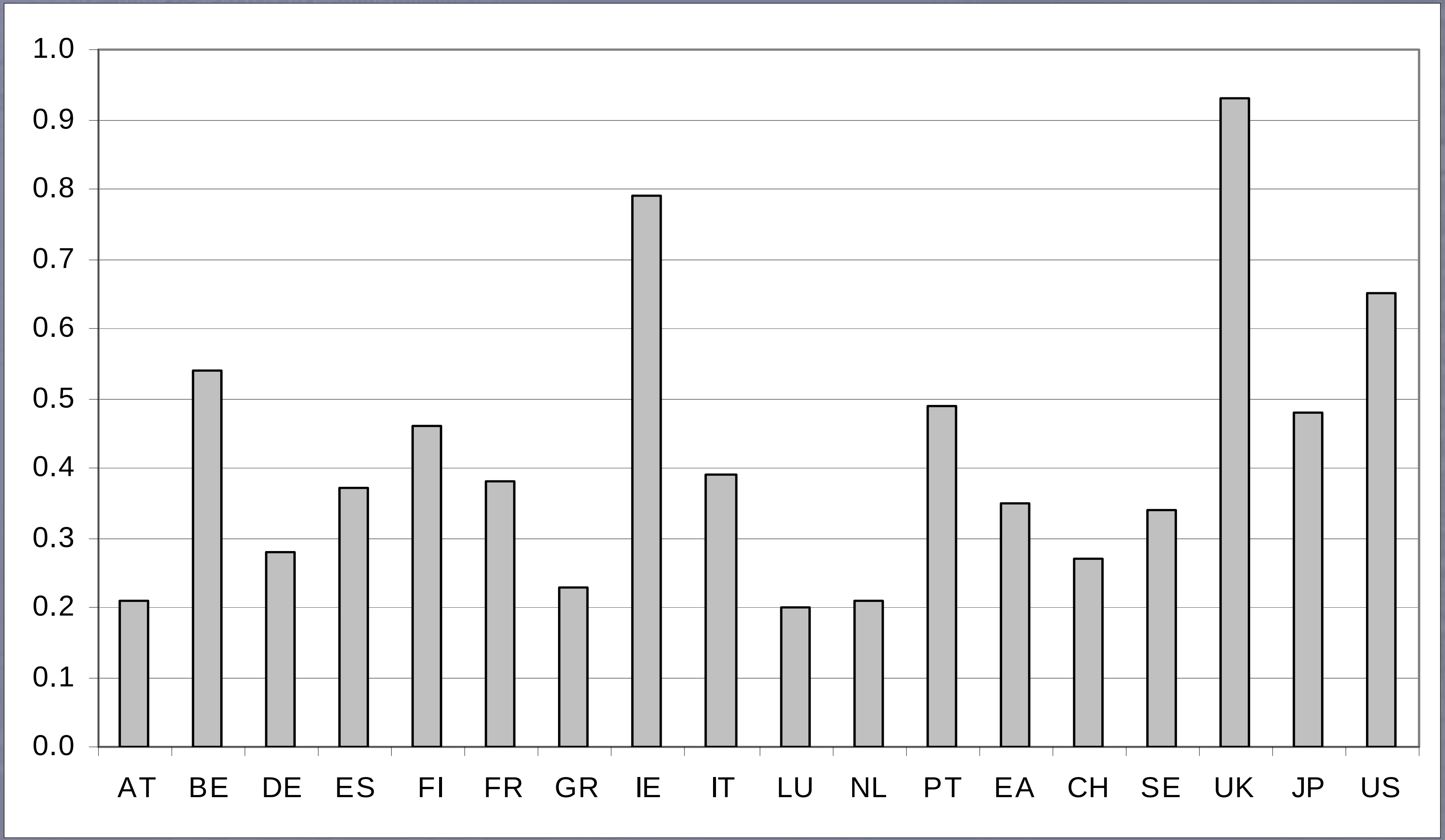
(% of GDP, by country of management, EVCA, PWC, Eurostat)

Dispersion of analysts' EPS forecasts



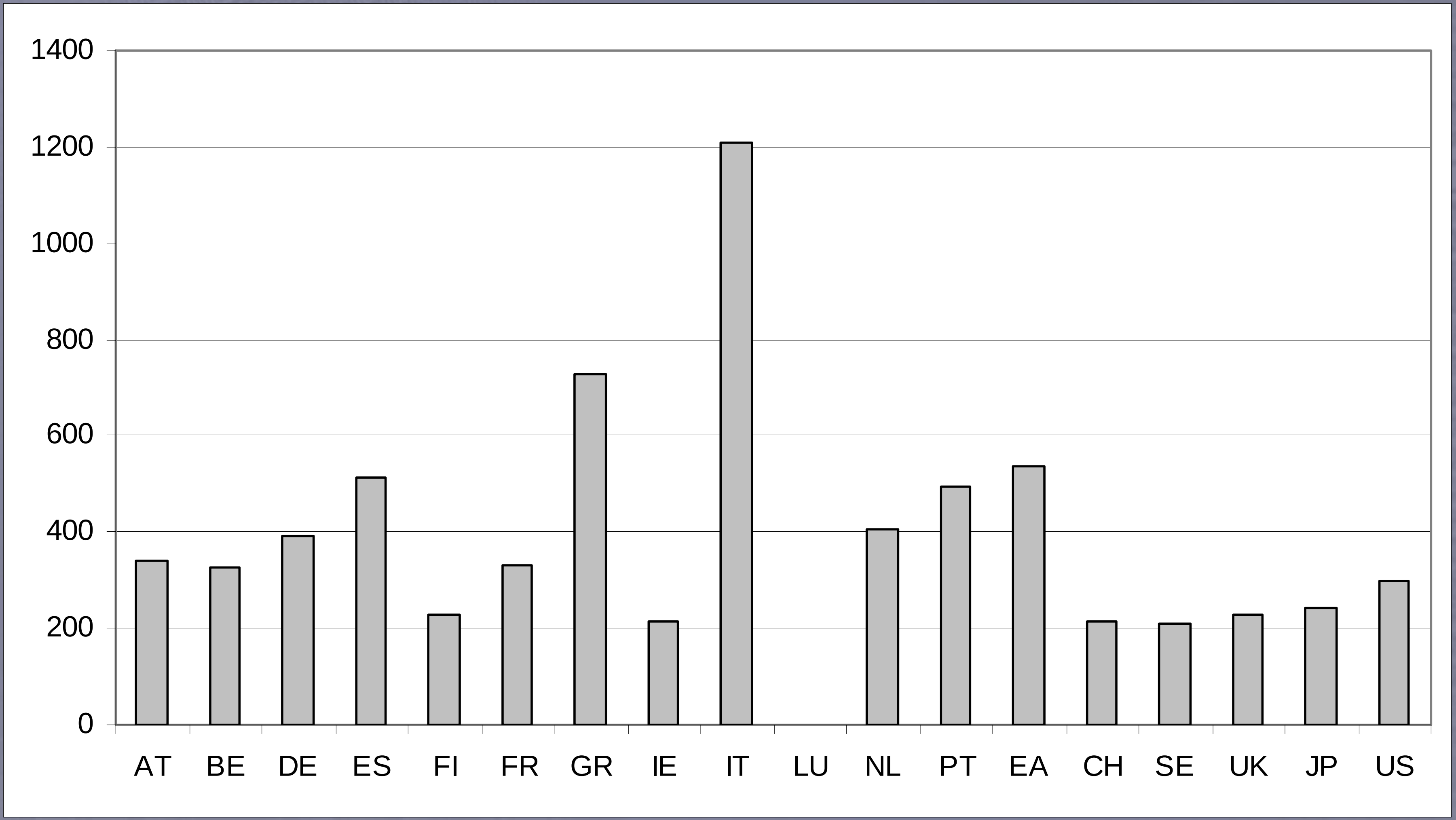
(standard deviation of EPS forecast/level of forecast, Thomson Financial)

Enforcement of shareholder rights against self-dealing by corporate insiders



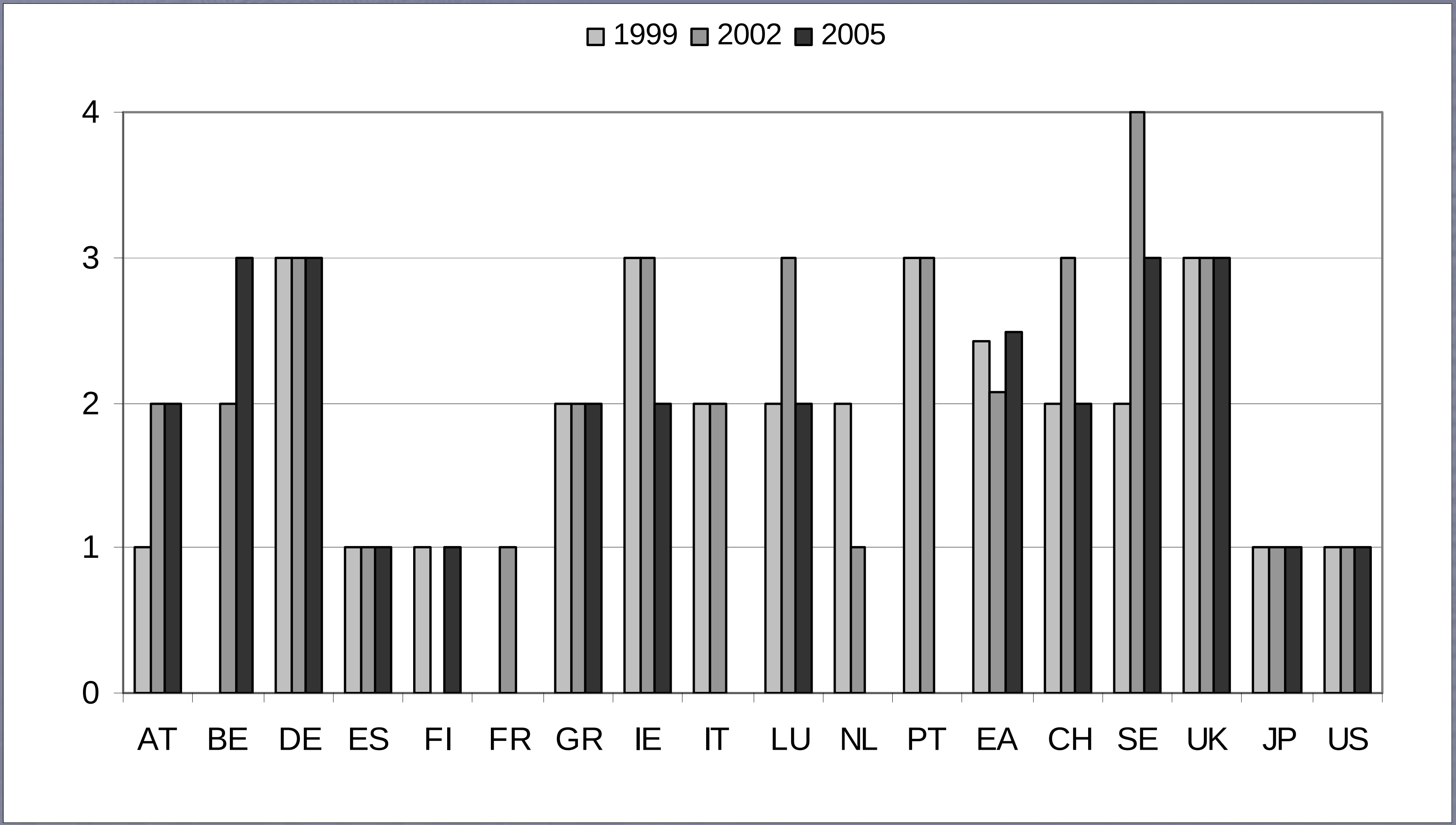
(high score = strong rights, anti-self dealing index, Djankov et al. 2006)

Duration of enforcement



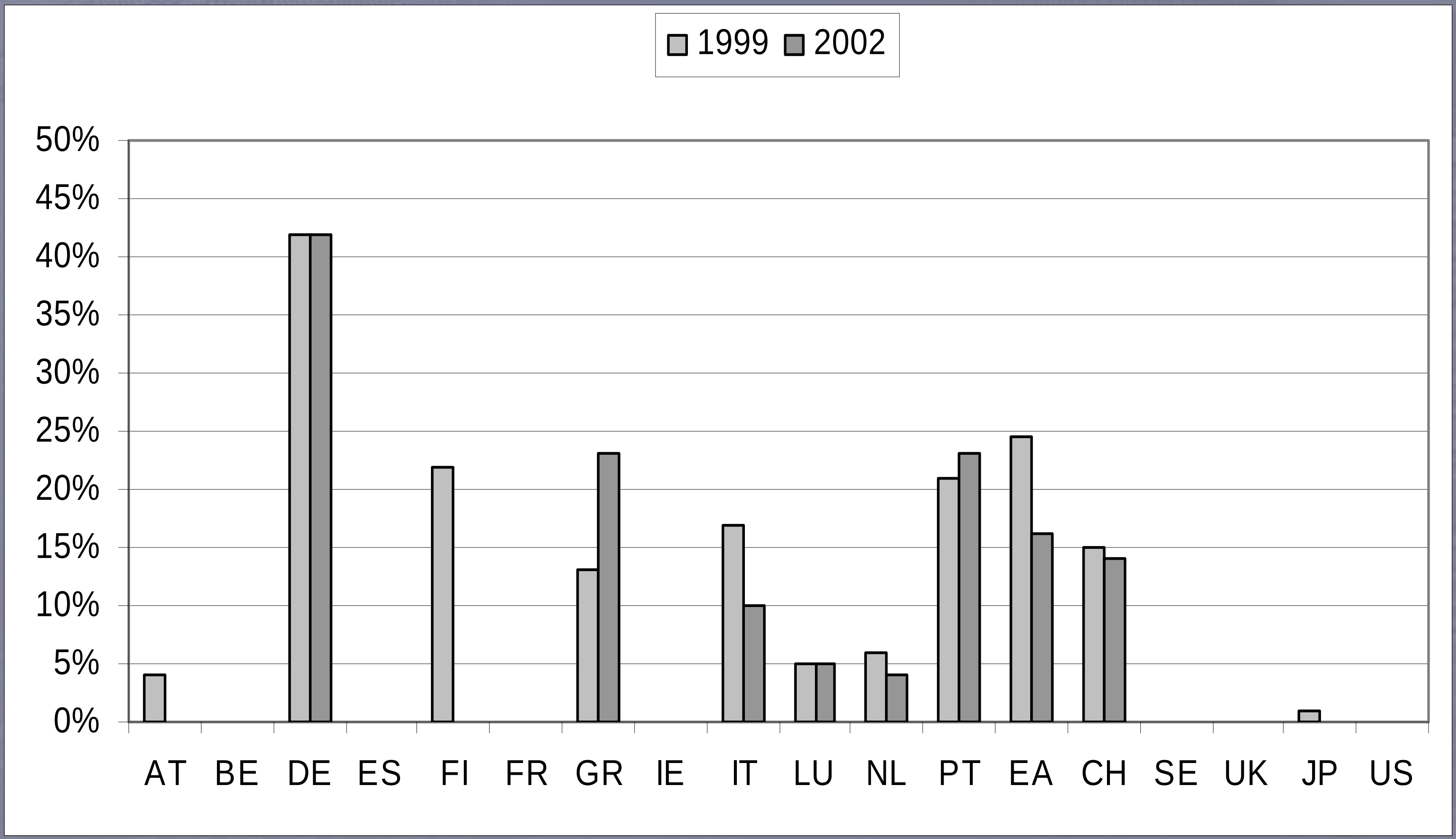
(calender days, Worldbank, data refer to 2005)

Supervisory forbearance discretion



(high score = strong discretion, World Bank and ECB)

State ownership of banks



(% of total assets, World Bank)

General findings from indicators

- Also taking into account a wider range of indicators
- Fair amount of heterogeneity across countries and across indicators
- Finland, Sweden and Netherlands are front-runners
- Greece, Italy and Portugal have room for further development
  - Indicators show clear trend of positive performance
- Germany and France offer mixed picture
- UK and US perform well across many indicators
- Room for structural reforms in the financial sector

Financial Development, reallocation of capital and productivity: Econometric results

Hypothesis

Argument (Bagehot, 1873; Schumpeter, 1911):

In financially developed countries capital flows to industries (as well as firms and entrepreneurs) with positive prospects

Financial Markets → Productivity-Innovation (relevance for advanced economies)

Only one broad channel addressed, there are others

Two-step procedure

1. Estimate country-specific speeds of inter-sectoral capital reallocation

   Using industry-level data (in manufacturing), investment growth is regressed on value-added growth (industry prospects).

   Control in the estimation for all possible sources of unobserved heterogeneity to precisely isolate the inter-industry response of industry investment to the emergence of growth opportunities (i.e. controlling for specialisation patterns; industry-specific global trends; common sector trends).

2. Examine the effect of capital markets size (financial development) on the estimated speed of capital reallocation and identify the sources of financial development.

   Two-stage least squares estimation.

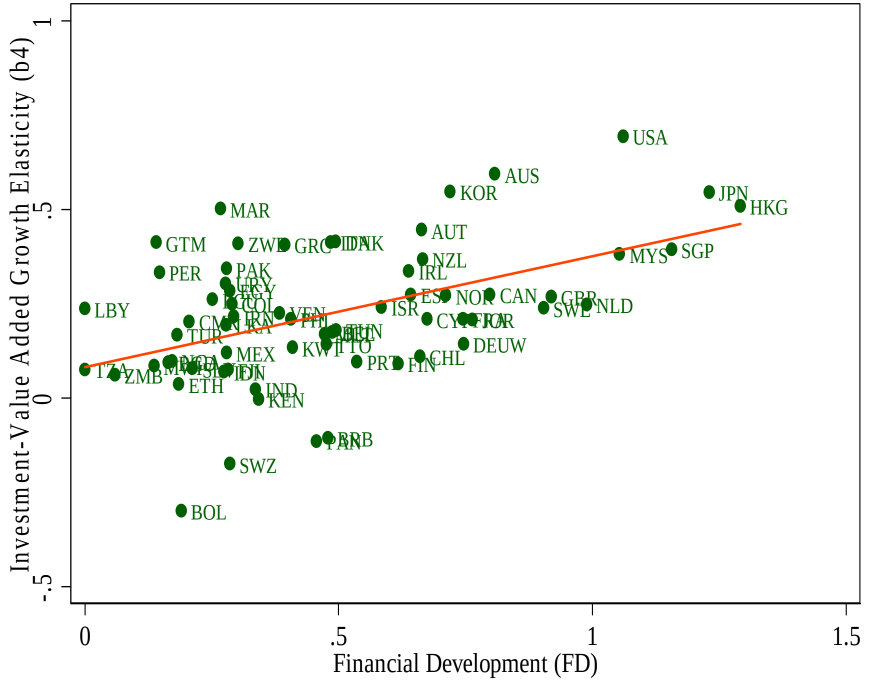
Significant refinement of Wurgler (JFE, 2000)

Data

- 65 countries
  - Industrial and developing
  - We separate three groups, distinguishing high and low income countries
- 28 manufacturing industries
- 1963 to 2003
- Source: UNIDO, Industrial Statistics Database

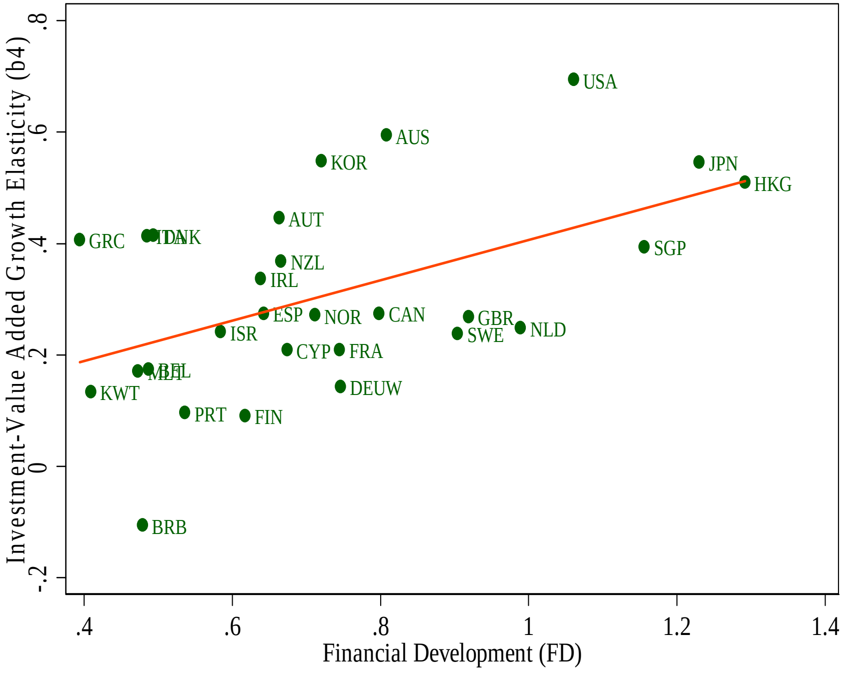
Speed of inter-sectoral capital reallocation and capital markets size: Plots

All Countries



Investment-Growth elasticity estimated:
controlling for country, industry, year, country-industry, industry-year and country-year fixed-effects

High Income



Investment-Growth elasticity estimated:
controlling for country, industry, year, country-industry, industry-year and country-year fixed-effects

Speed of inter-sectoral capital reallocation and capital market size: Regressions

	All countries	No Low-Income	High Income
	(1)	(2)	(3)
Capital Markets Size (FD)	0.3187	0.3173	0.4128
p-value	*0.00*	*0.00*	*0.00*
Income-Real GDP p.c. (*GDP*)	0.0328	0.0457	0.0316
p-value	*0.17*	*0.21*	*0.68*
Schooling (*SCH*)	0.0127	0.0142	0.0313
p-value	*0.30*	*0.26*	*0.04*
Institutional Quality (*IQL*)	-0.0660	-0.0698	-0.1330
p-value	*0.12*	*0.12*	*0.06*
adjusted R-squared	0.300	0.300	0.393
Countries	59	50	28

Institutional drivers of capital market size

1. Legal Institutions (such as court speed-efficiency; investor's protection rights; transparency, etc.)

   La Porta et al. (1997, 1998, 1999, 2006); Djankov et al. (2002)

2. Government ownership and control of banks and other financial institutions

   La Porta et al. (2002); Sapienza (2002); Dinc (2005); Papaioannou (2005)

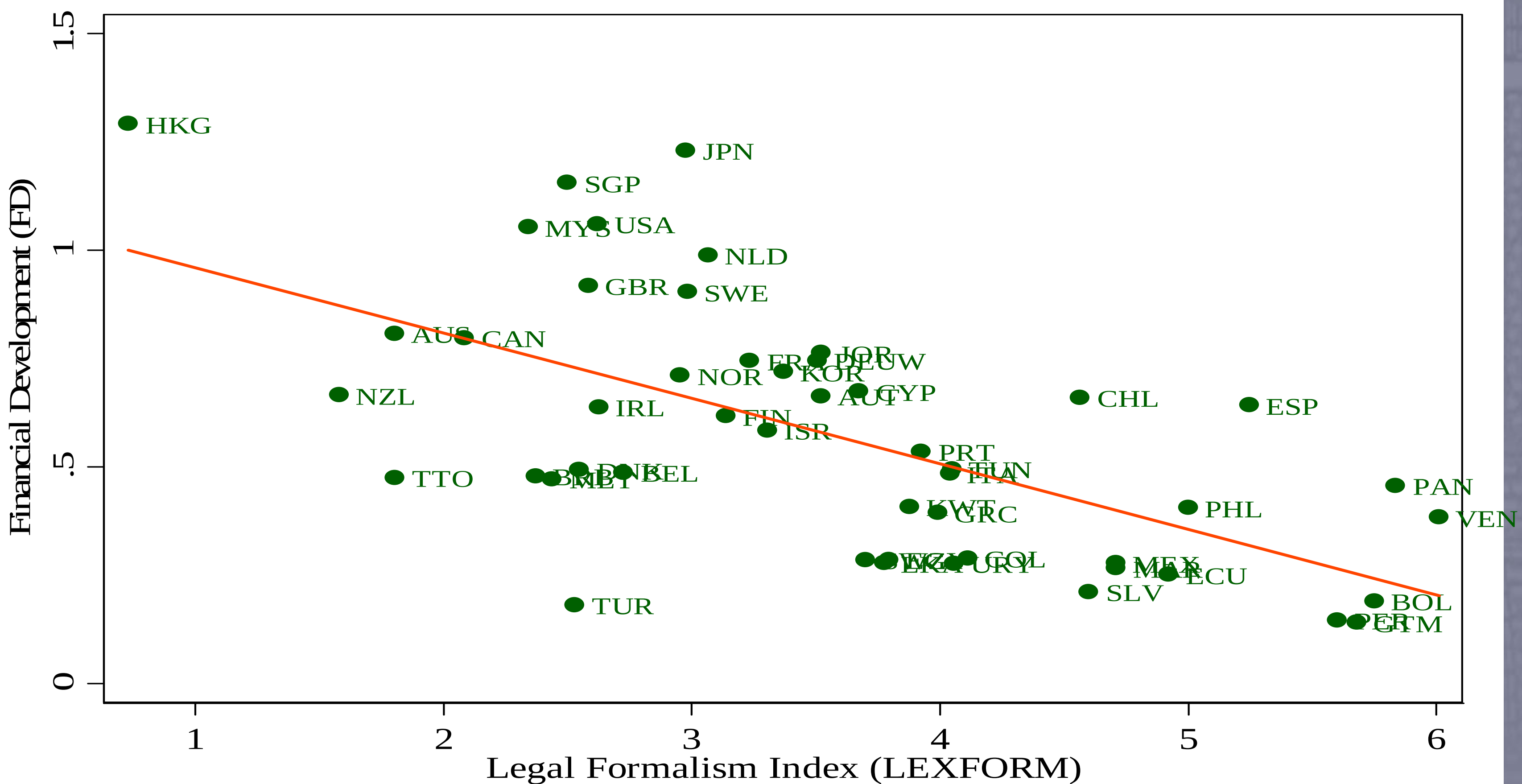
3. Politics

   Rajan and Zingales (2003); Pagano and Volpin (2004, 2005); Perotti and Von Thadden (2006)

4. Culture-Trust

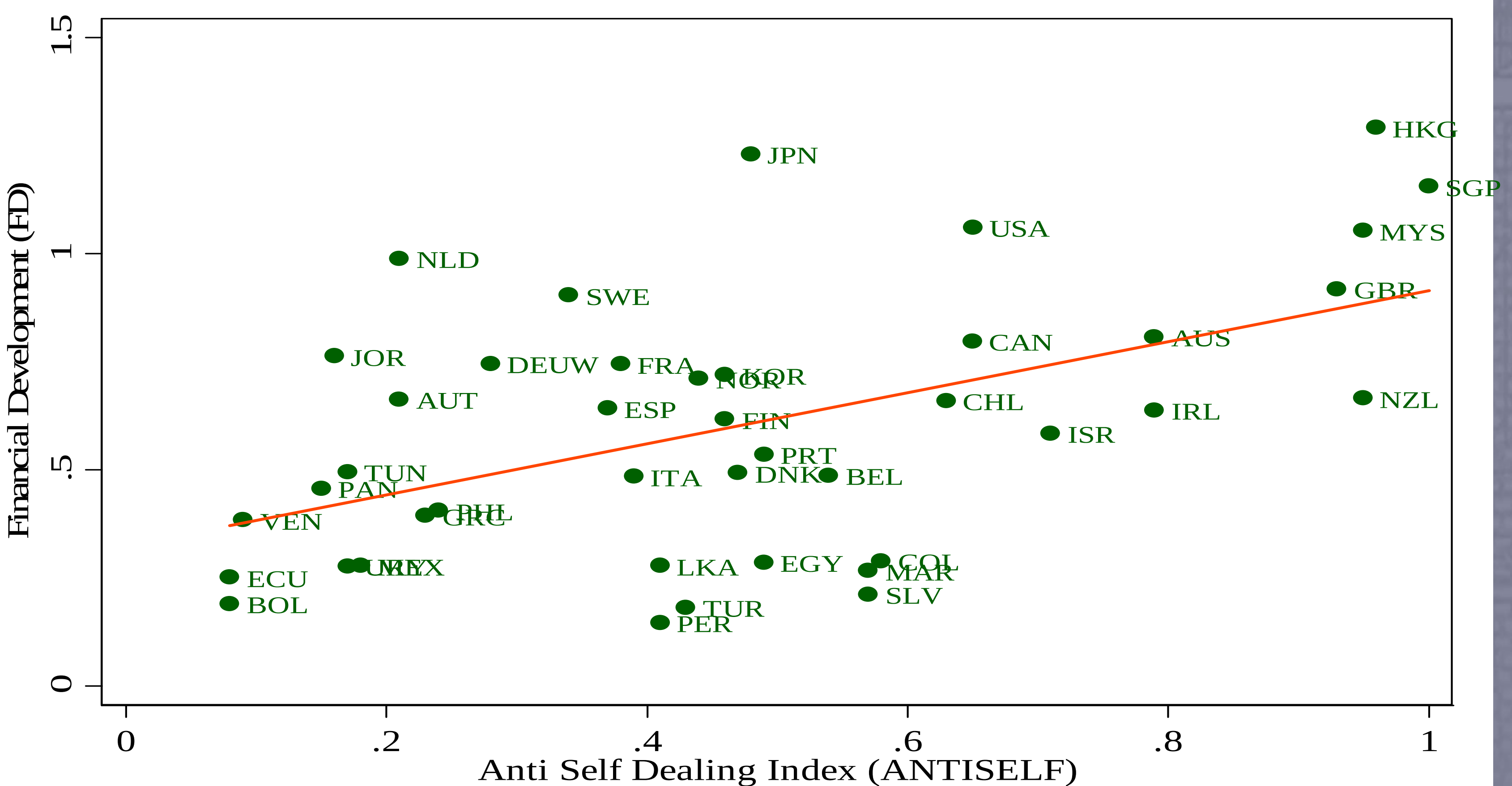
   Guiso et al. (2005, 2006); Stulz and Megginson (2003); Fukuyama

Legal efficiency and capital market size



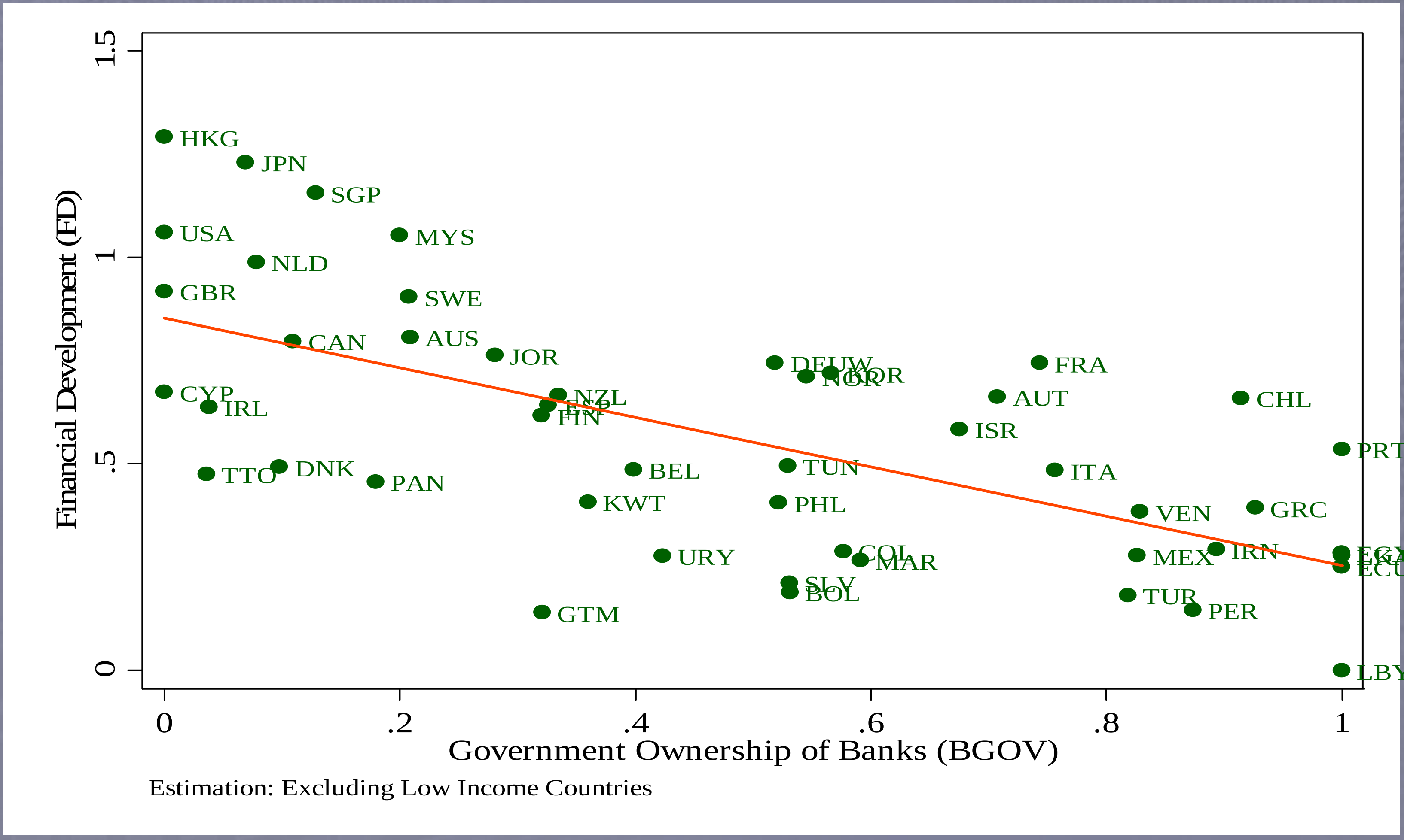
Estimation: Excluding Low Income Countries

Anti-self dealing and capital market size



Estimation: Excluding Low Income Countries

State ownership of banks and capital market size



Two-stage least-squares estimations

	All countries (1)	No Low-Income (2)	High Income (3)
	Panel A: Second Stage Estimates		
Capital Markets Size (FD)	0.341***	0.329**	0.367*
stand.error	(0.095)	(0.110)	(0.190)
p-value	*0.00*	*0.01*	*0.07*
	Panel B: First Stage Estimates		
Legal Formalism	-0.058**	-0.079**	-0.066**
stand.error	(0.028)	(0.028)	(0.046)
p-value	*0.04*	*0.01*	*0.02*
Insider Trading Legisl.	0.013***	0.011***	0.008**
stand.error	(0.003)	(0.003)	(0.003)
p-value	*0.00*	*0.00*	*0.03*
Gov. Ownership of Banks	-0.381***	-0.326***	-0.308**
stand.error	(0.089)	(0.099)	(0.136)
p-value	*0.00*	*0.00*	*0.03*
OID test; J-statistic	0.279	1.344	1.7220
p-value	*0.86*	*0.51*	*0.42*
1st Stage R2	0.606	0.616	0.475
Countries	56	48	26

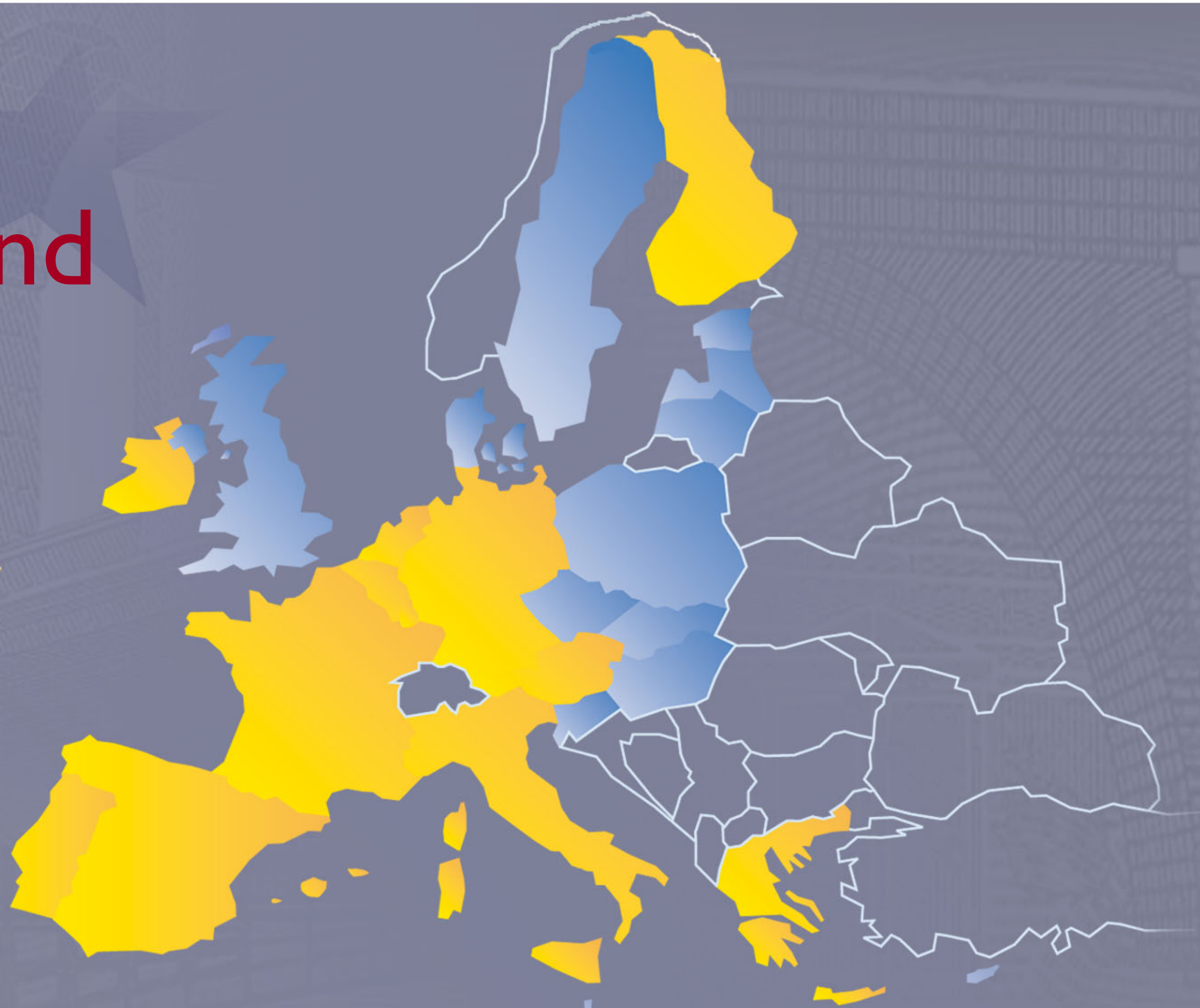
General findings from estimations

1. Capital market size (rather than income or other features of economic development) explains a significant part of the speed of capital reallocation

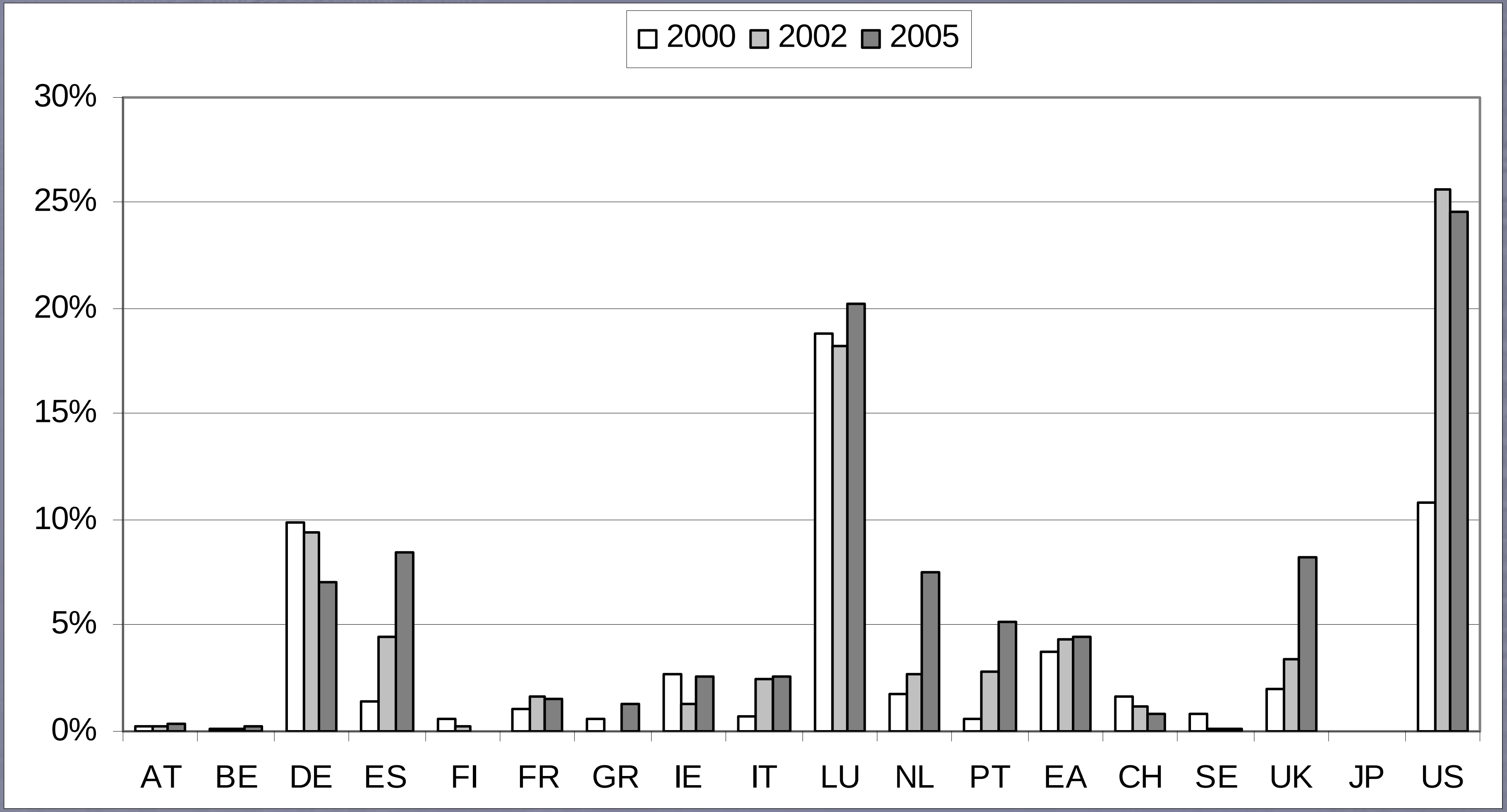
2. The results are in line with parallel studies that examine the Schumpeterian hypothesis that finance fosters aggregate productivity growth (capital and labour efficiency) by moving capital quickly to sectors where it is needed the most

3. Financial reforms that strengthen investor's rights, enhance market transparency, fasten resolution of legal disputes, improve the competition and efficiency of the banking sector may yield substantial productivity gains by increasing the breadth and depth of capital markets

The end

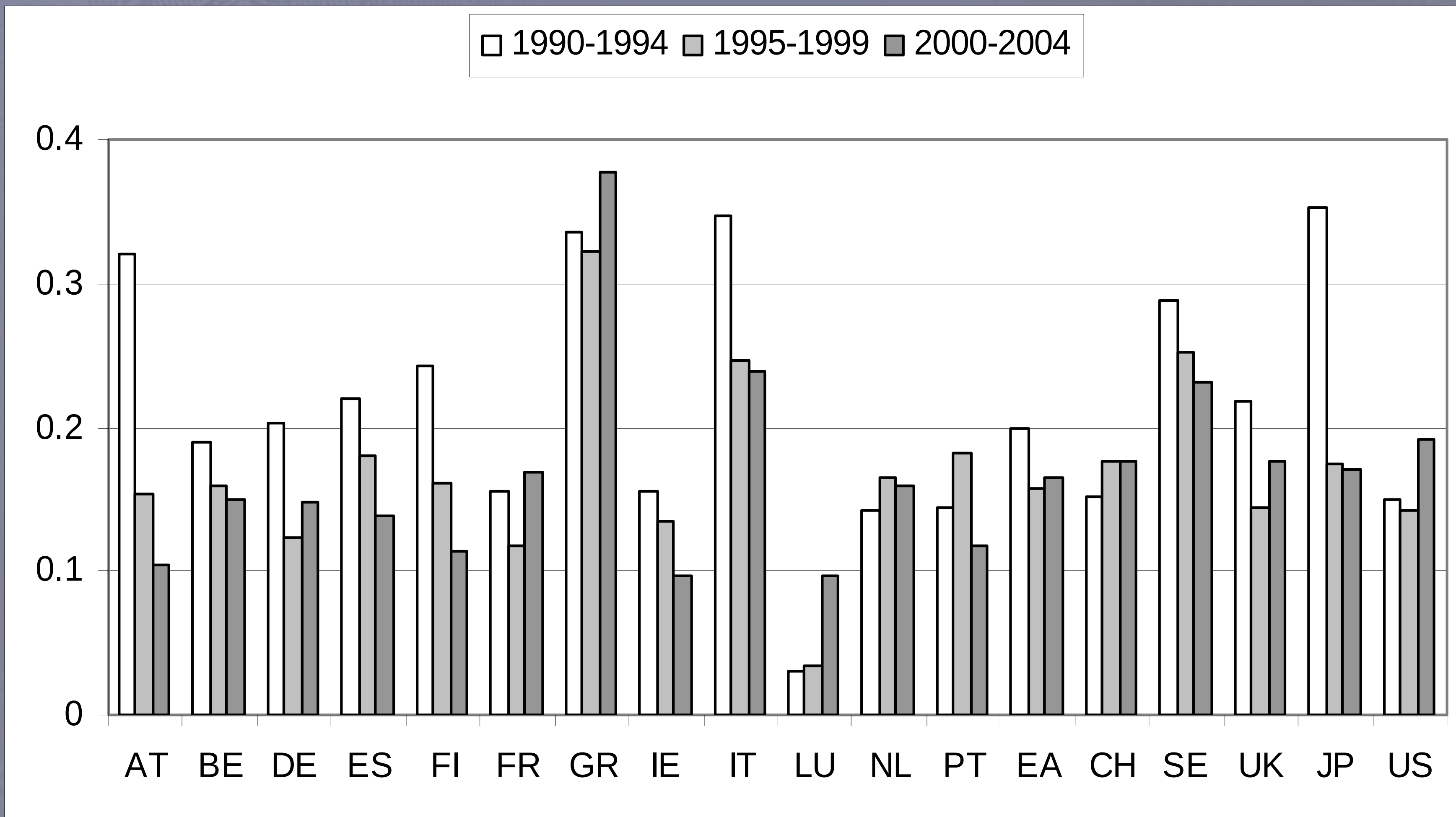


Securitisation



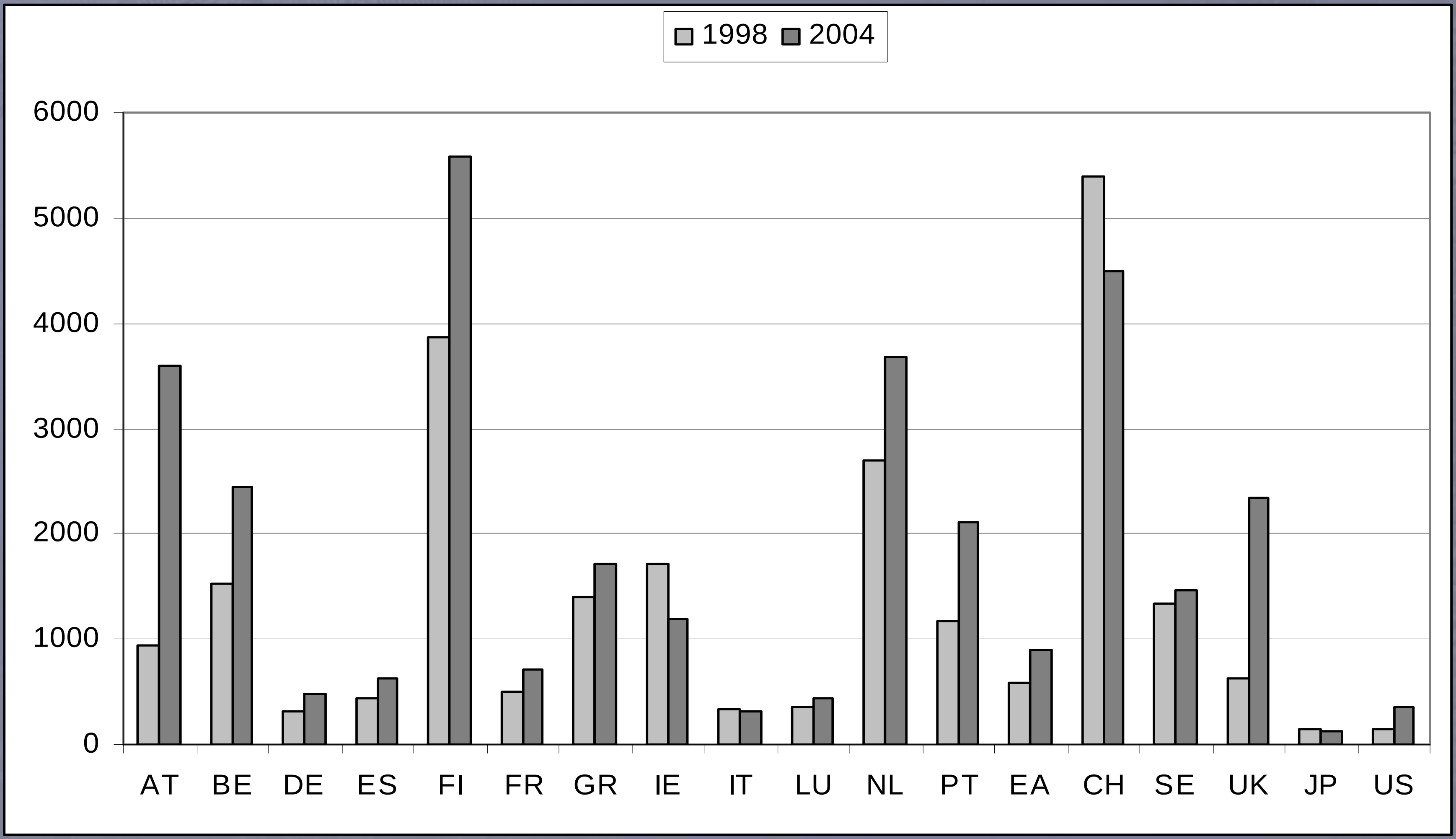
(% of GDP, by country of collateral, ESF, Eurostat, SIFMA)

Pricing of firm-specific information



(R2, high score = less pricing of idiosyncratic risk, own estimations/Datastream)

Bank concentration



(Herfindahl index for total assets, Bankscope)

Empirical approaches

1. **Pure Cross-Country Cross-Industry**

   Fisman and Love (2004a,b); Ciccone and Papaioannou (2006a)

   Is industries that experience global investment-growth opportunities growing faster in financially developed countries?

2. **Cross-Country (I)**

   Bekaert, Harvey, Lundbald, and Siegel (forthcoming)

   Do financially developed countries respond faster to shocks in the industries they specialize in?

3. **Cross-Country (II)**

   Wurgler (2000)

   Is industry investment more responsive to output growth (as a proxy for future growth opportunities) in financially developed countries?