

Financial market integration and economic growth: Quantifying the effects, Brussels 19/02/2003

**Presentation of « Quantification of the
Macro-Economic Impact of Integration of
EU Financial Markets »**

by

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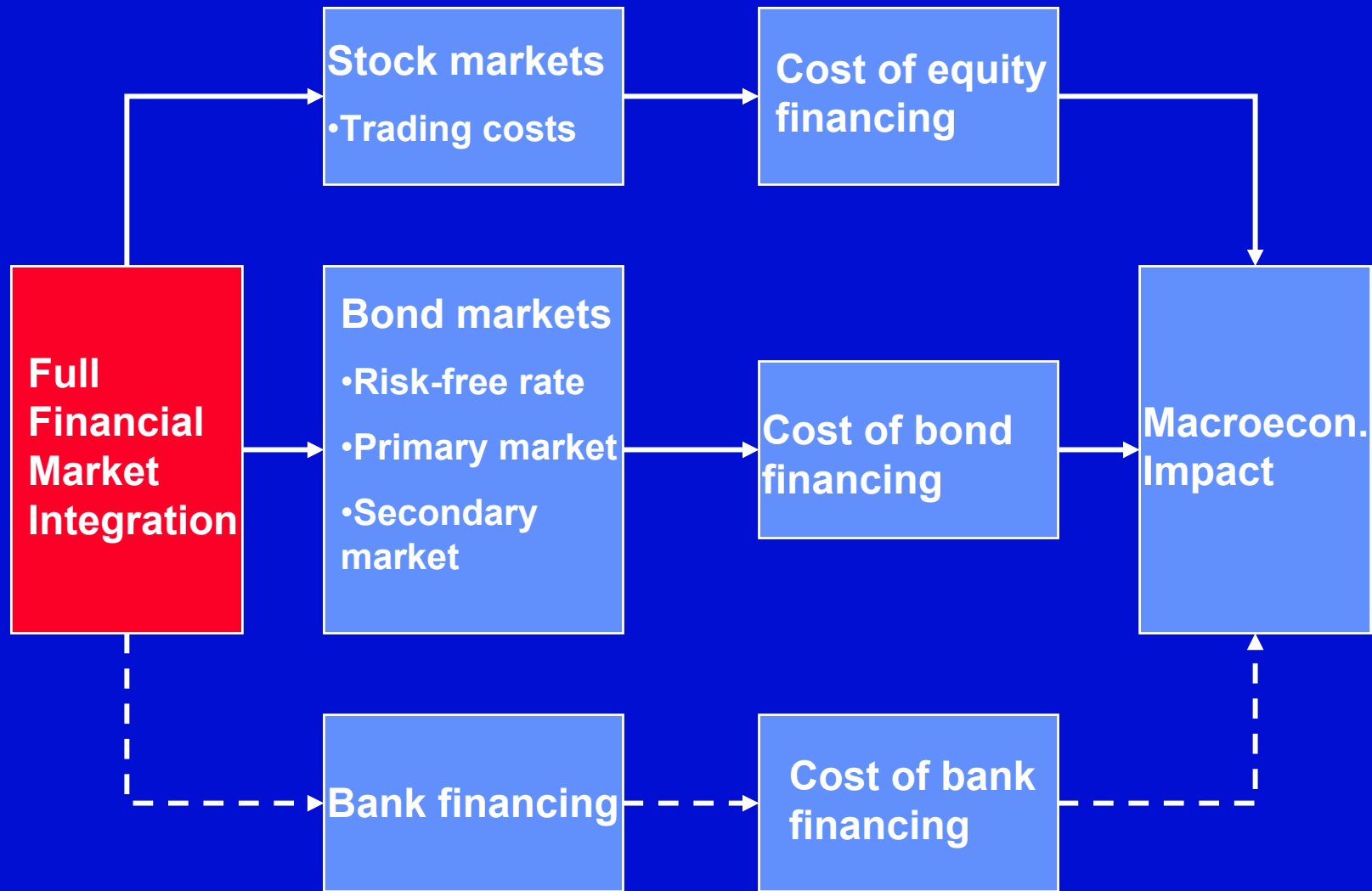
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Key objectives of study

- ❑ **Quantify the impact of financial integration and development on the cost of capital. Three sources of finance are considered:**
 - equity
 - bond
 - bank finance

- ❑ **Quantify the macroeconomic impact of integration of EU financial markets**

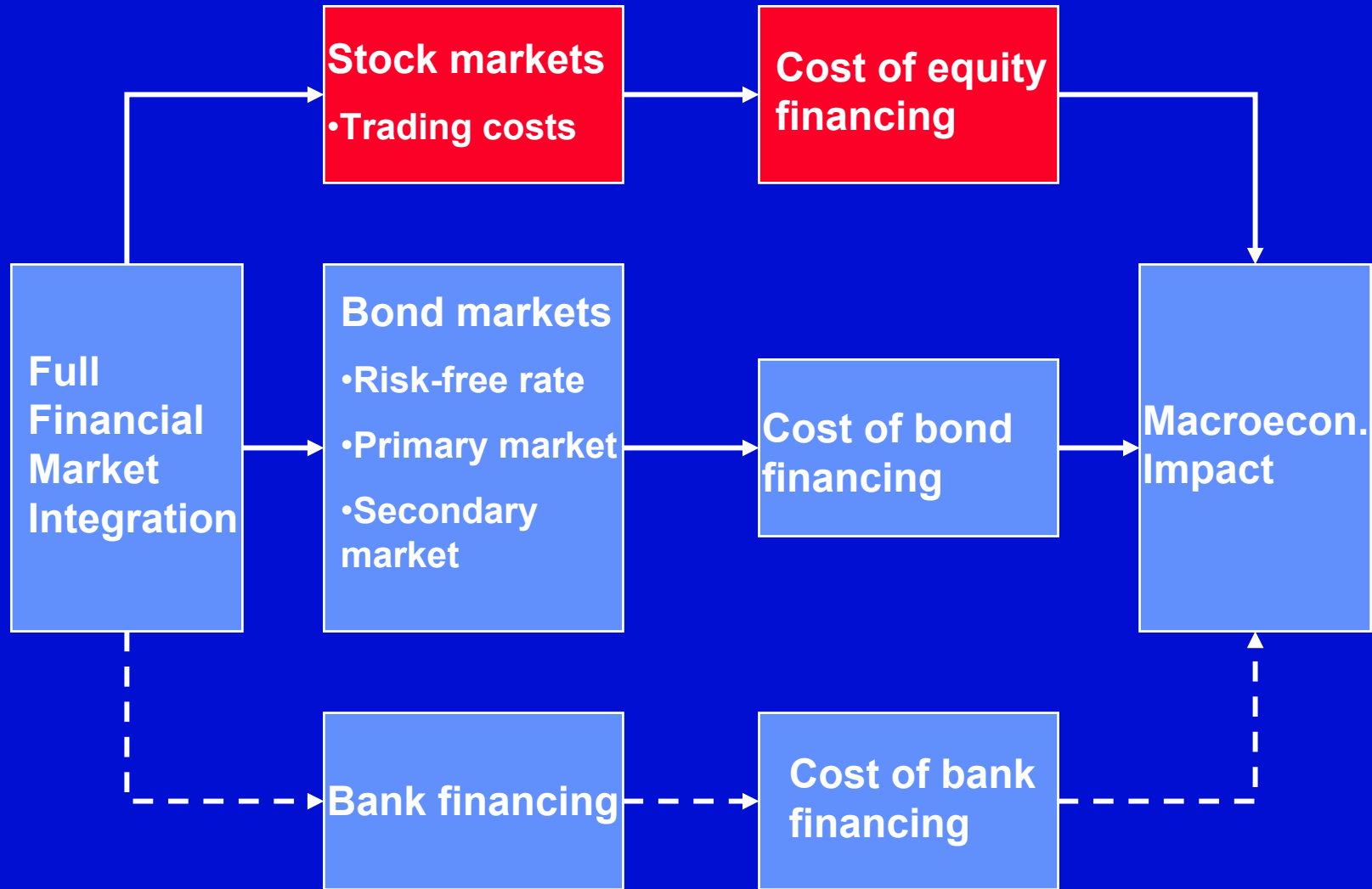


Definition of financial integration for the purpose of study (1)

- ❑ Financial integration can be generally defined as making regionally separate financial markets work as a single market
- ❑ This implies that supply and demand for a given security can interact freely on a European-wide basis
- ❑ In short there should be a single pool of liquidity for each security/instrument

Definition of financial integration for the purpose of study (2)

- ❑ A single market implies that different market participants can interact with players in other countries without regulatory, administrative barriers or additional costs.
- ❑ The definition of single market that we adopt is neutral with regards to the degree of centralisation and consolidation of market infrastructures
- ❑ We assume that all the current obstacles to full integration will be removed



Effect of integration on the cost of equity capital: overview

- ❑ Focus on the reduction of cost of equity capital that could be achieved from full integration of the European equity markets
- ❑ Our approach builds on the link between liquidity costs (trading costs) and market integration and the relationship between trading cost and asset returns
- ❑ We consider the following (implicit) trading costs
 - Trading spreads (on average 4% of market price in 2001)
 - Market impact costs (0.20% for large caps and 0.33% of small caps, Plexus 1998)

Effect of integration on the cost of equity capital: impact of integration on trading costs (1)

- ❑ The key papers that we refer to are among others Stoll (2000), Domowitz, Glen and Madhavan (2000), Jain (2001), etc.
- ❑ On this basis we model trading costs and trading turnover as a two-simultaneous equations system. The explanatory variables include trading turnover, volatility of the stock, market depth and other features of the stock.
- ❑ These equations are estimated paying attention to problems caused by unobserved heterogeneity and endogeneity

Effect of integration on the cost of equity capital: impact of integration on trading costs (2)

- ❑ Trading cost and trading turnover equations are estimated on data for all the stocks that are actively traded on the major OECD stock markets (21 exchanges in 20 countries) in 2000-2001 → 13,149 stocks
- ❑ (Implicit) trading costs are measured as “effective percentage spreads” as follows:
$$EPS=2* |P-M|/P$$
- ❑ This measure incorporates both the effects of market spreads and market impact costs

Effect of integration on the cost of equity capital: impact of integration on trading costs (3)

□ Empirical results suggest that:

- trading costs are negatively correlated with total market capitalisation and trading turnover and positively with volatility of returns
- trading turnover is negatively correlated with trading costs and positively with total market capitalisation and volatility of returns

□ Imposing steady-state conditions and solving the system we obtain

$$TC = f(\text{Market depth}^-, \text{volatility}^+ \text{ of returns})$$

Effect of integration on the cost of equity capital: impact of trading costs on equity yields (1)

- ❑ Key reference papers are Amihud and Mendelson (1986), Vayanos (1998), Domowitz & Steil (2001)
- ❑ The key intuition is that when trading is costly investors require higher returns as a compensation for higher trading costs
- ❑ We therefore model the cost of capital as a function of trading costs, volatility of the stock, size of the firm and riskiness of the stock

Effect of integration on the cost of equity capital: impact of trading costs on equity yields (2)

- The regression sample includes all the companies whose ordinary stocks are actively traded on the major European stock markets and for which dividend data are available in 2000-2001 → 2,596 stocks

Effect of integration on the cost of equity capital: impact of trading costs on equity yields (3)

- The results are consistent with the theoretical literature surveyed as well as with those obtained by other studies
- Specifically, our estimates reveal that equity yields are positively correlated with trading costs and negatively with company size (small-firm anomaly). The estimated equation is:

$$CC = g(\text{trading cost}, \text{OTHER})$$

Effect of integration on the cost of equity capital: measuring the benefits of integration

- We have considered two possible approaches to measure the current degree of integration and therefore the impact of *further* integration of European equity markets:
 - Approach based on correlation measures
 - Approach based on the prediction of average trading costs in an integrated European financial market with size equal to the total EU capitalisation

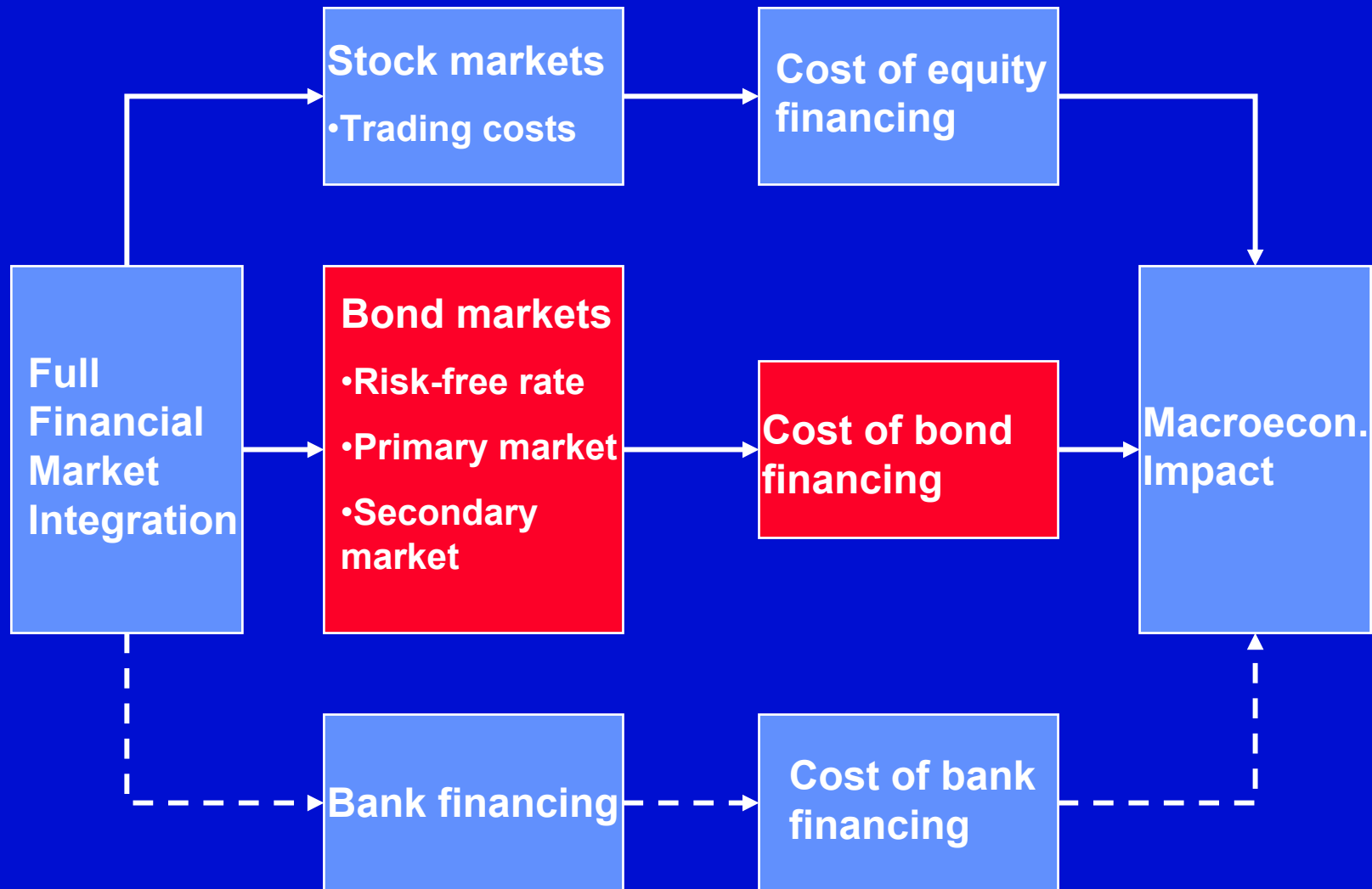
$TC = f(\text{Market depth}^-, \text{volatility}^+ \text{ of returns})$

$CC = g(\text{trading cost}^+, \text{OTHER})$

Effect of integration on the cost of equity capital: results

Country	Current single countries' capitalisation 2001 (€ Billions)	Current TC as a percentage of price (averages 2001)	Predicted absolute changes in TC given a 1.008% TC level for the integrated market	Predicted percentage reduction of TC	Predicted decrease in the CC (basis points)
Austria	26.5	7.9%	6.9%	87.3%	50.1
Belgium	157.1	6.9%	5.9%	85.5%	49.0
Denmark	100.9	5.4%	4.4%	81.4%	46.7
Finland	196.9	5.2%	4.2%	80.6%	46.2
France	1,270.8	6.8%	5.8%	85.2%	48.9
Germany	997.7	5.3%	4.3%	80.9%	46.4
Greece	69.4	1.6%	0.6%	38.0%	21.8
Ireland	79.5	6.6%	5.6%	84.7%	48.6
Italy	658.9	2.8%	1.8%	64.4%	36.9
Luxembourg	25.6	6.9%	5.9%	85.5%	49.0
Netherlands	641.7	3.4%	2.4%	70.7%	40.6
Portugal	61.2	6.7%	5.7%	85.0%	48.7
Spain	397.9	1.3%	0.3%	23.4%	13.4
Sweden	254.8	4.6%	3.5%	77.9%	44.6
UK	2,530.3	1.9%	0.8%	45.7%	26.2
EU (sum)	7,469.4				
EU (weighted average)					36.7

We assume that integration will further reduce the cost of capital of 10bp as a result of lower transaction costs on cross-border trades (direct trading costs).



Effects of integration/growth of corporate bonds markets on the cost of bond finance: overview

- We have analysed the following key components of the cost of bond funding in the EU:
 - Risk-free rate
 - Credit risk spread
 - Issuing costs for bonds
 - Trading costs in secondary markets

Effects of integration/growth of corporate bonds markets on the cost of bond finance: risk-free rate

- ❑ The risk-free rate is a benchmark for the corporate debt market and issues are generally quoted in terms of yields over this benchmark
- ❑ Lower interest rate environment due to discipline imposed to EU countries by the Maastricht Treaty and Stability Pact
- ❑ Unlikely to expect further gains from financial integration

Effects of integration/growth of corporate bonds markets on the cost of bond finance: credit spreads

- ❑ There is statistical evidence that the recent growth in the stock of Euro-denominated corporate bonds has decreased credit spreads.
- ❑ We estimate a standard credit spread model augmented for a learning effect, measured by the overall stock of outstanding Euro-denominated bonds issued by non financial corporations
- ❑ Our sample comprises 90 bonds over the period 1997-2000

Effects of integration/growth of corporate bonds markets on the cost of bond finance: expected reduction of credit spreads

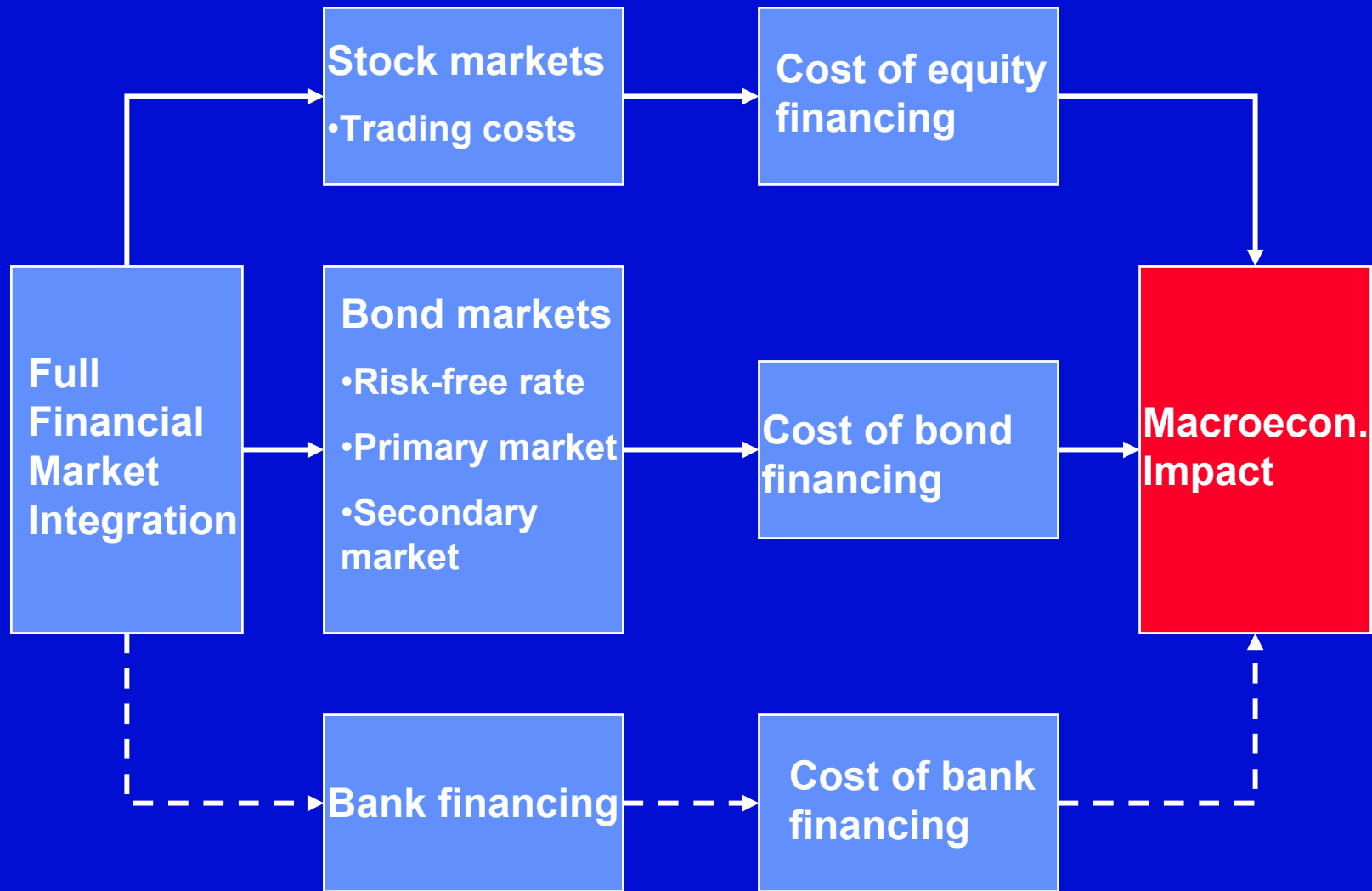
- We assume that over the next 10 years the structure of debt financing of European companies will move gradually towards the US structure
- Our estimates suggest that closing the gap of bond finance (in total debt finance) between EU and the US by 25% would reduce the cost of debt finance of 40bp.

Effects of integration/growth of corporate bonds markets on the cost of bond finance: issuance costs

- The key intuition is that a larger financial marketplace will increase investment in more efficient technologies as well as the contestability of the investment banking business
- Our analysis suggests that issuance costs are nowadays broadly similar to the US. Therefore we believe that there is little scope for further decreases in issuance costs.

Effects of integration/growth of corporate bonds markets on the cost of bond finance: trading costs

- ❑ As for equity markets, there are reasons to believe that a deeper and more liquid market may reduce trading costs for corporate bonds
- ❑ Secondary European corporate bond markets are still thin and not very transparent - only few data are available
- ❑ Our estimates do not provide adequate support to the hypothesis of lower trading costs due financial integration.



Macroeconomic simulations: overview

- ❑ Simulations undertaken with the Oxford Economic Forecasting model
- ❑ Investment depends on a number of variables including the user cost of capital, which is constructed as a weighted average of equity, bond and bank financing
- ❑ Key assumptions of simulations (in addition to reductions in the cost of each type of capital):
 - Constant equity share in total liabilities
 - Growing bond share in total liabilities
 - Decreasing bank share in total liabilities

Macroeconomic simulations: key input

- Level and change in funding costs used in the simulations scenarios

	Equity financing in %		Bond financing in %		Bank financing	
	Level	Change (in basis points)	Level	Change (in basis points)	Level	Change (in basis points)
Country						
Austria	4.60	-60	5.85	-40	6.60	-20
Belgium	5.30	-59	5.85	-40	7.20	-20
Denmark	4.30	-57	5.90	-40	6.60	-20
Finland	5.30	-56	5.85	-40	4.50	-20
France	5.60	-59	5.85	-40	5.10	-20
Germany	3.40	-56	5.85	-40	6.60	-20
Greece	5.40	-32	5.85	-40	7.70	-20
Ireland	5.60	-59	5.85	-40	8.10	-20
Italy	5.50	-47	5.85	-40	4.80	-20
Luxembourg	4.60	-59	5.85	-40	6.60	-20
Netherlands	5.10	-51	5.85	-40	6.60	-20
Portugal	6.60	-59	5.85	-40	6.00	-20
Spain	5.50	-23	5.85	-40	6.00	-20
Sweden	4.50	-55	5.90	-40	5.40	-20
United Kingdom	4.20	-37	5.90	-40	6.50	-20

Macroeconomic simulations: key results

	Simulation 1: reduction in the cost of equity finance only	Simulation 2: reduction in the cost of equity and debt finance	Simulation 3: reduction in the cost of equity and debt finance, and increase in share of debt finance	Simulation 4: reduction in the cost of equity, debt and bank finance, and increase in share of debt finance
Absolute change* in the level of:				
- GDP in constant 2002 prices (€ billion)	58.9	66.5	93.6	130.0
- GDP in current prices (€ billion)	105.1	116.4	173.4	224.5
- GDP per capita in constant 2002 prices	157.4	177.7	249.8	347.1
- GDP per capita in current prices	280.5	310.8	461.8	599.1
Percentage change in:				
- GDP in constant prices	0.5	0.6	0.8	1.1
- business investment in constant prices	2.7	3.0	4.4	5.9
- private consumption in constant prices	0.3	0.4	0.5	0.8
- employment	0.1	0.2	0.3	0.5
Absolute change in percentage points of:				
- user cost of capital	-0.2	-0.2	-0.3	-0.4
- unemployment rate	-0.1	-0.1	-0.1	-0.2
- inflation rate	0.1	0.1	0.1	0.2

Simulation versus baseline scenario

Conclusions

- ❑ **Full integration of the European financial markets can deliver significant reductions of equity and bond financing costs for European companies**
- ❑ **Our macroeconomic simulations of the above effects suggest that, in the long run:**
 - The level of EU-wide real GDP is raised by 1.1%, or €130 billion in 2002 prices
 - GDP per capita in current prices is €600 higher in the EU and GDP per capita at 2002 prices is €350 higher
 - Total employment is 0.5% higher