

# **Economic Impact Study - Annex 2**

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**June 2005**

## Outline

- Estimation of price elasticity (relationship between trading turnover and trading costs)
- Estimation of relationship between trading turnover, trading costs and the cost of capital
- Estimation of lower cost of capital on GDP
- Summary

# Data

Stock exchange	Observations	Percent
Austria	4,030	1.10
Belgium	7,770	2.12
Denmark	7,582	2.07
Finland	2,290	0.63
France	19,016	5.20
Greece	10,064	2.75
Germany	24,515	6.70
Ireland	2,015	0.55
Italy	7,993	2.18
Netherlands	3,665	1.00
Portugal	2,818	0.77
Spain	4,646	1.27
Sweden	10,686	2.92
United Kingdom	37,949	10.37
Australia	25,854	7.06
Canada	29,537	8.07
Japan	50,102	13.69
NASDAQ	66,919	18.28
NYSE	36,135	9.87
New Zealand	3,632	0.99
Switzerland	8,801	2.40
Total	366,019	100.00

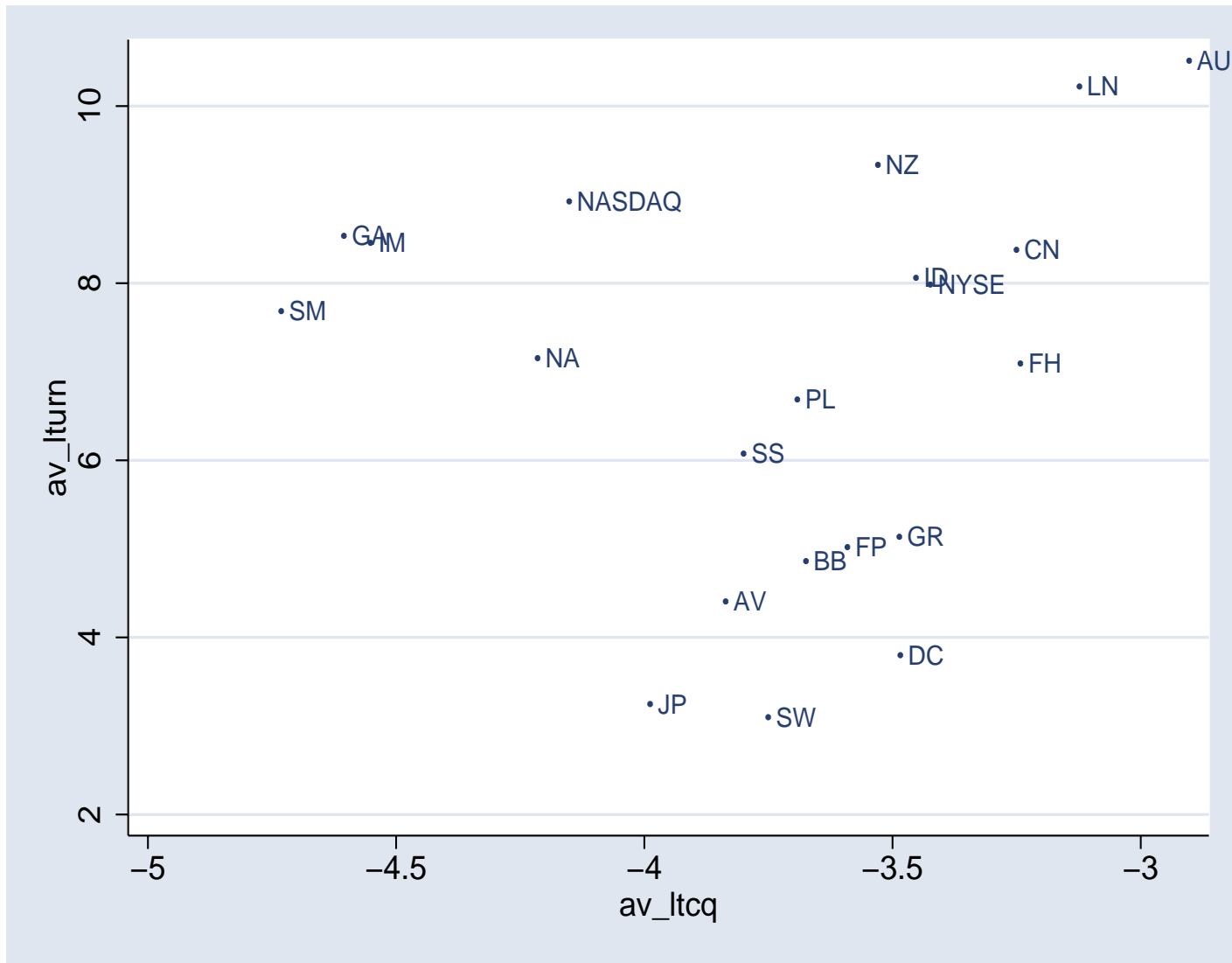
## Data

The data consists of 14,902 traded shares at 21 major OECD stock markets which represents more than 90 percent of the world stock market capitalization. The frequency of the data is monthly over the period 1999-2001.

Table 1: Descriptive statistics - Median values

stock exchange	quoted spread	turnover	volume	volatility	market cap	dividends
Austria	0.0157	124.52	3.78	0.0140	72.00	3.3914
Belgium	0.0187	124.13	5.43	0.0178	60.11	2.9724
Denmark	0.0265	51.67	14.67	0.0163	306.00	2.7586
Finland	0.0379	1446.85	150.47	0.0272	94.94	4.3878
France	0.0259	210.32	8.67	0.0233	59.40	2.8324
Greece	0.0082	5656.86	1115.88	0.0376	101.58	1.0718
Germany	0.0302	283.92	20.10	0.0231	96.80	3.7957
Ireland	0.0276	3651.12	832.52	0.0203	159.77	2.5157
Italy	0.0098	4823.44	2032.88	0.0186	337.07	2.1385
Netherlands	0.0132	1621.56	458.79	0.0221	181.63	3.3295
Portugal	0.0174	1556.38	74.97	0.0159	98.62	2.8295
Spain	0.0086	2623.75	1114.72	0.0175	464.25	2.6712
Sweden	0.0202	457.16	465.78	0.0295	727.01	2.9817
United Kingdom	0.0451	25406.87	1214.52	0.0187	35.99	3.5414
Total	0.0236	2631.69	612.30	0.0274	210.09	2.3051

## Estimation of the price elasticity



## Estimation of the price elasticity - The econometric model

Domowitz, Glen and Madhavan (2000)

$$tt = c + \alpha tc + \beta \sigma^2 + \gamma mcap + \varepsilon \quad (1)$$

## Price elasticity: Results 1

Stock exchange	Coef.	Std.Err.	t-value
Austria	-1.927406	.1494230	-12.90
Belgium	-1.530815	.1672036	-9.16
Denmark	-1.854389	.1816820	-10.21
Finland	-2.376062	.1657303	-14.34
France	-1.892370	.0694259	-27.26
Greece	-2.272785	.1076726	-21.11
Germany	-2.507675	.1780924	-14.08
Ireland	-3.850370	.3938118	-9.78
Italy	-2.054905	.1994333	-10.30
Netherlands	-2.577651	.1464614	-17.60
Portugal	-2.083261	.2583972	-8.06
Spain	-2.241855	.2032608	-11.03
Sweden	-2.311428	.0947211	-24.40
United Kingdom	-.7875250	.0786028	-10.02
NASDAQ	-1.528722	.0305099	-50.11

Estimated equation:  $tt = c + \alpha tc + \beta \sigma^2 + \gamma mcap + \varepsilon$   
 Only coefficient of trading costs  $tc$  is reported.

## Price elasticity: Results 2

### Between regression (regression on group means)

Number of observations = 66501

Number of groups = 5242

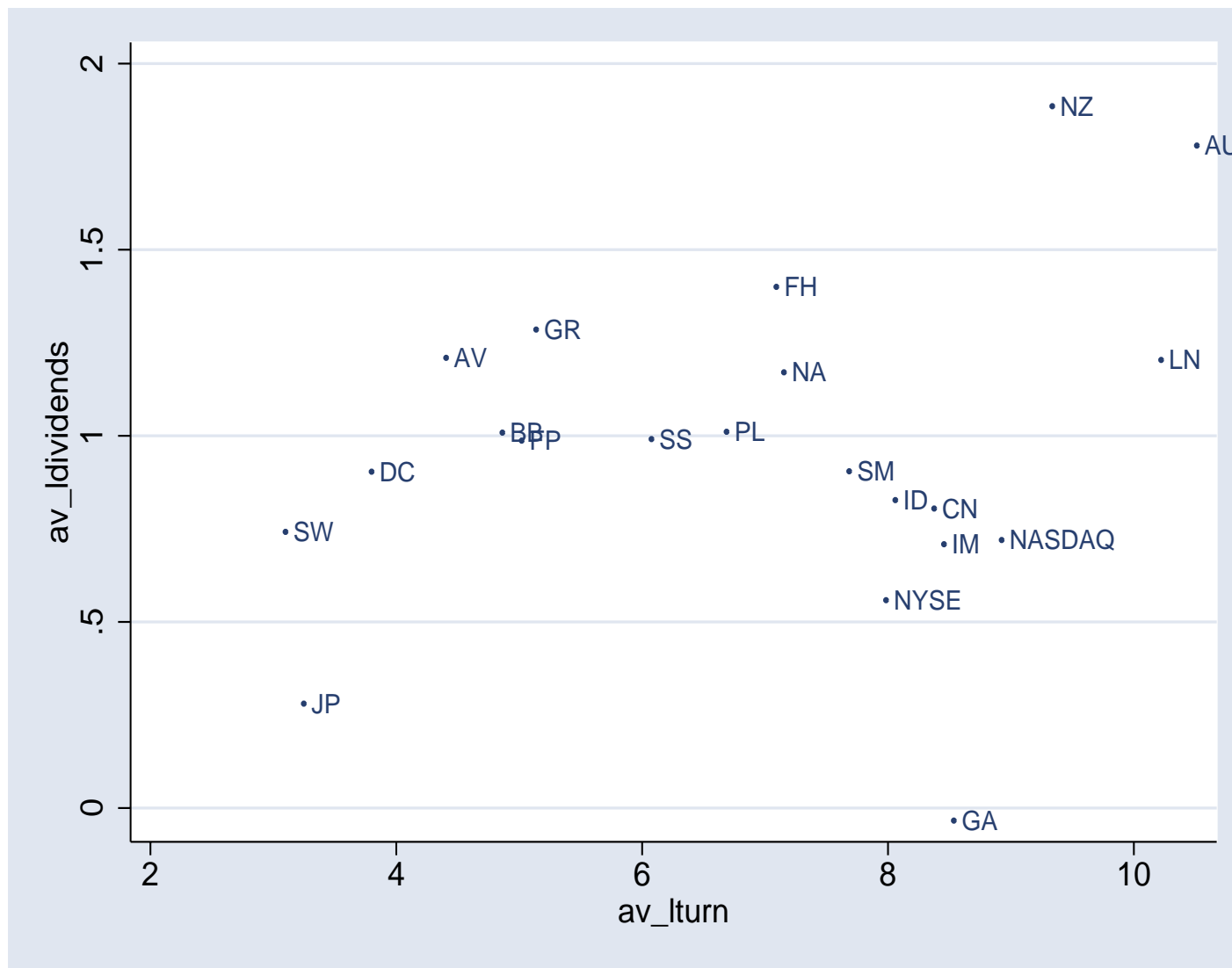
R-sq:	within = 0.1078
	between = 0.2181
	overall = 0.1589

trading turnover	Coef.	Std. Err.	t	$P >  t $	[95% Conf. Interval]	
trading costs	-1.282586	.0561592	-22.84	0.000	-1.392682	-1.172491
mcap	-.7005064	.0266674	-26.27	0.000	-.7527856	-.6482272
volatility	1.89452	.0657925	28.80	0.000	1.765539	2.023501
constant	13.27413	.2476198	53.61	0.000	12.78869	13.75957

For the stock markets of the EURO area, the price elasticity is  $-2.11$ .

**Estimation of impact of lower trading costs and higher  
liquidity on cost of capital**





**Estimation of impact of lower trading costs and higher liquidity on cost of capital - The econometric model**

Domowitz and Steil (2000)

$$cc = \alpha + \beta tc + \gamma tt + \varepsilon \quad (2)$$

## Cost of capital regression: Results 1

Stock exchange	trading costs			turnover		
	Coef.	Std.Err.	t-value	Coef.	Std.Err.	t-value
Austria	.2874382	.0618483	4.65	.0800902	.0292568	2.74
Belgium	.1161689	.1062883	1.09	.0006198	.0410940	0.02
Denmark	.3767515	.0724089	5.20	.0470223	.0338752	1.39
Finland	.0100371	.0914634	0.11	-.0454836	.0366344	-1.24
France	.1504679	.0298530	5.04	.0123118	.0168674	0.73
Greece	-.1389568	.0932378	-1.49	-.0637504	.0313358	-2.03
Germany	.2305764	.0510508	4.52	.0395903	.0121341	3.26
Ireland	.2261369	.1532356	1.48	.1105221	.0997326	1.11
Italy	.1095823	.0634114	1.73	.0038500	.0322630	0.12
Netherlands	.1468262	.0874352	1.68	.0327937	.0459030	0.71
Portugal	.1368858	.1369532	1.00	.0228225	.0550811	0.41
Spain	.2173996	.0807928	2.69	-.0086865	.0351439	-0.25
Sweden	.0744213	.0758828	0.98	-.0188238	.0323918	-0.58
United Kingdom	.1269959	.0273429	4.64	.0605606	.0163347	3.71
NASDAQ	.2540461	.0346172	7.34	-.0868451	.0278156	-3.12
NYSE	.1184127	.0485657	2.44	-.0499241	.0362988	-1.38

Estimated equation:  $cc = \alpha + \beta tc + \gamma tt + \varepsilon$

Only coefficients of trading costs  $tc$  and trading turnover  $tt$  are reported.

## Cost of capital regression: Results 2

### Between regression (regression on group means)

Number of observations = 46200

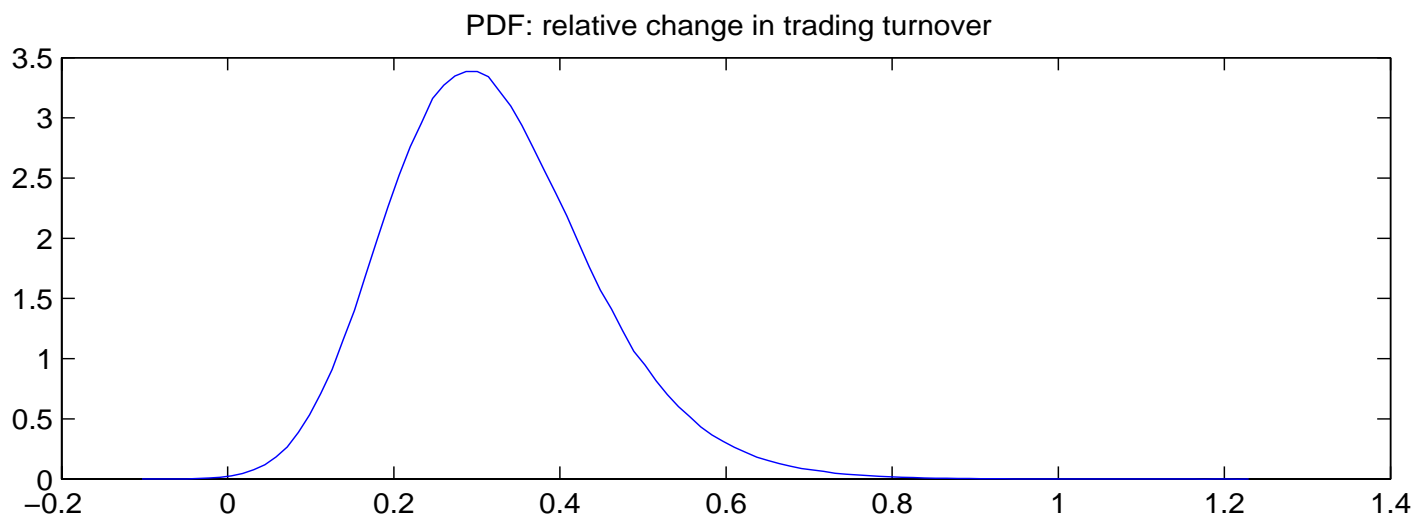
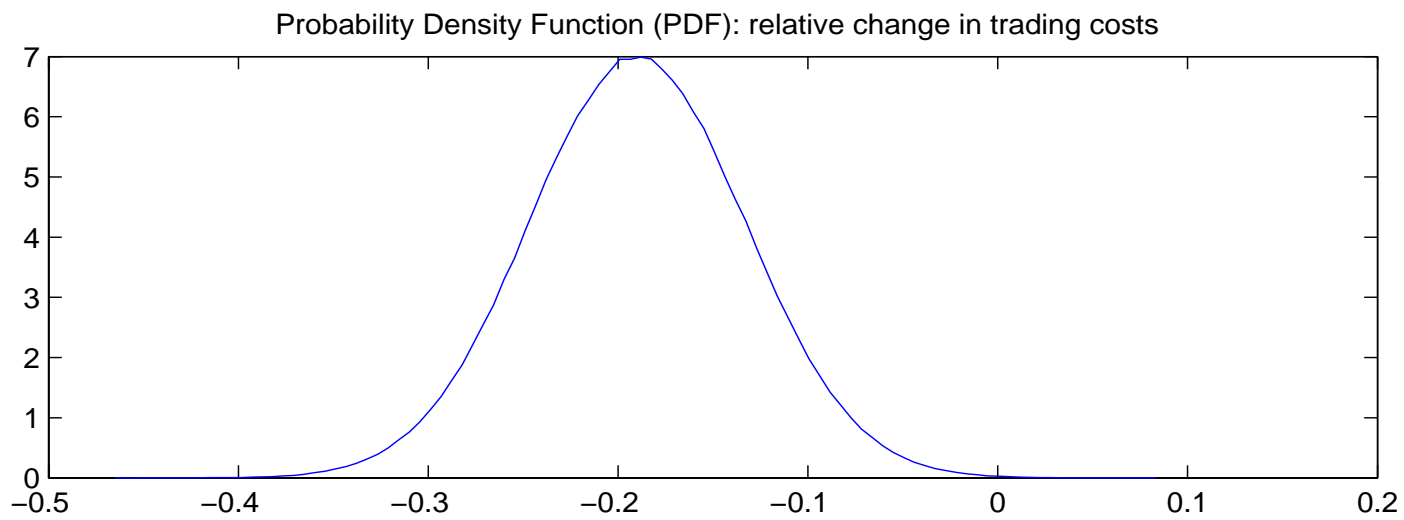
Number of groups = 3548

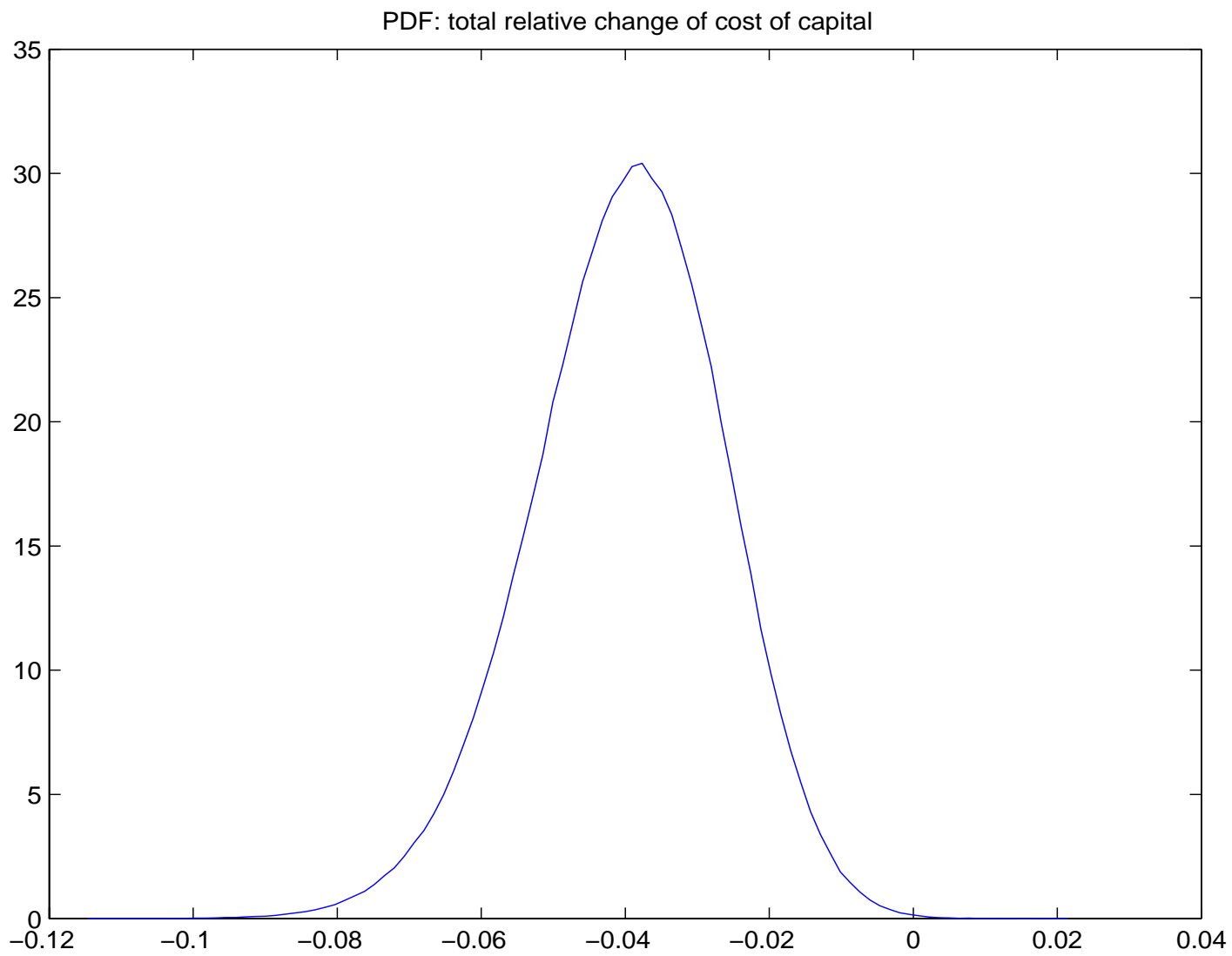
R-sq:                   |   within = 0.0261  
                           |   between = 0.0510  
                           |   overall = 0.0474

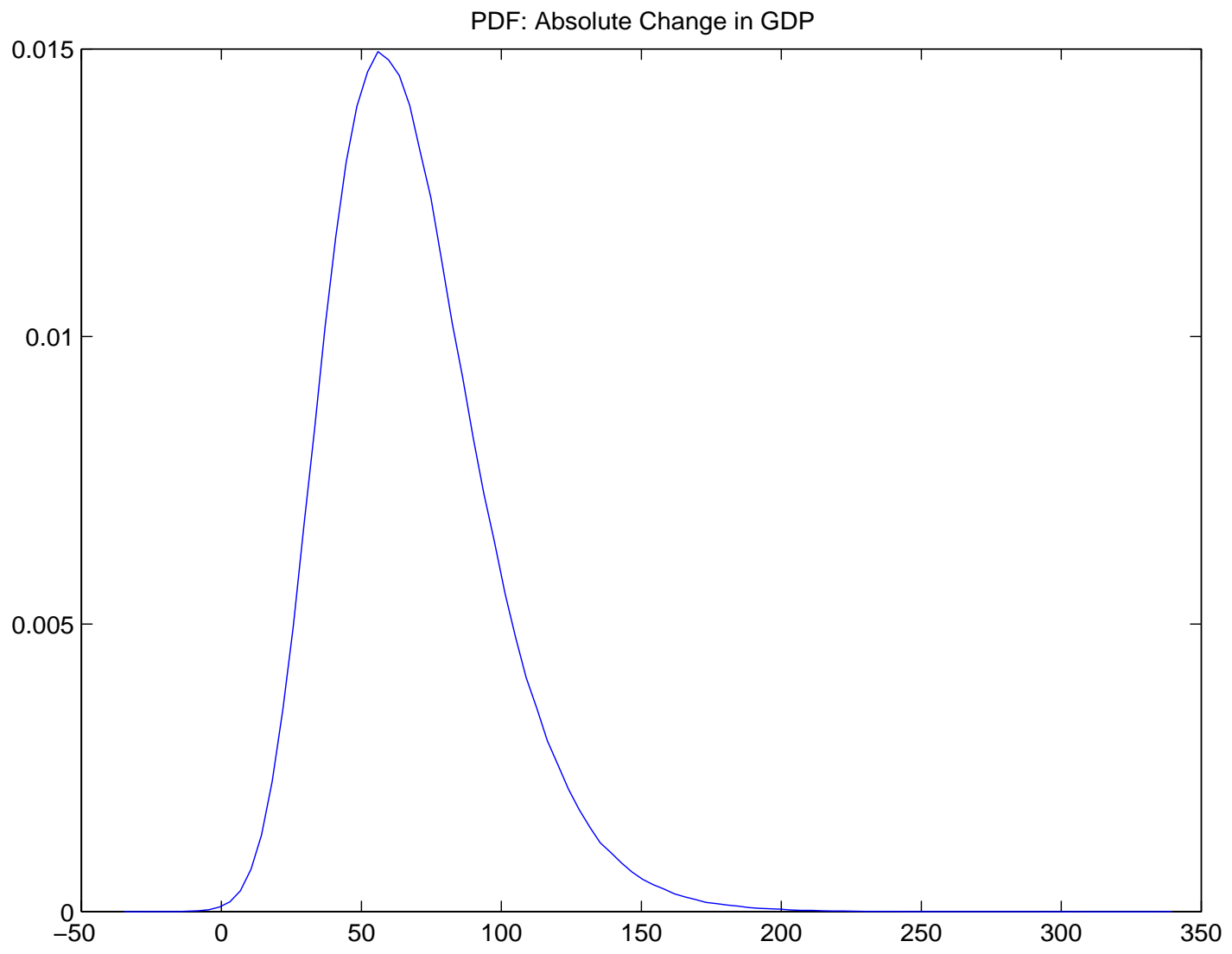
cost of capital	Coef.	Std. Err.	t	$P >  t $	[95% Conf. Interval	
trading costs	.1902611	.0139625	13.63	0.000	.1628857	.2176365
turnover	-.0007374	.0045566	-0.16	0.871	-.0096712	.0081963
constant	1.801319	.0589187	30.57	0.000	1.685801	1.916837

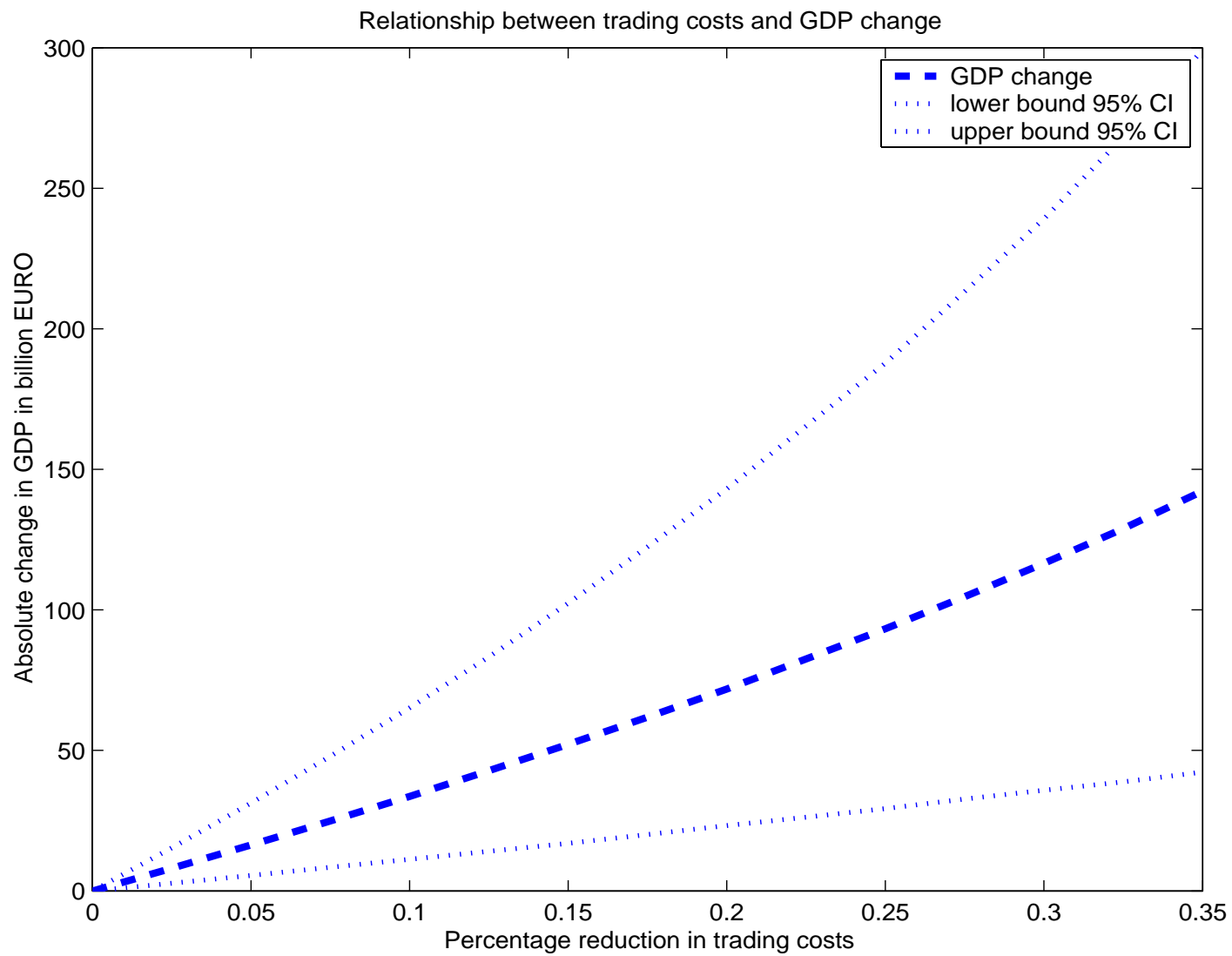
## **The impact of a reduction of the cost of capital on GDP**

- use of two different macroeconomic models
- use of distributions to account for uncertainty in every stage









## Summary

- there is a clear relationship between trading costs and GDP
- a 10 (15, 20, 25) percent decrease in trading costs leads to a long-run change in GDP of 33 (52, 72, 93) billion EURO
- estimates include uncertainty