ÖSTERREICHISCHES INSTITUT FÜR WIRTSCHAFTSFORSCHUNG
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Determinants of the Trade Balance in Industrialized Countries

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FIW workshop foreign direct investment

Wien, 16 Oktober 2008

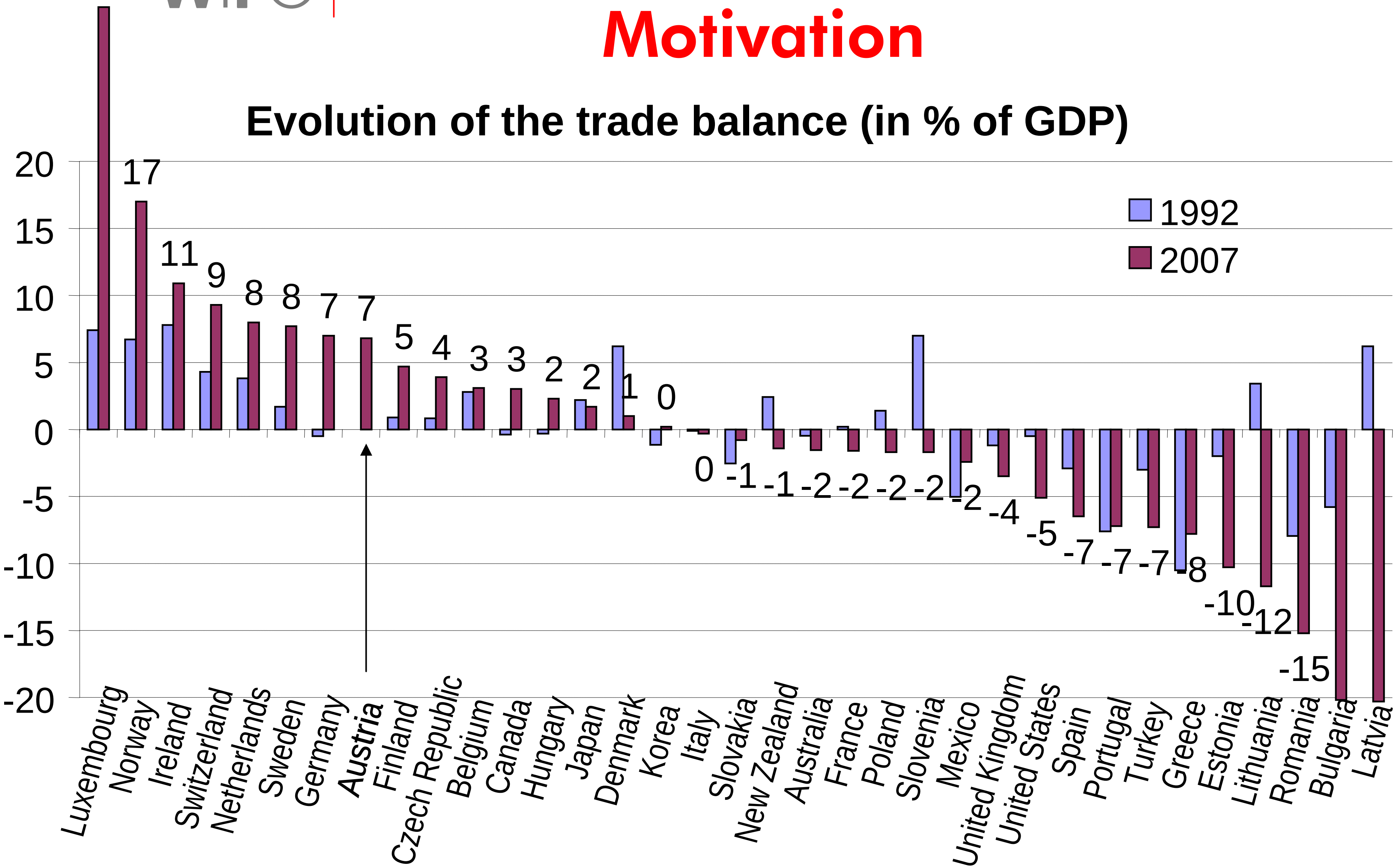
Motivation

- large and persistent trade deficits
  - USA, Greece, Portugal, Spain, United Kingdom and Australia and CEEC
- large and increasing trade surpluses
  - Germany, Austria, Finland, Netherlands, Switzerland, Sweden and Ireland
- Changes in the net FDI stock position
  - From net inflows to net outflows: Spain, Norway, Canada, (Austria)
  - Increasing net outflows: EU 15 except Sweden and Belgium & Lux.
  - Increasing net inflows: CEEC
- Austria interesting country case:
  - One of the largest improvements of the trade balance among industrialized countries in the last 15 years
  - change in the net FDI position is moderate
  - Net FDI position does not match the position of that of the trade balance
  - Improvement of the REER

Motivation

- Trade balance and net FDI position are connected (accounting identity)
- determinants differ between countries with negative and positive positions
- Impact of government budget balance
  - Twin deficits: USA, UK, CEEC
- little consensus on the magnitude and size of the determinants
- novelty of the paper
  - Determinants for 32 industrialized countries
  - more recent period
  - cross–country heterogeneity of the determinants

Motivation


Evolution of the trade balance (in % of GDP)
1992
2007
20
15
10
5
0
-5
-10
-15
-20
17
11
9
8
8
7
7
5
4
3
3
2
2
1
0
0
-1
-1
-2
-2
-2
-2
-2
-4
-5
-7
-7
-7
-8
-10
-12
-15
Luxembourg
Norway
Ireland
Switzerland
Netherlands
Sweden
Germany
Austria
Finland
Czech Republic
Belgium
Canada
Hungary
Japan
Denmark
Korea
Italy
Slovakia
New Zealand
Australia
France
Poland
Slovenia
Mexico
United Kingdom
United States
Spain
Portugal
Turkey
Greece
Estonia
Lithuania
Romania
Bulgaria
Latvia

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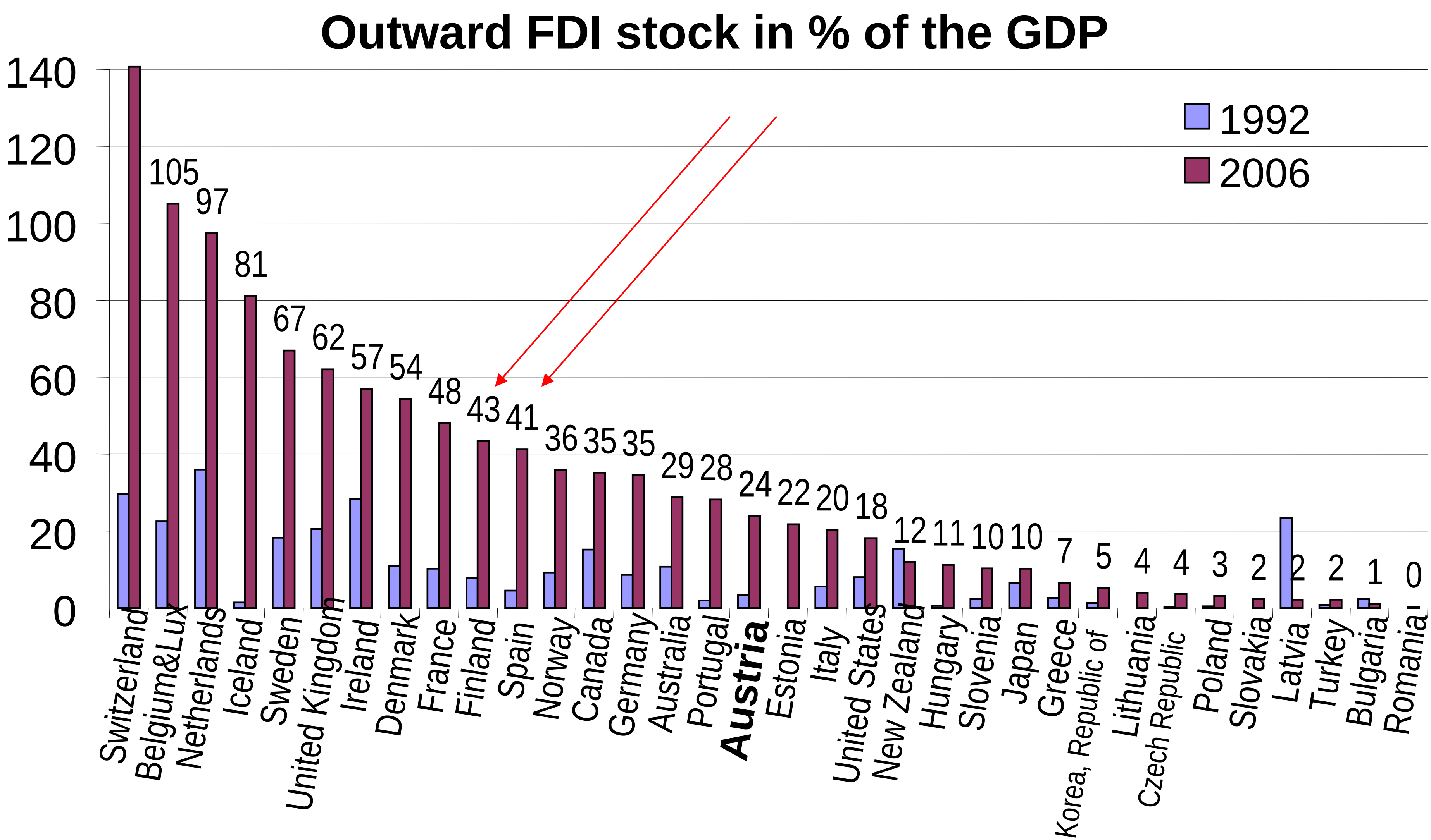

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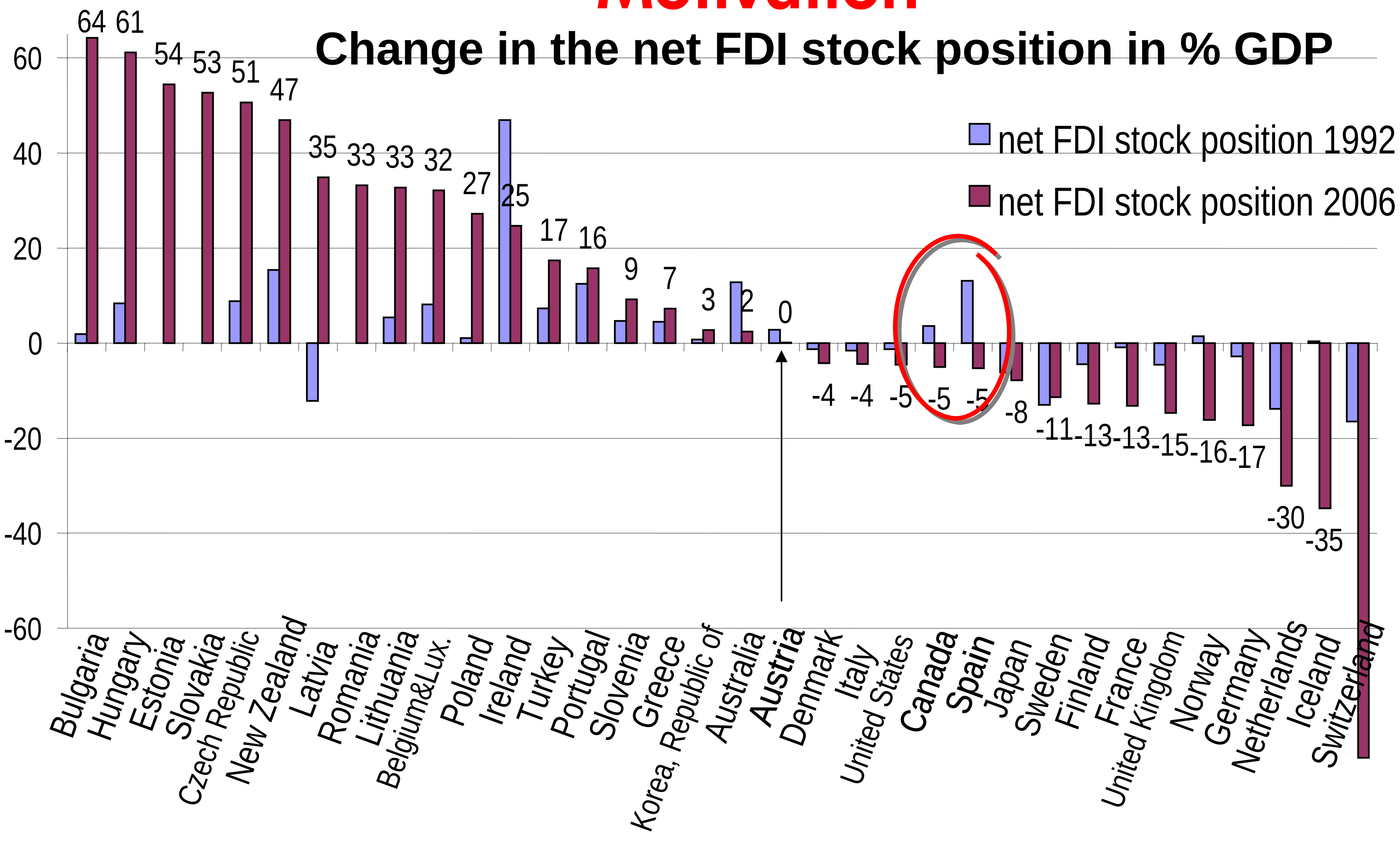
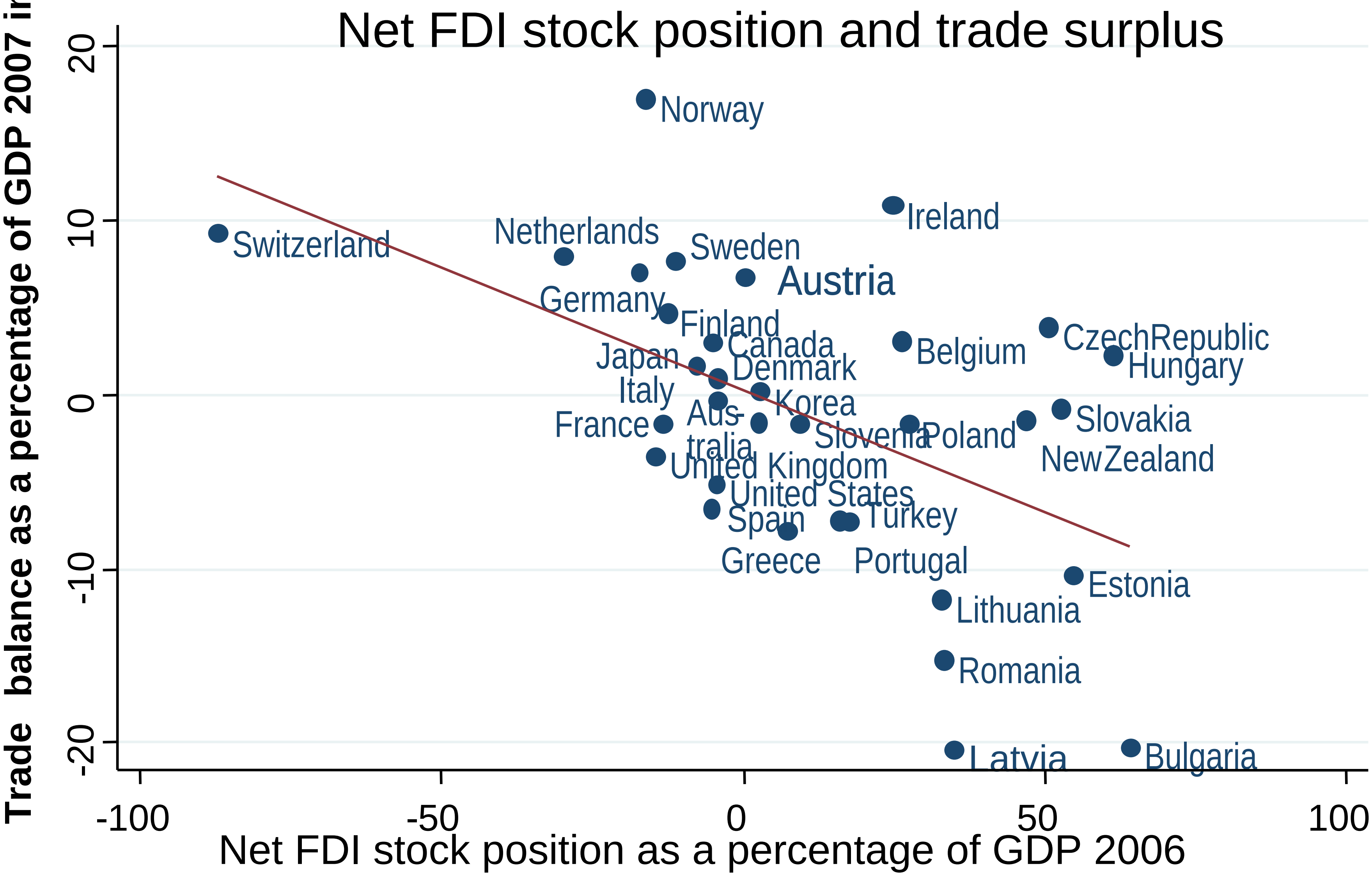

Change in the net FDI stock position in % GDP
net FDI stock position 1992
net FDI stock position 2006
60
40
20
0
-20
-40
-60
64 61 54 53 51 47 35 33 33 32 27 25 17 16 9 7 3 2 0
-4 -4 -5 -5 -5 -8 -11 -13 -13 -15 -16 -17 -30 -35
Bulgaria
Hungary
Estonia
Slovakia
Czech Republic
New Zealand
Latvia
Romania
Lithuania
Belgium&Lux.
Poland
Ireland
Turkey
Portugal
Slovenia
Greece
Korea, Republic of
Australia
Austria
Denmark
Italy
United States
Canada
Spain
Japan
Sweden
Finland
France
United Kingdom
Norway
Germany
Netherlands
Iceland
Switzerland

Motivation


Net FDI stock position and trade surplus
Trade balance as a percentage of GDP 2007 in %
20
10
0
-10
-20
-100
-50
0
50
100
Net FDI stock position as a percentage of GDP 2006
Norway
Ireland
Switzerland
Netherlands
Sweden
Austria
Germany
Finland
Canada
Belgium
CzechRepublic
Hungary
Japan
Denmark
Italy
Korea
Aus-
tralia
France
Slovenia
Poland
Slovakia
NewZealand
United Kingdom
United States
Spain
Turkey
Greece
Portugal
Estonia
Lithuania
Romania
Latvia
Bulgaria

Empirical model

- trade balance equation introduced by Goldstein and Khan (1985)

$$TBGDP_{it} = \alpha_i + \alpha_1 \ln REER_{it} + \alpha_2 \ln Y_{it}^{*} + \alpha_3 \ln Y_{it} + \alpha_4 PRIMBALGDP_{it} + \varepsilon$$

- TBGDP: trade balance as a percentage of nominal GDP
- REER: real effective exchange rate index
- Y*: weighted average real GDP per capita of the 40 major trading partners
- Y : real domestic GDP per capita
- PRIMBALGDP: primary balance as a percentage of GDP
- Estimation method: mixed models, fixed effects with dummy interaction terms

Hypotheses and previous literature

- Lane, Milesi-Ferretti (2002, EER)
  - Trade balance=f(real rate of return on foreign assets, domestic real GDP growth, real exchange rate, net foreign asset position lagged)
  - rate of return>growth rate
    - => inverse relationship between trade balance and the net foreign asset position
- Real effective exchange rate index (REER) effects
  - real devaluations improve the trade balance in the long–run (see Arize, 1994; Bahmani–Oskooee, 1985, 1991; Himarios, 1985, 1989; Miles, 1979; Shirvani and Wilbratte, 1997; Bahmani–Oskooee and Ratha, 2004 for a survey)
  - Central and Eastern European countries: insignificant effects of the real effective exchange rate index (Bahmani–Oskooee, Kutan, 2008)

Hypotheses and previous literature

- Real domestic and foreign income
  - impact of foreign GDP is positive ($\alpha_2 > 0$)
  - impact of domestic GDP is negative ($\alpha_3 < 0$)
- Effects of the government budget balance
  - coexistence of both budget deficit and trade deficit =>twin deficit
  - mixed evidence (Mohammadi and Skaggs, 1996)
  - Darrat (1988): budget deficit causes trade deficit

Data

- Data and descriptive statistics
  - REER indices:
    - NEER: geometric weighted average of bilateral exchange rates against the currencies of the 36 major trading partners.
    - deflated by the difference in domestic and foreign unit labour costs in the total economy
  - Real foreign GDP per capita:
    - weighted average of domestic real GDP per capita of 40 trading partners
    - weights: share of country's exports going to the other countries

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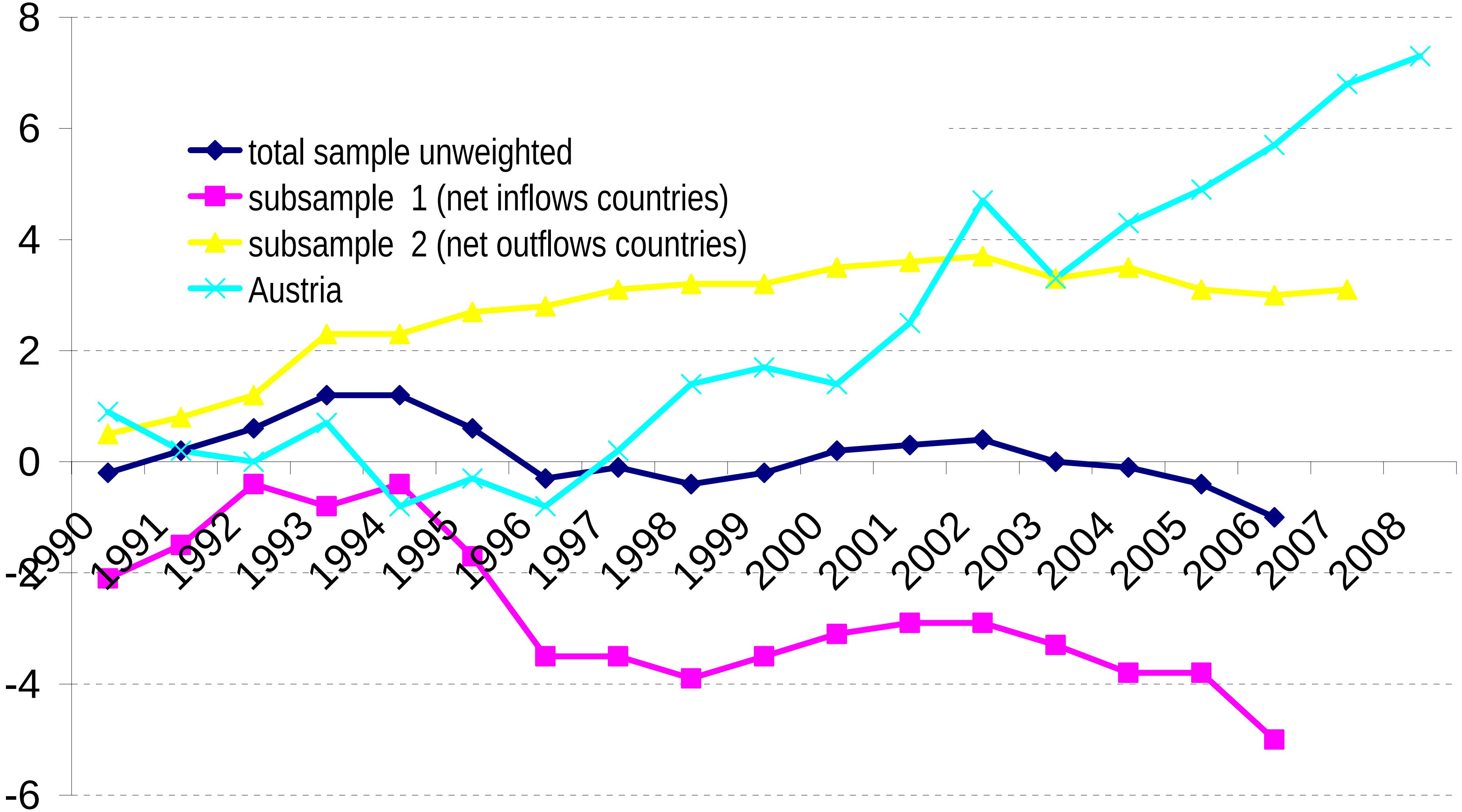
Descriptive statistics

Evolution of the trade balance



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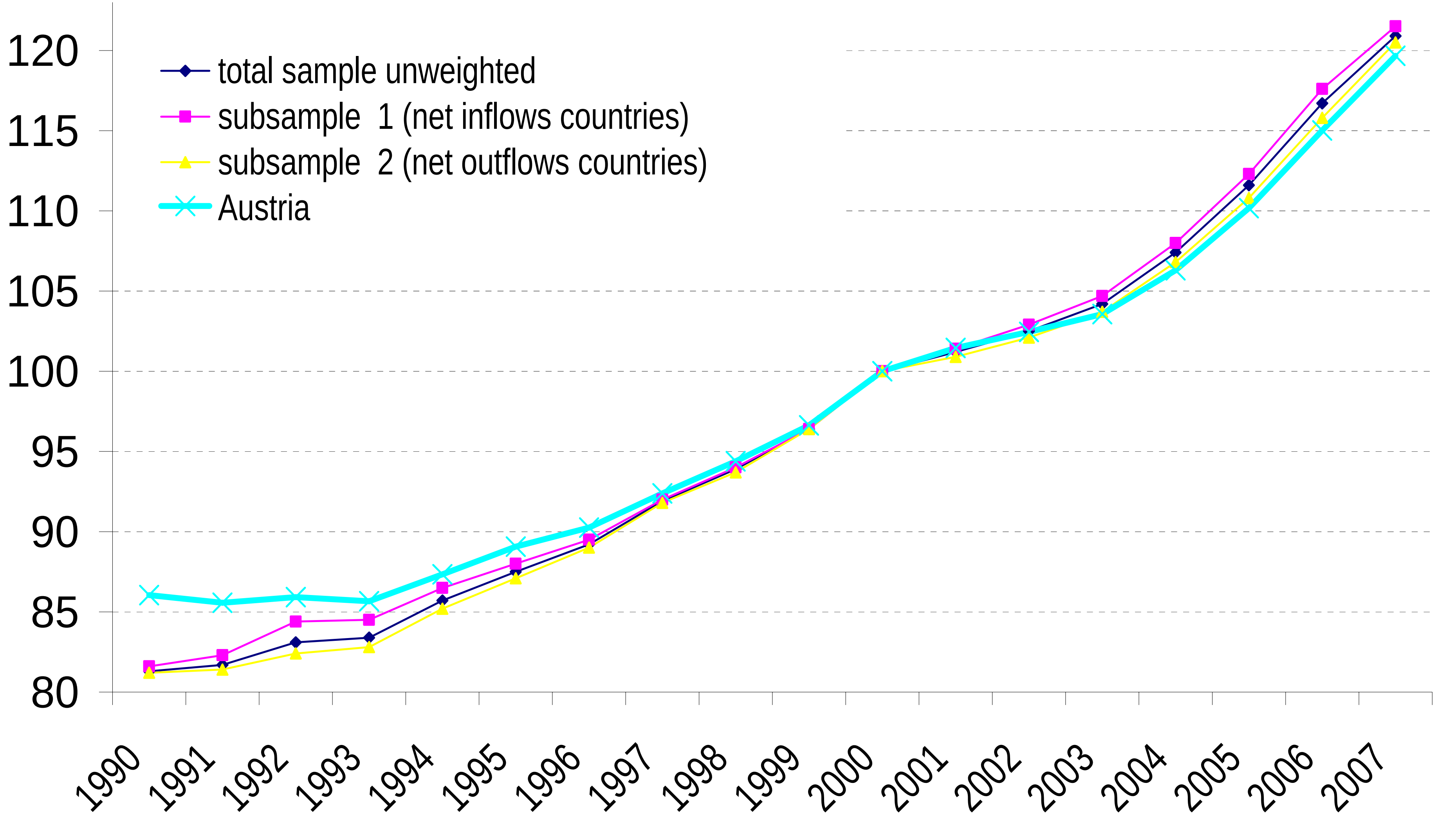
Descriptive statistics

Evolution of trade-weighted foreign GDP in const. prices



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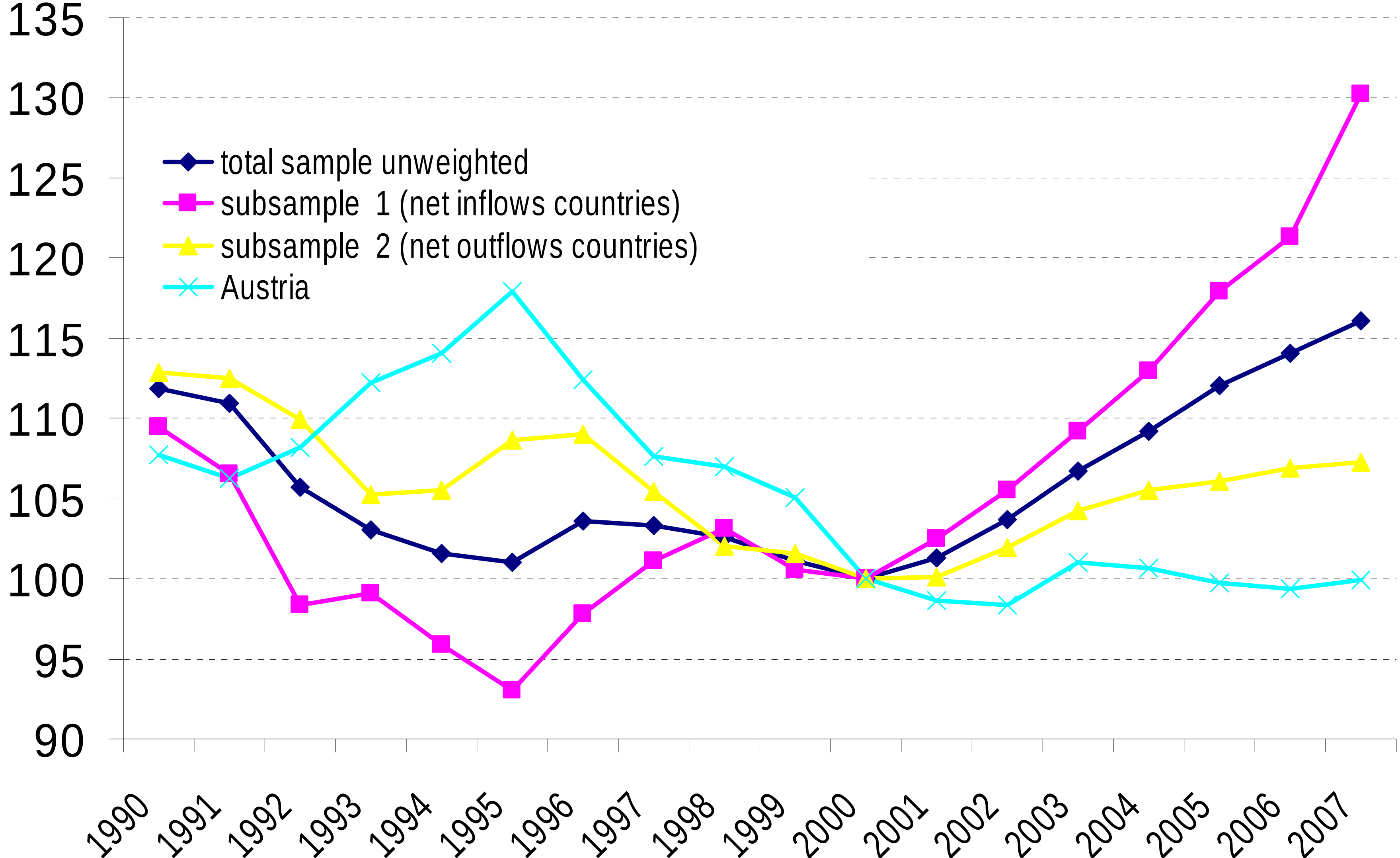
Descriptive statistics

Evolution of the real effective exchange rate



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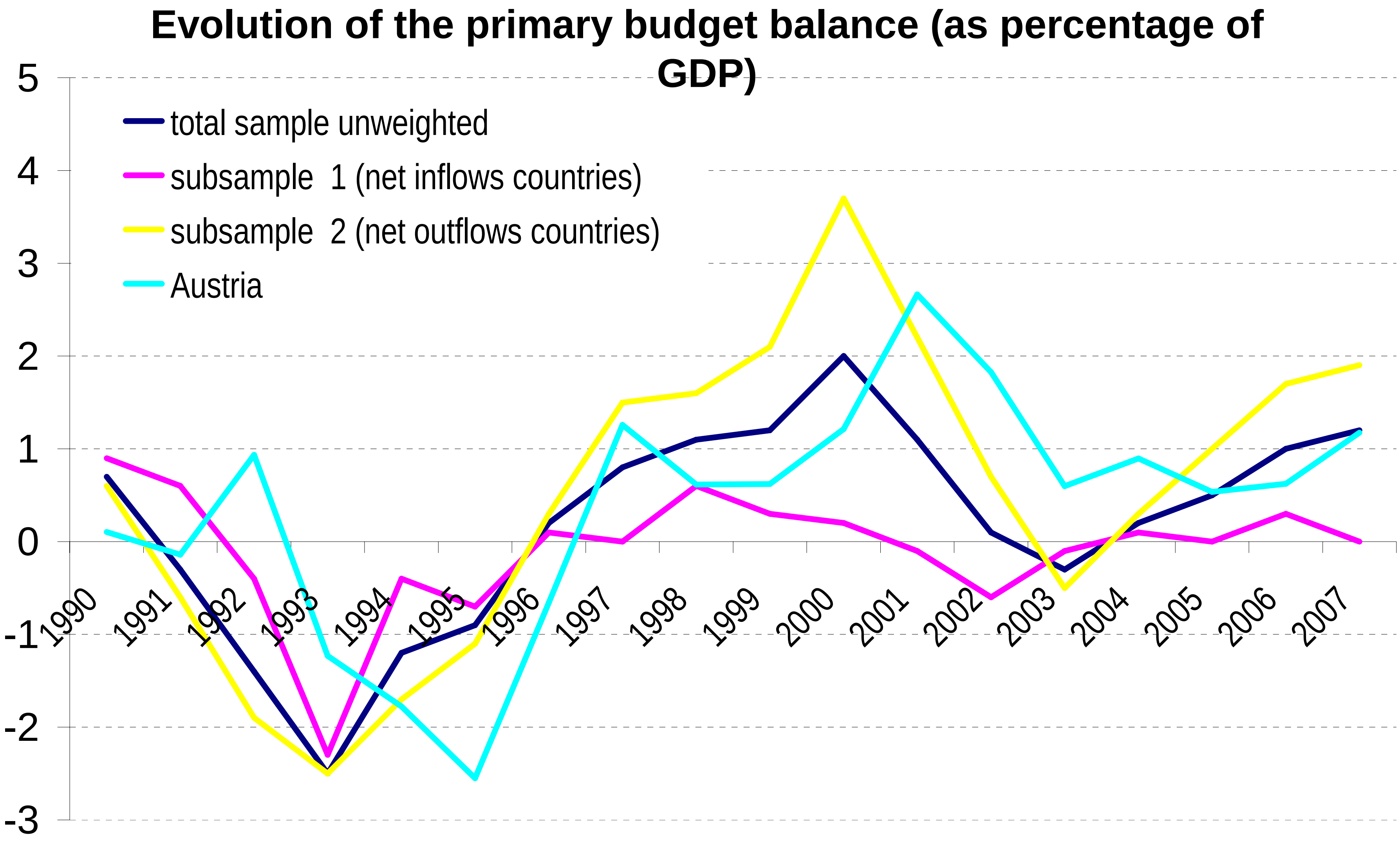
Descriptive statistics



WIFO

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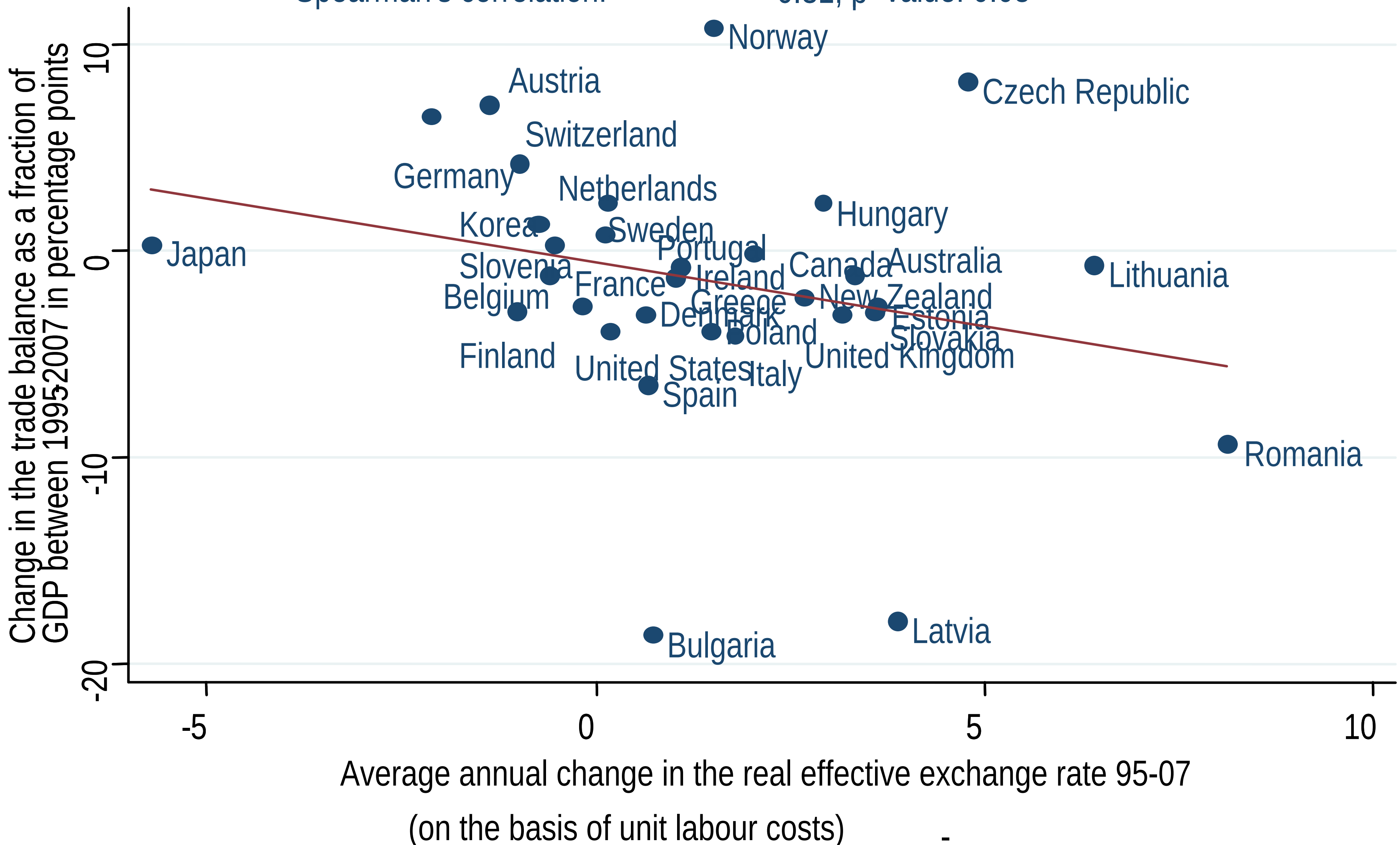
Descriptive statistics

Spearman's correlation: -0.31; p-value: 0.08



Empirical results

- Total sample
  - semi–elasticity of the real effective exchange rate –0.054
  - semi–elasticity of real foreign GDP per capita: 0.062
  - semi–elasticity of real domestic GDP per capita: –0.029
  - coefficient on budget balance: 0.163
- subsample incl.countries with a positive net FDI stock position
  - smaller effects in absolute values
- Results for Austria
  - semi–elasticity of the real effective exchange rate –0.208
  - semi–elasticity of real foreign GDP per capita: 0.27
  - semi–elasticity of real domestic GDP per capita: –0.02
  - coefficient on budget balance: 0.276

Empirical results

Results of the fixed effects model for the determinants of the trade balance

	Coeff.	t	Coeff.	t
ln REER	-0.054	-4.46	-0.083	-4.57
ln REER x dummy variable for countries with a positive net FDI position			0.059	2.37
ln real foreign GDP per capita	0.062	2.32	0.102	3.38
ln real foreign GDP per capita x dummy variable for countries with a positive net FDI position			-0.091	-1.71
ln real domestic GDP per capita	-0.029	-1.10	-0.082	-2.47
ln real domestic GDP per capita x dummy variable for countries with a positive net FDI position			0.076	1.53
Primary balance as percent of GDP	0.169	3.47	0.260	4.54
Primary balance as percent of GDP x dummy variable for countries with a positive net FDI position			-0.002	-1.73
Constant	0.005	3.76	0.004	3.11
R^2 within	0.11		0.13	
# of observations	528		528	
# of countries	32		32	

Conclusions

- Main explanations of Austria‘s widening trade surplus:
  - Trade balance reacts more strongly to changes in foreign GDP in Austria than that other countries
  - Improvement of REER also contributes the increased trade balance (one fifth)
  - Dampening effect of domestic GDP is weak
  - Improvement of the budget balance => minor role
- Future work
  - Relationship between net foreign asset position and the trade balance depends on a) Rate of the return on foreign assets and b) domestic growth rate
  - Stronger effect when the difference between the rate of the return on foreign assets and the domestic growth rate is high
  - Dynamic model