

The design of fiscal adjustments

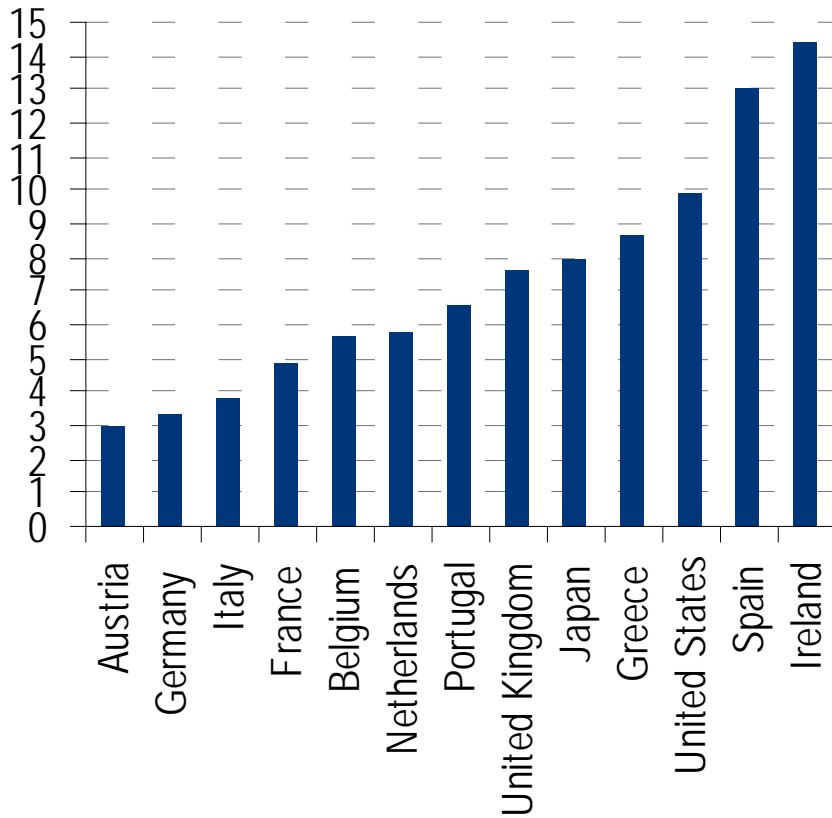
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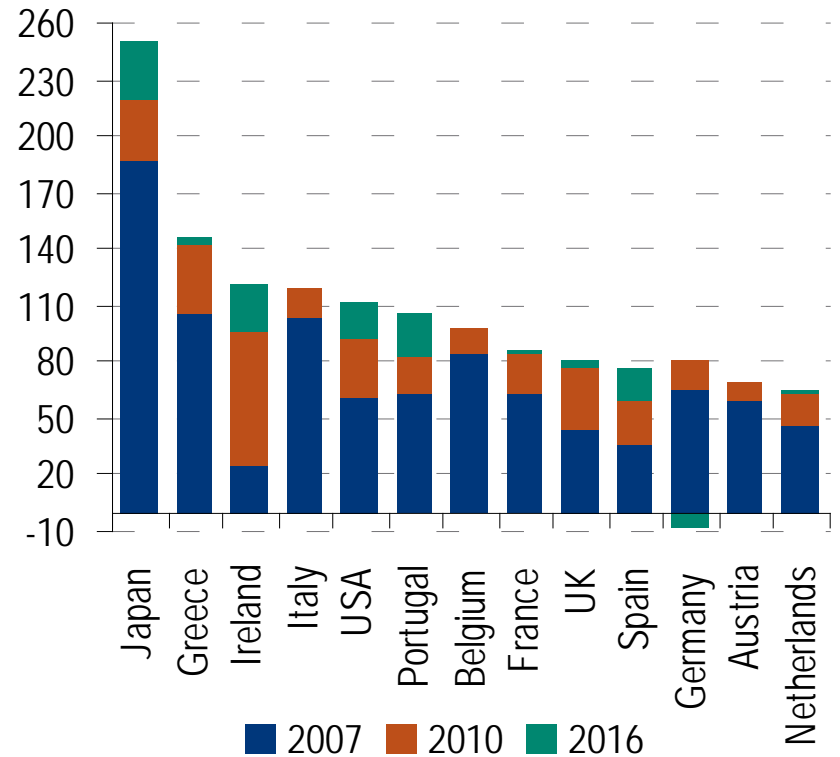
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The fiscal challenge

Increase in total deficit/GDP 2007-2009

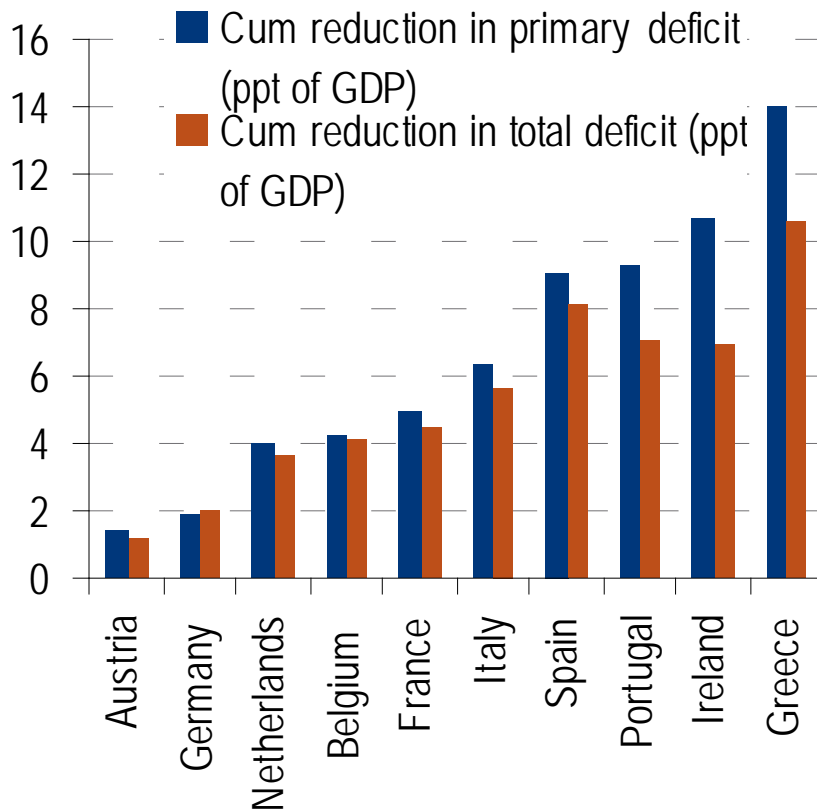


Debt/GDP in OECD countries (% of GDP)



Size of fiscal tightening

Decrease in deficit/GDP 2010-2012 (ppt of GDP)



Total deficit/GDP targets

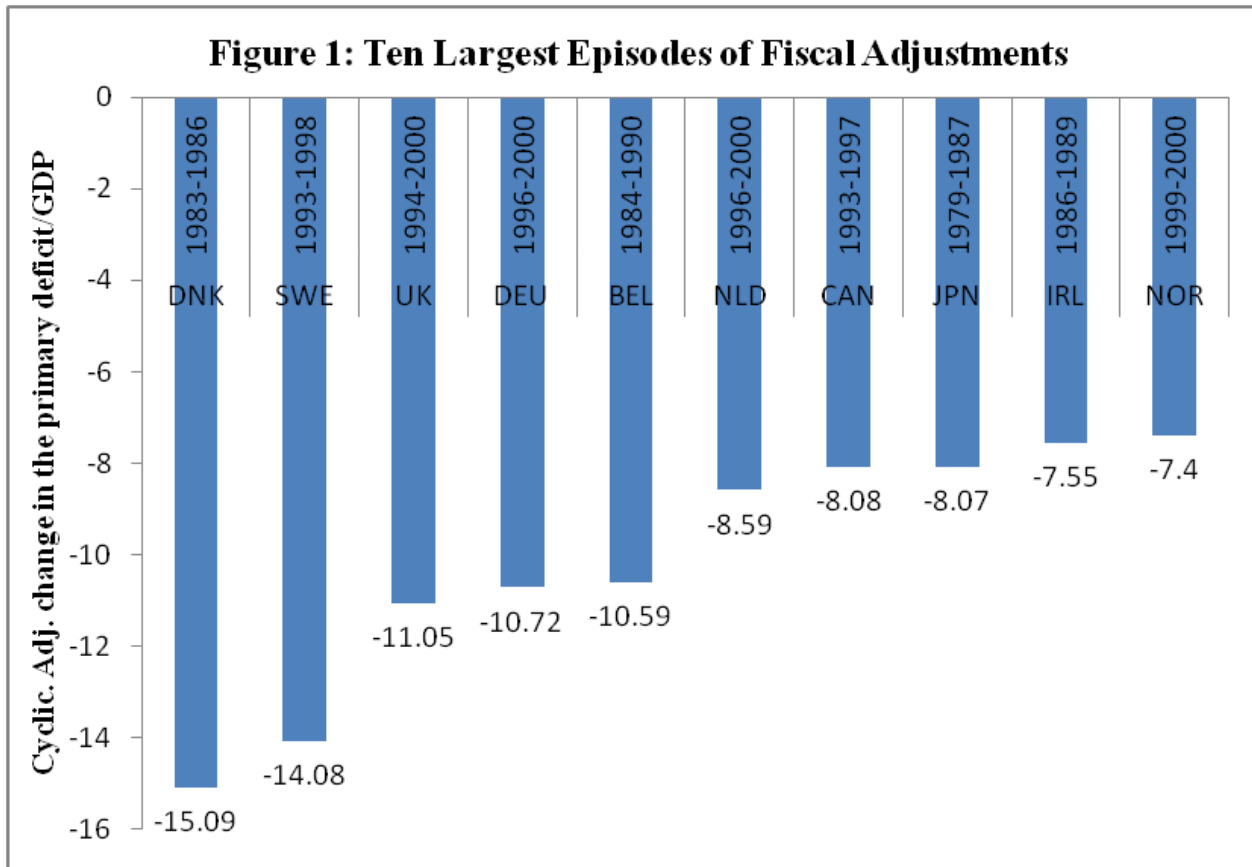
	2010	2011	3% SGP limit reached by
Belgium	4.8	4.7	2012
France	7.7	6	2013
Germany	4	3	2011
Greece	9.4	7.4	2014
Ireland	11.7	9.1	2015
Italy	5	3.9	2012
Portugal	7.3	4.6	2013
Spain	9.3	8.5	2015

Data

- 21 OECD countries from 1970-2010
- Fiscal adjustment episode
 - 2 consecutive years in which the cyclically adjusted primary balance/GDP improves in each year and the cumulative improvement over the 2 years is at least 2ppt
- or
- 3 or more years in which the cyclically adjusted primary balance/GDP improves in each year and the cumulative improvement over the years is at least 3ppt
- Alternative definitions:
 - Previous papers imposed restriction only on yearly reduction on size of the improvement in the cycl. adj.pr. balance/GDP
 - WEO 2010, IMF 2011 database

Fiscal adjustments in OECD countries

- 52 episodes of fiscal adjustments in 18 of the 21 countries for a total of 183 observations (25% of the sample)
 - average reduction of cycl. adjusted primary deficit/GDP per episode = 5.1% of GDP
 - average reduction of cycl. adjusted primary deficit/GDP per year = 1.4% of GDP
 - average duration 3.5 years



Duration (years)	Numb. of episodes
2	24
3	8
4	7
5	5
6	3
7	2
8	1
9	2

WEO data

- Narrative approach to select episodes of fiscal adjustments
- 2 versions of the database
 - WEO Oct 2010 - 184 observations in which a fiscal adjustment takes place
 - Data on-line - 173 observations in which a fiscal adjustment takes place
- 47 observations were considered fiscal adjustments in WEO Oct 2010, not such in data on-line (a)
- 16 observations were not considered fiscal adjustments in WEO Oct 2010, are such in data on-line (b)
- 20 “new” observations - 7 years of fiscal adjustments in Austria and 13 in the Netherlands (c)

WEO data

(a)	(b)	(c)
AUS 19879-1980	BEL 1985	AUT 1980-1981
BEL 1995	FRA 1992	AUT 1984
BEL 1998	FRA 1999	AUT 1996-1997
CAN 1978-1983	DEU 1991	AUT 2001-2002
CAN 1998-1999	ITA 1991	NLD 1981-1988
DEN 1978-1979	JPN 1979-1980	NLD 1991-1993
FIN 1978	JPN 1998	NLD 2004-2005
FIN 1984	ESP 1990	
FIN 1988	UK 1979-1980	
FIN 1998-2000	USA 1992	
FIN 2006-2007	USA 1995-1998	
FRA 1984		
FRA 1986		
FRA 1988		
FRA 1998		
FRA 2006-2007		
DEU 1985-1989		
DEU 1996		
DEU 2005		
JPN 1986		
PRT 2001		
ESP 1986-1988		
ESP 1998		
SWE 1983		
SWE 1986		
SWE 1992		
SWE 2007		
USA 2000		

Episodes identified with different approaches

- Corr(change pr. deficit and narrative/our measure)
 - WEO Oct 2010 = 0.16
 - Data on-line = 0.07
 - “our measure” = 0.94

	Fiscal adjustments	No fiscal adjustments	St. err. of difference
	WEO 2010	WEO 2010	
GDP growth	2.56	2.39	0.23
G7 GDP growth	2.78	2.02	0.15**
GDP growth in deviation from G7 growth	-0.22	0.37	0.18**

	Fiscal adjustments	No fiscal adjustments	St. err. of difference
	available on line	available on line	
GDP growth	2.3	3.22	0.22**
G7 GDP growth	2.62	2.94	0.16**
GDP growth in deviation from G7 growth	-0.32	0.28	0.18**

What outcomes are we interested in?

- Successful vs. unsuccessful fiscal stabilizations

Debt/GDP ↓ vs. Debt/GDP ↑

- Contractionary (Keynesian) vs. expansionary (non-Keynesian) fiscal stabilizations

GDP ↓ vs. GDP ↑

- Ability to reduce the stock of debt depends on
 - reduction in primary deficit
 - growth
 - cost of debt

What does the historical experience show?

▪ Successful vs. unsuccessful fiscal stabilizations

	Successful	Unsuccessful	St. err. of difference
Change in the debt/GDP	-0.19	1.49	0.65**
Debt/GDP (T_n+2) - Debt/GDP (T_n)	-7.4	6.89	1.18**
GDP growth	3.47	2.3	0.27**
G7 GDP growth	2.89	2.89	0.16
GDP growth in deviation from G7 growth	0.58	-0.59	0.25**
Avg. growth (T ₀ -T _n) - avg growth (T ₀ -2-T ₀ -1)	1.43	0.32	0.49**
Average duration	3.03	2.55	0.28*
Number of episodes	25	24	
Number of observations	101	74	

▪ Expansionary vs. contractionary fiscal stabilizations - def. 1

	Expansionary	Contractionary	St. err. of difference
Change in the debt/GDP	0.34	1.1	0.73
Debt/GDP (T _n +2) - Debt/GDP (T ₀)	-1.88	2.94	2.5**
GDP growth	3.15	2.49	0.31**
G7 GDP growth	2.95	2.84	0.18
GDP growth in deviation from G7 growth	0.2	-0.35	0.30*
Avg. growth (T₀-T_n) - avg growth (T₀-2-T₀-1)	1.88	-1.25	0.35**
Average duration	2.85	2.63	0.3
Number of episodes	35	17	
Number of observations	129	54	

What does the historical experience show?

Expansionary vs. contractionary fiscal stabilizations - def.2

	Expansionary	Contractionary	St. err. of difference
Change in the debt/GDP	0.54	0.57	0.66
Debt/GDP (Tn+2) - Debt/GDP (T0)	-2.51	2.19	2.30**
GDP growth	3.31	2.46	0.28**
G7 GDP growth	2.86	2.99	0.16
GDP growth in deviation from G7 growth	0.45	-0.53	0.27**
Avg. growth in dev. G7 (T0-Tn) - avg growth in dev. G7 (T0-2-T0-1)	1.42	-1.39	0.32**
Average duration	2.94	2.57	0.27
Number of episodes	28	24	
Number of observations	106	77	

WEO data: successful cases

▪ Successful vs. unsuccessful fiscal stabilizations

	Successful	Unsuccessful	St. err. of difference
Change in the debt/GDP	3.01	2.99	0.87
Debt/GDP (T _{n+2}) - Debt/GDP (T ₀)	-7.97	6.96	1.81**
GDP growth	2.41	1.55	0.41**
G7 GDP growth	2.68	2.64	0.25
GDP growth in deviation from G7 growth	-0.27	-1.17	0.33*
Avg. growth (T ₀ -T _n) - avg growth (T ₀ -2-T ₀ -1)	1.05	0.21	0.96
Average duration	4.6	2.87	0.61**
Number of episodes	8	10	
Number of observations	64	30	

▪ Expansionary vs. contractionary fiscal stabilizations

	Expansionary	Contractionary	St. err. of difference
Change in the debt/GDP	2.82	3.07	0.83
Debt/GDP (T _{n+2}) - Debt/GDP (T ₀)	-1.07	-2.33	4.32
GDP growth	2.39	1.97	0.4
G7 GDP growth	2.85	2.58	0.24
GDP growth in deviation from G7 growth	-0.45	-0.61	0.32
Avg. growth (T ₀ -T _n) - avg growth (T ₀ -2-T ₀ -1)	2.16	-0.94	0.55**
Average duration	4.24	3.94	0.63
Number of episodes	9	8	
Number of observations	42	47	

Questions

- Why are some episodes successful and/or expansionary and others are not?
 - policy mix?
 - initial fiscal and macro conditions?
 - countries' characteristics?
 - luck?
- Is there anything “special” about fiscal adjustments episodes in which growth increases and “normal” times?
- Large literature already exists

This paper

- Statistical evidence in different types of fiscal adjustments on “policy mix”
 - initial fiscal and macro conditions
 - size, composition, speed of fiscal consolidations
 - deregulation reforms in labour and product markets
 - monetary conditions - interest rates, exchange rate, lending conditions
 - *competitiveness*
- Statistical evidence in different types of fiscal adjustments on
 - macro outcomes
 - confidence indicators (Alesina, Favero and Giavazzi (2012))
- Selection of episodes: rules that rely on measures of cyclically adjusted primary deficit versus WEO narrative based sample
- Econometric analysis - confirms statistical evidence

Fiscal and macro initial conditions

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Growth	2.4	1.5	0.65	1.5	2.8	0.67**
Growth G7	0.1	-0.7	0.6	-0.6	0.5	0.64*
Inflation	4.2	6.4	1.29*	4.2	9.5	1.42***
Unemployment rate	8.2	6.9	1.3	8.6	5.1	1.21***
Output gap	-1.95	-0.63	0.62**	-2.2	0.85	0.53**
Total deficit/GDP	-5.5	-4.7	1.4	-5.6	-4.6	1.42
Primary deficit/GDP	-2.0	-2.4	1.0	-2.5	-2.1	1.03
Government spending	45.7	45.4	2.16	46.2	43.1	2.20
Total revenue	42.4	41.8	2.06	42.5	39.8	2.16
Debt/GDP	69.9	63.2	7.5	69.1	60.3	8.07

Fiscal and macro initial conditions using IMF 2011 data

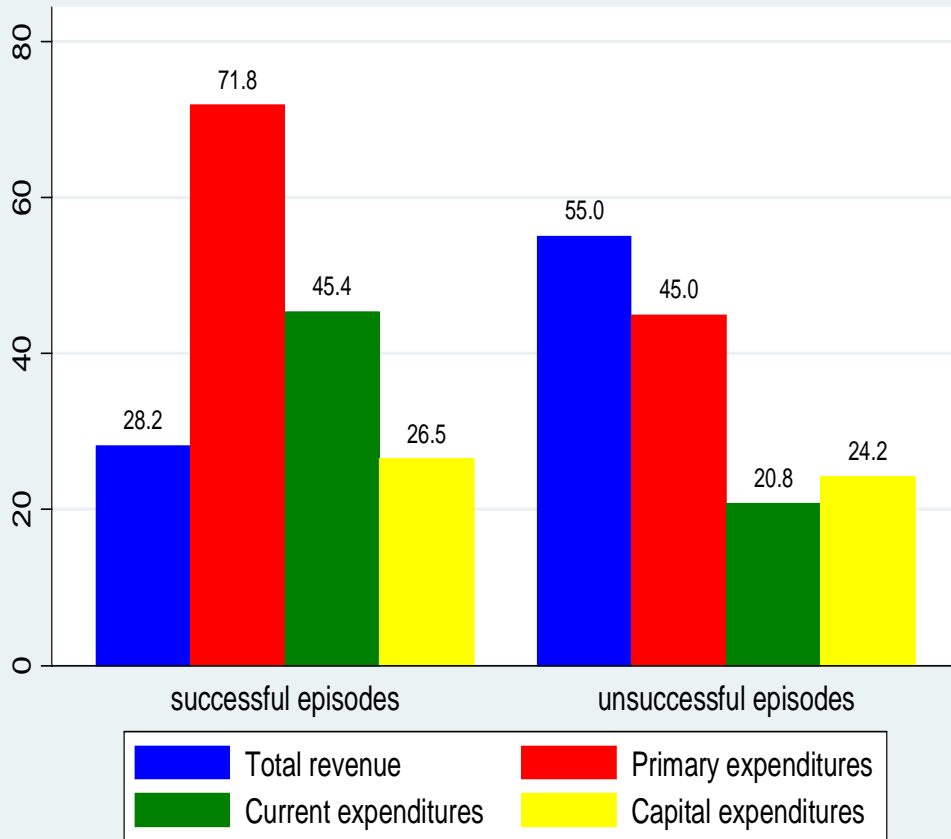
	Success	Unsuccess	St. err. of differenc e	Expansionary	Contraction ary	St. err. of differenc e
Growth	2.28	2.44	0.69	1.79	2.8	0.70
Growth G7	-0.09	-0.25	0.54	-0.62	0.28	0.52*
Inflation	4.92	3.49	1.22	2.84	6.11	1.39**
Unemployment rate	7.66	6.58	0.87	8.19	6.07	0.77***
Total deficit/GDP	-5.41	-5.18	0.99	-5.07	-5.60	0.94
Primary deficit/GDP	-1.78	-1.99	0.89	-2.45	-1.59	0.86

Fiscal policy during the adjustments

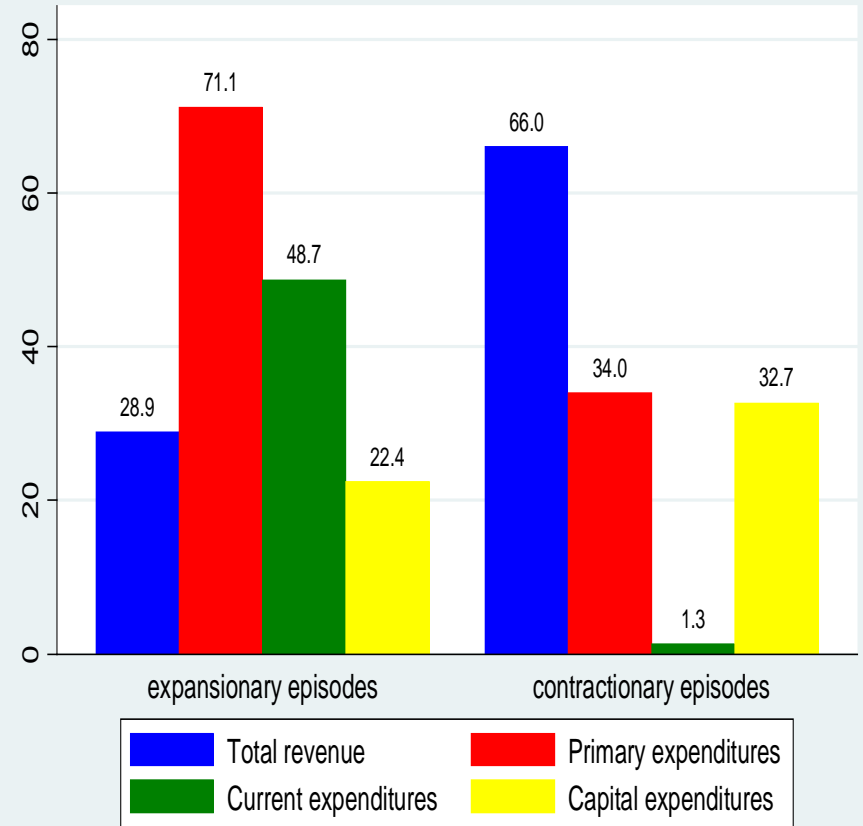
	Success	Unsuccess	St. err. of differenc e	Expansionar y	Contractiona ry	St. err. of difference
Δ Total deficit	-6.27	-3.91	0.80***	-5.43	-4.16	0.86
Δ Primary deficit	-5.82	-4.59	0.83	-5.34	-4.8	0.86
Δ Primary expenditures	-4.18	-2.53	0.91*	-3.98	-2.05	0.92**
Δ Current primary spending	-2.48	-1.31	0.73	-2.62	-0.38	0.68***
Δ Gov. consumption	-1.35	-0.61	0.37**	-1.32	-0.25	0.36***
Δ Government wage expenditures	-1.1	-0.59	0.27*	-1.12	-0.28	0.26***
Δ Government non wage expenditures	-0.24	-0.05	0.2	-0.24	0.03	0.2
Δ Transfers	-0.74	-0.55	0.4	-0.97	0.04	0.39**
Δ Subsidies	-0.39	-0.15	0.14*	-0.33	-0.17	0.14
Δ Government investment	-1.7	-1.21	0.5	-1.36	-1.67	0.5
Δ Total revenue	1.64	2.06	0.6	1.36	2.75	0.58**
Composition - spending	71.81	44.96	14.4*	71.14	33.98	14.18**
Composition - current spending	45.36	20.75	14.8*	48.7	1.29	14.00***
Composition - capital spending	26.45	24.2	5.9	22.43	32.69	5.79*
Composition - taxes	28.19	55.04	14.4*	28.86	66.02	14.18**
Public employment growth	1.64	3.08	1.62	1.51	6.37	1.84**

Composition of fiscal adjustments

Contribution of expenditure and revenues to fiscal adjustments



Contribution of expenditure and revenues to fiscal adjustments



Fiscal policy composition using IMF 2011 data

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
				y	y	
Δ Total deficit	-3.54	-1.64	.88**	-3.16	-1.51	.97*
Δ Primary deficit	-3.82	-2.01	1.02*	-3.51	-1.84	1.07
Δ Primary expenditures	-2.69	-0.68	.93*0*	-2.31	-0.7	.95*
Δ Current primary spending	-1.6	-0.21	.6*	-1.4	-0.13	.63**
Δ Gov. consumption	-1.05	-0.05	.32***	-0.84	-0.14	.34**
Δ Government wage expenditures	-0.95	-0.44	.32*	-0.9	-0.37	.32*
Δ Government non wage expenditures	-0.11	0.39	.20**	0.06	0.23	.21
Δ Transfers	-0.2	-0.10	.44	-0.23	0.08	.45
Δ Subsidies	-0.35	-0.06	.14**	-0.34	-0.06	.13**
Δ Government investment	-1.1	-0.46	.49	-0.91	-0.57	.47
Δ Total revenue	1.13	1.33	.56	1.2	1.15	.55
Public employment growth	0.6	1.25	1.64	-0.65	3.56	1.91**
Size-IMF	4.76	2.67	1.21*	3.27	3.87	0.50
Spending-IMF	2.93	1.67	0.92	2.15	2.31	0.90
Tax revenue-IMF	1.83	1.00	0.49*	1.11	1.56	0.48
Δ Pr. Expendit./ Δ Pr. deficit	70.4	44.8		65.8	38.1	
Spending-IMF/ Size-IMF	61.5	62		65.7	59.6	

Fiscal adjustments and markets regulation

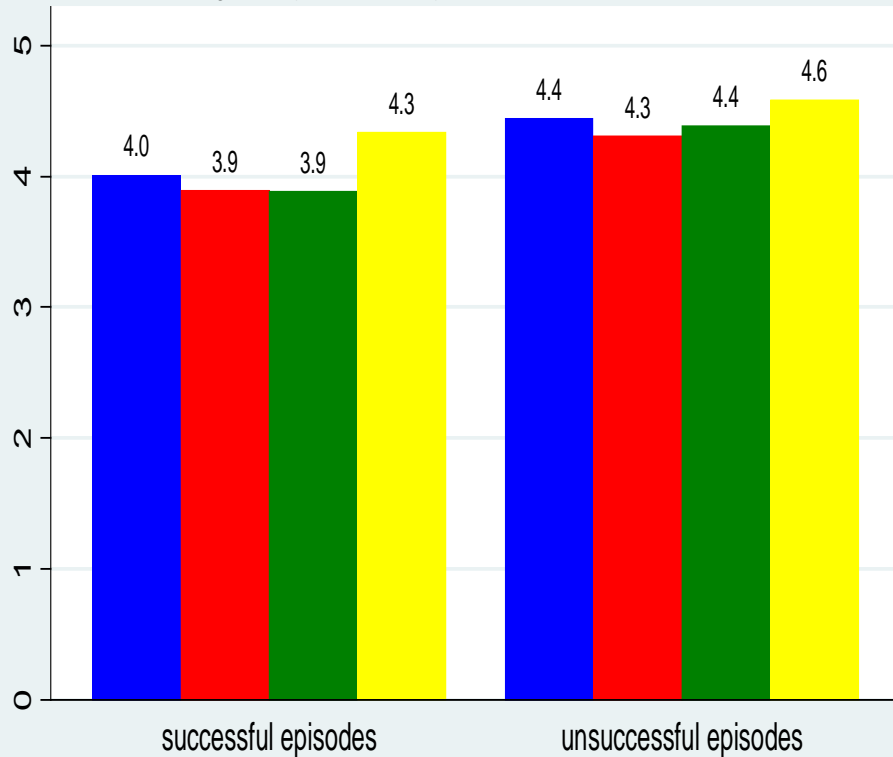
	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Initial level						
Product market regulation	4.0	4.4	0.40	4.0	5.2	0.39***
Product market regulation excluding public ownership	3.9	4.3	0.46	3.8	5.2	0.45***
Barriers to entry	3.9	4.4	0.48	3.8	5.3	0.47***
Public ownership	4.3	4.6	0.32	4.4	4.9	0.3
Employment protection	2.3	2.6	0.37	2.3	2.9	0.44
Employment protection regular contracts	2.3	2.6	0.33	2.4	2.5	0.4
Employment protection temporary contracts	2.3	2.6	0.54	2.2	3.3	0.63*
Union density	48.6	42.6	5.98	45.7	47.9	6.15

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Product market regulation	-16.69	-7.98	4.8*	-14.44	-4.92	5.13*
Product market regulation excluding public ownership	-20.56	-10.2	6.14*	-18.48	-4.7	6.47**
Barriers to entry	-23.62	-15.6	8.04	-21.44	-11.6	8.49
Public ownership	-13.93	-5.6	5.15*	-10.36	-6.98	5.42
Employment protection	-6.36	-1.8	3.79	-4.51	-4.15	4.69
Employment protection regular contracts	-1.14	1.25	2.59	-0.16	0	3.12
Employment protection temporary contracts	-10.55	-4.8	6.18	-8.35	-7.3	7.6
Union density	-7.43	-3.19	2.69	-5.96	-2.95	2.86

Product markets regulation and gov. debt outcome

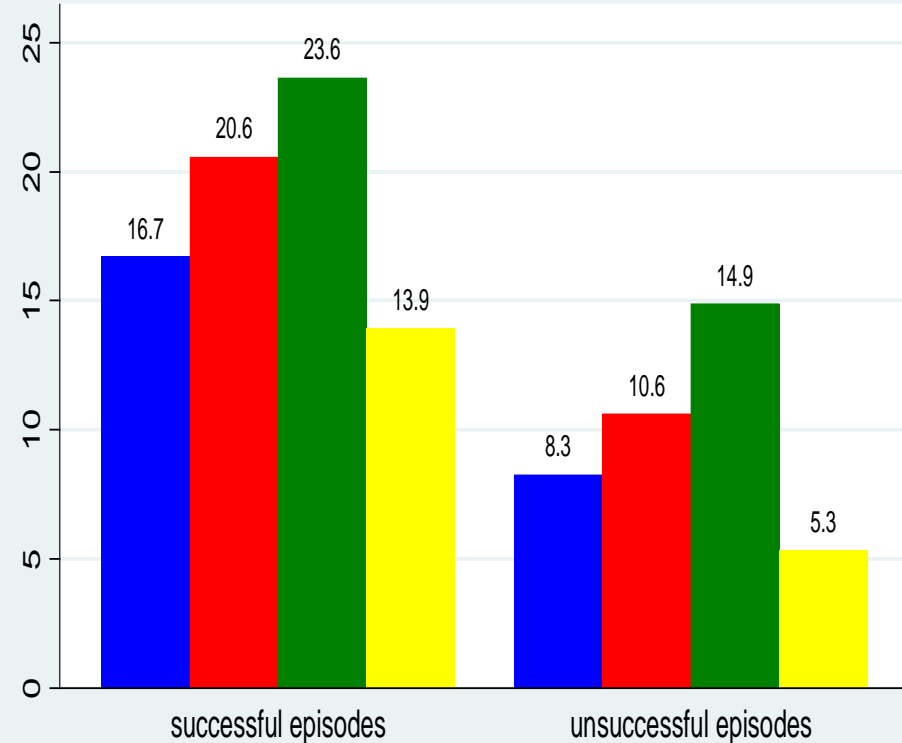
Product markets deregulation

Regulatory indicators year before fiscal adjustment



Product markets deregulation

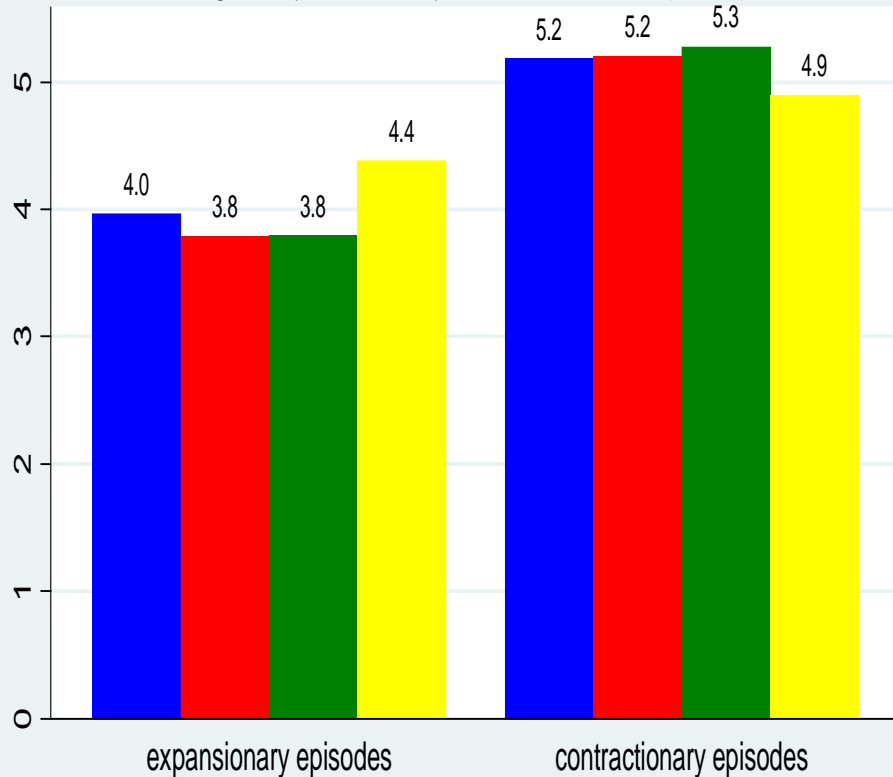
% decrease in regulatory indicators



Product markets regulation and GDP growth outcome

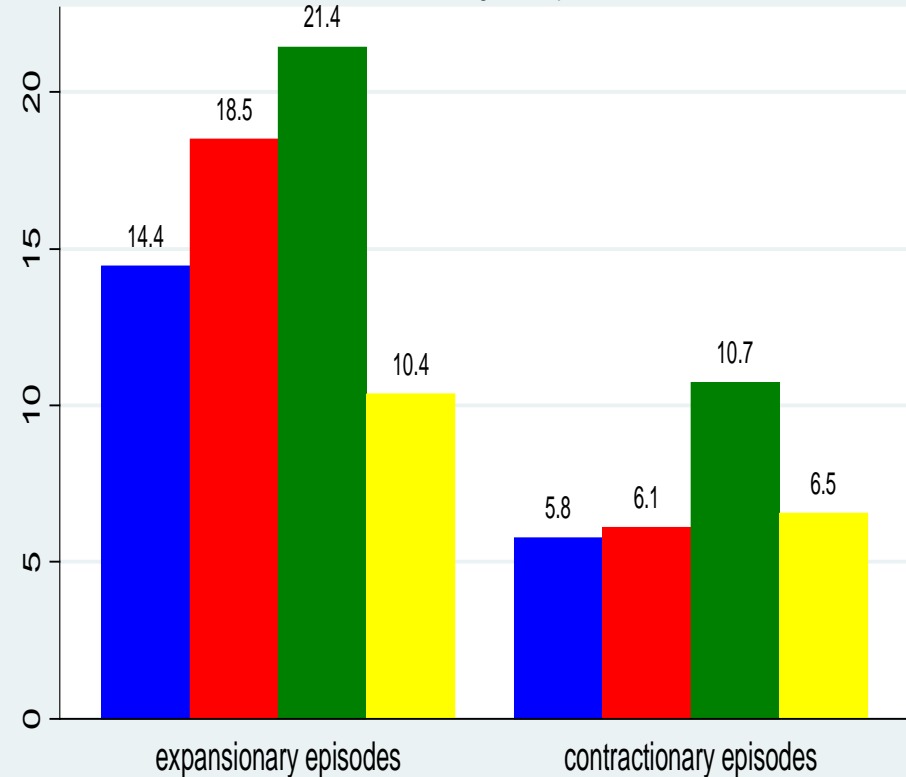
Product markets deregulation

Regulatory indicators year before fiscal adjustment



Product markets deregulation

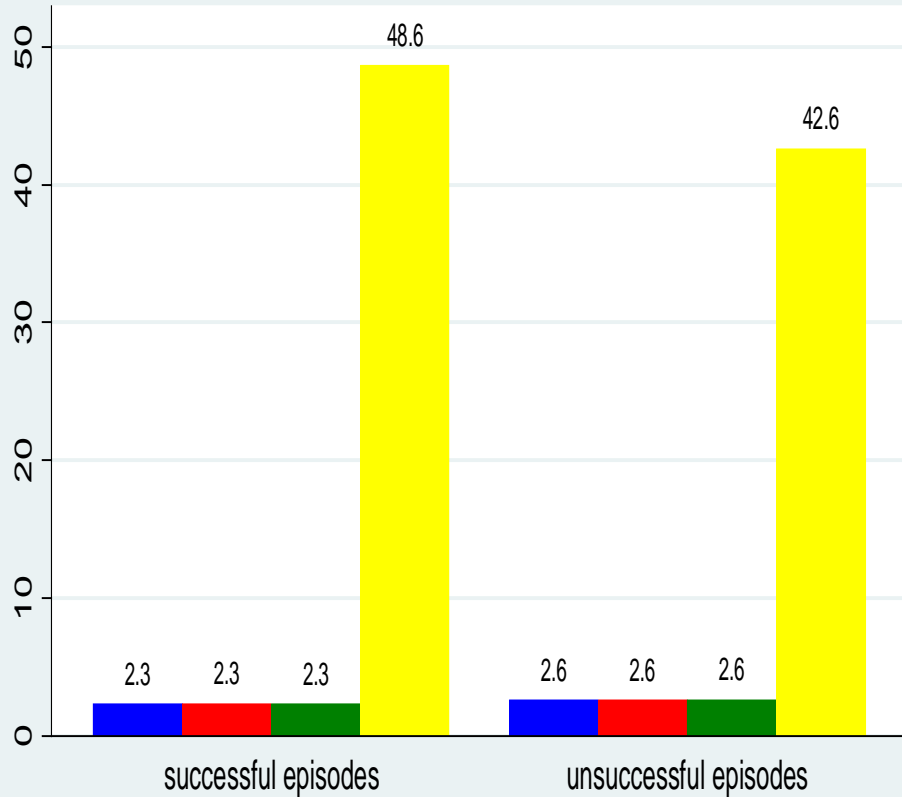
% decrease in regulatory indicators



Labour markets regulation and gov. debt outcome

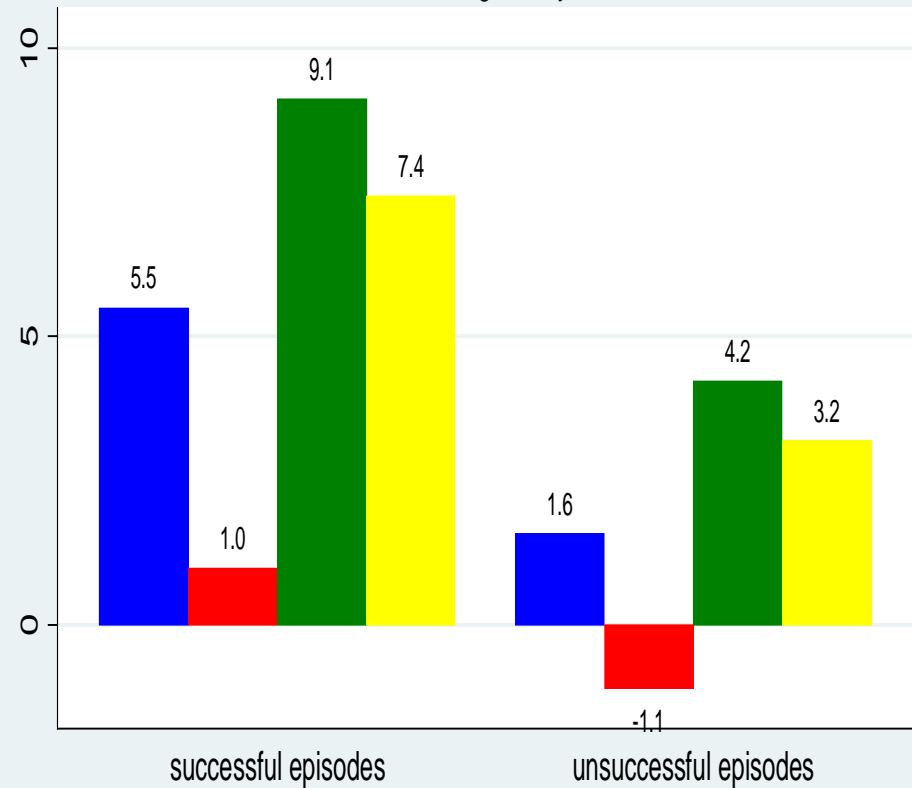
Labour markets deregulation

Regulatory indicators year before fiscal adjustment



Labour markets deregulation

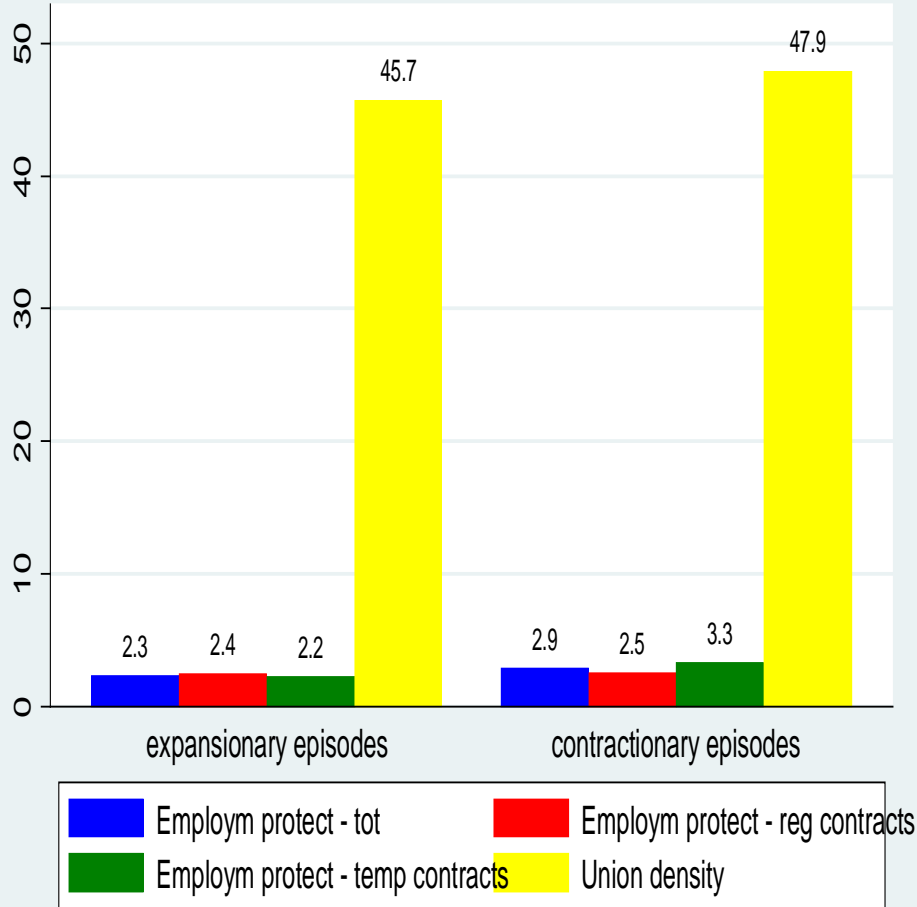
% decrease in regulatory indicators



Labour market regulation and GDP growth outcome

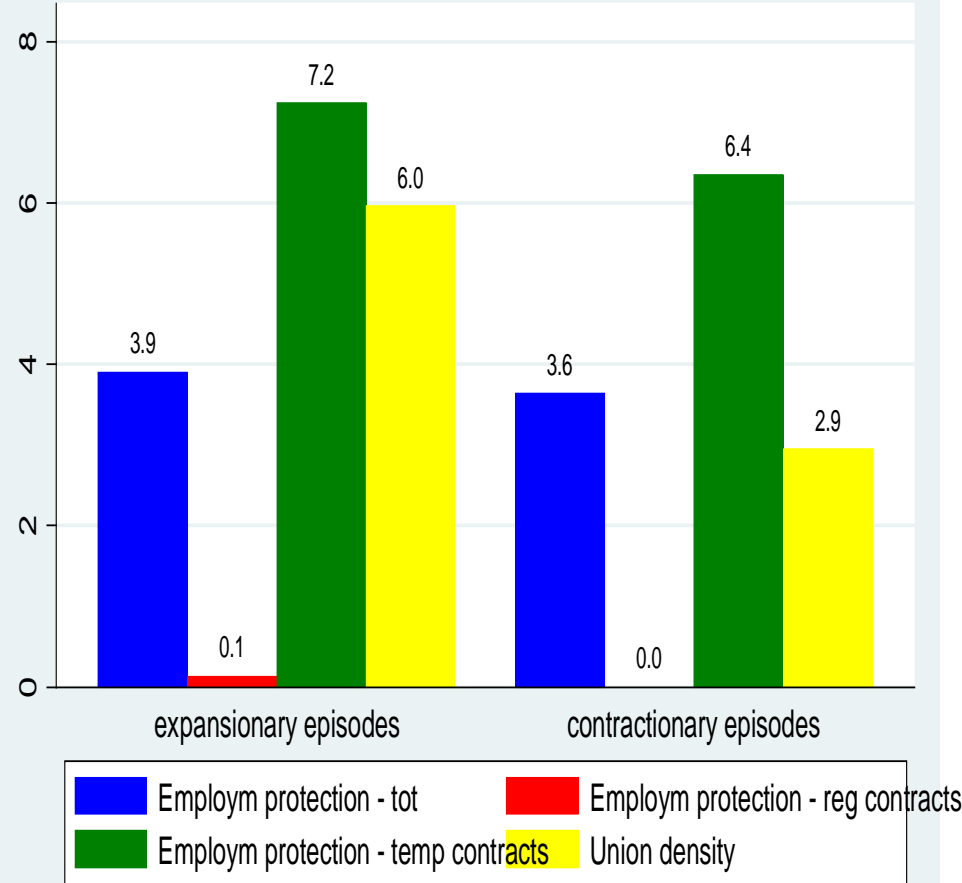
Labour markets deregulation

Regulatory indicators year before fiscal adjustment



Labour markets deregulation

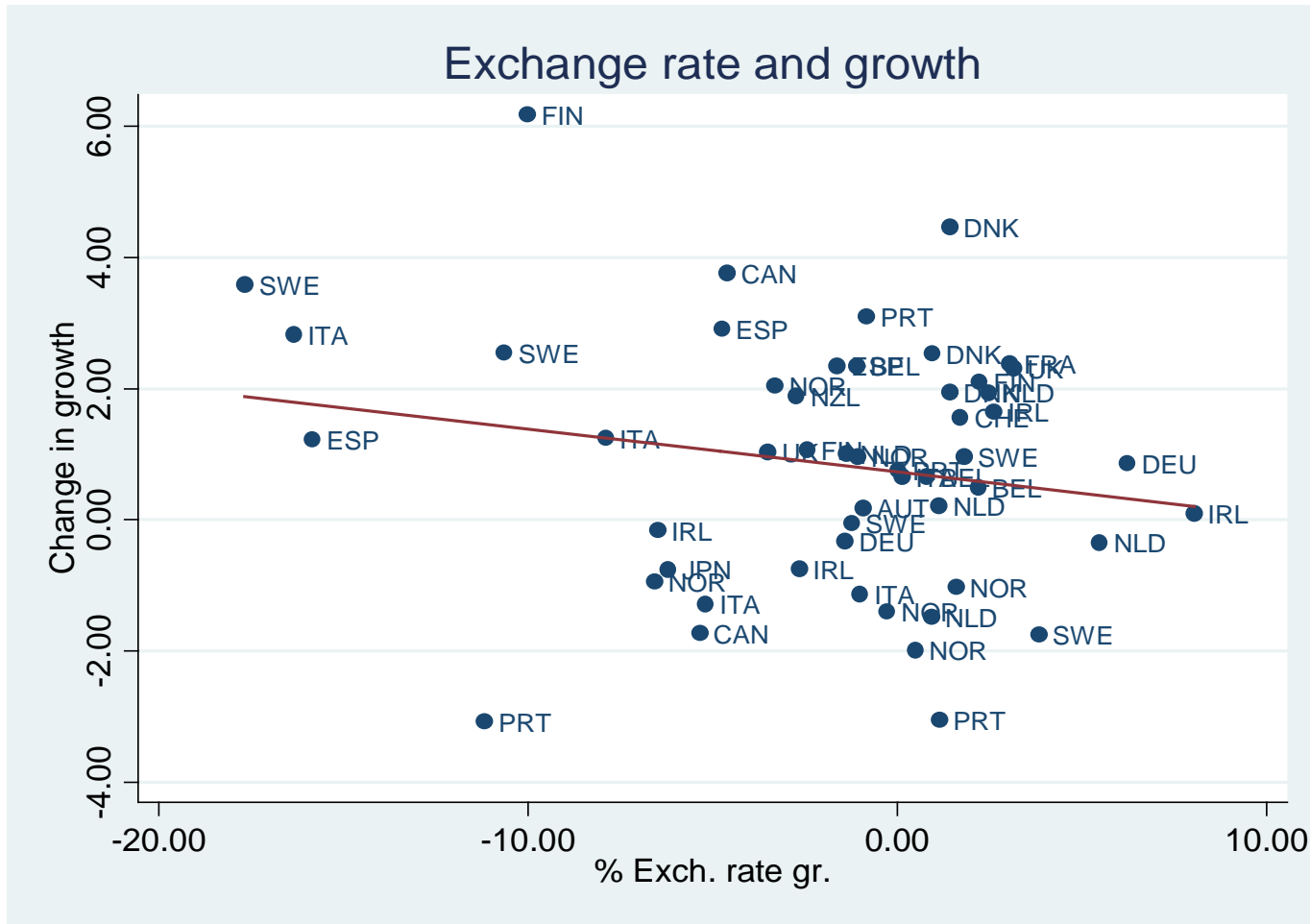
% decrease in regulatory indicators



Fiscal adjustments and markets regulation

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Initial level						
Product market regulation	4.14	3.9	.43	3.68	4.46	.41*
Product market regulation excluding public ownership	4.12	3.96	.45	3.65	4.53	.43**
Barriers to entry	4.19	3.85	.47	3.60	4.56	.44**
Public ownership	4.17	3.74	.44	3.70	4.2	.43
Employment protection	2.3	2.42	.39	2.18	2.54	.39
Employment protection regular contracts	2.11	2.41	.39	2.18	2.27	.40
Employment protection temporary contracts	2.68	2.43	.58	2.17	2.8	.59
Union density	41.74	31.70	5.9	37.23	36.49	5.9
	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Product market regulation	-21.29	-6.74	5.13**	-17.64	-8.48	5.28*
Product market regulation excluding public ownership	-27.95	-8.72	7.04**	-24.43	-9.62	7.06**
Barriers to entry	-33.04	-14.23	8.99**	-32.04	-11.56	8.80**
Public ownership	-11.69	-4.20	4.44*	-9.75	-4.76	4.43
Employment protection	-9.58	-1.81	5.30	-4.81	-7.28	5.80
Employment protection regular contracts	0.4	1.13	4.61	2.5	-2.04	4.77
Employment protection temporary contracts	-15.6	-4.73	7.35	-10.59	-9.86	8.07
Union density	-5.99	-5.16	2.88	-6.58	-4.64	2.80

Fiscal adjustments and exchange rate devaluation



Fiscal adjustments and monetary conditions

	Success	Unsuccess s	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Inflation	-1.07	-1.19	0.82	-0.72	-1.56	0.96
Nom. short-term interest rate	-2.53	-0.49	0.94**	-1.62	-0.65	1.17
Nom. long-term interest rate	-2.42	-0.38	0.67***	-1.55	-0.07	0.87*
"Real" short-term interest rate	-1.97	-0.76	1.23	-1.61	-0.65	1.35
"Real" long-term interest rate	-2.08	-0.37	1.01*	-1.42	0.41	1.16
Loans - % growth rate	39.8	28.5	9.24	34.4	34.9	11.7
Deposits - % growth rate	32.7	28.9	7.99	31.95	27.8	9.9

Fiscal adjustments and confidence

	Success	Unsuccess s	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Consumer confidence	-2.69	-12.48	2.50***	-5.48	-15.69	3.82***
Economic sentiment index	103.64	100.44	1.57**	102.51	99.69	2.33
Consumer confidence - cum % change	670	-11.2	707	483	-7.85	989
Economic sentiment index - cum % change	13.8	5.05	6.3	13.4	-12.91	7.32***

Fiscal adjustments and monetary conditions IMF 2011 data

	Success	Unsuccess s	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Inflation	-2.03	-0.35	1.02	-0.22	-1.82	1.1
Nom. short-term interest rate	-2.77	0.35	1.04***	-0.86	-0.86	1.1
Nom. long-term interest rate	-2.57	-0.06	.70***	-1.04	-1.14	.79
"Real" short-term interest rate	-1.61	1.17	.84***	-0.26	0.17	.96
"Real" long-term interest rate	-0.73	0.76	.9*	-0.45	0.46	.84
Loans - % growth rate	17.77	18.0	7.98	11.32	19.63	7.67
Deposits - % growth rate	17.02	21.76	7.56	14.7	20.84	7.55

Fiscal adjustments and confidence IMF 2011 data

	Success	Unsuccess s	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Consumer confidence	-9.33	-12.55	2.69	-7.72	- 12.61	2.82*
Economic sentiment index	98.66	99.92	1.80	101.39	96.51	1.80***
Consumer confidence - cum % change	-50.75	-12.85	85.8	59.54	-82.41	62.18**
Economic sentiment index - cum % change	7.63	3.96	5.10	9.32	2.43	5.09

Macro and competitiveness variables

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
GDP dev. from G7 - % growth rate	2.36	-1.82	1.16***	0.73	-1.1	1.33
GDP - % growth rate	14.02	7.08	1.94***	11.61	7.91	2.18*
Private consumption - % growth rate	12.35	6.2	2.06***	10.11	7.22	2.27
Investment private sect. - % growth rate	25.06	13.17	6.42*	26.17	6.77	6.00***
Investment business sect. - % growth rate	29.72	14.22	7.53**	29.74	9.25	7.31***
Total investment (incl. housing)- % growth rate	19.75	6.98	4.47***	18.49	1.57	4.49***
Exports - % growth rate	30.67	19.76	4.69**	27.62	19.69	4.89
Imports - % growth rate	-4.66	-38.91	32.6	-21.04	-43.06	34.03
Unemployment rate- ppt change	-0.84	0.51	0.65**	-0.61	1.09	0.66**

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Unit labour costs - % growth rate	10.06	13.07	3.12	9.41	18.78	3.23***
Relative unit labor costs in manuf. - % growth rate	-1	0.35	3.64	-2.64	3.8	3.58*
Relative consumer price index- % growth rate	-1.2	-0.21	2.55	-1.85	1.58	2.54
Export performance - % growth rate	4.25	5.3	2.93	2.85	6.14	3.09
Labor productivity - % growth rate	9.33	5.22	1.43***	7.55	6.3	1.62

Macro and competitiveness IMF 2011 data

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
GDP dev. from G7 -	-0.36	-1.99	1.19	-0.52	-1.90	1.14
% growth rate						
GDP - % growth rate	11.80	5.09	2.44***	9.84	6.04	2.57
Private consumption -	9.91	3.98	2.47**	7.91	5.04	2.55
% growth rate						
Investment private sect. -	14.76	6.61	5.17	17.16	2.65	5.26***
% growth rate						
Investment business sect. -	19.55	10.51	6.93	23.37	5.48	6.69**
% growth rate						
Total investment (incl. housing)- % growth rate	11.81	3.33	4.26**	12.46	0.94	4.26**
Exports - % growth rate	35.33	16.71	6.78***	28.96	20.42	6.90
Imports - % growth rate	-37.21	14.12	26.92*	-3.68	-18.39	26.17
Unemployment rate- ppt change	0.79	0.48	.81	-0.41	1.48	.71**

	Success	Unsuccess	St. err. of difference	Expansionary	Contractionary	St. err. of difference
Cumulative change						
Unit labour costs - % growth rate	11.86	7.89	4.18	5.72	13.99	3.83**
Relative unit labor costs in manuf. - % growth rate	-3.06	-1.88	4.9	-6.57	-1.31	4.65
Relative consumer price index- % growth rate	-3.06	-1.44	3.45	-5.44	-0.68	3.24
Export performance - % growth rate	6.48	2.18	3.35	2.70	6.80	3.24
Labor productivity - % growth rate	8.89	3.72	1.69***	6.69	4.66	1.83

Econometric analysis

$$\Delta Y_{it} = \sum_{j=1}^2 \alpha_j \Delta Y_{it-j} + \sum_{j=0}^2 \beta_j \Delta CAPB_{it-j}^{FA} + \lambda_i + \mu_t + \nu_{it}$$

$$\Delta Y_{it} = \sum_{j=1}^2 \alpha_j \Delta Y_{it-j} + \sum_{j=0}^2 \beta_j \Delta CAPB_{it-j}^{FA} + \sum_{j=0}^2 \beta_j \Delta CAPB_{it-j}^{NFA} + \lambda_i + \mu_t + \nu_{it}$$

Fiscal shocks and real GDP

	Fiscal Adjustments - Definition 1			Fiscal Adjustments – IMF (2011)		
Dependent variable: Real GDP growth	$\Delta\text{CAPB}<0$	$\Delta\text{G}<0$	$\Delta\text{T}>0$	$\Delta\text{CAPB}<0$	$\Delta\text{G}<0$	$\Delta\text{T}>0$
T	0.07 (0.86)	0.15* (1.71)	-0.12 (-1.00)	-0.33** (-3.15)	-0.096 (-0.56)	-0.64** (-3.49)
T+1	0.19* (1.64)	0.37** (2.74)	-0.24 (-1.19)	-0.63** (-3.89)	-0.177 (-0.69)	-1.35** (-4.11)
T+2	0.23 (1.48)	0.46** (2.57)	-0.34 (-1.28)	-0.51** (-2.73)	0.069 (0.24)	-1.6** (-3.69)
	682	682	682	482	482	482

	Fiscal Adjustments - Definition 1			Fiscal Adjustments – IMF (2011)		
Dependent variable: Real GDP growth	$\Delta\text{CAPB}<0$	$\Delta\text{G}<0$	$\Delta\text{T}>0$	$\Delta\text{CAPB}<0$	$\Delta\text{G}<0$	$\Delta\text{T}>0$
T	0.06 (0.79)	0.15* (1.74)	-0.17 (-1.43)	-0.36** (-3.51)	-0.08 (-0.49)	-0.72** (-4.08)
T+1	0.18 (1.49)	0.32** (2.44)	-0.33* (-1.70)	-0.68** (-4.25)	-0.19 (-0.77)	-1.51** (-4.82)
T+2	0.19 (1.28)	0.38** (2.23)	-0.41 (-1.60)	-0.55** (-2.96)	0.01 (0.06)	-1.81** (-4.35)
	682	682	682	482	482	482

Fiscal shocks and real GDP

```
. list t diff tstat if t>=1 & t<=`end';
```

```
+-----+
| t      diff      tstat |
+-----+
5. | 1  -.7916033  -3.462987 |
6. | 2  -1.736158  -4.22658  |
7. | 3  -1.968122  -4.086331 |
```

Shock to spending our sample

```
list t diff tstat if t>=1 & t<=`end';
```

```
+-----+
| t      diff      tstat |
+-----+
5. | 1   .0601053   .2919683 |
6. | 2   .693351   1.88076  |
7. | 3   .8027315   2.00874  |
```

Fiscal shock and the short-term interest rate

	Baseline specification				Augmented specification			
Dependent variable: Short-term interest rates	Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)		Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)	
	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$
T	-0.1	0.15	-0.18	0.53**	-0.11	0.15	-0.26	0.55**
	(-1.23)	(1.31)	(-1.11)	(2.71)	(-1.43)	(1.25)	(-1.58)	(2.88)
T+1	-0.11	0.29	-0.51*	0.8*	-0.11	0.31	-0.58**	0.88**
	(-0.72)	(1.22)	(-1.74)	(1.88)	(-0.74)	(1.30)	(-2.0)	(2.14)
T+2	-0.13	0.37	-0.86**	0.81	-0.14	0.39	-0.9**	0.95
	(-0.60)	(1.04)	(-2.29)	(1.27)	(-0.63)	(1.13)	(-2.44)	(1.53)

Fiscal shock and real GDP controlling for the short-term interest rate

	Baseline specification				Augmented specification			
Dependent variable: Real GDP growth	Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)		Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)	
	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$
T	0.14*	-0.04	-0.06	-0.47**	0.15*	-0.05	-0.04	-0.55**
	(1.69)	(-0.30)	(-0.34)	(-2.41)	(1.79)	(-0.44)	(-0.25)	(-2.93)
T+1	0.27**	-0.07	-0.21	-0.92**	0.24*	-0.17	-0.23	-1.1**
	(2.00)	(-0.31)	(-0.85)	(-2.51)	(1.86)	(-0.84)	(-0.93)	(-3.16)
T+2	0.4**	-0.16	-0.09	-1.1**	0.37**	-0.29	-0.11	-1.34**
	(2.22)	(-0.53)	(-0.30)	(-2.18)	(2.13)	(-1.08)	(-0.40)	(-2.82)

Fiscal shock and unit labour costs

	Baseline specification				Augmented specification			
Dependent variable % Δ ULC	Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)		Fiscal Adjustments - Definition 1		Fiscal Adjustments – IMF (2011)	
	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$	$\Delta G < 0$	$\Delta T > 0$
T	-0.27**	0.39**	-0.64**	0.33	-0.33**	0.4**	-0.64**	0.35
	(-2.02)	(2.04)	(-2.59)	(1.20)	(-2.50)	(2.22)	(-2.76)	(1.37)
T+1	-0.43**	0.57*	-1.07**	0.57	-0.48**	0.56*	-0.99**	0.59
	(-1.92)	(1.68)	(-2.79)	(1.12)	(-2.23)	(1.77)	(-2.74)	(1.23)
T+2	-0.37	0.75	-1.47**	0.52	-0.47	0.68	-1.28**	0.45
	(-1.22)	(1.63)	(-3.35)	(0.76)	(-1.61)	(1.55)	(-3.10)	(0.70)

Conclusions

- Fiscal policy mix very important...
 - fiscal adjustments implemented mainly by increasing taxes have been more likely to be associated with a decrease in growth and with an increase in public debt
 - fiscal adjustments implemented mainly by current (not capital) spending have been more likely to be associated with a stabilizations/increase in growth and with a permanent decrease in public debt
- ...particularly when they occurred in conjunction with reforms that deregulated product and labor markets and/or in more flexible economies
 - evidence that spending based fiscal adjustments reduced unit labor costs
- Monetary policy was important but evidence that some of the difference in the response of monetary policy was endogenous to the type of fiscal adjustment

To be done

- Debt reduction and growth - simultaneous estimation
- Other factors that can be important:
 - countries' characteristics (trust, corruption, bureaucracy, efficiency of justice system)
 - Budget rules, budget institutions, tax reforms
- Distributional effects
- Now and then - difference in initial conditions, room to raise T ? cut G ?
Cut regulation? Cut interest rates? devalue? Non linearities in taxes and spending? Output gaps? Interest rates at the zero lower bound and unconventional measures? Spillovers?

To be done

▪ Now and then

Difference in initial fiscal conditions:

room to raise T and cut G - non linearities in taxes and spending

Difference in initial macro conditions:

recessions/output gaps

Difference in monetary conditions:

Interest rates at the zero lower bound and unconventional measures. Monetary transmission mechanism working/not working. Credit crunch

International transmission

Spillovers? Is “all the world” implementing fiscal adjustments?