

# Fiscal multipliers in recessions and the costs of austerity for Greece

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## Motivation

- Effects of austerity hotly debated (frontloading vs. backloading)
- Discussion on regime dependence
- Wide variety in multiplier estimations (“multiplier morass”)

## Issue

- Identify stylized facts - based on quantifiable criteria
- Control for method-specific effects
- Derive underlying multipliers

## Contribution

- Meta regression analysis based on 98 studies (overwhelmingly mainstream journal), >1800 multiplier estimates
- Distinct effect of regime dependence for different fiscal impulses
- Apply underlying multipliers to identified fiscal measures in Greece

## Results

- Strong regime dependence, high multipliers in downturns for spending components
- No regime-dependence for taxes
- Frontloaded spending cuts extremely costly (GDP, unemp), almost self-defeating (debt, deficit)

# Multipliers - non-linear regime dependence

$m(\text{downswing}) \gg m(\text{upswing})$

- Low capacity utilization
- Hysteresis effects
- Monetary accommodation (zero lower bound / liquidity trap)  
→  $m_G \gg m_T$
- Credit- / liquidity-constraints of HH →  $m_G \gg m_T$

# Meta Analysis

## Papers included

- Journal publications and major working paper series
- Empirical papers only (VAR, SEE)
- Data-set contains 98 papers, 1882 observations
- multipliers + characteristics
  - regime
  - fiscal impulse
  - estimation technique
  - identification strategy
  - multiplier calculation
  - country openness (M/GDP)

Table 1 : List of variables for meta regression

variable	explanation	scale	obs
<i>economic regime</i>			
RAV	average or unspecified regime	dummy	1078
RUP	upswing regime	dummy	355
RLO	downswing or crisis regime	dummy	449
<i>fiscal impulse</i>			
SPEND	unspecified public spending	dummy	664
CONS	public consumption	dummy	524
INVEST	public investment	dummy	188
MILIT	public military spending	dummy	73
TAX	tax reliefs to private sector	dummy	318
TRANS	transfers to private sector	dummy	36
DEF	unspecified tax relief or spending increase	dummy	79
<i>model class and identification strategy</i>			
SEEIV	SEE with instrument variable approach	dummy	144
SEECA	SEE with prior cyclical adjustment of public budget	dummy	44
SEEWAR	SEE with war episodes approach	dummy	29
SEENAR	SEE with narrative record / action-based approach	dummy	56
VARWAR	VAR with war episodes approach	dummy	28
VARNAR	VAR with narrative record / action-based approach	dummy	32
VARRA	VAR with recursive approach	dummy	666
VARBP	VAR with Blanchard-Perotti approach	dummy	824
VARSR	VAR with sign restrictions approach	dummy	59
<i>further controls</i>			
PEAK	calculated as peak multiplier	dummy	450
CUM	calculated as cumulative multiplier	dummy	1432
HOR	horizon of the multiplier calculation	quarters	
M/GDP	import-to-GDP ratio of the surveyed country sample	percentage points	
LOGOBS	log of number of obs. used	continuous	

## Meta Regression Model

$$k_j = \kappa + Z_j\alpha + \delta_i + \varepsilon_j \quad j = 1, \dots, N \quad i = 1, \dots, M \quad (1)$$

- $k_j$  multiplier value of observation  $j$
- $\kappa$  “underlying” or “reference” multiplier value
- $Z_j$  vector of characteristics of observation  $j$ , coefficients  $\alpha$  (incl. interactions regime - fiscal impulse)
- $\delta_i$  the vector of 98 paper-specific dummies (study-level effect)

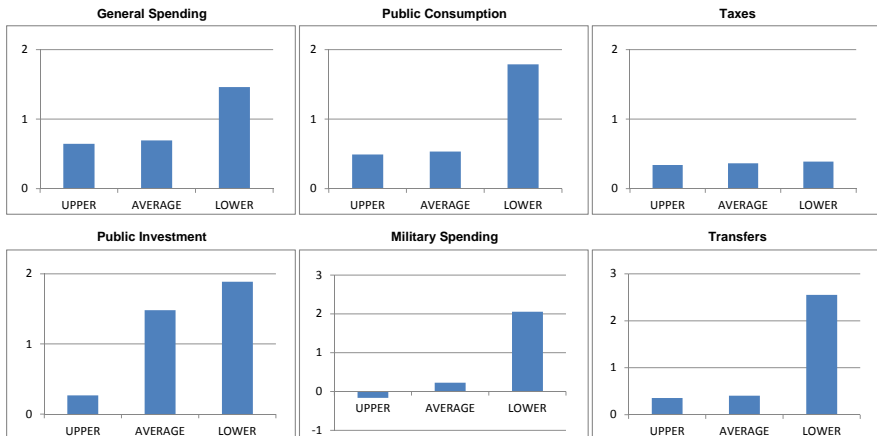
Table 2 : Total sample (Dep. Var.: multiplier)

	(1) base	(2) all	(3) no inter	(4) no dum	(5) cumulative
$\kappa$	<b>0.587(0.279)**</b>	0.406(0.155)**	0.636(0.33)*	0.697(0.091)***	0.717(0.221)***
<i>regime</i>					
RUP	-0.049(0.097)	-0.006(0.141)	-0.197(0.091)**	-0.166(0.083)**	0.005(0.093)
RLO	<b>0.769(0.143)***</b>	0.653(0.126)***	0.755(0.12)***	0.633(0.158)***	0.723(0.155)***
<i>fiscal impulse</i>					
CONS	-0.159(0.196)	0.312(0.238)	-0.122(0.171)	0.081(0.199)	-0.114(0.195)
INVEST	<b>0.788(0.263)***</b>	0.471(0.28)*	0.474(0.305)	0.704(0.28)**	0.728(0.233)***
MILIT	-0.467(0.328)	-0.678(0.358)*	-0.122(0.293)	-0.068(0.136)	-0.641(0.449)
TAX	<b>-0.328(0.126)***</b>	-0.297(0.131)**	-0.46(0.112)***	-0.368(0.106)***	-0.266(0.145)*
TRANS	-0.287(0.136)**	-0.348(0.234)	-0.239(0.154)	-0.443(0.212)**	-0.147(0.085)*
DEF	-0.087(0.086)	0.315(0.138)**	-0.176(0.089)**	-0.532(0.179)***	-0.071(0.093)
<i>interaction of impulse and regime</i>					
RUP*CONS	0.005(0.266)	-0.163(0.244)		-0.37(0.324)	-0.029(0.269)
RLO*CONS	0.484(0.248)*	0.024(0.233)		0.109(0.241)	0.51(0.249)**
RUP*INVEST	-1.166(0.25)***	-0.948(0.21)***		-1.061(0.278)***	-1.225(0.217)***
RLO*INVEST	-0.364(0.243)	-0.008(0.168)		-0.45(0.341)	-0.466(0.218)**
RUP*MILIT	-0.343(0.322)	-0.768(0.441)*		-0.834(0.203)***	-0.38(0.349)
RLO*MILIT	1.059(0.429)**	1.048(0.221)***		0.469(0.275)*	1.048(0.483)**
RUP*TAX	0.023(0.154)	0.037(0.198)		0.000(0.157)	-0.073(0.155)
RLO*TAX	<b>-0.744(0.235)***</b>	-0.664(0.224)***		-0.756(0.214)***	-0.753(0.255)***
RLO*TRANS	<b>1.378(0.138)***</b>	1.196(0.13)**		1.002(0.279)***	1.205(0.094)***
RUP*DEF	0.023(0.107)	1.03(0.234)**		-0.168(0.228)	
RLO*DEF	-0.677(0.15)***	-0.365(0.126)***		-0.495(0.438)	-0.563(0.16)***
<i>controls</i>					
...					
DF	1752	1709	1763	1849	1309
R <sup>2</sup>	0.394	0.448	0.350	0.269	0.383

standard errors in parantheses



Figure 1 : Mean Multipliers



# Effects of Austerity in Greece

## Assumptions

- LOWER regime multiplier estimates from Meta Study
- Corrected for higher Greek M/GDP ratio
- Consolidation effort:
  - Spending Side: ESA data
  - Revenue Side: AMECO Discretionary Fiscal Effort

Table 1b: Consolidation actions in Greece -  
 Cumulative revenue increases and expenditure cuts, % of 2009 GDP

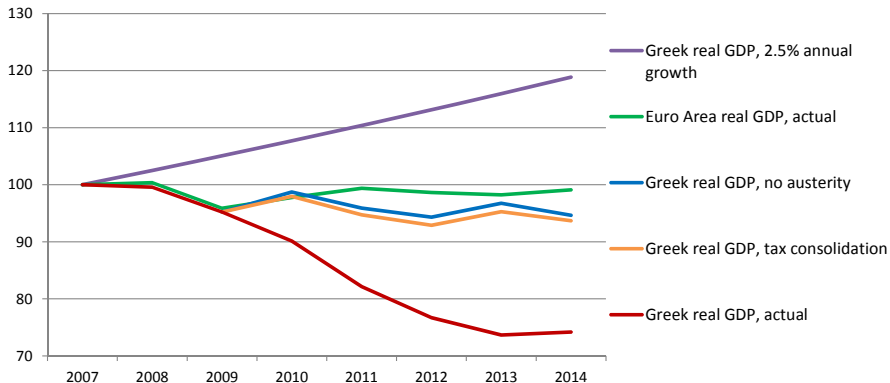
	2010	2011	2012	2013	2014
<b>Total revenue</b>	<b>4.2</b>	<b>8.2</b>	<b>10.5</b>	<b>11.8</b>	<b>12.3</b>
Transfers	0.8	0.9	1.6	3.2	2.9
Government consumption expenditure	2.3	4.4	5.8	7.3	7.4
Government gross fixed capital formation	1.6	2.5	2.7	2.5	1.9
<b>Total expenditure</b>	<b>4.7</b>	<b>7.9</b>	<b>10.1</b>	<b>13.1</b>	<b>12.2</b>
<b>All measures</b>	<b>8.9</b>	<b>16.1</b>	<b>20.6</b>	<b>24.9</b>	<b>24.5</b>

Source: AMECO, own calculations

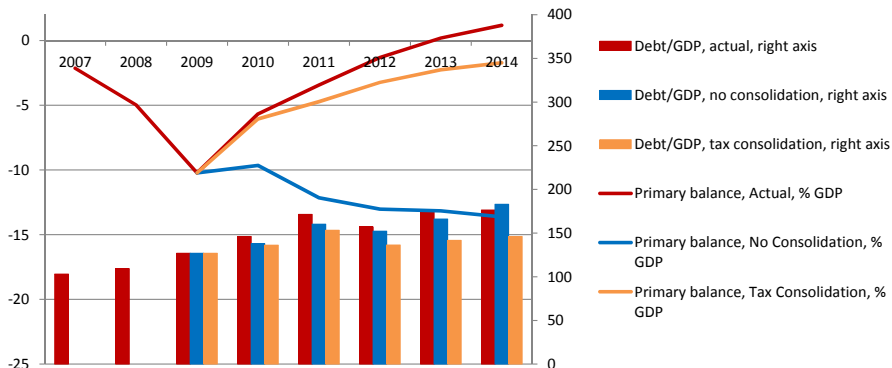
Table 2b: Estimated cumulative GDP effect  
 of Greece's fiscal consolidation, % of 2009 GDP

	2010	2011	2012	2013	2014
<b>Total Revenue</b>	<b>-0.8</b>	<b>-1.2</b>	<b>-1.5</b>	<b>-1.5</b>	<b>-1.0</b>
Transfers	-1.8	-2.2	-3.7	-7.4	-6.5
Government Consumption expenditure	-3.7	-6.9	-8.9	-11.2	-11.0
Government Gross fixed capital formation	-2.7	-4.2	-4.4	-4.1	-3.0
<b>Total expenditure</b>	<b>-8.2</b>	<b>-13.2</b>	<b>-17.0</b>	<b>-22.7</b>	<b>-20.5</b>
<b>All measures</b>	<b>-9.0</b>	<b>-14.5</b>	<b>-18.5</b>	<b>-24.2</b>	<b>-21.5</b>

Figure 2 : Greek real GDP at various scenarios, 2007=100



**Figure 3 :** Greek path of deficit and debt/GDP at various scenarios, % of GDP



## Backloading Scenario

- Same measures, but AVERAGE regime multipliers
- GDP loss only 5% → 80% of GDP loss due to frontloading
- Primary Budget +22pp (actual: +14pp)

## Conclusions

- Multipliers of spending impulses much higher in downturns
- Tax multipliers - no regime dependence
- Frontloaded spending cuts extremely harmful
- almost self-defeating in terms of debt, deficit
- Backloaded consolidation / tax-based less harmful, much more successful

Thank you very much!

## Contact

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