On the Effectiveness of Fiscal Devaluations: Evidence Using Bilateral Trade Balance Data

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Introduction

Euro introduction (EC, 2008):

→ macro-stability; low interest rates; no exchange rate risk

→ more cross-border trade and investment

→ record number of jobs created during the first decade of EMU.

… but also large trade imbalances within the European Union (especially Euro Area) during pre-crisis period.

Need to correct the imbalances without the possibility of nominal exchange rate adjustment.

Fiscal devaluation

Adjustment of nominal wages and prices takes time (reallocating resources from non-tradable to tradable sectors), especially with weak demand:

→ employment cuts often easier than full wage adjustment

→ increasing unemployment and adjustment through declines in imports much before a real depreciation of the exchange rate (IMF2012).

Speeding up the adjustment process through **fiscal devaluation (FD)**:

a budget-neutral shift from labor to consumption taxation.

How does FD work?

The **main form of FD** consists of cutting the employers' social security contributions (SCR) and raising the value added tax (VAT), with a neutral (ex ante) impact on government balance.

SCR cuts → lower labor costs and initially unchanged gross wages → lower prices of domestic producers; shift of demand to home country goods (in domestic and export markets).

VAT hike → higher consumer prices at home → lower consumption and imports.

In the **long run**: upward pressure on wages due to 1) higher labor demand at lower labor costs; 2) union demands after increase in consumer prices

→ The positive impact of lower labor costs declines, while domestic demand increases

→ The positive effect on trade balance gradually vanishes.

Different forms and effects of FD

Alternatively:

Cuts in personal income tax (PIT) or employees' social security contributions (SCE) financed through VAT hike – different expected effects.

PIT and SCE cuts do not initially reduce labor costs, but increase net wages for given labor costs → possibility for wage renegotiation, or new employment at lower labor costs (but same, or higher net wages).

Thus, smaller relative price and demand effects → smaller impact on trade balance expected.

Also, SCE are usually associated with personal rights (e.g. unemployment benefits or pensions) → possibly different reactions of economic agents to changes in SCE and PIT.

Related research

Theoretical reference: **Farhi et al. (2014)** – characterize conditions under which equivalent real allocation is achieved through FD and nominal exchange rate devaluation.

Many **simulation studies**: tax shift in amount of 1% of GDP results in trade balance improvements ranging between 0.1 and 0.6% of GDP.

Empirical research is very scarce. Possibly the most relevant empirical contribution (devotes more attention to econometric issues):

De Mooij and Keen (2013) – positive short-run impact of FD (of 1% of GDP in size) on trade balance in amount between 2.8 and 4% of GDP. Still, **remaining econometric problems (which we try to resolve)**:

1) endogeneity may not be completely resolved;
2) policy coordination not addressed.

Empirical approach

We apply the empirical model of De Mooij and Keen (2013) to 28 EU countries over the period 2000-2014 (unbalanced panel).

Bilateral trade balance data for each country and 5 largest EU trade partners, all variables defined as country-differentials → accounting for policy coincidence and obtaining more observations.

$$\Delta TB_{ij,t} = \lambda TB_{ij,t-1} + \beta_{D,VAT}\Delta VAT_{ij,t} + \beta_{L,VAT}VAT_{ij,t-1} + \beta_{D,SCR}\Delta SCR_{ij,t} + \beta_{L,SCR}SCR_{ij,t-1} + \beta'_{DX}\Delta X_{ij,t} + \beta'_{LX}X_{ij,t-1} + \alpha_{ij} + \gamma_t + u_{ij,t}.$$

$$FD_{SR} = \beta_{D,VAT} - \beta_{D,SCR};$$

$$FD_{LR} = -\left(\frac{\beta_{L,VAT} - \beta_{L,SCR}}{\lambda}\right).$$

Estimation

Tax variables as cyclically adjusted revenue shares in GDP – reduces potential endogeneity (from common shocks to TB and actual tax revenues) and accounts for differences and changes in tax base.

Other explanatory variables: real GDP growth; general government balance; other government revenues; dependency ratio; unemployment rate; (no real exchange rate).

Excluded instruments for tax variables: tax rates; public debt; EU and EMU.

We perform a number of statistical tests checking for under-identification of endogenous variables; validity of instruments; correct exclusion of excluded instruments; weak identification; whether endogenous variables can be treated as exogenous; whether exogenous variables are in fact exogenous.

Robustness checks with respect to model specification; sample heterogeneity; potentially influential observations; estimation technique; and specification of instruments.

Main results

Dependent variable: $\Delta TB_{ij,t}$	(1) Without time effects		(2) With time effects	
$TB_{ij,t-1}$	-0.35***	(0.07)	-0.35***	(0.07)
$\Delta VAT_{ij,t}$	0.14	(0.10)	0.10	(0.10)
$VAT_{ij,t-1}$	-0.16	(0.10)	-0.13	(0.10)
$\Delta SCR_{ij,t}$	-0.29*	(0.16)	-0.30*	(0.17)
$SCR_{ij,t-1}$	-0.13*	(0.07)	-0.14*	(0.07)
$\Delta GDPG_{ij,t}$	-0.01	(0.02)	-0.01	(0.02)
$GDPG_{ij,t-1}$	-0.01	(0.02)	-0.01	(0.02)
$\Delta GGB_{ij,t}$	0.00	(0.01)	0.00	(0.01)
$GGB_{ij,t-1}$	0.01	(0.01)	0.01	(0.01)
$\Delta GREV_{ij,t}$	0.00	(0.02)	-0.01	(0.02)
$GREV_{ij,t-1}$	0.01	(0.02)	0.01	(0.02)
$\Delta DEP_{ij,t}$	0.05	(0.07)	0.06	(0.07)
$DEP_{ij,t-1}$	0.01	(0.02)	0.01	(0.02)
$\Delta UR_{ij,t}$	0.05**	(0.02)	0.05**	(0.02)
$UR_{ij,t-1}$	0.02	(0.01)	0.01	(0.01)
Observations	1250		1250	
FD_{SR}	**0.44****		**0.40****	
FD_{LR}	**-0.08**		**0.03**	

Dependent variable: $\Delta TB_{ij,t}$	Sample without: Germany	France	Italy	UK	Outlier pairs	Outlier dummy
$TB_{ij,t-1}$	-0.40***	-0.36***	-0.31***	-0.36***	-0.30***	-0.33***
$\Delta VAT_{ij,t}$	0.16	0.10	0.01	0.28	0.16**	0.17**
$VAT_{ij,t-1}$	0.02	-0.10	-0.16*	-0.09	-0.06	-0.10
$\Delta SCR_{ij,t}$	-0.35*	-0.33*	-0.30	-0.30	-0.23	-0.29**
$SCR_{ij,t-1}$	-0.24***	-0.14*	-0.12	-0.12	-0.14**	-0.17***
$\Delta GDPG_{ij,t}$	0.00	-0.02	-0.02	0.00	0.00	0.00
$GDPG_{ij,t-1}$	0.01	-0.02	-0.04**	0.00	0.01	-0.01
$\Delta GGB_{ij,t}$	0.00	0.00	0.01	0.00	0.00	-0.00
$GGB_{ij,t-1}$	-0.01	0.01	0.01	0.00	0.00	0.00
$\Delta GREV_{ij,t}$	-0.01	-0.01	-0.03	-0.01	-0.03*	-0.02
$GREV_{ij,t-1}$	0.02	0.01	0.01	0.02	0.03*	0.02
$\Delta DEP_{ij,t}$	-0.13	0.07	0.10*	0.04	0.10**	0.07
$DEP_{ij,t-1}$	0.03	0.00	0.01	0.00	0.00	-0.01
$\Delta UR_{ij,t}$	0.07***	0.06**	0.04*	0.07***	0.04**	0.03**
$UR_{ij,t-1}$	0.01	0.02	0.00	0.01	0.00	0.00
Outlier dummy	-	-	-	-	-	3.29***
Observations	944	1018	1045	1043	1158	1250
FD_{SR}	**0.51*** **	**0.43** **	**0.31**	**0.59** **	**0.39*** **	**0.47*** **
FD_{LR}	**0.64***	**0.11**	**-0.11**	**0.09**	**0.27**	**0.23**

Other robustness checks

Defining the model in terms of separate variables for home and foreign country in country-pairs: results confirmed.

Euro area vs. non-euro area countries (as in De Mooij and Keen, 2013): results confirmed, no large differences found.

Adding nominal exchange rate variable: results confirmed, nominal ER not significant.

Using system GMM DPD estimator by Arellano and Bover (1995) and Blundell and Bond (1998): results largely confirmed for variables defined as country-differentials (at 10% level) and separately (at 5% level) in 2 out of 3 specifications (depending on the number of lags of used instruments).

System GMM with instruments specification as in De Mooij and Keen (2013): results confirmed in 2 out of 3 approaches (at 10% level), depending on the number of lags of used instruments.

Other forms of FD

Dependent variable: $\Delta TB_{ij,t}$	PIT		SCE	
$TB_{ij,t-1}$	-0.36***	(0.07)	-0.38***	(0.08)
$\Delta GDPG_{ij,t}$	-0.01	(0.02)	0.00	(0.02)
$GDPG_{ij,t-1}$	-0.01	(0.02)	0.00	(0.02)
$\Delta GGB_{ij,t}$	0.01	(0.01)	0.01	(0.01)
$GGB_{ij,t-1}$	0.01	(0.01)	0.02*	(0.01)
$\Delta GREV_{ij,t}$	-0.02	(0.02)	-0.03	(0.02)
$GREV_{ij,t-1}$	0.01	(0.02)	-0.01	(0.02)
$\Delta DEP_{ij,t}$	0.05	(0.07)	0.06	(0.07)
$DEP_{ij,t-1}$	0.01	(0.02)	0.00	(0.02)
$\Delta UR_{ij,t}$	0.04**	(0.02)	0.05**	(0.02)
$UR_{ij,t-1}$	0.00	(0.01)	0.01	(0.01)
$\Delta VAT_{ij,t}$	0.09	(0.10)	0.08	(0.12)
$VAT_{ij,t-1}$	-0.13	(0.10)	-0.18	(0.11)
$\Delta PIT_{ij,t}$	-0.13	(0.09)	-	
$PIT_{ij,t-1}$	0.05	(0.04)	-	
$\Delta SCE_{ij,t}$	-		0.04	(0.13)
$SCE_{ij,t-1}$	-		0.10	(0.14)
Observations	1288		1149	
FD_{SR}	**0.22***		**0.04**	
FD_{LR}	**-0.50****		**-0.75**	

Conclusions

- A tax shift from SCR to VAT in the amount of 1% of GDP leads to a short-run trade balance improvements ranging between 0.3% and 0.6% of GDP.
- The effect is of similar size for both, euro and non-euro area countries.
- Results are largely robust across subsamples.
- A tax shift from PIT to VAT has a (smaller) positive short-run impact, but negative in long-run.
- FD involving a reduction in SCE is not found to be significant.
- External adjustments in the crisis could have mostly been the result of import compression (demand decline due to increasing unemployment).
- The short-run impact of FD is smaller than in earlier econometric research, and corresponds to the results in most of the simulation studies.
- FD can be a useful short-run tool in speeding up external adjustments.