Is it the "How" or the "When" that Matters in Fiscal Adjustments?

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Question and data

- What is more important in fiscal adjustments ?
  - the **"How"**: composition, expenditure based *vs* tax based
  - or the **"When":** whether the consolidation is implemented during an economic expansion or a contraction
  - one at a time: if they are not orthogonal you could attribute to one effects produced by the other
- Data: 16 OECD countries, 1978-2014
- We study fiscal consolidations: this paper has nothing to say about fiscal expansions

Main findings

- fiscal adjustments mostly based on spending cuts much less costly than those based on tax increases, regardless of the state of the cycle at the start of the consolidation
- the dynamic response of the economy to a consolidation program does depend on whether this is adopted in a period of economic expansion or contraction, but the quantitative significance of this source of non-linearity is small relative to the one which depends on the type of consolidation
- these results do not appear to be driven by the response of monetary policy: thus they should survive at the ZLB
  - however the response of monetary policy appears to dampen the recessionary effects of tax-based consolidations implemented during a recession (relevant to understand the recessionary effects of "European Austerity", mostly tax based and implemented within a currency union)

Three ingredients

- Shifts in fiscal variables: narratively identified and organized into **plans**
- We allow for **two non-linearities**
  - composition of the plan (EB vs TB) (the "How")
  - state of the cycle when the consolidation is implemented (the "When")
- We simulate the effects of a fiscal consolidation allowing for a **two-way feedback**
  - the response of the economy to the fiscal plan depends on the state of the economy when the plan is launched
  - the state of the economy changes as output responds to the shift in fiscal variables

▸ (Selected) Related literature

The "How": multi-year plans

- Real-world fiscal adjustments rarely correspond to isolated fiscal "shocks"
- An adjustment adopted by Parliament in a year – say year t – consist of three components
  - unexpected shifts in fiscal variables (announced upon implementation at time t)
  - shifts implemented at time t that had been announced in previous years
  - future announced corrections (announced at time t for implementation in future years)
    - Persistent *vs* Partially Reverting plans
- Anticipations are an intrinsic element of plans and cannot be assumed orthogonal to unanticipated corrections (Leeper et al 2012, Ramey 2009)
- Corrections in T and G are correlated
  - analyzing isolated shocks when fiscal policy is conducted through plans thus only captures the effect of the components of the change in taxes and spending that are orthogonal to each other

An example of persistent plans

The multi-year plan introduced in **Belgium** (and then revised) in 1992 (% of GDP)

year	τ_t^u	$\tau_{t-1,t}^a$	$\tau_{t,t+1}^a$	$\tau_{t,t+2}^a$	$\tau_{t,t+3}^a$	g_t^u	$g_{t-1,t}^a$	$g_{t,t+1}^a$	$g_{t,t+2}^a$	$g_{t,t+3}^a$
1992	1.03	0	0.05	0	0	0.82	0	0.42	0	0
1993	0.40	0.05	0.55	0	0	0.12	0.42	0.28	0	0
1994	0	0.55	0	0	0	0.38	0.28	0	0	0

An example of partially reverting plans

Stabilization plans in Italy: 1991-1993 (% of GDP)

year	τ_t^u	$\tau_{t-1,t}^a$	$\tau_{t,t+1}^a$	$\tau_{t,t+2}^a$	$\tau_{it,t+3}^a$	g_t^u	$g_{t-1,t}^a$	$g_{t,t+1}^a$	$g_{t,t+2}^a$	$g_{t,t+3}^a$	**TB**	**EB**
1991	1.69	0	-1.26	0	0	1.08	0	0	0	0	**0**	**1**
1992	2.85	-1.26	-1.2	0	0	1.92	0	0	0	0	**0**	**1**
1993	3.2	-1.2	-0.57	0	0	3.12	0	0	0	0	**0**	**1**

Reconstructing plans

- A fiscal adjustment occurring in year t, e_t, has 3 components (consider plans with a forward horizon of 1 year)

$$e_t : \left\{ e_t^u,\ e_{t-1,t}^a,\ e_{t,t+1}^a \right\}$$

$$e_t^u : \left\{ \tau_t^u,\ g_t^u \right\} \quad e_{t-1,t}^a : \left\{ \tau_{t-1,t}^a,\ g_{t-1,t}^a \right\} \quad e_{t,t+1}^a : \left\{ \tau_{t,t+1}^a,\ g_{t,t+1}^a \right\}$$

- e_t^u: unexpected shifts in fiscal variables (announced upon implementation at time t)
- $e_{t-1,t}^a$: shifts implemented at time t that had been **announced** in previous years
- $e_{t,t+1}^a$: future announced corrections (announced at time t for implementation in future years)

▸ Isolated shocks

Plans vs the existing literature

$$e_t : \left\{ e^u_t,\ e^a_{t-i,t},\ e^a_{t,t+i} \right\}$$

$$e^u_t : \left\{ \tau^u_t,\ g^u_t \right\} \quad e^a_{t-i,t} : \left\{ \tau^a_{t-i,t},\ g^a_{t-i,t} \right\} \quad e^a_{t,t+i} : \left\{ \tau^a_{t,t+i},\ g^a_{t,t+i} \right\}$$

Romer and Romer (2010)

$$e^{R\&R}_t = \tau^u_t + \tau^a_{t,t+i}$$

Mertens and Ravn (2011)

$$e^{M\&R}_t = \left\{ \tau^u_t,\ \tau^a_{t,t+i} \right\}$$

IMF (2011), Jordà and Taylor (2013)

$$e^{IMF}_t = e^u_t + e^a_{t-i,t}$$

$\Rightarrow$ i.e. e^{IMF}_t is predictable

▸ Estimating and simulating plans

The "When": the state of the economy when the consolidation takes place

- To describe the state of the economy you don't want to use the state at time t, when the change in fiscal policy occurs as this might be affected by the policy shift

- We use a logistic function which predicts the state of the economy at time t based on past output growth

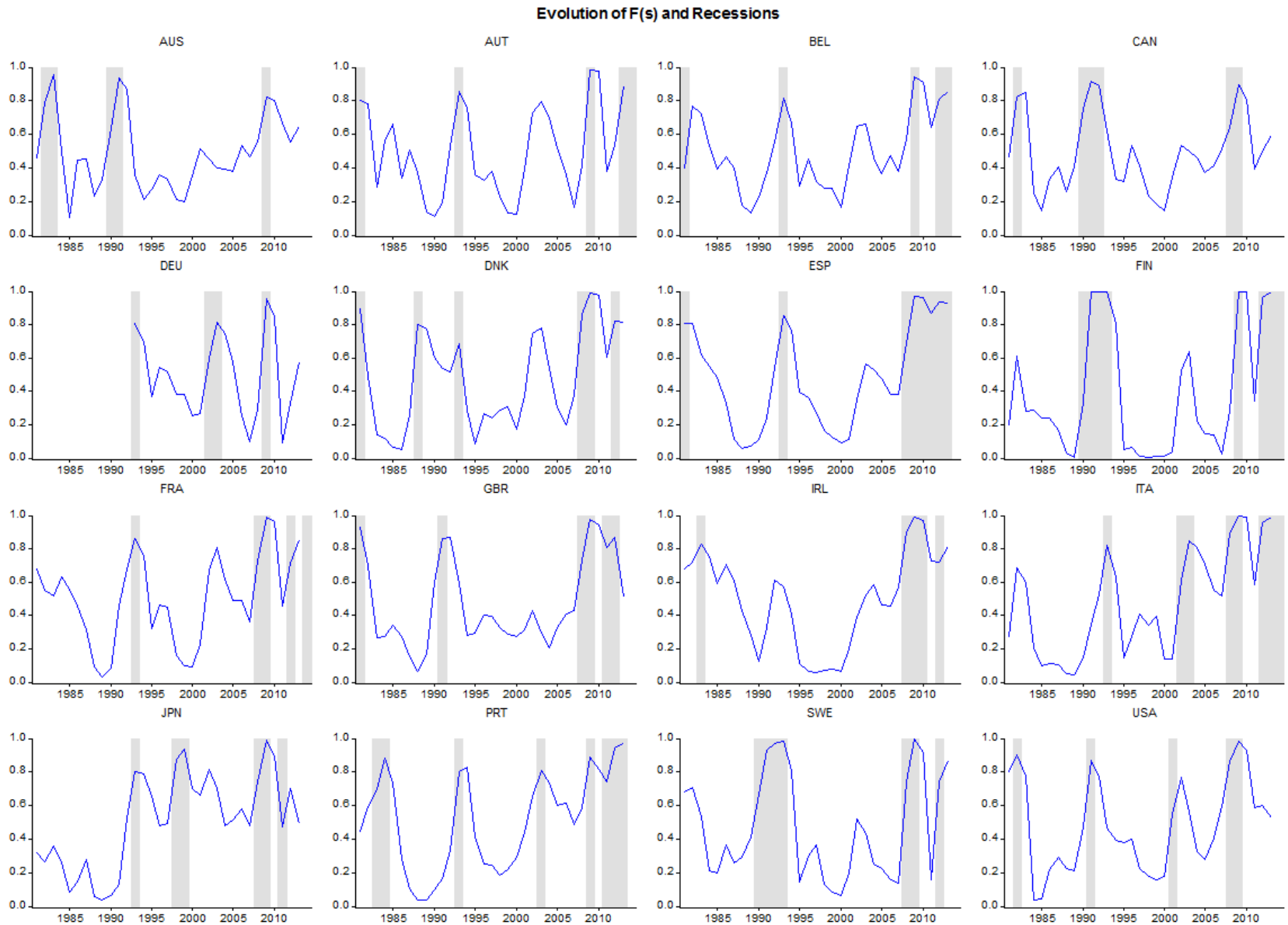
$$
\begin{aligned}
F(s_{i,t}) &= \frac{\exp(-\gamma_i s_{i,t})}{1+\exp(-\gamma_i s_{i,t})}, \quad \gamma_i > 0, \\
s_{i,t} &= (\mu_{i,t} - E(\mu_{i,t})) / \sigma(\mu_{i,t}) \\
\mu_{i,t} &= \frac{\Delta y_{i,t-1} + \Delta y_{i,t-2}}{2}
\end{aligned}
$$

Calibration of gamma

- γ_i is calibrated so that country i spends x_i per cent of time in a recessionary regime (defined as $F(s_t) > 0.8$
- x_i is the ratio of the number of years of negative GDP growth for country i to the total number of years in the sample, 1979-2014

▸ More details on the calibration

$F(s_{i,t})$ and years of recession (years negative per capita output growth, shaded areas), 1981-2013.



A model with two sources of non-linearity

$$
\begin{aligned}
\Delta y_{i,t} &= (1 - F(s_{i,t}))A_1^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_1^R(L)\,\mathbf{z}_{i,t-1} + \\
&\begin{bmatrix} 1 - F(s_{i,t}) \\ F(s_{i,t}) \end{bmatrix}' \begin{bmatrix} \mathbf{a}'\mathbf{e}_{i,t} & \mathbf{b}'\mathbf{e}_{i,t} \\ \mathbf{c}'\mathbf{e}_{i,t} & \mathbf{d}'\mathbf{e}_{i,t} \end{bmatrix} \begin{bmatrix} TB_{i,t} \\ EB_{i,t} \end{bmatrix} \\
&+\lambda_{1,i} + \chi_{1,t} + u_{1,i,t}
\end{aligned}
$$

$$
\begin{aligned}
\Delta g_{i,t} &= (1 - F(s_{i,t}))A_2^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_2^R(L)\,\mathbf{z}_{i,t-1} + \\
&+\beta_{21} g^u_{i,t} + \beta_{22} g^a_{i,t-1,t} + \lambda_{2,i} + \chi_{2,t} + u_{2,i,t}
\end{aligned}
$$

$$
\begin{aligned}
\Delta \tau_{i,t} &= (1 - F(s_{i,t}))A_3^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_3^R(L)\,\mathbf{z}_{i,t-1} + \\
&+\beta_{31} \tau^u_{i,t} + \beta_{32} \tau^a_{i,t-1,t} + \lambda_{3,i} + \chi_{3,t} + u_{3,i,t}
\end{aligned}
$$

$$
F(s_{i,t}) = F(y_{i,t-1},\ y_{i,t-2})
$$

A model with two sources of non-linearity

- $F(s)$ responds to shifts in fiscal policy and changes as a plan evolves
- The nature of the regime (TB, EB) is known upon announcement of the plan and does not change unless the plan is amended

▸ Auxiliary regressions

Data and narrative identification

- Starting point: exogenous fiscal consolidations identified by Devries&al (IMF 2011) using the Romer&Romer (2010) methodology
- 17 OECD countries, 1978-2009 (we only use 16 - we drop the Netherlands)
- Consolidation episodes are classified as exogenous if
  - geared towards reducing an inherited budget deficit, a long run trend of it (e.g pensions, aging) or the inherited level of debt
- Adjustments motivated by short-run countercyclical concerns are excluded on the argument that they are endogenous in the estimation of their effect on output
- Individual shifts in fiscal variables identified à la R&R: Budget Reports, EU Stability Programs, IMF Reports, OECD Surveys, etc.
  - both shifts in G and T (general government except US, CAN, AUS)
    - shifts in G : relative to projections (as in the "Sequester")
    - shifts in T: estimated revenue effect (as in R&R)
  - unanticipated and anticipated shifts in G and T
    - 216 episodes of shifts in G or T (unanticipated and anticipated)

Constructing plans and extending the data

- We go back to the original Devries&al sources and
  - separate out unanticipated, anticipated and implemented (but previously announced) shifts in taxes and spending
  - organize the data into plans
  - extend the data and construct plans that cover the period 2010-2014
  - while doing this we double check the Devries&al identification
    - e.g. drop the Netherlands and a few other observations: Dutch government sets fiscal targets which can later be changed based on the cycle
- Data and plans available on Igier website

Labelling of plans

	TB	EB		TB	EB
AUS	3	4	FRA	3	7
AUT	1	3	GBR	4	6
BEL	4	11	IRL	6	8
CAN	3	16	ITA	6	12
DEU	3	6	JPN	3	5
DNK	3	5	PRT	4	7
ESP	8	7	SWE	0	5
FIN	2	7	USA	4	4
Total TB:	57		Total EB:	113	

The composition of plans

	Share of Main Component			
Type of Plan	≥ 0.75	< 0.75	< 0.65	< 0.55
TB (57 plans)	30	27	19	9
EB (113 plans)	55	58	33	7
Total Plans: 170				

Plans' Size and Length

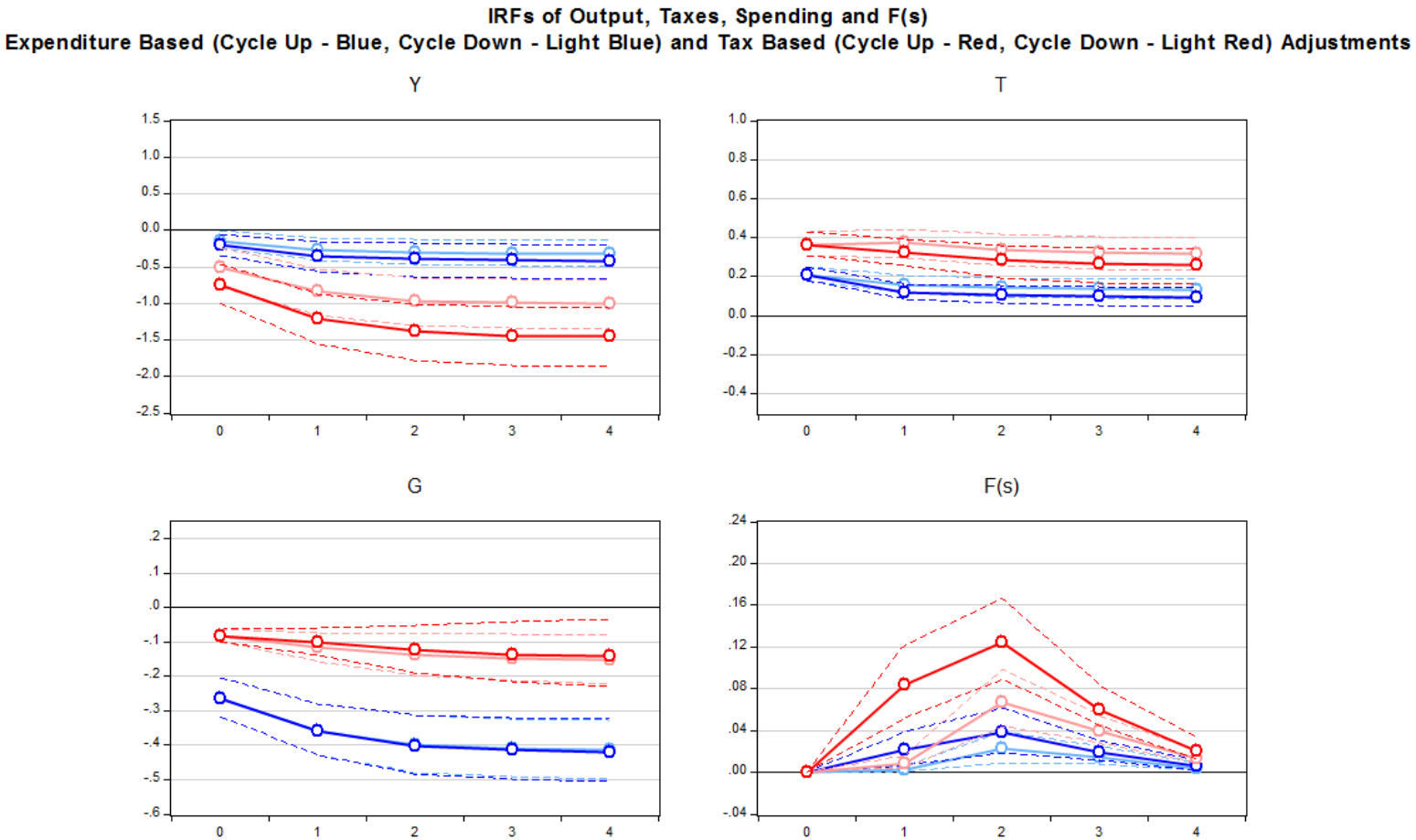
	Horizon of plans in years							Size of plans (% GDP)		
Type of Plan	0	1	2	3	4	5	Average	Total	Spending	Taxes
TB	16	20	6	7	7	1	1.51	1.60	0.49	1.10
EB	26	41	7	14	9	16	1.88	1.94	1.46	0.48
All Plans	42	61	13	21	16	17	1.76	1.83	1.14	0.69

Fiscal adjustments and the state of the economy

	$F(s_{i,t})$	
Type of Plan	< 0.2	> 0.8
TB (57 plans)	5%	38%
EB (113 plans)	9%	35%

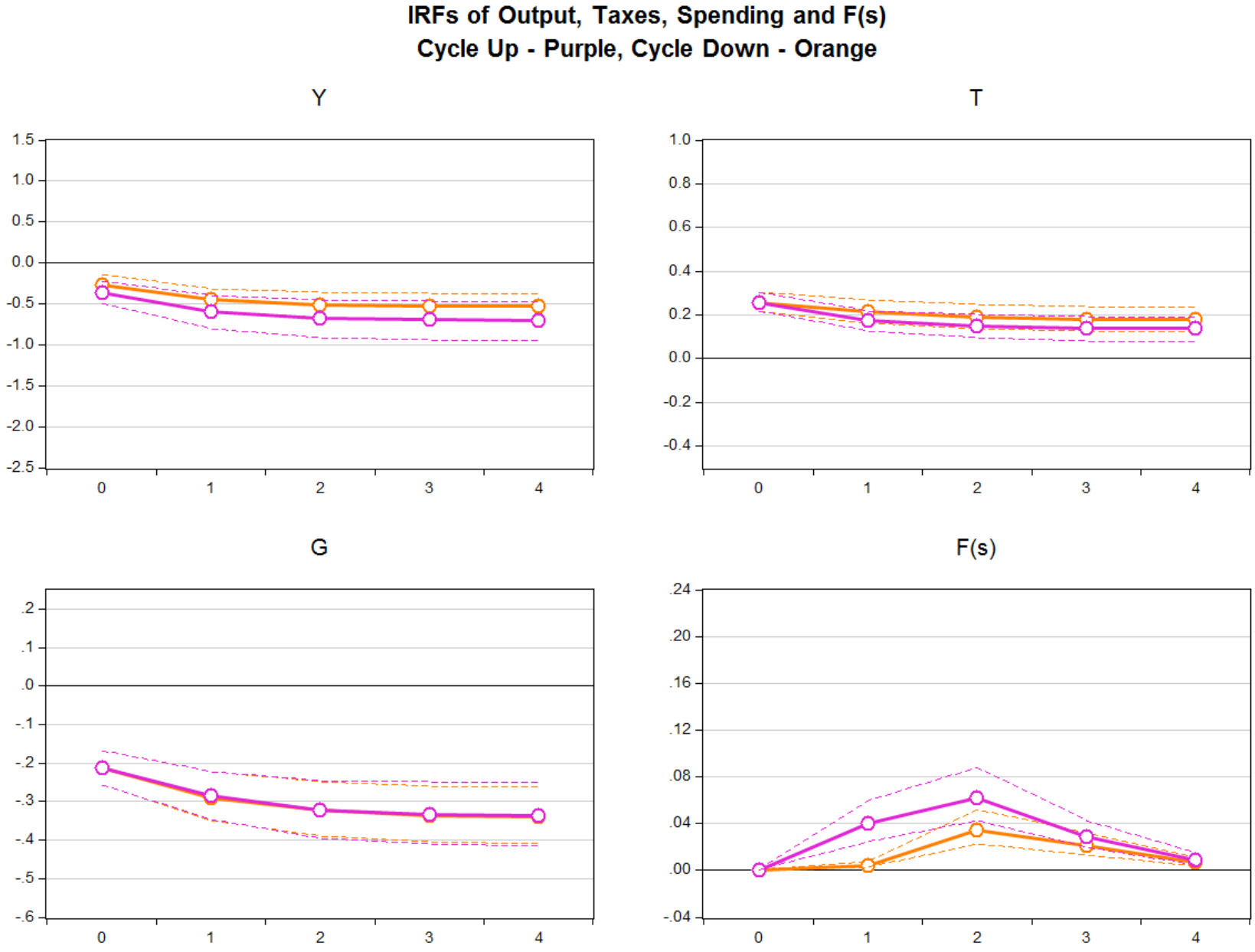
▸ Predictability ▸ Why a VAR

Both sources of non-linearity: EB -TB plans and state of the cycle (unrestricted model)

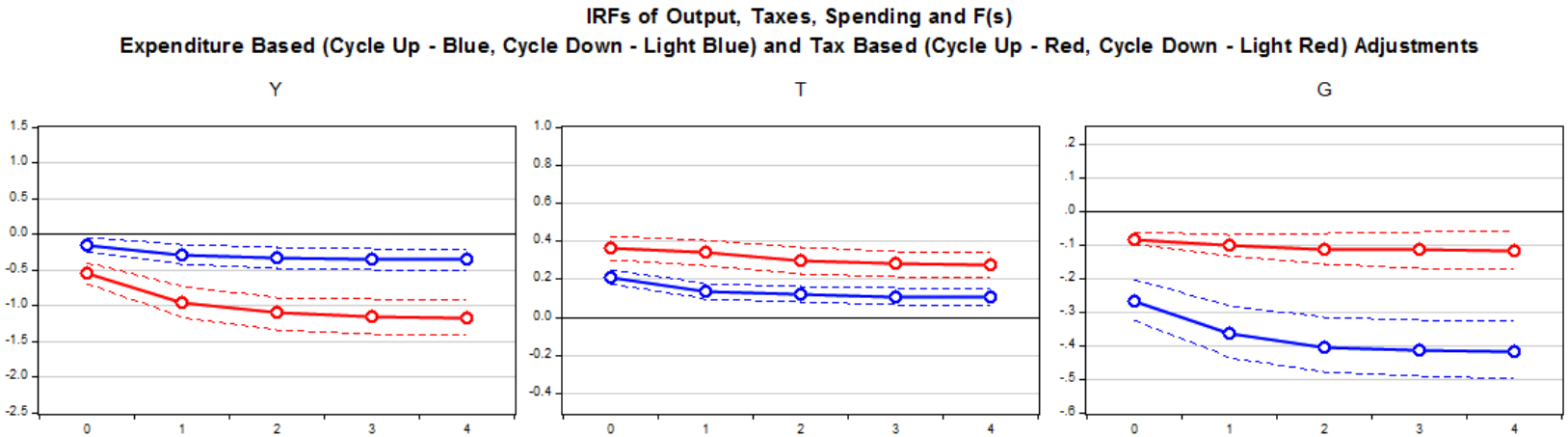


▸ Limiting state dependence to the autoregressive part

Heterogeneity between states of the cycle only

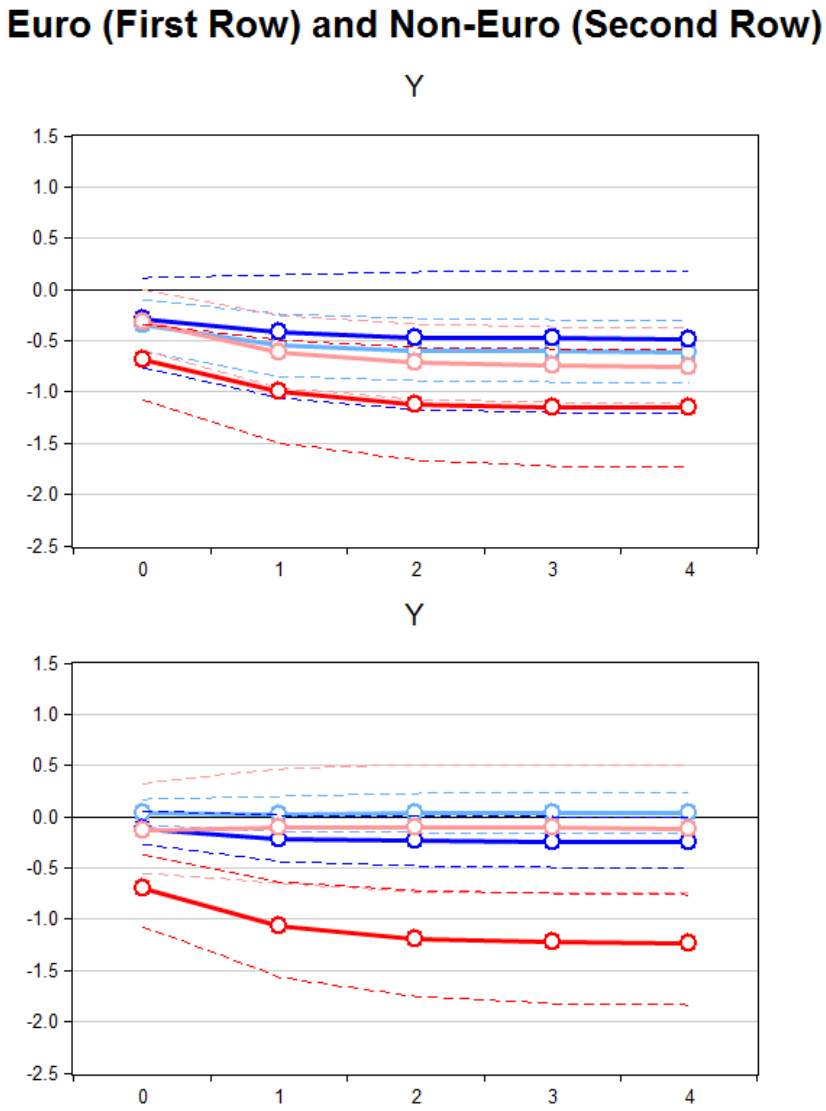


Heterogeneity between EB and TB plans only

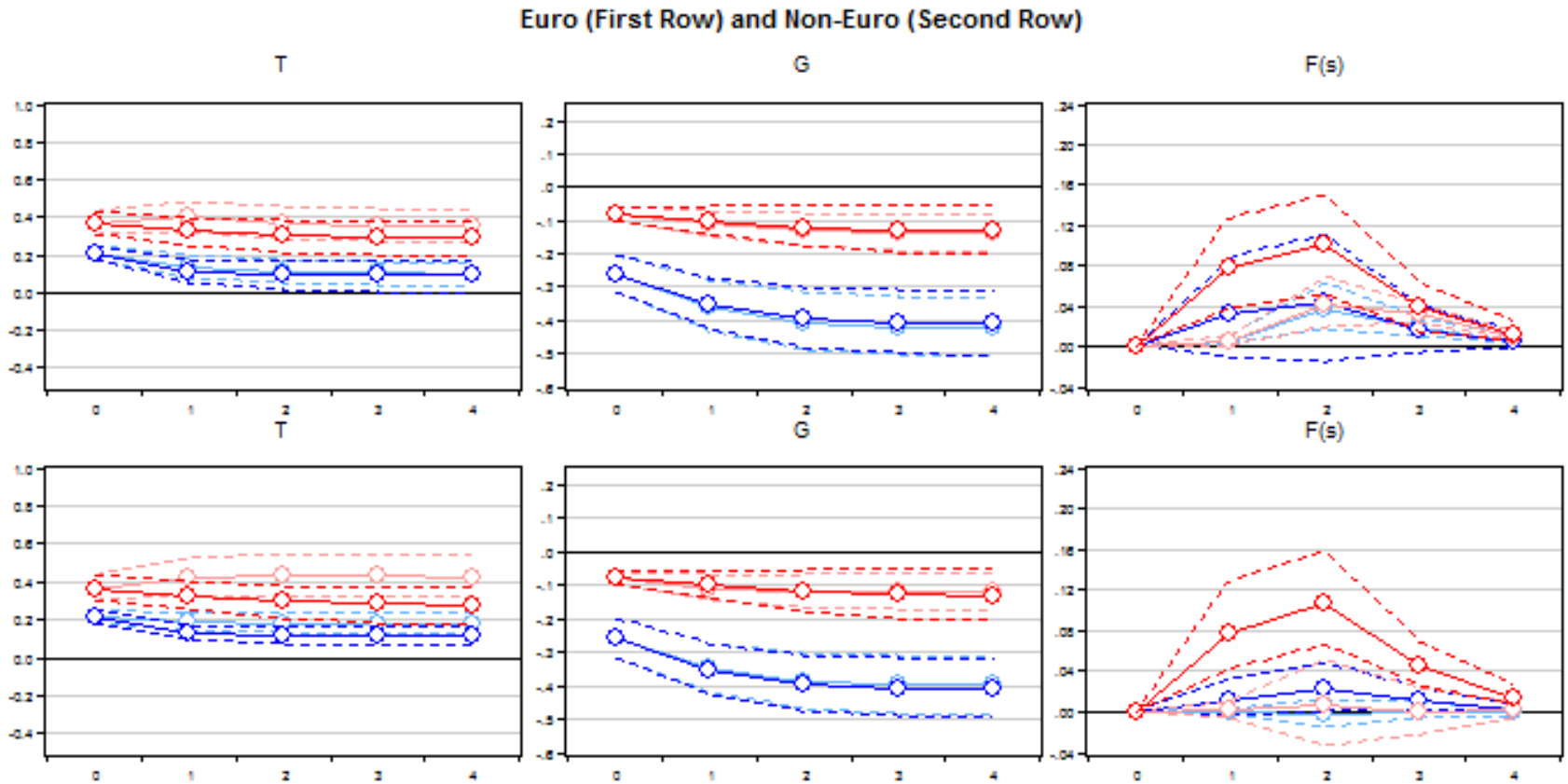


▸ Testable restrictions

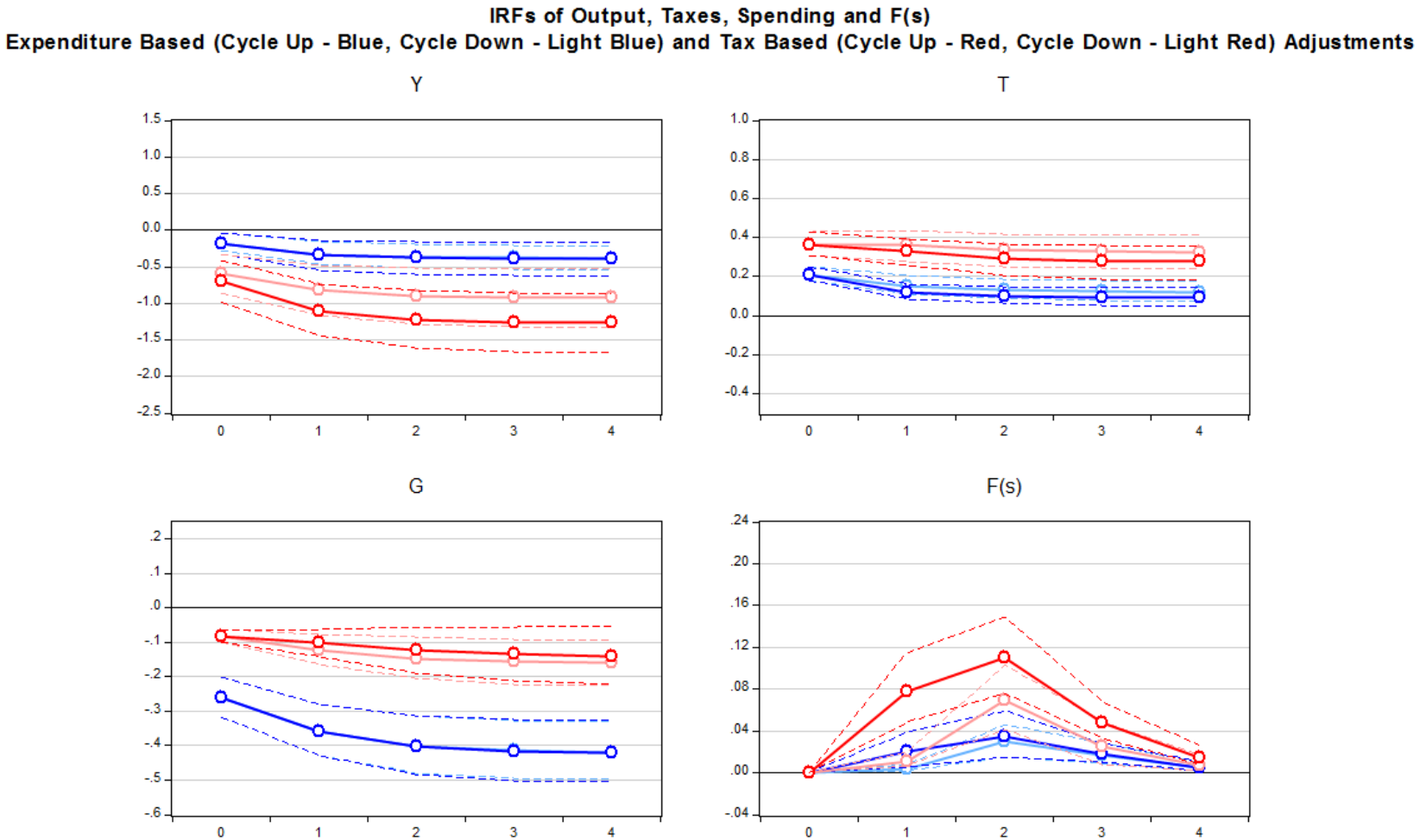
Fiscal policy when monetary policy does not respond: Euro vs. non-Euro (unrestricted model)



Fiscal policy when monetary policy does not respond: Euro vs. non-Euro (unrestricted model)



Fiscal policy when monetary policy does not respond: excluding episodes at the ZLB (unrestricted model)



Conclusions

- what matters most is composition
- the dynamic response of the economy to a consolidation program does depend on whether this is adopted in a period of economic expansion or contraction, but the quantitative significance of this source of non-linearity is small relative to the one which depends on the type of consolidation
- The role of the ZLB is more difficult to assess in our sample. Our (admittedly not conclusive) evidence does not point towards a large difference between episodes at or away from the ZLB, or more generally when monetary policy cannot react to a fiscal adjustment in a monetary union
  - however the response of monetary policy appears to dampen the recessionary effects of tax-based consolidations implemented during a recession

(Selected) related literature

- Auerbach and Gorodnichenko 2012, 2014 study spending multipliers
  - US data: regime switching VAR with smooth transitions across states; IRFs computed *assuming that the regime prevailing when the shift in fiscal policy occurs never changes*
    - GDP multiplier of government purchases is larger in recessions
  - OECD data: analyzed using Jordà's 2005 local projections method
    - find larger spending multipliers in recessions

- Ramey and Zubairy 2014, 2015, also study spending multipliers
  - US and Canadian data: compute regime-dependent multipliers using the linear projections method (Jordà 2005): find no evidence that multipliers are different in recessions *vs* expansions or at the ZLB

- Alesina, Favero and Giavazzi 2015, effects of a fiscal consolidation depend on the composition of the adjustment, Taxes *vs.* Spending

- Other interesting sources of non linearity: e.g. the level of debt (Huidrom et al, World Bank, 2016)

◂ Back

Analyzing isolated shocks when fiscal policy is conducted through plans

- Suppose the data generating process is

$$y_t = \alpha + \beta_1 e_t^u + \beta_2 e_{t,t+1}^a + \beta_3 e_{t-1,t}^a + \epsilon_t$$
$$e_{t,t+1}^a = \varphi e_t^u + v_t$$

- If you overlook plans and estimate

$$y_t = \alpha + \beta e_t^u + \zeta_t$$

$$p\lim(\beta_{OLS}) = (\beta_1 + \varphi\beta_2)$$

- β_{OLS} captures the inter-temporal dimension of the plan, not only the effect of the innovation e_t^u

Analyzing isolated shocks when fiscal policy is conducted through plans (cont.)

- Suppose the data generating process is

$$y_t = \alpha + \beta_1 e_t^u + \beta_2 e_{t,t+1}^a + \beta_3 e_{t-1,t}^a + \epsilon_t$$
$$e_{t,t+1}^a = \varphi e_t^u + v_t$$

- You estimate

$$y_t = \alpha + \beta_1 e_t^u + \beta_2 e_{t,t+1}^a + \zeta_t$$
$$p\lim\left(\beta_{1OLS}\right) = \beta_1$$
$$p\lim\left(\beta_{2OLS}\right) = \beta_2$$

- Using β_{1OLS} to simulate the output effect of an innovation e_t^u would be wrong: $\frac{dy_t}{de_t^u} = \beta_1 + \beta_2\varphi$ and φ cannot be set to 0 in simulation

Overlooking the correlation between shifts in G and T

- Suppose the data generating process is

$$y_t = \beta_1 \tau_t + \beta_2 g_t + \epsilon_t$$
$$g_t = \varphi \tau_t + v_t$$

- You estimate

$$y_t = \alpha + \beta \tau_t + \zeta_t$$
$$p\lim(\beta_{OLS}) = (\beta_1 + \varphi \beta_2)$$

- It would be wrong to interpret β_{OLS} as the effect of (e.g.) a tax cut: it is the effect of a tax cut paired with a coordinated change in g

Overlooking the correlation between shifts in G and T (cont.)

- Suppose the data generating process is

$$y_t = \beta_1 \tau_t + \beta_2 g_t + \epsilon_t$$
$$g_t = \varphi \tau_t + v_t$$

- You estimate

$$y_t = \alpha + \beta_1 \tau_t + \beta_2 g_t + \zeta_t$$
$$p\lim\left(\beta_{1OLS}\right) = \beta_1$$
$$p\lim\left(\beta_{2OLS}\right) = \beta_2$$

- Using β_{1OLS} to simulate the output effect of an innovation e_t^u would be wrong: $\frac{dy_t}{d\tau_t} = \beta_1 + \beta_2\varphi$ and φ cannot be set to 0 in simulation

◂ Back

Estimating and simulating plans

- Estimation

$$\Delta y_{t,} = \alpha + \beta_1 e_t^u * TB_t + \beta_2 e_{t,t+1}^a * TB_t + \beta_3 e_{t-1,t}^a * TB_t$$
$$\gamma_1 e_t^u * EB_t + \gamma_2 e_{t,t+1}^a * EB_t + \gamma_3 e_{t-1,t}^a * EB_t + \epsilon_t$$

- Simulation
  - need to keep track of the correlation between "news innovations" and "current innovations"

$$e_{t,t+1}^a = \varphi_1 e_t^u * TB_t + \varphi_2 e_t^u * EB_t + v_{t,t+1}$$
$$where \quad e_t^u = \tau_t^u + g_t^u$$

- $\varphi's$ can be plan-specific, as here, or country-specific

- Since TB and EB are mutually exclusive ($when \quad TB = 0, \quad EB = 1$)
  - $\frac{dy_t}{de_t^u * TB_t} = \beta_1 + \beta_2 \varphi_1, \quad \frac{dy_t}{de_t^u * EB_t} = \gamma_1 + \gamma_2 \varphi_2$
    - you could not compute $\frac{dy_t}{d\tau_t^u} \Big|_{g^u}$ *or* $\frac{dy_t}{dg_t^u} \Big|_{\tau^u}$

◂ Back

Calibration of gamma

- γ_i is calibrated so that country i spends x_i per cent of time in a recessionary regime
  - x_i is the ratio of the number of years of negative GDP growth for country i to the total number of years in the sample, 1979-2014
- We define an economy to be in a recession if $F(s_t) > 0.8$
  - as in Auerbach and Gorodnichenko 2012, 2014
- For example, since x_i for the US is 17%, in order to have $Pr(F(s_{US,t}) > 0.8) = 0.17$ we need to set $\gamma_{US} = 1.56$
  - this probability also matches the duration of US recessions according to NBER business cycle dates (21 percent of the time since 1946)

Back

Auxiliary regressions

$$
\begin{aligned}
\tau^u_{i,t} &= \delta_0^{TB} e^u_{i,t} * TB_{i,t} + \delta_0^{EB} e^u_{i,t} * EB_{i,t} + \epsilon_{0,i,t} \\
g^u_{i,t} &= \vartheta_0^{TB} e^u_{i,t} * TB_{i,t} + \vartheta_0^{EB} e^u_{i,t} * EB_{i,t} + \upsilon_{0,i,t} \\
\tau^a_{i,t,t+j} &= \delta_j^{TB} e^u_{i,t} * TB_{i,t} + \delta_j^{EB} e^u_{i,t} * EB_{i,t} + \epsilon_{j,i,t} \quad j = 1, 2 \\
g^a_{i,t,t+j} &= \vartheta_j^{TB} e^u_{i,t} * TB_{i,t} + \vartheta_j^{EB} e^u_{i,t} * EB_{i,t} + \upsilon_{j,i,t} \quad j = 1, 2
\end{aligned}
$$

$$
e^a_{i,t+j} = g^a_{i,t+j} + \tau^a_{i,t+j}
$$

δ_0^{TB}	δ_1^{TB}	δ_2^{TB}	δ_0^{EB}	δ_1^{EB}	δ_2^{EB}
0.7823	0.1552	0.0170	0.3918	−0.0415	0.0072
(0.0175)	(0.0278)	(0.0099)	(0.0104)	(0.0165)	(0.0059)

ϑ_0^{TB}	ϑ_1^{TB}	ϑ_2^{TB}	ϑ_0^{EB}	ϑ_1^{EB}	ϑ_2^{EB}
0.2177	0.1290	0.0305	0.6082	0.1590	0.0364
(0.0175)	(0.0315)	(0.0152)	(0.0104)	(0.0187)	(0.0091)

◂ Back

Predictability of narratively identified e^u_{it}: timing vs size and composition

- If transformed into a 0/1 dummy, the narratively identified e^u_t appear to be predictable by past economic developments
  - there are two sources of identification of narrative adjustments: the *timing* of a fiscal correction and its *size and composition*
  - transforming fiscal adjustments into a 0/1 dummy neglects size and composition as a source of identification
- Run these two regressions
  - $e^u_t = \beta_1 I^u_t + \varepsilon_t$ $R^2 = 0.42$
  - $\sum e^a_{t,t+j} = \beta_2 I^a_t + \eta_t$ $R^2 = 0.27$
- Fiscal policy is different from a medical treatment in which a group of patients are given the same dose of a medicine: if it wasn't, the above regression would produce an R^2 of 1

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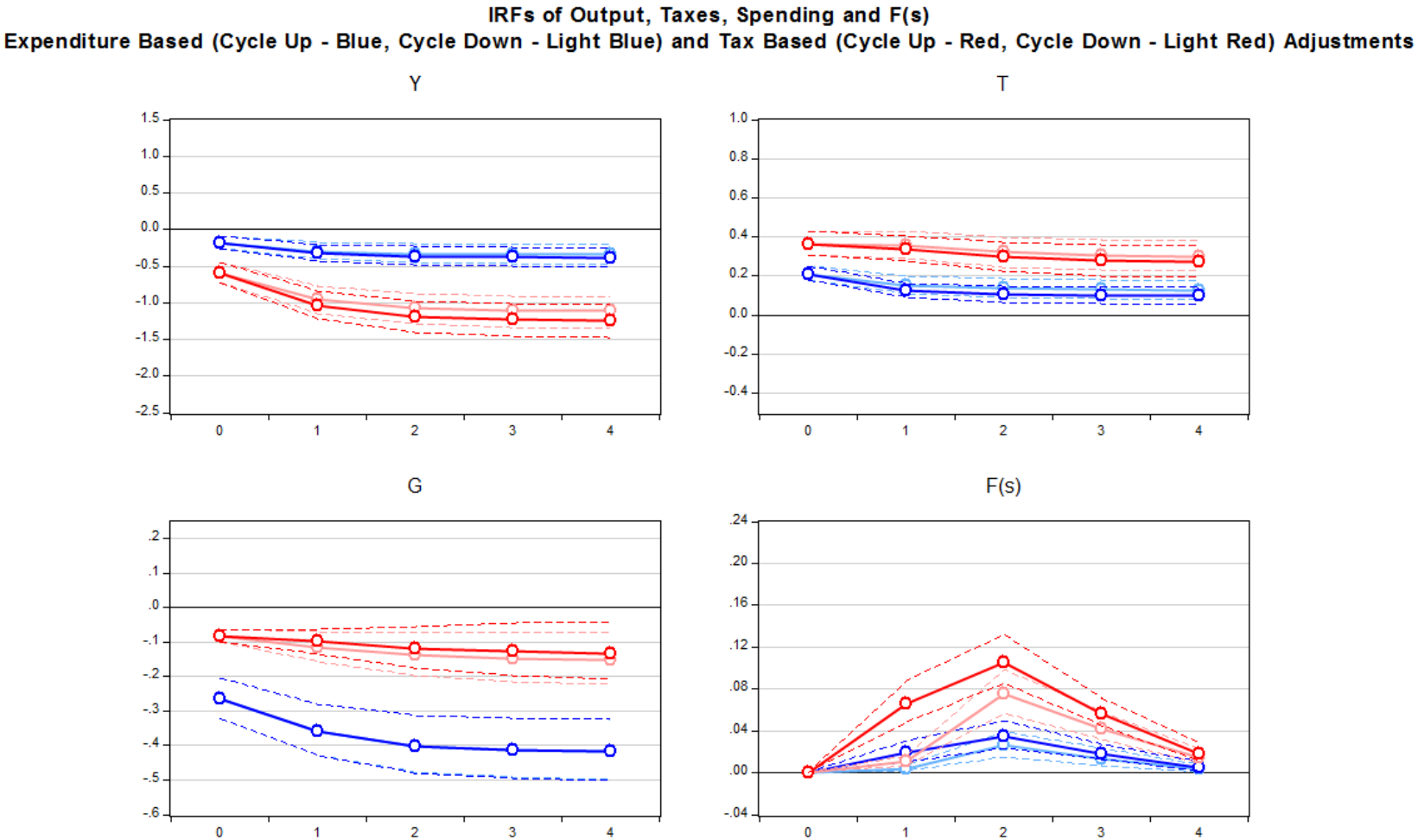
Why a VAR

- The e_t^u still display some evidence of predictability on the basis of past output growth and past government revenues and expenditures. Is this a problem?
  - *Estimation:* consistent estimates of fiscal multipliers require that e_t^u and innovations in $\Delta y_{i,t}$ are not correlated. When this condition – which is our identifying assumption – is satisfied, the fact that e_t^u can be predicted based on past output growth is irrelevant for the consistency of the estimated multipliers
  - *Simulation* is a potential problem: you think you are simulating an unpredictable shift in fiscal policy, while it isn't
- a VAR which includes revenues and spending, along with their narrative shocks, allows to check of the strength of the narratively identified instruments
- results from the VAR are consistent with those obtained estimating a truncated MA representation (Romer&Romer 2010, Alesina, Favero, Giavazzi 2015), indicating that the residual predictability is small

Back

Heterogeneity between EB and TB plans, limiting state dependence to the autoregressive part



Back

Testable restrictions

$$
\begin{aligned}
\Delta y_{i,t} &= (1 - F(s_{i,t}))A_1^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_1^R(L)\,\mathbf{z}_{i,t-1} + \\
&\quad \begin{bmatrix} 1 - F(s_{i,t}) \\ F(s_{i,t}) \end{bmatrix}' \begin{bmatrix} \mathbf{a}'\mathbf{e}_{i,t} & \mathbf{b}'\mathbf{e}_{i,t} \\ \mathbf{c}'\mathbf{e}_{i,t} & \mathbf{d}'\mathbf{e}_{i,t} \end{bmatrix} \begin{bmatrix} TB_{i,t} \\ EB_{i,t} \end{bmatrix} \\
&\quad + \lambda_{1,i} + \chi_{1,t} + u_{1,i,t}
\end{aligned}
$$

$$
\begin{aligned}
\Delta g_{i,t} &= (1 - F(s_{i,t}))A_2^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_2^R(L)\,\mathbf{z}_{i,t-1} + \\
&\quad + \beta_{21} g^u_{i,t} + \beta_{22} g^a_{i,t-1,t} + \lambda_{2,i} + \chi_{2,t} + u_{2,i,t}
\end{aligned}
$$

$$
\begin{aligned}
\Delta \tau_{i,t} &= (1 - F(s_{i,t}))A_3^E(L)\,\mathbf{z}_{i,t-1} + F(s_{i,t})A_3^R(L)\,\mathbf{z}_{i,t-1} + \\
&\quad + \beta_{31} \tau^u_{i,t} + \beta_{32} \tau^a_{i,t-1,t} + \lambda_{3,i} + \chi_{3,t} + u_{3,i,t}
\end{aligned}
$$

Testable restrictions

1. $a = c, \quad b = d$: the only source of non-linearity in the contemporaneous effect of a plan arises from its type (*EB vs TB*)

2. $a = b, \quad c = d$: the only source of non-linearity in the contemporaneous effect of a plan arises from the state of the cycle

3. $a = b = c = d$: the contemporaneous effect of a plan depends neither on the the state of cycle nor on the type of plan

   In these tests the dynamic response of the economy is allowed to be different during expansions (E) and recessions (R) through the auto-regressive coefficients. We then test the additional hypotheses

4. ${A_1}^E(L) = A_1^R(L), \; A_2^E(L) = A_2^R(L) \; A_3^E(L) = A_3^R(L)$ *given* $a = c, \quad b = d$: neither the contemporaneous effect of a plan nor its dynamic response depend on the cycle

5. $a = b = c = d, \quad {A_1}^E(L) = A_1^R(L), A_2^E(L) = A_2^R(L) \quad$ *and* $\quad A_3^E(L) = A_3^R(L)$: we are left with a linear VAR model without non-linearities

Testable restrictions: results

H_0	Likelihood ratio	Number of Restrictions	Probability
(1)	6.9848	6	0.3223
(2)	16.4584	6	0.0115
(3)	20.6639	12	0.0555
(4)	26.3106	9	0.0018
(5)	46.0683	21	0.0013

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