

Questioning the puzzle: fiscal policy, real exchange rate and inflation

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Motivation

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 - ▶ increasing relevance of open economy aspects
- ▶ In open (but also closed) economies, current evidence finds multiple **puzzles**
 - ▶ Increase in government consumption
 - ▶ Depreciates the real effective exchange rate (Kim and Roubini [2008], Monacelli and Perotti [2010], Corsetti et al. [2012], Ravn et al. [2012] - not always Born et al. [2019])
 - ▶ Is deflationary (d'Alessandro et al. [2018], Jorgensen and Ravn [2018])

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- ▶ Show that the puzzles *lie* in the identification
 - ▶ Using a proxy-Bayesian SVAR (with Ramey's narratives shocks) to instrument *current* government spending:
 - ▶ an increase in government spending is inflationary and appreciates the REER (Born et al, 19)

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- ▶ Show that the puzzles *lie* in the identification
 - ▶ Using a proxy-Bayesian SVAR (with Ramey's narratives shocks) to instrument *current* government spending:
 - ▶ an increase in government spending is inflationary and appreciates the REER (Born et al, 19)
 - ▶ Estimating a SOE RBC model using IRF matching
 - ▶ Theory is consistent not only with REER and inflation reaction but also for other validating domestic/international variables (e.g. net export (\downarrow), consumption(\downarrow), etc)

Issue and Methodology - 1

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 1. VAR restrictions (institutional features - Blanchard and Perotti [2002], sign - Mountford and Uhlig [2009])
 - ▶ Pro: parsimonious characterization of the shock transmission mechanism
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 3. Proxy-SVAR (1 + 2) (Mertens and Ravn [2013])
 - ▶ informational content of narrative approach in a VAR without imposing restrictions on structural parameters
 - ▶ extend narrative approach and allows for testing the instrument

Issue and methodology - 2

- ▶ Difficult identifying fiscal shocks - timing:
 1. Expected or unexpected (Ramey [2011] - military)
 - ▶ Most of fiscal shocks are anticipated, forgetting this leads to wrong IRF
 - ▶ Anticipated shocks can help explaining the puzzle but...(Forni and Gambetti [2016])
 2. Importance of the sample of analysis
 - ▶ using military spending as anticipated shocks, needs war episodes (WWII and Korea)

What do we do

Proxy-SVAR using narrative military spending to instrument current government spending

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Plan of the talk

- ▶ Proxy-SVAR
- ▶ Results
- ▶ Robustness
- ▶ Model

Proxy-SVAR

Reduced form

$$X_t = c_0 + c_1 t + \sum_{k=1}^P A_k X_{t-k} + u_t \quad u_t \sim N(0, \Sigma) \quad (1)$$

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Structural - needs to specify a matrix P_0

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To restrict P_0 , use m_t narrative series as proxies, assuming

$$E(m, t) = 0 \quad (3)$$

$$E[m_t, \epsilon_{f,t}] = \gamma \quad (4)$$

$$E[m_t, \epsilon_{nf,t}] = 0 \quad (5)$$

Then two-stage least squares (2SLS) estimates of all non-fiscal residuals on the fiscal residual, using each time m_t as an instrument + impose restrictions (3) + (4) + (5);

Data and specification

- ▶ The narrative series is the military news series of Ramey and Zubairy [2018]
- ▶ Narrow real effective exchange rate from BIS - available from 1964
- ▶ Quarterly data, constant + four lags - Bayesian techniques (dummy observations to impose a Minnesota prior on the reduced-form VAR parameters - Del Negro and Schorfheide [2011])
- ▶ Baseline sample 1964Q1 to 2015Q4
- ▶ Data normalized by potential output (with exception of prices)

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BUT

- ▶ We use it to instrument only contemporaneous spending - *surprise*
 - ▶ Need to test the strength of the instrument
- ▶ F-TEST

$$\sum_{j=0}^h g_{t+j} = \gamma_h + m_h \text{news}_t + \phi_h(L)z_{t-1} + \omega_{t+h} \quad (6)$$

and

$$\sum_{j=0}^h g_{t+j} = \gamma_h + \phi_h(L)z_{t-1} + \omega_{t+h} \quad (7)$$

F-TEST

- ▶ Test if the residual for the 1st stage are serially uncorrelated - Q-statistics of Ljung-Box test

Lags	4 quarters	8 quarters	12 quarters	16 quarters	20 quarters
Critical values	9.5	15.5	21.0	26.3	31.4
Q-statistic					
impact	8.5*	10.5*	12.3*	15.3*	19.6*
4 quarters	157.0	169.2	169.4	182.6	200.1
8 quarters	235.7	251.4	258.7	278.4	289.4
12 quarters	263.6	278.8	298.0	318.6	325.6
16 quarters	276.4	292.1	322.4	344.0	346.5
20 quarters	277.6	293.3	332.8	353.0	353.4

- ▶ Add controls : tax revenue, GDP, inflation, TFP, consumption, short rate, exchange rate - Stock and Watson [2018] and Montiel Olea et al. [2018]

Instrument

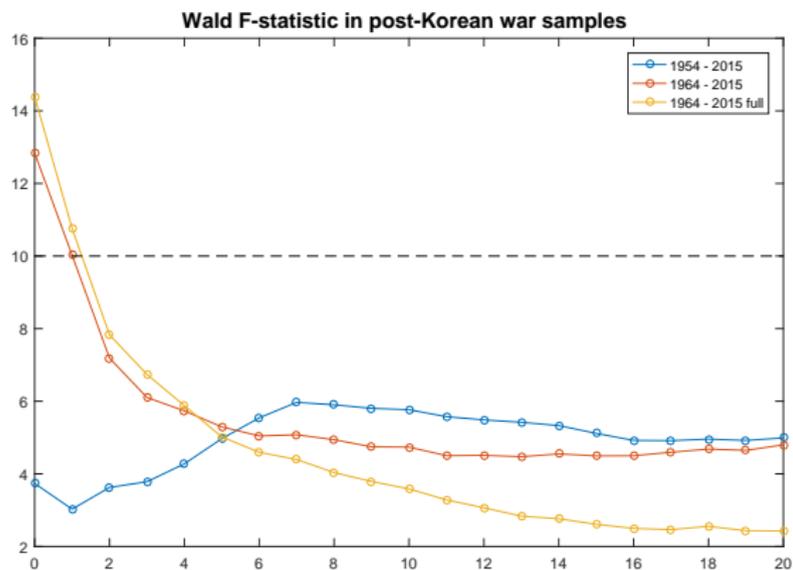
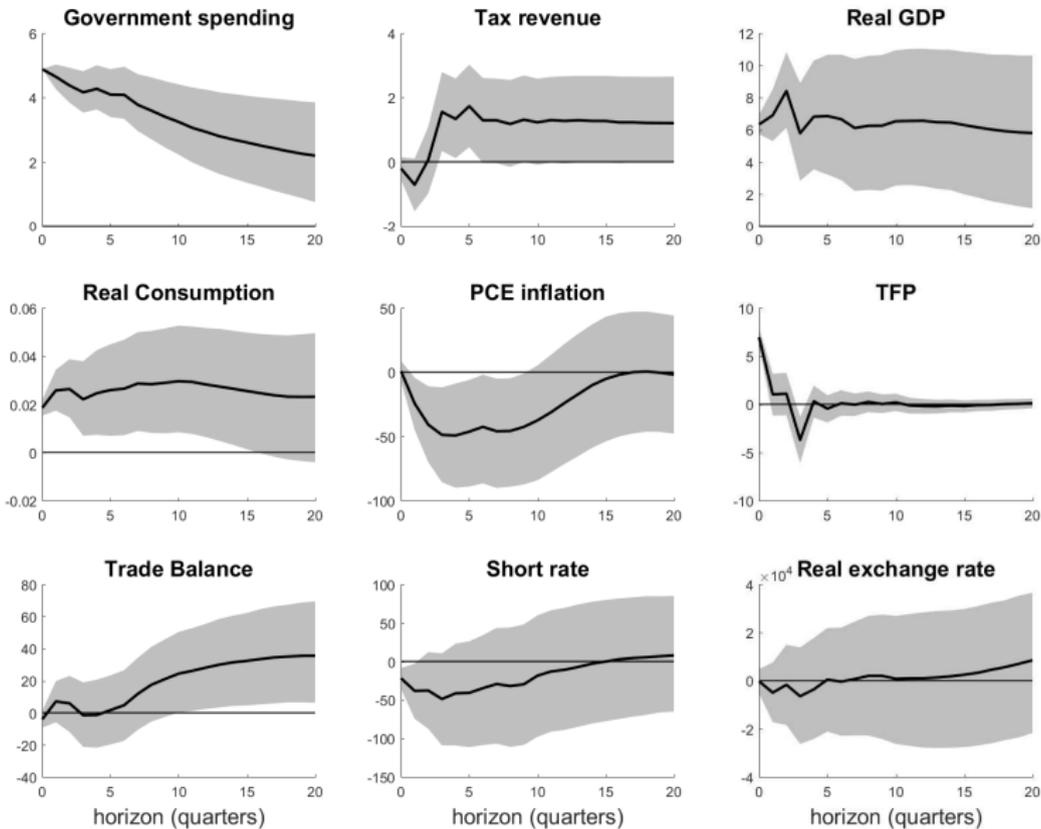


Figure: Comparison of F-statistics over time. The horizontal dashed line is the weak instrument threshold of Stock et al 2002 for the case of serially uncorrelated error terms.

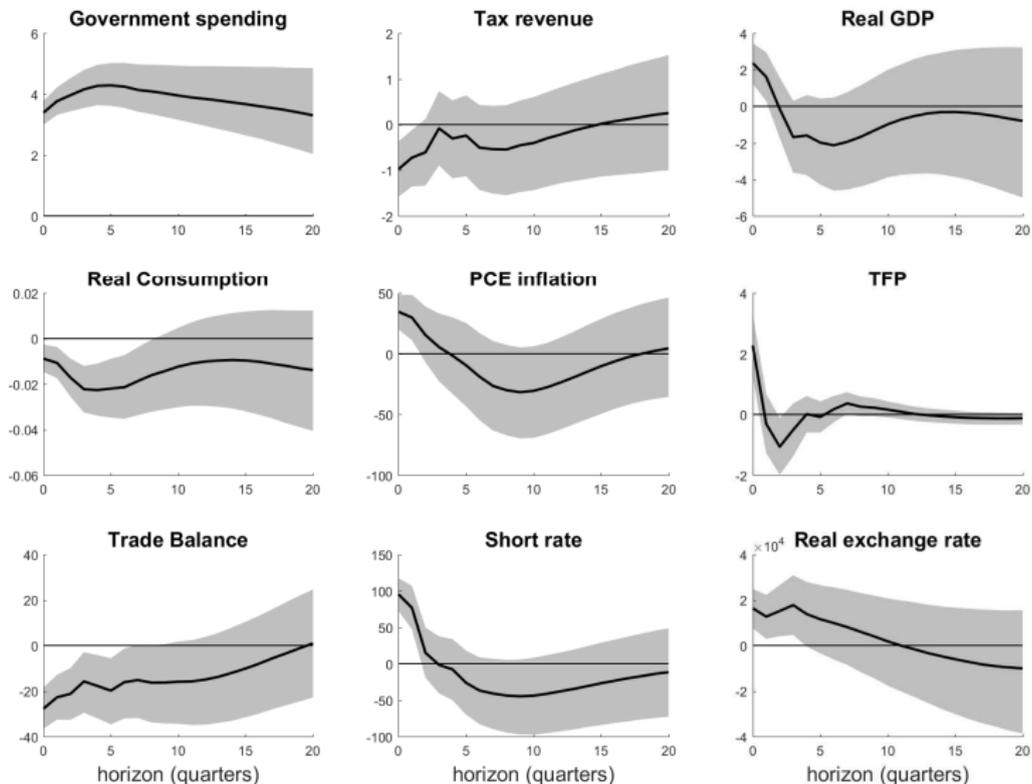
The puzzle - Cholesky

BP - Government spending shock



It is all in the identification - Proxy-SVAR

Proxy SVAR - Government spending shock

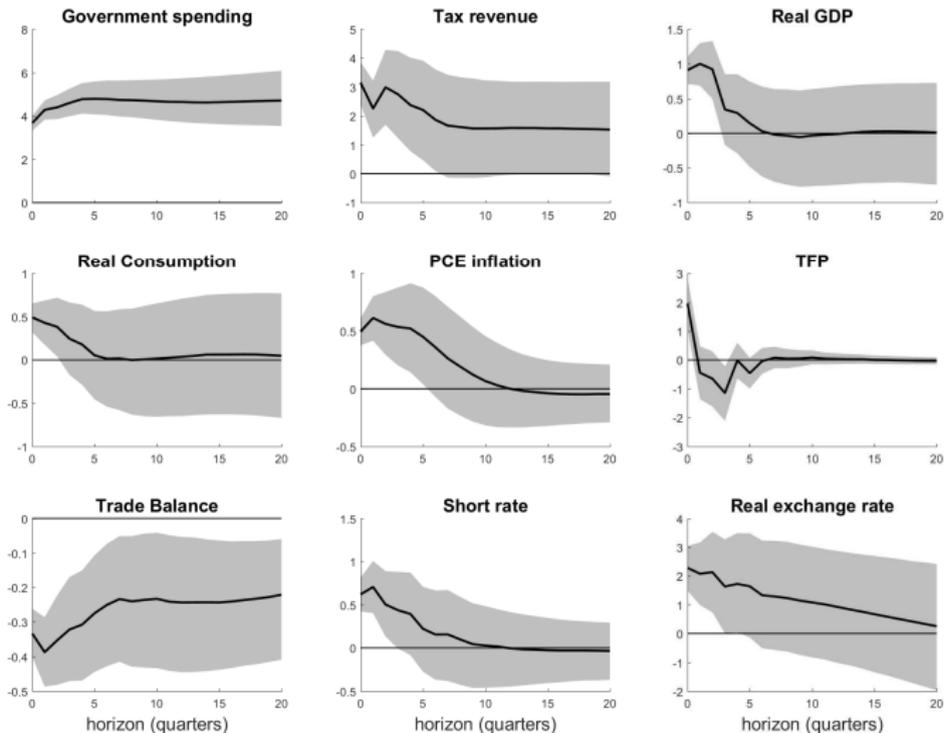


Robustness

- ▶ Do not trust the instrument: use changes in gov. defense investment
- ▶ Bretton woods: 1976-2015
- ▶ Great Recession: 1964-2006
- ▶ What about the nominal?
- ▶ What about inflation and deflation - Lambertini and Proebsting [2019]

Defense investment as instrument

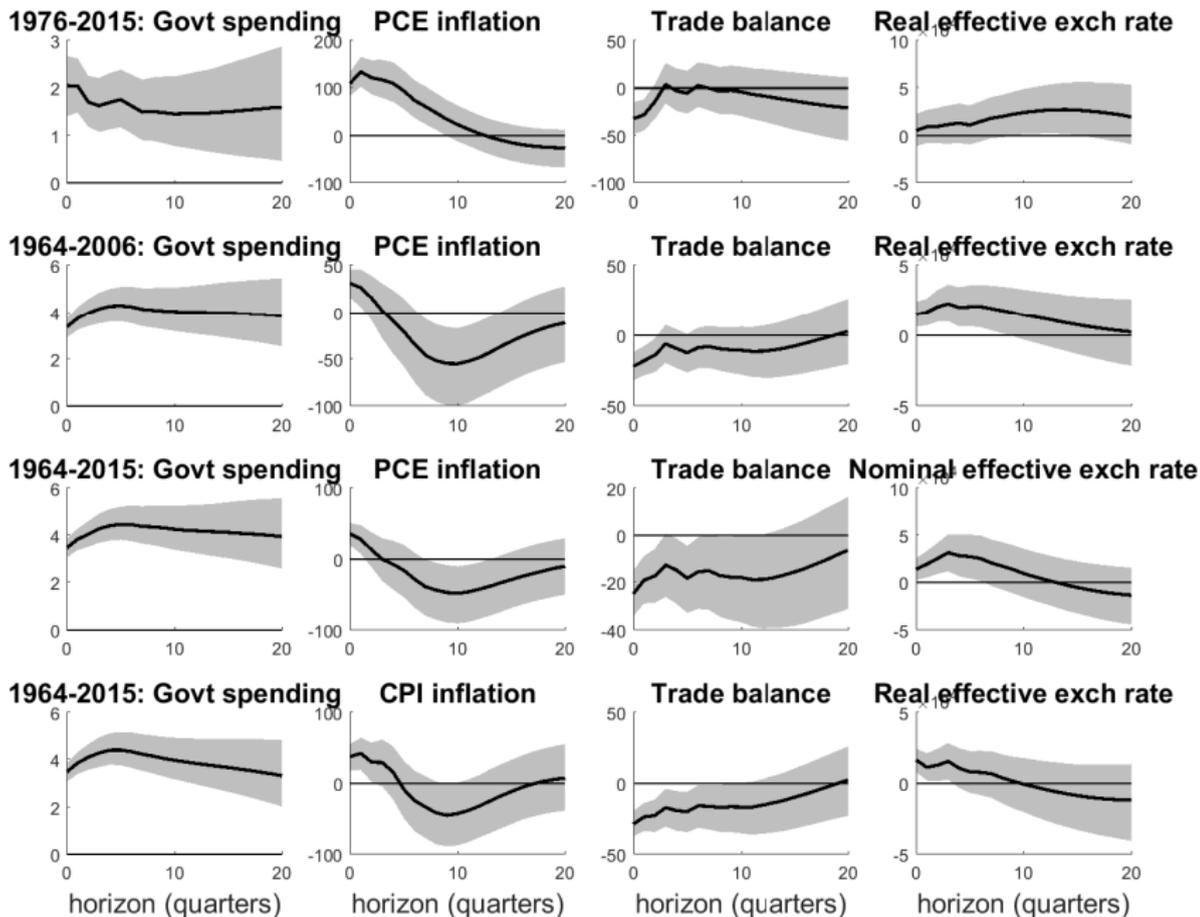
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Theory

Is it consistent with theory

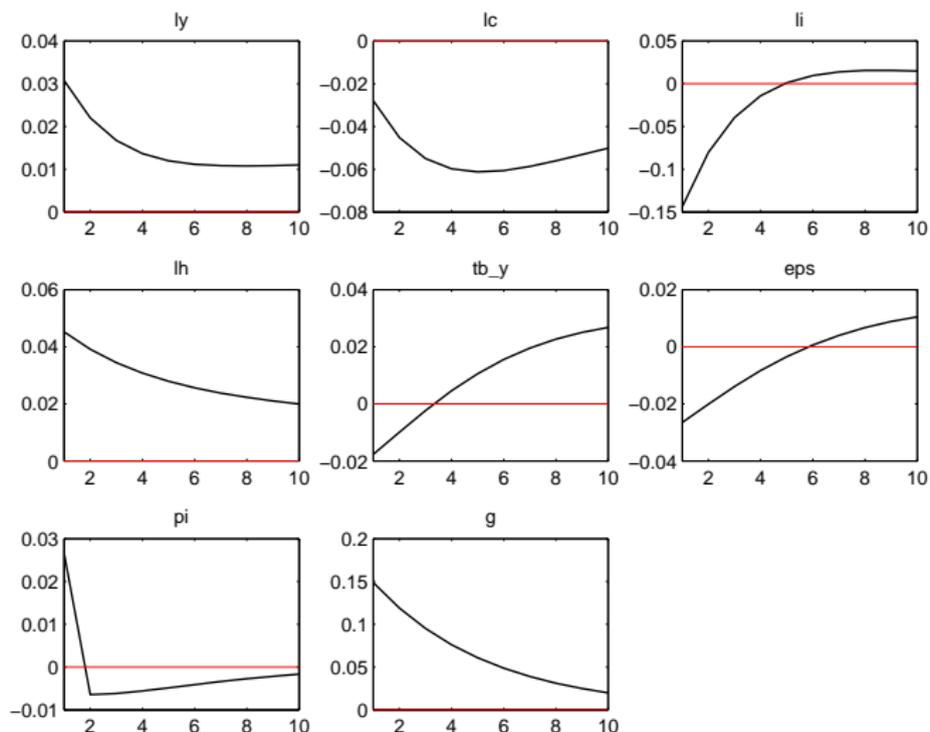
Construct a simple small open economy RBC model with

- ▶ two goods
- ▶ habit in consumption
- ▶ investment adjustment costs
- ▶ JR preferences

Doing - IRF matching

Theory - NK Small Open Economy

Government consumption shock)



Conclusions

- ▶ Using a different identification scheme (Proxy-SVAR with narrative defense shocks) puts puzzles under pressure
 - ▶ In response to an increase in government consumption shock
 - ▶ The real exchange rate appreciates and inflation increases
 - ▶ Consumption falls and net exports falls
- ▶ Results are consistent with SOE RBC (or NK) theory, which matches well the behavior of standard macro variables

Thank you!