

# Do zero and sign restricted SVARs identify unconventional monetary policy shocks in the euro area?



## Conclusion: No

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### Introduction

- Are ECB balance sheet policies (UMP) effective at stabilising the euro area economy?
- Existing VAR evidence suggest that UMP is effective
  - Burriel and Galesi (EER, 2018)
  - Boeckx et al. (Int J CB, 2017)
  - Gambacorta et al. (JMBCB, 2014)
- Our contribution:** the identification scheme used by the above papers does not credibly identify UMP shocks in the euro area
  - Therefore their conclusions are unwarranted
- Above studies identify UMP shocks by assuming that they
  - only have a lagged effect on output and prices
  - lower financial system stress
  - expand the ECB's balance sheet
- Information in the sign of the response of the ECB's balance sheet is key to distinguishing UMP shocks from other financial market and news shocks
- Throwing away all information about the stance of monetary policy by replacing the size of the ECB's balance sheet with random [0,1] numbers leads to statistically indistinguishable IRFs and the same time series of purported UMP shocks

### 1: Burriel and Galesi (2018) vs random [0,1]

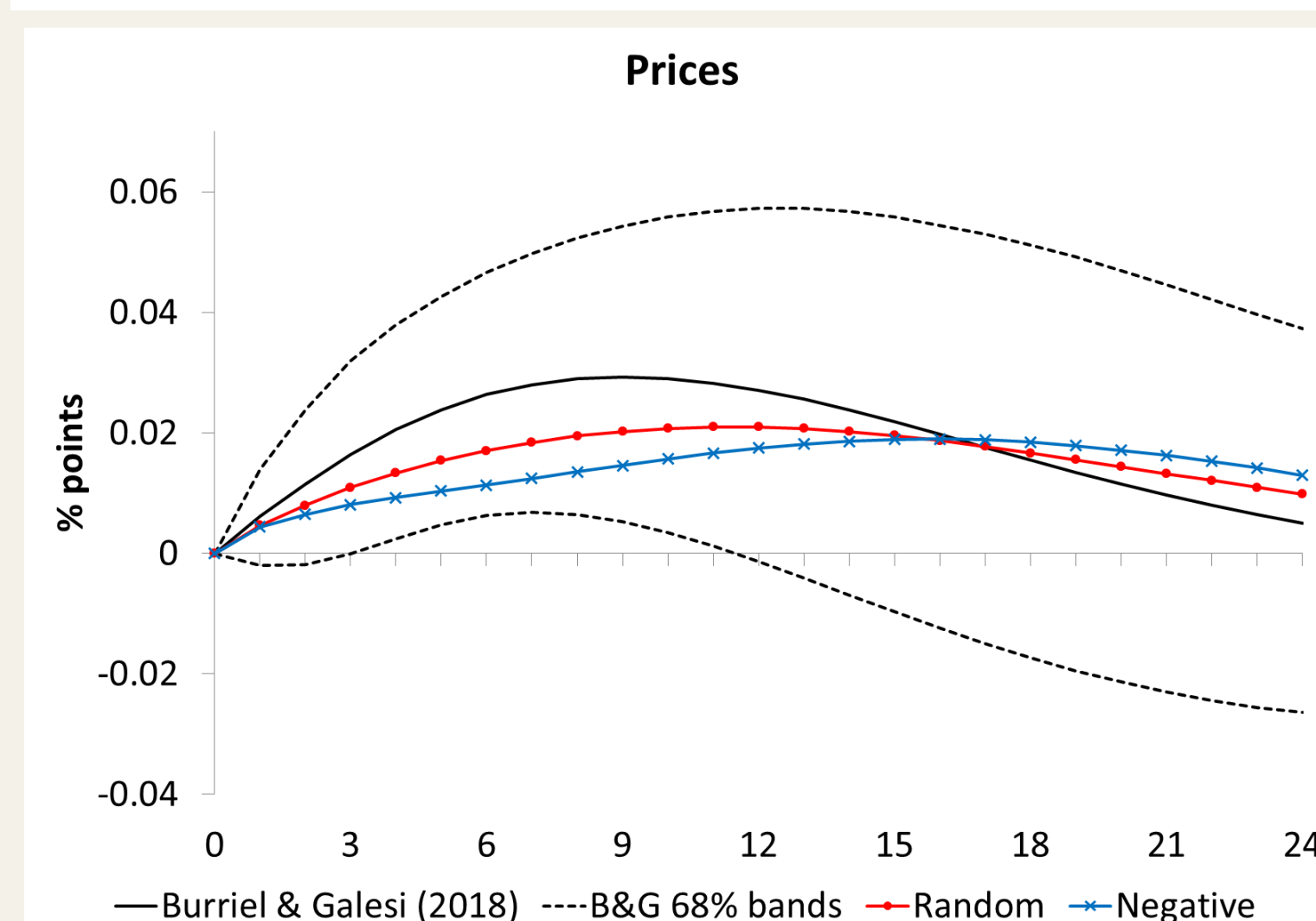
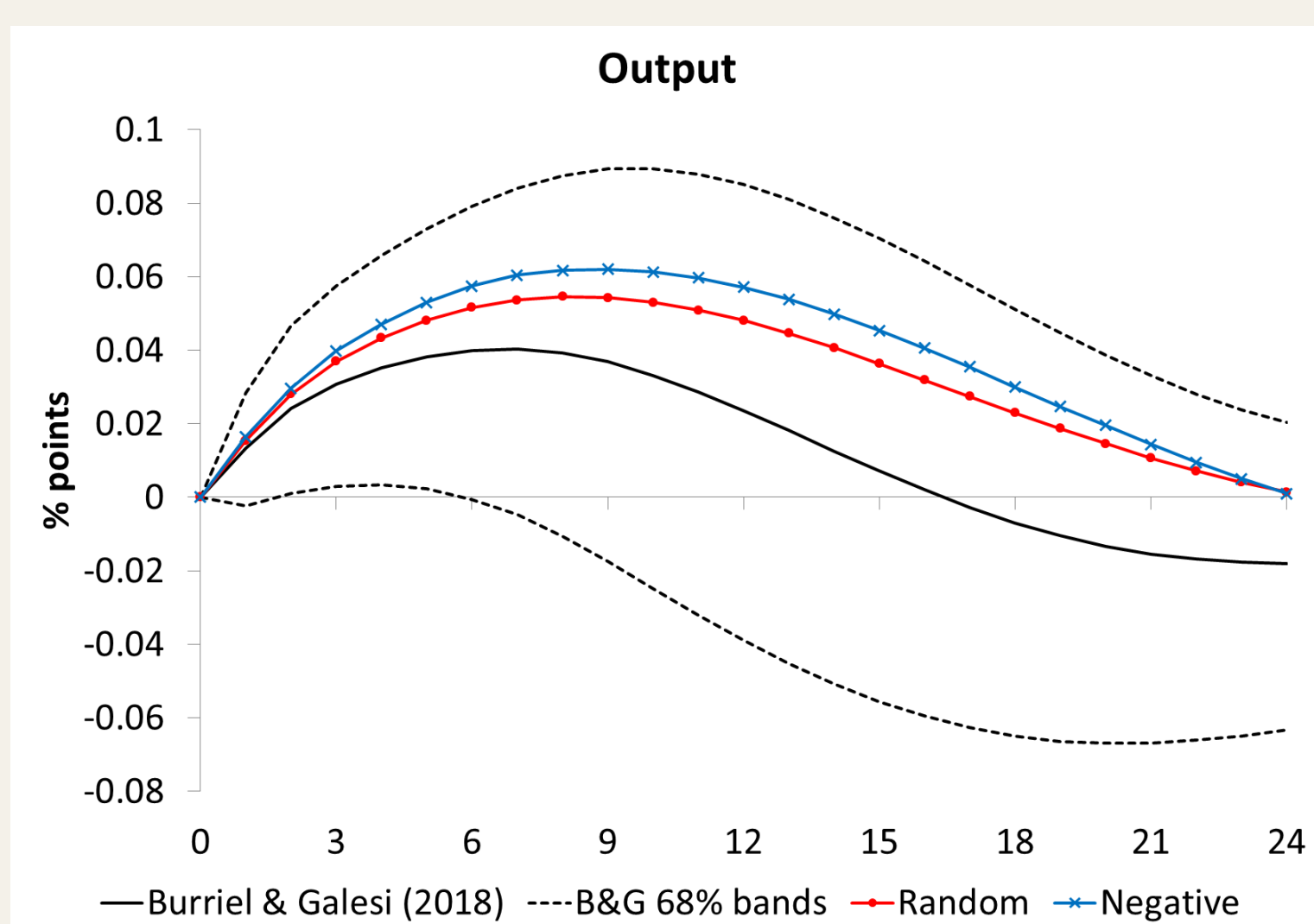
We replicate Burriel and Galesi (2018) GVAR using data and Matlab code downloaded from the EER website

Data series [Restriction for identifying UMP shocks]  
 Output [0]  
 Price level [0]  
 ECB total assets [+]  
 CISS financial stress [-]  
 EONIA-MRO spread [-]  
 MRO rates [0]  
 Exchange rate [?]

Three exercises:

- Replicate the published results
- Replace the ECB total assets data with random [0,1] numbers
- Using original data assume that an expansionary UMP shock shrinks the balance sheet [-]

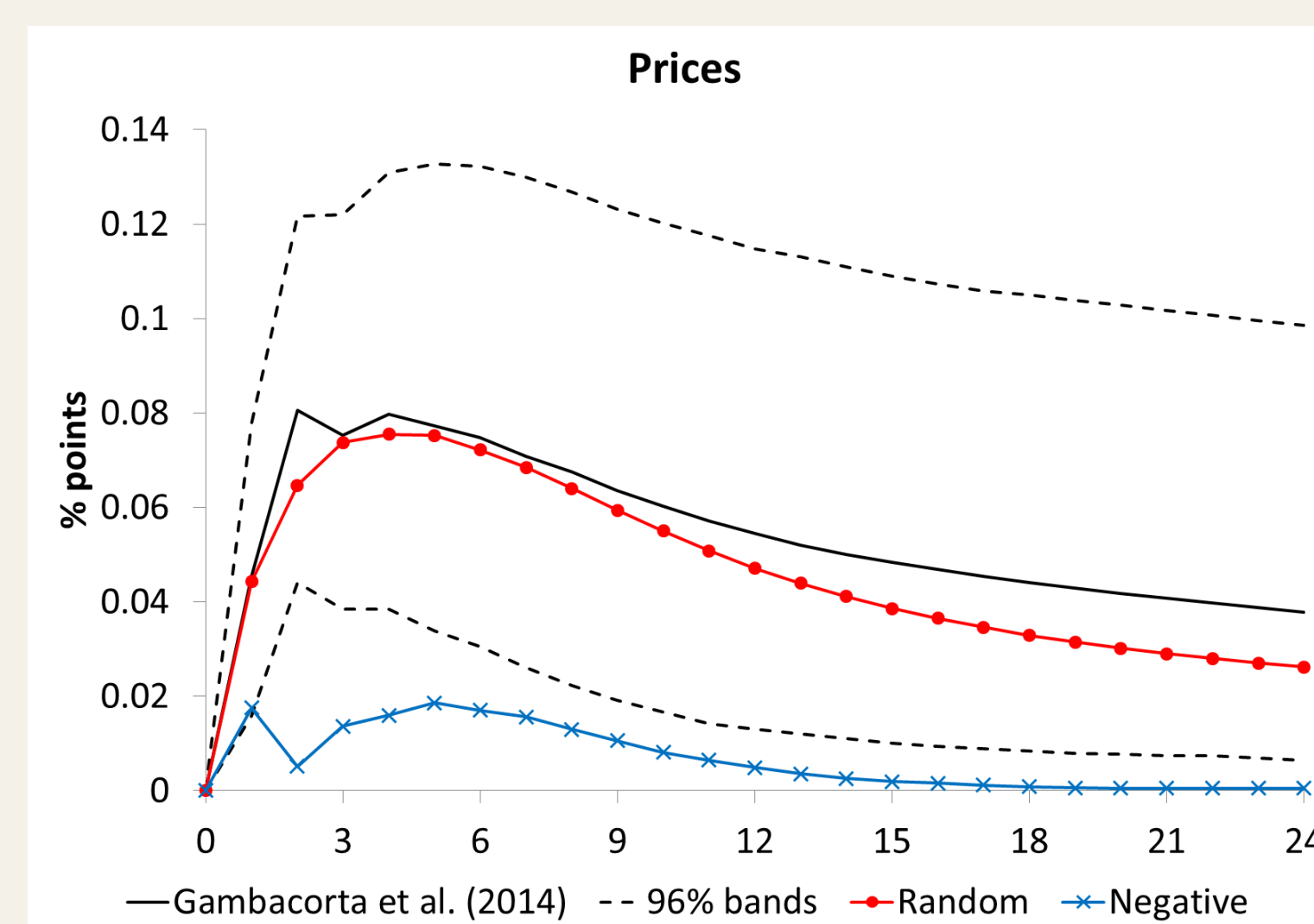
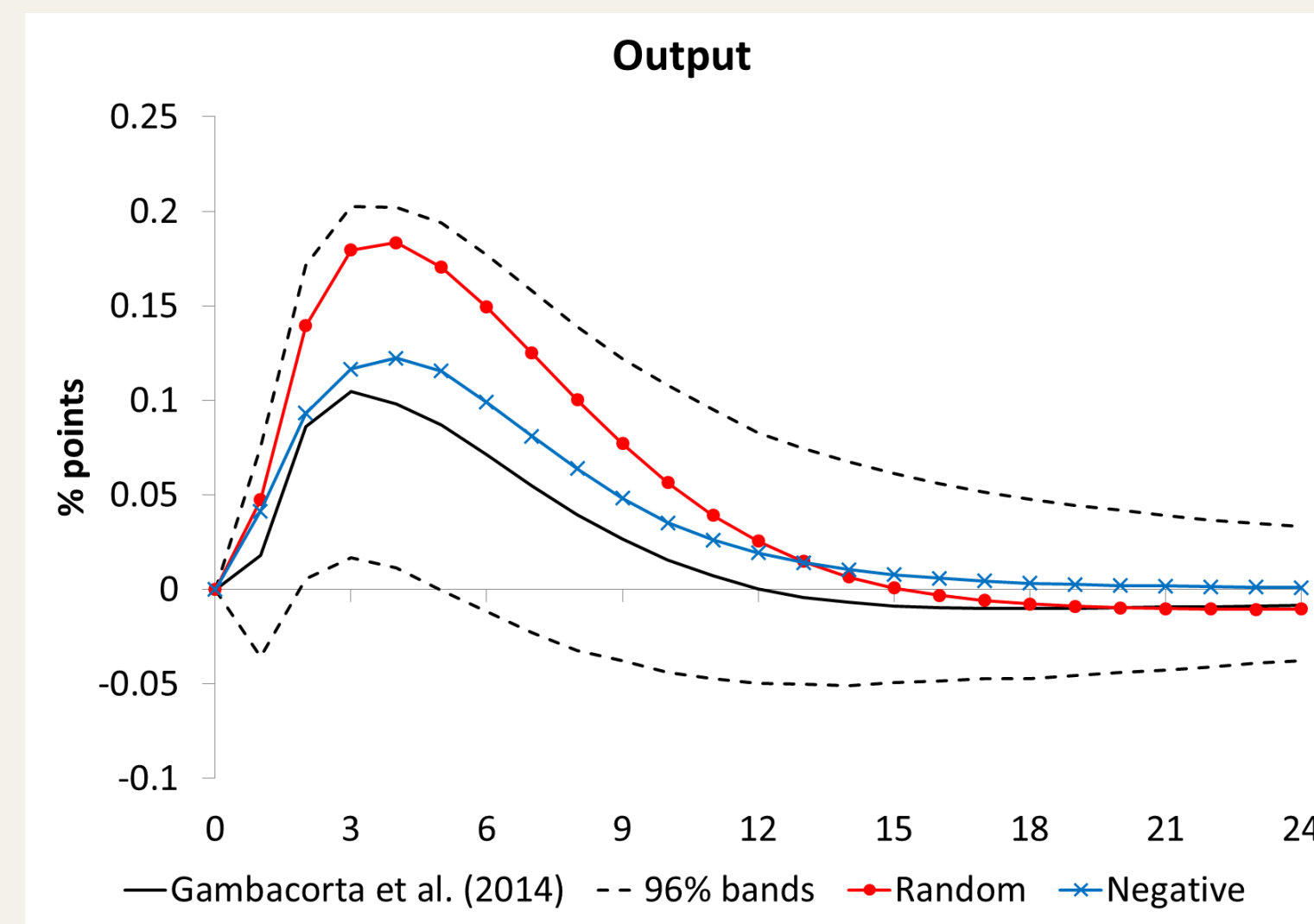
Differences between output and price level IRFs are tiny:



### 2: Gambacorta et al (2014) vs random [0,1]

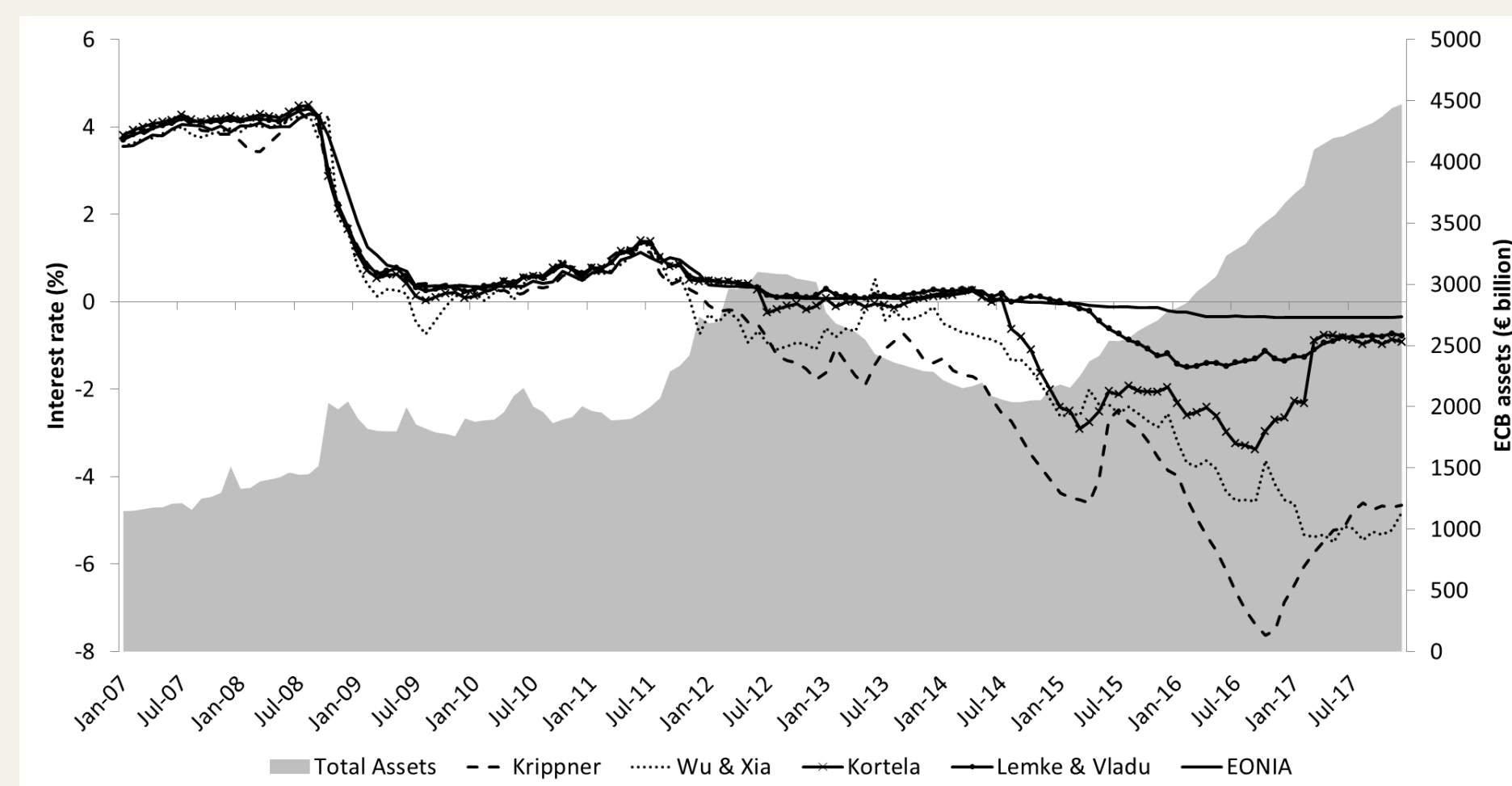
We performed the same exercise for Gambacorta et al. (2014) as we did with Burriel and Galesi (2018) – using the original RATS code and data for the euro area

- Similar identification scheme to Burriel and Galesi (2018). UMP shock
  - expands balance sheet
  - lowers VIX
  - Only lagged effect on output and prices
- Balance sheet data not important for IRFS

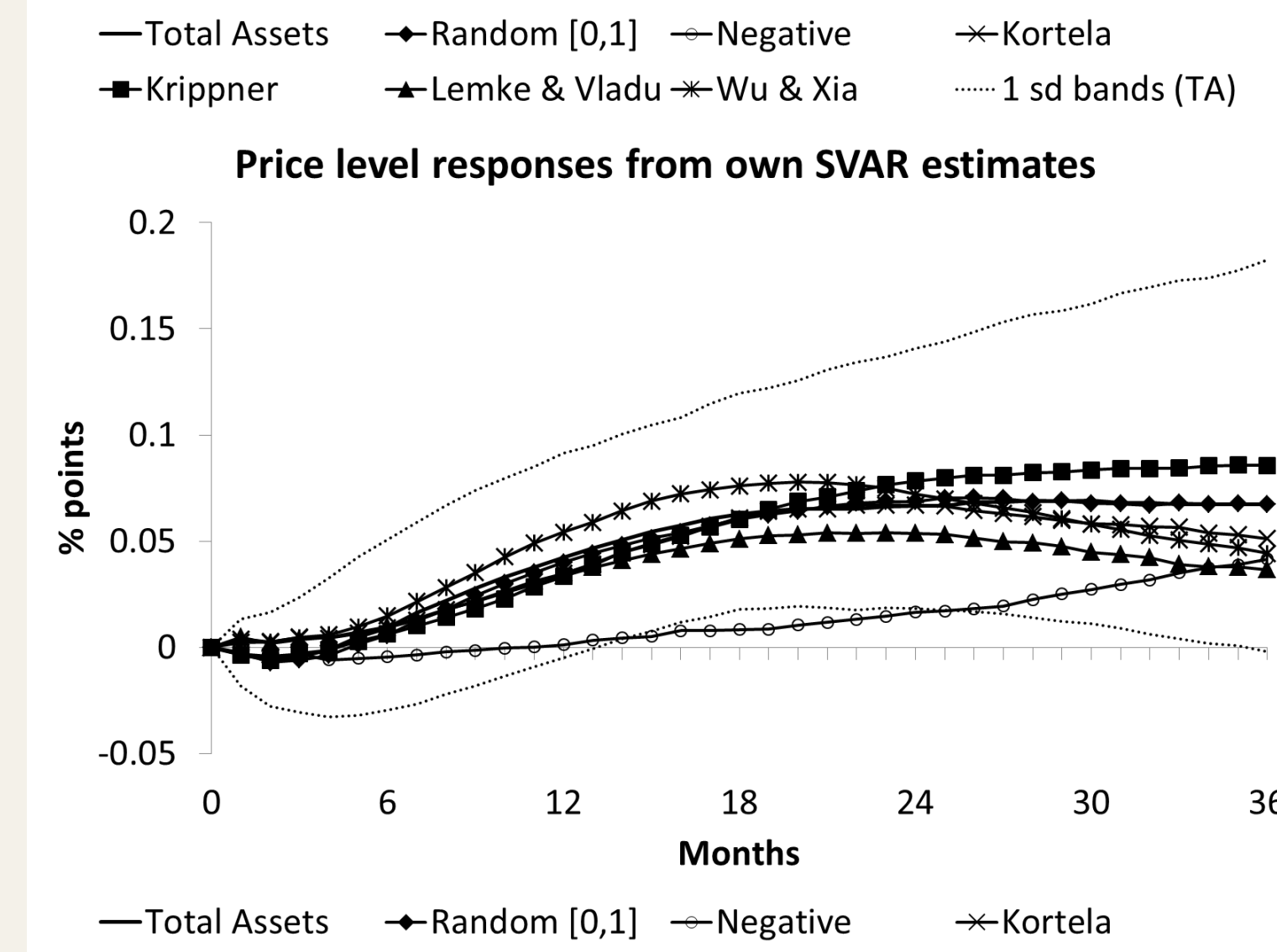
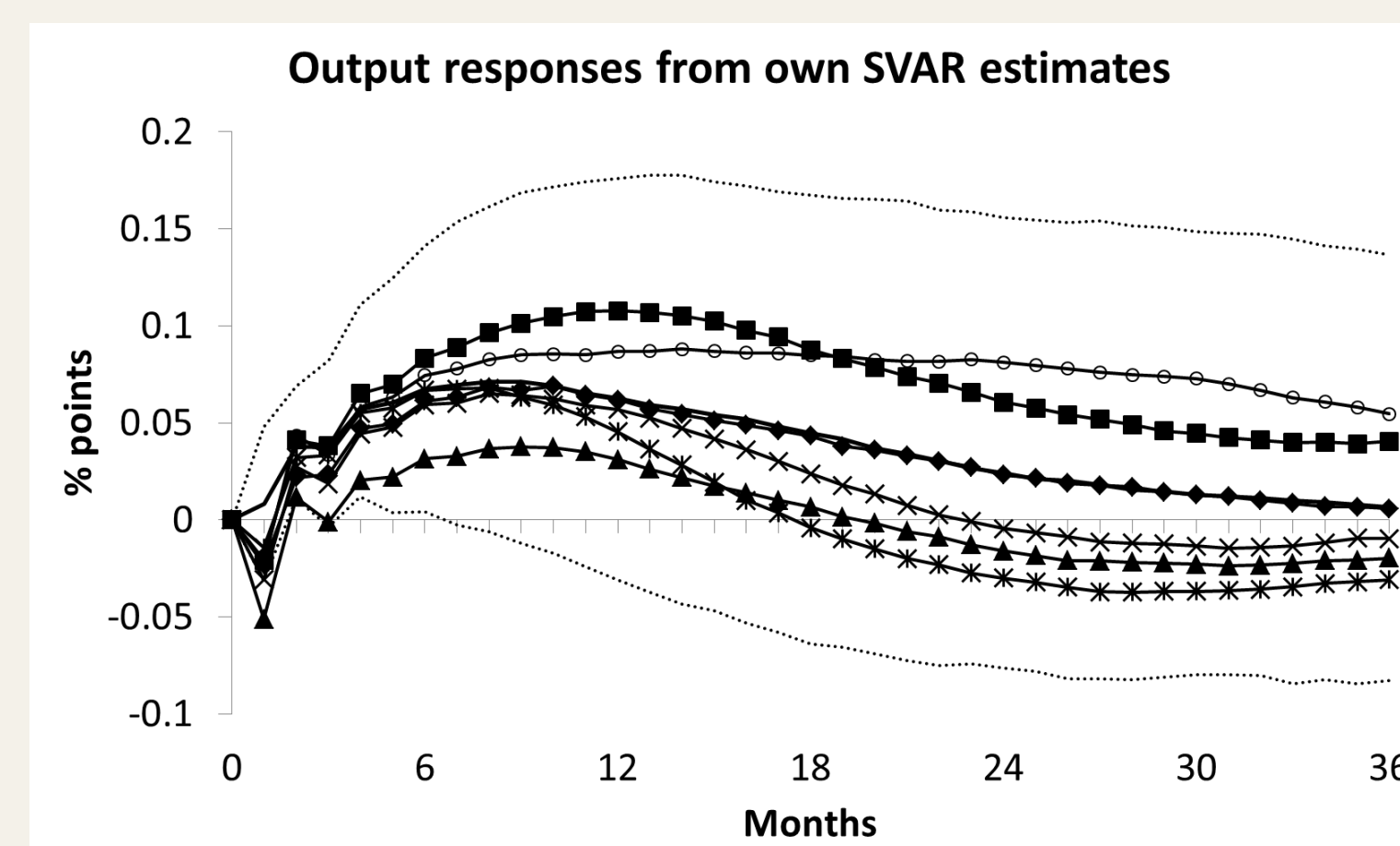


### 3: Shadow short rates suffer from same problem

- There are a number of shadow short rates available, but there are enormous differences between them
- All suffer from the estimated regressors problem
  - Errors in the VAR are random estimation errors from first stage regression, not UMP shocks

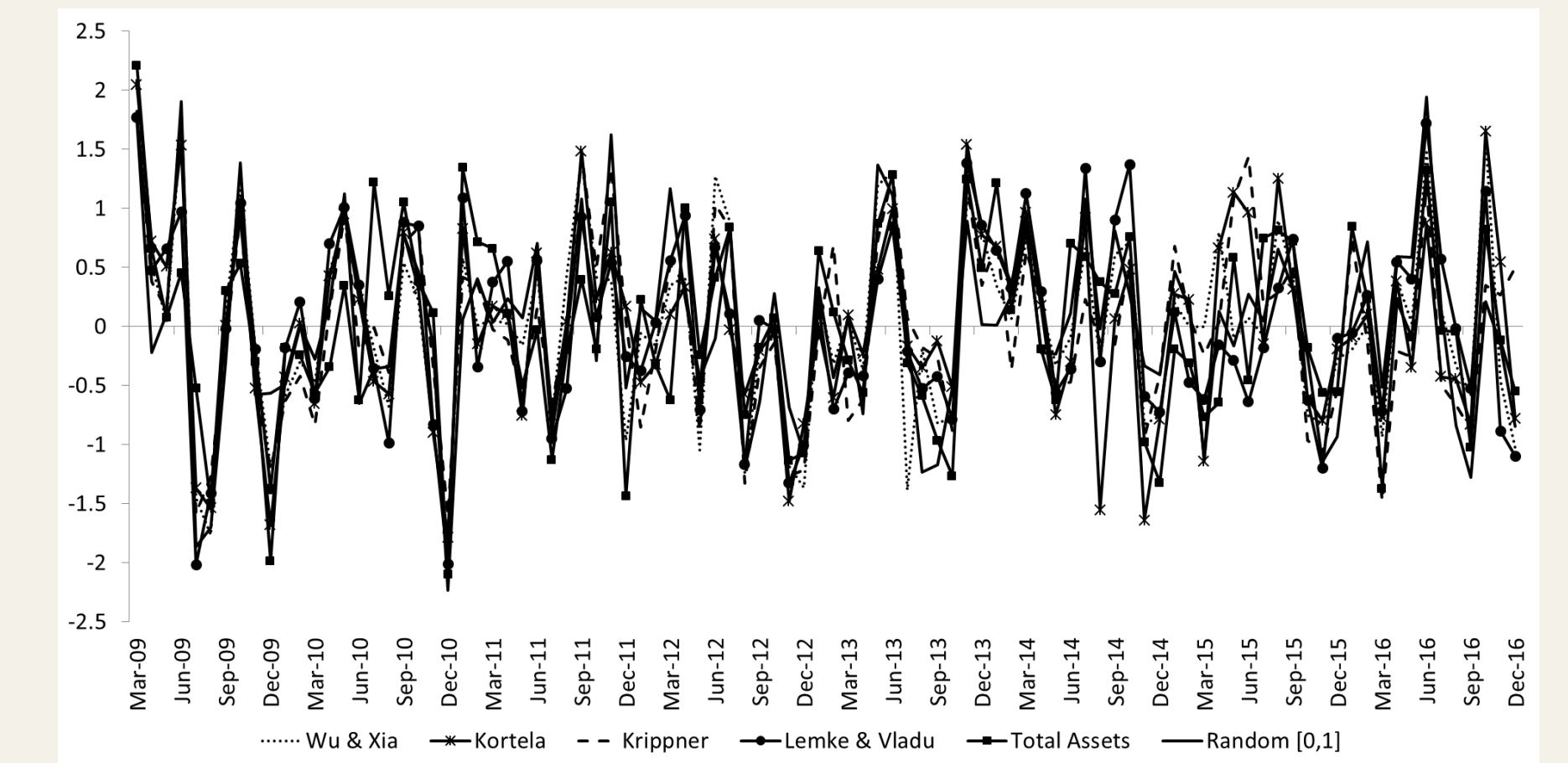


- With such large differences, you'd expect different IRFs
  - But they are very similar:

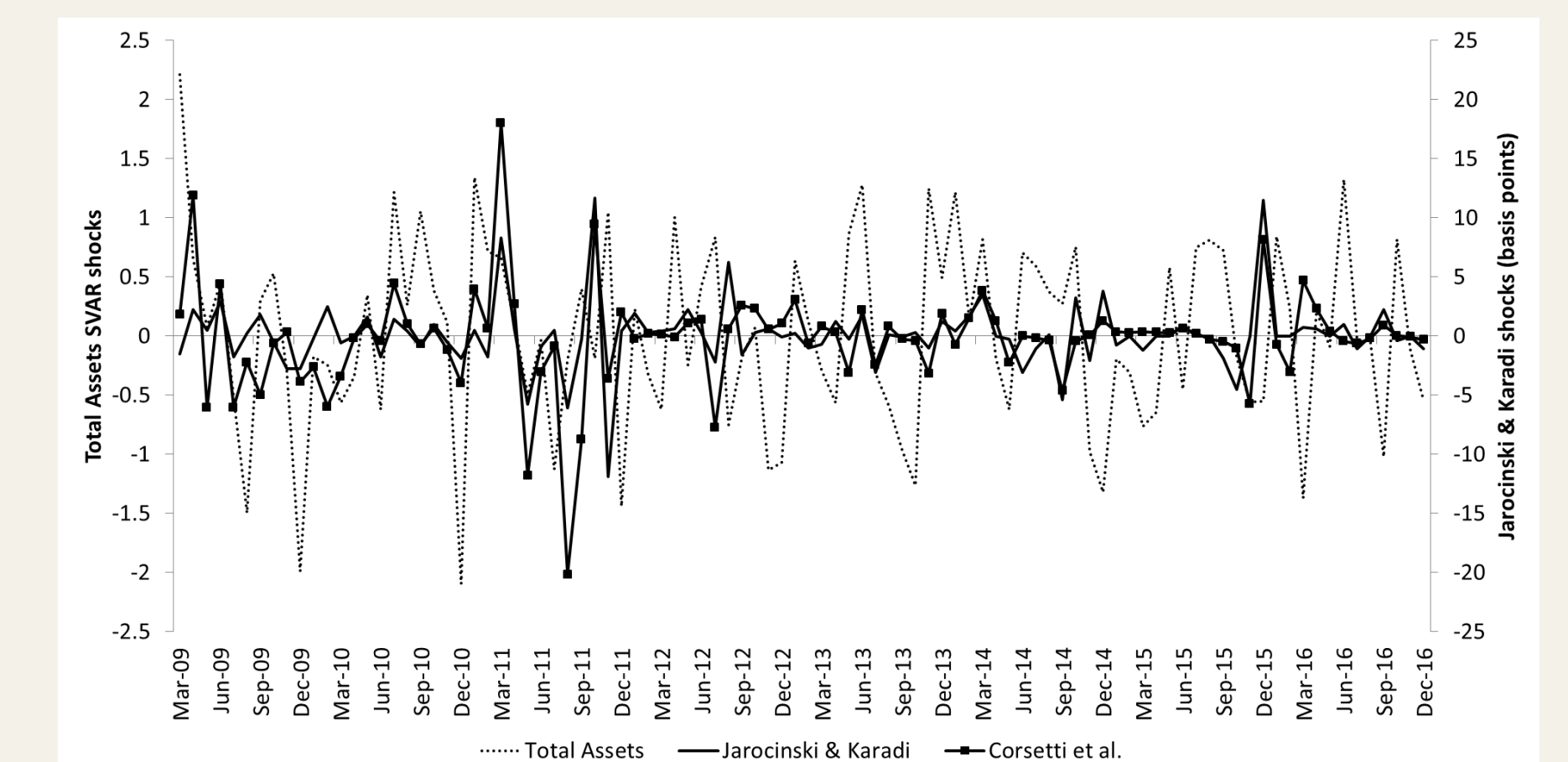


### 4: UMP shocks?

- The reason that all of the IRFs are a so similar is because the identified SVAR shocks are very similar
  - The information in the ECB balance sheet is irrelevant for the identified shocks



- Implausible that UMP shocks can be identified without a measure of the stance of monetary policy
  - Not impossible
- Alternative plausibility test: compare to EONIA swap rate surprises
  - Correlation between SVAR UMP shocks and swap rate surprises reported by Corsetti et al. (2018) and Jarocinski and Karadi (2018) is zero

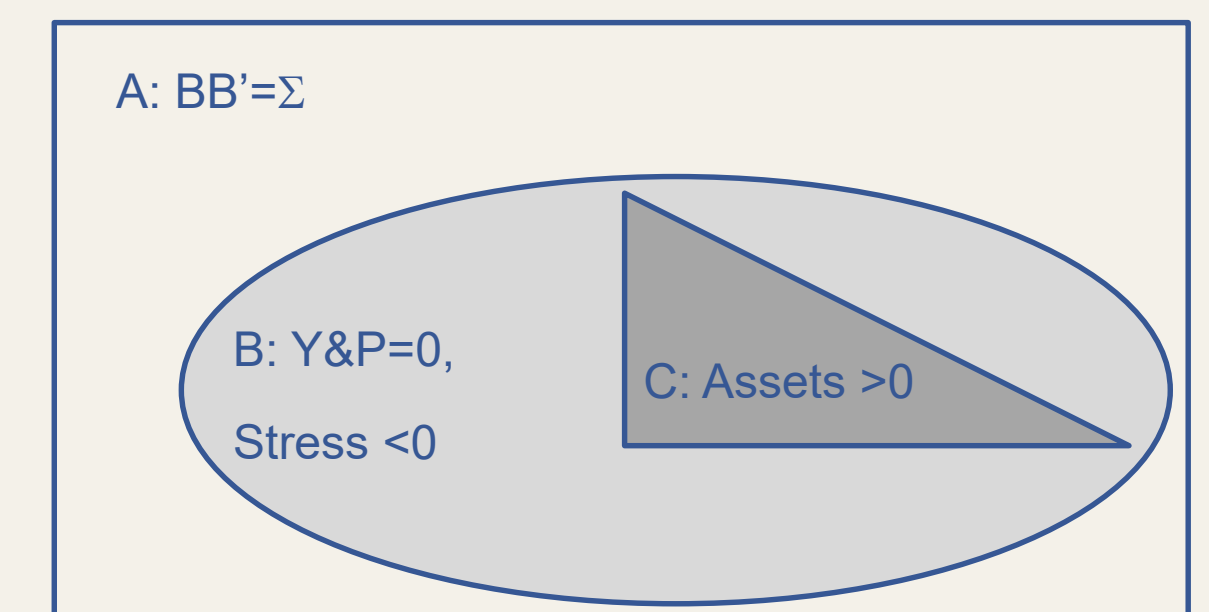


### 5: Obvious data problems

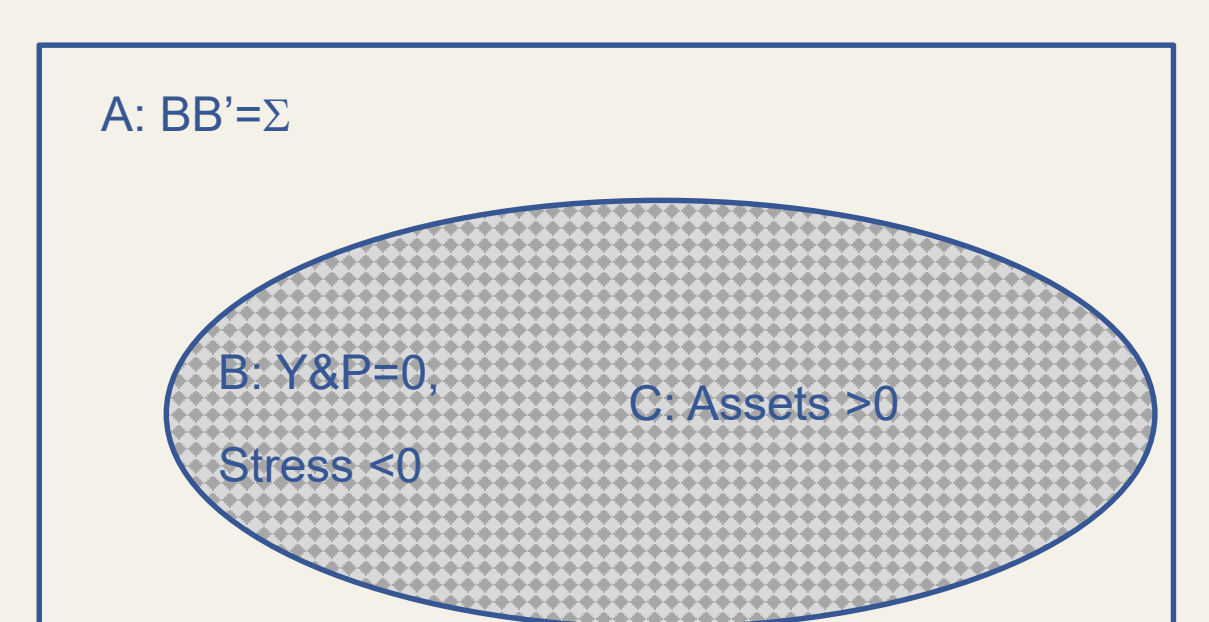
- ECB balance sheet data suffers from the foresight problem
  - QE, LTRO etc announced in advance
  - Errors in balance sheet equation are simply measures of misspecification
- Shadow short rates suffer from the estimated regressors problem
- Sign restrictions are 'weak information' (Fry and Pagan, 2011)
- It is not surprising they do not recover true UMP shocks

### 6: Sign restrictions algorithm

- Sign restrictions algorithms sample through the set of all possible models that reproduce the reduced form covariance matrix,  $\Sigma$
- Each successive sign restriction reduces the set of accepted models: Set A > Set B > Set C.



- If the errors in the monetary policy equation are random noise, then any restriction on the response of policy will simply return a random sample from the set of models not imposing that restriction
  - That means the same shocks



### 7: Conclusions

- Existing SVAR estimates of the effects of UMP shocks have not successfully identified UMP shocks
- The conclusion that UMP shocks have effects on output and prices is therefore unwarranted
- Commonly used measures of the stance of monetary policy have serious econometric shortcomings