

Macroeconomic Effects of Unconventional Monetary Policy in the Euro Area

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Motivation

- Monetary authorities have been responding to the financial crisis by embarking on a series of unconventional policy actions
 - Operations that change the composition or size of central bank balance sheets or actions that try to guide longer term interest rate expectations
- Little is known about the macroeconomic consequences
 - What are the effects on economic activity and inflation?
 - Is the pass-through different from conventional interest rate changes?
- Better understanding is not only essential for policymakers, it is also important for the construction of monetary models

Motivation

- This paper attempts to address this issue for the Euro area
 - SVAR framework to examine the effects of traditional interest rate innovations and unconventional policies on a set of macro variables since launch of the euro
 - SVARs impose very little theoretical structure on the data and can be used to establish some relevant stylized facts
- Important: focus on the effects of both policy instruments via the banking sector
 - Borrowing and lending in Euro area predominantly via banking sector
 - Non-standard policy measures of Eurosystem primarily aimed at fueling the banking system
 - Different from Gertler and Karadi (2009) who define unconventional monetary policy as "direct lending by central bank in private markets"

Baseline VAR model for Euro area economy

- Monthly data over sample period 1999M1-2009M12
- Six variables
 - y : output (industrial production)
 - p : prices (HICP)
 - c : credit (loans to private sector adjusted for sales and securitization)
 - i : lending rate (weighted average of rates on loans to households, non-financial corporations and non-MFI financial intermediaries)
 - s : monetary policy rate (MRO rate)
 - b : central bank money (monetary base)
- VAR is estimated in (log) levels with 4 lags

Identification strategy

	y	p	c	i	s	b	c - b
Credit multiplier shocks	0	0	↑	↓			
Interest rate innovations	0	0	↑	↓			
Non-standard policy actions	0	0	↑	↓			

- Identification of three possible sources of disturbances at the supply side of the credit market
 - Credit market shocks have no immediate (within month) effect on output and prices: to differentiate from shocks outside credit market
 - Shocks that lead to negative co-movement of lending rate and volume of credit are considered as shocks on supply side of credit market
 - Volume of credit: restriction only imposed after 3 months to allow that firms draw in short-run more on their credit lines at a pre-specified rate when the interest rate on new loans increases

Identification strategy

	y	p	c	i	s	b	c - b
Credit multiplier shocks	0	0	↑	↓	↑		↑
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- Innovations to credit supply independently of a policy action
 - Credit multiplier shocks: volume of credit generated by the financial sector with a specific amount of central bank money
 - Disturbances to possibilities for banks to securitize their loans
 - Shocks to risk-taking by banks or fluctuations in derivatives markets if banks are able to obtain extra funding in market to finance new loans
 - Peersman (2011): these disturbances explain more than 30 percent of Euro area output fluctuations since introduction of the euro
 - Central bank reacts to the shock by tightening the policy stance

Identification strategy

	y	p	c	i	s	b	c - b
Credit multiplier shocks	0	0	↑	↓	↑		↑
Interest rate innovations	0	0	↑	↓	↓		
Non-standard policy actions	0	0	↑	↓	0		

- Credit supply shocks due to monetary policy decisions
 - Interest rate innovations: change in credit supply caused by a shift in the monetary policy rate
 - Non-standard policy actions: credit supply shocks with zero contemporaneous impact on the policy rate
 - Sufficient to differentiate from credit multiplier and interest rate shocks
- 3 identified credit market shocks and 4 credit market variables
 - Remaining innovation captures all other possible credit market shocks

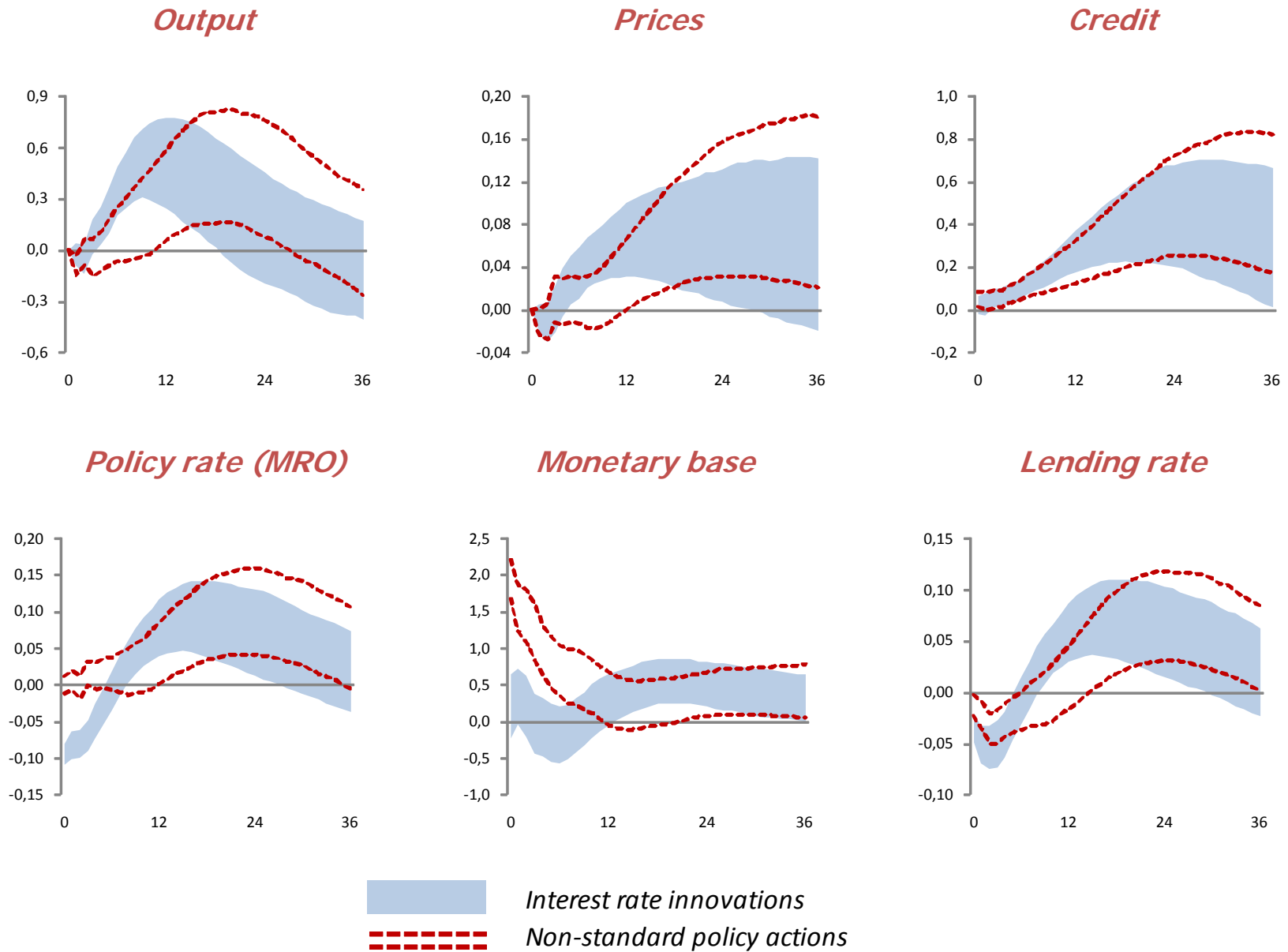
Some remarks about identified unconventional shocks

- Unconventional policies are only captured by this shock if they successfully affect credit supply
 - Not necessarily economic activity and consumer prices, which will be determined by the data
 - Non-effective measures not identified, as well as policies that influence the economy beyond financial intermediaries (cfr remaining innovation)
 - Notice: also the case for traditional interest rate innovations
- Shocks could be "demand-induced"
 - Shocks are not credit demand nor multiplier shocks, but could be credit supply driven by extra liquidity that banks obtain from ECB
 - However: accommodation of demand is still a policy decision, and particularly the decision to keep the interest rate constant (e.g. full allotment decision)

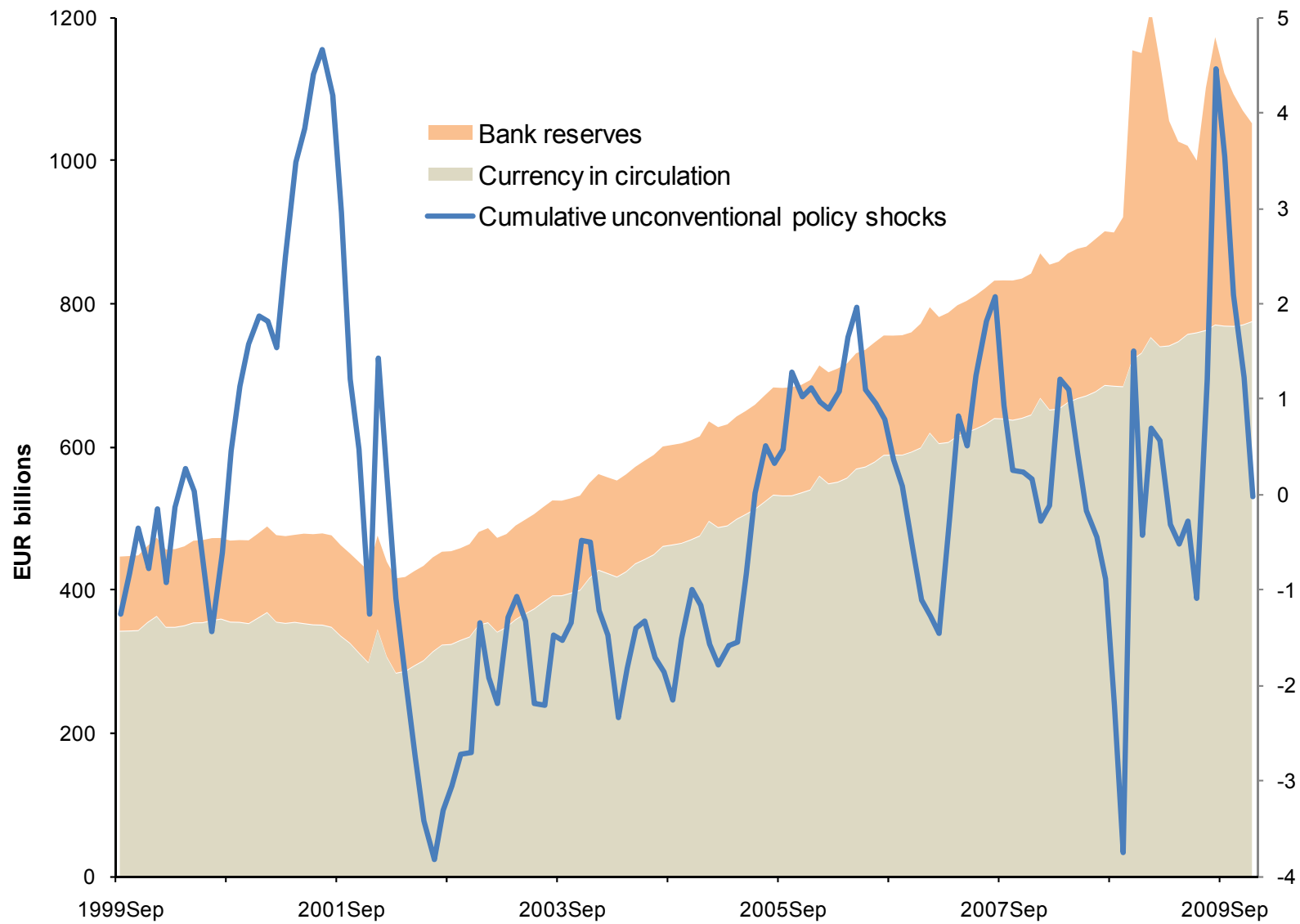
Some remarks about identified unconventional shocks

- Can be considered as a combination of several possible actions aimed at influencing flow of credit beyond the main policy rate
 - Response to crisis: liquidity at longer maturities, more eligible collateral, full allotment policy, outright purchases of covered bonds
 - Also in normal times, such shocks could have occurred: ECB responses not fully "unconventional" in their essence (Borio and Disyatat 2009)
 - A specific level of MRO may always be associated with varying monetary conditions (e.g. communication of future policy intentions)
 - Changes in allocated volume of liquidity and estimation errors of autonomous liquidity needs in main and LT refinancing operations
 - Even composition of balance sheet (MRO versus LTO) has not been constant
 - In the end, a generic series of such shocks is estimated: results should help to interpret source more carefully
 - Dynamic effects could be used as a benchmark to learn more about the effectiveness of extraordinary measures (some caution obviously required)

Baseline results



Baseline results



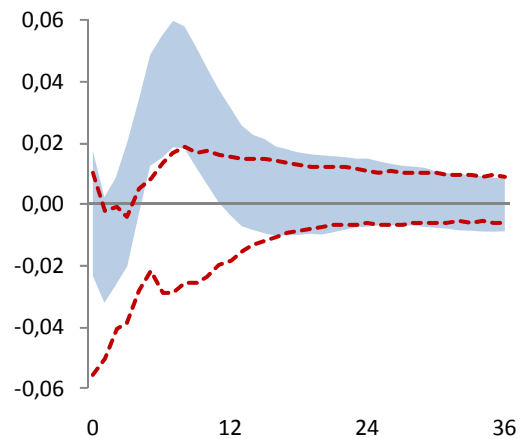
Sensitivity analysis

- Results robust for several alternative specifications
 - Central bank money measures: volume of bank reserves, volume of liquidity providing operations and overall size of ECB's balance sheet
 - A VAR model with money market variables instead of credit market variables
 - Alternative identification strategy: no zero contemporaneous restriction on the response of output and consumer prices
 - Extra variables in VAR estimations: European Sentiment Indicator, oil prices, stock market volatility, ...
 - A shorter sample period that excludes the enhanced credit support period: policy response to turmoil was not fully unconventional in its essence

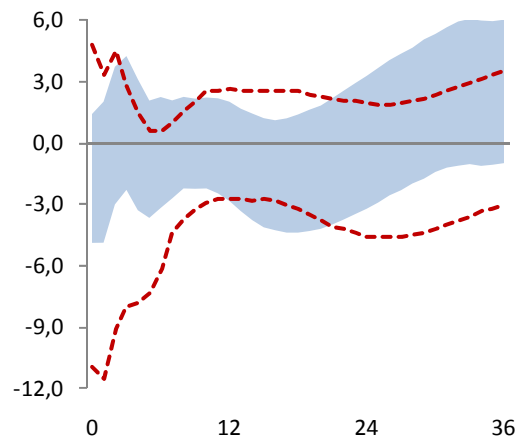
Inspecting the source of unconventional policy shocks

- Shocks mainly represent measures aimed at expanding or reducing the size of the central bank's balance sheet
 - Are not "interest rate" innovations within the corridor of the standing facilities: results also hold for VAR with EONIA
 - Confirmed by the responses of some other variables

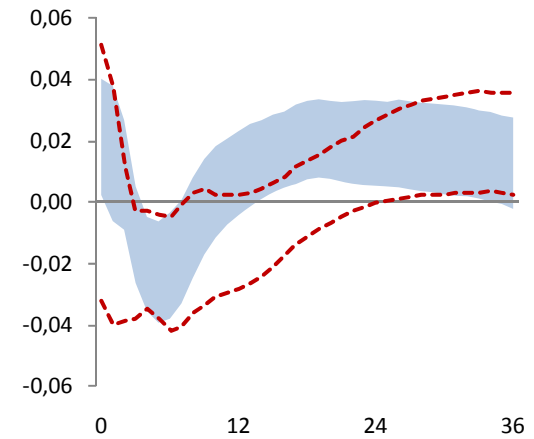
Spread 12m – 1m Euribor



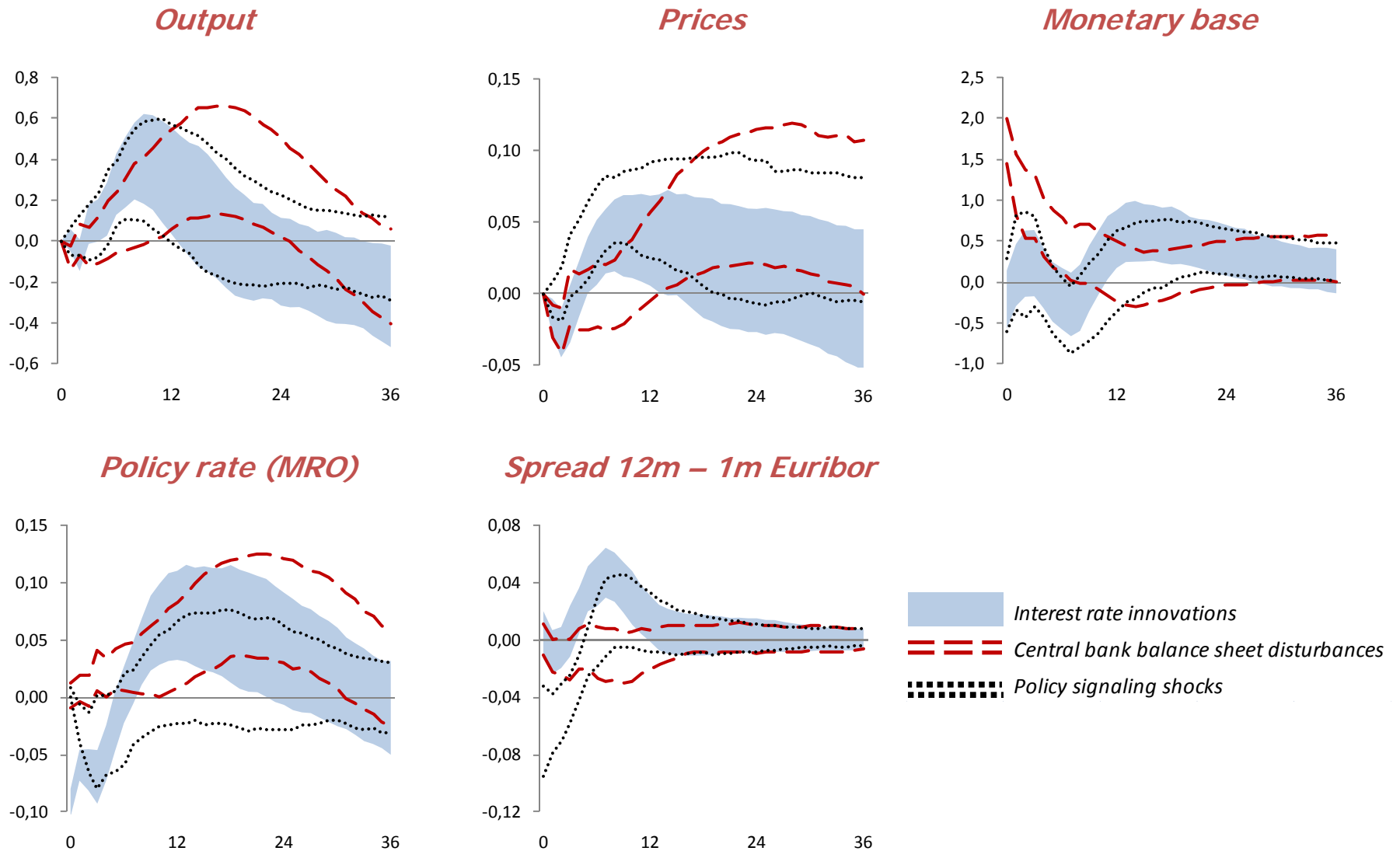
Ratio MRO-LTO liquidity



Spread 3m Euribor – OIS rate

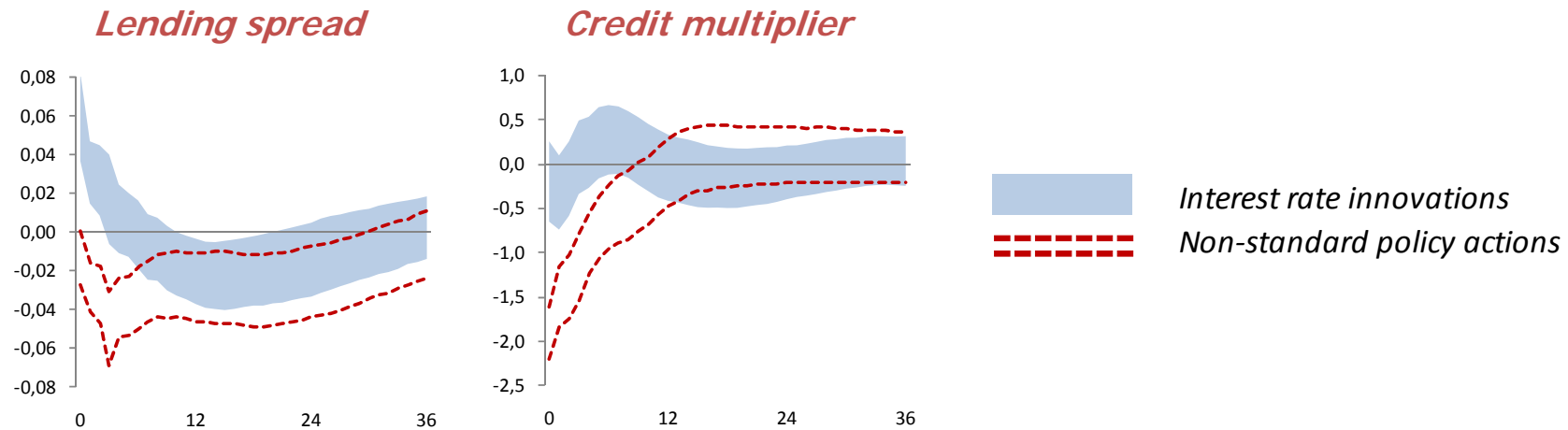


Inspecting the source of unconventional policy shocks



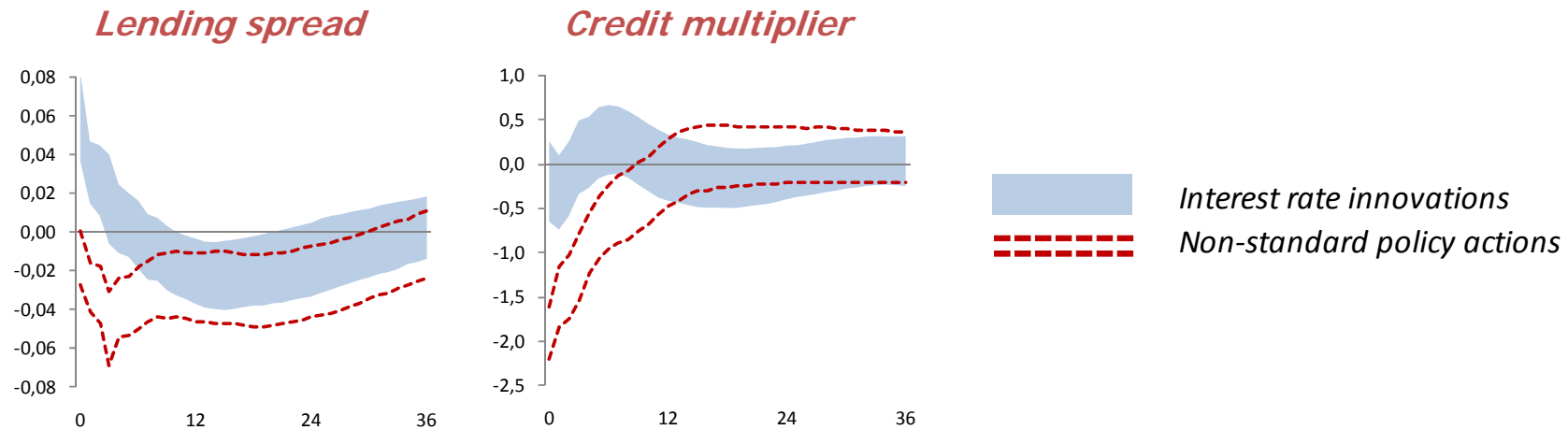
– Confirmed by VAR with two types of unconventional shocks

Monetary Transmission Mechanism



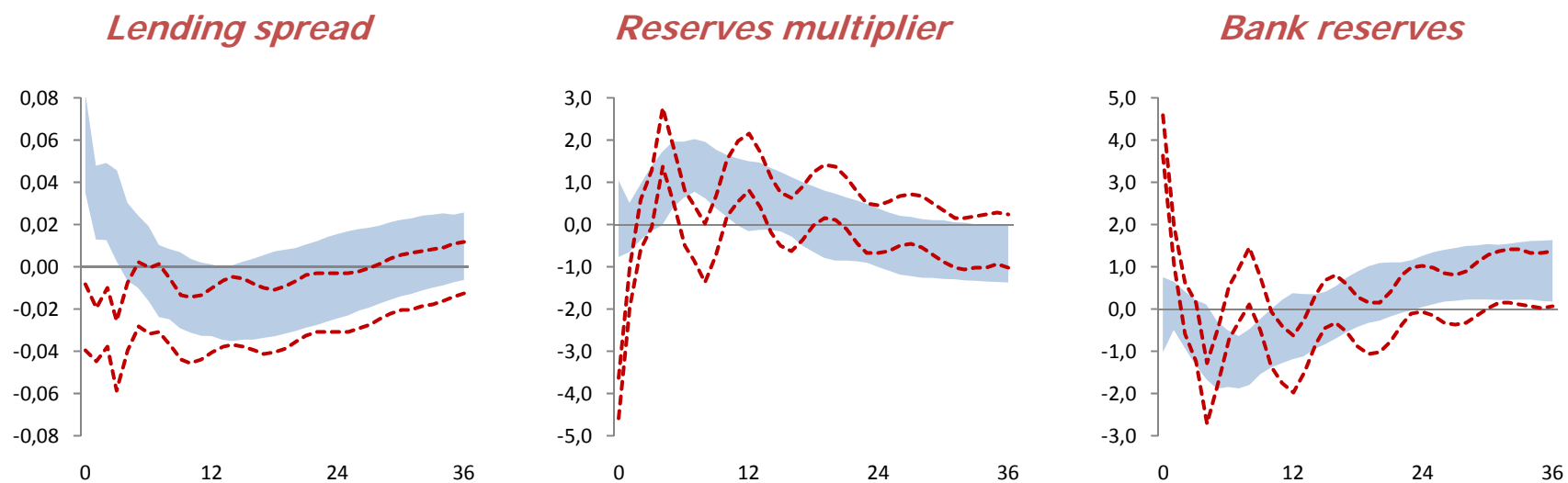
- Unconventional policy action
 - Extra liquidity reduces lending rates and hence also the interest rate spread charged by banks (difference between policy rate and lending rate)
 - Credit multiplier declines significantly in short-run (returns only after 1 year)
- Traditional interest rate innovation
 - Policy easing increases the interest rate spread (incomplete pass-through)
 - Hardly a change in credit multiplier

Monetary Transmission Mechanism



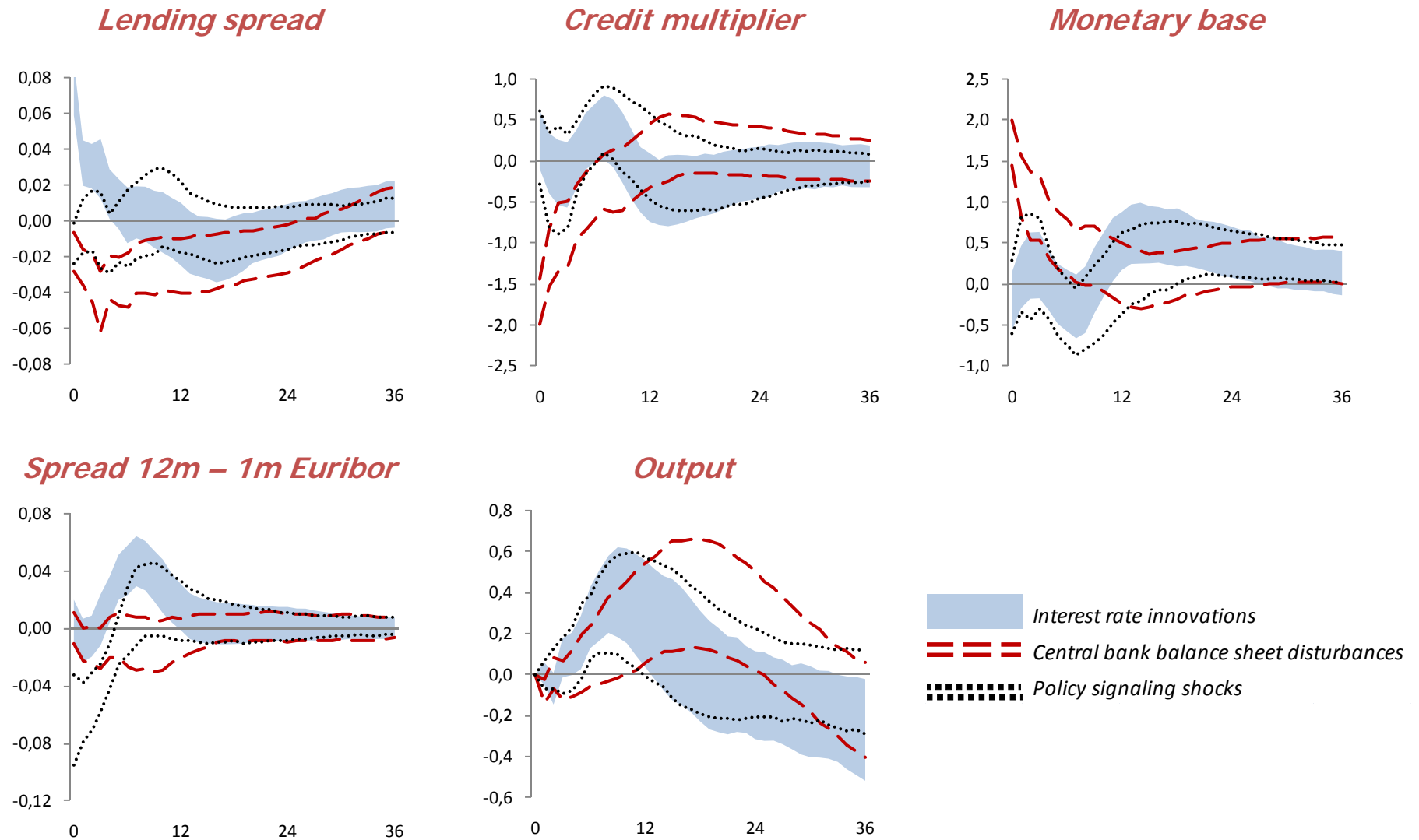
- Different response of multiplier could be due to the risk-taking channel
 - Traditional textbooks: expansionary policy has downward effect on multiplier
 - RTC1: expansionary policy increases value of outstanding bank loans and hence also bank's marked-to-market equity, leading to an increased balance sheet capacity and risk appetite of banking system, resulting in greater loan supply
 - RTC2: profitability, marked-to-market equity and risk-taking capacity are more directly affected by interest rate spreads
 - Risk taking channel very likely stronger for interest rate innovation: value of collateral probably more affected and response of spread is very different

Monetary Transmission Mechanism



- Not even a liquidity effect for bank reserves after interest rate shock: bank reserves decline after a fall in the policy rate
 - Due to stronger balance sheets, it is much easier/cheaper for banks to find liquidity in the market and expand their balance sheets without the need of central bank money (Borio and Zhu 2008; Adrian and Shin 2010)
 - Liquidity effect is often used to identify monetary policy shocks with sign restrictions (e.g. Uhlig 2005)...

Monetary Transmission Mechanism



– Confirmed by VAR with two types of unconventional shocks

Conclusions

- More than one instrument can be used for policy purposes
 - Impact on output and consumer prices similar for 25bp decline in policy rate and 10% rise of monetary base that is orthogonal to the policy rate
 - Pass-through is more sluggish compared to traditional interest rate shift
 - Transmission mechanism of both instruments is different
 - Spreads increase after expansionary interest rate innovation, but decrease following an unconventional policy shock that raises central bank liquidity
 - There is no significant short-run (bank reserves) liquidity effect for an interest rate shock, i.e. the rise in credit is generated by a greater multiplier, whereas the multiplier declines for an unconventional policy shock
 - Potential explanation is a much stronger risk-taking channel of monetary transmission after an interest rate innovation