Unconventional Policies During the Crisis and Expectations of Inflation and Growth: a Cross Country Analysis

Carlos Carvalho
PUC-Rio and Kyros Investimentos

Stefano Eusepi
FRB of New York

Christian Grisse
Swiss National Bank

May 2012

Did unconventional policies work?

- Did unconventional policies implemented in response to the 2008-9 crisis work?

- Difficult to answer. Need counterfactual

- One way to go: structural model

    - Calibrate/estimate

    - Simulate different policies (e.g. absence of policy response)

    - Next paper in this session

- What we do in this policy paper: simple approach to take a step toward addressing this first-order question
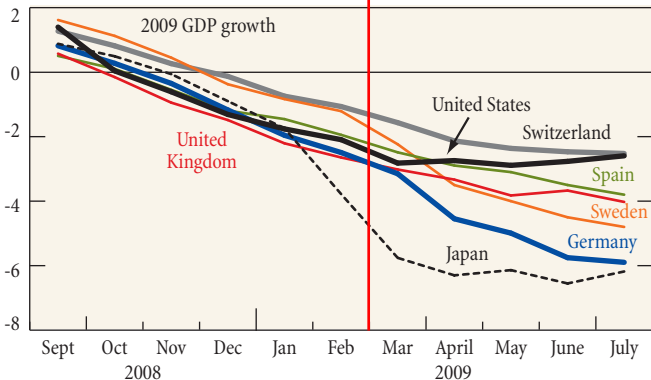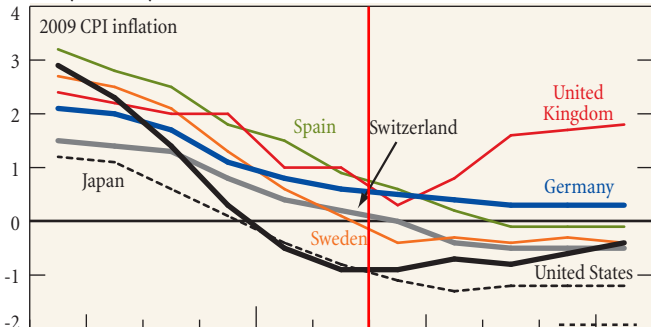
Two sets of facts

- After Lehman (Sept 2008)

    – Asset prices collapsing

    – Expectations of inflation and GDP growth falling precipitously

- Feb-Mar 2009

    – Many unconventional policies started/were scaled-up

    – Stabilization/rebound in expectations of GDP growth and inflation

    – Rebound in risky assets
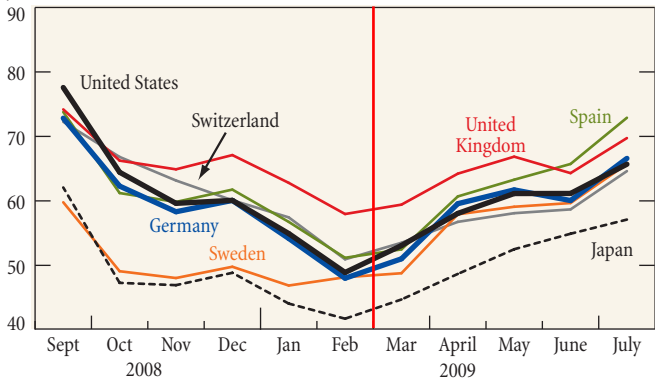
Consensus Expectations

Percent, year-over-year

2009 CPI inflation

United Kingdom

Spain

Switzerland

Japan

Germany

Sweden

United States

2009 GDP growth

United States

Switzerland

United Kingdom

Spain

Sweden

Germany

Japan

Sept | Oct | Nov | Dec | Jan | Feb | Mar | April | May | June | July
2008 — 2009

Source: Consensus Economics.

2009 Rebound in Global Stock Markets

June 2007 = 100

Source: Haver Analytics.

What we do

- Look for a connection between intensity of unconventional monetary policies around Feb-Mar 2009 and expectations of future inflation and real GDP growth

- Why expectations?

  - Should respond (immediately?) if policies were expected to be effective

  - No need to wait for realized inflation and GDP in 2009 and 2010: can focus on narrow window around Feb-Mar 2009

- Cross-country regressions of changes in expectations of GDP growth and inflation for 2009, 2010 on measures of unconventional monetary and fiscal policies

- Idea: should expect larger "expectation rebounds" in countries that undertook more aggressive policy responses.

- Caveats for causal interpretation: correlation, endogeneity, selection

Data

- 34 countries: G-20 (except Indonesia) + Euro area countries not in G-20 (except Cyprus, Luxembourg, Malta, Slovakia, and Slovenia) + Denmark, Hungary, Israel, New Zealand, Norway, Sweden, Switzerland, and Thailand

- Expectations of inflation and output growth: Consensus Economics

  - Change between Mar-Jul 2009

- Measure of fiscal stimulus

  - Information from Prasad and Sorkin (2009) + announcements made by national authorities in late 2008 through April 2009

  - Averge package $\approx$ 3% of GDP

  - Considerable variation: bottom quartile = 1% of GDP; top quartile = 4% of GDP

  - Do not distinguish between tax cuts and spending increases

Data - measure of unconventional monetary policy

- Measure of unconventional monetary policy: "detrended" rate of CB balance sheet expansion

  - Expansion over Feb-Dec 2009

  - Take out average growth rate of balance sheet expansion over Jan 2005 - Jun 2007 period

  - Go until Dec 2009 to account for policies that were announced around March 2009, but were implemented slowly over time (e.g. Fed's LSAPs)

  - Also look at "raw" rate of balance sheet expansion

Reversal in 2009 Inflation Expectations

Change in inflation expectations before March 2009 (September 2008-March 2009)

Change in inflation expectations after March 2009 (March-July 2009)
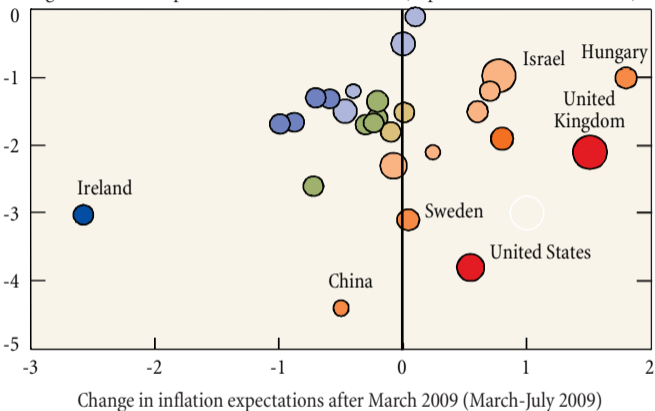
Source: Authors' calculations, using data from Consensus Economics and national central banks.

Note: The size of each data point reflects the percentage change in the detrended balance sheet, February-December 2009.

Baseline regressions

- We run the following regressions:

$$\Delta^{post}\pi^e_{YY,i} = \beta^\pi_0 + \beta^\pi_1 BalSheetChg_i + \beta^\pi_2 FiscalStimulus_i + \varepsilon^\pi_i$$
$$\Delta^{post}g^e_{YY,i} = \beta^g_0 + \beta^g_1 BalSheetChg_i + \beta^g_2 FiscalStimulus_i + \varepsilon^g_i,$$

where:

-$\Delta^{post}\pi^e_{YY,i}$ = change in inflation expectations for country i, year YY between Mar-Jul 2009

-$\Delta^{post}g^e_{YY,i}$ = change in GDP growth expectations for country i, year YY between Mar-Jul 2009

-$BalSheetChg_i$ = detrended CB balance sheet growth between Feb-Dec 2009 for country i

-$FiscalStimulus_i$ = size of country i's fiscal package as a % of GDP

-$YY = 2009, 2010$

Results: Model 1

Dependent Variables	2009		2010	
	Inflation	Growth	Inflation	Growth
Constant	.06	-1.63***	-.09	-.33**
	(.15)	(.27)	(.10)	(.13)
	[.70]	[.00]	[.37]	[.02]
Balance sheet	1.82**	1.50	.78**	.18
	(.75)	(1.42)	(.32)	(.42)
	[.02]	[.30]	[.02]	[.67]
Fiscal stimulus	-3.46	12.04*	-1.08	3.12
	(3.57)	(6.29)	(2.78)	(3.29)
	[.34]	[.07]	[.70]	[.35]
R^2	0.18	0.10	0.11	0.03
Observations	34	34	33	33

Source: Authors' calculations.
Notes: Parentheses denote Huber-White robust standard errors; brackets denote
p-values. Dependent variables are the March-July 2009 changes in expectations.

***Statistically significant at the 1 percent level.
**Statistically significant at the 5 percent level.
*Statistically significant at the 10 percent level.

Regressions - zero lower bound

- Allow for differential relationship when at the zero lower bound

- ZLB countries: CB must have

  - Cut the policy rate by at most 25 bps in the Mar-Jul 2009 period

  - Left rate unchanged through the end of 2009

  - Canada, Japan, Switzerland, the United States, and the United Kingdom

$$
\begin{aligned}
\Delta^{post}\pi^e_{YY,i} &= \beta^\pi_0 + \beta^\pi_1 BalSheetChg_i \\
&\quad + \left(\beta^\pi_{2,LB}LB_i + \beta^\pi_{2,NLB}NLB_i\right) FiscalStimulus_i + \varepsilon^\pi_i \\
\Delta^{post}g^e_{YY,i} &= \beta^g_0 + \beta^g_1 BalSheetChg_i \\
&\quad + \left(\beta^g_{2,LB}LB_i + \beta^g_{2,NLB}NLB_i\right) FiscalStimulus_i + \varepsilon^g_i,
\end{aligned}
$$

Results: Model 3—Fiscal Policy at the Lower Bound

	2009		2010	
Dependent Variables	Inflation	Growth	Inflation	Growth
Constant	.05	-1.64***	-.09	-.34**
	(.16)	(.28)	(.10)	(.14)
	[.74]	[.00]	[.38]	[.02]
Balance sheet	1.59*	1.15	.71*	-.29
	(.87)	(1.68)	(.36)	(.38)
	[.08]	[.50]	[.06]	[.46]
Fiscal stimulus NLB	-5.26	9.34	-1.63	-.01
	(5.01)	(9.04)	(3.63)	(.05)
	[.30]	[.31]	[.70]	[.92]
Fiscal stimulus LB	1.31	19.21**	.38	12.67***
	(4.65)	(7.37)	(2.97)	(2.20)
	[.78]	[.01]	[.90]	[.00]
R^2	0.20	0.12	0.12	0.18
Observations	34	34	33	33

Source: Authors' calculations.

Notes: Parentheses denote Huber-White robust standard errors; brackets denote *p*-values. Dependent variables are the March-July 2009 changes in expectations. The variable "fiscal stimulus LB" captures fiscal stimulus for countries at the lower bound during 2009 according to our criterion (it equals zero for countries not at the lower bound); the variable "fiscal stimulus NLB" includes fiscal stimulus of countries not at the lower bound (it equals zero for countries at the lower bound). The lower-bound group includes Canada, Japan, Switzerland, the United States, and the United Kingdom.

***Statistically significant at the 1 percent level.
**Statistically significant at the 5 percent level.
*Statistically significant at the 10 percent level.

Policy Initiatives in the Global Recession: What Did Forecasters Expect?

Carlos Carvalho, Stefano Eusepi, and Christian Grisse

The global recession of 2008-09 led to monetary and fiscal policy responses by central banks and government authorities that were often unconventional in size and scope. A study of expansionary measures employed during the recession suggests that overall, the policies were likely effective in shaping the outlook for a recovery, as forecasters raised their expectations of inflation and GDP growth after the policies' implementation. From this perspective, the policies stimulated economic activity and prevented deflationary pressures during the financial crisis.

The global recession of 2008-09 resulted in a significant loss of output (GDP), a large increase in unemployment, and a deflationary scare in many countries. Indeed, forecasters' expectations of inflation and GDP growth deteriorated in fall 2008, particularly after the collapse of Lehman Brothers in September.

The depth, scale, and duration of the recession associated with the financial crisis triggered monetary and fiscal policy responses by central banks and government authorities that in some cases were unconventional in size and scope. Many central banks with policy rates at or near the lower bound of zero percent turned to other stabilization tools, which altered the size and composition of their balance sheets. The Federal Reserve and the Bank of England, for example, implemented large-scale asset purchase programs. In addition, authorities in several countries sought to address the crisis through sizable fiscal stimulus packages involving tax cuts and higher public spending. By spring 2009, inflation and output growth expectations seemed to have stabilized (Chart 1). Stocks and other assets also rebounded around that time (Chart 2).

Assessing the role of monetary and fiscal policies in the stabilization process is a key challenge, and the subject of an intense debate among policymakers, academics, and the public. In this edition of *Current Issues,* we use cross-country data to investigate the relationship between policies put in place during the global recession and their influence on forecasters' output and inflation expectations. We focus on expectations because they may convey more information about the effectiveness of policies than economic outcomes do. Forecasters adjust expectations quickly after policies are announced; therefore, expectations are less affected by additional changes in economic conditions that could occur once the policies are implemented.

We find that expansionary monetary and fiscal policies, overall, were successful in shaping expectations of a recovery. Forecasters raised their expectations of inflation and GDP growth following implementation of the policies. In particular, monetary expansions appear to have affected inflation forecasts while fiscal policies seem to have influenced expectations of economic growth. From this perspective, the policies