The Exchange Rate, Price Setting and Financial Markets:

Considerations for Monetary Policy in an Open Economy

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Overview

My plan here is to discuss practical implications of some of the open-economy monetary policy literature.

My intention, in a sense, is to talk about how I would translate that literature if I were talking to a central bank policymaker.

There are important questions for which I do not know the answer. I will ask the questions, and give my thoughts, but I invite discussion.

Pass-through

One thing that I will not talk about is how "pass-through" affects inflation, and hence policy.

In a sense, I want to talk about "targeting rules" and "loss functions" for the policymaker, but maybe the questions about pass-through are more relevant for thinking about the nature of the "instrument rule".

I do think that the degree of pass-through affects the trade-offs of policymakers. I will return to that later. This is something that I actually addressed in a BIS paper (Engel, 2013).

Distortions

One of the greatest practical contributions of the New Keynesian monetary policy literature is to recast policy questions in terms of minimizing distortions.

Monetary policy can be thought of the way tax policy is considered in the public finance literature – how is the market economy distorted and what policies address those distortions?

This will also help us think about, for a particular problem, monetary policy is the appropriate tool versus some other tool (such as macroprudential.)

Friedman (1953) and Clarida-Gali-Gertler (2002)

Friedman argued that when nominal prices are sticky (PCP), the nominal exchange rate delivers desired terms of trade.

He also argued that floating rates bestowed independence of monetary policy.

That wording applies to fixed vs. floating. Except in the extreme case of fixed, if a country has its own currency, its policy is always “independent”. “Spillovers” may worsen the tradeoffs.

CGG is, in a sense, a modern-day version of Friedman. Under some strong assumptions, minimizing the loss from inflation and the output gap is optimal, and exchange rate will act as in Friedman.

(Note the role of the exchange rate in "completing" asset markets.)

Engel (2011)

In a quite simple model, I derive one example of how monetary policymakers may want to target the exchange rate, as well as inflation and the output gap.

Loss function CGG:

$$\left[\frac{\sigma}{D}+\phi\right](\tilde{y}_t^R)^2+(\sigma+\phi)(\tilde{y}_t^W)^2+\frac{\xi}{2\delta}\left((\pi_{Ht})^2+(\pi_{Ft}^*)^2\right)$$

Loss function Engel:

$$\frac{\sigma}{D}(\tilde{y}_t^R)^2+\sigma(\tilde{y}_t^W)^2+\frac{\nu(2-\nu)}{4D}m_t^2+\frac{\xi}{\delta}\left((\pi_t^R)^2+(\pi_t^W)^2+\frac{\nu(2-\nu)}{4}(s_t-s_{t-1})^2\right)$$

Why Do Deviations from LOOP Matter?

If the output gap is zero – so aggregate output is at the efficient level – and inflation is zero, so there is no misalignment of relative prices within a country, what other distortion is left?

Here it is a consumption distortion – asset markets misallocate (from a global perspective) payoffs.

$$\frac{U_i\left(\vec{C}_t\right)}{P_{i,t}} = \frac{\lambda}{\lambda^*}\frac{U_i\left(\vec{C}_t^*\right)}{S_t P_{i,t}^*}, \text{ not } U_i\left(\vec{C}_t\right) = \frac{\lambda}{\lambda^*}U_i\left(\vec{C}_t^*\right)$$

But Isn't this Condition Arcane and Irrelevant?

In Engel and Matsumoto (2009) (and, relatedly, Coeurdacier and Gourinchas (2016)) such a relation arises optimally. The optimal portfolio has agents with debt denominated in their own currency, holding foreign debt denominated in foreign currency, and substantial home bias in equities.

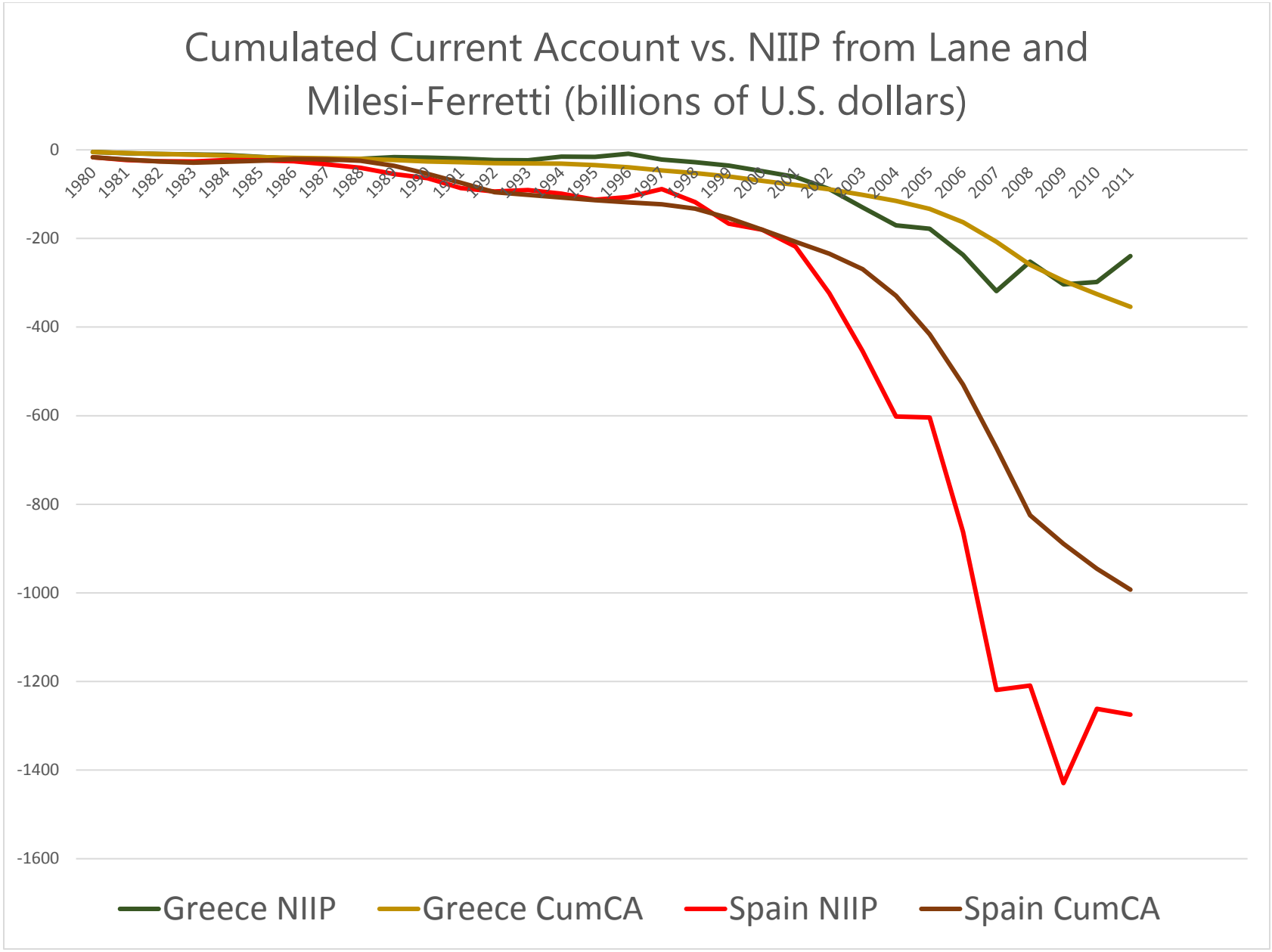
The intuition arises from the diversification motive when prices are sticky, and the role the terms of trade play in diversifying risk when prices adjust.

What Should the Policymaker Know?

The key takeaway is that the exchange rate may matter because of valuation effects. This is an aspect of the spillovers from monetary policy choices that is often ignored. There is no "disconnect" here.

Gourinchas and Rey (2007) made valuation effects famous. We see that they play a large role in the adjustment of international asset positions.

Here is a chart of cumulated current accounts versus NIIP for a Spain and Greece. Note the role of Euro appreciation:


Cumulated Current Account vs. NIIP from Lane and Milesi-Ferretti (billions of U.S. dollars)
0
-200
-400
-600
-800
-1000
-1200
-1400
-1600
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Greece NIIP
Greece CumCA
Spain NIIP
Spain CumCA

In fact, for advanced countries, sovereign debt does tend to be denominated in domestic currency.

For emerging markets, foreign-held sovereign debt was primarily denominated in foreign currency, but less so now. (Du and Schreger, 2016)

For both emerging markets and advanced countries, foreign-held corporate debt is mostly denominated in foreign currency! (Du and Schreger, 2016; Maggiori, Neiman, and Schreger, 2017)

I will return to the problem that valuation effects cause for balance sheets.

There are a lot of recent theoretical papers on financial market constraints and international spillovers of monetary policy. One of my favorites is Banerjee, Devereux and Lombardo (2016), which I discussed here in March, 2016.

The paper shows that an emerging market country, whose banks borrow from global banks in the advanced countries, are not very insulated at all from the spillovers from the center if they follow an inflation targeting rule.

But a more nimble rule that responds by easing quickly during the crisis and then reversing course will greatly improve performance in the emerging economy.

Two questions

Can we give policymakers insight into these questions?

1. Prior to the GFC, when the euro costs nearly $1.60, how should monetary policy have reacted? U.S. tradable goods firms benefited at the expense of European firms – but that was not because they were more productive.

2. Krugman and others have argued that if Greece had its own currency, they could have easily adjusted with a real depreciation that stimulated exports. Would it be desirable to have inefficient Greek firms expand?

Using a CGG Framework to Analyze the German Case

In that framework, we should see a nominal depreciation when a country has a positive productivity shock.

The relative price of its output should fall, and with PCP prices, that is accomplished through nominal depreciation.

A cost-push shock could lead the country into recession, then the depreciation could help reduce the output gap. But this does not seem like the right framework.

Other Distortions and Other Causes of Depreciation

1. Bubbles, sunspots, multiple equilibria and other deviations from rational expectations (Bacchetta and van Wincoop, 2004, 2006, 2012, 2013)

2. Expectations of future monetary policy (and imperfect credibility)

3. Liquidity shocks

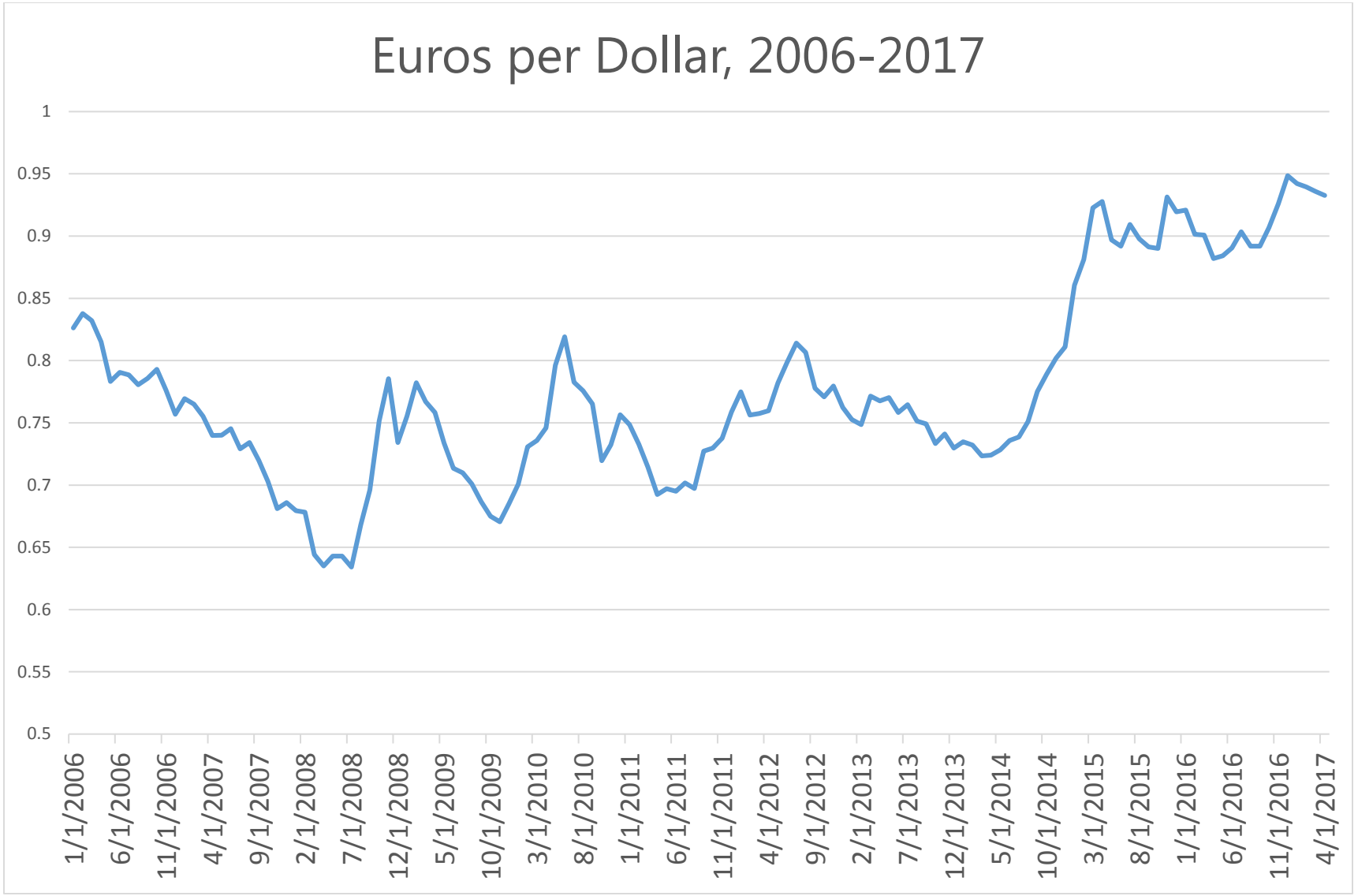
4. Time-varying default risk

Commitment and Expectations of Monetary Policy

Clearly in recent years, expectations of future Fed policy have played a large role in driving the value of the dollar. For example, the sudden appreciation of the dollar during the "taper tantrum," or the rise in the dollar in anticipation of "lift-off."

Indeed, the latter seemed to play the dominant role in driving the value of the dollar in 2014-2015.

But under CGG, the monetary rule is known. The only news that would influence the exchange rate is anticipation of future productivity or cost-push shocks.


Euros per Dollar, 2006-2017
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
1/1/2006
6/1/2006
11/1/2006
4/1/2007
9/1/2007
2/1/2008
7/1/2008
12/1/2008
5/1/2009
10/1/2009
3/1/2010
8/1/2010
1/1/2011
6/1/2011
11/1/2011
4/1/2012
9/1/2012
2/1/2013
7/1/2013
12/1/2013
5/1/2014
10/1/2014
3/1/2015
8/1/2015
1/1/2016
6/1/2016
11/1/2016
4/1/2017

Why Does Anticipation of Future Monetary Policy Matter?

Perhaps markets learn about the state of the economy (productivity, cost-push shocks) from Fed communications.

Another possibility is that it is not completely credible that the Fed is committed to its targets. Markets believe there is some probability of discretionary policymaking.

Policy under commitment must both deal with the distortions introduced by lack of full credibility (Calvo, 1989) but also must try to follow policies that over time will be too costly for the discretionary policymaker.

Some Examples

Perhaps during 2014-2015, markets were relearning about the Fed's commitment to keep inflation below 2%, and were "surprised" at each announcement that tapering or lift-off was coming.

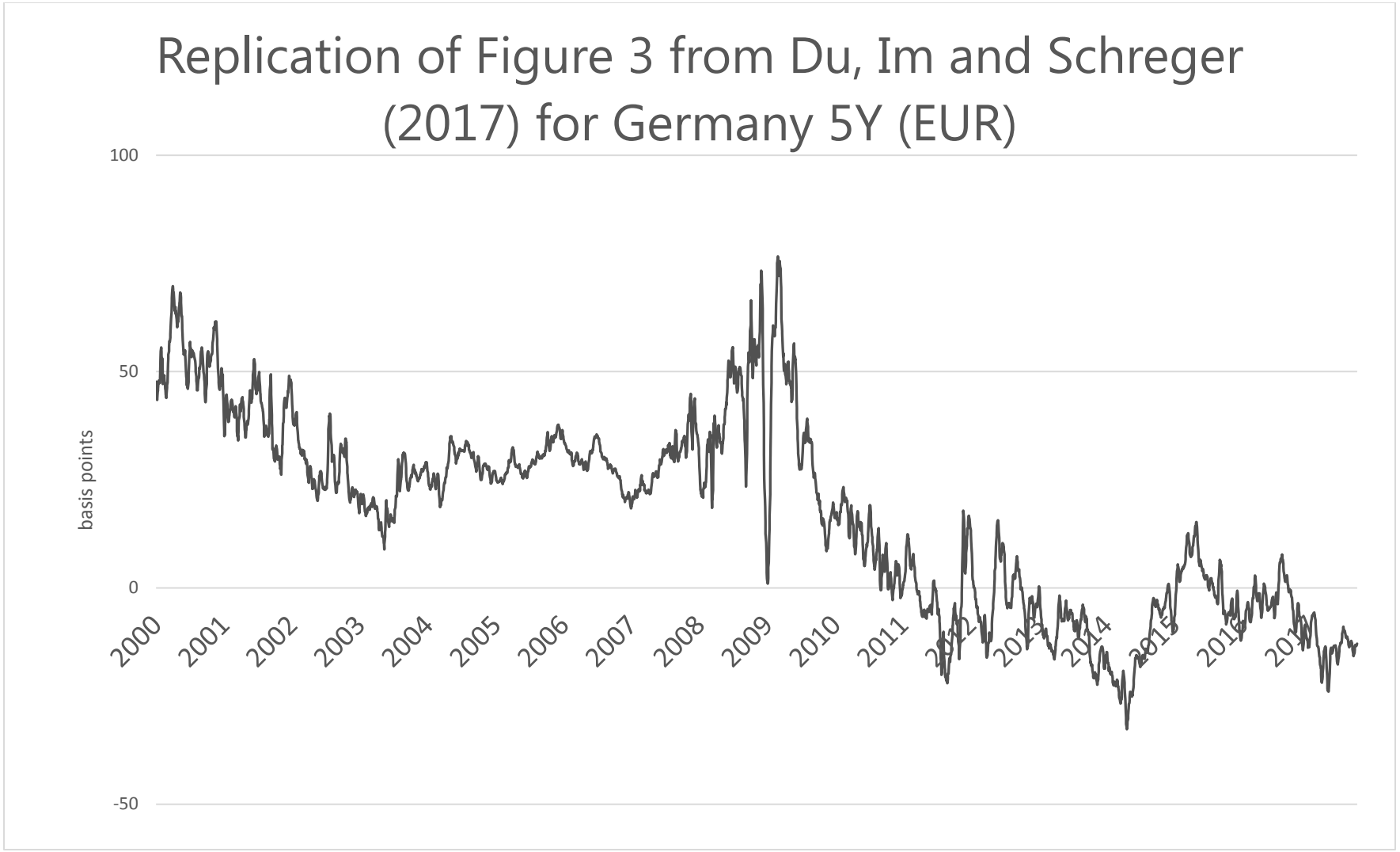
Countries that have rigidly pegged to the dollar (Hong Kong 1983-present, China in 1995-2004, Argentina in 1991-2002, Ecuador 2000-present, and Danish Krone to the Euro 1999-present) In all these cases, the policy at least initially worked to stabilize the exchange rate and grant monetary policy credibility.

Liquidity

Liquidity has many meanings, and has been implicated in exchange rate determination in different contexts recently (Gabaix and Maggiori, 2015; Du, Tepper, and Verdelhan, 2017).

I have in mind the liquidity of certain assets – U.S. dollar reserves and "near reserves" (short-term Tbills). They provide liquidity in the global banking system (Bianchi and Bigio, 2017; Bianchi, Bigio & Engel, 2018)

Modeled loosely as T-bills providing liquidity services that are not as good as reserves (Nagel, 2016; Engel, 2016)


Replication of Figure 3 from Du, Im and Schreger (2017) for Germany 5Y (EUR)
100
50
0
-50
basis points
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

Quick Regression Result

$$Log(S_{€/\$}) = 0.27 + 0.34^{*} \times TreasPrem + 0.02\left(i^{€} - i^{\$}\right) + 0.05^{**}\left(u^{€} - u^{\$}\right)$$

Monthly, Jan. 2000-April 2017

* significant at 5% level (one-sided)
** significant at 1% level (one-sided)

But if the liquidity premium drives the dollar/euro rate, what are the implications for policy?

This may account for the strengthening of the dollar in 2008-2009, but should this benefit German firms?

Current Account Imbalances

Following Corsetti, Dedola and Leduc (2011), we can define the general asset market distortion term:

$$F_t \equiv \left(\frac{U_i\left(\vec{C}_t\right)}{\lambda P_{i,t}} \right) \Bigg/ \left(\frac{U_i\left(\vec{C}_t^*\right)}{\lambda^* S_t P_{i,t}^*} \right)$$

In CGG, $F_t = 0$. In Engel (2011), and Gourinchas, Casas, Diez and Gopinath (2017), $F_t \neq 0$ because LOOP fails. In Corsetti, Dedola and Leduc (2018) and Engel (2014), $F_t \neq 0$ because asset markets are not complete.

Sovereign Default

None of these papers examines optimal monetary policy under the possibility of sovereign default. (Note that Engel and Park (2017) examine using monetary policy to inflate away home-currency debt.)

Many believe that the depreciation of the euro, 2010-2012, resulted primarily from the European default crisis.

As I noted above, Krugman and others believe that if Greece had its own currency, the default problem would have been less severe.

Exchange Rates and the Current Account

Why is it important to have current account adjustment? The main problem, I believe, is that sustained deficits can lead to too much external debt accumulation, leading to the possibility of default.

Is currency depreciation the correct solution?

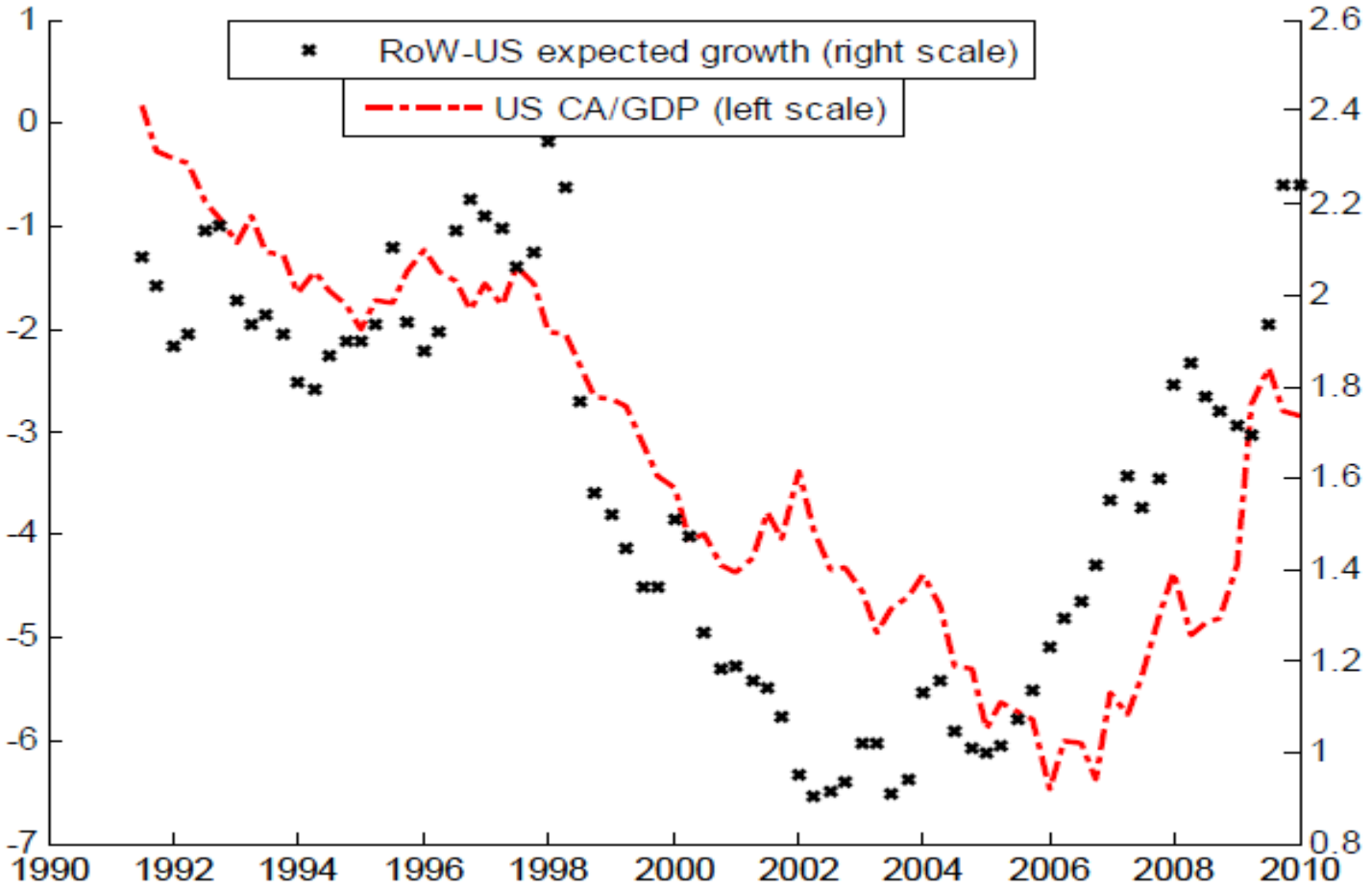
And, if so, should that be a target of monetary policy, or would sterilized intervention work?

The Response of the Trade Balance to the Exchange Rate

My reading of empirical evidence: causal link between depreciation and trade balance is weak – disconnect!

1. There is a lot of pricing to market, so that relative prices respond weakly to nominal exchange rate changes
2. In the short-run, trade elasticities are low
3. The level of the nominal exchange rate should not matter in the long run.

The correlation between exchange rates and the trade balance mostly represents the tendency for the currency to be weak during downturns. Imports are income sensitive, so trade balance improves in downturns.



Hoffmann, Krause, Laubuach (2017), Engel & Rogers (2006)

Balance Sheet Effects

On the other hand, as we know from the work of Cespedes, Chang and Velasco (2004), a home depreciation can be contractionary because of balance sheet effects.

Bruno and Shin (2015 a,b) and Hoffmann, Shim and Shin (2017) outline a mechanism by which appreciation (dollar depreciation) improves balance sheets, leading to excessive risk taking. Subsequent depreciation magnifies the effects. Similar to Bianchi (2011).

Feedback loop can materialize.

Summary

In recent years, the main drivers of exchange rates have been anticipation of monetary policy, liquidity, default and possibly bubbles/sunspots.

But this leads to a number of questions, for which I think the literature does not give clear answers. What should we tell policymakers?

Credibility and Anticipations of Future Monetary Policy

1. How should policymakers respond when the exchange rate changes in response to anticipations of future monetary policy?

The exchange rate change can lead to distortions. Should they use monetary policy to smooth exchange rates? Sterilized intervention? Even a currency board?

Would stabilizing the exchange rate enhance credibility? Or is stronger inflation targeting preferable?

Liquidity

2. When there is an increased demand for dollars for liquidity, how should monetary policy respond?

Again, the dollar appreciation may lead to distortions. Should monetary policy respond by resisting the exchange rate change?

Or is this a problem that is better handled by macroprudential policy?

Current Account Imbalances and Default

3. Should a country depreciate its currency if it is running a current account deficit? Would this even work, or would it be useless or even counterproductive?

How should monetary policy respond when the currency depreciates as markets suspect default?

Indeed, even in "normal" times, should monetary policy manage exchange rates in order to protect balance sheets against currency mismatch?

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