

The role of macroeconomic policies in the global crisis[☆]

Pietro Catte, Pietro Cova, Patrizio Pagano^{*}, Ignazio Visco

Banca d'Italia, Via Nazionale 91, 00184 Rome, Italy

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Abstract

This paper argues that the lack of timely and decisive policy action to correct domestic and external imbalances contributed crucially to the build-up of financial excesses that led to the financial crisis and the Great Recession. We focus on 2002–2007 and perform a number of counterfactual simulations to investigate two central elements of the story, namely: (a) an over-expansionary US monetary policy and the absence of effective macro-prudential supervision, which permitted a prolonged expansion of debt-financed consumer spending and (b) the choice by China and other emerging countries to pursue an export-led growth strategy supported by pegging their currencies to the US dollar, in conjunction with sluggish domestic demand in major advanced economies characterized by low potential output growth. The results of the simulations lend support to the view that if substantial, globally coordinated demand rebalancing had been undertaken early on, the macroeconomic and financial imbalances would not have accumulated to the extent that they did and the financial turmoil might have had less drastic global consequences.

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1. Introduction

While the trigger and the proximate causes of the crisis that has rocked the global economy since the summer of 2007 were essentially financial, it has become increasingly clear that

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^{*} Corresponding author.

E-mail addresses: pietro.catte@bancaditalia.it (P. Catte), pietro.cova@bancaditalia.it (P. Cova), patrizio.pagano@bancaditalia.it (P. Pagano), ignazio.visco@bancaditalia.it (I. Visco).

macroeconomic imbalances were a central part of the complex set of circumstances that lay at its root. In particular, the financial excesses that led to the piling up and underestimation of risks could not have become so widespread if the macroeconomic environment had not been characterized by large saving–investment imbalances, very low interest rates and substantial asset price misalignments. In the general climate of hype that those macroeconomic conditions permitted, supervisory and regulatory failures allowed financial innovations to generate serious dysfunctions in the US and global financial systems. Moreover, the lopsided composition of global final demand in the years preceding the crisis, with most of the world ultimately relying on US consumer spending, essentially financed by growing mortgage debt, made the world economy extremely vulnerable to a shock – the downturn in the US housing market – that called this central factor of the global expansion into question. If this key source of fragility is not borne in mind, it is difficult to explain fully the sharp and highly synchronized contraction of world trade and the collapse of global confidence that characterized the propagation of the global recession.

In this paper we argue that the lack of timely and sufficiently decisive policy reactions to the domestic and external imbalances was crucial: if those imbalances had been corrected, the financial turmoil would have had lesser far-reaching consequences.

Over the 10–15 years that preceded the crisis it was indeed already possible to identify a number of signals of macroeconomic stress, which over time interacted with flaws in the financial system to create very significant, though at the time partly hidden, financial fragilities.¹ These signals were: the dramatic fall in the US household saving rate, from around 7 per cent in the early 1990s to close to zero in 2005–2007; a sharp increase in US and global liquidity, which largely reflected the generally accommodating monetary conditions in the United States; the continuous widening of global imbalances, already recognized as hard to sustain in the late 1990s; an enormous increase in official reserves, mainly in emerging Asia and the oil-exporting countries, which mostly pegged their currencies to the US dollar; very low levels of long-term interest rates and asset price volatility after 2003; and a sequence of asset price bubbles in the United States and globally, starting with the dot-com bubble of the late 1990s, followed by an unusually synchronized global housing price boom.

Essentially, these disequilibria reflected rapid and sustained growth in final demand, especially consumption demand, in the United States, financed by over-borrowing, primarily from abroad. This occurred in a global context of excess saving that compressed real interest rates to abnormally low levels compared with average GDP growth. If the United States served as a sort of “consumer of last resort”, other large advanced and emerging economies implicitly or explicitly followed an export-led growth strategy, which is difficult to maintain indefinitely but also difficult to abandon.

Among the explanations for the emergence of such disequilibria, one thesis at the centre of a heated debate is that US monetary policy was too expansionary for too long. Taylor (2007), on the basis of a simple model of housing starts as a function of lagged interest rates, showed that, had the Fed simply adhered from 2002 to 2005 to the standard “Taylor rule”, the federal funds rate would have been raised more quickly and both the boom and the subsequent bust in housing starts would have been considerably mitigated. On the other hand, Bernanke (2010) claims that if one considers the information available at the time (and especially current estimates of the output gap) monetary policy was not overly expansionary and played, at most, a modest role in

¹ See Visco (2009, 2010).

the US housing bubble. In his view, financial regulatory policy should be the appropriate tool for preventing harmful asset price bubbles in the future.²

Other interpretations of the build-up of the crisis emphasize the role of excess saving outside the United States and the channeling of foreign saving into Treasuries, which put downward pressure on interest rates. Low interest rates triggered a search for yield, and the attendant squeeze of risk premia tended to make financial conditions even more favourable for a broad range of borrowers, feeding the house price bubble. Several explanations have been put forward to rationalize the impact of global savings on long-term interest rates. One strand of this literature, originated by Bernanke (2005), starts out from the reaction of emerging Asian countries to the 1997–1998 crisis: the crisis induced these countries to assign a high priority to accumulating official reserves as a buffer against possible capital outflows. In several countries the counterpart was a sharp drop in investment (IMF, 2005). In China, however, which had escaped a currency crisis, there was an exceptional increase in saving after 2002. Overall, the “excess saving” approach does not explain why emerging countries would channel their additional savings into portfolios biased towards a few assets (mainly US Treasury paper). This is made explicit in the “Bretton Woods II” analysis (Dooley, Folkerts-Landau, & Garber, 2003), which emphasizes the deliberate maintenance of undervalued exchange rates pegged to the dollar as part of an export-led growth strategy. An alternative interpretation of emerging countries’ accumulation of reserve assets is found in a more recent strand of the literature (Caballero, Farhi, & Gourinchas, 2008) according to which the United States’ unrivalled comparative advantage in terms of financial market deepness, liquidity and legal infrastructure and its position at the financial core of a rapidly integrating world enable it to attract financial investments from fast-growing industrializing economies, unable themselves to produce the financial assets they need to store wealth safely. Excess demand for high-quality assets in the periphery thus translates into a global shortage of such assets that forces the core country, the United States, into a structural equilibrium characterized by persistent current account deficits and low long-term real interest rates.

More recently, it has been suggested that only a much broader set of interrelated factors – macroeconomic as well as financial – could have generated a crisis of such magnitude (Visco, 2009). Along similar lines, Bean (2009) concludes that it would be a mistake to look for a single guilty culprit. Optimistic views of the extent to which the Great Moderation had reduced underlying risk, loose monetary policy in the United States and a perverse pattern of international capital flows together provided fertile territory for the emergence of a credit/asset-price bubble. Similarly, Obstfeld & Rogoff (2009) argue that the global imbalances of the 2000s and the global crisis are intimately connected, both having their origins in the economic policies followed in a number of countries in the 2000s and in distortions that influenced the transmission of these policies through the United States and ultimately global financial markets.

In this more eclectic interpretation, which is also the one taken up in this paper, interactions among the Fed’s monetary stance, global real interest rates, credit market distortions, and financial

² Recent IMF research (Kannan, Rabanal, & Scott, 2009) shows that in some countries there was some correlation between loose monetary policy and house price rises in the years leading up to the crisis, but loose monetary policy was not the main, systematic cause of boom–bust cycles. However, simulation results suggest that a stronger emphasis on macrofinancial risk could provide stabilization benefits. Strong monetary reactions to accelerator mechanisms that push up credit growth and asset prices could help macroeconomic stability, but a macro-prudential instrument designed specifically to dampen credit market cycles would also be useful. Nevertheless, invariant and rigid policy rules that do not consider the source of the shock (e.g. financial vs. real) raise the risk of policy errors that could destabilize the economy instead of stabilizing it. Hence, discretion would be preferable.

innovation created the toxic mix of conditions that made the United States the epicentre of the global financial crisis. Outside the United States, exchange rate and other economic policies followed by emerging markets such as China helped allow the United States to borrow cheaply abroad and thereby finance its unsustainable housing bubble.

The simulations that we perform in this paper aim to shed light on such interrelations. In particular, we focus on the period 2002–2007, before the start of the financial turmoil that evolved into the global crisis, and perform several counterfactual simulations to investigate two central elements of the story, namely: (a) an overly expansionary monetary policy and lax supervisory policy in the United States, which may have permitted a prolonged expansion of debt-financed consumer spending and (b) the choice by China and other emerging countries to pursue an export-led growth strategy supported by pegging their currencies to the US dollar, in conjunction with sluggish domestic demand in other advanced economies characterized by low potential output growth. Model simulations are conducted to provide a quantitative assessment of the effects of the different policy choices mentioned above.

To carry out these simulations, we use the National Institute of Economic and Social Research's large-scale global macroeconomic model (NiGEM). NiGEM is an estimated model, whose framework is "neo-Keynesian" in the sense that agents' choices may be assumed to be forward-looking, but with nominal rigidities that slow the process of adjustment to shocks. Financial asset prices are normally assumed to be forward-looking, and affect consumer demand via wealth effects. Monetary policy can be set according to alternative interest rate feedback rules.³

Overall, our results highlight the complementarity of policy actions in the United States and in surplus countries for the correction of both internal US and global imbalances. In this sense, they support the fundamental assumption underlying the current efforts to rebalance global demand in the context of the G-20 Framework for strong, sustainable and balanced growth (G-20, 2009). The results lend support to the view that if substantial and globally coordinated demand rebalancing had been undertaken early on, the imbalances would not have accumulated to the extent that they did. Although it is hard to say whether in that scenario the financial crisis might have been avoided, its propagation would probably have been less destructive because both the US financial system and the global economy would have been less vulnerable to it.

In the remainder of the paper, we first provide an overview of the model and of the simulation design (Section 2). Section 3 then reports the results of the main simulation. In Section 4 we single out the contribution of each element of the story. Section 5 concludes.

2. Overview of the model and simulation design

In NiGEM, most OECD countries are individually modelled, with each country model containing the determinants of domestic demand, export and import volumes, prices, current accounts and net assets. The core of each of these country models consists of a production function determining output in the long term; a wage-price block; a description of the government sector; consumption, personal income and wealth; international trade; and financial markets. A dynamic error-correction structure is used for the estimated equations, which allows the model to adjust gradually towards equilibrium in response to a shock. In some cases the speed of adjustment depends on expectations as well as the distance from equilibrium. In the steady-state equilibrium, output depends on the production function underlying the model.

³ The main model properties of NiGEM are discussed in Barrell et al. (2004). The structure of the main equations of the model can be found on the Niesr website (www.niesr.ac.uk).

The rest of the world is modelled through regional blocks: Latin America, Africa, East Asia, Developing Europe, OPEC and a Miscellaneous group comprising mainly countries in West Asia. A few large emerging economies (including China) are individually modelled; however non-OECD country models are much less detailed than the OECD ones.

Cross-country linkages in NiGEM take place through trade and competitiveness, financial market interactions and international stocks of assets. Demand for exports equals imports across the world. Price competitiveness acts as an important stabilizing feedback on the model, as shifts in domestic price levels and exchange rates feed into relative trade prices, allowing net trade to offset shifts in domestic demand.

Countries are also linked via their financial markets, as the model describes the structure and composition of financial net worth, emphasizing the role and origin of foreign assets and liabilities as well as the distinction between equity, bond and banking assets. The value of wealth depends on expectations, since bond prices reflect long-term interest rates, which are the forward convolution of short-term interest rates, and equity prices depend on expected future profits.

In what follows several shocks are applied to the model. We assume that agents have full knowledge of the vector of model parameter estimates, future values of the exogenous values are available and all lagged values are known. Agents also know the set of shocks (the certainty equivalence assumption is assumed to hold). The model is solved far enough into the future so that the results are not affected by the terminal date. Terminal conditions are standard, and embed steady-state properties where appropriate.

Where NiGEM allows us to choose among alternative simulation options, we have adopted the following ones throughout:

1. Flexible exchange rates are forward-looking (and determined according to a UIP condition).
2. Equity prices are forward-looking.
3. House prices are backward-looking. In the US they are determined according to the following, estimated, equation, which states that in the long run real house prices are cointegrated with a measure of the cost of borrowing:

$$\log(P_t^H) = \log(P_{t-1}^H) - 0.125 \cdot [\log(P_{t-1}^H) - \log(P_{t-1}^C) + \sigma \log(r_{t-1}^{LR} + \mu_{t-1} + 0.05)]$$

where P^H is the house price index, P^C is the consumption deflator, σ is the elasticity of substitution between capital and labour in the production function (set at 0.5), r^{LR} is the forward real long-term interest rate, and μ is the wedge between lending and borrowing rates for households.

4. Long-term real rates are forward-looking. Nominal long-term rates are modelled as a convolution of expected short-term rates plus a term spread.
5. Consumption is backward-looking in all countries; we experimented with forward-looking consumption without obtaining significantly different results.⁴ In both forward and backward-looking consumption equations there is a share of liquidity-constrained consumers, which varies across countries. For example, in the United States it is calibrated to around 15 per cent; it is higher in most other industrialized countries.

⁴ As expected, results are slightly more frontloaded with forward-looking consumption, even if the speed of convergence of simulations is much faster with backward-looking consumption.

6. The inflation rate included as an argument of the monetary policy targeting rules is forward-looking.
7. Interest rates are determined endogenously and follow different monetary policy targeting rules. In particular, the United States follow a standard Taylor rule. Monetary policies in the other countries either follow a so-called 2-pillar – inflation and nominal GDP – rule or shadow the policies adopted by some other country (e.g. China's policy shadows the policy adopted by the US so as to peg its currency to the United States; most non-euro-area European countries shadow the ECB's 2-pillar strategy). Japan follows a price level targeting rule.
8. A fiscal solvency condition is imposed, which stabilizes the budget deficit (as a percentage of GDP) at some target level.
9. All individual country models are allowed to respond endogenously to the various shocks that are imposed in the different simulation exercises.

3. Counterfactual: joint effects of tighter US monetary and financial supervisory policies and a major demand rebalancing (and currency appreciation) in surplus economies

3.1. Policy assumptions

We concentrate on the period 2002–2007 to investigate whether a different set of policy actions in various areas of the world would have avoided the build-up of domestic imbalances in the US and current account imbalances in the US and other major areas.⁵ The counterfactual scenario that we propose combines a monetary tightening and a credit tightening via macro-prudential policy tools in the United States with a large increase in potential output in Japan and the larger euro area countries and a rebalancing towards domestic demand, accompanied by an exogenous currency appreciation, in China and other Asian surplus economies that peg to the dollar. Furthermore, given the tighter monetary policy stance in the United States and the reduced demand for US Treasuries coming from foreign official authorities, we assume also an increase in the term premium on long-term bonds.

3.1.1. US monetary and financial supervision policies

In the US the monetary policy tightening is assumed to begin in 2003Q1, with the federal funds target starting from a lower initial level (1.5 per cent) and reaching 3.75 per cent in 2005Q2; the policy rate is then allowed to remain constant for other two quarters, when it crosses the baseline, and to be determined afterwards by a Taylor rule (Fig. 1, top left panel). Until 2005Q4, this path for the federal funds rate is very similar to the path that would have been obtained had the Fed followed a Taylor rule using real-time data on changes in the GDP deflator as the inflation measure (as in the original Taylor rule specification), as suggested by Papell (2010). Furthermore, the credit spread incorporated in mortgage rates is raised progressively by 1.5 percentage points in 2003Q1–2004Q2, and by an additional 0.5 percentage point until 2006Q1; it is then assumed to return to the baseline by early-2007.⁶ This policy shock is calibrated so as to keep the cost of

⁵ By contrast, Barrell, Holland, & Hurst (2008), who also use the NiGEM to simulate a scenario of global imbalances correction via demand rebalancing, take 2007 as the starting point. Their scenario is centred on a large US dollar depreciation driven by a rise in risk premia on US assets, with no exogenous change in US monetary policy.

⁶ Such a path for the lending wedge was designed to increase the cost of mortgages when housing prices were increasing particularly fast.

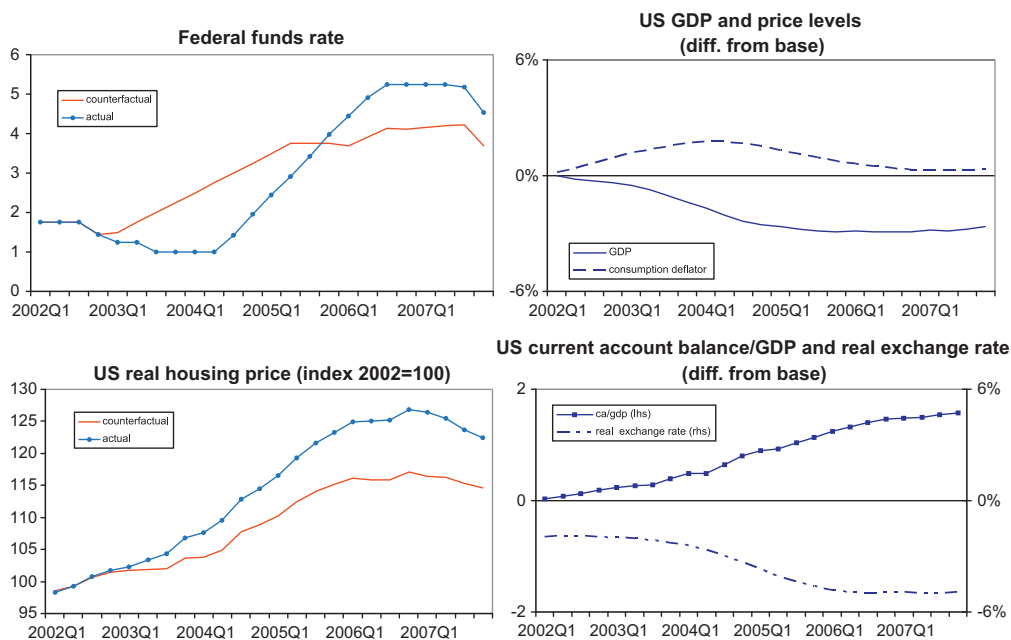


Fig. 1. Simulation results: US variables.

mortgages in 2002–2007 close to the average recorded in the 1990s, while in reality it declined markedly. As in the analysis conducted by the IMF (2009), the model is insufficiently rich to specify the nature of banking supervisory or macro-prudential tools explicitly (banks are not explicitly modelled, for example). So we assume that the policymaker had access to an instrument that affects mortgage credit spreads directly. This is a simple shortcut intended to mimic the effects of, say, regulations that require banks to set limits on housing loan-to-value ratios. Alternatively, we may want banks to set aside more capital as asset prices rise, thus raising the margin that banks have to charge over funding costs, yet this would also affect the cost of business capital.

3.1.2. Structural policies in the rest of the world

For the rest of the world, we assume that major advanced economies suffering from particularly sluggish growth enact supply-side reforms that enhance their potential output; this would also endogenously boost their domestic demand. Specifically, in Japan and the three major euro-area countries (Germany, France and Italy) we would ideally want to assume a productivity enhancement in nontradables (e.g. Koske & Wörgötter, 2010). This, in turn, would augment domestic demand via wealth effects. However, since NiGEM is a one-good model, we take a short-cut and increase potential output directly. The size of the shock is calibrated so as to raise potential output growth to 2.5 per cent in 2002–2007, which is roughly equal to potential output growth in the United States in the same period. Thereafter, counterfactual potential growth is assumed to stabilize gradually at an average between the United States' and the country's baseline potential growth. Ultimately, over the entire period, potential output growth exceeds the baseline by 0.7 percentage points in Japan, 0.5 percentage points in Germany and 0.3 percentage points in France and Italy.

In emerging countries, instead, we assume a broad range of economic reforms – macro-fiscal management, governance – that directly rebalance the overall composition of demand towards the domestic component. In particular, in China and other surplus emerging Asian economies, domestic demand is assumed to shift upwards between 2002Q1 and 2007Q4 by an amount equal to net exports; after that, it is allowed to revert very gradually to the baseline. These assumptions are meant to capture a genuine rebalancing towards domestic demand, carried out through enhanced welfare state reforms aimed at reducing precautionary saving (Baldacci et al., 2010; Blanchard & Giavazzi, 2006) as well as corporate governance reforms able to reduce firms' retained earnings.

At the same time, in China and other surplus emerging Asian economies the path of the exchange rate is calibrated so as to ensure that the counterfactual path of output and inflation remains as close as possible to the baseline.⁷ In other words, a real appreciation is engineered to ensure that the excess domestic demand is directed towards imports and domestic macroeconomic balance is maintained. In Japan and the euro area, which like all advanced economies have a fully modelled monetary policy reaction function in NiGEM, the reaction of the exchange rate occurs endogenously, though with some lags, via the induced changes in monetary policy rates.

3.1.3. Term premium

One crucial element concerns how to deal with the “conundrum” of the apparent lack of sensitivity of US long-term interest rates to the gradual rise in short rates after June 2004, which surprised many observers for being in sharp contrast with interest rate behaviour during past policy tightening cycles (Greenspan, 2005). Many interpretations (see Rudebusch, & Swanson, 2007, for a survey) have traced it to a decline in the term premium. For instance, Kim & Wright (2005) estimated a three-factor affine model of the yield curve and found that the risk premium on ten-year bonds fell by 0.8 percentage points between 2004 and 2005.⁸ As noted by Kohn (2005), the decline in term premia in the Treasury market may have contributed to keeping long-term interest rates relatively low and, consequently, may have supported the housing sector and consumer spending more generally.

Overall, due to the tighter policy stance in the United States and the reduced demand for US Treasuries coming from foreign official authorities, in our counterfactual we assume that from 2004 onwards the term premium on long-term bonds increases everywhere by 0.8 percentage points.⁹ In particular, we follow Craine and Martin (2009) and attribute half of the 0.8 percentage points change in the term premium to foreign holdings of Treasury debt. This may be viewed as a conservative assumption with respect to the findings of Warnock & Warnock (2006), who estimate that increased foreign demand in 2004–2005 kept the ten-year Treasury yield 0.9 percentage points lower than it would otherwise have been. But other studies find that foreign official purchases of Treasury securities play little or no role in explaining the decline in long-term Treasury yields (e.g. Wu, 2008). As suggested by Rudebusch (2010), with the benefit of hindsight it now appears that the “conundrum” was part of a broader global credit boom characterized by an underpricing of many types of risk, especially for fixed-income securities. Indeed, monetary policy actions may have affected the risk-taking capacity of banks, leading to shifts in the supply of credit (Adrian &

⁷ This allows, among other things, for an appreciation of the renminbi vis-à-vis the US dollar by an amount cumulatively slightly larger than 20 per cent.

⁸ This estimate is remarkably similar to that obtained by Bernanke, Reinhart, & Sack (2004). It is slightly higher than the estimate by Rudebusch & Wu (2007) and lower than that by Cochrane and Piazzesi (2005).

⁹ Except in Japan, where the increase in the term premium is assumed to be somewhat smaller (50 basis points).

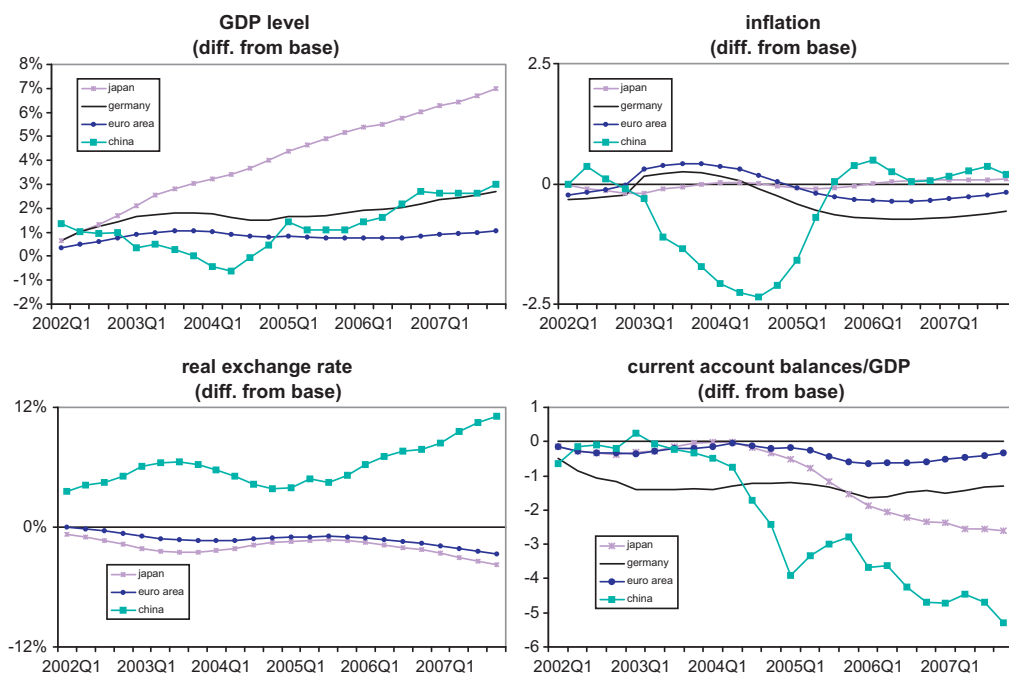


Fig. 2. Simulation results: other major economies.

Shin, 2008, 2009). Therefore, we also assume that tighter liquidity conditions would have reduced the appetite for risk (or the search for yield), resulting in higher term premia.

3.2. Results

In the United States, the contractionary effect of tighter monetary policy is compounded by the increase in real interest rates due to the global demand shock and the higher term premium. Accordingly, output falls by about 3 per cent relative to the baseline by 2005 (Fig. 1, top right panel). The increase in the price level is transitory and disappears after the third year of the simulation.

The effect on real house prices is substantial: by end-2006 they are 8 per cent lower than the baseline (Fig. 1, bottom left panel). Their cumulative increase between end-2001 and the peak (2006Q4) is cut by 11 percentage points relative to the baseline (from 31 to 20 per cent). This means that while real house prices actually increased by almost 4 per cent per year in the six years between 2002 and 2007, according to the counterfactual in the same period they would have increased by 2.7 percent per year, which is much closer to the average annual growth in the previous decade (2.2 per cent, Fig. 3, left-hand panel).

The improvement in the US current account deficit comes to 1.6 percentage points of GDP by end-2007. The implied real depreciation of the dollar amounts to less than 5 percent by end-2007. The improvement in the current account also continues in the remaining years of the simulation exercise, when it exceeds 2 percentage points of GDP.

In Japan, the higher potential output deepens deflation on impact, but just slightly (Fig. 2, top right panel). The expansionary effect of the increase in domestic demand is only partially offset

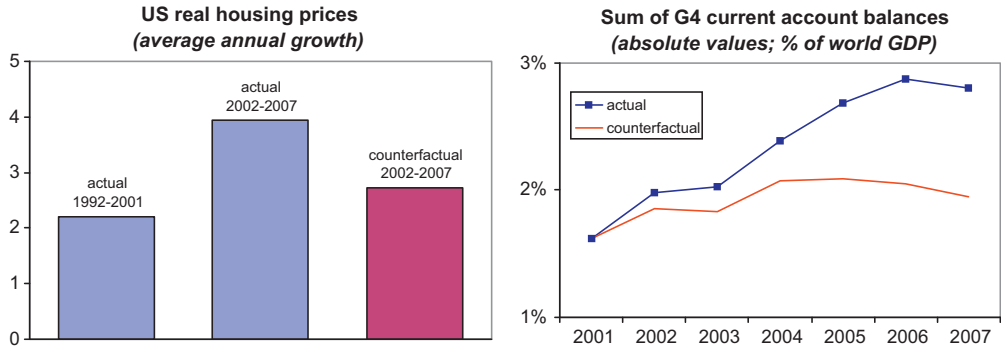


Fig. 3. Actual and counterfactual US real housing prices and dispersion in current account balances.

by the fall in equity prices (not shown) due to expectations of a long-lasting monetary tightening (even though the actual policy tightening occurs only several years later, since policy rates were initially above the desired level owing to the zero lower bound). Thus, the deviation of output from the baseline is substantial. The large increase in domestic absorption causes the current account surplus to shrink relative to the baseline by around 2.5 percentage points of GDP by 2007.

In Germany too, the shock to potential output pushes inflation slightly below the baseline. Output growth jumps above the baseline on impact and then slows down, but remains persistently above the base. For the euro area as a whole, the net effects are more limited (output rises permanently above the baseline, by 1 per cent by end-2007). Germany's external surplus shrinks by 1.3 percentage points of GDP by 2007. The euro area's external balance changes very little.

In China, output remains close to the baseline, as the domestic demand shock is offset by the exchange rate appreciation; the (calibrated) renminbi appreciation required to do that is of the order of 6 per cent on impact, relative to the baseline, vis-à-vis the US dollar and a little more than 20 per cent by end-2007 (but just 11 per cent in real effective terms). The reduction in China's current account surplus is small initially, but increases progressively after 2004 and exceeds 5 percentage points of GDP by 2007.

As a consequence, in 2001–2007 the dispersion of current account balances – measured as the sum of the absolute values of the current account balances of the US, Japan, Germany and China (G4) scaled by world GDP – would have remained almost flat, whereas it actually doubled (Fig. 3, right-hand panel).

4. Identifying the contribution of each policy assumption

To separately identify the contribution of each of the different policy choices mentioned above, model simulations were conducted imposing just one shock at the time. We report the results as answers to the following questions:

- A. Was US monetary policy too expansionary for too long in the wake of the 2001 recession? Would a tighter monetary stance have prevented (or at least contained) the housing bubble?
- B. Would stricter financial supervision or the use of a macro-prudential policy instrument, acting via the cost of credit, have helped to prevent or contain the bubble?
- C. What would have been the effect on US housing prices and America's current account imbalance of an increase in potential output in Japan and Europe and a major rebalancing towards

domestic demand (with an appreciation of the currencies that were being pegged to the dollar) in emerging Asia?

4.1. Was US monetary policy too expansionary for too long in the wake of the 2001 recession? Would a tighter monetary stance have prevented (or at least contained) the housing bubble?

A simulation that includes only the counterfactual monetary policy path assumed in Section 3 (not shown for brevity) yields a limited impact on US real housing prices, while making a small dent on current account balances.¹⁰ The latter result does not change qualitatively if one imposes a somewhat tighter US monetary policy, while the sign of the effect on real housing prices may be even reversed. This is shown in this section by closely modelling the path for the US policy rate on that proposed by Taylor (2007), which assumes that the federal funds rate followed a Taylor rule, smoothed to have the 25-basis-point increments used by the Fed in those years. So the policy rate is assumed to be raised by 25 basis points per quarter, from 1.75 per cent in 2002Q1 to 5.25 per cent in 2005Q3; it then follows the baseline until 2007Q4, after which it is allowed to be endogenously determined. In reality, the federal funds rate was initially lowered to 1 per cent and did not start to be raised until 2004Q2, reaching 5.25 per cent only in mid-2006. We further assume that the term premium on long-term US interest rates increases by 40 basis points by 2005; we assume that the risk premium also increases in the rest of the world.¹¹ This second assumption can be justified as reflecting the indirect effect of tighter US policy on global liquidity conditions and, by that channel, on risk premia in general (thus removing one possible source of the “conundrum”).

4.1.1. Results

Tighter monetary policy leads to lower output (by about one and half per cent after two years; Fig. 4, top right panel) and a lower price level (5 per cent by the fourth year). Nominal house prices are dampened by more than 4 per cent with respect to the baseline, but because the general price level falls by more than that, the effect on real house prices is actually expansionary. The tighter monetary policy leads, on impact, to a strengthening of the dollar’s effective exchange rate. The US current account balance (as a percentage of GDP) initially deteriorates before improving modestly with respect to the baseline by end-2007.

Overall, it appears that the tighter US monetary policy suggested by Taylor (2007), coupled with an increase in the term premium on long bonds, would not have avoided the house price bubble and would have reduced by a small amount the US external deficit. However, it can be argued that a large component of the appreciation of housing prices came through self-fulfilling expectations of price increases, in which case the effect of monetary policy on housing prices reported above would just represent a lower bound, since the equation that describes the evolution of housing prices does not incorporate such a mechanism. In fact, in a model that allows for

¹⁰ Other studies find that tighter monetary policy would have lowered real house prices by a modest amount. For example, Del Negro & Otrok (2007) calculate that expansionary monetary policy accounts for less than one percentage point of the average annual percentage increase in real housing prices in 2001–2005 (which was 6 per cent per year). Iacoviello & Neri (2010) estimate that between 1998 and 2005 monetary policy can account for 2.1 percentage points of the increase in real house prices in excess of a deterministic trend (cumulatively equal to 13.9 percentage points).

¹¹ For example, the increase is equal to 40 basis points in the euro area and somewhat lower (25 basis points) in Japan.

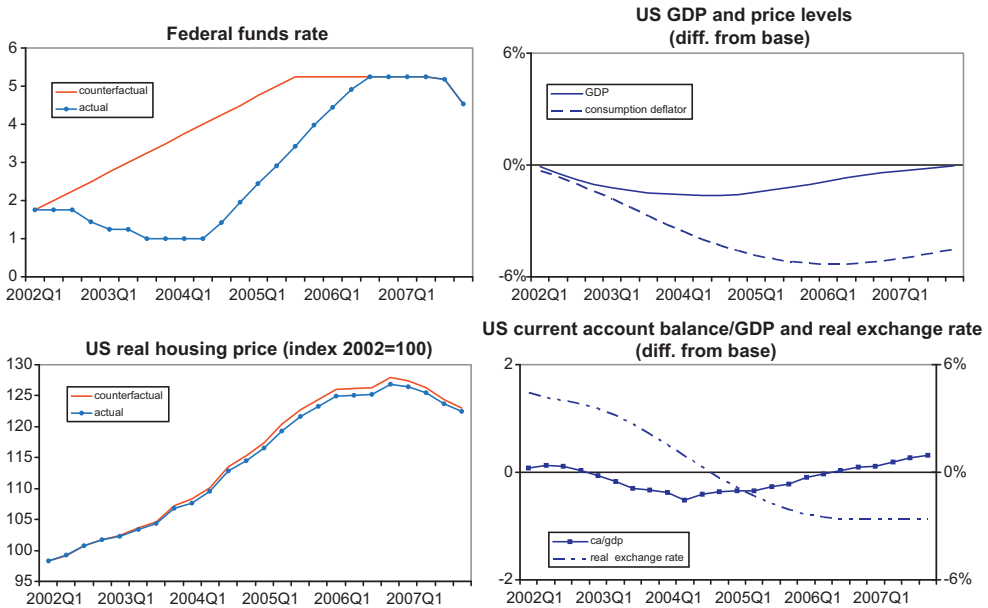


Fig. 4. Scenario A (Taylor, 2007).

self-fulfilling expectations, a front-loading of the monetary restriction could have significantly dampened the prospect of future price growth.

4.2. Would stricter US financial supervision or the use of a macro-prudential policy instrument, acting via the cost of credit, have helped to prevent or contain the housing bubble?

Counterfactual scenario B focuses on macro-prudential policy. As mentioned above, since the model does not specify a role for housing loan-to-value ratios, we assume that the policymaker had access to an instrument that affects mortgage credit spreads directly. These were changed as in Section 3. Monetary policy is allowed to follow the baseline.

4.2.1. Results

Because this macro-prudential tool is specifically targeted to the mortgage market, it affects real house prices but has a limited (and only indirect) impact on other macroeconomic variables. The effect on real house prices is significant: by 2007 they are more than 5 per cent lower with respect to the baseline (Fig. 5, bottom left panel). The effect on nominal prices is slightly greater (−7 per cent), but is partly offset by lower inflation, which is the result of this policy's dampening effect, via a negative wealth effect, on consumption demand and output. The improvement in the current account balance is minimal – about 0.2 percentage points of GDP by 2007.

If combined, tighter US monetary policy and additional credit restraint resulting from an aggressive use of macro-prudential policy tools could have dampened the housing boom (cutting the total rise in real house prices between 2002 and 2006 by one-third) and would have made

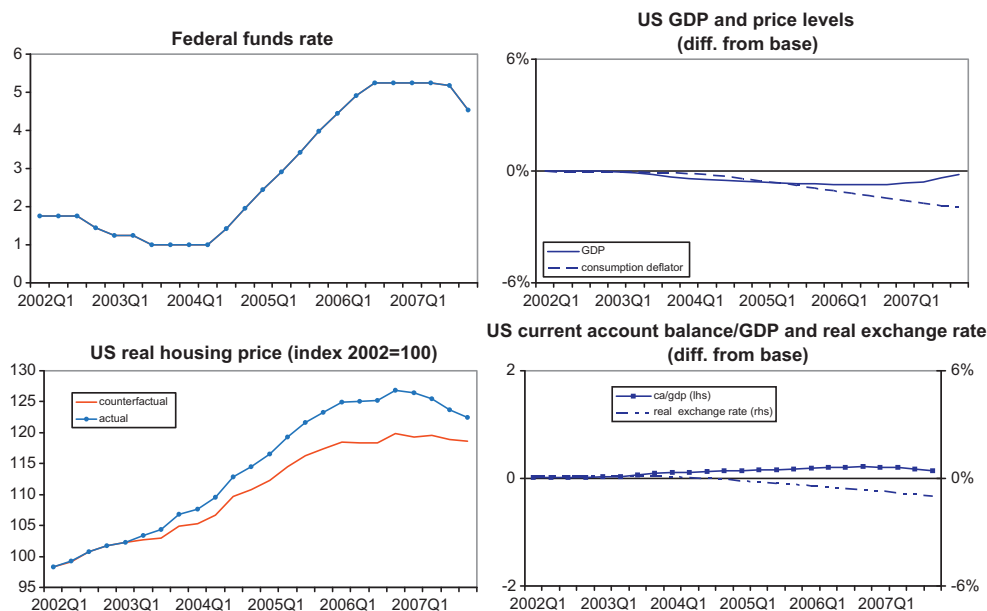


Fig. 5. Scenario B (macro-prudential).

a dent in the US external imbalance.¹² However, this would have been achieved at the cost of somewhat lower output. Moreover, the improvement in the current account deficit, though not trivial, would presumably have been too small to eliminate the risk of a disorderly correction. The decline of activity in the United States would have spilled over to the other main economies, where GDP would have fallen permanently below the baseline. To avoid such an outcome, these economies would have had to implement policies to cope with the adverse effect of the shortfall in their external demand.¹³ Therefore, we turn next to the exercise focused on the rebalancing of demand outside the United States.

4.3. What would have been the effects of an increase in potential output in Japan and Europe and a major rebalancing towards domestic demand (with an appreciation of the currencies that were being pegged to the dollar) in emerging Asia?

Counterfactual scenario C is designed to assess the “global savings glut” hypothesis, which asserts that if the surplus countries had saved less, US monetary policy could have been tighter, US consumers would not have needed to act as “consumers of last resort” and global interest rates would have been higher. Thus, according to this view, both the large global imbalances and asset price bubbles could have been significantly reduced. Policy shocks are those for the rest of the world in Section 3: i.e. we assume that major advanced economies suffering from particularly sluggish growth enact supply-side reforms that enhance their potential output, while in emerging

¹² To save space, the results of the combination of the two changes in US policies are not shown. They roughly amount to the sum of the results in the two scenarios.

¹³ In the simulation, the only offsetting endogenous policy changes allowed are to monetary policy. After three years it becomes more expansionary in Europe and Japan, where it soon hits the zero lower bound.

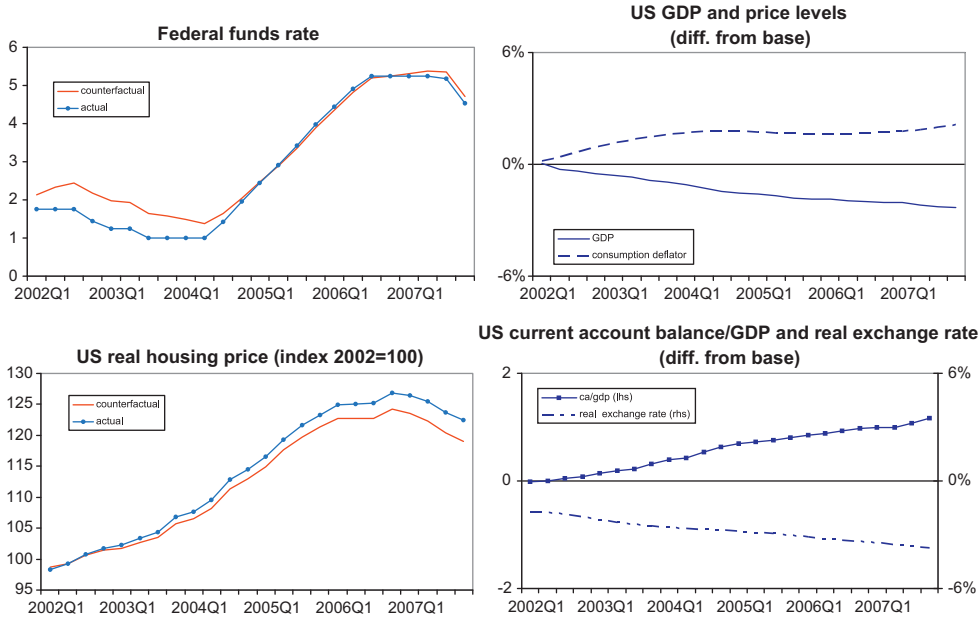


Fig. 6. Scenario C (global savings glut).

countries we assume a broad range of economic reforms that directly rebalance growth towards domestic demand. At the same time, in China and other surplus emerging Asian economies the path of the exchange rate is calibrated so as to ensure that the counterfactual path of output and inflation remains as close as possible to the baseline.

Finally, we also assume an increase in the term premium on US bonds of 0.4 percentage points starting from 2004. Given the other assumed policy changes, this should reflect the lower demand for US Treasuries coming from official authorities, consistent with the estimates of [Craine & Martin \(2009\)](#). As in Section 3, we assume that the term premium also increases in the rest of the world.

4.3.1. Results

The shock to the rest of world's net saving forces US monetary policy to be more restrictive than in the baseline, by about three-quarters of a percentage point in the first 3 years. The dampening effect on US real house prices reaches 3 per cent by end-2007 (Fig. 6, bottom left panel). The shocks drive real interest rates permanently higher. US consumers react to the negative wealth effect on asset prices (due to higher real rates) and also to the fall in their incomes, and immediately reduce their spending. As a result, US output falls, and although growth rates later return close to the baseline, the decline in the output level is permanent. In addition, the US price level increases permanently, although inflation returns to the baseline after 3 years. Higher demand for US exports and the fall in domestic demand, together with the real depreciation of the dollar (by about 2 per cent on impact and almost 4 per cent by end-2007), cause the US current account balance to improve by more than 1 percentage point of GDP by end-2007.

These stagflationary effects are also due to the increase in the oil price induced by the rebalancing of global demand towards oil-consumption-intensive countries (especially China). In fact

the oil price increases by 3 per cent in US dollars relative to the baseline in the first year and then progressively rises (following the evolution of world demand) to 9 per cent above the baseline after 10 years.

In the rest of the world, the effects on output and on current account imbalances are not substantially different from those described in Section 3, with a somewhat smaller current account adjustment in Japan. As in that scenario, monetary policies and real exchange rates are little changed both in Europe and Japan.

Overall, the main conclusion of this section is that none of the policy changes considered would have been, in isolation, sufficient to address both the US domestic and global imbalances to a substantial extent. Only their combination, as discussed in Section 3, would have made a real difference.

5. Concluding remarks

Was the Great Recession avoidable? It is probably impossible to tell, but this paper shows that with a different set of economic policies in various areas of the world the global environment could have been substantially different. In particular, had monetary and financial supervision policies been tighter in the United States, had productivity-enhancing structural policies been implemented in Japan and Europe, and had policies conducive to rebalancing towards domestic demand been pursued in emerging Asian economies, in combination with enough exchange rate flexibility to maintain domestic balance, the pattern of current accounts would have been considerably more balanced and US housing prices would have grown at a much slower pace. For the United States, the cost of these policies would have been lower output and temporarily higher inflation, but the loss in output (less than 3 percentage points below the baseline in 2006) is half as big as the output loss at the trough of the recession (6 percentage points relative to the pre-crisis trend in 2009Q2). Furthermore the output “loss” is truly a loss only if the baseline output level can be regarded as sustainable. But, in fact, part of the lower output would have simply reduced the positive output gap, estimated by the OECD at 1.7 per cent in 2006 (OECD, 2010b). The remaining part may be interpreted as a reduction in potential output deriving from maintaining real interest rates at more normal levels instead of the unusually low levels experienced during the period of easy credit over much of 2000s (OECD, 2010a). For the other major economies the rebalancing of global demand, through a shift towards greater reliance on domestic demand in China and an increase in potential output growth in Europe and Japan, would have compensated the slowdown induced by tighter US monetary and supervision policies, helping markedly to mitigate the international distortions that facilitated the build-up of the crisis.

The fundamental macroeconomic imbalances that lay at the root of the financial turmoil have not been righted by the consequent global recession. After a temporary narrowing induced by the rise in US private sector saving and the sharp fall in investment, partly offset by a larger public sector deficit, the US current account deficit is again on the rise according to IMF projections. This scenario is complicated by the huge accumulation of public debt, which could lead to higher borrowing costs if markets became concerned about its sustainability, and the protracted period of very low policy interest rates and abundant liquidity, which could end up fuelling new asset price bubbles, thus creating the conditions for the next crisis.

The need to achieve a major rebalancing of global demand through policies aimed at a more sustainable pattern of growth has not been eliminated by the crisis. In order to reduce the risk that macroeconomic imbalances and distortions in the financial system might again combine to produce large-scale, devastating financial crises in the future, it is essential to address systemic

fragilities. Important changes in financial market regulation and banking supervision are already being introduced. In the macroeconomic field, an effort is being made to strengthen economic policy coordination in the context of the G-20. However, it is also necessary to review how macroeconomic policies are conducted in light of the experience of the crisis. Two areas where a rethinking is already under way are monetary policy frameworks – and, in particular, how and to what extent they should take into account asset market developments and associated financial fragilities – and exchange rate arrangements.

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