

Handcuff Central Banks, Save The Global Market

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Nowadays, central bankers from Washington, D.C. to Tokyo, from Brussels to Beijing, are playing, or expected to play, God to relieve all agonies caused by economic crises. Since the collapse of the Bretton Woods gold exchange system, major central banks have been untied and able to undertake monetary policy at will by managing either liquidity or interest rates for various economic and political purposes. In their arsenals, the ultimate weapon is to issue fiat money without restriction.

In recent years, discretionary monetary policy in major countries, both mature and emerging ones, has been employed to pursue highly politicized short-term macroeconomic goals. Until recently, loose monetary policy has been identified as the main cause of the financial crisis, but even easier monetary policy enforcement is once again being used to overhaul the financial sector and contain economic recession. Hence, holders of main global fiat monies, or assets denominated by these currencies around the world, are increasingly wary of the value of their wealth in the years to come, in the context of an unprecedented flood of paper monies. Indeed, there is no panacea on earth; cure and cause is more likely to be just two sides of one coin. If the hands of central banks were still unchained, the prevailing global market system would be shattered.

In this paper, we will trace track records of major central banks in the past decade, analyze the political economy tone of monetary policies and propose a possible framework of global governance for central banks and relating monetary policies.

Catch 22: Monetary Policy in Advanced Countries

It is very important to assess the relationship between the Fed's easy monetary policy and the recent financial crisis for the purpose of formulating appropriate remedial policies and preventing the world from the reoccurrence of such a crisis. The loci of the U.S. short-term federal funds rate (policy rate) and long-term interest rate indicate that the Fed undertook a very easy monetary policy to depress interest rates to extremely low levels, known as the "Greenspan Put", at the turn of the century, releasing an abundance of liquidity which was followed by a housing boom. When the Fed raised the interest rate from one percent in 2004 to more than five percent in 2007 for fear of possible inflation, the housing bubble burst and a financial crisis was subsequently triggered.

Taylor (2008) pointed out that "the classic explanation of financial crises, going back hundreds of years, is that they are caused by excesses—frequently monetary excesses—which lead to a boom and an inevitable bust. In the recent crisis we had a housing boom and bust which in turn led to financial turmoil in the U.S. and other countries. Although some researchers regarded the Fed's low-rate monetary policy as a factor in the crisis, they only admitted that its effect was modest and not big enough to cause a financial crisis¹. Nevertheless, a study illustrates that the Fed's too long and too loose monetary policy in the early 2000s reduced interest rates far below what a policy rule or Taylor rule framework would have suggested, with the counterfactual federal funds rate being higher than



the actual rate in pre-crisis years². The empirical evidence also documents that the easy monetary policy has significant effects on housing investment and prices³. As such, the Fed's extra easy monetary policy was a main and primary cause of the property boom and the resulting financial crisis⁴.

Alternatively, Bernanke⁵ proposed a global savings glut hypothesis, arguing that capital inflows from emerging markets to industrial countries can help explain asset price appreciation and low long-term real interest rates in the countries receiving the funds, particularly in the U.S. Based on a cross-country study⁶, Bernanke claimed that “the relationship between the stance of monetary policy and house price appreciation across countries is statistically insignificant and economically weak; moreover, monetary policy differences explain only about 5 percent of the variability in house price appreciation across countries.”⁷ The empirical study he quoted, however, is severely flawed, resulting in a spurious conclusion. Note that there exists a mismatch between the change in housing prices on the vertical axis (dependent variable) and the degree of ease or tightness of monetary policy on the horizontal axis (explanatory variable) in the study. The former lags one quarter behind the latter, but it should be the other way around. When monetary policy leads housing prices, the empirical result is reversed—the linkage between monetary policy and housing prices is statistically significant and monetary policy can account for over 20 percent of housing price appreciation across countries. More robust tests also document the nexus between easy monetary policy and financial woes⁸.

Moreover, information asymmetry and incentive problems of all market participants such as financial institutions, accounting firms, rating agencies, and regulators were important factors in explaining the recent financial crisis⁹. However, these are at most secondary factors relative to the Fed's loose monetary policy undertaken in the beginning of the last decade. Lastly, some external factors like exchange rates and other economic policies followed by emerging markets may have contributed to the U.S.'s ability to borrow cheaply abroad and

thereby finance its unsustainable housing bubble¹⁰. If there were an outside impact on the U.S. housing market, it would have been marginal in comparison to the Fed's dominating role.

As soon as the Fed raised interest rates to prevent the economy from possible inflation, almost all market agents were in a pinch and the financial crisis emerged. In the midst of the crisis, the Fed immediately reversed monetary policy by rapidly lowering the federal fund rate from 5.25 percent in September 2007, to 0-0.25 percent in December 2008, and has maintained that level to the present time. Furthermore, it launched three rounds of unprecedented quantitative easing measures (QEs) by providing liquidity to all kinds of financial institutions, exchanging toxic assets of troubled financial companies, swapping dollars with foreign central banks and buying Treasuries from the federal government. As a result, the QE measures have tripled the Fed's balance sheet in a few years.

Even though the Fed successfully bailed out “systemically important” or too-big-to-fail financial institutions, the unconventional QEs have a very limited effect in stimulating aggregate demand and/or in lowering high unemployment. Bernanke¹¹ has also expressed his skepticism that quantitative easing by itself would be effective. He indicated that the expansion of the Fed's balance sheet should instead be viewed as a result of what he referred to as credit easing, that is, an attempt to lower spreads between different asset classes through asset purchases and liquidity provisions.

In Europe, the establishment of the euro system set up an umbrella to shelter peripheral countries to issue bonds with low costs in financial markets in order to fund their budget deficits. Prior to the emergence of the European sovereign debt crisis, there were little differences in interest rates of long-term government bonds for both core countries and southern peripherals during the period of 2000-2008. However, government bond markets in the eurozone are very fragile and extremely vulnerable. The reason is simple—national governments in a monetary union issue debt in a ‘foreign’ currency

over which they have no control. As a result, they cannot guarantee to the bondholders that they will always have the necessary liquidity to pay out the bond at maturity. This contrasts with 'stand alone' countries that issue sovereign bonds in their own currencies. This feature allows these countries to guarantee that the cash will always be available to pay out the bondholders¹².

When one country (Greece) had difficulty in servicing its debts, contagion occurred within southern peers, fear of insolvency of other peripheral countries prevailed and interest rates of those government bonds quickly soared, triggering a European sovereign debt crisis. Since European banks held vast amount of sheltered southern government bonds, the sovereign debt crisis accordingly led to solvency problems of the entire banking system. Again, expanding monetary policy together with unconventional bailout measures executed by the European Central Bank (ECB) is the only hope to clean up the mess. Up until recently, the ECB has kept its policy rate close to zero. Besides, it has departed from its sole price stability mandate given by the Maastricht Treaty, either by indirectly injecting mass liquidity into the European banking system or by directly buying government bonds of its member countries to cope with the crisis. Consequently, the ECB's balance sheet has expanded to a historically high level.

Lastly, the Bank of Japan (BOJ) has also engaged in a very long and unusually easy monetary policy, namely through a zero interest rate plus QE measures with continuous expansion of its balance sheet. A decade-long extra loose policy has had little stimulating effect on the sluggishness of the domestic economic activities out of long-possessed recession.

Sticky Fingers: Monetary Policy in China

Shortly after the burst of the global financial crisis in late 2008, the Chinese government reversed macroeconomic policies from inflation-preventing contraction to domestic-stimulating measures. Along with a 4 trillion yuan fiscal stimulus campaign,

easy monetary policy immediately delivered extra liquidity to accommodate infrastructure investment, especially for big projects launched by state enterprises and local governments. Consequently, the domestic economy bounced back and the growth rate quickly picked up. Annualized GDP growth was 16.3 percent in the period of 2008-2012, far above other major economies and also higher than China's previous growth record.

Nonetheless, the growth was basically driven by monetary expansion. The People's Bank of China (PBoC) has overtaken the Fed, BoJ and even the whole euro system by assets in recent years and has become the largest central bank in the world. During 2008-2012, China's broadly-defined money stock (M2) doubled in size, increasing from 47.5 trillion yuan (7.5 trillion dollars) to 97.4 trillion yuan (15.7 trillion dollars). As a result, the Chinese economy is heavily levered—outstanding bank loans more than doubled, climbing from 30.3 trillion yuan (4.9 trillion dollars) in 2008 to 67.2 trillion yuan (10.8 trillion dollars) in 2012; outstanding bonds also rose from 12.3 trillion yuan (2 trillion dollars) to 23.8 trillion yuan (3.8 trillion dollars); and trust funds increased from less than one trillion yuan (16 billion dollars) to 7.5 trillion yuan (1.2 trillion dollars)—bringing China's overall leverage ratio to over 200 percent.

The extraordinarily easy monetary policy has already nurtured significant systemic risks. First of all, debts of local governments dramatically increased to an astonishing level under the condition of very cheap money—the total size is estimated between 16-20 trillion yuan (2.6-3.2 trillion dollars). Even though local governments are not allowed to have debts directly at present, they have created over 11,000 investment vehicles across the country that are categorized as "independent legal entities" and able to solicit funds by issuing enterprise bonds and bills, borrowing from commercial banks and consolidating products for trust companies and other financial intermediaries to finance development of local infrastructure facilities, industrial parks, government buildings and social welfare programs. The investment vehicles usually

use assets or land granted by local governments as collateral to issue securities or engage in borrowing, promising to pay much higher interest rates than bank loans. It is estimated that annual interest payments of local government debt alone will be over 1 trillion yuan (160 billion dollars), and the debt service is generally beyond the financial ability of local governments. Since most funds come directly or indirectly from commercial banks, solvency problems of local governments become a main source of systemic risk in China, posing a heavy pressure on the stability of the banking system.

Easy monetary policy fostered excessive capital investment in manufacturing sectors, especially in iron and steel, coal and alternative energy production. This accounts for the growth bubble in which many provinces doubled their economic size in two to three years. For example, Sichuan province made its GDP twofold in three years and Chongqing municipal city achieved the same in two years. The investment-driven expansion, while creating jobs in the short-run, contributed far less to the long-run enhancement of society's well-being. It left excess capacity in almost all industries. According to the IMF's estimation, the average capacity utilization of industries declined from 78 percent in 2007 to 60 percent in 2011. This is a second source of systemic risk in the Chinese financial market.

Lastly, easy money is the main cause of skyrocketing property prices in all major cities. Calibrated by all standards, housing prices of big Chinese cities are too high for most normal urban households. The rising prices of urban properties have become a most controversial policy issue in China. Although the central government is determined to curb this rising trend in housing prices, local governments, relying heavily on selling land to finance their budgets, are much less enthusiastic about it.

Political Economy Tune: Free-lanced Monetary Policies

Not long ago, policymakers around the world were overwhelmingly convinced by mainstream economics that they can well avoid serious recessions

due to two powerful macroeconomic tools innovated in modern capitalism. One is fiscal policy that enables governments to manage aggregate demand by expanding public spending and reducing taxes, and the other is monetary policy that empowers central banks to lever market consumption and investment by providing liquidity and lowering rates of interest. Compared to relatively less flexible and binding fiscal policy based on budget constraints, monetary policy based on legal tenders was always to be effective and very handy. Bernanke's concluding remarks of his speech at Milton Friedman's 90th conference in 2002 reflected this confidence, "Let me end my talk by abusing slightly my status as an official representative of the Federal Reserve. I would like to say to Milton and Anna: Regarding the Great Depression. You're right, we did it. We're very sorry. But thanks to you, we won't do it again."

However, the real danger is that the missions of central banks are too many to be achieved. For example, the Fed has multiple missions including "conducting monetary policy in pursuit of maximum employment, stable prices, and moderate long-term interest rates; supervising and regulating banking institutions and maintaining stability of the financial system and containing systemic risk that may arise in financial markets, and providing financial services to depository institutions, the U.S. government, and foreign official institutions". As such, discretionary monetary policy is most likely to comply with changeable short-term political economy goals at the expense of long-term obligations. It is inevitable that the world's leading central bank goes astray, away from its solemnly declared responsibility of maintaining currency value to protect its IOU holders both at home and abroad.

In Western democratic societies, political pressure from prevailing populism in electoral governments to seek favor from constituencies creates stress on modern welfare states which are beyond sustainable tax resources. For most politicians, it is "politically correct" to ratchet up welfare provisions for the current voters, leaving prudential budgeting as a policy choice to come later. Parallel to European-style cradle-to-grave welfare stateism, the U.S. has quickly

caught up in recent years—the federal government has spent a quarter of its budget on healthcare services, together with most outstanding mortgages guaranteed or owned by government-sponsored enterprises (GSEs). To overcome budget constraints due to already-high taxes, governments of advanced countries are deeply indulging in borrowing, such that gross sovereign debt of the eurozone countries are over 85 percent of their GDP and the U.S. federal debt is more than 100 percent of its GDP.

Herein, it is central banks' implicit political priority, regardless of their willingness to directly keep interest rates low (like the Fed) or indirectly provide an umbrella of good rating (like the ECB), to depress costs of capital for issuance of new government bonds and service outstanding debts, so as to sustain financing of welfare provisions. Subsequently, these practices sabotaged market discipline, devastated incentive problems of financial institutions and mortgage holders and accelerated moral hazard of the prophetic governments in the euro system, resulting in the global financial crisis.

As soon as the financial meltdown starting with the burst of the housing bubble in the U.S., the Fed played "kind father" by extending the coverage of bailouts or assuming a role of a lender of last resort to financial institutions, which further exacerbated all the adverse incentive problems. Though bailout actions temporarily stabilize the situation, it is not always so clear who benefits from them. "The question is, what would have happened, were there not a bailout? Who is better off? Who is worse off? Clearly, taxpayers are worse off: at the very least, they have assumed risks that would otherwise have been borne by others. The full answer depends in part, of course, on the terms of the bail-out"¹³. The exact same problems were repeated in the continental eurozone as the ECB resumed its first duty of lender of last resort to bail out financial institutions and troubled prophetic countries.

In addition, differences in political dynamics for domestic and foreign debts may also account for actions of major central banks in the financial crisis. "In the case of domestic debt there is a constituency

that will vote for governments that want to avoid default. This is not the case for foreign debt; defaulting on 'foreigners' might actually be highly popular"¹⁴. That is, the main central banks of leading advanced countries are more likely to issue unlimited reserve currencies to partly shift to foreign holders the burden of their obligations.

On the other hand, China's monetary policy also has similar but much stronger political economy undertones. Contrary to its Western peers with legislatively autonomous status, the PBoC is *de facto* a ministry-level unit in the Chinese cabinet. Therefore, monetary policy is not independently formulated by the central bank, but determined by the government and employed as a direct instrument to fulfill the most urgent macroeconomic objectives. This may basically explain the expansion of the central bank's size by leaps and bounds in a brief period of time.

Due to China's unitary government structure implicitly guaranteeing lower level obligations without limit, local governments across the country are sheltered from opportunism with little, hard budget constraints and can engage in free borrowing from banks, markets and other available intermediaries. Moreover, agency problems of bureaucrats within multiple governmental layers, originated largely from selective elitism by a top-down approach, opt to lead to self-benefiting and rent-seeking activities in local public policy decisions. History reiterates that internal hierarchical disciplines have a limited and diminishing role to check moral hazards as long as information asymmetry between local and central government is big and wrong-doing stakeholders set up conspiracies. The easy monetary policy in recent years, coupled with these mechanisms and conducts, enhances soft budget constraints of local governments, accelerating a pile-up of local debts and obligations to the central government.

A Possible Solution

Against a backdrop of the Fed's recent conduct, Taylor¹⁵ claimed that highly discretionary policy is moving in the wrong direction. He also suggest-

ed that “the Fed should follow the perfectly good framework for monetary policy in much of 1980s and 1990s without large deviations from simple policy rules, without pro-cyclical capital buffers, and without unorthodox policies”. Taylor’s moral persuasion is a good wish but it won’t work for the Fed or for other central banks.

Over the past decade, experiences of major central banks have taught the world big lessons on how to maintain the integrity of basic principles of the free market system in both global and local monetary markets. First of all, central banks must protect but not destroy private property rights for current and future generations by safeguarding currency values. To fulfill this obligation, the international community needs to put handcuffs on central banks to prevent ordinary people’s wealth from being eroded by their discretionary monetary policies. Second, central banks must abide by a universal decree in the provision of exchange media—the most important public goods in the market system. This requires a clearly defined rule of law to govern behaviors of all central banks. Third, a virtuous framework must be set up for major central banks to ensure that good money drives out bad money. This needs a free but fair competition mechanism embedded in the international monetary system.

To fulfill these objectives, there must be a globally binding system to govern the behavior of major central banks around the world. In almost all respects, gold can play the role perfectly. It has two basic features that are especially fitting for central bank functions. One is that gold imposes real but not nominal restrictions on all central banks without any mercy. The other is that it represents a natural order of commodities in the entire human history. Any central bank-designed policy target is movable and able to be manipulated, but natural order is not. For example, the Fed has its own selective target called the prices of consumption expenditures (PCE), and it claims that the target is always fulfilled¹⁶. The same stories are repeated in the consumer price index (CPI) target used by other major central banks such as the ECB and PBoC.

In fact, modern fiat monies provided by the main central banks of advanced countries have two fundamental roles of exchange media and reserve currencies. These two roles can be separated. The track records of free-lanced and politicized monetary policy disqualify these central banks in their provision of inter-generational and reliable global reserve assets. Only gold can be trusted to resume this role. On the other hand, central banks can still manage media of exchanges or conduct monetary policy, for both global and local ends. In this regard, monetary policy can be simplified to insist on maintaining long-term value while managing adequacy of liquidity. As far as development of information and communication technology creates a long list of substitutes to replace conventional money stocks, central banks should pay much closer attention to monitor the costs of capital including interest rates and exchange rates. This leaves enough space for central banks to perform their domestic monetary policies.

Nevertheless, gold has inherent drawbacks in serving this end. Since there is not enough supply of gold on earth to facilitate expanding market transactions, the return of gold as a reserve currency may lead to global deflation. In addition, uneven global gold production and hoarding may lead to a significant redistribution of wealth in favor of gold producers and existing big gold-holders. These problems can be solved by creating certain gold-equivalent products. Many proposed that the IMF should use special drawing rights (SDRs) to replace sovereign fiat monies as a global reserve currency¹⁷. However, the man-made SDRs lack intrinsic value and are too hollow to play a designated anchoring role. Indeed, the IMF can lead the creation, distribution and supervision of gold-linked products to amend these shortcomings of gold. For example, the IMF can supply a particular type of gold-backed certificate (or gold-equivalent SDRs) which is directly enriched by gold, and allot it among member countries in line with their respective shares in global GDP or in global value-added trade volume. As such, these countries can secure reserve assets to shore up their currencies and be free from worry of wealth redistribution caused by the return of gold.

Due to the existence of strong resistance from different vested interests, the network of gold-linked sovereign currencies plus gold-equivalent certificates may be implemented in a progressive way, letting free market mechanisms work incrementally and win eventually. That is, some countries may move first to anchor their own currencies with gold and gold-equivalent certificates. As long as good money debuts in the international monetary market, free competition will commence and good money will drive out bad ones. To facilitate the establishment of a virtuous framework, the particular gold-equivalent SDRs should be tradable among central banks as well as financial institutions, and derivatives against it should also be created for promotion of market competition and enforcement of market disciplines.

Conclusion

In retrospect, world economic history suggests that there is a close causal linkage between loose monetary policy and financial woes. Empirical evidence reveals that this time is not much different. In particular, the Fed's too long and too easy monetary policy at the turn of the century fostered a housing boom. Coupled with agency problems of financial institutions and the absence of prudential regulations, discretionary monetary policy was the primary cause of the financial crisis. Ironically, the most important and possibly the only tool for the Fed to combat the financial crisis would have been to implement even looser monetary policy. Similar situations are also observed with some differences in other major economies including the eurozone,

Japan and China. As a consequence, the world is falling into a vicious cycle: easy money—financial crisis—easier money—further deformation. This chaotic process will wreck the global market system.

Money is proven to be neutral in long-run. However, major central banks still manipulate it to circumvent binding budgetary constraints for political economy purposes, violating basic pillars of modern capitalism such as property rights, free competition and the rule of law. Recent lessons indicate that easy money contributes little to social well-being but create big distortions. Moreover, it softens budgetary constraints of both private and public sectors, nurtures excessive speculation in financial markets and worsens agency problems and moral hazard of financial intermediaries, regardless of central bank autonomy in democratic systems or authoritarian settings.

Monetary policy at large must be stopped and workable global governance machinery must be installed to regulate randomness of central banks. It is essential to adjust monetary policy from pursuing multiple goals within a “finite political short-term” to meeting fundamental obligations on “the constitutional long-term” for central banks around the world. Gold is the sole object with which a well-designed framework is able to handcuff central bankers and restore the sustainability of the world monetary system. It is high time for the leaders of major economies, following the footsteps of their predecessors in the early 1870s and the late 1940s, to take decisive action.

References

Charles Bean, Matthias Paustian, Adrian Penalver and Tim Taylor (2010). "Monetary Policy after the Fall," Presentation at the Symposium "Macroeconomic Challenges: The Decade Ahead", Sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 28, 2010.

Bernanke, Ben S. (2002). "On Milton Friedman's Ninetieth Birthday", Remarks by at the Conference to Honor Milton Friedman, University of Chicago, Chicago, Illinois November 8, 2002.

Bernanke, Ben S. (2005). "The Global Savings Glut and the U.S. Current Account Deficit", speech delivered at the Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia.

Bernanke, Ben S. (2007a). "Global Imbalances: Recent Developments and Prospects," at the Bundesbank Lecture, Berlin, Germany, September 11, www.federalreserve.gov/newsevents/speech/bernanke20070911a.htm.

Bernanke, Ben S. (2007b). "Globalization and Monetary Policy," At the Fourth Economic Summit, Stanford Institute for Economic Policy Research, Stanford, California, <http://www.federalreserve.gov/newsevents/speech/bernanke20070302a.htm>.

Bernanke, Ben S. (2009a) "The Crisis and the Policy Response", At the Stamp Lecture, London School of Economics, London, England, January 13, 2009.

Bernanke, Ben S. (2009b), "Reflections on a Year of Crisis", At the Federal Reserve Bank of Kansas City's Annual Economic Symposium, Jackson Hole, Wyoming, August 21, 2009

Bernanke, Ben S., 2010. "Monetary Policy and the Housing Bubble", at the Annual Meeting of the American Economic Association, Atlanta, Georgia.

Bernanke, Ben S. (2011). "Global imbalances-Links to Economic and Financial Stability", at the Banque de France Financial Stability Review Launch Event, Paris, France.

De Grauwe, Paul (2011). "Only a more active ECB can solve the euro crisis", CEPS Policy Brief, No. 250, August. "Fast and Loose: How the Fed Made the Subprime Bust Worse" (2007). *The Economist*, October 17.

Gros, Daniel (2011). "External versus Domestic Debt in the Euro Crisis", CEPS Policy Brief, No. 243, 25 May.

Jarocinski, Marek and Frank R. Smets (2008). "House Prices and the Stance of Monetary Policy," *Federal Reserve Bank of St. Louis Review*, July/August 2008.

Obstfeld, Maurice and Kenneth Rogoff (2009). "Global Imbalances and the Financial Crisis: Products of Common Causes", Paper prepared for the Federal Reserve Bank of San Francisco Asia Economic Policy Conference, Santa Barbara, CA, October 18-20, 2009.

Stiglitz, Joseph E. (2009). "The Financial Crisis of 2007/2008 and its Macroeconomic Consequences," Initiative for Policy Dialogue Working Paper Series, April 2009.

Taylor, John B. (2007). "Housing and Monetary Policy", presentation at the Policy Panel at the Symposium on Housing, Housing Finance, and Monetary Policy sponsored by the Federal Reserve Bank of Kansas City in Jackson Hole, Wyoming, September.

Taylor, John B. (2008). 008 B.action at the Policy Panel at the Symposium on Housing, Housing Finance, and Monetary working paper, Stanford University, November.

Taylor, John B. (2010). "The Fed and the Crisis: A Reply to Ben Bernanke", *Wall Street Journal*, Jan. 11.

Taylor, John B. (2010). "Commentary: Monetary Policy after the Fall," Presentation at the Symposium "Macroeconomic Challenges: The Decade Ahead", Sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, August 28.

UN Expert Commission, (2009). Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System.

Yu, Qiao, Hanwen Fan and Xun Wu. (2012). "What is Wrong with Bernanke's Explanation?", Working paper, School of Public Policy and Management, Tsinghua University .

Zhou, Xiaochuan (2009). "Reform of the International Monetary System", essay on the website of the People's Bank of China, April 9.

Endnotes

¹ Charles Bean et al. (2010)

² *The Economist*, "Fast and Loose," October 18, 2007.

³ Jarocinski and Smets (2008)

⁴ Taylor (2007), (2008), (2010)

⁵ Bernanke (2005), (2007)

⁶ Bernanke (2010)

⁷ Bernanke (2010)

⁸ Yu et al. (2012)

⁹ Stiglitz (2009)

¹⁰ Obstfeld and Rogoff (2009)

¹¹ Bernanke (2009)

¹² De Grauwe (2011)

¹³ Stiglitz (2009)

¹⁴ Gros (2011)

¹⁵ Taylor (2010)

¹⁶ Bernanke (2010)

¹⁷ Zhou, 2009, UN Expert Commission (2009)