Monetarism with Chinese Characteristics

By James A. Dorn

February 14, 2017

CATO WORKING PAPER
No. 42

1000 Massachusetts Avenue NW
Washington DC 20001

MONETARISM WITH CHINESE CHARACTERISTICS

James A. Dorn

Monetarism is often misunderstood, overlooked, forgotten, or even derided. Yet its basic logic, resting on the quantity theory of money, is evident and remains important in a world of pure fiat monies. Most major central banks have abandoned monetary targeting in favor of setting interest rates to achieve long-run price stability and full employment. China is an exception. Since 1998, the People's Bank of China (PBC) has used money growth targets to help guide monetary policy aimed at preventing socially disruptive inflation and maintaining growth of nominal income. However, the PBC is subject to oversight by the State Council; the financial system is dominated by state-owned banks; capital markets are highly regulated; and interest rates and exchange rates are distorted. Thus, China's monetarism is best described as "monetarism with Chinese characteristics."

This article gives an overview of the basic tenets of monetarism, contrasts monetary policymaking at the Federal Reserve with that employed by the PBC, examines financial repression in China, and offers some lessons learned from the operation of the monetary transmission mechanism under China's system of monetary targeting and financial repression. While the M1 money multiplier is robust in China, it has collapsed in the United States since the use of unconventional monetary policy. Both China and the United States would benefit from the adoption of an explicit monetary rule, the depoliticization of credit allocation, and market-determined interest rates.

James A. Dorn is Vice President for Monetary Studies and a Senior Fellow at the Cato Institute. He thanks Ari Blask, Kevin Dowd, Tom Humphrey, and George Selgin for helpful comments on an earlier version of this article.

Basic Tenets of Monetarism

Monetarism holds that variations in the quantity of money are the chief cause of variations in nominal income. Two propositions stand out, and can be traced back to the early quantity theory of money: (1) changes in the quantity of money are the primary determinant, in the long run, of changes in the general price level; and (2) the major causal factor in business fluctuations is erratic money. An excess supply of money may stimulate real output in the short run but, if persistent, will lead to inflation—and conversely in the case of an excess demand for money.[1]

David Hume ([1752] 1987) clearly stated these monetarist principles when he wrote:

1. "It seems a maxim almost self-evident, that the prices of every thing depend on the proportion between commodities and money, and that any considerable alteration on either has the same effect, either heightening or lowering the price. Encrease the commodities, they become cheaper; increase the money, they rise in their value" (p. 290).

2. "Alterations in the quantity of money, either on the one side or the other, are not immediately attended with proportionate alterations in the price of commodities. There is always an interval before matters be adjusted to their new situation; and this interval is as pernicious to industry, when gold and silver are diminishing, as it is advantageous when these metals are increasing" (p. 288).

Milton Friedman (1960: 9) continued in this tradition when he wrote:

> The Great Depression did much to instill and reinforce the now widely held view that inherent instability of a private market economy has been responsible for the major periods of economic distress experienced by the United States. . . . As I read the historical record, I draw almost the opposite conclusion. In almost every instance, major instability in the United States has been produced or, at the very least, greatly intensified by monetary instability.

---

[1] For a useful summary of monetarism, see Cagan (1989) and McCulloch (1975); for a discussion of the history of the quantity theory, see Humphrey (1974); for the idea that "inflation is always and everywhere a monetary phenomenon," see Friedman (1968); and for an overview of the doctrine of erratic money and theory of monetary disequilibrium, see Warburton (1966).

The quantity theory of money, which underlies monetarism, holds that

(1) $P = MV/y$ or $V(M/y)$,

where P is the price level, M is the quantity of money, V is the velocity of money, and y is output or real income. This implies that

(2) $\Delta P/P = \Delta M/M - \Delta y/y + \Delta V/V$.

If velocity is constant, then

(3) $\Delta P/P = \Delta M/M - \Delta y/y$.

Central banks have direct control over the monetary base (B), which is the sum of currency held by the public and bank reserves. However, the channel of monetary transmission by which base money affects the broader money supply and nominal income depends on a number of variables. Those include the required reserve ratio (or, in the case of where there are no legal reserve requirements, the *desired* reserve ratio), the willingness of commercial banks to lend out their excess reserves, and the preferences of the public to hold cash balances and to borrow.

In its simplest form, the money multiplier can be expressed as

(4) $m = M/B$.

An increase in base money would increase excess reserves in the commercial banking system and normally lead to a multiple increase in bank money (demand deposits). However, if banks don't lend out all their excess reserves, or if consumers don't take out

loans or don't spend all the loans, or if consumers decide to hold more cash and fewer demand deposits, the multiplier effect will be diminished. This can be seen in the more detailed equation of exchange:

(5) $Bm(c, r)V = Py,$

in which the money stock M is replaced by the product of the base B and the multiplier m, the later treated not as a fixed constant but rather as a decreasing function $m(c,r)$ of the public's desired currency/deposit ratio c and bankers' desired reserve/deposit ratio r.[2] Increasing B will not translate into inflated prices and strong recovery of output if low interest rates reduce velocity and payment of interest on excess reserves increases r, as has happened in the United States. Also, if interest rates become negative, depositors may prefer to hold more cash to avoid the "tax" on deposits, thus mitigating the impact of any increase in base money. Macroprudential regulation can also impair the monetary transmission mechanism as can the absence of a clearly stated and enforced monetary rule.[3]

Monetarism Is Dead at the Fed

Monetarism is mostly dead at the Fed. There is little mention of the role of erratic money in causing business fluctuations or in explaining movements in the price level—and monetary policy is purely discretionary. The Fed abandoned money supply targets after the link between money and nominal income became more precarious because of

[2] See Humphrey (2013) for a more detailed discussion of the extended equation of exchange and its application to the financial crisis and Great Recession.
[3] One other consideration for why increases in base money don't translate into increases in M, P, or y is that mistaken central bank lender-of-last-report policy may fail to prevent or mitigate financial panics, which increase the demand for money to hold as the safest liquid asset and decrease velocity. I thank Tom Humphrey for this observation.

financial innovation.[4] Prior to the financial crisis of 2008, the Fed used open-market operations to target its benchmark interest rate, the federal funds rate. However, with the huge increase in base money engineered by the Fed to combat the crisis, and with payment on excess reserves that sterilized most of the new base money, the fed funds market no longer operates in a normal fashion. Banks already have large reserve balances at the Fed and have no need to borrow in the interbank market. The "treasuries only" policy has been replaced by the largescale purchases of longer-term securities (i.e., quantitative easing or QE). The Fed now sets a target range for the fed funds rate, and that rate is administered by setting rates for interest on reserves and reverse repos. As Selgin (2017: 8) notes, "Instead of endeavoring to influence a *market-determined* federal funds rate by reducing or increasing the supply of bank reserves, the Fed now adjusts a pair of rates determined solely by its own administrative decrees, while conducting open-market operations without any particular reference to these rate adjustments."

Recent experience with QE and zero interest rate policy (ZIRP) has turned monetarism on its head. Although the monetary base has quadrupled since 2007, there has been little inflation and nominal GDP growth has been sluggish. Near zero interest rates have reduced the velocity of money (i.e., increased the demand for money). Meanwhile, payment of interest on excess reserves has raised the reserve ratio and—

[4] The Full Employment and Balanced Growth Act of 1978 (known as the "Humphrey-Hawkins Act") required the Fed to set target ranges for the monetary aggregates. Disparity in the growth of M1 and nominal GDP in the recession of 1982, however, led to the loss of confidence in M1 as a policy guide, and the Fed ended announcing target ranges for M1 in 1987. In July 1993, Alan Greenspan downgraded M2 as an indicator. Finally, the Humphrey Hawkins Act expired in 2000, and the Fed no longer sets target ranges for money supply growth. See Federal Reserve Bank of New York (2008).

along with macroprudential regulation—has lowered the money multiplier from 1.6 before the 2008 financial crisis to less than 1 today (Figure 1).

It is ironic that the Fed has sought to stimulate the real economy by ratcheting-up the monetary base but at the same time has plugged-up the monetary transmission mechanism by its unorthodox policies. One could well call the Fed's policies "schizophrenic." In place of monetarist reasoning, the Fed has adopted new-Keynesian ideas and models, in which monetary policy works through interest rate, asset price, and Phillips Curve channels.

Creating new base money to buy mortgage-backed securities, agency debt, and

Figure 1. The Falling M1 Money Multiplier in the United States

longer-term government securities—and repressing interest rates to push up asset prices—cannot have a *permanent* wealth effect. Rather, the Fed's unconventional policies produce a pseudo wealth effect and misallocate capital (Dorn 2015a). Real wealth can only be increased in the long run by supply-side reforms that increase productivity and improve institutions, not by "monetary stimulus." When interest rates

return to normal, financial markets will adjust and asset prices will fall in line with market forces.

Monetary policy must be examined within existing institutions. The U.S. dollar is a pure fiat money supplied by a fully discretionary central bank. The lack of any monetary rule to guide Fed policy has increased uncertainty. That uncertainty—along with ultra-low interest rates, the payment of interest on reserves, and macroprudential regulation—has plugged up the normal monetary transmission mechanism (see, e.g., Calomiris 2017, Dorn 2015b, and Selgin 2016).

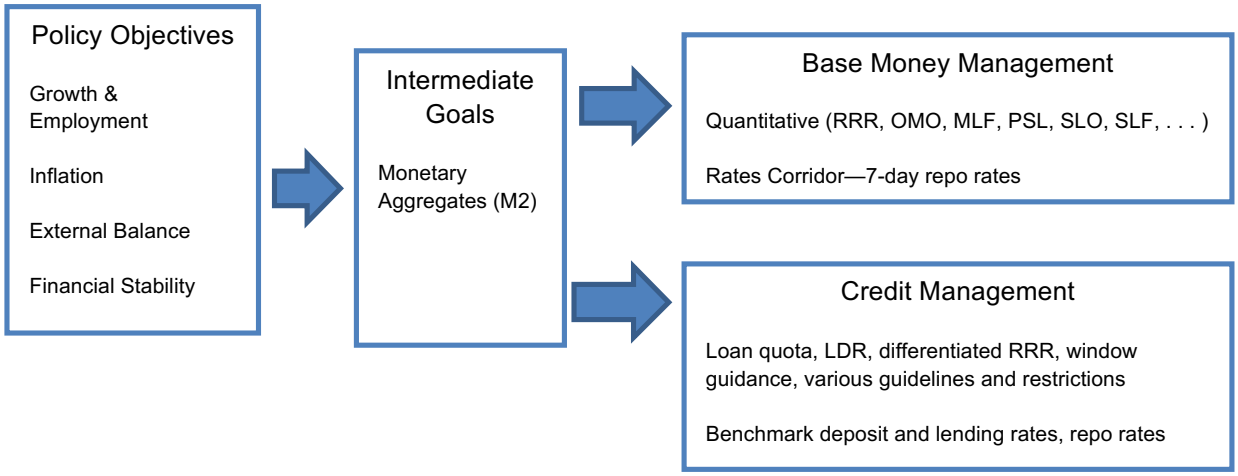
The Use of Monetary Targets in China

Although monetarism is largely dead at the Fed, the People's Bank of China targets monetary aggregates to anchor the price level and keep nominal income on a steady path (see Figure 2 for the PBC's monetary framework). As UBS economist Tao Wang and her team note:

> Unlike some developed central banks that directly target certain policy interest rates or inflation, the PBC has targeted broad monetary aggregates such as M2 since 1998 to achieve its key macroeconomic objectives. The M2 growth target is usually set by adding together the GDP growth and CPI inflation targets plus a few percentage points for "financial deepening." Although the PBC has tried to increase the use of price-based policy instruments, to date it still relies mainly on managing the quantity of base money supply and directly controlling credit growth to help achieve its desired broad money growth [Wang et al. 2017: 2].[5]

[5] Financial deepening refers to the spread of banking and other financial services that help monetize an emerging market economy. The development of the financial sector, and the wider availability of credit, spur economic growth and increase the demand for real balances.

Figure 2: PBC Monetary Framework



Notes: RRR is required reserve ratio; OMO is open market operations; MLF is medium-term lending facility; PSL is pledged supplementary lending; SLO is short-term liquidity operations; SLF is standing lending facility; LDR is the loan-to-deposit ratio.

Source: Wang et al. (2017: 2).

The PBC is not an independent central bank. It is governed by, and reports to, the State Council. Policymakers set targets for the growth of monetary aggregates based on plans for CPI inflation and real GDP growth—the sum of which is equal to the growth of nominal income. The simple quantity theory of money, which lies behind monetarist logic, specifies that to achieve nominal income growth of *x* percent per year, the quantity of money should grow at a similar rate, with some adjustment made for changes in the income velocity of money:

(6) $\Delta M/M = \Delta P/P + \Delta y/y - \Delta V/V.$

The PBC does not directly control the money supply, which can be expressed as

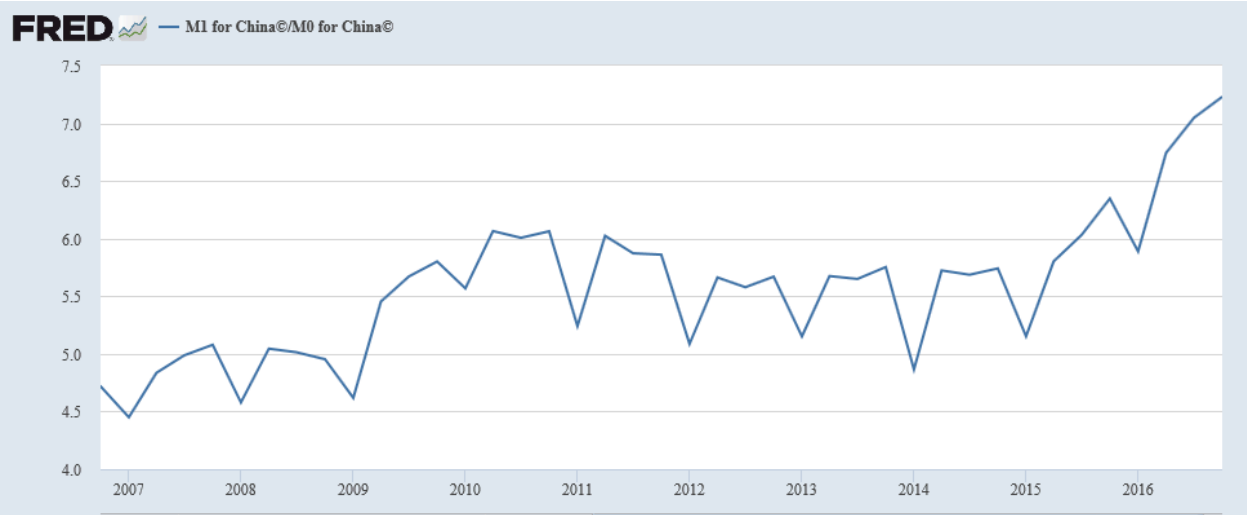
(7) $M = mB.$

To achieve its target for money growth, the PBC relies on controlling the monetary base and uses various instruments to regulate the flow of credit.[6] The state-run banking system in China means that newly created base money can be multiplied into a much larger stock of bank money (Figure 3). When state-owned commercial banks have excess reserves, they will have a strong incentive to lend them out to meet the credit plans handed down to them, creating a multiple expansion of demand deposits.[7]

The increase in M will then flow into the economy, first impacting output and employment, and later the price level. Work by Princeton economist Gregory Chow, who studied with Milton Friedman at Chicago, has shown that the relationship between money growth and inflation in China, both during and after the period of rigid central planning, is consistent with the quantity theory of money (see Chow 2007: chap. 7; Chow 2010: chaps. 16 and 22).[8] For example, prior excess money growth led to 22 percent inflation in 1994, but when the PBC reduced money growth, inflation fell to less than zero in 1998 (Chow 2007: 130).

[6] Burdekin and Siklos (2008a) argue that interest-rate controls preclude the PBC from targeting interest rates (p. 84). Thus, a better fit for China is to target monetary aggregates and use a McCallum-type monetary rule (p. 85). See McCallum (1988).
[7] The PBC pays interest on reserves, with required reserves earning 1.62 percent and excess reserves 0.72 percent, which is substantially less than the prime lending rate of 4.35 percent.
[8] See also Burdekin and Siklos (2008b) for evidence that “monetarism with Chinese characteristics” has worked to tame inflation and stabilize nominal income.

Figure 3. The M1 Money Multiplier in China Is Working



Financial Repression in China

To prevent inflation, the PBC has to manage its balance sheet in a way consistent with its money supply and credit plans. This is often difficult because the PBC's objectives include not only domestic price stability but also a target zone for the exchange rate. Financial repression—in the form of low or negative real interest rates on deposits at state-owned commercial banks, capital controls, and credit rationing—weaken market forces. State-owned banks favor lending to state-owned enterprises (SOEs), rather than more efficient private enterprises, resulting in a misallocation of capital. Deposit rates are purposefully kept below lending rates to keep state-owned banks profitable and generate tax revenue. Inflation can turn real deposit rates negative, adversely affecting savers. Finally, below-market lending rates at state-owned banks create an excess demand for loanable funds and result in the use of quotas to ration credit.[9]

[9] For a discussion of financial repression in China and its implications, see Lardy (2008) and Li (2001).

China has allowed more flexibility in setting interest rates but still uses benchmark rates to maintain a positive net interest margin at state-owned banks. Private enterprises that find it difficult to obtain low-interest loans in the state sector move to the shadow banking system where they must pay a much higher interest rate. The lack of investment alternatives, and strict control of capital outflows, has resulted in more than 50 percent of national income being saved.[10] Financial deepening and liberalization have reduced the scope of financial repression, but the financial sector is still under strong state control.

Chinese monetary policy is inconsistent because it tries to achieve two mutually incompatible policy goals: low inflation and an artificially depressed exchange rate. China has been accused of currency manipulation because it has pegged its currency at an artificially low exchange rate against the dollar to spur exports. However, such a policy requires the PBC to create base money to buy dollars, which leads to inflationary pressure that could be socially destabilizing. To prevent inflation, the PBC must sterilize base money growth by selling bills to state-owned banks, which drains excess reserves from the banking system.[11]

While it is true that China has intervened to lower the foreign exchange value of the yuan, more recently the PBC has tried to stem capital outflows by defending the yuan against the U.S. dollar, and in so doing is using up scare foreign exchange reserves. That is, the PBC is propping up the yuan-dollar rate by buying yuan in the foreign exchange market and selling dollars. To offset the decrease in base money—

[10] Given the low interest rates, people have to save more to meet their desired target for savings.
[11] For an excellent discussion of how China sterilizes its currency interventions, see Kwan (2006).

and prevent deflation—the PBC must sterilize the foreign exchange intervention by buying securities (central bank bills, etc.) from state-owned banks, adding reserves to the banking system. But this is a tricky business because the larger the capital outflows, which put downward pressure on the yuan, the higher the probability of further downward pressure on the yuan-dollar exchange rate. This reality makes it increasingly difficult to defend the peg and manage the money supply. In contrast, if China were to move to a market-determined exchange rate regime, there would be no need to hold massive reserves and capital would be more effectively used in the domestic economy. Meanwhile, the PBC could focus on achieving long-run price stability and keeping nominal income on a steady path. It would then be impossible to label China a "currency manipulator" and U.S.-China relations would improve.

So while the money multiplier is not plugged up in China, as it is in the United States, monetarism with Chinese characteristics lacks a simple rule, is compromised by competing policy goals, and is hindered by heavy state intervention in capital markets. The dominance of state-owned banks in China's financial system, who lend to SOEs and take their marching orders from the PBC under the visible hand of the State Council, means constant fine-tuning of monetary and credit policy.

The number of tools in the PBC's toolbox to control base money and provide liquidity has increased (see Figure 1), but there is still strong reliance on administrative measures that suppress market forces. Benchmark deposit and lending rates persist despite the fact that officially they have been liberalized.[12] The exchange rate is

[12] The ceiling on deposit rates was abolished in October 2015, and lending rates have been liberalized. Nevertheless, benchmark deposit and lending rates are still published by the PBC and used to guide state-owned commercial banks in their pricing decisions (Wang et al. 2017: 12).

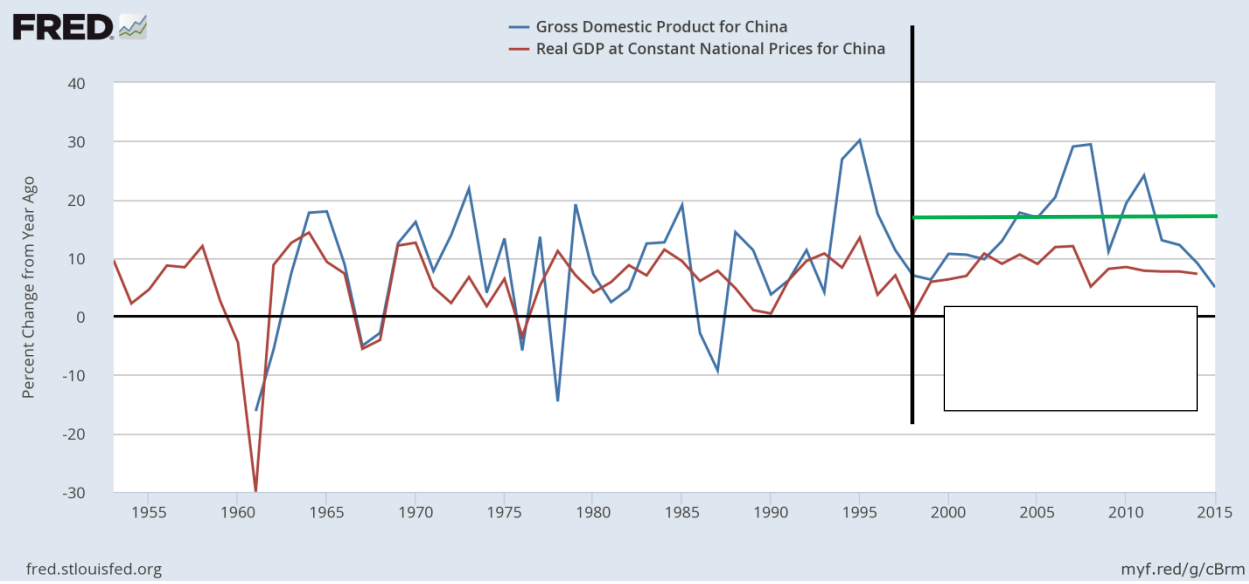
supposed to reflect market forces, but it too is heavily managed. Meeting multiple targets means tradeoffs have to be made.

Lessons

The use of monetary targets since 1998 has helped prevent severe inflation and recession in China (Figure 4), but there is no guarantee those targets won't be politicized in a one-party state. In a fiat money world, central banks need an anchor in the form of a monetary rule. The choice of rules can vary but the objective should be clear: long-run price stability to protect people's property right in a stable-valued currency.

Although China is far from having the type of central planning used before 1978, the government has a target rate for real and nominal GDP growth as well as money and credit. State-owned banks provide more than 50 percent of outstanding credit. The green line in Figure 4 represents a 10 percent nominal GDP growth target, assuming 3 percent inflation and 7 percent real growth. Since 1998, adherence to a monetary rule with Chinese characteristics has prevented nominal GDP growth from dipping below the10 percent target—even during the global financial crisis in 2008. However, in the last several years, real growth has slowed and nominal GDP growth has fallen below the green line.

Figure 4. Real and Nominal GDP Growth, China



The difficulty facing Chinese policymakers is to restructure the economy by allowing the market to play a larger role vis-à-vis the state. What is important for development is to use markets to widen the range of choices open to people, including investment choices. China's real GDP may be falling but if China restructures in a market-friendly way, people's lives will improve.

To achieve restructuring, China will have to keep inflation from erupting, which means the PBC will have to control the growth of money and credit. Policymakers understand the link between money and prices, and monetarist arithmetic. Gregory Chow and others have helped spread the idea that the price level depends on balancing money growth and real growth, and that those who ignore this economic law do so at their peril.[13]

[13] Chow estimated inflation over different periods in China using a simple quantity theory equation and found that changes in the supply of money and real output, along with past inflation, were reliable

The challenge for central bankers is to recognize the limits of monetary policy and the importance of monetarist principles in a fiat money world. Meanwhile, economists need to think carefully about alternatives to discretionary government fiat money.

The use of unconventional monetary policies by the Fed and other central banks has shifted attention away from monetarist principles, based on the quantity theory of money, and given those banks greater power. Lost in the fog is the simple and proven idea that monetary excess will eventually result in inflation. QE and ZIRP have not done so because new instruments—such as interest on reserves, negative interest rates on bank reserves, and macroprudential regulation—have dampened the link between money, credit, and prices. Consequently, there has been little stimulus resulting from QE, while near-zero or negative interest rates have distorted investment decisions, increased leverage, inflated asset prices, and misallocated credit (see, e.g., Levy 2017).

The Fed and other central banks could learn from China's experience with money supply targeting, while recognizing the dangers of credit allocation. China pays interest on both required and excess reserves, but the rate on excess reserves is far below lending rates. If the Fed abolished interest on excess reserves, while retaining

---

indicators of inflation. Using the Chow test, he found that his equation was valid during both the period of central planning before 1979 and after economic liberalization took place. He concludes by stating, "The econometric study shows the validity of this important economic law [the quantity theory of money] which is applicable to China and the rest of the world" (Chow 2010: 94).

interest on required reserves, the money multiplier would return to normal—helping to unplug the monetary transmission mechanism.

Conclusion

China has used monetary targeting since 1998 and managed to avoid serious inflation and recession. That experience is something the Fed and other major central banks should notice. However, if China wants to become a global financial power, it needs to allow privatization of SOEs and state-owned banks, the free flow of capital and information, the full liberalization of interest rates, and adhere to the rule of law safeguarding persons and property. With those and other institutional changes, a simple monetary rule designed to prevent inflation and keep nominal income on a steady path would help stabilize the foreign exchange market. Moreover, if China chooses to let the yuan float, there would be no need to hold large amounts of foreign reserves and there would be a more efficient allocation of capital.

References

Burdekin, R. C. K. (2008) *China's Monetary Challenges: Past Experiences and Future Prospects*. New York: Cambridge University Press.

Burdekin, R. C. K., and Siklos, P. L. (2008a) "People's Bank of China Policymaking and External Pressure." In Burdekin (2008: 76–92).

_____ (2008b) "What Has Driven Chinese Monetary Policy since 1990? Investigating the People's Bank's Policy Rule." *Journal of International Money and Finance* 27 (5): 847–59.

Cagan, P. (1989) "Monetarism." In J. Eatwell, M. Milgate, and P. K. Newman (eds.) *The New Palgrave: Money*, 195–205. New York: W. W. Norton.

Calomiris, C. W. (2017) "The Microeconomic Perils of Monetary Policy Experiments." *Cato Journal* 37 (1): 1–15.

Chow, G. C. (2007) *China's Economic Transformation*. 2nd ed. Malden, Mass.: Blackwell.

_____ (2010) *Interpreting China's Economy*. Singapore: World Scientific.

Dorn, J. A. (2015a) "Monetary Stimulus Creates Only Pseudo Wealth." *Investor's Business Daily* (April 21, online).

_____ (2015b) "Unconventional Fed Policy Hasn't Paid Off." *US News and World Report* (December 17).

Federal Reserve Bank of New York (2008) "The Money Supply." Available at www.newyorkfed.org/aboutthefed/fedpoint/fed49.html.

Friedman, M. (1960) *A Program for Monetary Stability*. New York: Fordham University Press.

_____ (1968) "Inflation: Causes and Consequences." In *Dollars and Deficits*, 21–71. Englewood, N. J.: Prentice-Hall.

Hume, D. ([1752] 1987) "Of Money." In *Essays: Moral, Political, and Literary,* revised ed., 281–94. Edited by E. F. Miller. Indianapolis: Liberty Fund.

Humphrey, T. M. (1974) "The Quantity Theory of Money: Its Historical Evolution and Role in Policy Debates." Federal Reserve Bank of Richmond *Economic Review* (May/June): 2–19.

_____ (2013) "Arresting Financial Crises: The Fed versus the Classicals." Levy Economics Institute Working Paper No. 751 (February).

Kwan, C. H. (2006) "China Faces a Tough Challenge in the Steering of Monetary Policy: The Room for Sterilization Is Diminishing." *China in Transition* (August 23): www.rieti.go.jp/en/china/06082302.html.

Lardy, N. R. (2008) "Financial Repression in China." Peterson Institute Policy Brief No. PB08–8 (September).

Levy, M. D. (2017) "Why Have the Fed's Policies Failed to Stimulate the Economy?" *Cato Journal* 37 (1): 39–45.

Li, D. D. (2001) "Beating the Trap of Financial Repression in China." *Cato Journal* 21 (1): 77–90.

McCallum, B. T. (1988) "Robustness Properties of a Rule for Monetary Policy." *Carnegie-Rochester Conference Series on Public Policy* 29 (Autumn): 173–203.

McCulloch, J. H. (1975) *Money and Inflation: A Monetarist Approach*. New York: Academic Press.

Selgin, G. (2016) “Interest on Reserves, Part III.” Center for Monetary and Financial Alternatives, *Alt-M* (January 12): www.alt-m.org.

_____ (2017) “A Monetary Policy Primer, Part 9: Monetary Control, Now.” Center for Monetary and Financial Alternatives, *Alt-M* (January 10): www.alt-m.org.

Wang, T.; Chen, L.; Kwok, D.; Zhang, N.; and Zhong, J. (2017) “Understanding China (Part III): The Monetary Policy Maze.” UBS *China Economic Perspectives* (January 25): www.ubs.com/economics.

Warburton, C. (1966) “The Monetary Disequilibrium Hypothesis.” In *Depression, Inflation, and Monetary Policy*, 25-35. Baltimore: The Johns Hopkins Press.