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An Alternative View of Finance, Saving, Deficits, and Liquidity

***Abstract:** This article contrasts the orthodox approach with an alternative view on finance, saving, deficits, and liquidity, with the goal of shedding light on the current global financial crisis. It first briefly summarizes the orthodox view according to which global savings financed the U.S. speculative boom. Excessive growth of U.S. indebtedness was unsustainable, and matters were made worse by Fed monetary ease. The alternative view is based on Keynes’s approach to finance and liquidity preference, integrated with the “modern money” view of currency sovereignty. It is argued that investment, budget deficits, and current account deficits create saving; on this view it is more revealing to think of U.S. current accounts as financing global dollar savings. Finally, an alternative interpretation of the causes of, and solutions to, the global financial crisis are offered.*

***Key words:** Chartalism, deficits, finance, financial crisis, Keynesian theory, liquidity, Minsky, modern money.*

This paper contrasts the orthodox approach with an alternative view on finance, saving, deficits, and liquidity, with the goal of shedding light on the current global financial crisis. It first briefly summarizes the orthodox views on these topics; these are called “out-of-paradigm” because although they may apply to some (possibly hypothetical) economy, they are not applicable to the conditions that exist in a modern capitalist economy. The “in-paradigm” economy I am analyzing is a modern “monetary production” economy (as

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Keynes called it) that operates with a sovereign currency. I further define a sovereign currency as one that is issued by a sovereign government that operates with a flexible exchange rate—and that requires that the government not promise to redeem its currency on demand at some fixed exchange rate (against a commodity such as gold or a foreign currency). I do not limit the analysis to a free float currency, but rather I discuss what Keynes referred to as a managed exchange rate. The government may intervene if it believes the exchange rate has moved outside some desirable bounds, but it does not operate with a fixed exchange rate. The floating rate—even if managed—preserves domestic policy space. However, to the degree it is managed, domestic policy can become constrained.

Summary of the Orthodox Views on the Origins of the Crisis: Out-of-Paradigm Views on Savings and Liquidity

Let us very briefly set out the conventional views on the cause of the current global financial crisis. First, excessive U.S. trade deficits are supposed to have “soaked up” global savings, a sort of “beggar thy neighbor” policy that left much of the world underdeveloped for lack of savings to finance investment. Worse, the policy was ultimately unsustainable because as the United States became the world’s biggest debtor, it was inevitable that eventually there would be a run out of the dollar. This would trigger a liquidity crisis because no one would want to lend to an overindebted United States. Problems were compounded because the U.S. Federal Reserve (the Fed) pursued a low interest rate policy, pumping liquidity into the markets and thereby fueling a real estate boom. Although the United States appeared to enjoy a robust economy, that was predicated on a continued flow of dollars—largely from China and other net exporters. At the same time, China, India, and other parts of the globe also grew relatively rapidly, increasing commodities (especially oil) prices—leading to even more dollars flowing out of the United States to purchase commodities imports. Eventually, with the world awash in dollars, the much anticipated run did take place; the dollar collapsed and the Fed (and then the Treasury) had to come to the rescue of U.S. banks, firms, and households. When asset prices plummeted, the financial crisis spread to much of the rest of the world. As the residual supplier of dollars, China—given its \$2 trillion of foreign currency reserves—now holds the fate of the United States and possibly the entire world in its hands. It is necessary for the United States to begin to live within its means, by balancing its current account. This will require fiscal responsibility and higher interest rates, although austerity might be temporarily postponed because of the crisis (this last point seems to be a pragmatic position that is not founded in orthodox theory).

This position on the causes of the crisis follows from orthodox, out-of-paradigm views on savings that derive from loanable funds theory. Savings are necessary to finance investment and thus are critically important for development. Savings can be excessive, which would generate too much investment and thus inflation. However, this is self-correcting because the higher rate of savings leads to more capital, which lowers its return, reducing the incentive to invest. The economy moves to a higher living standard but returns to the original growth rate. Savings can also be insufficient, generating too little investment and thus slow growth as development is impeded. Again, markets will adjust, with higher returns to capital and a lower living standard, but converge to the original growth rate. Once we add government to the model, its deficits soak up savings, hindering growth and development. Because government is presumed to be less efficient, its deficits transfer resources out of the more productive private sector, and thus living standards are made permanently lower. Running budget surpluses would add to available national savings, leading to more private investment and thus more development and higher living standards. Finally, a current account deficit soaks up rest of world (ROW) savings, hindering investment and development elsewhere. Both government deficits and current account deficits raise solvency issues (for the government and for the nation, respectively), making matters even worse. Perpetual deficits in the government's budget or in the current account are unsustainable under at least some conditions.

The central bank provides liquidity through its discount window, through open market purchases, or—even worse—through lending directly to the Treasury. There is a deposit multiplier attached to central bank provision of liquidity, so every dollar of reserves provided leads to some multiple quantity of loans and deposits created. Excessive liquidity leads to too much spending, which generates inflation. Because government spending is less productive, central bank financing of budget deficits is likely to be the most inflationary. The central bank must ensure that just the right level of liquidity is provided to keep spending at the correct level (the natural rate, or the nonaccelerating inflation rate, of unemployment) to avoid accelerating inflation. Normally the central bank should be restricting liquidity to fight inflation; however, if recession threatens, the central bank can pump out liquidity to increase spending.

The current crisis was largely caused by excessive lending to unqualified homebuyers—who had been induced by low interest rates and rising real estate prices to mislead lenders about credit risk. Some lenders were thereby duped into making loans to subprime borrowers, who then defaulted. Other lenders were forced by bleeding heart liberals to make subprime loans to poor people under the rules of the Community Reinvestment Act. This was especially true

of the government-sponsored enterprises, which combined private and public interest in an unnatural and fatally flawed manner. Finally, the Fed must share a big part of the blame for keeping interest rates too low for too long as it continued to pump liquidity into housing markets.

In the context of the current financial crisis, the Fed has been “bailing out” financial institutions by providing liquidity; it should avoid pumping out too much, as this may fuel a return of inflation. The Treasury has also been bailing out institutions by buying bad assets and injecting capital. This threatens long-run government solvency because it is adding to deficit spending; this also burdens future taxpayers, who will have to repay the debt. If, however, the Treasury takes some equity shares in the institutions it rescues, taxpayers can recover some of the costs. In any event, today’s budget deficits perpetuate U.S. reliance on external funding sources, such as China. U.S. citizens face undesirable prospects: erosion of the foreign currency value of the dollar, inflation, and possibly even national—or at least governmental—insolvency.

The In-Paradigm View: Modern Money and Internal Balances

The alternative, in-paradigm view will be based on what I call “modern money.” This is an integration of the post-Keynesian endogenous money approach, the Keynes-Veblen-Marx monetary theory of production, the Chartalist or state money approach of Knapp, and the credit money approach of Innes. I have detailed this integration in many publications over the past dozen years, so I will not devote much space to it here (see Wray 1998, 2004). The main principles include the following propositions:

- The government names a unit of account and issues a currency denominated in that unit.
- The government adopts a floating exchange rate (managed) and does not promise to convert to any precious metal or foreign currency at a fixed exchange rate.
- The government ensures a demand for its currency by imposing a tax liability that can be fulfilled by payment of its currency.
- Government spends by crediting reserves and taxes by debiting reserves.
- In this manner, banks act as intermediaries between government and the nongovernment sector, crediting deposits as government spends and debiting them when taxes are paid.
- Government deficits mean net credits to banking system reserves and also to nongovernment deposits at banks.

- The central bank sets the overnight interest rate target; it adds/drains reserves as needed to hit its target rate.
- As post-Keynesians insist, the overnight interest rate target is exogenous, set by the central bank; the quantity of reserves is endogenous determined by the needs and desires of private banks; and the deposit multiplier is simply an *ex post* ratio of reserves to deposits—it is best to think of deposits as expanding endogenously as they leverage reserves but with no predetermined leverage ratio.
- The Treasury cooperates with the central bank, providing new bond issues to drain excess reserves or retiring bonds when banks are short of reserves.
- For this reason, bond sales are not a borrowing operation used by the sovereign government, instead they are a reserve maintenance tool that helps the central bank hit interest rate targets.
- The Treasury can always afford anything for sale in its own currency, including a bailout.
- Lending by the central bank is not a bailout and need not be constrained.
- The current crisis will not be resolved until the budget deficit expands sufficiently to satisfy the net saving desires of nongovernment sectors in the form of currency, reserves, and Treasury debt.

Most macroeconomic theory that follows from Keynes's analysis begins with the GDP identity according to which aggregate spending (consumption, investment, government, net exports) equals aggregate income (wages, profits, taxes). Following Wynne Godley (1996) we can instead use a stock-flow consistent balances approach: a sector's spending flow must equal its income flow plus changes to its financial balance. A sector can spend more than its income, but this implies a deduction from its net financial assets. At the same time, the deficit spending of one sector implies that at least one other sector must be spending less than its income, accumulating net financial assets.

For example, in a two-sector model, the government's deficit spending (and thus its net debt issue) is identical to the nongovernment sector's budget surplus (and thus its net accumulation of financial assets, which are claims on the government sector). As J. Fagg Foster would put it, the surplus (or saving) of the nongovernment sector is the pecuniary accountancy (accounting record) of the government's deficit (dissaving). Following Keynes, this statement is interpreted as something more than an identity, as causation is also implied. It is the deficit spending of one sector that generates the surplus (or saving) of the other; this is because the entities of the deficit sector can in some sense decide to spend more than their incomes, whereas the surplus entities can

decide to spend less than their incomes only if those incomes are actually generated. Again, in Keynesian terms, this is simply another version of the twin statements that “spending generates income” and “investment generates saving.” Here, however, the statement is that the government sector’s deficit spending generates the nongovernment sector’s surplus (or saving).

Obviously, this reverses the orthodox causal sequence because the government’s deficit finances the nongovernment’s saving in the sense that the government deficit spending provides the income that allows the nongovernment sector to run a surplus. Looking to the stocks, it is the government’s issue of claims that allows the nongovernment to accumulate financial claims on government. Although this seems mysterious, the financial processes are not hard to understand. Government spends (purchasing goods and services or making transfer payments) by crediting the bank accounts of recipients; this also leads to a credit to their bank’s reserves at the central bank. Government taxes by debiting taxpayer accounts (and the central bank debits reserves of their banks). Deficits over a period (say, a year) mean that more bank accounts have been credited than debited. The nongovernment sector realizes its surplus initially in the form of these net debits to bank accounts. All this analysis is reversed in the case of a government surplus: the government surplus means the nongovernment sector runs a deficit, with net debits of bank accounts (and of reserves). The destruction of nongovernment sector net financial assets of course equals the budget surplus.

There are often two objections to this approach: (1) it must be more complicated than this, and (2) what if the private sector’s portfolio preferences do not match the government’s budget outcome. The first of these objections has been carefully dealt with in a long series of published papers and working papers by Bell (2000, 2001; also known as Kelton), Bell and Wray (2003), Fullwiler (2006), Rezende (2009), and Wray (1998), who look at actual operating procedures in the United States, Canada, and Brazil. The central bank and the Treasury develop such procedures to ensure that government is able to spend, that taxpayer payments to the Treasury do not lead to bounced checks, and—most important—that undesired effects on banking system reserves do not occur. This often generates another question: what if the central bank refused to cooperate with the Treasury? The answer is that it would miss its overnight interest rate target (and eventually would endanger the payment system because checks would start bouncing). Readers are referred to the substantial literature on the coordination—the conclusions of which have never been successfully challenged by any critic. Nonspecialists can be assured that the simple explanation above is sufficient: the conclusion from close analysis is that government deficits do lead to net credits to reserves, and if excess reserves are created they are drained through bond sales.

With regard to the second objection, we first must notice that if the government's fiscal stance is not consistent with the desired saving of the nongovernment sector, then spending and income adjust until the fiscal outcome and the nongovernment sector's balance are consistent. For example, if the government tried to run a deficit larger than the desired surplus of the nongovernment sector, then some combination of higher spending by the nongovernment sector (lower nongovernment saving and lower budget deficit), greater tax receipts (thus lower budget deficit and lower saving), or higher nongovernment sector income (so greater desired saving equal to the higher deficit) is produced. Because tax revenues (and some government spending) are endogenously determined by the performance of the economy, the fiscal stance is at least partially determined endogenously; by the same token, the actual balance achieved by the nongovernment sector is endogenously determined by income and saving propensities. It is not possible for the nongovernment's balance to differ from the government's balance; this also means it is impossible for the aggregate saving of the nongovernment sector to be less than (or greater than) the budget deficit.

It is also obvious that the nongovernment savings cannot exist before the budget deficit, so we should not imagine that a government that deficit spends must first approach the nongovernment sector to borrow its savings. Rather, we should recognize that the government spending comes first; it is accomplished by credits to bank accounts; and finally that both the resulting budget deficit as well as the nongovernment's savings of net financial assets are residuals and are equal.

As Keynes argued, saving is actually a two-step process: given income, how much will be saved; and then given saving, in what form will it be held. Thus many who proffer the second objection have in mind the portfolio preferences (that is, the second step) of the nongovernment sector. How can we be sure that the budget deficit that generates accumulation of claims on government will be consistent with portfolio preferences, even if the final saving position of the nongovernment sector is consistent with saving desires? The answer is that interest rates (and thus asset prices) adjust to ensure that the nongovernment sector is happy to hold its saving in the existing set of assets. Here we must turn to the role played by government interest-earning debt ("Treasury notes," or bills and bonds).

We can safely assume that anyone who sold goods and services to government did so voluntarily; we can also assume that any recipient of a government "transfer" payment was happy to receive the deposit. Recipients of government spending then can hold receipts in the form of a bank deposit, can withdraw cash, or can use the deposit to spend on goods, services, or assets. In the second case, bank reserves and deposit liabilities are reduced

by the same amount (this can generate further actions if it reduces aggregate banking system reserves below desired or required levels—always accommodated by the central bank); in the third case, the deposits shift to the sellers (of goods, services, or assets). As post-Keynesians have long argued, only cash withdrawals or the repayment of loans can reduce the quantity of bank deposits; otherwise only the names of the account holders change. Still, all these processes can affect prices—of goods, services, and, most important, of assets. If deposits and reserves created by deficit spending are greater than desired at the aggregate level, then the “shifting of pockets” bids up asset prices, lowering interest rates. Modern central banks operate with an overnight interest rate target. When excess reserves cause banks to bid the actual overnight rate below the target, this triggers an open market sale of government bonds that drains excess reserves. So the answer to the second objection is really quite simple: asset prices/interest rates adjust to ensure that the nongovernment’s portfolio preferences are aligned with the quantity of reserves and deposits that result from government spending—and if the central bank does not want short-term interest rates to move away from its target, it intervenes in the open market.

It is best to think of the net saving of the nongovernment sector as a residual that results from the government’s deficit spending—which creates income and savings. These savings cannot exist before the deficits because the net credits by government create the savings. Hence, the savings do not really finance the deficits, but rather the deficits create an equal amount of savings. Finally, the fear that government might “print money” if the supply of finance proves insufficient is exposed as unwarranted. All government spending takes place by crediting private bank accounts—which could be counted as an increase of the money supply (initially, deposits and reserves go up by the same amount). However, the portfolio preferences of the nongovernment sector will determine how many of the created reserves will be transformed into bonds, and incremental taxes paid will determine how many of the created reserves and deposits will be destroyed.

Short-term Treasury bonds are an interest-earning alternative to bank reserves. As discussed, when they are sold either by the central bank (open market operations) or by the Treasury (new issues market), the effect is the same: reserves are exchanged for treasuries. This is to allow the central bank to hit its overnight interest rate target; thus, whether the bond sales are by the central bank or the Treasury, this should be thought of as a monetary policy operation. As post-Keynesians have long emphasized, reserves are nondiscretionary from the point of view of the government (Moore 1988; Wray 1990). If the banking system has excess reserves, the market rate falls below the target, triggering bond sales; if the banking system is short, the

market rate rises above target, triggering bond purchases (Wray 1998). The only thing that is added by the modern money perspective is the recognition that no distinction should be made between the central bank and the Treasury on this score: the effect of bond sales/purchases is the same.

Also following from this perspective is the recognition that the central bank cannot pump liquidity into the system if that is defined as providing reserves in excess of banking system desires. The Fed cannot encourage/discourage bank lending by providing/denying reserves. Rather, it always accommodates the banking system, providing the amount of reserves desired. Only the interest rate is discretionary, not the quantity of reserves. In the United States, the Fed operates with an interest rate target, although it allows the Fed funds rate to deviate within a band and intervenes when the market rate deviates from the target by more than the Fed is willing to tolerate. In other words, modern central banks operate with a price rule (target interest rate), not a quantity rule (reserves or monetary aggregates). In the current financial crisis, bank demand for excess reserves has grown considerably, and the Fed has learned to accommodate that demand. Although some commentators remain perplexed that Fed “pumping” of “liquidity” has not encouraged bank lending, it has always been true that bank lending decisions are not restrained (or even linked to) the quantity of reserves held. Banks lend to creditworthy borrowers, creating deposits. If they then need (or want) reserves, they go to the Fed funds market or the discount window to obtain them. If the system as a whole is short, upward pressure on the Fed funds rate signals to the Fed that it needs to supply reserves.

Orthodoxy worries that financing federal government deficits requires a continual flow of global (especially Chinese) savings; presumably, if these prove insufficient, government would have to “print money” to finance its deficits. Worse, at some point in the future, government will find that it cannot service all the debt it has issued so that it will be forced to default. For the moment, let us separate the issue of foreign savings from domestic savings. The question is whether federal government deficits can exceed nongovernment savings (domestic plus ROW). From our analysis above, we see that this is not possible, because every dollar of government spending results in a credit to an equal credit to a bank account. Taxes then lead to bank account debits, so that the government deficit exactly equals net credits to bank accounts. As discussed, portfolio balance preferences then determine whether the Fed or Treasury will sell bonds to drain reserves. These net credits (equal to the increase of cash, reserves, and bonds) are identically equal to net accumulation of financial assets held in the nongovernment sector. In the next section we examine complications that arise from adding the external sector to the analysis.

The In-Paradigm View: Modern Money and External Balances

We can divide the nongovernment sector into a domestic private sector and a ROW sector. In our two-sector model we found that the government's deficit (surplus) must equal the nongovernment sector's surplus (deficit). A similar accounting identity holds for the domestic and external sectors: the domestic deficit (government plus domestic private sector current account deficit) equals the external surplus (capital account surplus). In the three-sector model, the domestic private sector balance plus the government balance equals the external sector balance. In recent years for the United States this has meant that the private sector deficit plus the government's deficit equaled the ROW surplus (the U.S. current account deficit with the sign reversed). The stock counterpart to the ROW surplus is accumulation of dollar-denominated U.S. debt in the hands of foreigners. As noted above, orthodoxy interprets this unrecognized identity as ROW financing the U.S. current account deficit and worries what will happen if the ROW finally refuses to provide the finance, or if the United States becomes unable to service its external debt.

However, the ROW dollar savings cannot exist before the U.S. current account deficits, for the same reason that domestic savings cannot exist before U.S. government deficits. In other words, it is the purchase of imports by Americans that provides the dollar savings accumulated in the form of U.S. debt held by foreigners. Further, these transactions must have been voluntary: in the case of exports someone, somewhere, must have made a decision that she would rather have dollars than the goods or services sold to the United States. Certainly there can be many layers of financial intermediation between the Chinese producer of toys exported to the United States and the American children consuming them. Each of these is pursuing perceived self-interest in some set of constraining conditions (perhaps Chinese prisoners produced the toys, and American parents faced enormous social pressure to purchase them). The point is that if the ROW did not wish to exchange its output for U.S. dollars, the United States would not enjoy a trade deficit. So the answer to orthodoxy is that if a time should come in which no one outside the United States wanted to accumulate additional dollars, the United States would not be able to continue to run an external deficit. The problem will not be that the ROW refuses to lend dollars to the United States but rather that the ROW will not accumulate additional dollar claims on the United States. The ROW dollar saving is the "pecuniary accountancy" (or accounting record) of the U.S. current account deficit—just as net domestic saving is the pecuniary accountancy of government deficits in the simple two-sector model.

Above, we analyzed savings as a two-step decision: first there is the deci-

sion to save and next there is the decision about the form in which saving will be held. Exporters to the United States face a similar two-step decision: once they have sold exports, portfolio preferences will determine the form in which the ROW will hold its dollar assets. A Chinese exporter probably does not want to accumulate dollars so will exchange them at the central bank of China for domestic currency. Foreign central banks, in turn, usually want to hold interest-earning assets rather than dollar reserves (reserves held at the Fed did not until recently earn interest; now that they do, the foreign central bank must choose between reserves that earn a low interest rate versus other dollar-denominated assets that earn higher rates). As we discussed above, portfolio allocation decisions will affect asset prices, interest rates, and central bank/Treasury sales and purchases of treasury bonds.

There is another complication, however, that arises once we add an external sector: exchange rate effects. The exchange rate can be thought of as another price affected by portfolio allocation decisions (the second step of the saving decision). Although the United States could not run a trade deficit unless there were someone, somewhere, willing to accept dollars, the recipient might prefer to exchange them for another currency. The Chinese importer exchanges them for domestic currency; it is possible that the Chinese central bank does not want U.S. dollar reserves so it offers them in the foreign exchange markets. No exchange can take place unless someone, somewhere, will take them. Of course, there is always a market for dollar reserves, but offers might find bidders only by accepting a lower exchange rate. In other words, portfolio preferences can lead to a depreciating (or appreciating) exchange rate. We conclude: a current account deficit can affect the structure of interest rates as well as the exchange rate as dollar recipients make portfolio allocation decisions.

There are two (related) final issues to be examined with regard to external deficits: are they sustainable, and do they raise solvency questions. An external (current account) deficit is sustainable as long as the ROW wants to accumulate dollar assets (at some exchange rate). As mentioned, the stock counterpart to a current account deficit is accumulation by the ROW of dollar claims on the United States; these claims can be on the government or nongovernment sectors. If the claims are on the government sector (reserves or treasuries), they can always be serviced as necessary by crediting interest to bank accounts. It makes no difference whether the holder of a claim on the U.S. government resides in the United States or abroad; indeed, the ultimate claimant is relying on a bank with access to the Fed—either directly or indirectly through a U.S. bank—and interest can always be credited to such a bank. If the claims are on U.S. domestic nongovernment entities (firms or households), then there is always some risk of default. As long as the claims

are in dollars, there is little difference between such debts held domestically or externally. If the external holder has legitimate claims that can be enforced in the United States, there is no additional risk over that to which a U.S. holder of the same liability would be subject.

Of course, with a flexible exchange rate, all holders of U.S. dollar-denominated assets are subject to exchange rate risk, which they can choose to bear or which they can hedge—shifting the risk to someone willing to bear it. With a flexible exchange rate, depreciation against another currency (or against gold, or against the price of a basket of currencies) is not a default. Only if the nation had adopted a fixed exchange rate (gold standard, currency board, and so on) would currency depreciation represent a default. Although pegging the exchange rate will eliminate exchange rate risk (as long as the peg is maintained), it increases default risk, which can take the form either of depreciating the currency or of nonpayment. As such, the claim that pegging the exchange rate will lower interest rates by reducing risks is theoretically and empirically dubious; supposed elimination of exchange rate risk is transformed into potentially even larger default risk. But we conclude that with a flexible exchange rate (1) there is no default risk on government liabilities denominated in the domestic currency, and (2) the default risk on private sector liabilities denominated in the domestic currency is the same whether the holder is resident in the United States or abroad.

The In-Paradigm View: Saving, Investment, Budget Deficits, Current Account Deficits, and Wealth Accumulation

Let us first focus on the domestic nongovernment sector (firms, households, and banks), ignoring the government and external sectors. Within the domestic private sector, firms produce output, generating household income that is consumed or saved. Firms issue IOUs to obtain the resources needed for production, and banks “intermediate” by issuing their own IOUs to firms to be used for purchases of the resources. Households use the bank IOUs to purchase consumption sector output. Both firms and households can run deficits or surpluses, with the surpluses (or savings) of one sector equal to the net accumulation of IOUs on the other. A sectoral deficit or surplus (savings) is voluntary. Firms produce consumption and investment goods, but only the consumption goods are available for household consumption, whereas all production creates income. Thus, investment goods production generates income not spent on consumption goods, creating saving that is the pecuniary accountancy (accounting record) of the investment. If the saving were considered excessive, households would increase consumption, leading to disinvestment through inventory reduction—maintaining equality between

saving and investment. If the saving were considered insufficient, households would reduce consumption, causing unplanned inventory accumulation that is counted as investment. Hence, saving equals investment, always, representing income from production that was not consumed. And it must be at the desired level given income and other constraints impinging on decisions. Subsequent portfolio adjustments can affect prices and interest rates on the stock of dollar financial assets; these could in turn affect future production, investment, and consumption decisions.

For every nongovernment financial dollar liability, there is a nongovernment financial dollar asset; the net must be zero. Similarly, total inside nongovernment net wealth must equal the value of real assets (because financial assets net to zero). Only if we add another sector, say, government, can the domestic private sector accumulate net financial wealth. Thus, once we add the government sector, it becomes the net source of dollar financial assets: a government deficit adds net financial wealth, whereas a government deficit would reduce net financial wealth. Growth of nongovernment net dollar financial wealth is equal to the annual government dollar budget deficits. All dollar receipts are voluntary. If the nongovernment sector had preferred to accumulate fewer net dollar assets, it would have spent more, resulting in higher income (and perhaps higher desired net dollar holdings) and higher taxes (thus, a lower budget deficit). In other words, the government's deficit is an endogenously and complexly determined outcome that allows the nongovernment sector to achieve its desired accumulation of net financial dollar-denominated savings, given constraints. Subsequent portfolio adjustments can affect prices and returns on financial assets, which can then affect future spending and saving decisions.

When we add the ROW to our model, its net accumulation of dollar-denominated financial wealth is equal to the U.S. current account deficit. If the ROW desired to accumulate fewer dollar assets, it would spend dollars, resulting in a smaller U.S. current account deficit and a lower level of ROW accumulation of net dollar financial wealth. Again, all dollar receipts are voluntary, given constraints. Subsequent portfolio adjustments can affect asset prices and returns as well as the exchange rate, which can affect future production, consumption, and saving decisions.

We conclude that there can be no glut (or shortage) of domestic or global dollar saving. In a closed, no government economy, investment determines and equals saving. Net accumulation of domestic currency financial assets is zero. In a closed economy with government, saving equals the sum of investment plus the government's deficit. Net accumulation of domestic currency financial assets equals government debt issue. In an open economy with a government, ROW net dollar saving equals the U.S. current account deficit.

There is simply no possibility that the U.S. current account deficit could find too much (or too little) external finance. All the domestic and external savings is fully accounted for by investment spending, the government budget stance, and the current account outcome.

It is true that subsequent portfolio preferences can affect prices (interest rates and exchange rates). In the recent past, the ROW preferences first turned against dollar-denominated assets—resulting in a depreciating dollar—and then when the crisis hit, preferences turned sharply toward safe dollar assets, such as U.S. Treasury notes. As a result, the dollar appreciated rapidly, and longer-maturity U.S. Treasury notes rose in price. However, as the dollar appreciated (and as the ROW clamored for ever more dollars), the U.S. current account deficit actually fell. The Fed decided to help the ROW meet its insatiable demand for dollars through swap lines (unsecured lending to the world's central banks). Clearly, the falling current account deficit had nothing to do with a sudden shortage of ROW savings but rather with curtailment of consumption in the United States. Nor did the decade-long U.S. consumption boom that preceded the crisis have anything to do with a ROW glut of “savings”—rather, it was the U.S. current account deficit that provided the ROW with its dollar savings.

Crisis Resolution

Although orthodoxy sees the current crisis as a result of excessive liquidity (too much global saving and excessive monetary ease in the United States) as well as a euphoric real estate boom (in part caused by political pressure on financial institutions to lend to low-income homebuyers), I have argued that the roots of the crisis lie in the long-term transformation of the financial system from what Minsky called “robust” to “fragility” (see Wray 2008 for details). Minsky identified the key players in this transformation as money managers—those who manage huge pools of institutional funds (pension, hedge, sovereign wealth, and university funds). Thus we have observed over the past three decades a series of financial crises, each worse than the previous. The current crisis is not a subprime crisis nor even a real estate crisis. Rather, it is a crisis of the entire global financial system, and it threatens to set off a Fisher-type debt deflation process; that last time the world experienced a similar situation was in the 1930s. However, this time around it is likely that we will avoid a great depression. The reason is that we now have a big government (with a U.S. Treasury whose spending is more than a fifth of the economy) and a big bank (the Fed). The key differences now are a floating exchange rate, a willingness and ability to run very large budget deficits as necessary, and a willingness and ability to act as lender of last resort to fi-

nancial institutions. Resolving the current crisis does not require continued flows of global savings to the United States to finance its budget and current accounts deficits. Operating with a sovereign currency, the United States has the domestic policy space to deal with the crisis through a combination of Fed provision of reserves, Treasury coverage of insured losses, and ramped-up Treasury spending to replace private sector demand.

It took too long for the Fed to recognize the proper way to deal with a liquidity crisis: lend without limit, to any financial institution, against any kind of collateral. Monkeying around with interest rate targets and with reserve auctions was a diversionary tactic with no practical benefit. If the Fed had immediately opened the discount window to all financial institutions—even at a discount rate of 4 or 5 percent—it could have resolved the liquidity crisis very quickly. Unfortunately, the Fed thought that gradual reductions of interest rates and auctioning off blocks of reserves would be sufficient—a costly error that caused a number of institutions to fail or to be forced into mergers. The next step should have been to eliminate Federal Deposit Insurance Corporation ceilings to cover all deposits and then to expand coverage to money market funds. Again, hesitation and failure of nerve wasted time, and insurance limits have still only been raised to \$250,000. However, the liquidity crisis had nearly been resolved by the beginning of 2009 despite such mistakes.

A sovereign government can always afford to lend without limit and to cover losses on deposits. Although some commentators have fretted that all the liquidity pumped into the economy will generate inflation later, that is clearly out-of-paradigm thinking. Banks do not lend reserves, nor do they increase lending simply because they have excess reserves. As the economy recovers and bank fears diminish, they will want to reduce their reserve holdings. They will then repay discount window loans and offer reserves in the Fed funds market. This will cause the Fed funds rate to decline below the Fed's target, triggering bond sales. Reserves will decline and the Fed's balance sheet will be reduced. Similarly, making good on insured deposits will not encourage inflation-inducing spending but merely maintain the value of liquid financial wealth. It is probably true that all the bank lending over the decade before this current crisis did cause some inflation—but the price pressures occurred at the time the loans were made. Simply making good on deposits now is not going to unleash inflation.

As of January 2009, the liquidity crisis is mostly behind us. What the United States now faces is a massive insolvency problem and rapidly declining employment and production. The deposit insurance will protect a portion of household financial wealth from bank insolvency—but it is likely that uncovered losses will be in the trillions of dollars. This will affect pension

funds, insurance companies, hedge funds, state and local governments, university endowments, and so on. Treasury secretary Paulson's numerous plans for dealing with the crisis were neither well conceived nor large enough to do much good. In the end, he used bailout funds to subsidize consolidation by picking favored institutions and paying part of the cost of merger. In case after case, it has turned out that the merged institution remains insolvent, chock-full of bad assets, and requiring more money from the Treasury to write down losses.

The preferred orthodox solutions—Treasury purchases of bad assets or of nonvoting equity shares—will not resolve the crisis for two, related, reasons. The assets on and off the books of financial institutions cannot be priced, so any price assigned to them is purely arbitrary. To save the institutions, the Treasury must pay prices high enough to cover all liabilities on, and off, the balance sheets; and this requires a level of Treasury spending that cannot be known but is certainly so large it will not be approved by Congress. Thus, neither purchases of bad assets nor taking equity shares in financial institutions is the answer. This is not the place for a detailed plan for crisis resolution. However, in very general terms, recovery will require two main thrusts: resolution of insolvent financial institutions and a large fiscal stimulus package.

With respect to financial institution insolvency, here is the unrecognized problem: The massive insolvencies at the larger financial institutions result not from subprime loans but from colossal, unprecedented fraud. The entire mortgage debt universe is only about \$10 trillion; securitized products also total about \$10 trillion, of which \$2.5 trillion are subprimes and \$5 trillion are other mortgages (Wray 2008). Banks have already written off a trillion dollars of bad debt, and even conventional analyses project another trillion dollars of write-downs. How could \$2.5 trillion of subprimes already result in \$2 trillion of bank losses—surely these mortgages and the underlying collateral (houses) cannot all be bad? Despite the conventional wisdom about low-income minorities duping banks into letting them buy suburban mansions they could not possibly afford, most subprime loans were for refinancing a mortgage. Yes, there were a lot of NINJA (no income, no job, no assets) loans, but these cannot possibly explain more than a tiny fraction of the losses already realized by banks.

The truth is that the losses involve assets that never had any value to begin with—squared and cubed collateralized debt obligations (CDOs), for example—assets that were complexly structured so that they could have any purported value desired precisely because value was entirely fictitious. The “assets” on the books of the larger institutions never had any real value, and never will. The best course of action is to close them, pay off the depositors,

and deal with collateral damage (for example, pensions will take a big hit through their equity holdings, so the Pension Benefit Guarantee Corporation that insures them will go bankrupt and require a bailout). It is likely that Paulson had become aware of the problem, which is why he used the “too big to fail” doctrine to prop up Wall Street’s finest. For this crisis, a better doctrine would be “too big to save” to close down the Ponzi schemes and to focus efforts on saving the small- to medium-sized financial institutions that are actually necessary for economic recovery. This would have the added benefit that when the economy recovers, those institutions and individuals that created this mess will not be in a position to create another one.

That brings us to the final point—fiscal stimulus. Between the time of the November 2008 election and the January 2009 inauguration, President-elect Barack Obama began to recognize the scale of the economic calamity, increasing the size of his stimulus package by a factor of almost three. He has also correctly favored spending over tax cuts and has targeted tax cuts mostly to households rather than business. This will have bigger multipliers than the traditional supply-side tax cuts favored by Republicans and Democrats alike in previous recessions. There is nothing wrong with tax cuts for households in the present circumstances, however, because they need to rebuild their balance sheets by paying down debts and adding to savings. Thus, I favor tax relief for households, and the best way to give that is through a payroll tax holiday—elimination of collection of the social security tax—because that gives immediate relief to all workers. To reduce employment costs, we can also extend the payroll tax holiday to firms (in the United States, social security taxes are imposed on both employers and employees)—which might save a few jobs.

Given the run-up of private sector debt over the past dozen years, economic growth must be driven by government spending. Obama’s plans to increase spending on infrastructure, green technologies, and education while creating millions of new jobs is a step in the right direction. So far, however, the package is too limited in terms of total spending, number of jobs created, and sectors covered.

For example, the sectors highlighted for government help (such as infrastructure and green technologies) mostly hire males with relatively high education and training—leaving behind women, minorities, and high school dropouts. Again, this is not the place for specific policy proposals, but Obama needs to supplement his package with a universal job guarantee, hiring anyone willing to work for a basic wage and benefits package (Wray 1998). Jobs would then be created in public service (government and not-for-profit institutions, providing childcare, elder care, and a full range of community services) to supplement the kinds of employment Obama has already identified. These

new jobs would be designed for the levels of skills and education of program participants. Note that employment in the program would be highly countercyclical, shrinking as the economy recovers and workers are pulled into the private sector. As such, spending would also be countercyclical and would supplement the planned stimulus of \$800 billion or so that Obama is trying to get through Congress. The planned fiscal stimulus will fall far short of what is needed—even Obama has projected that unemployment would still rise because his package would only replace 3 million of the jobs lost. An employer of last resort program would supply as many jobs as needed (perhaps as many as 10 million), creating as much income and spending as needed (\$200 billion if 10 million are employed at a salary of \$20,000 each) to stop the downward spiral. Further, with the jobs program in place permanently, it would continue to act as a stabilizer long after this crisis is past. Thus, Obama needs to add a comprehensive “employer of last resort” jobs program to his package.

The good news is that the United States can financially “afford” to resolve this crisis. It does not need foreign savings. Government can spend on the necessary scale by crediting bank accounts. If U.S. recovery leads to more imports, this will help to satisfy the ROW’s current insatiable demand for dollars and to put other nations on the path to recovery. Although other sovereign nations do not really need U.S. help, as of the beginning of 2009 only China seems to have recognized the solution to its recession—using its domestic policy to restore growth. Other nations that do not operate with sovereign currencies (those with fixed exchange rates or those that have abandoned domestic currencies—such as those on the euro) are not so lucky. They will have to wait for the United States and other sovereign nations to pull the global economy out of this slump before they can begin to recover. Perhaps this experience will finally put the out-of-paradigm model to rest.

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