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# Financing State and Local Government Infrastructure Investment

Special Report 2001/03

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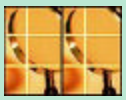

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BY
L. RANDALL WRAY

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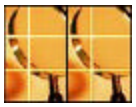

# FINANCING STATE AND LOCAL GOVERNMENT INFRASTRUCTURE INVESTMENT

BY L. RANDALL WRAY, SENIOR RESEARCH ASSOCIATE

In this note, I will examine policy that might encourage greater public infrastructure investment. Much of the discussion will center around H.R. 1452, a bill that was introduced to the House of Representatives in 1999. This bill provided a novel financing method, the primary purpose of which was to provide interest-free loans to state and local governments that would use the money to improve infrastructure. However, at that time, the bill was opposed by the Federal Reserve, for reasons that will be discussed below. For this, and perhaps for other reasons, the bill died an untimely death. There now seems to be growing support for a new bill that would retain most of the features of H.R. 1452. In addition, there are two developments that might have reduced objections to this proposal. First, it has become widely recognized that the U.S. economy is headed toward recession. Even Chairman Greenspan recently testified that growth may have fallen to zero, prompting his support for President Bush's tax cuts. Second, Chairman Greenspan also publicly worried about the prospect that on the basis of projections of budget surpluses, the Treasury (and the Fed) will soon run out of public debt to be purchased.

This is, I believe, a particularly appropriate time to renew discussion of the need for greater public infrastructure investment. Not only has our nation suffered through nearly 3 decades of low investment of public infrastructure investment, but it is also highly likely that we have entered a downturn that will turn into a "hard landing". Thus, it is vitally important to stimulate growth. While I believe that large tax cuts are urgently needed to stave off a hard-landing, we also need to begin thinking of ways to increase spending in a socially useful manner. It is difficult to perceive a more worthy cause than public infrastructure investment. Further, as designed, H.R. 1452 would have created public debt that could replace Treasury debt that is expected to be retired over the coming decade. This would provide the Fed with an instrument for open market operations, and would allow the Treasury to purchase public debt if it should ever reach the point that all publicly-held Treasury debt had been retired.

## BACKGROUND

On April 15, 1999 Representative LaHood introduced H.R. 1452, The State and Local Government Economic Empowerment Act, to the House of Representatives. This Act would have provided for creation of non-interest bearing loans to state and local governments for the purpose of funding capital projects. A Loan Agreement would be established between the Treasury and the Board of Governors of the Federal Reserve System (BOG) such that the BOG would lend to the Treasury an amount up to $72 billion each year for a total of five years (hence, up to $360 billion). These funds would then be lent by the Treasury to eligible state and local governments to fund capital projects, to be repaid over a period of between 10 years and 30 years. The novel features of H.R. 1452 are, first, that it includes explicit participation by the BOG and, second, that the created loans to do not bear interest.

The BOG has objected to both of these elements of the Act. In this section I will briefly consider the provisions of the Act, and then will respond to the objections raised by the BOG. We will not consider the arguments in favor of increased provision of public infrastructure, as these arguments have been examined in detail in a number of publications issued by the Jerome Levy Economics Institute over the past few years (Aschauer 1993, 1997a, 1997b; Erenburg 1994; Regan 1994; and Levy and Cadette 1998). Indeed, Levy and Cadette (1998) put forth a proposal--largely incorporated in H.R. 2227, introduced by Representative Metcalf--that contains provisions similar to those of HR 1452. Thus, this

Note will primarily be concerned with the stated concerns of the BOG, as represented in commentary provided by Winthrop P. Hambley, Deputy Congressional Liason (of the BOG), and Donald J. Winn, Assistant to the Board (BOG). (The commentaries provided by Hambley and Winn are identical.)

a) *Provisions of H.R. 1452*

The Act includes among its findings that Congress has the constitutional authority to create government credit funds in the form of non-interest bearing credit to fund a legislatively approved program. Further, it finds that this method of finance would allow projects to be built for one-half to one-third the normal cost, hence, would allow a greater number of necessary projects to be built. The funds created pursuant to this Act would be distributed according to a formula that takes into account the 1990 census population as well as the type of jurisdiction (state, county, incorporated municipality, township, school district, or Indian tribe). The funds could be used only for capital projects (such as school facilities, streets, bridges, water and sewer systems, public buildings and facilities, and other listed projects) and for cleanup of toxic waste sites or other environmental improvements. An Administrator would be appointed by, and would be held accountable to, the Secretary of the Treasury, to be solely responsible for disbursing the funds created under the Act. The Administrator would issue United States Government checks from an account held at a Federal Reserve bank to eligible governments. Borrowing government entities would repay principal on a schedule developed according to the useful life of the project (but with a minimum repayment schedule of ten years and a maximum of thirty years), into a separate checking account maintained by the Administrator in a Federal Reserve bank. Each year for five years, up to $72 billion of new interest-free loans could be approved by the Administrator–or $360 billion maximum over five years. The Act provides for payment of small administrative fees by borrowers to the Administrator. Similarly, the Act provides for payments by the Treasury to the BOG to cover administrative costs incurred by the BOG.

The novel features of this Act include the following:
a) The BOG would be required to lend funds to the Treasury at zero interest, while the Treasury would in turn lend these funds to state and local governments without charging interest;
b) Any United States Government checks issued under the terms of this Act would not be counted as Treasury expenditures for the purposes of the Balanced Budget And Emergency Deficit Control Act of 1985, the Budget Enforcement Act of 1990, or any other provisions of law; and
c) Any principal payments received by the Administrator as governments begin to retire their debts created pursuant to this Act will similarly be excluded from calculation of United States Government revenue for the purposes of the above-named budget acts.

It is clear that the objective of these provisions is to create a way to provide low-cost federal government funding of needed projects to be chosen by state and local governments in such a way that the costs do not impact the federal government's budget as calculated for the purposes of the various acts that commit it to maintaining a balanced budget. Essentially, the Act would allow the federal government to "create money" to be lent without interest–so that neither the federal government nor the state and local government borrowers would have to pay interest on the created funds. Apparently, the Act has included BOG participation because the authors could not find an alternative mechanism that would allow the Treasury to otherwise "create money" in the desired manner, and to escape provisions of the various deficit-reduction acts.

b) *Objections raised by the BOG*

The BOG has provided two comments on H.R. 1452, the first by Winthrop P. Hambley (Deputy Congressional Liaison) to Congresswoman Sue W. Kelly on 23 August 1999, and the second by Donald J. Winn (Assistant to the Board) to Joe Engelhard, Esq., Senior Counsel to the Subcommittee on Domestic and International Monetary Policy (Commimttee on Banking and Financial Services), 5 April 2000. These identical comments raise four objections to the Act.

"First, the introduction of the Federal Reserve into the operation of the program tends to mask its true economic cost. Indeed, the legislative language suggests the projects could be built for much less than their normal cost. But there is no free lunch. If such zero-interest loans were funded by the Federal Reserve, the Federal Reserve would hold a commensurately smaller portfolio of Treasury securities, and consequently we would have a smaller volume of earnings to turn over to the Treasury."

"Second, the potential expenditure of federal resources under this legislation would not be subject

to the normal oversight, appropriations, and accountability processes."

"Third, because the loans to the governmental unit would be interest-free, the governmental unit would not face normal incentives to determine which projects would be economic to undertake. That is, the required rate of return on the projects would need to be only zero, rather than positive. Consequently, it is likely that our nation's limited productive resources would be misallocated as a result of this program."

"Finally, this legislation inappropriately confounds fiscal policy and monetary policy. The task of monetary policy is to provide aggregate credit and liquidity consistent with the nation's macroeconomic goals. The task of fiscal policy is to make decisions regarding expenditures of public resources and to provide financing for those expenditures. As you know, the latter appropriately involves intensely political decisions. As illustrated by the unfortunate experience of other nations, involving the nation's central bank in that process can lead to strong and inappropriate pressures on the central bank to expand its balance sheet in an inflationary manner to finance government expenditures. Such pressures can ultimately lead to a serious deterioration in economic performance."

In the remainder of this section, we will examine all but the second point–while the Act does seem to contain adequate oversight, we will not explore that issue. Instead, we will focus on the three objections that relate directly to the Fed, interest rates, and monetary policy.

i) *As designed, the program masks the true economic cost; there is no free lunch.*

Let us first dispense with the common misperception that economics teaches that "there is no free lunch". As the late, great, Robert Eisner used to remark, so long as there are any unemployed resources, free lunches can be obtained by putting them to work. Indeed, he used to say that if we skip our free lunches, we might end up going without dinner as well. If H.R. 1452 manages to put unemployed resources to work to provide valuable public infrastructure and environmental clean-up, it has indeed provided the nation with a *real* "free lunch" regardless of the way the accounting is kept on the books of the Treasury and Fed. If H.R. 1452 merely pulls employed resources away from some other worthy projects, however, only a detailed analysis could tell us whether it results in net benefits. The real cost of the "lunch" thus depends on the extent to which the economy is operating at full capacity utilization of all resources, or, the extent to which other worthwhile projects are displaced (whether at full employment of all resources or not). Even though our economy is still operating with low, measured, unemployment rates, there are still substantial unused resources within the U.S. Even Chairman Greenspan has estimated there are currently 10 million potential workers who do not yet have full time jobs; I would put the figure at something closer to 16 million. (See Pigeon and Wray 1999.) Beyond that, the U.S. can still, to some extent, tap substantial unused capacity around the world. Furthermore, it must be noted that our economy has been doing unusually well in the past five years and there is strong reason to expect that economic growth–and thus employment rates–will subside in coming years. (See Godley 2000; Wray 2000) Indeed, as mentioned above, even Chairman Greenspan believes that economic growth has collapsed to zero. All this means that there probably are some free, or at least very cheap, lunches that can be obtained by wise application of the provisions of H.R. 1452.

The objections raised by the BOG, however, seem to apply mainly to the supposed financial "free lunches" rather than the real "free lunches". The BOG has correctly argued that if it provides zero interest loans to the Treasury, the Fed will earn less interest income than it would have earned. As a result, the Fed would likely turn-over a smaller volume of net earnings to the Treasury (the Fed transfers net earnings in excess of a return of 6% on equity to the Treasury). We can attempt to obtain an estimate of the maximum loss entailed. If H.R. 1452 does result in the maximum quantity of loans permitted by the legislation, $72 billion per year for five years would be spent. Currently, the Treasury is paying a weighted average of about 5.5% on its outstanding securities.

Thus, if the Fed had to offset all spending created by H.R. 1452 through sales of its interest-earning securities, its earnings could be reduced by almost $4 billion in the first year, growing to an annual total of $20 billion by the fifth year. The "financial" lunch is thus not free, but for an annual expenditure of $20 billion, Congress would increase state and local government spending on capital by $360 billion. Note, also, that we have performed a "static" analysis, ignoring any secondary effects that might be induced by such spending. It is usually estimated that the government spending multiplier for the U.S. is about two, indicating that $1 of government spending

induces another dollar of private spending. Hence, the $360 billion capital spending by state and local governments might conceivably generate a total increase of GDP equal to $720 billion. Federal tax revenues amount to something on the order of 20% of GDP, thus, increasing GDP by $720 billion could generate an additional $144 billion of Federal tax revenue. This easily offsets the losses due to lower earnings by the Fed. Obviously, this is a very rough calculation, it is inherently difficult to calculate secondary effects of budget changes, and in any case, Washington budget policy does not usually include such dynamic analysis.

It may be useful to show that these losses due to lower earnings by the Fed are not contingent on the method chosen to finance the program. One might suppose that it is only because H.R. 1452 forces the Fed to lend to the Treasury at zero interest that causes the Fed's income to fall, however, that is not the case. We can evaluate 4 different scenarios: 1) Direct "money creation" by the Treasury; 2) Use of Treasury "overdrafts" on its accounts at the Fed; 3) Treasury sale of interest-earning debt to the general public; or 4) Zero-interest loans from the Fed. It may not be intuitively obvious, but all of these scenarios lead to exactly the same $20 billion annual "cost" to the Treasury. While one might believe that if the program were redesigned to exclude the Fed, the Treasury would pay more interest on its debt, in reality this is offset by Fed payments to the Treasury. Thus, it turns out that inclusion or exclusion of the Fed, as well as borrowing at zero interest or at a positive interest rate, makes no difference.

Suppose the Treasury simply created a new legal tender note that it lent at zero interest to qualifying state and local government. As these notes were spent to finance capital construction, they would flow into bank deposit accounts–just as Federal Reserve Notes and United States Government checks are deposited into such accounts. The receiving banks have their reserves at the Fed credited by the same amount (ignoring the small amount that might be held as vault cash). As the money and banking textbooks teach, if the banks had previously been in "equilibrium", holding the quantity of reserves desired (mostly, this is determined by legal reserve ratios), they will now hold undesired excess reserves. Banks with excess reserves will offer them in the fed funds market; however, this can only shift the excess around from bank-to-bank but cannot rid the system as a whole of the excess. Thus, downward pressure will be placed on the fed funds rate–the overnight lending rate charged by banks for loans of excess reserves. This is the Fed's primary target rate and as soon as it begins dropping, an automatic Fed sale of Treasury securities is triggered. Hence, the Fed will end up with fewer Treasury securities held, lower interest earnings, and less profit to turn over to the Treasury–just as the BOG (correctly) claims it would under the scenario envisioned in H.R. 1452. [1]

What if the Treasury simply issued checks, drawn on its accounts at the Fed (which is the way the Treasury actually spends in the U.S.) Suppose further, that the Treasury does this without having any "money" in its deposit accounts. As it turns out, the results would be exactly the same as creating new notes or borrowing interest-free from the Fed. Those who received the Treasury's checks would deposit them in bank deposit accounts, leading to credits of reserves to bank accounts at the Fed and triggering Fed open market sales. Again, the Fed would hold fewer Treasury securities, would earn less interest, and would turn-over fewer profits to the Treasury. It is not surprising that the result is exactly the same, because if the Treasury simply writes checks on its accounts at the Fed, this is essentially an "overdraft", or, an interest-free "loan" from the Fed.

In contrast, if the Treasury tries to finance H.R. 1452 loans by first selling interest-earning Treasury securities, this will cause the banking system to be short of desired reserves. That is because security buyers will pay for the securities by writing checks on their deposit accounts, which leads the Fed to debit the reserve accounts of banks. This places immediate upward pressure on fed funds rates, thus, triggers Fed open market purchases. The Fed then holds more Treasury debt, earns more interest, and can turn over more profits to the Treasury. These profits will more-or-less compensate for the interest cost incurred by the Treasury to finance its H.R. 1452 spending. This seems to be the financing method preferred by the BOG, and so far it looks like the Treasury has avoided the $20 billion cost. But the story doesn't end here, for the Treasury only sold the securities in order to raise the funds to be spent by state and local government borrowers. Once these funds are spent, the banking system will find itself with undesired excess reserves (as in the cases just examined). The Fed will automatically drain these funds through an open market sale so that it can hit its fed funds rate target. This means it will have fewer securities and less net profits to turn over to the Treasury. Thus, the net financial impact on the Treasury is actually no different from the previous cases examined. The extra interest it pays out will not come back to it from Fed payments of profits because

when all is said and done, the Fed will not hold any of the newly created Treasury debt.

In sum, it appears that so far as the Treasury's *finances* go, it makes no difference whether the Treasury creates and issues new notes, writes "overdraft" checks, or borrows at zero interest from the Fed. In all three cases, the increased spending by state and local governments (financed by Treasury lending at zero interest) would increase bank reserves, force Fed open market sales, lower Fed earnings, and, hence, lower payments made by the Fed to the Treasury. Current financial practice, however, seems to make it difficult for the Treasury to create a new note. Whether the Treasury provides loans to state and local governments by simply cutting checks or by first going through the motions of obtaining a loan from the Fed is really immaterial–for these amount to exactly the same thing. If the Treasury writes a check that is in excess of its deposit at the Fed, the Fed would automatically provide an overdraft (a "loan")–the alternative would be to "bounce" the Treasury's check. Thus, the issue simply boils down to payment of interest by the Treasury to the Fed on the overdraft. But since the Fed turns-over excess earnings to the Treasury this is all a wash. It is therefore difficult to find any *economic* reason to favor one alternative over the other. The decision should be made on the basis of political considerations.

ii) *At zero interest rates, our nation's limited resources will be misallocated*

The BOG objected to zero interest rate loans because the internal rate of return of projects must only clear an interest rate hurdle, thus, scarce resources will be misallocated if that rate is set at zero. This is based on a particular theory about the role played by interest rates in an economy, which supposes that market forces determine an equilibrium interest rate that allocates "scarce" savings among alternative borrowers. However, as the Act provides for Fed creation of new loans, it is clear that the projects that will be created under H.R. 1452 will not displace lending from other worthy projects. It is still possible that the new capital projects might displace other projects by taking away real resources (labor, capital equipment, natural resources). Again, as we discussed above in connection with the "no free lunches" argument, whether or not real resources will be displaced by these projects depends on the degree to which all American (indeed, global) resources are already fully utilized. It is not clear that higher interest rates charged for lending to H.R. 1452 projects would alleviate this problem in any way, except by convincing some governments not to undertake them. Given the small size of the program ($72 billion in each year, spread out over the entire country in a manner largely determined by population) and given the likelihood of an economic slowdown over the next few years, it seems highly unlikely that these capital projects will cause substantial displacement of other worthy projects. However, it might be worth adding a provision to the Act such that the quantity of spending in a particular year could be reduced if the Treasury found national resource utilization levels excessively high. This would seem to be a much more effective method of determining the amount of real resources to be devoted to these projects than trying to rely on "market-determined" interest rates.

There are two other significant objections that might be raised to the BOG's comments. While the BOG does not indicate what interest rate should be charged on these loans, the comments would seem to indicate that the BOG would prefer an interest rate in line with market rates. However, it has long been understood that public projects–especially infrastructure projects–should probably face an interest rate hurdle that is below market rates. Public finance theorists have tried to come up with an alternative "social discount rate", but as BOG member Edward Gramlich notes in his textbook (Benefit-Cost Analysis of Government Programs, 1981), this is no easy matter. Analysts might generally conclude "that the state, as guardian of the interests of those not yet born, might impose a lower rate of time preference for evaluating public investment projects. This argument would lower the social rate of discount below the private rate..." (Pp. 96-7) Still, even if we accept that government projects ought to use a lower interest rate hurdle, this does not tell us what interest rate to use. As Governor Gramlich argues, we should take into account the quantity of capital already existing as well as existing saving and investment flows. A lower hurdle should be adopted if the economy suffers from insufficient investment and infrastructure. The authors of H.R. 1452 believe that there is a serious shortage of investment by state and local governments in infrastructure, hence, the interest rate hurdle should be set below the market rate. Still, this does not necessarily tell us that zero is the optimum.

Governor Gramlich also raises another objection to use of market rates for public investment decisions. This is because interest rates really are not set by markets, but are substantially influenced by monetary

policy. This means that "market" interest rates do not really reflect "time preference" of consumers, they do not equilibrate "saving and investment", and they should not therefore be used to decide how to allocate resources. "Particularly for federal public investment policies, it seems a little silly to argue that public investment ought to be valued at an interest rate that is strongly influenced by what its own policies are doing." (Gramlich p. 97) Again, this does not tell us that zero is the proper interest rate to use for public infrastructure construction lending, but it does call into question the notion that "market" rates provide any guidance. It should be remembered that during WWII, the government issued debt at a short-term interest rate of 3/8 of one percent. Also recall that this interest rate was sufficient to allow the government's deficit spending to reach 25% of GDP! Would anyone today argue that the war effort should have been held to a higher interest rate standard? Perhaps to a "market-determined" interest rate? Now, we know why the government was able to "borrow" at that near-zero interest rate–the Fed agreed to keep the rate at 3/8 of one percent. Does the current infrastructure-deficit for many of our governmental units deserve a similar level of attention of our nation's efforts? It seems that question can only be answered by our elected representatives. If they decide that this is, indeed, a high priority, then there is already a precedent for maintaining very low interest rates to see the project through to completion. Hence, this is a matter for Congress, not the BOG or "markets", to settle.

C) *The program confounds fiscal and monetary policy.*

The BOG comments suggest a sharp dividing line between monetary and fiscal policy that simply cannot exist in the real world. Admittedly, some people do suppose that it is possible to separate the "intensely political" tasks of fiscal policy from the presumably apolitical tasks of monetary policy. The critiques suggest that monetary policy involves provision of just the right amount of "aggregate credit and liquidity consistent with the nations's macroeconomic goals." It is not at all clear how this is free from political considerations, nor is it clear that monetary policy can do any such thing. The nation's "macroeconomic goals" clearly must be "intensely political"–what level of unemployment is the nation willing to accept?; how much poverty should we tolerate?; how fast should incomes rise? In fact, the Fed has only one primary tool, the ability to set the overnight (fed funds) inter-bank lending rate. Even if we believe that this rate has significantly powerful impacts on private lending and borrowing, this still leaves us a long way from the conclusion that the Fed, alone, can ensure we attain all the nation's "macroeconomic goals", while fiscal policy should be relegated to simply making "decisions regarding expenditures of public resources".[2]

In sum, it seems entirely appropriate for Congress to legislate the interest rate to be charged on loans to state and local governments in order to promote capital spending.

CONCLUSIONS

Our analysis has shown that each of the following four alternative methods of "financing" public infrastructure investment has the same impact on the Treasury:

i. BOG "loans" at zero interest to the Treasury (as in H.R. 1452);
ii. Creation of new Treasury "notes";
iii. Treasury "overdrafts" written on accounts at the Fed; or
iv. Treasury sales of interest-earning securities to the public.

Each of these is likely to result in a net financial cost to the Treasury of about $20 billion annually. Only Congress can determine whether an expenditure of this magnitude is justified in order to increase state and local government capital spending by $360 billion. In light of the strong probability that our nation's economic growth will decline over the next few years (or, worse, that we could become mired in a deep recession), additional government spending on worthwhile projects is not likely to stretch capacity utilization beyond prudent limits. Given strong political sentiment against "printing money" and for budget surpluses, options two and four are probably not feasible. As we have seen options one and three actually amount to the same thing, economically, but it might be politically preferable to "finance" infrastructure investment on the basis of "overdrafts" (option three).

Finally, as Chairman Greenspan has noted, the projected federal budget surpluses are so large that the Treasury will soon run out of debt to retire. As the Chairman recognizes, once this point is reached, additional collection of taxes in excess of government spending puts tremendous pressure on the banking system. Indeed, this was a major problem encountered the last time the federal government retired its debt—under President Jackson. When the

time comes, either the Treasury or the Fed would have to purchase private financial assets in order to ensure that the banking system does not run out of required reserves. Many economists would object to federal government purchases of private debt because of the obvious impact this might have on private decision making. Another possibility is that the Fed would simply loan reserves at the discount window against bank assets that would serve as collateral. However, a program such as that offered in H.R. 1452 would provide another public asset that could be purchased by the Fed and the Treasury. This would allow the Fed to continue to engage in open market purchases to supply reserves as needed to maintain orderly fed funds markets. At the same time, the Treasury could also purchase the state and local debt issued to finance public infrastructure as envisioned in H.R. 1452.

NOTES

1. This is actually not quite the end of the story. Holding all else equal, if H.R. 1452 causes the Fed to sell $72 billion of securities each year for five years, the Fed's portfolio of securities would be reduced by $360 billion. Thus, the required sales are too large to be undertaken by the Fed alone, so the Treasury will be enlisted to drain some of the excess reserves through its own sales. Because the Federal government is currently running budget surpluses, and is expected to continue to do so, the Treasury will not need to actually sell additional securities. All that will be required is for the Treasury to reduce its retirement of outstanding debt below what it would have otherwise retired. In order to completely avoid impacts on the Fed's holdings of securities, the Treasury could retire $360 billion fewer securities over the next five years. In this case, the Fed's earnings would not be affected so that it would not be forced to reduce its payment of net earnings to the Treasury. However, these earnings are offset by the higher interest payments the Treasury will make because it will not retire as much debt. Thus, while impacts to the Fed's balance sheet can be avoided by reduced Treasury retirement of outstanding debt, this still results in a net cost to the Treasury of $20 billion over the four years. Note, also, that this result is obtained regardless of the method of "finance" for H.R. 1452 chosen. Thus, we will ignore this in discussion of the other alternatives.

2. In any case, the BOG's attempt to draw a sharp distinction between fiscal and monetary policy cannot be maintained in the real world. As we saw above, any spending by the Treasury automatically increases bank reserves for the simple reason that Treasury checks get deposited into bank accounts, leading to a credit by the Fed. Assuming, as above, that banks were previously in "equilibrium", this injection of reserves leads to a position of excess reserves for the system as a whole. To prevent the fed funds rate from falling below target, the Fed automatically and immediately drains the excess reserves by selling Treasury securities. Tax payments made to the IRS have exactly the opposite effect: reserves are drained as banks clear accounts with the Treasury, forcing the Fed to engage in open market purchases of Treasury securities to keep the fed funds rate from rising above target. In other words, even such day-to-day operations as cutting checks to pay Social Security recipients, or payment of taxes on quarterly due dates force coordination of Treasury and Fed activities. (In the real world, the coordination turns out to be much more complex than this – meaning, quite simply, that activities of the Fed and Treasury cannot be separated.) If the Treasury is consistently spending more than it receives in tax payments, reserves are continually injected into the banking system. As the Fed would eventually run out of securities to sell, the Treasury must issue new securities to drain those excess reserves from the system. If it did not, the fed funds rate would be driven to zero–exactly as is the case in Japan today. While it is common to think of new Treasury issues as a "borrowing" operation, their immediate purpose is to drain excess reserves. The interest rate paid on the new issues is policy-determined, mostly by the Fed's fed funds rate target (and, in the case of longer maturity securities, by expectations of future Fed targets). So long as this rate is above zero, banks will prefer to hold securities to undesired, non-interest-earning, excess reserves. This is why the Fed could maintain the short term interest rate at 3/8 of one percent all through WWII. More recently, the Japanese government actually managed to issue securities at a negative interest rate (by keeping undesired excess reserves in the banking system) in spite of government deficits that reached 8% of GDP!

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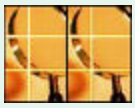

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