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What is money and who says so?

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"Liquidity and market efficiency - alive and well?"
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Peter R. Fisher
Senior Fellow, Center for Global Business and Government
Tuck School of Business at Dartmouth

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Are liquidity and market efficiency alive and well? No, I don't think so. But why do you ask?

Why are central bankers and policy makers the world over so concerned with this thing called liquidity? Is this an outpouring of sympathy for the plight of the hard working bond trader? More likely you are wondering whether current valuations can be sustained or if prices of financial assets might go down. This seems a reasonable concern.

First, for the market as whole, there is no such thing as liquidity. Finance capitalism is premised on a profound liquidity illusion. Central bankers, in particular, should not be confused about this.

Second, this generation of central bankers is committed to stabilizing macroeconomic outcomes and they do this by manipulating financial conditions and asset prices. Having pushed financial conditions with extraordinary policies in the hope of creating a good equilibrium between the supply and demand for labor and other resources, it is *un*likely that central bankers have simultaneously engineered an enduring equilibrium in financial asset prices. If we hope to find both economic and financial equilibrium we will need an internally consistent articulation of the objectives and the constraints of monetary policy.

Third, consider the possibility that central banks have put Gresham's Law into operation by inducing the hoarding of the "good money" of sovereign debt and high-quality assets while the expanded supply of low and negative-yielding "bad money" of central bank liabilities circulates through the banking system.

Fourth, with Gresham's Law in mind, let me suggest that the risks are more symmetric than you think. There is the risk that hoarding behavior stops and we then see price declines in government bonds and other assets. But there is also the risk that hoarding behavior does not stop and that central bankers find themselves with diminished influence over the shape of the yield curve.

Our financial system is based upon liquidity illusion

In relation to market efficiency, when we say "liquidity" we mean our ability to sell an asset – to convert our claims on future cash flows into cash – without material loss and, preferably, for a merely-frictional transaction cost. The larger the pools of available cash and of potential buyers, the more liquidity we expect to find.

Markets may not be always and everywhere efficient but they have a strong tendency toward efficiency. As long as financial agents record their profits and losses on a calendar basis, but incur costs and earn fees on a transaction basis, market participants will be incented to increase the volume of transactions conducted on given pools of funds and counterparties.

Reforms instituted since the crisis, particularly stricter leverage ratios and liquidity requirements, have reduced the ability of some intermediaries to conduct their habitually preferred size and volume of transactions. But as innovations in trading, clearing and settlement unfold, market participants will press for higher throughput. All of these changes in the technology of trading – both those that may diminish and those that may enhance the volume of transactions – should not confuse you about the nature of market liquidity.

> *"Liquidity is not a quantity; it is a behavior"*

Liquidity is not a quantity; it is a behavior. The pool of potential buyers is highly elastic. Humans are not good at being time consistent. Uncertainty about the key variables that influence asset valuation will reduce liquidity just when having it will be most desired.

Individual transactions can be liquid and individual financial agents can find liquidity for some of their assets some of the time. But we cannot all withdraw our deposits from the bank the same day, nor can we all sell all of our bonds and stocks at the same time. Our financial system rests on a liquidity illusion.

In financial markets when we all rush for the exits the doors actually get smaller. The history of fixed income investing, in particular, has been the history of moving our liquidity illusion around – and hiding it behind complexity.

If we look at narrow segments of the market, and short enough time horizons, we observe behaviors that look like liquidity. Or we can look at very long horizons and comfort ourselves that we are bound to regress to the mean eventually. Neither will shed much light on the conditions in which we will be *un*able to sell assets without material loss. With the financial world now fretting about liquidity, consider how far we have come from Keynes's observation that:

> *Of the maxims of orthodox finance none, surely, is more anti-social than the fetish of liquidity, the doctrine that it is a positive virtue on the part of investment institutions to concentrate their resources upon the holding of 'liquid' securities. It forgets that there is no such thing as liquidity of investment for the community as a whole.* [1]

Central banks were, in fact, invented to provide an elastic currency that would backstop our liquidity illusion. When sovereigns found it awkward that their credit was beholden to Medici and Fugger bankers, they sought to have their debt held by a wider group of creditors.

[1] John Maynard Keynes, The General Theory, Chapter 12 (1936).

To comfort these creditors, particularly in times of war and high levels of debt, central banks turned out to be useful expedients in supporting the "liquidity" of sovereign bonds. In the nineteenth century, we discovered that, in a similar manner, central banks could provide a liquidity backstop to the banking system.

Modern central bankers are slightly embarrassed by their origins as mere liquidity providers and lenders of last resort. They have resolved not to be satisfied with merely stabilizing the value of sovereign debt and money and, rather, have committed themselves to ensuring good macro-economic outcomes.

Finding equilibrium requires integrated thinking about economics and finance

In our post-crisis, weak economic environment this commitment is best expressed by the powerful idea that if the supply of labor and other resources exceeds the demand for these same resources then, by definition, interest rates are too high. This is viewed both as a fact and an imperative: both as an accurate description of how the world works and how it should work, particularly so as not to repeat the mistakes of the 1930s.

Only two constraints are acknowledged to the objective of ensuring that the observed rate of interest should be lowered to the "natural rate" at which demand and supply for real resources will meet. The first constraint is if inflation is, or is expected to be, too high. The second, begrudgingly admitted, are so-called "financial stability concerns.

But to solve your curiosity about whether we have an efficient market in financial assets, we need to do a better job of describing both the economic and the financial consequences of central bank behavior in a consistent framework.

Whenever central banks lower the rate of interest, from whence do they conjure the additional aggregate demand? It can come from only two places: from foreigners or from the future. With lower interest rates we can weaken our exchange rate and can take demand from our trading partners.

> *"Monetary policy is a grubby business but someone has to do it"*

We can also try to take demand from the future by two means: first, by inducing people to borrow more against their future income and, second, via a "wealth effect" that takes place when we lower the rate of discount on future cash flows making them appear more valuable.

Stated in plain terms, by manipulating financial conditions central banks can steal demand from foreigners or they can take demand from the future, either by inducing people to borrow more than they would otherwise be inclined to or by making rich people *appear* richer. Monetary policy is a grubby business but someone has to do it.

Foreigners can defend themselves, but the future is defenseless. It is also in the future that we will discover whether financial asset prices are now in equilibrium. So while exchange rates are an important part of the financial conditions that central bankers try to manipulate, I suggest we focus on borrowing from the future.

We can think of finance as intermediation between different agents and sectors. But the more important role of finance is the intermediation that takes place between the present and the future. With this in mind, we can integrate "financial stability concerns" and monetary policy if we think more symmetrically about the risks of borrowing too little from the future and the risks of borrowing too much. We can also be more specific about too little or too much "compared to what".

If we borrow too little from the future we risk under performing our economic potential.

A great virtue of finance capitalism is the opportunity we have to convert our potential future income into current consumption and investment, while at the same time these claims on future income become assets (and savings vehicles) for others. If we borrow too little we miss the chance to realize our potential and, thus, "too little" should be compared both to our likely future income and to our current potential. This is the powerful idea that animates the imperative that if current supply exceeds demand then interest rates should be lowered.

But the current proponents of solving the imbalance between supply and demand by lowering the price of money are passing over the possibility that prices for resources could already be too high and need to adjust rather than the price of money. Easing financial conditions in order to increase demand would then push us away from equilibrium rather than toward it.

The lower-the-rate-of-interest imperative turns out to be a mechanism for pushing prices higher in the hope of discovering a high-price equilibrium and avoiding a low-price one. But pushing the prices of labor and other resources ever higher might not be the best route to equilibrium prices, both for real resources and for financial assets.

So we should also consider the risks that we borrow too much from the future and the constraints that these risks imply. There are several.

First, there is widespread agreement that if we bring too much demand from the future into the present we might create an imbalance of demand relative to supply and, thereby, risk creating inflationary pressures, so too much demand compared to our current productive potential. This would be particularly likely if we stimulate more current consumption than investment.

Second, we might borrow too much investment from the future – we might over-invest – and create too much output compared to demand. This would contribute to deflationary forces. Today's central bankers are conflicted about this: they recognize the desirability of increasing our productive potential but they are opposed to any decline in prices, seeking instead a persistent inflation. (This is a topic for another day.)

Third, we might borrow too much from the future compared to our future income. Too much debt relative to income might limit our disposable income and constrain our propensity to consume. This would be a deflationary force, weakening future demand.

In borrowing too much against our future income we might also incur a debt burden in excess of our ability to repay it. This would be likely to reduce the value of financial assets, as they come to reflect lower cash flows, a lower probability of repayment and a higher probability of default. This introduces us to financial instability risk: the risk that claims on future income may be of uncertain value and, thus, volatile.

Fourth, we can also "borrow" from the future via the wealth effect. As already mentioned, by lowering the rate of discount on future cash flows we can make claims on these cash flows *appear* more valuable in present value terms. By itself, this does not increase wealth it only increases apparent wealth, which might, in turn, stimulate current consumption and investment.

When might this form of borrowing via the wealth effect become too much? Converting future expected returns into present values may make us appear wealthier today but, at the same time, it diminishes our expectations about the future. Increasing current apparent wealth but reducing expected further accretions to wealth is a trick that can work its magic but once and, by definition, must push us closer to uncertainty about the sustainable level of asset prices. If the rate of discount (and the term premium, in particular) were to mean revert to higher levels then the apparent increase in wealth would be erased, likely reversing any benefits to confidence.

We can think of the risk of financial instability as the risk that financial asset values decline sharply or unexpectedly in a manner that might undermine confidence, lowering consumption and investment.

But a more important risk of financial instability is that we both borrow beyond our likely income and also do so against the collateral of unsustainably elevated asset prices. Debt in excess of income leveraged against unsustainably priced collateral creates exactly the balance-sheet mismatch most likely to lead to a debt deflation and, hence, to the conditions where we would expect to find chronically weak demand for resources – supply in excess of demand – and perhaps even secular stagnation. (This balance sheet mismatch also defines the predicament of banks and even countries in stress, bringing to mind the current situation in Greece.)

So there are significant risks of borrowing too much from the future that are alluded to as "financial stability concerns" but that, I would suggest, are more accurately recognized as directly relevant to the price stability and economic objectives of monetary policy.

Have central banks unleashed Gresham's Law?

Over the past year, as I have tried to understand the extremely low and even negative yields on high-quality, fixed-income securities, particularly in Europe, it struck me that their high prices and low yields could be described as reflecting "hoarding behavior". This made me think of Gresham's Law that bad money drives out good money. More precisely, if a government accepts a lesser-valued coin (like copper) at par as a substitute for a high-valued coin (like silver or gold), then the higher-valued coin will be "driven out of circulation" and hoarded off of the market, while the lesser-valued coin will circulate.

In bond markets we put the idea behind Gresham's Law into practice every day with the concept known as "the cheapest to deliver". If a lender demanding collateral will accept a bond of lower credit quality in the place of a higher quality bond, without applying a different credit "haircut" to the lower quality one, the borrower can satisfy the collateral requirement with the security that is the cheapest to deliver. In this way, high quality bonds are held back (to the extent possible) and lower quality ones are used instead to secure extensions of credit.

This helps to explain how European capital markets came to be confused about the credit quality of Euro-member sovereign debt. From its inception, the European Central Bank accepted the debt of all member nations in its repurchase operations as if they were of identical credit quality – with no difference in haircuts for the lower-rated sovereigns – thereby giving a strong impulse to price convergence between core and peripheral sovereigns as they all were deemed equally "money good" collateral for the creation of Euros.

Quantitative easing influences asset prices in a number of ways. Significantly, the open-ended commitments of QE-practicing central banks are functionally equivalent to the issuance of free options and, thereby, compress implied volatility. More obviously, QE results in a compression of the term premium in long-term interest rates. Both of these forces tend to push up asset prices.

We can also think of QE-practicing central banks as putting Gresham's Law into practice by vastly expanding the supply of low duration central bank liabilities while buying up high duration government debt and other high quality bonds.

But with the combination of negative deposit rates and QE, the ECB has, I think, unleashed Gresham's Law with particular force. By buying up and hoarding the "good money" of coupon-paying sovereign debt and other high-quality assets while issuing the "bad money" of negative-interest rate deposits, the ECB is powerfully creating the conditions in which financial intermediaries hoard whatever high-quality, income-producing financial assets they can find.

Wherever we look, we see that income-producing assets – that is, claims on future cash *flows* – are highly valued when priced in terms of *cash*. We see this in sovereign debt and corporate debt markets. We also see this in the share and debt buy-backs of corporations who wish to hoard their own internal cash flows.

What is money and who says so?

The textbooks told us that central bank liabilities are the best and most important form of money, the so-called high-powered money at the base of our monetary system. This story suggests that central bankers control both the quantity and the price of the most important form of money.

I have long thought that this view was mistaken, at least as a characterization of monetary arrangements for most of the last 40 years. The base asset of our monetary regime has been central *government* liabilities, not central *bank* liabilities. Sovereign debt has been the collateral that underpins our monetary system. While this would suggest that quantity has been regulated by the accident of fiscal policy, central bankers could still take comfort from their influence over the price of sovereign debt, and the shape of the yield curve, through their influence over the expected path of short-term rates.

Perhaps QE can be thought of as the central bankers' counter offensive, reclaiming control over the quantity of high-powered money by flooding the banking system with their own liabilities.

But having themselves become the major hoarders of sovereign debt – both via QE and foreign reserve accumulation – and also having induced others to hoard sovereign debt at higher and higher prices and lower and lower yields, what if reversing this process – of reverse engineering Gresham's Law – is harder than expected?

The "portfolio rebalance channel" sounded so simple and reasonable: QE would push private agents to rebalance their portfolios away from high-quality assets into lower quality ones, thereby stimulating us all to borrow more from the future. But why would changes in the size and composition of central bank balance sheets change the rest of our risk preferences so as to induce us to take more credit risk at the same time that our duration risk was being increased so significantly?

What if, independent of the supply and price of central bank liabilities, the hoarding behavior, the safe haven bid, the scarcity premium for sovereign debt is unimpressed with relatively small changes in the expected path of short-term interest rates? What if central bankers find that they have diminished their own influence over the shape of the yield curve? What if *this* is the exit that is hard to achieve?

The risks going forward are more symmetric than you think. There is the risk that hoarding behavior ceases and the value of sovereign bonds, and other financial assets, decline. There is also the risk that they don't – that hoarding behavior is harder to reverse and that the ability of central banks to encourage us to borrow more or less from the future will be diminished.

So, are liquidity and market efficiency alive and well? My response is that markets seem to be dominated by a hoarding behavior of central banks' own invention and that hoarding is not a concept that I normally associate with either liquidity or efficiency.

About the author

Peter R. Fisher is a Senior Director at the BlackRock Investment Institute and also a Senior Fellow at the Center for Global Business and Government at the Tuck School of Business at Dartmouth. He is a member of the Board of Directors of AIG, Inc., of the Peterson Institute for International Economics and of the John F. Kennedy Library Foundation. Mr. Fisher has previously served as head of BlackRock's Fixed Income Portfolio Management Group and as Chairman of BlackRock Asia. Prior to joining BlackRock in 2004, Mr. Fisher served as Under Secretary of the U.S. Treasury for Domestic Finance from 2001 to 2003. He also worked at the Federal Reserve Bank of New York from 1985 to 2001, concluding his service as Executive Vice President and Manager of the Federal Reserve System Open Market Account.

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Secretariat SUERF – c/o OeNB
Otto-Wagnerplatz 3,
A-1090 Vienna, Austria
Phone: +43-1-404 20-7206

www.suerf.org • suerf@oenb.at