

Commentary: The Routes Into and Out of the Zero Lower Bound

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Bob Hall has given us a very timely and thought-provoking paper. He questions the notion of the “natural rate of unemployment” and the idea that inflation slows down or accelerates depending on the slack in the economy. He is questioning ideas that go back to Milton Friedman’s 1967 AEA presidential address.

In particular, Bob wants to draw the analogy between hiring a worker and investing in fixed capital guided by Tobin’s Q . According to the Q theory of investment, the firm should invest if the increased stock market value of the firm from the investment exceeds the cost. As then, the firm can issue shares in the stock market to finance the investment, and still end up with a higher share price in spite of the dilution of ownership that results from the share issue.

The analogy with hiring a worker works like this. When a firm adds a worker, the employer gains the present value of the worker’s marginal contribution to cash flows. This is weighed against the present value of the worker’s pay. The difference between the two is the job value. If the job value is positive, then the firm should hire the worker, and the firm’s stock market value will go up.

Since firms compete for workers, employment is completely determined by the job value, which we can measure as the expected time to fill a vacancy.

The labor market is always in equilibrium, and so there is no such thing as a “natural rate” of unemployment. If the job value remains low because the discount rate for valuing the stock market remains high, then unemployment remains high. Policymakers can reduce unemployment by reducing the discount rate for valuing stocks. This is Bob’s central conclusion.

Let me make three comments—one on detail and two more that are more fundamental.

Just like the Q theory of investment, Bob’s argument revolves around the stock market. In practice, most businesses are not listed on the stock market. Even for those that are, they rarely tap the stock market to finance investment. Instead, the “pecking order” theory of corporate financing is that firms use their cash holdings first, then debt financing, and issuing shares is a last resort. For small firms that don’t have a bond credit rating, debt financing means borrowing from banks.

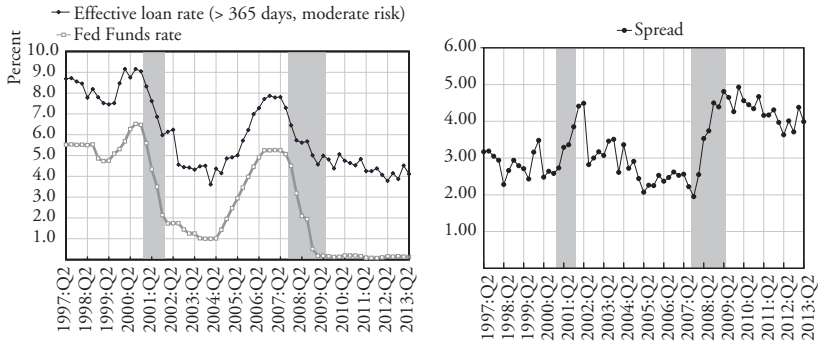
But with this small change, Bob’s argument applies as before. The only difference is that the firm uses the bank lending rate to discount cash flows, rather than the stock market discount rate.

When we look at the data, there is definitely something to Bob’s argument about high discount rates holding back employment.

The left panel of Chart 1 shows the bank lending rate to U.S. businesses from a Fed survey when the risk is “moderate” and the maturity is over one year. Notice how the lending rate has stayed stubbornly high, long after the policy rate has hit the zero lower bound. The right panel of Chart 1 shows the spread between the bank lending rate and the fed funds rate. The spread is still quite high at around 4 percent.

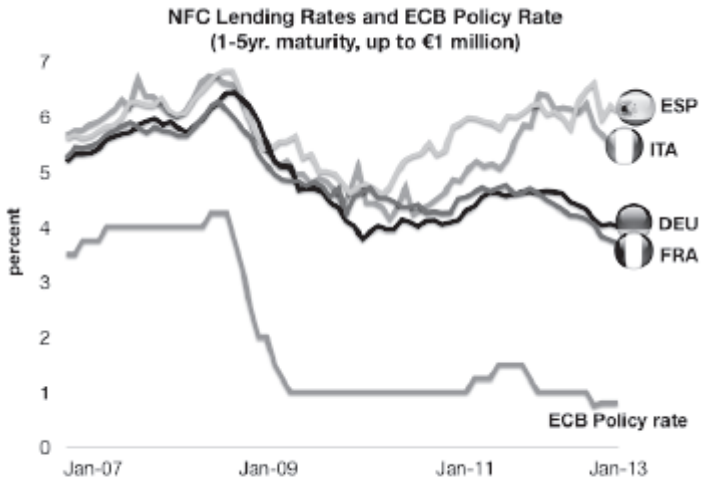
The stubbornly high spread in bank lending is even more apparent in Europe. Chart 2 is from the IMF’s recent document on banking union in the eurozone and shows the lending rate to nonfinancial

Chart 1
Weighted-Average Effective Loan Rate for More than 365 Days, Moderate Risk, All Commercial Banks (EELMNQ), the Effective Fed Funds Rate and the Spread Between the Two



Source: Federal Reserve survey of business lending conditions.

Chart 2
Nonfinancial Corporate Lending Rates in the Eurozone



Source: IMF document on Banking Union in Europe.

corporates for loans between one to five years. The spreads relative to the policy rate have increased, especially for Spain and Italy.

Bob's hypothesis on the role of high discount rates for persistent unemployment would fit this picture perfectly. The survey evidence from the U.K. on the tight bank lending conditions to small and medium-sized enterprises also fits this picture.

The tight bank credit conditions are also reflected in the quantities. Chart 3 shows total credit to U.S. nonfinancial businesses. The left panel is the total credit to the corporate business sector and the right panel is the total credit to the noncorporate business sector.

Notice how lending to corporate businesses has surged after the crisis, mainly through the surge in bond financing. Total credit to corporate businesses now stands at well over \$8 trillion and is much higher than before the crisis.

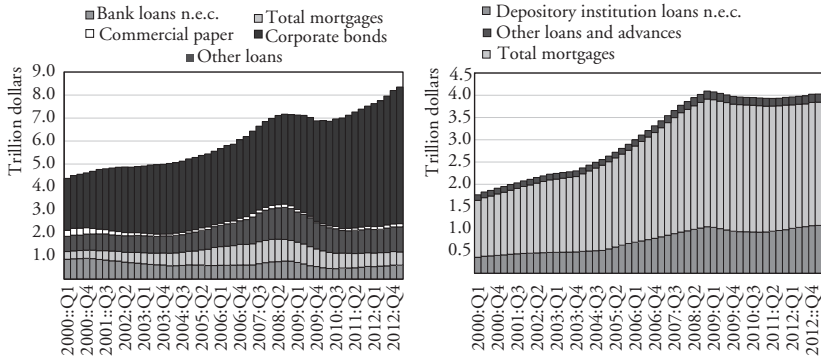
But contrast that with the lending to noncorporate businesses in the right panel of Chart 3. Total credit is still below its peak before the crisis, and is pretty much stagnant.

There is a very sharp contrast between the tough lending conditions faced by small businesses that rely on banks and the ample financing that large firms have enjoyed in the bond market. As you know, many commentators have worried about a bubble in the bond market. There are many in this room.

The trouble is that job creation is done most by new businesses, which tend to be small. John Haltiwanger and co-authors have pretty extensive evidence on this. Chart 4 is from a paper by John Haltiwanger in 2011. It shows the job creation rate of U.S. businesses organized into employer size. Notice how the smallest employers create the most jobs. Notice also how the job creation rate for the smallest employers fell sharply during the crisis and did not rebound.

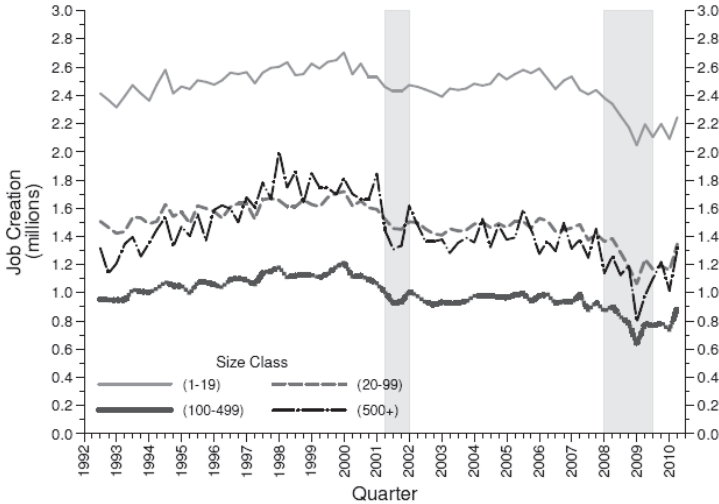
New small businesses are precisely those that will be most dependent on bank financing, especially for working capital. Credit conditions for working capital in small firms are best measured by the unsecured overdraft rate, rather than the corporate bond rates, and the overdraft rate has remained high. Imagine that small businesses

Chart 3
Credit to U.S. Nonfinancial Corporate Business Sector (left)
and Nonfinancial Noncorporate Business Sector (right)



Source: Federal Reserve Flow of Funds, Tables L102, L103)

Chart 4
U.S. Business Sector Job Creation by Firm Size



Source: John Haltiwanger (2011) "Job Creation and Firm Dynamics in the U.S."

are wholly reliant on credit card balances to finance working capital, and you will get the picture.

The message is that banks are special. We have a feast and famine side by side, where financing conditions were (until recently) very loose in the bond market, but bank lending conditions were tight. My paper in this year's *NBER Macroeconomics Annual* with Tobias Adrian and Paolo Colla¹ delves into this in more detail, but the message is that one dollar of credit through the banking system is a very different animal from one dollar that goes through the bond market in terms of its impact on the economy.

There are some disturbing implications for the effectiveness of central bank asset purchases. If Bob is right, and unemployment is due to high discount rates, pushing down the spreads on corporate bonds or mortgage-backed securities will not do much for unemployment as long as bank lending rates are stubbornly high.

Acting directly on the banking system would be a much more effective way to reduce unemployment. This is a lesson that was learned in the banking union debate for the eurozone, and it seems that the lessons are quite universal.

Now let me turn to my second point.

The title of Bob's paper is "The Routes Into and Out of the Zero Lower Bound," but his paper is mostly about getting out of the zero lower bound. It doesn't say much about the route into the zero lower bound. But let's not forget why we're in this mess in the first place. Bob mentions the housing bubble, but he sees the crisis as a big shock to an otherwise normally functioning economy.

The alternative view is that things were not right in the financial system before the crisis. Leverage was too high and the banking sector had become too large. It's what I have called the "Banking Glut."² If you take this latter view, the dysfunctional features we see now are the direct result of the excesses prior to the crisis.

The policy choice now is not between having lower discount rates versus having higher discount rates. Instead, the policy choice revolves around the slope of the trade-off between stimulus now and

a higher probability of trouble down the road. This is a real choice. We've seen how large the costs are. This is not simply about "financial stability" in the abstract. We care about financial stability because it is about macroeconomic outcomes.

Let me conclude with some remarks on forward guidance.

A few years ago in this room, I told you about the Millennium Bridge. Today, I would like to tell you about a bell. The bell in question is in the Catedral Metropolitana in Mexico City. The story is that in 1947, a novice bell ringer died in an accident when he tried to move one of the bells while standing under it. The offending bell was then "punished" by having its clapper removed and then tied down, and sentenced to remain so for 50 years. It was renamed La Castigada, or "the punished one," for this reason.

Why do we find this odd? We find it odd because "punishing" a bell is incongruous. It is anthropomorphizing an object. This is an example of what philosophers call a "category mistake." Wikipedia defines a "category mistake" as:

"a semantic or ontological error by which a property is ascribed to a thing that could not possibly have that property."

But before we get too smug about this, we should ask ourselves whether we are committing a similar mistake. I believe we are when we talk too literally about the "market's expectations." The "market" is not a person. Market prices are outcomes of the interaction of many actors, and not the beliefs of any one actor.

Even if prices are the average of individual expectations, average expectations fail even the basic property of the law of iterated expectations. In other words, the average expectation today of the average-expectation tomorrow of some variable is not the average expectation today of that variable. This is why Keynes's Beauty Contest example is so potent.

But most discussions of central bank forward guidance treat the market as if it were an individual that you can sit down and reason with. Transparency over the path of future policy rates is seen as a

device to manipulate long rates. And crucially, such manipulation is seen as something amenable to fine-tuning. But by doing so, I believe we are in danger of committing a category mistake where we anthropomorphize the “market” as a rational individual with beliefs.

This is not a new point. Let me read you a passage from a Brookings Papers piece from 1983 by Bob Shiller, John Campbell and Kim Schoenholtz about the expectations theory of the yield curve and the hold that it has over central bankers.

“The simple expectations theory, in combination with the hypothesis of rational expectations, has been rejected many times in careful econometric studies. But the theory seems to reappear perennially in policy discussions as if nothing had happened to it. ...”

“We are reminded of Tom and Jerry cartoons that precede feature films at movie theatres. The villain, Tom the cat, may be buried under a ton of boulders, blasted through a brick wall (leaving a cat-shaped hole), or flattened by a steamroller. Yet seconds later he is up again plotting his evil deeds.”³

Of course, it is not true that “anything goes.” The discipline set by consistency at a moment in time (no arbitrage) means that prices are consistent at a moment in time. But when things flip, everything flips completely consistently. This is another instance of the general maxim that the intertemporal dimension is inherently more difficult to pin down than the cross-section dimension.

There is, I believe, a smell test. When the argument relies on intertemporal reasoning that involves a fair degree of mental gymnastics to telescope the future into the present, we should exercise some caution.

What we have seen in the bond market is that “overreaction” is the norm rather than the exception. But the alleged “overreaction” is just the normal workings of the market when risk-taking accumulates the vulnerabilities to reversal. The longer easy monetary policies are in place, the sharper will be the reaction once stimulus is removed.

Identifying the exact mechanisms will be challenging, but it is essential that we try. The 1994 bond market crash involved MBS duration hedging via short treasury positions. This mechanism is probably less important now, although it may be there to some extent. A new element that is possibly more important for bond market dynamics nowadays are risk parity funds that hold leveraged positions in treasuries and which are forced sellers when volatility picks up. Yet another possible element in the amplification of market distress are mortgage REITS that finance themselves with short-term repos. There are many unknowns. What about duration hedging by life insurers? What about payoff replication by EFTs? What about hedge funds? How large are these elements? How do the amplification channels interact?

We have many questions but few good answers. Bob's paper doesn't address these issues. But when we look for the answers, my guess is that we will uncover elements that are sure to complicate the tradeoff between stimulus today and trouble down the road. And by the nature of that tradeoff, the longer we wait, the less favorable that tradeoff will become.

Endnotes

¹Adrian, Colla and Shin (2013).

²Shin (2012). “The Global Banking Glut and Loan Risk Premium,” 2011 Mundell-Fleming Lecture, IMF Annual Research Conference.

³Shiller, Campbell and Schoenholtz (1983, pp. 174-5).

References

- Adrian, Tobias, Paolo Colla, and Hyun Song Shin. 2013. "Which Financial Frictions? Parsing the Evidence from the Financial Crisis of 2007-9," 2012 *NBER Macroeconomics Annual*, vol. 27, Daron Acemoglu, Jonathan Parker, and Michael Woodford, eds., pp. 159-214.
- Haltiwanger, John. 2011. "Job Creation and Firm Dynamics in the U.S." University of Maryland, working paper.
- Shiller, Robert J., John Y. Campbell, and Kermit L. Schoenholtz. 1983. "Forward Rates and Future Policy: Interpreting the Term Structure of Interest Rates," *Brookings Papers on Economic Activity*, vol. 1, no. 1 pp. 173-223.

