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Krugman on Japan’s Liquidity trap

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The theoretical analysis of Japan’s liquidity trap is developed by Krugman (1998a,b,c; 1999) in terms of both an “inter-temporal maximisation” framework and an “...absolutely conventional open economy IS-LM model”. In this note I examine the latter version of the story and argue that Krugman’s analysis is obscured by reliance on the Fisher parity relationship. The distinction between the cost of capital and the return on capital is introduced to make sense of Krugman’s analysis.

The final version of Japan’s liquidity trap is presented in Krugman (1989,c; 1999) and the essence of the IS-LM version runs as follows. The IS and LM curves are defined by distinguishing between the nominal rate of interest $i$, and the real rate of interest $r$. Following Fisher, the nominal rate is defined as the real rate plus expected inflation as in the traditional approximation to the Fisher parity condition. The IS and LM curves are written as:

$$S(r, y) = I(r, y) \quad (6)$$

and

$$\frac{M}{P} = L(y, i) \quad (7)$$

From Krugman’s definition, a liquidity trap occurs when $i = 0$ and $r < 0$ which implies that even when $r = 0$ the economy has a surplus of saving over investment at full employment; $S(0, y_f) > I(0, y_f)$. Krugman’s liquidity trap is illustrated in Figure 1.
Krugman (1998c: 2, italics added) then argues:

“… that the full employment real interest rate is negative \( r^*_D < 0 \). And monetary policy therefore cannot get the economy to full employment unless the central bank can convince the public that the future inflation rate will be sufficiently high to permit that negative real interest rate.

That’s all there is to it. You may wonder why savings are so high and investment demand so low, but the conclusion that an economy which is in a liquidity trap is an economy that as
currently constituted needs expected inflation is not the least exotic: it is a direct implication of the most conventional macroeconomic framework imaginable”.

I think it is clear from the highlighted sections that Krugman is arguing that if the real rate of interest, $r$, is negative the economy needs an inflation adjusted nominal interest rate that is also negative. In terms of the Fisher parity relationship Krugman is suggesting that a negative real rate ($r_o < 0$) can be offset by inflationary expectations of an equal magnitude. In other words we can think of the Fisher parity relationship as $i = 0 = r + \pi$ because $r < 0 = \pi > 0$. But this line of reasoning is misleading - for several reasons.

(i) The distinction between the cost and the return on capital is obscured.

(ii) Krugman’s proposal to produce a negative cost of capital to equate to the negative return on capital makes no economic sense.

(iii) Inflationary expectations will induce a rise in the nominal rate of interest (the cost of capital) unless the BOJ acts to hold down the nominal interest rate.

The key to clarifying Krugman’s argument is to stress the distinction between the cost of capital and the return on capital. From that perspective, the nominal rate of interest is a proxy for the cost of capital while the real rate on interest is a proxy for the return on capital. Krugman’s liquidity trap is a situation in which the return on capital is negative but the cost of capital cannot be depressed below zero. Hence the economy is trapped at the equilibrium $E_1$.

What is the solution to this problem?
Krugman suggests that if the BOJ can induce inflationary expectations that would do the trick because the Japanese economy needs a negative real rate of interest. But this diagnosis and proposed solution involves confusion between the *cost* and the *return* on capital. Wicksell’s distinction between the money and natural rates of interest is more relevant because it reflects the distinction between the cost of capital and the return on capital. The Japanese economy may well suffer from a *negative real return* on capital (in terms of modern Wicksellian terminology, Tobin’s $q < 0$) but in that case the solution is not to generate a *negative real cost* of capital. *What the Japanese economy needs is a positive (non-negative) real return on capital.* That is, the Japanese economy needs a Tobin’s $q > 1$.

Would inflation and inflationary expectations produce the desired outcome? Maybe.

If the solution to Japan’s liquidity trap is to increase the return on capital, (raise the marginal efficiency of capital, $r$) inflation could produce this result if it increases prices faster than costs, i.e., if the inflation is of the demand-pull variety. A demand-pull inflation can, in principle, increase the marginal efficiency of capital (by increasing profits) relative to the cost of capital and ultimately increase investment so it is logically possible for Krugman’s proposal to work. I am ignoring here the fact that in Japan’s case this process may be attenuated by the extent to which mal-investment has resulted in redundant capital. The process of adjustment will require that this capital be written off and that may take some time. It also ignores the state of confidence of the Japanese public whose liquidity preference will rise if the state of anxiety and uncertainty increases.
Another difficulty arises with Krugman’s proposal because the inflation and inflationary expectations engendered by the BOJ’s “irresponsible” monetary policy would, according to the Fisher parity relation, cause nominal interest rates to rise. Hence, even if inflation succeeds in increasing the marginal efficiency of capital there will be no stimulus to the economy if the interest rate rises pari passu. (This is straight out of the *General Theory*). What is required then is for the BOJ to hold the nominal interest rate at zero (or at least below the rising marginal efficiency of capital) in the face of inflationary expectations.

Hence, in my opinion, and contra Krugman, what Krugman’s analysis suggests is that the Japanese economy needs is a non-negative marginal efficiency of capital, not a negative real cost of capital. A demand-pull inflation fuelled by an “irresponsible” monetary policy could, under ideal circumstances, do the trick if increased expenditure increases the marginal efficiency of capital relative to the cost of capital. Krugman’s analysis of the Japanese predicament is obscure because of the failure to clearly distinguish the cost of capital from the return on capital. It is a moot point whether Krugman’s “irresponsible” monetary policy would work in the face of the mal-investment and political economy dimensions to Japan’s malaise.

**References.**


