Liquidity Preference, Credit Transmission, and Debt Sustainability

Stefan Collignon[1]

Abstract

This letter extends the cash-in-advance view of money by allowing liquidity to have precautionary value. When uncertainty raises the shadow value of liquidity, a smaller share of newly created bank deposits is converted into expenditure, weakening the transmission from credit creation to income. In a bank-based credit economy, this mechanism also tightens the condition under which the debt-income ratio remains bounded. The contribution is therefore to connect liquidity preference, state-dependent credit transmission, and debt sustainability in one simple framework.

Keywords: liquidity, credit, money, debt, uncertainty, growth

JEL classification: E41, E51, E44, G21

1. Introduction

Cash-in-advance models formalize Clower's insight that, in a monetary economy, purchases must be financed by money. In that tradition, Lucas and Stokey model the transactions role of money through a restriction on exchange. Yet this approach abstracts from the possibility, emphasized by Keynes, that agents may also wish to hold money for precautionary reasons. Desired money balances need not be exhausted by current transactions needs.

This letter incorporates that missing dimension by treating liquidity as valuable in its own right, as immediately available settlement capacity. The central claim is simple. When uncertainty increases the shadow value of liquidity, a smaller share of newly created bank deposits is transformed into expenditure. Credit creation may still expand balance sheets, but it translates less effectively into current income. In a bank-based credit economy, this weaker transmission also tightens the condition under which leverage remains sustainable.

The contribution is therefore not to replace cash-in-advance theory, but to extend it in a direction that links liquidity preference, credit transmission, and debt sustainability within one compact monetary-credit framework.

2. The model

Let agents derive utility from consumption and real liquidity balances:

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[1] Chulalongkorn University and London School of Economics

$$U = U\left(C_t, \frac{M_t}{P_t}\right),$$

with

$$\frac{\partial U}{\partial C_t} > 0, \qquad \frac{\partial U}{\partial (M_t/P_t)} > 0, \qquad \frac{\partial^2 U}{\partial C_t^2} < 0, \qquad \frac{\partial^2 U}{\partial (M_t/P_t)^2} < 0.$$

Define the liquidity premium as the marginal utility of liquidity relative to the marginal utility of consumption:

$$l_t \equiv \frac{\partial U/\partial (M_t/P_t)}{\partial U/\partial C_t}.$$

This expression measures the shadow value of an additional unit of real liquidity in consumption terms. A rise in l_t means that agents attach greater value to remaining liquid relative to current consumption.

This shadow value should be distinguished from purchasing power. Purchasing power is given by $1/P_t$, that is, the quantity of goods that one unit of money can buy. By contrast, l_t measures the utility value of holding that purchasing power in liquid form.

The present argument therefore concerns not only what money buys, but also the security it provides by remaining immediately available for settlement.

Consider now a bank-based monetary economy in which bank lending creates deposits and deposits serve as means of payment. Desired money holdings may exceed current transactions requirements:

$$M_t = P_t Y_t + H_t, \qquad H_t \geq 0.$$

where H_t denotes desired excess liquidity holdings.

Let net new bank credit be

$$N_t \equiv L_t - R_t = \Delta M_t,$$

where L_t is gross new lending and R_t repayment. To keep the accounting consistent with debt dynamics below, let repayment be written as

$$R_t = s_t P_t Y_t,$$

where s_t is the share of nominal income devoted to debt retirement.

Demand for new borrowing depends positively on expected repayment capacity and negatively on both the loan rate and the liquidity premium:

$$N_t = N(\Omega_t, i_t^L, l_t),$$

with

$$\frac{\partial N_t}{\partial \Omega_t} > 0, \qquad \frac{\partial N_t}{\partial i_t^L} < 0, \qquad \frac{\partial N_t}{\partial l_t} < 0.$$

Here Ω_t summarizes expected repayment capacity, collateral, and other conditions affecting debt servicing. The negative effect of l_t
captures the idea that when liquidity is highly valued, agents are less willing to transform liquid balances into expenditure commitments financed by debt. The bank loan rate i_t^L is a contractual market rate, whereas l_t is a shadow value; the two are therefore distinct.

Let only a fraction of newly created liquidity be converted into current expenditure:

$$X_t = \chi(l_t)N_t, \qquad \chi'(l_t) < 0, \qquad 0 < \chi(l_t) \leq 1.$$

The function $\chi(l_t)$ is the share of new deposits that is spent rather than retained in liquid form. A higher liquidity premium reduces this spending share.

Nominal income is then given by

$$P_t Y_t = Z_t + \mu_t X_t = Z_t + \mu_t \chi(l_t)N_t.$$

where Z_t denotes the autonomous component of nominal income and μ_t is the share of credit-financed expenditure that becomes contemporaneous domestic income. μ_t need not equal one if part of credit-financed expenditure leaks into imports, purchases of existing assets, intermediate transactions, or debt repayment.

Finally, let the liquidity premium depend positively on uncertainty and negatively on the available stock of real liquidity:

$$l_t = l\left(\sigma_t, \frac{M_t}{P_t}\right),$$

with

$$\frac{\partial l_t}{\partial \sigma_t} > 0, \qquad \frac{\partial l_t}{\partial(M_t/P_t)} < 0.$$

A rise in uncertainty therefore raises the shadow value of liquidity, lowers $\chi(l_t)$, and weakens the effect of net credit creation on expenditure and income. Credit creation is thus not sufficient by itself to guarantee expansion of output. Its macroeconomic effect depends on the willingness to spend out of newly created liquidity.

3. Debt sustainability

The same mechanism has a longer-run implication. A bank-based credit structure is viable only if income grows sufficiently relative to the debt-service burden. Let outstanding bank debt evolve according to

$$B_{t+1} = (1 + i_t^L)B_t - s_t P_t Y_t.$$

Define the debt-income ratio as

$$b_t \equiv \frac{B_t}{P_t Y_t}.$$

Let nominal income grow at rate g_t^N, so that

$$P_{t+1}Y_{t+1} = (1 + g_t^N)P_t Y_t.$$

Then the debt-income ratio evolves as

$$b_{t+1} = \left[\frac{(1 + i_t^L) - s_t/b_t}{1 + g_t^N} \right] b_t.$$

A bounded debt-income ratio requires that debt not systematically grow faster than nominal income. In steady state, and to a first-order approximation, this implies

$$g_t^N \geq i_t^L - \frac{s_t}{b_t}.$$

Writing nominal growth as $g_t^N = \pi_t + g_t$, where π_t is inflation and g_t is real output growth, yields

$$g_t \geq i_t^L - \pi_t - \frac{s_t}{b_t}.$$

Real growth must therefore not fall persistently below a debt-service-adjusted threshold if leverage is to remain stable. The threshold rises when the loan rate is higher, falls when inflation is higher, and falls when a larger share of current income is used to retire debt. The term s_t/b_t is best interpreted as the amortization rate, that is, repayment relative to the outstanding debt stock. It counteracts debt accumulation, though it is not identical to deleveraging in the strict sense.

The paper therefore does not claim that observed growth must always equal the interest rate. Its point is narrower: when heightened liquidity preference weakens the expenditure effect of new credit, income growth may become insufficient to validate the debt stock. In that sense, liquidity preference affects long-run sustainability through the income-generating capacity of credit.

4. Conclusion

This letter extends the transactions view of money by allowing liquidity to have precautionary value. When uncertainty raises the shadow value of liquidity, a smaller share of newly created bank deposits is converted into expenditure, and the transmission from credit creation to income weakens. In a bank-based credit economy, that mechanism also tightens the condition under which leverage remains sustainable.

The argument is deliberately limited. It does not offer a complete theory of growth. It shows, more modestly, that liquidity preference matters not only for portfolio choice but also for the macroeconomic effectiveness of credit creation and the stability of debt-based expansion.

References

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Highlights

- Liquidity preference weakens the spending effect of bank credit
- Uncertainty lowers spending out of newly created deposits
- Credit creation has a state-dependent effect on income
- Stable leverage requires a debt-service-adjusted growth floor