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Excess Liquidity and Monetary Overhangs

Gerard Caprio, Jr.
and
Patrick Honohan

It may be inappropriate to tighten money in response to excess liquidity in developing economies and to money overhang in the constrained reforming socialist economies. Instead, the best policy is to address the root causes: deficient information and thin money markets in banking systems of the developing world and rationed goods markets in the reforming economies.

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The term "excess liquidity" may refer to the share of liquid assets in bank portfolios (the result of a retrenchment in bank lending, or a "credit crunch") or to money holdings of the nonbank public. Excess liquidity may be voluntary or nonvoluntary (the result, for example, of credit ceilings).

In response to excess liquidity, policymakers tend to take steps to drain off the excess so it won't lead to a surge in inflation. This response is ineffective in some circumstances.

Caprio and Honohan examine the appropriateness of conventional policy instruments for tightening money in two common cases: (1) when there is a voluntary credit crunch because of a rise in perceived risk of default, and (2) when individuals rationed in the goods market in reforming socialist economies accumulate savings involuntarily ("money overhang").

They conclude that neither excess liquidity in the banking systems of the developing world (and in the U.S. post-savings-and-loan crisis) nor the money overhang of the reforming planned

economies calls for a response of restrictive monetary policy.

More important is an understanding of the main underlying causes: deficient information and thin money markets in banking systems of the developing world and rationed goods markets in the reforming economies. Structural reform is the appropriate response in both cases.

In reforming socialist economies, the monetary overhang in the household sector may be quickly transformed into excess liquidity in the banking system, so much so that relatively inexperienced bankers may demand substantial collateral and may pull back from lending in a risky environment characterized by poor information. This reaction would leave the economy in a "low-lending" trap and could seriously impede development of the private sector.

A more appropriate policy might be a prudent but not overly restrictive monetary policy and reservation of some part of credit for the emerging private sector.

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Patrick Honohan*

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* Senior Financial Economist, the World Bank, and Research Professor, Economic and Social Research Institute (Dublin).

INTRODUCTION

Problems of excess liquidity are cited with striking frequency in countries ranging from the emerging socialist economies to those in the developing world, especially in Africa. The diagnosis is also heard, less regularly but more so in 1990-91, in respect to industrialized nations. But the label, and its near synonyms, have been applied to very different types of phenomenon. In 1990, observers in the United States became concerned about a sharp retrenchment in bank lending (dubbed the credit crunch, which entailed an increase in holdings of liquid assets) and a consequent recession. Policymakers in many developing countries have long been worried that banks routinely prefer to hold liquid assets rather than support investment through lending. And especially in emerging socialist economies, there is widespread apprehension about the inflationary consequences of reform stemming from a long-term build up of liquid assets in the hands of the public.

More precisely, excess liquidity may refer either to the share of liquid assets in bank portfolios or to money holdings of the nonbank public. Furthermore, the condition may have arisen because of involuntary rationing, or it may represent purely voluntary behavior in the absence of any constraints. Whatever the reason for excess liquidity, policymakers are apt to respond to the label by taking steps to drain off the excess lest it lead to an inflationary surge. This is the appropriate response in some circumstances but would be ineffective or even counterproductive in others.

Some types of excess liquidity are familiar. For example when banks are prohibited from additional lending by bank-by-bank credit ceilings, so that additional deposit resources to the banks can only be placed by them in liquid form, excess liquidity is by no means puzzling and is unavoidable to the extent that monetary restraint is required and less direct methods of policy implementation are deemed infeasible. Similarly, a voluntary increase in money holdings by the public is not difficult to understand conceptually, even though it may not admit to easy diagnosis.¹ Indeed, distinguishing different causes of, and the durability of, disturbances to money demand is a thumbnail definition of the art of central banking and the subject of a voluminous literature.

The focus of this paper is on the two cases which have become increasingly relevant and which remain somewhat less understood, namely, the "credit crunch" case as it occurs in both industrialized and developing countries when perceived default risks rise, leading banks to voluntarily restrict credit, and the money overhang case in reforming socialist economies, where individuals rationed in the goods market accumulate savings involuntarily. It is for these cases that a conventional tightening of monetary policy instruments can be particularly inappropriate. The next section deals with voluntary holdings of excess liquidity by banks, and the following section with the money overhang in constrained economies.

STRUCTURAL AND CYCLICAL INFLUENCES ON BANK LIQUIDITY

A. Industrialized economies

The portfolio decisions of bankers and nonbankers alike tend to be driven by variables such as expected rates of returns on assets and the time stream of income receipts and payments obligations. Confidence about the future -- usually related to the current perceived health of loan portfolios -- weigh heavily on these decisions as well. Banks that are concerned about the likelihood of default on loans tend to hold greater amounts of liquid assets, such as cash and deposits (in their own vaults, at other depository institutions, or at the central bank), treasury bills (and in some cases, bonds), and other readily marketable securities. Bank liquidity can be a source of concern, since higher liquidity means less lending to support potentially high-yielding non-government investment. Thus an increase in overall bank liquidity is tantamount to a tightening of monetary policy, in that with higher liquidity a given monetary base will support a lower level of economic activity.

A common complaint by bankers in these situations is that there is an insufficient supply of "good, bankable" projects. Often their judgments are affected by a generalized financial crisis (including an impaired loan portfolio), or by heightened uncertainty, which has led them to regard previously normal loans as being excessively risky. Following a series of crises in the mid-nineteenth century, British banks retrenched from all but the most liquid assets, leaving a gap which was partly filled by growth of capital markets but contributing perhaps to a long-term slowdown in economic growth.² Similarly, in the United States during the Great Depression, banks pulled back from lending to hold the most secure paper available.³ Reflecting the changed perception of the riskiness of lending, the differential between the interest rate on low risk assets, such as treasury securities, and more risky credits widened, with yields on US treasury issues falling as low as 0.01% during the early 1930s. An increased spread between low and high risk assets should be a good indicator of this type of excess liquidity provided interest rates are market-determined.⁴

However, while higher interest spreads could help compensate for increased risk, they are not a fully satisfactory response for banks. Bankers know (as modelled by Stiglitz and Weiss (1981)) that higher interest rates will tend to discourage borrowers who would prove to be good risks. The average profitability of lending may not therefore increase with higher interest rates. Beyond a certain point the supply of credit may be backward bending: higher interest rates being associated with less lending. An increased uncertainty exacerbates this problem: borrower screening becomes more problematical and the risk of worsening the average quality of the loan portfolio can induce banks to balance the advantages of a smaller, safer portfolio with those of higher spreads.

Currently the US banking system is again feared to be in the midst of a liquidity build-up following the S&L crisis. Although the "flight to quality" is often attributed to stricter regulation, the latter is denied by officials. Indeed bank managements themselves more likely are responding to weakened capital positions and a perception that the financial environment is more fragile. As is well known, U.S. banks real estate exposure vastly outweighs

that to highly indebted LDCs, and the unloading of such assets from the portfolios of bankrupt or desperate S&Ls is at least correlated with a generalized weakening of that market. Another indicator of fragility is the continued spate of bank failures⁵; although over half of the 1989 failures were in Texas, the spreading weakness of the real estate market has led to concerns in many other parts of the country. The future is clouded by the fact that the Resolution Trust Corporation will be disposing of the huge real estate portfolio it acquired as a result of the S&L failures.

It is reasonable to be concerned about banks attempting to shift to more liquid portfolios. This type of excess liquidity most clearly calls for monetary base expansion, not contraction: in order to support the same nominal aggregate demand, a higher base would be needed the less inclined bankers are to lend. However, a central bank must first make an assessment of the health of the borrowers being denied credit. If these borrowers could only be solvent (if at all) with an unacceptably high rate of growth of nominal GNP, then the banks are being perfectly rational in denying them credit. But the denial of credit to large numbers of solvent borrowers should prompt a more stimulative policy from the central bank.

While actual liquidity ratios (or related measures such as loan to deposit ratios) have not proved to be much of a leading indicator of recessions, they did rise following the onset of the recessions of 1973-74 and 1980-82, perhaps because it takes time for banks' increased reluctance to lend to take effect when confronted by greater loan demand from clients in distress. In the Great Depression, this ratio only rose around mid-1930, about a year after the peak in industrial production (figure 1). Data for the current cycle are only beginning to show some evidence of increases in bank liquidity (figure 2). Thus, a crunch still can be a credible concern. In contrast to its early 1930s stance (which, it has long been argued, contributed to the depth and duration of the Great Depression⁶), the Federal Reserve is alert to the danger and appears to be trying to run an easy monetary policy. However, as the Fed may be discovering, credit crunches can be difficult to reverse. Even if central banks provide ample supplies of reserves, once alert to the dangers of an impaired loan portfolio bankers may be reluctant to expand loans as they had during good times. Thus preventatives, rather than antidotes, may be more valuable in the case of a credit crunch, since antidotes may take so long to work that the "patient" would have to endure a substantial amount of pain.

B. Developing Countries

1. Banks in retreat?

The conditions that prompt an occasional "flight to liquidity" by banks in industrialized countries may be endemic in some developing economies. Quite commonly, bankers in those economies are constrained by administrative limits on expanding credit, often coupled with restrictions on interest rates that they can charge. In such cases, far from being reluctant to lend, bankers are constrained by lending limits and/or unable to charge interest rates commensurate with perceived risk. The appropriateness of any monetary

Figure 1

Bank Liquidity in the United States:

Liquidity Assets / Total Deposits

Figure 2
Bank Liquidity in the U.S.
Liquid assets / Total deposits

tightening in this instance depends on the country's actual and desired inflation performance and the stance of fiscal policy.

In other cases, however, banks are unconstrained by credit or interest rate controls and yet excess liquidity still is observed. Consider just two examples: In Sierra Leone total liquidity has persisted well above required levels since the mid-1970s and has fluctuated between 49% and 80% of total deposits in the late 1970s and most of the 1980s. Although credit ceilings were in force, banks seemed to be unconstrained by these limits. Moreover, though real interest rates were negative, banks still were reported to be earning large spreads. Tunisia may also fall into this category: following the lifting on many credit restraints in 1987, liquidity holdings rose and private investment spending declined, and banks were widely accused of being excessively risk averse⁷. There are many other countries for which similar stories could be told of this seemingly perverse phenomenon: bankers who do not want to lend.

The possibility of a backward-bending supply curve for loans, mentioned above, which could well explain seemingly excessive risk aversion, is much more likely the greater the asymmetry of information between borrowers and lenders. In contrast to the considerable sources of information relevant to credit extension decisions in industrial countries, information is meager in the developing world. Indeed, in many poor countries one is fortunate to find a handful of auditors or accountants; rating agencies and the network of firms associated with bond and equity markets (which both consume and generate information) are generally absent. Under such circumstances it is not surprising that banking accounts for the lion's share of finance in the developing world and that bank relationships with clients are a principal channel for acquiring information. Bankers with imperfect information will be guided by the banking transactions of their customers. Even with imperfect information, improved cash flow probably signals a healthier balance sheet and thus also serves to trigger increased lending and perhaps a lower cost of funds.⁸

Mature firms with a track record of good management and timely repayment are especially attractive to banks when information is imperfect: the bank has built up a "relationship" with such clients, learning about their markets and their production function and being able to discipline these firms by withholding future lending if performance on current loans is unacceptable. If banks lose regular clients, which in effect constitutes a destruction of information capital, it may take them some time to build relationships with new firms, a process made all the more difficult by the new firms' unfamiliarity with dealing with formal financial institutions. Consequently, banks may be expected to curtail drastically their normal lending operations and switch into relatively riskless assets, such as treasury bills.

Bank information capital is destroyed when the set of prices on which it is based collapses. Disruption of credit information has therefore been an unfortunate byproduct of the far-reaching structural reforms which have involved drastic revisions in internal and external relative prices in many developing countries over the past few years. For example, long-standing public sector investment programs frequently established the credit-rating of

many of the firms concerned -- despite the inefficiency of their projects -- in many developing countries, a position often solidified by trade barriers. Eventually, governments recognized that the investments had to be scaled back, overvalued exchange rates devalued, and protection reduced. The reforms entailed price swings that caused a contraction of previously viable sectors and even led to widespread bankruptcies among the banks' client base. Usually, firms producing for the domestic market have lost out and export-oriented firms gained. In some cases banks became insolvent as a result of these shifts, though they may have continued lending to former clients in the desperate hope that the situation would turn around, or at least to put off the recognition of their true state of affairs.⁹ But where banks remain solvent, they have often responded by reducing their lending to former clients and, not having relationships with newer and often smaller firms, have retreated into safer investments, such as government obligations. The situation has been exacerbated by the limited sectoral scope of banks' lending experience in countries where they have been constrained over the years by a web of regulations aimed at directing credit to various sectors. New-found freedom to make their own lending decisions is not supported by the necessary information to do so with confidence, nor by the sudden development of skills and proclivities to take informed, well-diversified risks.

The data to substantiate these hypotheses do not exist for developing countries. But it is intriguing, for example, that the share of liquid assets in commercial bank portfolios is evidently correlated with 1980s inflation on a cross-country basis in sub-Saharan Africa (figure 3). Since inflation usually is accompanied by greater relative price variability and thus is correlated with the riskiness of investment conditions, the plotted data, showing a tendency for liquidity to rise with an increase in risk, is consistent with our story. (Ethiopia with a low measured inflation is an outlier, but who can doubt that it has been a high-risk environment apart from economic factors). There are, of course, other potential explanations for the correlation, including the possibility that it is not the choice of banks, but pressure from governments (also relying on inflationary finance) which induces banks to make hold liquid assets and thereby provide cheap finance to government. Still, the graph provides some comfort for the view espoused here.

2. Attractions of liquidity

In addition to being dissuaded from lending, banks also find positive attractions to holding liquid assets, even more so in unsophisticated markets. However, in the absence of the relevant markets makes it difficult for banks in developing countries to "buy" liquidity, leading them to tend to prefer holding more liquid assets than is the case in industrial countries. Unconstrained profit maximizing banks add to their holdings of liquid assets until the marginal return to doing so is offset by the expected foregone cost of not investing in additional loans (taking account of default risks).¹⁰ Bank holdings of liquid, readily marketable assets above that consistent with legal cash, reserve, or liquidity requirements thus are determined by factors affecting these benefits and costs.

Banks can be faced with a drain on reserves because of a sudden bunching

Figure 3

Bank Liquidity and Risk

Sub Saharan Countries, 1988

of withdrawals, the non-renewal of funds borrowed from other intermediaries, an unexpected rise in automatic borrowing (under lines of credit or stand-by facilities), or the sudden need to make credit available to important clients. A bank's reputation would clearly suffer were it unable to meet an important client's loan request. Hence banks will always hold some liquidity. The demand for excess liquidity (that is, holdings of liquid assets above that required by regulations) by an individual bank will depend on a variety of factors. The problem of withdrawal bunching can be expected to diminish the greater the number of accounts.¹¹ The same is true of lending opportunities which can lead to quite lumpy liquidity requirements. Thus small banks likely will hold greater reserves relative to large ones. Even large banks may need relatively substantial liquidity holdings if their size is small relative to their clients needs, or if there are substantial seasonal swings in loan demand, such as would arise in economies dominated by one or two agricultural products.

When confronted by a deficiency of liquidity, banks must either sell securities, or borrow from the central bank or from the market. Thus the deeper the money market -- including certificates of deposit, commercial paper, treasury bills, interbank lines, and bankers acceptances -- the less banks are disposed to rely on holdings of liquid assets. If interbank markets are absent or shallow, banks cannot "buy liquidity," and instead must hold a greater amount of reserves than they would if these markets were better developed. Higher transactions costs in selling securities, typical of shallow markets, also fosters greater reliance on reserves. Higher levels of technology, especially in regards to the computerization of banking, permit a more detailed and timely tracking of loans, deposits, and scenarios regarding the evolution of each, and make bankers feel more comfortable with minimal amounts of liquid reserves. A higher central bank lending rate or money market rate will increase the cost of being caught with deficient reserves, thereby boosting liquidity, while a higher rate paid on liquid reserves, by increasing their attractiveness, will have a similar effect.¹² Money market development will be hampered as well by widespread insolvencies in the financial sector.

Other things equal, then, the lack of money market development and technology suggests that banks in less developed financial systems will have a greater demand for liquidity, a fact that may help to explain the frequency with which claims of so-called excess liquidity are reported in Africa. This relationship between liquidity holdings (and, inversely, the supply of credit by banks) and the depth and sophistication of money markets explains the importance of the latter in the development of the financial sector. A clear policy implication is that attention should be paid to the development of short-term money markets, an issue that has been overshadowed by attention to stimulating directly long-term finance in the developing world.

It is less apparent what policy measures can be adopted to reduce the aversion of banks to lending, though it is clear that tighter money would be counterproductive, as is argued in the case of the U.S. Depression. Instead, policymakers should attempt to prevent such a situation from occurring. In developing countries, where information asymmetries are more likely to be important, efforts should be focussed on fostering relationships between banks

and small and medium scale enterprises, especially if a program of structural adjustment cum financial liberalization is envisaged. Since information imperfections lie at the heart of the reduction in lending when banks' information base is destroyed, much greater attention should be given to developing a transparent auditing and accounting system. Although such recommendations are routinely made for the fostering of equity markets, they may be viewed with skepticism by governments who do not appreciate the role of information in finance.

Indeed, the importance of informational requirements suggests a role for a "financial extension service," akin to that for the agricultural sector. This service could specialize in acquainting medium and small firms with the rigors of bank demands for information and assist with the establishment of auditing and accounting systems. Firms do not produce sufficient quantities of information precisely because it is a public good. Governments could correct this deficiency by giving tax advantages or subsidies to firms supplying detailed, audited financial statements, or, alternatively, imposing higher taxes on firms not in compliance with these requirements. Directed credit schemes are not a solution to this problem, in that they introduce well-known distortions into the credit allocation process, which often prove difficult to remove, and regularly lead to a proliferation of non-performing loans. Moreover, these schemes lead to underinvestment in information services, compared with what would be expected in a more market-oriented economy, inasmuch as the primacy of the government's view about which sectors should receive credit reduces the value of information gathering.

INVOLUNTARY ACCUMULATION OF MONEY: THE CONSTRAINED ECONOMY.

Where there are administrative controls on the acquisition of goods or of foreign exchange or other assets, the unsatisfied demand tends to spill over into additional (nonbank) holdings of money which, since they are the result of administrative controls, can be described as involuntary. Centrally planned economies of both socialist countries and countries at war can display such characteristics. It can also be observed where exchange controls are biting. Where it is goods that have been in short supply and price controls have been in effect¹³, the removal of controls normally¹⁴ results in price increases, though not necessarily to sustained inflation. Indeed, price de-control in several Eastern European countries is reported to have summarily removed excess liquidity; stores previously bereft of consumer goods found their shelves stocked with goods priced quite high relative to local purchasing power.

The typical situation in a planned economy has been that cash management by enterprises is part of the plan, and is not subject to much discretion at the decentralized level of the individual enterprise. Cash balances represent the bulk of financial saving by households because there have been few if any alternative savings media. Although in most planned economies there has been little outright unemployment (households have not been rationed in their sales on the market for labor), there have been many absolute shortages of goods (households are rationed in their purchases of goods). Some build-up of money holdings in these circumstances is not altogether surprising, but it is a bit puzzling why a build-up is sustained for several years when households may

have the option to run down their money balances by reducing their supply of labor, or by leakages of cash into purchases of uncontrolled goods.

During the 1970s economists studied mainly static models of rationed economies¹⁵. These models typically followed the standard pattern of picturing economic agents as allocating their time between work and leisure; work being for the purpose of buying goods and accumulating cash balances. Unlike the usual analysis in which everyone can buy and sell as much as they want at equilibrium relative prices, the models of rationing assumed that prices do not adjust to the equilibrium values and that agents therefore encounter constraints on one or more markets. These constraints inhibit them from buying all they would otherwise on other markets. A disequilibrium set of prices results in a set of transactions which are the best any agent can achieve given the constraints he faces on the markets that do not clear.¹⁶

Although they were mainly applied to disequilibrium in the labor market, as an analysis of unemployment, such models can equally well be used to discuss the shortages of goods which characterize the planned economy. If workers are unable to buy as much as they would like (and could afford at prevailing prices) on the market for goods, they will opt for more leisure, reducing their supply of labor (and thereby exacerbating the shortage of goods) and they will also hold more money. The result is very much like the situation described for planned economies: relatively high money balances and relatively low levels of output. The model also predicts that wages and prices will be relatively low in nominal terms, as has been the case in Eastern Europe, dramatically illustrated in East Germany during the run-up to the German monetary union. Because of these low nominal prices, the shortage economy has been termed "repressed inflation", though since the model is timeless, it might be better to call it the situation of repressed money prices. A move to full equilibrium would definitely involve higher money prices for goods and labor services, though it might not require lower real wages. It would also involve lower real money balances.

High money balances in the controlled economy thus represent a response to rationing in the goods market. They mean that price decontrol will result in higher prices unless the government reduces its claim on real resources and unless there is a sufficiently high supply response. The stock overhang does not, per se, represent a continuing threat to price stability: once the new equilibrium price levels have been reached, money balances will not continue to drive up prices. However, the initial adjustment in prices could have sustained consequences if wage setting behavior is not conducive to reaching equilibrium. For example, the old real wages (computed without making any adjustment for the rationing of goods) are probably unsustainable, but the initial surge in prices to the new equilibrium may result in a sustained inflation for as long as trade unions succeed in securing compensating increases in nominal wages.

Looking at the developing countries for which data are readily available¹⁷, it does seem that planned economies tend to have rather high values of the ratio of money (M2) to GDP. Top of the list in 1988-89 are Yemen PDR, whose 175% is far higher than the next highest among the "Low-Income" countries, i.e. China, also a planned economy, with 65%. Bulgaria

(105%), Egypt (94%), Romania (72%), Hungary (47%) and Yugoslavia (46%) also have relatively high shares for their level of development, though Poland (38%) is not particularly high.

One of the features of Socialist economies has been the absence of other assets that can be held in household portfolios. (One might say for symmetry that acquisition of non-monetary financial assets has been rationed). Some of the high money holdings which have been noted may be explicable in these terms without any appeal to disequilibrium in the goods market. To the extent that this is so, freeing the prices of goods and labor services would not necessarily result in any great change: if there is an expectation that money will soon be convertible into real assets or into other financial assets there will still be a demand to hold the excess balances. The authorities could avoid or at least minimize an inflationary surge following goods market liberalization by selling assets to households against cash that was then retired¹⁸. The proposed privatization of much of the productive capital of reforming centrally planned economies could therefore have a favorable impact on inflation and monetary conditions, if the capital is sold for money. The real difficulties here lie in such larger problems as ensuring a fair price for the privatization and adequate shareholder control over management of the newly privatized entities, not to mention the legal and bureaucratic hurdles that must be overcome in advance of privatization.

The problem of money overhang in socialist economies evolved over a long period of time; this temporal aspect needs to be considered if we are to understand the process fully. One factor influencing accumulation in many planned economies over the past few years must be household expectations that constraints on the goods market will soon vanish¹⁹, in which case it makes sense to hold some more cash balances instead of reducing further one's labor supply²⁰. Cash holdings are elevated now, not because of an intrinsic usefulness of money, but because households believe that they may be able to use them later to buy the goods they were unable to buy now because of rationing.

What if households' expectations of further liberalization are disappointed in the future: will there be a further accumulation of money then, or will labor supply return to lower levels and no further money be accumulated? We believe that a continued expectation of future market reform will tend to result in additional accumulation of money balances as long as the awaited reform fails to materialize. Households will continue to position themselves for the reform and each year (given the increased money holdings of other households which imply a higher expected post-reform price level) the typical household will find it optimal to accumulate money in anticipation of the reform. The process of accumulation could persist for a long time, though ultimately it will cease unless the likelihood of imminent reform increases (see Annex 1).

If we are right, a sudden increase in the expectation of reform will result in a period of years in which output will be higher, as households work to accumulate money balances. This pattern certainly fits the experience of China in the 1980s. Following partial liberalization of prices from 1979, rapid output expansion and monetary accumulation followed (Figures 4 and 5).

Figure 4

China: M2/GNP, 1977-88 (%)

Figure 5

China: Real GNP, 1960-88

1988=100

After over ten years of the new policy, goods markets have not yet been fully liberalized and indeed there has apparently been some tightening of controls. The slowdown in economic growth and small reversal in real money balances during 1988-89 would be explained in our model by some reduction in the probability of reforms, although the role of credit policy (which is not included in our model) was probably also important.

What is the appropriate policy response to accumulation of liquidity in a planned economy where an expectation of reform has taken root? Surely not an increase in interest rates which will at best have no effect on the accumulation and at worst accelerate it. The key message of our model is that the situation calls for a rapid liberalization of goods markets -- that is, supply side reforms -- to halt the monetary accumulation.

The provision of alternative assets to money may also mop up the overhang; households will be willing to diversify their holdings of liquid assets into other credible assets. (Giving away ownership rights to public enterprises, as has also been proposed, will not help to mop up liquidity directly, though it may help ensure a more fair initial distribution of ownership). Establishing equity and corporate bonds as credible instruments will, however, require careful definition of legal rights and obligations, and also adequate prudential supervision.²¹

CONCLUSION

Neither excess liquidity in the banking systems of the developing world (and in the US post-S&L crisis) nor the money overhang of the reforming planned economies calls for a restrictive monetary policy response. Instead an understanding of the main underlying causes, information deficiencies and thin money markets in the former and rationed goods markets in the latter, points to a role for more appropriate action including structural reforms. In reforming socialist economies, it is possible that the monetary overhang in the household sector will be transformed in short order into excess liquidity in the banking system, to the extent that relatively inexperienced bankers demand substantial collateral and pull back from lending in a risky environment characterized by poor information. This reaction would both leave the economy in a "low-lending" trap but also seriously impede the development of the private sector. A prudent but not overly restrictive monetary policy, combined perhaps with the reservation of some part of credit for the emerging private sector, might then be in order.

Annex 1

1. The Build-up of Money Holdings in the Planned Economy

To understand why households might attempt to accumulate cash balances, it might be useful to examine the models of macroeconomic behavior under conditions of rationing or market disequilibrium. Most models of this type are related to the early model of Barro and Grossman (1971). They describe a one-period world in which just three things are valued by economic agents, namely goods, leisure and money. If all agents were able to buy and sell as much as they wanted at prevailing relative prices, then an equilibrium set of relative prices would exist at which all markets cleared and no agent wished to undertake any further transactions. If, however, prices do not adjust to the equilibrium values, agents perceive constraints on one or more markets, and this inhibits them from buying all they would otherwise on other markets. A disequilibrium set of prices results in a set of transactions which are the best any agent can achieve given the constraints he faces on the markets that do not clear.

At first mainly applied to disequilibrium in the labor market, as an analysis of Keynesian unemployment, the model can equally well be used to discuss disequilibrium in the goods market. Thus, even if there is no unemployment, agents may not be able to buy as many goods as they wish to at current relative prices. Perceiving this constraint, agents will opt for more leisure, reducing their supply of labor (and thereby exacerbating the shortage of goods) and will also hold more money. The resulting level of output will clearly be lower than in the full equilibrium. As discussed by Malinvaud (1977), such a situation will occur when the wage rate and the price of goods are both lower than in the full equilibrium (the real wage may be higher or lower than in the full equilibrium). Because money prices are generally too low, this is termed a situation of repressed inflation, though since the model is timeless, it might be better to call it the situation of repressed money prices. A move to full equilibrium would definitely involve higher money prices for goods and labor services. It would also involve lower real money balances.

As presented in the model, the demand for money is based on some intrinsic usefulness of money, whereas we normally think of money holdings as being motivated by a desire to store value in a form that allows agents to

take advantage of opportunities to purchase goods (or other assets). Accordingly, the model should be extended in two dimensions: to include other assets and to cover decisions over several time periods in order to allow us to explain the gradual accumulation of large cash balances in a less arbitrary way.

2. The Model

In the pre-reform period prices and wages are fixed. Consumption is rationed at a fixed level $\bar{C}$. Agents live two periods: they can supply labor when young and use the wage receipts to buy consumption and to accumulate sufficient money to satisfy their consumption needs in the next period when (being old) they cannot supply labor. They may hold more money than needed to buy the ration if they expect reform to occur in time for their old period. If it does not occur they bequeath the surplus money to the young generation following. In the post-reform period the money price of consumer goods adjusts to clear the market and the real wage equals the marginal product of labor (assumed to be constant in what follows). Total output does not necessarily equal the sum of the rations. We may think of the difference between output and ration as being wasted: it plays no part in private decisionmaking in the pre-reform period.

The evolution of the nominal stock of money differs in the pre- and post-reform periods. Pre-reform, money is created by wage payments and destroyed by purchases of the consumption ration. This is broadly equivalent to the way the household financial circulation works in the monobank system of many socialist economies, though this model does not examine the role of enterprise credit in such systems. Post-reform the nominal money stock is constant. This reflects the steady state nature of the modelling and the absence of a government sector post-reform.

Four phases must be considered. First, the pre-liberalization phase, which may consist of many periods, where there is a subjective probability of reform. Second, the first liberalized period. Third the second period after liberalization. Fourth, the steady state post-liberalization. These phases are denoted with subscripts 1, 2, 3 and ∞ . Consumption is dated according to the birthdate of the relevant consumers. Thus C_{y1} and C_{o1} refer to the consumption of the same generation in two successive periods. The superscripts N and L, where used, represent the state of the world where reform has not occurred and that where the liberalizing reform has taken place respectively.

In phase 1, the maximand for the young generation is the expected value of lifetime consumption: they thus choose e_1 and C_{y1} to maximize,

$$\pi u(e_1, C_{y1} C_{o1}^N) + (1-\pi) u(e_1, C_{y1}, C_{o1}^R)$$

subject to:

$$C_{y1} \leq \bar{C}$$

$$c_{01}^N \leq \min\{\bar{C}, m_1\}$$

$$m_1 = e_1 - c_{y1} + \mu_1$$

$$c_{01}^R \leq \frac{m_1}{p_2}$$

where μ is the inherited stock of money which is given in each date of the first phase by the difference between the previous date's chosen stock of money m and the available ration of consumer goods $\bar{C}$.

The four constraints can be understood as follows: young consumption must lie below the ration; old consumption must also lie below the ration if there is no reform, and must also lie below the stock of money held over into old age; this stock of money is determined by the inherited money stock augmented by savings out of income; if there has been reform, real consumption when old equals the money holdings carried forward divided by the price level in the first reformed period.

In Phase two the maximand is simply:

$$U(e_2, c_{y2}, c_{02})$$

subject to constraints:

$$m_2 = w_2 e_2 - p_2 c_{y2} + \mu_2$$

$$c_{02} \leq \frac{m_2}{p_3}$$

The real wage is determined by the marginal product of labor:

$$\frac{w_2}{p_2} = f'(e_2)$$

And equilibrium in the goods market requires:

$$c_{01}^R + c_{y2} = f(e_2)$$

Where f is the aggregate production function.

In phases 3 and 4 essentially equivalent maximands are subject to similar constraints:

Thus in phase 3 the maximand is

$$U(e_3, c_{y3}, c_{03})$$

And the constraints:

$$m_3 = w_3 e_3 - p_3 c_{y3}$$

$$c_{03} \leq \frac{m_3}{p_4}$$

$$\frac{w_3}{p_3} = f'(e_3)$$

$$c_{02} + c_{y3} = f(e_3)$$

And in phase 4 the maximand is

$$U(e_\infty, c_{y\infty}, c_{0\infty})$$

and the constraints:

$$m_\infty = w_\infty e_\infty - p_\infty c_{y\infty}$$

$$c_{0\infty} \leq \frac{m_\infty}{p_\infty}$$

$$\frac{w_\infty}{p_\infty} = f'(e_\infty)$$

$$c_{0\infty} + c_{y\infty} = f(e_\infty)$$

2.1 A Cobb-Douglas Implementation

In order to make explicit computations we specify the utility function as Cobb-Douglas and the production function as linear. Thus,

$$U(e, c_y, c_0) = (1-e)^\alpha c_y^\beta c_0^{1-\alpha-\beta}$$

$$f(e) = \Omega e$$

The timepath of the economy is best solved from the last phase backwards. In phase 4, the equilibrium is readily computed as:

$$e_\infty = 1 - \alpha$$

$$p_{\infty} C_{y\infty} = \beta w_{\infty} \Rightarrow$$

$$C_{y\infty} = \beta \Omega$$

$$C_{0\infty} = (1 - \alpha - \beta) \Omega$$

And if we assume further that young and old consumption have equal weight (and no discounting), i.e. $\beta = 1 - \alpha - \beta$; then

$$C_{0\infty} = C_{y\infty}$$

For phase 3, the equilibrium conditions are:

$$e_3 = 1 - \alpha$$

$$p_3 C_{y3} = \beta w_3 \Rightarrow$$

$$C_{y3} = \beta \Omega$$

$$p_4 C_{03} = \beta w_3$$

With the assumptions made, output in phase 3 is already equal to output of phase 4. Furthermore (because of the equality of weight on old and young consumption) the share of this output taken by the old generation (C_{02}) is the same as old consumption in phase 4 ($C_{0\infty}$). Accordingly, with these assumptions the price level of phase 4 has already been reached by phase 3.

In phase 2, the inheritance of unspent money by the young generation makes a difference in the equilibrium conditions:

$$w_2 (1 - e_2) = \alpha (w_2 + \mu_2) \Rightarrow$$

$$e_2 < 1 - \alpha$$

$$p_2 C_{y2} = \beta (w_2 + \mu_2)$$

$$p_3 C_{03} = \beta (w_2 + \mu_2)$$

The phase 2 price level is determined by equilibrium in the goods market, with the supply of output generated by the young-2 generation being absorbed both by the spending of money balances carried over by the old-1 generation and by the consumption out of wages by the young-2:

$$\frac{m_1 + \beta (p_2 \Omega + \mu_2)}{p_2} = \Omega \left\{ 1 - \frac{\beta (p_2 \Omega + \mu_2)}{p_2 \Omega} \right\}$$

leading to:

$$p_2(m_1, \mu_2) = \frac{m_1 + (1-\beta)\mu_2}{\beta\Omega}$$

Finally, we look at what is in practice the most complicated calculation, that relating to phase 1. Here we make the auxiliary assumptions that the inequalities of the optimization are binding, and that m_1 is sufficient to purchase the ration. Then the only choice to be made is of labor supply to maximize:

$$\pi \bar{c}^{2\beta} (1-e)^{\alpha} + (1-\pi) \left\{ \frac{\bar{c}}{P_2} \right\}^{\beta} (e - \bar{c} + \mu_1)^{\beta}$$

Where P_2 is given by the formula given above and depends on the predetermined value of μ_2 and the value of m_1 which depends on the choice of labor supply

e_1 . First order conditions can be obtained in a standard manner leading to complicated, though closed form, expressions which we have calculated for some parameter values.

2.2 The Simulations

Given parameter values, phase 1 will stabilize at a pre-reform steady state quantity of money. A change in the probability π of no-reform will lead to a progressive adjustment of money holdings in accordance with the first order conditions which have been derived.

We simulated the model for the following parameter set:

$$\begin{aligned} \Omega &= 1 & \alpha &= 0.4 & \bar{c} &= 0.2 \\ & & \pi &= 0.7 \end{aligned}$$

This set has a pre-reform steady state of:

$$\mu = 0.162 \qquad m_1 = 0.362 \qquad e_1 = 0.4$$

The immediate post-reform price level is 1.6 times the pre-reform. The post-reform steady state (phase 4) would have:

$$C_{y\infty} = C_{0\infty} = 0.35 \qquad e_{\infty} = 0.7$$

Starting with this pre-reform steady state an upward shift in the probability of reform to $\pi=0.5$ leads to a rapid accumulation of money balances, obtained by an expansion of output, the time path of money holdings and labor supply is

as shown in figure 3 and figure 4. The new pre-reform steady state is:

$$\mu=12.23$$

$$m_1=12.43$$

$$e_1=0.4$$

If reform took place at this steady state, it would lead to an immediate post reform inflation to 70 times the initial price level.

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1. For example, if the surge in money holdings is the result of a temporary buffer-stock accumulation of spending power which threatens to spill over into aggregate demand, there may be a clear case for restrictive monetary policy.

2. See Kennedy (1987) for an elaboration of this case.

3. Bernanke (1983) noted that two eminent economists conducted a credit survey in 1934-35 and found a widespread unsatisfied demand for credit by solvent borrowers.

4. Interest rates on relatively riskless assets also fell sharply in the United Kingdom towards the end of the last century. In some developing countries where voluntary excess liquidity is reported, a similar reaction may not occur where, for example, interest rates on government obligations are regulated at what are actually artificially high levels, a phenomenon more likely to occur in times of disinflation. Note also that excess liquidity implies nothing about the level of real interest rates, which will be determined by a variety of variables. In fact, the low nominal yields on U.S. treasury bills in the 1930s actually were quite high in real terms, as prices were plummeting sharply.

5. In 1989, 206 U.S. bank failures (in addition to numerous S&L closures) led to an \$851 million loss for the FDIC's bank insurance fund and a fall in reserves to 0.7% of insured deposits, well below the target of 1.25%. Moreover, at the end of 1989, 1,109 banks out of a little over 13,000 received a (CAMEL, or Capital, Assets, Management, Earnings, and Liquidity) rating of 4 or 5, indicating, respectively, serious problems and imminent failure.

6. See Kindleberger (1986) for a discussion of the debate.

7. It is a moot point as to whether or not interest rate controls were binding. Although a ceiling was placed on loan rates and Tunisian banks were offered an attractive rate on government obligations, banks were reported to be lending to prime customers at rates well within the ceilings. See the Institute for International Finance (1990, chapter 2) has a lucid discussion of the Tunisian experience.

8. See Gertler (1988) for an explanation of this point and the argument regarding preference for mature firms in the next paragraph.

9. de Juan (1987) provides a lucid description of bankers' ability to put off the day of reckoning. Inadequate levels of bank supervision contribute to the ability of banks to continue lending when they are insolvent. However, even with the best system of supervision -- which admittedly may be revealed only ex post -- insolvencies can be incorrectly perceived as illiquidities (and vice versa). These uncertainties may lead supervisors to tread slowly in closing banks, except in clear instances of defalcations.

10. In some countries banks may not be lending aggressively because of requirements that a large part of their assets be held in the form of "liquid" government paper. Depositors and borrowers pay for this practice in the form

of lower deposit rates and higher lending rates.

11. See Simpson (1987, p. 163), Harrington (1987), and Stigum and Branch (1983) for more of an elaboration on loan bunching and general considerations on liquidity management.

12. It is assumed that banks cannot continuously borrow on the money market at a lower rate than that at which they can lend.

13. As described by the expression, "We pretend to work and they pretend to pay us."

14. Depending on the response of monetary policy.

15. Cf. the well-known paper by Barro and Grossman (1971)

16. Some economists neglect cases in which prices may not adjust, or consider such cases to be unrealistic for market economies, claiming that free competition between profit-motivated traders should achieve the market clearing prices. Although there is a considerable, but not very conclusive literature on the subject, the relevance of the assumption for the planned economy is clear.

17. Of course this leaves out the USSR and several other planned economies, where large holdings of money are reported as well.

18. The strategy will not work if the proceeds are used by the government to buy more goods and services.

19. Another possibility is that labor supply is forced, so that money accumulation is simply a residual; money is not then demand determined and represents an overhang that has to be worked off.

20. See Feltenstein et al, (1990) for a suggestion along these lines.

21. Recent liberalization in Viet Nam has been marred by a large Ponzi scheme where 140,000 depositors lured by high interest rates offered by a perfume manufacturing and trading company lost over \$25 million.

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