THE TRANMSISSION MECHANISM OF MONETARY POLICY IN TRANSITION AND DEVELOPING COUNTRIES

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Some countries have sophisticated financial systems, with numerous banks and a mature set of bond markets. In others, such features are only embryonic. Most developed countries are at one end of a spectrum between these positions. Most developing and transition economies are moving towards that point, but at different speeds; and some have quite some way to go to reach it. The first point to stress about transition and developing countries' financial and economic systems is that they are very far from homogeneous[1].

Money, in its narrowest form of token coinage and paper notes, circulates in every country in the world, however. In more advanced countries, monetary policy works through interest rates. Central banks alter their policy rate. Interest rates on treasury bills and retail interest rates on loans and deposits quickly move more or less one for one. Interest rate changes then prompt changes in consumption and investment spending through a variety of channels; and policy interest rate changes may alter the value of the exchange rate, with consequent impact on aggregate demand through changes in the gap between exports and imports. Interest rates therefore provide the crucial early steps in the transmission mechanism of monetary policy in advanced countries. So how does that mechanism work in institutional environments where interest rates are relatively unimportant, or even, in the extreme, completely absent? How and why does a rise in monetary aggregates arise in such a context? What are its effects? What are the key links between the supply of money on the one side, and aggregate output and prices on the other, in countries where interest rates play at most a minor role? These are the questions top which this paper is addressed.

[1] This is one of the main themes to emerge from Mahadeva and Sterne (2000).

With almost no exceptions, currency is always and everywhere the non-interest-bearing liability of the State. Occasionally this currency might be supplemented by paper issued by private institutions, but the role played by privately issued currency is usually trivial or non-existent. Currency acts as means of payment, medium of exchange, and unit of account. It is also an important store of value. In less developed financial systems, bank deposits will also perform the last of these four functions to some degree. Cheques drawn on those deposits may be used alongside currency as exchange and payment instruments, too, but currency is likely to enjoy the lion's share. In advanced financial systems, by contrast, currency acts as little more than small change.

There are two principal ways in which the supply of currency can rise. One results from the State's budgetary deficits. The other is the consequence of a surplus on the country's balance of payments with the rest of the world.

If the State runs a budget deficit, receipts from taxation fail to match the public authorities' disbursements. The gap has to be offset by some combination of borrowing and currency issuance. In the absence of domestic bond markets and banks, the State will not be able to borrow from domestic sources (though it might, if it wishes, still sell State assets to domestic residents). So government borrowing, in all likelihood, means borrowing from abroad – from overseas banks or international financial institutions, for example, or in the form of trade credit extended by foreign firms selling exports to the public sector. Arranging finance from those external sources may be hard. Its terms may be unattractive, too, even if such funding is feasible.

In such circumstances, it seems likely that currency will have to plug at least some of the gap. That would imply a strong

positive link between the budget deficit and the increase in currency outstanding.

A surplus on the country's balance of payments will generally entail a rise in domestic residents' holdings of liquid claims against the rest of the world. If these agents began the period in portfolio equilibrium, the chances are that they will end it holding some foreign exchange that is surplus to their requirements. If the country's monetary authorities operate a fixed or managed exchange rate system, they will need to intervene to prevent a local excess demand for foreign exchange from generating an appreciation of the currency.

Essentially this means selling domestic currency to buy up the unwanted foreign exchange. Private holdings of domestic currency can only rise as a result. And quite often, the monetary authorities of less developed countries may actually prohibit domestic residents from holding foreign currency, obliging them to surrender it (though with compensation) to the central bank. The end result will be the same: a higher level of domestic currency outstanding.

During the Second World War, and for some time thereafter, most countries imposed restrictions on international capital movements. Developed countries, and not a few developing ones, have now abolished these. Where this has happened, the external value of national currencies, if freely floating, is influenced far more by capital movements across the exchanges than by the state of the current account of the balance of payments. Real interest rates in such countries are linked to levels elsewhere, perhaps with differentials to reflect risks and additional anticipated taxation. Such complications aside, domestic nominal interest rates in local currency tend to match similar rates overseas, supplemented by a term to cover the

expected drift in the relevant nominal exchange rate[2]. But at the other end of our spectrum, capital movement restrictions remain common, and it will be the current account of the balance of payments that exercises the dominant influence on the exchange rate when it floats.

So much, then, for reasons why the supply of (narrow) money, currency, may increase. What happens next?

The key point to start with here is the notion that currency is an *asset*, held over time. Firms and households need to weigh up the expected benefits and costs of holding currency, against those of holding assets alternative to currency. Those alternatives include real assets, such as buildings, land, consumer durables, machinery, farm equipment and livestock, and inventories of raw materials, work in progress and finished goods awaiting sale. All those other assets offer some prospect of yield. For buildings and consumer durables, for instance, it will be imputed rent, that is the rent that the owner does not have to pay someone else for their use.

Currency bears no nominal interest. What it provides, instead, is a yield of convenience. This may be thought of as a stream of savings in transactions, search and trading costs that the holder would have incurred, if forced, instead, to resort to make purchases through a different and more cumbersome mechanism, like barter.

In equilibrium, the right balance has to be struck between currency holdings on the one side, and alternative assets on the other. This should entail equality between the marginal convenience yield on money (call this MCYM) and the

[2] This is the much debated uncovered interest parity (UIP) hypothesis, which has recently received a stout defence by Meredith (2002).

anticipated net marginal return on the latter. Risks aside, all assets should offer the same net return at the margin. If they did not, the portfolio's total yield would be raised by selling low-yield assets and buying high-yield ones instead.

It is *real* currency that provides the benefit streams that households and firms enjoy. So *nominal* currency holdings have to be divided by an index of prices of items their holders expect to buy. And though currency offers no nominal interest by definition, its *real* yield will be non-zero unless prices are stationary. Inflation imposes a negative real yield on currency. It is indeed an approximate measure of the cost of holding currency, and indeed the only one available in an economy with no data to reveal a real rate of interest.

Higher inflation should reduce real currency holdings. Phenomena like expectations of a bad harvest (which will raise food prices) or exchange rate devaluation (which should increase the home currency prices of exportable and importable goods, about one for one) should induce a flight from cash. Farmers, traders, families and firms will react to such developments by attempting to raise their inventories of goods expected to rise in price. Since the overall supply of such goods is likely to be given, or at best slow to change, their prices will tend to jump to clear markets. In the process, holdings of real currency will fall.

A sudden burst of actual inflation can arise, therefore, as a result of increased expectations of future prices. You do not need a rise in currency to occur at the same time. What a piece of paper money is worth today depends upon what real value it is expected to command tomorrow, and that is governed by what prices are expected to be the day after tomorrow, and so on in an infinite chain. Equally, heightened fears of inflation in the

distant future, whatever occasioned them, this logic suggests, could conceivably translate into a big jump in prices now. This is especially true if the prices of goods and services are highly flexible, a condition that may well be fulfilled when the country's record of past monetary stability is weak. And it in no way depends upon the presence of banks or mature bond markets; it could operate perfectly well without them[3].

The main message from this observation, then, is that the *demand* for currency can be volatile. The behaviour of the price level over time depends on currency demand as well as currency supply. In a sophisticated financial system the authorities nowadays aim to set interest rates. They meet any swings in the demand for money by immediate changes in its supply. In a much less developed financial system, where interest rates mean little or play little role, monetary policy means, above all, controlling and varying the evolution of narrow money - currency – to achieve its objectives (such as low and steady inflation, subject, perhaps, to what are perceived as satisfactory outcomes for real variables such as GDP).

When it is the stock of money that is the chief subject of control, unforeseen changes in money demand can create havoc. The best thing to aim for, perhaps, is to create a climate in which sudden changes in expected future price levels, and consequent sudden changes in today's demand for currency, simply do not happen. That may mean building a reputation for achieving low and steady inflation in the past, or constructing a device of credible commitment to it in the future.

So much for why prices could jump now in the absence of accompanying changes in the supply of currency. Suppose, now, that the stock currency *does* increase: through what

[3] For a recent model of inflation dynamics governed partly by budgetary variables, the reader may wish to consult Fry and Sinclair (2002).

channels shall we observe an increase in prices, in monetary systems where interest rates are absent or unimportant?

When the nominal supply of currency has gone up, perhaps as a result of budget deficits or of balance of payments surpluses, upward pressure on the price level can and indeed should ensue. There are just two provisos. First, we must qualify the last claim by stating a key condition – *all other things equal*. Second, there are many reasons for thinking that the upward pressure on prices may be slow in coming. What happens following the increase in currency, then, and why?

The first stage involves agents' discovery that they now have a surplus of currency. (This must be so, if all other things are equal, and currency holdings were "right" at their previous, lower level). To restore equilibrium in their portfolios, they will seek to augment holdings of alternative assets. A farmer with a large cash surplus may think of extending the family dwelling, or stock of animals. A manufacturer or workshop owner may start looking to buy a machine, to raise production or cut costs. A trader will contemplate adding to his inventory of goods to sell. A family may react by purchasing a hitherto unaffordable vehicle, telephone or television set. A large private institution with surplus cash may think of buying other businesses, or constructing new buildings for sale or rent.

(In some poorer economies, capital formation is often subject to central planning or control. Official approval is needed for investment, at least in larger projects or enterprises. But even here, some categories of investment (such as inventories or smaller projects, and durables purchases by households) that go unregulated).

The increased demand for all such goods will be considerably enhanced if the economic agents involved perceive that the surplus cash is not just something they are experiencing themselves, but a widespread phenomenon, affecting many others. That will make them anticipate shortages and price increases in the near future. They will be much keener to secure their new purchases at current prices, in advance of those rises to come.

If a rise in the supply of currency raises the demand for a wide range of alternative, real assets, an immediate consequence will be a rise in their (explicit or shadow) prices. The stocks of such assets can be thought of as fixed in the short run. So their holders will become wealthier in terms of consumption goods. The resulting wealth effect, common to those with sophisticated financial markets and those without, will tend to boost overall consumption.

There is a second factor that can strengthen the demand for non-cash assets when the supply of money has risen. This is imperfections in capital markets. The first rule of capital markets is this: you can always get a loan when you can prove you do not need it. In all economies, those with sophisticated financial systems and those without, the asset-poor find borrowing a challenge. Asymmetries in information are the main reason for this. But borrowing is impossible for everyone when loan markets barely function at all, and countries with only rudimentary banks and financial markets will be close to this position. If there is a widespread unsatisfied demand for credit, additional surpluses of real currency, whatever caused them, can be expected to generate a large increase in the effective demand for goods of all kinds. This phenomenon should be particularly powerful in poorer transition and developing countries.

An unexpected cash surplus is really like a windfall gain. When capital markets work well, someone experiencing a windfall gain should react by barely increasing recurrent consumption spending, on non-durable goods, at all. The most you would expect is for non-durable consumption to rise, over a year, by the product of the gain and the real rate of interest. Nearly all the windfall would be "saved" – transferred into income-yielding assets, or, of course, consumer durables.

If capital markets are deficient, on the other hand, there are likely to be many consumers who cannot borrow what they would have liked, and been able, to borrow, had capital markets been perfect: particularly individuals confident about future income. Give such people an cash surplus, and you should see an immediate and appreciable increase in current non-durable consumption spending. "Real balance" effects – the alleged tendency for an increase in real money holdings to induce higher consumption – receive a poor press in the economic literature, and for several reasons. They involve attributing causality to at best an indirect association between a pair of endogenous variables that might even be independent of each other in long run equilibrium. It is rather like "explaining" the consumption of olive oil by the consumption of carrots. The econometric evidence in their favour is not strong, either. But in an economy with very poorly developed capital markets, the real balance effect channel of the transmission mechanism of monetary policy really does merit some close attention. What makes this interesting is the implication that a (narrow) money supply increase is not limited, in its initial effects, to the markets for other assets.

If aggregate demand does increase in the wake of a rise in the supply of currency, what happens next? At first, it is *volumes* of purchases that should react most. Increased demand for goods

may be satisfied initially from traders' inventories. When the goods are exportable or importable, and foreign exchange rates remain fixed, higher home demand may be met from reduced exports or increased imports. But markets for many goods where international trade is insignificant, such as most services, or housing, may witness increased levels of business, when there is initial slack or excess supply in the markets for them.

Then there will be domestic products supplied by just a handful of home firms – in a small developing economy, maybe just one – which have set their prices for the time being, and stand prepared to meet any increase in demand by increasing production. Temporarily sticky prices make no sense in goods markets where sellers compete perfectly with each other. But they have strong appeal under monopoly and some other forms of imperfect competition (although you can also have monopoly with perfect price flexibility). And so temporarily sticky goods prices, and the imperfect competition with which they are at least partly associated, can give monetary policy a powerful, temporary, real effect.

Furthermore, in a developing country, news of a stronger demand for labour may well filter from the towns to the countryside, prompting migration. And a fringe of townsfolk seeking employment will furnish some of the additional labour demanded. So, taking all these factors into account, a rise in the supply of narrow money should trigger not just an increase in aggregate demand, but a wide set of changes embracing all components of GDP, as well as increases in the demand for labour and overall level of employment.

There is an important qualification that needs to be made at this point. It relates to the country's exchange rate system. If the exchange rate is fixed, and remains so, we have already seen

that there will be forces that immediately start weakening the trade balance, by lowering exports and raising imports. As time goes on, these consequences may well be reinforced by other developments (upward pressure on the prices of non-traded goods and labour in the home economy). If the economy stays wedded to its fixed exchange rate, and the rest of the world displays no inflation, the home country's trade deficits will lead to a sequence of subsequent money supply *reductions*.

So the initial rise in the money supply ends up in reversing itself automatically. It has no persistent effects on anything – output or prices – precisely because it has to reverse itself later on. In an open economy of this kind, what determines the domestic rate of inflation in the long run is two things: the rate of inflation abroad, in the rest of the world; and the trend, if any, in the exchange rate. A once and for all devaluation of the exchange rate ends up by raising all domestic prices (non-traded goods and labour) as well as traded goods. The monetarist claim that the rate of growth of the money supply "determines" the rate of inflation is simply false in such circumstances.

With cleanly floating exchange rates, however, the picture changes completely, and the portfolio equilibrium approach to the first stages of the monetary transmission mechanism introduces the crucial new element of foreign currency. If home residents are allowed to hold this – or if the government and central bank are unable to stop them from doing so – a sudden surplus of domestic cash is likely to be translated rapidly into foreign exchange. This is all the likelier if the cash surplus is thought to be economy-wide, because everyone else will be trying to do this, too. The end result is, of course, an immediate depreciation of domestic currency. That will translate into higher domestic nominal prices of both importable and exportable goods (though not necessarily one for one in the short run). If non-traded goods prices are sluggish, but traded

goods prices jump at once by the full extent of the depreciation, equilibrium in the market for domestic money suggests that the exchange rate depreciation will tend to overshoot. This is so because, given sticky non-traded goods prices, the exchange rate has to fall that bit more to bring up nominal money demand to match its higher supply.

Let us now return from these interesting digressions about the open economy to the main theme. Prices will shortly react to these developments, but typically with a lag. If inflation is modest – in the 3 per cent to 5 per cent range, let us say, that Albania has recently been displaying - the lag may be at least a year. The maximum impact on the price level in economies with inflation at this level is usually seen about eight quarters after the initial monetary impulse. In countries where inflation is faster, the lag shortens.

The theory of menu costs suggests that individual nominal prices are held for an interval that is inversely proportional to the two-thirds root of the trend rate of inflation. So if 4 per cent inflation makes firms with market power reprice their products once a year, an eightfold jump in the trend inflation rate, to 32 per cent, would see them switching to changing nominal prices every three months.

The strongest influence on firms' selling prices is probably the unit cost they face for labour, which depends critically upon money wage rates. Theory and evidence concur in the observation that money wage rates respond to expected inflation, roughly one for one, and, in addition, negatively to the level of unemployment. If the evidence of rich countries can be extrapolated elsewhere, it shows that the unemployment effect is lagged, by perhaps six months or so when the trend level of inflation is low, and potentially less than this when it is rapid.

Rapid inflation also appears to make the short-term Phillips curve steeper, reducing the fall in unemployment associated with any temporary (unanticipated) increase in the rate of money wage increase[4].

When it comes, then, to the way in which aggregate demand increases are split between output and price level changes, and to the timing of price level effects, the differences between countries with sophisticated financial systems and those without begin to fade. These differences are very important in the first stage, which relates to the channels linking a change in the monetary policy instrument to changes in aggregate demand. But not later on. And in all economies, whatever the state of their financial development, there is one key conclusion that merits particular emphasis. This is that the long run real effect, upon the time paths of output, or employment, for example, of a change in the monetary policy instrument is going to be negligible. Eventually all the effect of monetary expansion shows up in higher prices. And none in higher output.

Indeed, one can go further. Saying that the monetary policy can have no enduring impact upon output does not mean that what happens to monetary policy is irrelevant for real variables. Persistently faster growth in nominal money can only mean persistently, permanently faster inflation. That implies lower real holdings of money, and a retreat from the benefits that higher real money brings towards time-wasting alternatives such as barter. So fast inflation is a time waster. And if it wastes time that would otherwise be devoted to work, output will fall. And if it wastes resources that would otherwise be devoted to training, to building up human capital, it will waste resources that would otherwise be devoted to growth. Very rapid inflation

[4] Indeed, the character and speed of the transmission mechanism of monetary policy depends greatly upon whether inflation is rapid or slow, perhaps even more on this than on the extent of domestic banking and bond markets. Vinals (2001) and Woodford (2000) have important reflections on this.

in perpetuity could well mean permanently slower economic growth[5].

Furthermore, if monetary policy is fitful, with big random swings, the rate of inflation will become less predictable. Asymmetries may well mean that any short-lived output gain, in the expansionary phase, is briefer and smaller than the output cost associated with bringing inflation back down again. The variance of output is likely to rise, and it is not inconceivable that its average level over time could fall.

There is great uncertainty about the transmission mechanism of monetary policy in advanced countries, and perhaps even more so in developing and transition countries, where the usual interest rate channels are weaker or even absent. Among central bankers and economists alike, there is also much greater modesty now than thirty years ago about what monetary policy can achieve, and in anyone's ability to predict the shocks that all of us would ideally like monetary policy to neutralize. But if there is greater diffidence and realism in accepting what monetary policy cannot do, there is at least the hope that it will be employed more circumspectly and successfully. For developing and transition countries, on the other hand, there is an added burden. What matters does not just involve appreciating how the weakness of interest rate channels alters (standard textbook) perceptions about the transmission mechanism of monetary policy, but monitoring how these perceptions have to keep changing as those interest rate channels deepen and strengthen as time goes on. That is indeed no small challenge.

In countries where financial markets are still in their infancy, the transmission mechanism of monetary policy is not the same as

[5] Barro (1996) presents clear evidence testifying to this.

where they are mature. In the former, interest rates play little role. Official rates may even be dead letters, fixed far below a full market equilibrium (expected inflation plus world real interest plus premia for risk), and a state of financial repression will ensue. In their place, we see a much bigger, explicit role for monetary aggregates, and particularly for the supply of currency.

Here, the concept of portfolio equilibrium, between real currency on the one side and alternative, real assets on the other, is key. An increased nominal supply of currency, at unchanged goods prices, prompts an excess demand for those alternative assets, leading to a jump in their prices and to increased attempts to add to them. Wealth effects and imperfections in capital markets will combine to raise consumption demand. Upward pressure on employment and output will lead to a quickening pace of money wage rises, and then inflation. With a successfully defended fixed exchange rate, all these effects will tend to be undone through payments deficits, reserve losses and subsequent monetary contraction. But a floating exchange rate is liable to register depreciation, pushing up all traded goods prices, as would an enforced devaluation.

As transition and developing countries mature, retail banks assume growing importance. Deposits outpace currency. Loan and deposit interest rates enter the story, creating interest rate channels to supplement the wealth and direct-spending effects noted above. As restrictions on international capital movements fade, exchange rate dynamics start to reflect cross country nominal interest differentials. Central banks come increasingly to focus on changes in policy interest rates as the key instrument of monetary policy. Quantities of money, broad and narrow, become demand determined, of interest chiefly for what they may hint about the private sector's future spending plans. Official interest rates need to be revised swiftly and sharply,

really more than one for one, whenever inflation threatens to rise above (or fall below) its formal or informal target.

Paradoxically, higher nominal interest rates may play two roles. They can furnish evidence that expectations of inflation have risen (an admission that monetary policy has failed to maintain price stability); and yet they are also a device, indeed *the* main device, for bringing inflation back down to target. A not dissimilar paradox applies in countries where official interest rates are yet to become the central instrument of monetary policy. A reduction in real currency holdings can testify to higher inflation expectations (monetary policy has "failed"); but it could also mean that monetary policy has recently been deliberately tightened to reduce inflation, quite possibly with success later on.

Indeed, the analysis of monetary policy is complicated by another paradox: if monetary policy were conducted perfectly, and ironed out all unwelcome disturbances in inflation or output completely, econometric evidence would appear to tell us that it had exercised no effect! It is only when monetary policy is conducted with less than complete success that we are in a position to see the details of how it really works. This paradox applies no less in countries where the financial system is not yet deep and strong enough for policy to work through interest rates, but rather on the supply of currency.

The "headline" elements in the transmission mechanism of monetary policy are the chain linking the monetary policy instrument to aggregate demand, and thence to output, employment, the pace of money wage increases and inflation. These elements are the same everywhere. Where countries differ lies primarily in the first stage. What matters is whether the instrument is an official nominal interest rate on the one

side, or a monetary aggregate (or device to control it) on the other – and in the nexus that takes us from such policy intervention to the subsequent changes in aggregate demand. In larger, richer countries, interest rates are the key device. Among transition and developing countries there is great diversity. All (or almost all) are moving towards an interest-rate control system based on domestic banks and bond markets, and some measure of financial deregulation, but at very diverse speeds. And some are only at the very start of that hazardous but, one hopes, ultimately rewarding journey.

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