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Monetary Transmission and Monitoring of the Real Economy in Uganda

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Report to the Governor of the Bank of Uganda
February 13, 2003

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I. Introduction

Lack of timely, comprehensive, and accurate data on the real economy in Uganda is a major constraint in the monitoring of real-sector activity and assessment of the impact of monetary, exchange rate, and fiscal policies on real economic growth in the country. Currently, the Uganda Bureau of Statistics compiles annual GDP statistics in addition to the monthly index of industrial production, annual and monthly headline and underlying inflation rates and a limited array of social and poverty indicators. With the exception of inflation rates, these series are published with a long time lag, and some are only available on either a calendar or financial year basis. Therefore, they cannot permit any timely assessment of the current state of the real economy in Uganda. Consequently, it has been very difficult for the Bank of Uganda and the Government to gauge the effects of its policies on real economic activity. It is against this background that the Bank of Uganda proposed that the services of an outside consultant should be requested.

In September last year a contract between the Governor of the Bank of Uganda, Mr. E. Tumusiime-Mutebile, and Professor Tryggvi Thor Herbertsson at the University of Iceland was signed. The contract stated the mandate, which included clarification of the monetary transmission mechanism in Uganda, putting forth ideas on how to improve monitoring of the real economy in Uganda, and the identification of potential instruments for the conduct of monetary policy. To launch the project the consultant visited Uganda with an assistant, Axel Hall from the University of Iceland, the second week of November to conduct interviews, collect data, map the financial system, and identify the exact needs of the Bank of Uganda. The contract also stated that four months after the visit, the consultant should visit Uganda for a second time to deliver the proposals, discuss findings, and negotiate further work if required. This report contains the findings of the mission and proposals for reform.

Reykjavik, February 13, 2003

Tryggvi Thor Herbertsson

II. Monetary Policy in Uganda: A Brief Overview of the Policy Challenges and the Scope of Monetary Policy

II.1 The Reserve Money Program

The Reserve Money Program has guided the formulation and conduct of monetary policy since 1992-1993. This program is based on the relation between money, broadly defined, and the money base (high-powered money). The relation is relayed through the multiplier effect of financial intermediation and the propensity of people to hold cash on hand. The Reserve Money Program involves the mapping of intermediate targets, the forecasting of factors affecting supply and demand for base money and the design of monetary policy to ensure consistency with policy targets. When determining the demand for base money, three steps are followed:

1. Overall macroeconomic objectives on desired GDP growth, inflation, and balance of payments are defined.
2. Monetary growth is projected as consistent with the macroeconomic objectives, given assumptions for velocity.
3. The growth of base money is then projected to be in line with broader monetary aggregate and inflation. The annual growth target for base money is converted into monthly targets that reflect seasonality of the demand for money.

The targeting of base money reflects the fact that timely information on the real economy is very limited. Furthermore, it has been shown in the past that the velocity of money fluctuates and can therefore cause further problems. The main policy instruments of the Bank of Uganda are:

- Open market operations like the Treasury Bills, and BoU bills.
- Cash reserve requirements.
- Bank rate to regulate commercial banks' lending from the BoU.
- Rediscount Rate to regulate the liquidity impacting Treasury Bills.
- Interventions in the FOREX market.
- Repurchase agreements.

At the moment, the BoU holds regular meetings forecasting liquidity in the Ugandan financial system, and, based on these meetings, TBs are auctioned off, mainly to mop up liquidity and sterilize flows of donor funds into the economy.

II.2   The background

The preceding decade has witnessed enormous changes in the economic environment in Uganda. Government printing of money as a source of revenue was halted in 1992-1993 with the adoption of the Reserve Money Program, and inflation was brought down from a three-digit to a single-digit inflation rate. During the same time, annual growth has been steady at 4.5-10.6%. The government's strict adherence to maintaining macroeconomic stability and the prudent financing of fiscal imbalances have led to lower inflation than before. This stability, among other things, has lead to an increased flow of donor funds for poverty reduction programs, and donor agents are to intensify their presence in the near future. These flows constitute around 10% of GDP and constitute a very significant amount of the government budget (43% in 2001). The aid flows have become a permanent feature of the Ugandan economy and are likely to continue in the near future. The foreign aid serves to balance a budget deficit and is mostly spent on domestic goods and services. The impact of these donor funds in poverty reduction cannot be overstated; however, these flows cause short- to medium-run instabilities, as these increases in expenditures are inflationary. Poverty reduction expenditures do not add to immediate productivity although they increase output capacity in the long run, and expenditures consequently show up as inflationary. As a result, there is a constant need for sterilization of donor inflows. This sterilization is twofold: through contractionary monetary policy (via open market operations, through new issues of Treasury Bills, by varying bank rates or on the foreign exchange markets through sales of foreign exchange) or as a non-poverty reduction, contractionary fiscal policy. Given the large share of donor funds in the government budget and political realities, sterilization solely through the budget is extremely difficult. The burden of sterilization, however, needs to be shared by fiscal and monetary authorities. The monetary and exchange rate policies are also problematic:

- When inflows are spent on local goods and services via government expenditure, donor flows are sterilized through sale of the foreign currency. The sterilization will mop up the liquidity injections and cause appreciation of the Shilling. This deters export growth and favours increased imports at the expense of local production. Such sterilization will hamper economic development and growth.

- In order to mop up the liquidity through contractionary monetary policy, the Bank of Uganda constantly needs to issue more TBs than are redeemed. The government budget bears the interest cost of these issues, which exceeded 5% of government revenue in 2000-2001. The constant increases in TB issues are achieved through high interest rates. These high interest rates are in effect causing two kinds of damage. They crowd out private investment, and the interest payments serve as a government subsidy to banks, which then are in part relieved of their ordinary function of serving as coordinators of lending and saving. This reduces efficiency in the financial system and has an adverse effect on economic growth.

The temporary ills caused by donor flows are, however, a light burden in light of the potential welfare effects and long-run growth opportunities for the Ugandan economy that are likely to follow these poverty reduction programs. The task, however, facing current policy is to minimize the side effects of donor flows. Choosing between two policy options, it is generally preferable to choose the one entailing less price response. The greater the response, the greater the distortion. This general rule can serve as a good guide for choosing between alternative instruments. This is more or less the advice of the IMF and would generally be the advice of most economists. The choice of a possible mix of policy instruments therefore necessitates three types of actions:

- Choice of the mix of instruments in the current environment of rules, procedures, and economic realities.
- Changes in procedures and introduction of new instruments for monetary policy.

- Changing institutional settings to widen the impact of monetary policy deepening the transmission mechanism of monetary policy and thereby reducing price distortions resulting from current economic policy.

Of course, one also has to keep in mind that the numbers of instruments and policy objectives have to be equal. Within current constraints it has been more and more difficult for the Bank of Uganda to mop up the excess liquidity in the market. If the bank intends to reduce interest rates, it needs to hold back on the money markets and focus on foreign exchange intervention, which, other things being equal, leads to appreciation of the Shilling. Thus, there exists a trade off between intervention on the money market and on the foreign exchange markets. The money markets have been characterized by high volatility in interest rates. This is detrimental to the financial markets as it prevents economic agents from decision making over the future horizon. This can have an adverse effect on long-term lending and capital market development.

II.3   Improving current practices

The problems of the policy mix have led to reconsiderations and emphasis on changes in procedures and development of new instruments. The duality of the role of the Bank of Uganda in monetary policy has been pointed out before by outside consultants, i.e., the role of its day-to-day conduct of monetary and exchange rate policies and its actions in mopping up the excess liquidity, i.e., sterilization of donor funds. Essentially the bank has only two instruments at its disposal for sterilization purposes, intervention in the exchange market and intervention in the money market. At any time the choice of intervention should be based on minimizing the price distortions created. Decreasing these distortions can be attained through improvement in current practices or via modifications of existing markets or introduction of new ones. When the bank intervenes in the exchange market for sterilization purposes, it wants its impact to be minimized. Alternatively, when the bank intervenes for exchange rate purposes, it wants its impact to be maximized. It is therefore sensible, as has been pointed out, that the bank's stance in its conduct of sterilization programs be known beforehand and clearly signalled to the market in a coherent and transparent manner. On the other hand, foreign exchange interventions should have an element of surprise and not be announced in advance. These interventions are designed to signal

the market on the bank's stance on current exchange rates and sway investors (speculators) in the bank's desired direction. In April 2002, the Bank of Uganda changed the modalities of its presence in the foreign exchange market. Specifically, it distinguished between sterilization and intervention operations, where the former was aimed at removing liquidity injected by donor-funded government expenditure, and the latter aimed at mitigating excess movements in the exchange rate.

The money markets are characterized by constant issuance of new TBs to absorb liquidity. One possible source of the volatility in interest rates probably stems from the fact that the lag between the timing of expenditures and the mopping up activity of the Bank of Uganda are not simultaneous and equal in size, and that the information on liquidity in the system is not complete. The volatility of short-term interest rates leads to volatility in the whole spectrum of interest rates. It has been recommended that the issue of TBs deal solely with the long-term liquidity management, and short term instruments with maturities of one or two weeks be used to conduct the day-to-day policy of the Bank of Uganda. These instruments will then serve as the key means to manage short-term liquidity. In this respect the introduction of and emphasis on the REPO market in day-to-day operations are extremely important. Today, monetary policy is conducted through a mix of net issues of Treasury Bills, REPOs, and sales of foreign currency.

The central bank conducts its monetary policy in view of the Reserve Money Program. This is done by forecasting overall liquidity in the economy (M2), using assumptions of velocity and taking into account output growth projections, as mentioned earlier. The link between the M2 and base money is via an estimate of the money multipliers. The target path forms a target line. The multiplier and M2 are adjusted monthly for seasonal factors to derive a seasonally adjusted desired path for reserve money on a monthly basis. This operational target is then linearly distributed over each working day of the month. The inherent problem with this strategy is the stability of money demand, the stability of the money multiplier, and changes in seasonal factors over time. The instability in money demand could be a sign that it is more preferable to focus more explicitly on movements in inflation rather than on base money whose linkage with M2 is an unstable one. However, if inflation targeting were to be adopted, it would have to take into account that many consumer goods in

Uganda are subject to exogenous conditions, such as weather, and would therefore have to be excluded as such price movements are outside the arena of monetary policy.[1] Furthermore, it is not clear whether financial markets have been developed enough to meet the necessary requirement for inflation targeting. The effective transmission of monetary policy to the real economy is blocked to a large degree, and there is not yet a mechanism in place to systematically assess expected future inflation. For inflation targeting to be adopted, these requirements must be fulfilled along with the availability of real sector indicators to monitor the real economy.

The structural problems in the financial market are in constant need of redress and attention. There are a number of issues that monetary authorities need to tackle. Commercial banks have gone through heavy restructuring during the last decade. However, the problem remains that there is still a lack of public confidence in the banking system, reflected by the wide use of cash rather than cheques as a means of payment and the high ratio of currency in circulation. This ratio was at 41% in 1990 and had decreased by 10 percentage points by 2000, and it continues to be relatively high. This heavy use of cash is a problem as it reduces the transmission effect of monetary policy via a lower multiplier effect. When the public gains more confidence in the financial system, the use of cash is likely to be reduced.

High intermediation costs in the financial system, along with failure to achieve competitiveness, have probably been the main source of the wide spread between the lending and deposit rates. Monetary policy generally does not have much effect on the spread between lending and borrowing rates. To reduce these spreads the microeconomic circumstances need to be looked into.

Reducing these intermediation costs involves, among other things, adopting efficient operation procedures in the commercial banking sector, constant improvement in standards of accounting and auditing practices, creation of incentives to reduce excess reserves held by banks, encouragement of technological investment, e.g., interlocking computer network systems. The practice of holding excess reserves raises spreads. If the inter-bank market becomes more active and securities become more liquid, it is

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[1] See Atingi-Ego, M. (1999), *Inflation Targeting: Considerations in Uganda's Case.*

likely that excess reserves will gradually decrease, which also has implications for the reserve ratio becoming an active instrument. At the moment there are already signs that the inter-bank is becoming more active. Segmentation in the form of weaker banks obtaining credit at higher rates seems to be decreasing, as banks now seem to be lending to each other at uniform rates with volumes increasing.

Finally, spreads between loans and deposits will probably be reduced via the introduction of further competition by attracting foreign players into the market that bring with them expertise, stronger management culture, better procedures, and stricter credit discipline (indeed the banking sector had a very large foreign presence prior to 1972). While the concentration of the bank markets persists, it is very likely that the spreads will linger. The issue of high spreads should remain a priority as they can obstruct financial sector development and form an effective block to monetary and credit policies.

II.4   Structural issues and reforms

In essence banks are unable to thrive in the absence of enforcement of property rights. The culture of non-compliance with loan contracts, wilful default, and inefficient commercial courts or tribunals and inefficient enforcement of collaterals have insidious effects on the banking business and can be a contributing factor to high intermediation costs and the transmission of monetary policy. These structural imperfections have hampered commercial bank operations in Uganda in many ways, namely:

- Lengthy and costly legal processes.
- Lack of secondary markets for seized collaterals in rural markets.
- Misleading valuation by property appraisers and forged titles of ownership.
- Auctioneers absconding with sales proceeds.
- The non-sharing of information on defaulters.

Some of these issues are in the process of being tackled or have already been addressed. During a one-day workshop for MPs in Uganda, on Monday, August 19, 2002, the issue of structural reforms was brought up in detail, and the following

reforms to address problems of high lending rates and intermediation margins were mentioned as being prospective or having already been introduced.

- The minimum capital requirements have been raised and made uniform for both domestic and foreign banks. The increased capital base is to protect customer deposits.

- There is a program underway to strengthen the legal system in general and the commercial court in particular to enforce contracts, improve loan recovery and reduce forgeries and fraud. In this regard, at the time of the address, The Draft Financial Institutions Statue 2000 was before Parliament for enactment.

- The establishment of a Credit Reference Bureau is being set up at the Uganda Institute of Bankers to remove the information asymmetry between lenders and possible wilful defaulters.

- It is to be made mandatory for commercial banks to publish all charges and interest rates weekly. This is to increase transparency, foster competition, and reduce information asymmetry.

There were other measures in addition to these. The importance of these measures lies in the possible efficiency gains that are likely to result from such structural reforms. It must be remembered that for these structural amendments to be successful, constant monitoring, review, and revisions need to be executed. Furthermore, it is vital that a dialogue is kept open with the commercial banks so that if further remedies are needed, the identification stage will be short so that adjustments can be swiftly carried out to circumvent further costs due to these problems in the future.

At the issue of this report it was announced that to promote the secondary market of government securities, the Bank of Uganda would adopt a Primary Dealers System.[2] Commercial banks, which have met specific criteria, will be licensed to operate as primary dealers in Government securities, and thereafter the Bank of Uganda will conduct all open-market operations only through primary dealers. Furthermore, to

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[2] Primary dealers in government securities markets have an obligation to make a market in secondary markets in exchange for certain market priviliges accorded to them by the Bank of Uganda.

strengthen the secondary markets the Bank will auction TBs every other week instead of weekly. This will serve as a good first step to extend the scope of monetary policy in Uganda.

In conclusion, for all of the policies that have been mentioned here to be fruitful, much will rest on the ability of policymakers to maintain macroeconomic stability so that the Ugandan people can reap the full rewards of the structural aid and capitalization of the economy of Uganda.

III.   The Monetary Transmission Mechanism: Theory and Implications

III.1   Introduction and overview

Information on real sector development is limited, and consequently the Bank of Uganda policy actions can only take limited account of the real economy in its policy decisions. In addition, the effects of monetary policy on the real economy emerge only after a long time lag. To better understand the effects of monetary policy on the real economy and inflation, we have drawn a simple schematic representation of a monetary transmission mechanism in an economy with a well-developed financial market. The reason that the schematic representation is of a fully developed market economy is that it allows us to direct attention to where there are blocks in the monetary transmission in Uganda and also to pinpoint the differences between the Ugandan monetary transmission mechanism and one with a fully functional hypothetical financial system. These differences can also serve as a guide to possible reforms to implement if the aim is to extend the effect of the monetary transmission mechanism in Uganda and thereby increase the effect of monetary policy on the real economy. Furthermore, at this moment many structural and procedural modifications are taking place in the financial system; therefore, venues of the transmission mechanism not seen in the past are likely to be opened in the near future. As will emerge, the transmission mechanism is a fairly complex process, and the impact may vary from one time to another.
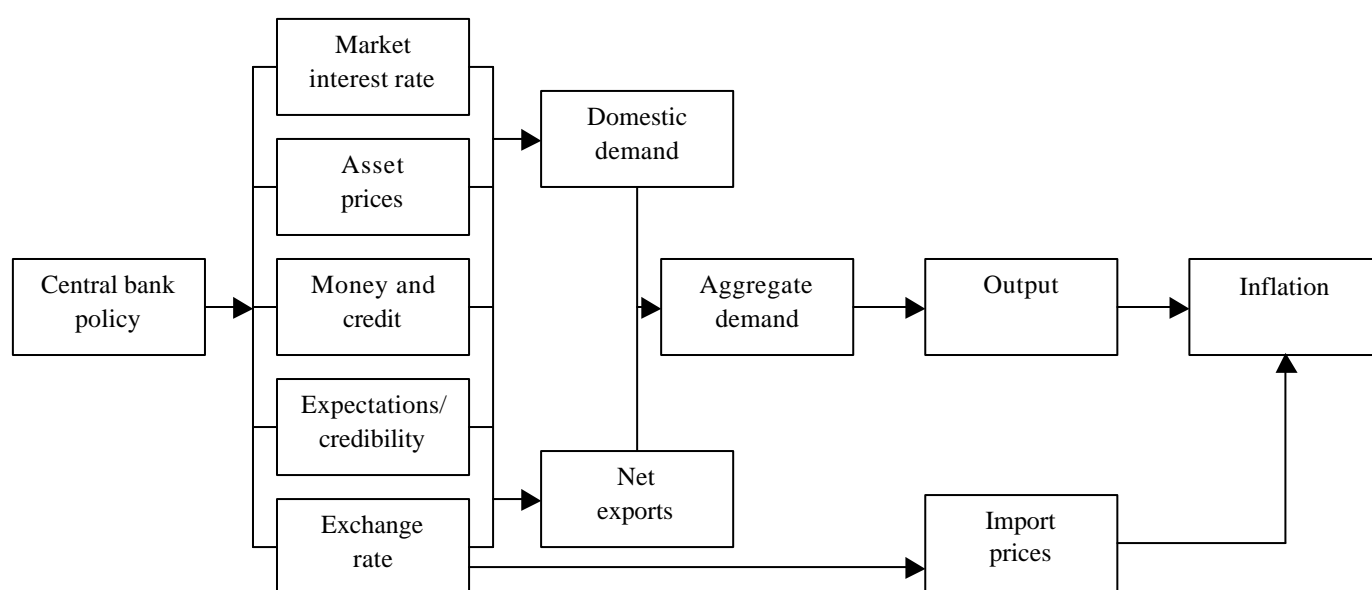
The reason that central banks can affect interest rate formation in the economy in general is that they have monopoly power in supplying money, i.e., base money that comprises notes and coin in circulation and the reserves of financial institutions at the central banks. By setting the price of base money, i.e., the interest rate at which financial institutions can borrow short-term capital from central banks, they are able to influence the volume and price of liquidity in the financial system, which will in turn ordinarily affect interest rate formation in the economy. Central bank interest rate decisions affect the whole spectrum of interest rates, liquidity in the financial system, the quantity of money and bank credit, exchange rates, other asset prices and, last but not least, market expectations about the future development of all these variables. All this, in turn, influences both the consumption and investment decisions of individuals and firms, and thereby aggregate demand and, ultimately, inflation, as shown in the figure above.

III.2   Traditional Interest Rate Channel

According to standard monetary theory, when liquidity is injected into the financial system, it can raise the expected price level and hence expected inflation, thereby lowering the real interest rate. Households take the opportunity of lower real interest rates to increase investment in consumer durables, such as automobiles or refrigerators or resident housing. Firms also take on investment projects with lower rates of return and step up hiring and training of new workers (if training is an investment decision). Increased demand eventually increases output above potential output, and inflation pressures consequently increase. This is the Keynesian view of the world we live in.

In Uganda interest rate interventions have operated through mechanisms, such as open market operations, the discount rate, and the rediscount rate. The 91-day Treasury Bill is the key market instrument, but it has not been effective as a channel of monetary policy. There are various reasons for this:

- The securities market is dominated by commercial banks, and conditions in the financial sector have on various occasions dominated the market conditions more than monetary policy signals.

- Changes in the TB rate and discount rate do not seem to lead to significant changes in commercial bank rates. It has been pointed out that it may be due to high intermediation costs by banks.[3]

The relationship between central bank rates and commercial interest rates is generally described as the main channel of monetary policy. The apparent lack of causality between the two rates creates a block in the monetary transmission mechanism in Uganda. The block seems mainly to be due to constant new issues of high-interest-bearing Treasury Bills. Commercial banks can simply avoid the usual loan-default-risk that all loan institutions have to bear by simply investing deposits in TBs, using the difference between interest on deposits and interest on TBs to pay for operating costs and profits. Buying Treasury Bills is an investment activity in its own right, instead of buying or selling securities for the purpose of transmission via the usual intermediation of funds from and to the market.

The other channels of the transmission mechanism fall into two basic categories: those operating through asset prices and those operating through operating through asymmetric information effects on credit markets, often referred to as the credit view.

III.3 Asset prices

Monetarists generally object to focusing on only one asset price, i.e., the interest rate. Monetarists envision a transmission mechanism in which other relative asset prices and real wealth transmit monetary effects onto the economy. Asset prices can be affected through three channels. The first one is James Tobin's theory on how monetary policy can affect the economy through its valuation of stocks. The second can be traced to Franco Modigliani's life-cycle theory of consumption. The third asset price that monetary policy affects is the exchange rate and consequently, net exports, which we will leave for a special section due to its importance for monetary policy in Uganda.

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[3] The link between monetary policy and lending rates is empirically tested in: Nannyonjo, J. (2000), Financial Sector Reforms in Uganda (1990-2000), Interest Rate Spreads, Market Structure, Bank Performance and Monetary Policy, PhD.-Thesis.

III.3.1   Tobin's *q* theory

The *q* here is defined as the ratio of the shadow price of capital to its replacement costs. If *q* is high, new capital is cheap relative to its replacement value, which makes investment profitable. Monetary policy can then affect investment and the real economy by affecting the shadow price of capital: Expansionary monetary policy reduces interest rates, raises the shadow price of capital and makes investment more profitable. A well-developed stock market makes this channel more potent since the market value of firms in an efficient stock market is a good proxy for the shadow price of the existing capital stock: When the market value goes up relative to the replacement cost of capital investment becomes more profitable. In this case, companies can issue stock and sell it at a high price compared to the price of the capital equipment that they are buying. Investment spending rises because firms can buy new investment goods with only a small issue of stock. When the money supply is increased, the public finds that it has more money than it wants; it spends it on, among other things, the stock market and, equity prices consequently rise, increasing *q* and thus investment and finally output and inflation. Furthermore, there may also be wealth effects on consumption.

Only five companies are listed on the Ugandan stock exchange, and direct equity holdings of the Ugandan population are almost non-existent. It can be said with a confidence that monetary policy does not increase investment and consumption through this channel in Uganda, and transmission effects that have been recognized through stock and bond markets remain weak. However, the stock exchange is deepening. Trading at the Uganda Securities Exchange is slowly gaining momentum. The general increase in turnover and the number of shares traded are a sign that additional products have captured investors' interest. Recently there has been a successful offer of 20% of the shares of Bank of Baroda to the Ugandan public. The Capital Market Authority, the regulator of the Uganda Securities Exchange, is very active in promoting and giving advice to prospective investors. In the future this channel is likely to play some role in the transmission of monetary policy to output and inflation, although effects like those seen in more developed economies are not likely in the near future. This channel shows the importance of nurturing a weak stock market with the right institutional settings and structure in place so that confidence in

equity investment can form a viable option for saving among the relatively better off people of Uganda.

III.3.2   Wealth effects

The basic premise of the life-cycle hypothesis of consumption is that consumers smooth their consumption over their life cycle. An important component of consumers' lifetime resources is their financial wealth, a major component of which is common stock. When interest rates go down, stock prices rise, and the value of financial wealth increases, thereby increasing the lifetime resources of consumers, and consumption should rise.

The wealth in Tobin's q channel allows for a general definition of equity so it can be applied to the housing market, where housing is equity. An increase in house prices that raises their price relative to their replacement costs leads to a rise in the housing q, thereby stimulating the building of residential housing. Similarly, housing and land prices are extremely important components of wealth, and so a rise in these prices increases wealth, thereby raising consumption. Monetary expansion, which raises land and housing prices through Tobin's q and wealth mechanism described here, thus leads to a rise in aggregate demand.

The wealth channel might be important in Uganda. Housing and land prices, especially in urban areas like Kampala, are likely to rise above replacement costs as a consequence of expansionary monetary policy, thus increasing the lifetime wealth and consumption of people owning houses and land. In rural areas this wealth effect applies especially to land but less so to housing, as urbanisation developments might deter wealth effects from raising housing prices.

III.3.3   Money and credit

Dissatisfaction with conventional economic theory that interest-rate effects explain the impact of monetary policy on expenditures for durable assets has led to a new explanation based on the problem of asymmetric information in financial markets. This theory, referred to as the credit view, proposes that two types of monetary channels arise as a result of information problems in credit markets: those that operate

through effects on bank's lending and those that operate trough effects on firms and households' balance sheets. This might be the most important block in the monetary transmission mechanisms in Uganda as it seems that lending rates are not responsive to monetary authority decisions, which raises issues, such as the structure of the Ugandan financial system and high intermediation costs, as discussed in Section II.4.

Traditional Keynesian models do not account for financial intermediaries as, by assumption, financial markets are perfect, and all funds are perfect substitutes. According to the credit view, financial intermediaries play an important role in the transmission of monetary policy due to informational imperfections, which prevent firms from substituting between alternative forms of credit. A significant credit channel is important as it implies that monetary policy can affect investment, and aggregate demand and lending can then serve as an indicator of monetary policy.

The credit channel is particularly relevant for the Ugandan economy as almost all borrowers are dependent on bank lending due to the underdeveloped nature of capital markets. Furthermore, as both consumers and firms have limited access to loans in the commercial banking system, effective credit rationing exists. The banking system has been burnt by past experience with defaulted debt, and though the banking system has undergone a restructuring, bad debts still remain a problem in bank portfolios. Banks seem to have become more risk averse towards lending to the private sector. The TB arrangements provide them with a nice low-risk cushion. Banks can simply take part in TB auctions, and high discount rates provide them with income more than sufficient to cover operating costs as well as reasonable profits – auctions of TBs crowd out private sector credit. In addition, lending rates are such that moral hazard and adverse selection are very likely to be a major problem in the banking system. This happens as the quality of the pool of borrowers changes adversely in favour of those with high default risks. This probably further discourages the banks from increasing loans as the money supply is increased and consequently makes the banks reluctant to increase credit as liquidity is increased in the face of high lending rates.

III.3.4 Bank lending

Expansionary monetary policy, which increases bank reserves and bank deposits, increases the quantity of loans available. Because many borrowers depend on bank loans to finance their activities, this increase in loans will cause investment (and possibly consumption) spending to rise. Monitoring of borrowers is difficult, and banks therefore set interest rates that do not necessarily clear the markets. A bank that faces excess demand will not necessarily raise the loan rate or increase collateral requirements to eliminate it to prevent the adverse selection problem. In a similar way a bank with an excess supply of loanable funds will assess the profitability of loans attracted by lower interest rates. Therefore, there does not have to be a direct link between lending rates and bank rates.

An important implication of the credit view is that monetary policy will have a greater effect on expenditures by smaller firms, which are more dependent on bank loans, than it will on bigger firms, which can access the credit market directly through stock and bond markets.

In countries like Uganda with underdeveloped stock markets, big firms cannot raise credit by issuing new stock or bonds like their counterparts in the developed countries – markets are normally too small or even non-existent. Therefore, firms have to rely on traditional bank lending or financing abroad. As real-interest rates have been very high in Uganda in the past, and banks have been reluctant to loan to businesses, possibly due to a long history of bad debt in the country, big firms and multinationals often finance themselves abroad. The pressure is possibly increasing as interest rate differentials between Uganda and the rest of the world have been widening as economic growth in the US and Europe has slowed and consequently world interest rates have declined. Furthermore, loans between companies also serve as a source of credit in Uganda.

Smaller firms and households only have limited access to loans, and if they do have it, the lending rates are very high. High rates create a vicious circle in the credit system. Only firms with high-return (and consequently high-risk) projects can stand high interest rates. Projects bearing less risk and having lower returns are not carried out

since they will not be profitable under a high interest rate regime. On the other hand, high-risk projects can withstand high capital costs, and therefore only high-risk projects will apply for loans. This is the adverse selection problem in a nutshell. Under current TB arrangements banks are much better off investing in high interest bearing low-risk TBs than high interest bearing high-risk loans to the private sector.

In lending there seems to be a selective allocation of credit in that less is being lent to the agricultural sector. In the rural parts of Uganda micro-finances play a big role in financing small investment projects that potentially raise productivity in agriculture and increases the yield of crops. Furthermore, micro-finances encourage off-farm activities, which possibly have higher returns than traditional farming activities. In normal bank practices collateral is one of the main instruments for limiting the impact of asymmetric information, especially the temptation for people not to repay a loan. Given the fact that the poor often have very few possessions, the provision of collateral is often hampered by the weak state of property right enforcement, as discussed in Section II.4. Although micro-finances bear very high interest rates, they seem to have overcome information problems, such as adverse selection and moral hazard problems with extensive monitoring of borrowers and enforcement of contracts although at very high costs, as reflected in their interest rates. Due to these high interest rates monetary policy has an insignificant effect on micro-finances, but that could change if they were encouraged to take deposits and evolve into some kind of savings and loans associations. This would then in the future affect the portfolio behaviour of rural households and extend the transmission of monetary policy into the rural areas. At first glance this seems a good option as the micro-finances seem to have solved the information problems associated with the business of lending money.

Currently there seems to be a limited connection between monetary policy, lending rates, and lending, both in rural and urban areas in Uganda, resulting in limited effects of monetary policy on the real sector in the country.

III.3.5   Balance sheet of firms

The lower the net worth of business firms, the more severe the adverse selection and moral hazard problems are in lending to those firms. Lower net worth means that

lenders in effect have less collateral for their loans, and so potential losses from adverse selection are higher. A decline in net worth, which raises the adverse selection problem, thus leads to decreased lending to finance investment spending. The lower the net worth, the greater the moral hazard problem because it means that owners have a lower equity at stake in their firms, giving them more incentive to engage in risky investment projects. Since taking on riskier investment projects makes it more likely that lenders will not be paid back, a decrease in businesses' net worth leads to a decrease in lending and hence investment spending.

Monetary policy can affect firms' balance sheets in several ways. Expansionary monetary policy that causes a rise in equity prices along lines described earlier raises the net worth of firms and so leads to higher investment spending and aggregate demand because of a decrease in adverse selection and moral hazard problems.

This is unlikely to be a channel for monetary policy effects in Uganda, as discussed in the section on Tobin's q theory above. However, if the stock market takes off in the near future, this might become an important channel for monetary policy in Uganda.

III.3.6   Cash flow channel

Another balance sheet channel operates through its effects on cash flow. Monetary policy, which lowers nominal interest rates, also causes an improvement in firms' balance sheets because it raises cash flows. This causes an improvement in the balance sheet because it increases the liquidity of the firm (or household) and thus makes it easier for lenders to know whether the firm (or household) will be able to pay its debt. The result is that adverse selection and moral hazard problems become less severe, leading to an increase in lending and economic activity.

Credit rationing occurs when borrowers are denied loans, even when they are willing to pay higher interest rates. As mentioned before, this is because those with the riskiest investment projects are exactly those who are willing to pay the highest interest rates. When expansionary monetary policy lowers the interest rates, less risk-prone borrowers make up a higher fraction of those demanding loans, and so lenders are more willing to lend, raising both investment and output.

As mentioned earlier, interest rates on loans in the commercial banks do not seem to be connected to the monetary policy of the Bank of Uganda, causing this channel of the transmission mechanism to be blocked in Uganda. In conclusion, adverse selection and moral hazard problems become less severe in Uganda during monetary expansion as theory predicts although loans do not increase to the extent predicted due to the reasons discussed above.

III.3.7   Unanticipated price level channel

Because debt payments are contractually fixed in nominal terms, an unanticipated change in the price level lowers the value of firms' liabilities in real terms, but should not lower the real value of assets. Monetary expansion that leads to an unanticipated rise in the price level therefore raises the real net worth of indebted households and firms, which decreases adverse selection and moral hazard problems, thereby leading to a rise in investment spending and aggregate output.

The view that unanticipated movements in the price level have important effects on aggregate demand has a strong tradition in economics. This channel potentially provides an important connection between monetary policy conducted by the bank of Uganda and the real economy.

III.3.8   Household liquidity effects

In the liquidity effects view, balance sheet effects work through their impact on consumers' desire to spend rather than on lenders' desire to lend. Because of asymmetric information about their quality, consumer durables and housing are illiquid assets. If, as a result of a bad income shock, consumers need to sell their consumer durables or housing to raise money, they would expect a big loss because they could not get the full value of these assets in a distress sale. In contrast, if consumers held financial assets, such as stocks and bonds, they could easily sell them quickly for their full market value. Hence, if consumers expect a higher likelihood of finding themselves in financial distress, they would rather be holding fewer illiquid assets and more liquid financial assets.

When consumers have a large amount of financial assets relative to their debt, their estimate of the probability of financial distress is low, and they will be more willing to purchase consumer durables and housing. When stock prices rise, the value of financial assets increases and consumer durables will rise because consumers find themselves in a more favourable position. This is another transmission mechanism for monetary policy, operating through the link between money and equity prices.

Since relatively few saving vehicles, such as stocks, exist on the Ugandan financial market, this is not a likely source of great effects of monetary policy on households. However, as the stock exchange grows, this might become an important channel for monetary policy.

III.4 Exchange rate effects on net exports

Possibly the most effective transmission mechanism of monetary policy of the Bank of Uganda is the effect of changes in the exchange rate of the Shilling on exports and imports. The first effect is through interest rates. As interest rates fall, domestic papers become less attractive, compared with foreign papers; the Shilling depreciates, and funds start flowing out of the country, further depreciating the Shilling. The depreciation should be large enough for the expected return on domestic and foreign assets to be equal. Otherwise unexploited arbitrage opportunities would exist. At any time, the interest rate differential between comparable domestic and foreign securities should therefore correspond to the expected change in the domestic currency over the maturity of the investment, plus a risk premium that investors demand for investing in domestic assets. This depreciation will furthermore make domestic goods relatively cheaper than imported goods and consumption shifts to domestically produced goods, which increase demand for those goods. Thus, exporters now get more Shillings for their export. This causes a rise in net exports and economic activity increases.

The second effect stems from sterilization practices of the Bank of Uganda. To mop up liquidity in the financial system that can be traced to government expenditures on poverty reduction measures financed by inflow of donor funds, the Bank sells a steady flow of US dollars in the FOREX market, which prevents depreciation of the Ugandan Schilling.

Recently the Bank of Uganda has observed an interesting channel between the FOREX markets and intermediation services in Uganda. The interest rate differential between rates on TBs and world interest rates are starting to attract offshore players – foreign investors are coming into the market and buying TBs and simultaneously making forward contracts on exchange markets for hedging purposes. This is a very good development and shows increased trust in the ability of the Bank of Uganda to maintain its current monetary stance.

III.5 Expectations and credibility

In addition to the above, consumer and business expectations, credibility of the monetary policy regime, and political stability also play a big role in determining the effects of monetary policy on the real economy. The effects are much greater in an economy were stability, credibility, and consistency of the monetary policy regime have prevailed for some time than in an economy prone to regime changes and a weak central bank. Expectations on future actions of the central bank matter very much, e.g., how committed it is in its endeavour to fight inflation and decrease uncertainty about the future. A credible monetary policy leads to more investment of both firms and households than would be the case in an unstable, uncertain economy. Macroeconomic stability and effective financial sector regulation and supervision are in some respects a necessary condition for the transmission channel of monetary policy to become fully functional.

In addition to expectations of bank actions, agents' expectations in the market of the future developments of, for example, economic growth and inflation are a major determinant of the ultimate impact of monetary policy actions. Monetary policy can affect these expectations and the confidence with which they are held. Such changes in expectations influence the behaviour of financial market participants and other agents in the economy, including individual's expectations about employment prospects and firms' expectations about future sales and profits. Monetary policy can thus affect the behaviour of firms and individuals through their expectations; such effects may even become evident before these, which are channelled through the price and volume of various financial assets as discussed above. Even expected monetary

policy decisions can affect behaviour without actually being implemented. However the precise impact of monetary policy on expectations is difficult to ascertain precisely and probably varies from one time to another.

If the public does not believe in a central bank policy, or if actions of the central bank lack credibility, the effect can in some cases have unintended consequences. This underlines the importance of credible and transparent monetary policy.

IV.   Monitoring the Real Economy

IV.1   Monitoring

Conducting monetary policy is a difficult business. Not only is the transmission mechanism uncertain, but also information on economic activity is difficult to obtain and interpret. The degree of complexity increases, the fewer the data the policymaker has to base his decision on. Consequently, the lack of timely data on the real economy is currently a major constraint in the monitoring of real sector activities and assessment of the impact of monetary policy in Uganda.

The main measure of real sector economic activity is GDP, whose fluctuations are the most important gauge of good times or bad times that one has. In Uganda projections of GDP are usually made in advance of the pending fiscal year. The projections are mainly done by the Ugandan Bureau of Statistics and will then be revised by the Treasury and the Bank of Uganda. The projections are not based on any formal statistical or macroeconometric models but rather based on experience and educated guesses. These projections, however, are hampered by severe lack of real-time data. In general, the problem with using GDP figures as a guide is that constructing national accounts is time-consuming, and consequently GDP figures are often not timely enough to serve as a road map for conducting monetary policy. This can to some extent be overcome by using quarterly GDP figures, but the caveat is that quarterly figures are normally not accurate enough to use for policymaking until several quarters have passed, and therefore they are not very useful in conducting day-to-day policy. Furthermore, GDP is more of an accounting measure than an indicator of things to come. However, such data have turned out to be very important and valuable to use in all kinds of statistical models that policymakers use to support policy decisions as well as to estimate output gaps (see Appendix B for a discussion on different methods to estimate output gaps and an estimate of the Ugandan output gap 1981-2000). Consequently, other indirect measures serve better as a signal of things to come and are more easily obtained.

The emphasis so far in the Real Sector Section of the Research Department at the Bank of Uganda has been on identifying indicators to monitor the real economy. At

first the focus was on data compiled by the Uganda Bureau of Statistics, but the severity of the time lag to publication of indicators made them almost unusable for the conduct of monetary policy. The Real Sector Section has tried to survey manufacturing production by visiting major industries. These on-the-spot surveys have proven helpful to some extent, as they have given information on production levels as well as information on the outlook for forthcoming quarter. The surveys have shown that employment levels are stagnant and do not fluctuate very much. In addition, the level of inventories has not been shown to be an important indicator, as it seems to be mostly affected by seasonal factors.

IV.2   Real sector indicators

Indirect measures of real sector activities can be broadly classified into three categories, according to the information they convey on the state of the business cycle; leading, lagging, and coincident indicators. The names given to each refer to the way the series moves in relation to changes in overall economic activity, see figure. Leading indicators turn down before the economy enters a recession and turn up before the expansion begins. Lagging indicators behave just the opposite, turning down after a slowdown and up sometime after the recovery is underway. A coincident indicator neither leads nor lags. Instead, its timing is such that it turns down when the economy turns down, and up when the economy turns up. Most indicators of economic activity are mixed in terms of what information they convey. For example *gross private non-residential fixed investment* is normally thought to be coincident for recessions, lagging for recoveries, and coincident overall.

Below, we try to classify the indicator status of some potential real sector indicators that the Bank of Uganda could use as a guide in conducting monetary policy in Uganda. However, it is important to bear in mind that the classification is based on the authors' experience with countries other than Uganda; the interpretation should thus be taken with a grain of salt.
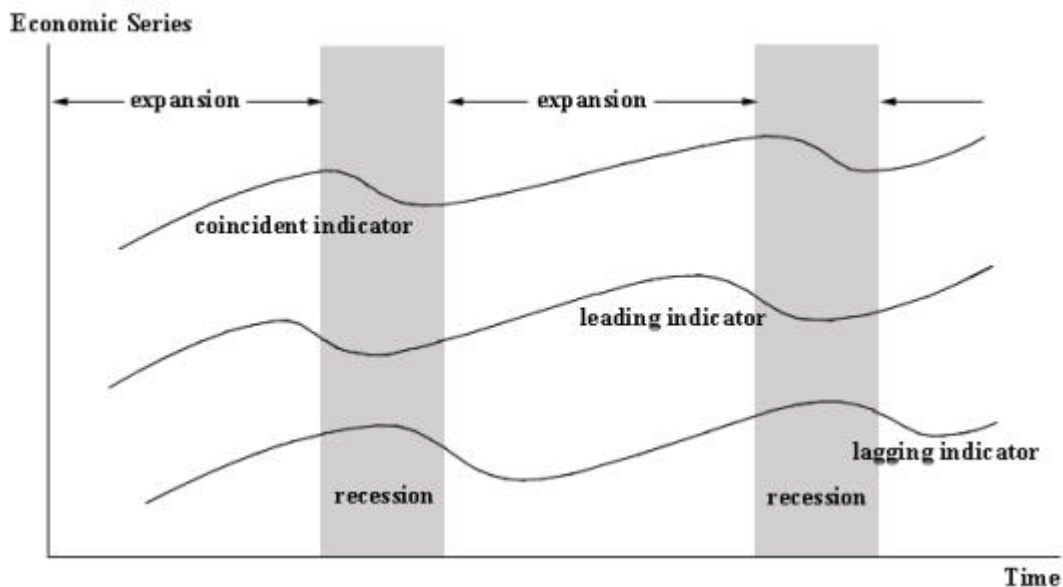
One of the tasks ahead at the Bank of Uganda is to evaluate the information value of the real sector indicators that will be compiled at the Bank in the future. Taking this into consideration, the following classification of indicators is helpful:

- Durable and non-durable good production (Coincident with recessions, leading for recoveries and overall).

- Capacity utilization (leading for recessions, coincident for recoveries).

- Index of Industrial Production (coincident with changes in real GDP).

- Gross private non-residential fixed investment (coincident for recessions, lagging for recoveries, coincident overall).

- Labour productivity (none).

- Building permits and housing starts (both series: leading for recessions, recoveries, and overall).

- Changes in manufacturing and trade inventories (leading for recessions, recoveries, and overall).

- New durables goods orders (leading for recessions, recoveries, and overall economic activity).

- Civilian unemployment rate (leading for recessions, lagging for recoveries, unclassified overall).

- New jobless claims (leading for recessions, coincident for recoveries, and leading overall).

- Help-wanted advertising (leading for recessions, lagging for recoveries, unclassified overall).

- Personal income, disposable income (coincident for recessions and recoveries, coincident overall).

- Corporate profits (leading for recessions and recoveries, leading overall).

- Personal consumption expenditures (none).

- Monthly retail sales (leading for recoveries, unclassified otherwise).

- Consumer confidence and expectations (both indicators are leading for recessions, recoveries and overall).

- The stock market index (leading for recessions, recoveries and overall)

- Trade deficit (none).

Many of these variables are not currently available in Uganda, but others simply need to be collected in an organized way.

IV.3   Real Sector Indicator Report

During our visit to Uganda at the beginning of November last year, we attended a number of meetings both within and outside of the Bank of Uganda. The minutes of outside meetings are listed in Appendix C. Based on all of these meetings, we conclude that in order to take on the data problems and to improve the monitoring of the real economy, we believe that the Bank of Uganda should start publishing a quarterly report on various real sector indicators, expectations indicators, and proxies for the status of the real economy (a sample report is presented in Appendix D). To compile this report we propose that the following measures should be taken in the near future:

1.   The Bank of Uganda should initiate a joint effort between the Bank, the Uganda Bureau of Statistics, the Treasury, and the Economic Policy Research Centre at Makerere University to compile various survey-based expectation indicators, such as a Consumer Confidence Indicator (see Appendix A for a menu of building blocks of such an indicator), a Business Confidence

Indicator (see Appendix A), and an Inflation Expectation Indicator,[4] which would be used for the Real Sector Indicator Report.

2. The Bank of Uganda should initiate a joint effort between the Bank and the Uganda Bureau of Statistics to compile a Construction Index and to make the Index of Industrial Production timelier than it currently is (see Appendix C).

3. The Bank of Uganda should initiate a joint effort between the Bank, the National Social Security Fund, and the Uganda Bureau of Statistics to compile information on employment in firms contributing to the fund by sectors, the total wage bill of those firms, and the number of firms (see Appendix C).

4. The Bank of Uganda should encourage the Uganda Bureau of Statistics to start compiling as many of the subcomponents of quarterly GDP accounts as currently possible in a timely manner.

For the longer run we propose that:

1. An effort should be made to overcome obstacles related to compiling the quarterly GDP.

2. Research capabilities of the Real Sector Section in the Research Department should be strengthened.

3. The Research Department at the Bank of Uganda should start building short- and medium-run forecasting models for GDP growth and inflation, based on real sector data to supplement current practices.

4. The Bank of Uganda should start publishing a Quarterly Inflation Report to support the mission of the Bank.

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[4] The Inflation Expectation Index is based on the simple average of responses to the question: *What do you think inflation will be in the next* 12 *months*? The question could be asked in the Consumer Confidence survey.

Appendix A. Expectations Surveys

A.1   Consumer Expectations

In many countries the best indicator of economic outlook as perceived by individuals is captured through surveys. In Iceland such surveys are conducted on a monthly basis by Gallup. 400 responses from a sample of 600 are compiled each week for two weeks. The survey is therefore based on a sample of 1200 people. The survey starts the first Wednesday of each month and the results are ready by the last Tuesday of each month. The survey is categorized for the following categories:

- Gender
- Age: 16-24, 25-34, 35-44, 45-54 and 55-74 years.
- Residence
- Education: Basic Educations, Secondary Education and University Degree.
- Domestic income: Four income groups

The data for each month are weighted by gender, age and residence in accordance with the national census statistics.

The Gallup Expectations Index is based on the following five components:

1. Evaluation of the current economic climate: Do you believe that the current economic conditions are: GOOD, BAD or NEITHER?
2. Expectations of economic climate in six months: If you think six months forward, do you believe that economic conditions will be: BETTER, WORSE or UNCHANGED?
3. Evaluation of current labour market conditions: Do you believe that job opportunities in your industry are: GOOD, BAD or NEITHER?
4. Expectations of labour market conditions in six months: If you think six months forward, do you believe that job opportunities in your area will be: GREATER, LESSER or UNCHANGED?

5.   Expectations of domestic income in six months: Do you believe that the income within the home will: INCREASE, DECREASE or REMAIN THE SAME in six months?

For each of the questions above, the number of positive responses is divided by the number of positive and negative responses. The result for each question is then multiplied by 200. The resulting variable will then correspond to an index, which can take on values of 0-200. When the index is 100, there are as many positive as negative responses. If it is higher than 100, there are more positive responses, and if it is lower, there are more negative responses.

<p align="center">Various evaluation and expectation indices</p>

Gallup Expectations Index	Average for questions 1 to 5
Evaluation of current economic conditions	Average for questions 1 & 3
Expectations for the next six months	Average for questions 2, 4 & 5
Evaluation of current economic climate	Average for questions 1 & 2
Evaluation of labor market conditions	Average for questions 3 & 4

The level for the current month, the past 12 months and the average is then published for each index. The index is then disaggregated by gender, age, residence, education and income. The percentage change from the following month is also calculated for each category.

The Gallup survey also includes questions on major household purchases planned in the near future. These major household purchases are categorized as new housing, car investment or planned trips abroad. The questions and options for answers are the following:

1.   Do you plan to buy a new house in the very near future? VERY LIKELY, RATHER LIKELY, NEITHER LIKELY NOR UNLIKELY, RATHER UNLIKELY or VERY UNLIKELY.

2.   Do you plan to buy a car in the very near future? VERY LIKELY, RATHER LIKELY, NEITHER LIKELY NOR UNLIKELY, RATHER UNLIKELY or VERY UNLIKELY.

3.   Do you plan to go on a trip abroad in the very near future? VERY LIKELY, RATHER LIKELY, NEITHER LIKELY NOR UNLIKELY, RATHER UNLIKELY or VERY UNLIKELY.

A.2   Business expectations

The index could be constructed using the same methods used for compiling the Consumer Confidence Index. The survey could be based on a sample of firms that regularly contribute to the NSSF. The index should be based on questions such as:

6.   Will investments in your industry, compared with the last six months:
        INCREASE, DECREASE or REMAIN THE SAME for the next six months?
7.   If you think six months forward, do you believe that economic conditions in
        your industry will be: BETTER, WORSE or UNCHANGED?
8.   If you think six months forward, do you believe that demand for workers in
        your industry will be: GREATER, LESSER or UNCHANGED?
9.   Do you believe that profits within your industry will: INCREASE,
        DECREASE or REMAIN THE SAME in six months?
10.   Will inventories in your industry this month: INCREASE, DECREASE or
        NEITHER, compared with last month?

For each of the questions above, the number of positive responses is divided by the number of positive and negative responses. The result for each question is then multiplied by 200. The resulting variable will then correspond to an index, which can take on values of 0-200. When the index is 100, then there are as many positive and negative responses. If it is higher than 100 there are more positive responses, and if it is lower there are more negative responses.

Appendix B. Estimating the Output Gap

In this appendix we present an estimation of the output gap in Uganda 1981-2000. We start by giving a brief introduction to three different methods of measuring output gap. Then we present the estimation for Uganda.

B.1   Measuring the output gap

Output gap (Y^P) is defined as:

$$(1) \qquad Y^P \equiv \frac{Y}{Y^T} - 1,$$

where Y is output (GDP), and Y^T is long run, or equilibrium, output. Data for output can easily be obtained from national accounts, but the same does not apply to equilibrium output. Hence, the main difficulty in measuring the output gap is to obtain information on equilibrium output. In this appendix we give a brief introduction to three methods that can be used to estimate equilibrium output of an economy. These are 1) the Hodrick–Prescott filter (HP filter), 2) the production function method and, 3) the VAR method.

B.2   The HP filter method

The HP filter derives an estimate of Y^T by choosing Y^T so as to minimize:

$$(2) \qquad \sum_{t=1}^{T} \left(Y_t - Y_t^P \right)^2 + \mathit{I} \sum_{t=2}^{T-1} \left[\left(Y_{t+1}^P - Y_t^P \right) - \left(Y_t^P{}_t - Y_{t-1}^P \right) \right]^2 ,$$

where T is the number of time periods in the sample. Y^T is therefore derived by minimizing the squared distance of Y from Y^T (the first part of equation (2)) and changes in the growth of Y^T (the second part of equation (2)). The parameter $?$ is predetermined and is commonly set to $? = 100$ when using annual data.[5]

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[5] If the data is quarterly, it is common to set $? = 1,600$, and $? = 14,400$ if the data is monthly.

B.3 The production function method

Y^T can also be derived given a production function. A constant returns to scale Cobb-Douglas functional form is a popular one to assume:

$$(3) \qquad Y_t = A_t N_t^a K_t^{1-a} \, ,$$

where N is labour use, K is capital stock, A is total factor productivity (TFP) and a is labour's share in output. Replacing A, N and K by their equilibrium values, i.e., A^T, N^T and K^T, gives the equilibrium value for *output*, i.e., Y^T:

$$(4) \qquad Y_t^T = A_t^T \left(N_t^T \right)^a \left(K_t^T \right)^{1-a} \, ,$$

To be able to estimate Y^T, one has to be able to measure A^T, N^T and K^T on the right side of equation (4) as well as have information on a in equation (3).

The standard approach is to assume that all changes in the capital stock are permanent. This enables us to replace equilibrium capital stock with its observed value, i.e., to set $K = K^T$. Values for TFP, i.e., A, are obtained by using equation (3), given data on Y, K and N and an estimate of a. Values for A^T are then derived by using the HP-filter method previously discussed.

Many methods are possible for measuring equilibrium labour use of an economy. One method is based on the following equation for N:

$$(5) \qquad N_t = L_t h_t \left(1 - u_t \right),$$

where L is the number of individuals at working age (usually 15-64 years), h is the labour force participation rate, and u is the unemployment rate. The equilibrium labour use, i.e., N^T, can therefore be obtained by replacing L, h and u by their equilibrium values, i.e., L^T, h^T and u^T:

$$(6) \qquad N_t^T = L_t^T h_t^T \left(1 - u_t^T \right).$$

The problem is to obtain information on each of the equilibrium variables on the right side of equation (6). Here we discuss two methods. The first one is to obtain these variables by using the HP-filter method for each of these variables.[6] The second one is to assume that the equilibrium unemployment rate is a given constant, and that all changes in the number of individuals at working age and in the labour force participation rate are permanent. This enables us to replace these two equilibrium values with their observed values, i.e., we can set $L = L^T$ and $h = h^T$. Hence, according to the second method, all changes in the equilibrium labour use are due to changes in the number of individuals of working age and/or the labour force participation rate.

B.4   The VAR method

The two methods discussed so far derive the equilibrium output by using various ways of smoothing the observed output. Hence, it seems as if they are unable to account for rapid changes in equilibrium output. An example of this may be the oil crisis in the '70s.

Due to this disadvantage, using a multivariate time series model has been suggested to derive the equilibrium output process, i.e., the VAR model. One disadvantage of doing this is that it seems that the output gap derived by it depends on the long-term relationships assumed in the model. Hence, this method requires further investigation before it can be used with confidence.

B.5   Estimated Output Gap in Uganda, 1981-2000

Due to data requirements and theoretical restrictions, we use the HP filter to obtain the equilibrium GDP for Uganda. Figure B1 contains actual GDP and the estimated equilibrium GDP in Uganda in 1981-2000, in 2001 prices:

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[6] This is, in effect, the same as using the HP filter to derive NT on the right side of equation (6).

GDP and Equilibrium GDP (in 2001 prices)
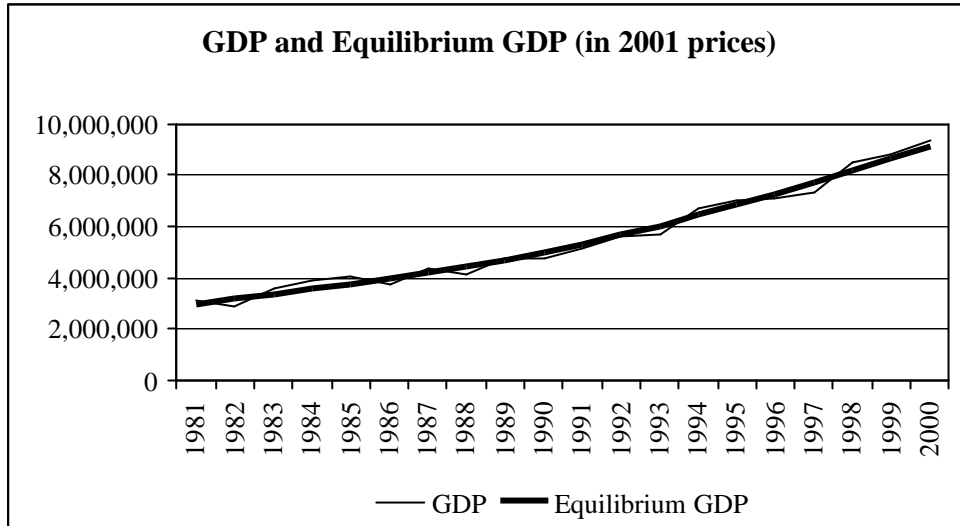
Simply by extracting the observed GDP from the estimated equilibrium GDP, we have an estimate of the output gap in Uganda during the time period 1981-2000. Figure A2 shows the results in percent changes:

The Output Gap in Uganda, 1981-2000
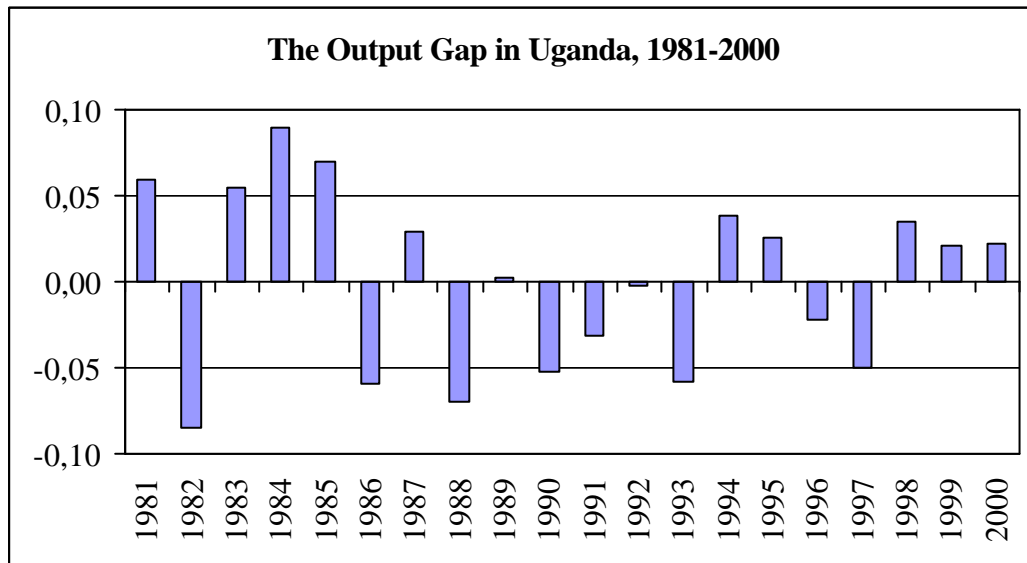
Appendix C. Meetings outside the bank of Uganda

C.1   Meeting at the Uganda Bureau of Statistics (UBS), November 5

Attending: Mr. Male-Mukasa, Professor Herbertsson, Mr. Hall, Mr. Wandera of BoU, and three experts from the UBS.

The meeting began with Mr. Male-Mukasa expressing interest in establishing indicators for the real economy in order to enhance the BoU's ability to conduct monetary policy.

The constraints on supplied data were discussed. The UBS compiles annual GDP and has so far compiled it up to 2000. Quarterly GDP is not available. One of the main obstacles to compiling quarterly GDP is the problem of accounting for agriculture and the problems associated with the swings and seasonal nature of agriculture. In addition, many other problems exist.

At the meeting the idea behind the real sector proxy indicators for the successful conduct of monetary policy was discussed in detail. Consequently, discussions centred on the various variables necessary for such an endeavour. During this discussion UBS stated that the following data could easily be supplied on a monthly basis:

- CPI
- Procurement of tea and coffee
- Sugar production
- Exports of goods
- Electricity generation
- Telecommunications services
- Import of goods on both value and quantity bases
- Imports of services go through BoU
- Imports of machinery on a monthly basis with a two-month lag

The UBS compiles a manufacturing index. However, due to the nature of government construction, it is difficult to compile the index on a monthly basis. Nevertheless, some elements could be compiled monthly.

- Cement
- Lime
- Roofing (tiles and roofing steel)
- Steel production

These key elements of construction are available and could be compiled on a monthly basis. Employment information is sketchy. A census of business is currently in progress. It is envisaged that the census will provide information on the size of the labour force, participation rates, the employed and the unemployed, pending definitions of unemployment. This information will not be available on a frequent basis in the near future. The UBS conducts household expenditure surveys every year, and we discussed the possibility with them of including some employment information in the questionnaire.

At the end of the meeting Mr. Male-Mukasa reiterated the full interest of the UBS in establishing these figures on a monthly basis and establishing a relationship with the BoU in that respect. However, the director also iterated that data collection is expensive as it requires the physical collection of information from various parts of the country. This project would therefore require resources. Nevertheless, the necessary resources would not have to be substantial. Furthermore this project would in all probability speed up the development of compiling national accounts on a quarterly basis.

C.2   Meeting at Economic Policy Research Centre, November 7

Attending: Dr. John Alphonse Okidi, Professor Herbertsson, Mr. Hall, and Mr. Wandera of BoU.

The meeting started with Dr. Okidi greeting the guests and describing the Research Centre and its functions. The Research Centre is a small research unit with 7 researchers. In the past there have not been many studies on monetary policy. The emphasis has been on microeconomic research. Some of those have been real sector micro studies. The EPRC has been experiencing staffing problems as there are vacancies available, and they are currently going through a recruitment drive where they hope to add 2 Masters and 2 PhDs. Funding does not seem to be a problem

At the moment the Research Centre publishes a Quarterly Publication of major statistics available for the real economy and a summary of main economic events. Dr. Okidi recognizes that it would be optimal to publish each quarterly publication in the successive quarter. However, at the moment they are experiencing a time lag of 2 quarters. The Research Centre has been contemplating whether to revise the issue completely and rethink the process of its publication. A serious impediment to such work is the in housing capacity constraints that they are experiencing at the moment.

The issue of the EPRC conducting its own studies of a Measure of Consumer Confidence and a Measure of Business Confidence, which would be conducted on a quarterly basis with as little a lag as possible, was discussed. Dr. Okidi stated that the EPRC have been thinking about studies like that for the private sector for some time. Dr. Okidi was very receptive to the idea of co-operation with the BoU, the UBS and the Ministry of Finance in advancing the issue and embarking on such a project.

In relation to this discussion, the instruments available for such a study were discussed. A variety of instruments in Europe and in the US exists for such a study. Professor Herbertsson indicated that he is familiar with some of them, and that he would include some of them in his report. The EPRC is in co-operation with the

Uganda Manufacturer Association, which could be helpful in the construction of an Indicator of Business Confidence.

Dr. Okidi assured Professor Herbertsson that the possibilities of launching a project like this were very real once the EPRC had the necessary staff and instruments available. Problems such as sampling and surveying would probably not prove to be serious obstacles. The idea of a secondment from the BoU was raised. If that could be arranged, it would in all probability lead to the successful launch of the project.

The advantages of having the EPRC doing it rather than e.g., a market research firm are obvious. The EPRC has the institutional collaborative arrangements in place. The academic environment is probably not subject to the same public choice constraints as can arise if the project was to be conducted in the governmental arena. Furthermore, it is also likely that students could participate in a project like this, which could lower the costs of surveying and prove helpful in other respects. On these words the meeting was concluded.

C.3   Meeting at the NSSF, November 8

Attending: Mr. L. K. Mpuuma, director of NSSF, Professor Herbertsson, Mr. Hall, Mr. Wandera of BoU.

The meeting started with Mr. L. K. Mpuuma welcoming us, and then Professor Herbertsson described the problem at hand, i.e., the necessity of obtaining real sector data to construct indicators to form a basis for monetary policy. The NSSF is probably the agency that is closest to the private sector labour market and probably has the best overview of it.

The NSSF was formed in 1967 and restarted its operation in 1985. It is a pension fund for the private sector, and its operation is based on an Act of Parliament. Employers are free to set up supplementary funds, but there is a minimum contribution of 5% from employees and 10% from the employer. The contribution is obligatory for employees and employers of private companies that have five and more employees.

The fund has been growing exponentially for the last decade. In 1992 it was 2 billion USH, and last year it was 260 billion USH. There are 435,000 members in the NSSF at the moment, but only 150,000 are contributing.

When looking at these figures, it should be borne in mind that unemployment rates are very high, and that formal sector employment is low in Uganda. Mr. L. K. Mpuuma roughly estimates that 80% of formal sector wages are processed through the fund, and that the contributors make up 60% of formal sector workers. The difference exists because big companies are compliant, and they usually pay higher wages. Non-compliance, legal and illegal, also explains this difference.

The NSSF database has the number of workers contributing and their contributions on a monthly basis. The lag of the data is 20 days at the moment. The deadline for payment is the 15th of each following month, and 5 days are reserved for clerical work. The aim is to reduce the time lag to 15 days when the NFFS offices have been relocated, and a new, centralized computer system is implemented.

Mr. L. K. Mpuuma very much appreciated the data problems facing the BoU and expressed willingness to provide NSSF data. During discussion between Mr. L. K. Mpuuma and Professor Herbertsson, it was concluded that the following data could be available from the NSSF on a monthly basis to the BoU.

- Number of firms contributing.
- Number of employees contributing.
- The volume of contributions being paid into the fund.
- Sectoral classification of contributions and the number of employees (pending classification requirement of the BoU).

The meeting concluded with Professor Herbertsson thanking Mr. L. K. Mpuuma for his positive response and willingness to provide the data in question. On this note the meeting was concluded.

Real Sector Indicators

Bank of Uganda
November 2002

1. Employment and wages

Wage bill of the private sector estimated from NSSF data

Shs bln

Source: National Social Security Fund
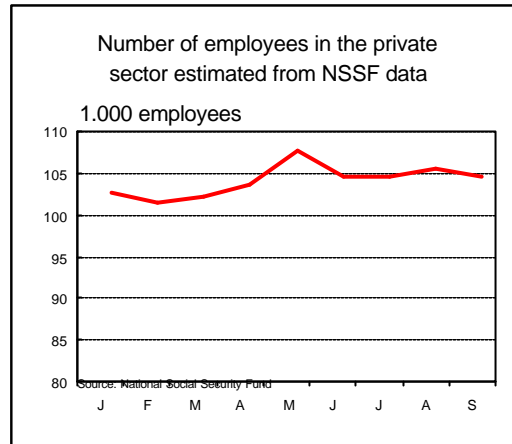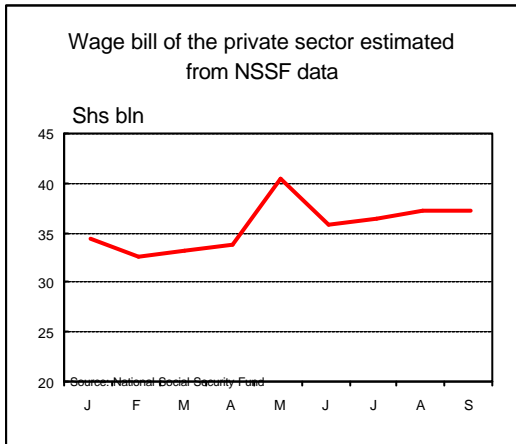
Over the first nine months of 2002 the total wage bill in private sector firms, employing five employees or more, rose by 7.6%. The jump in wages in May was caused by receipts of contributions from four large firms that had not contributed before. The steady rise in the wage bill indicates that growth in the real sector is fairly constant, although it seems to have stagnated in September. Data for October will be available from the NSSF November 20th.

Number of employees in the private sector estimated from NSSF data

1.000 employees

Source: National Social Security Fund

Employment in the private sector rose by 3.000 jobs, or by 2.9% the first nine months. When compared to wage bill increases it seems that wages are increasing faster than employment, indicating a tighter supply of labour and wage drift in the real sector. Data for October will be available from the NSSF November 20th.

Number of employees in the private sector by industries

1.000 employees

Agriculture

Services

Construction

Manufacturing

Source: National Social Security Fund
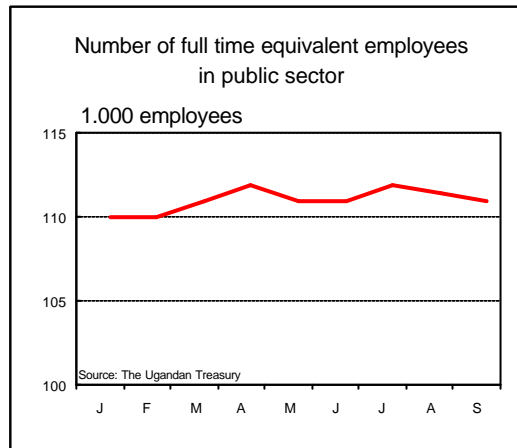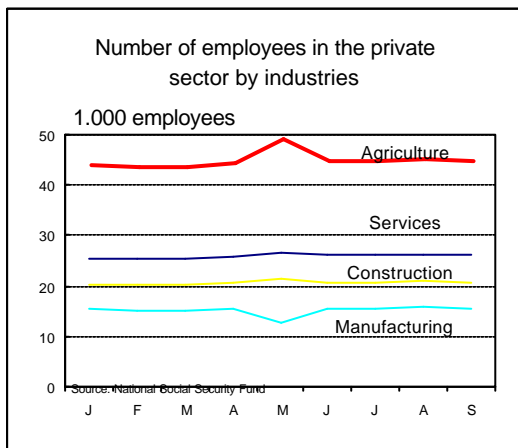
The first nine months employment rose fairly steadily across all industries. The jump in May in employment in the agricultural sector reflects the four big farms that contributed to the NSSF that month. Data for October will be available from the NSSF November 20th.

Number of full time equivalent employees in public sector

1.000 employees

Source: The Ugandan Treasury

Employment in the public sector has remained farily stable during the first nine months of 2002. Figures on public sector employment in October will be available from the Treasury November 10th.

2. Construction

Monthly changes in the index of cement production

Source: Uganda Bureau of Statistics

Monthly changes in the index of lime stone production

Source: Uganda Bureau of Statistics
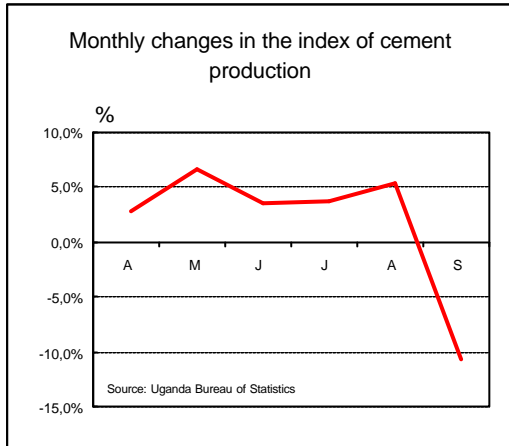
Production of cement increased by an average of 4.1% April to August, but dropped by 11% in September. This chould indicate that the construction industry is contracting. Data for October, which will be available from the UBoS November 20th, will further cast light on development in the construction industries.
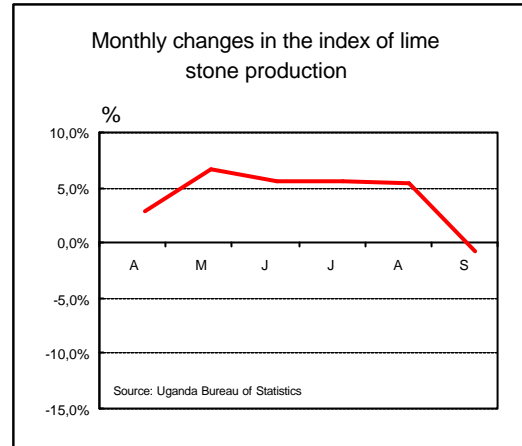
The increase in the production of limestone was fairly constant until September when production decreased by 1%. This, along with the recorded drop in cement production, indicates that the construction industry is contracting. Data for October, which will be available from the UBoS November 20th, will further cast light on development in the construction industries.

Monthly changes in the indices of tiles and roofing steel production

Tiles

Roofing steel

Source: Uganda Bureau of Statistics

Monthly changes in the index of steel production

Source: Uganda Bureau of Statistics
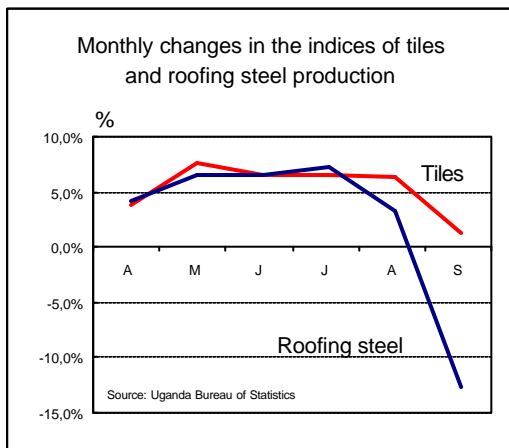
Production of roofing material increased steadily until September, when the production of tiles halted and production of roofing steel fell by 14%. This indicates that construction of less expensive housing, which uses tiles for roofing, did not contract as much as the building of more expensive housing and industrial buildings, which use more expensive roofing material. Data for October on roofing material will be available from the UBoS November 20th.
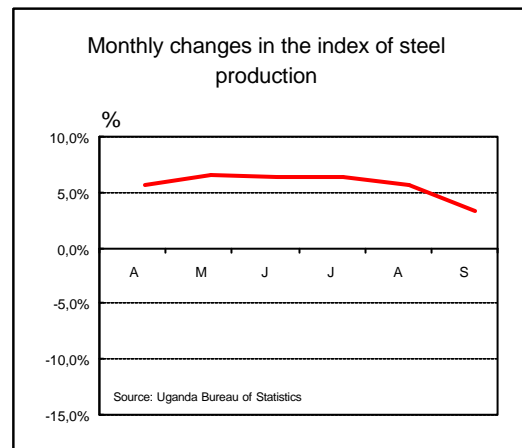
Steel production increased at a fairly constant rate until September when it slowed somewhat. Steel production is somewhat later in the construction cycle than other building material and consequently a decrease in its production might be expected in October, if the drop observed in the other construction indices will continue in October. Data for October will be available from the UBoS November 20th.

NOTE: Currently work is underway at the UBoS on compiling a construction index based on all the indexes shown above, using principal component analysis.

3. Agriculture

Procurements of tea and coffee
Sugar production
Exports of agricultural goods
Export prices of agricultural goods

4. Manufacturing

Index of industrial production
Subcomponents of the index of industrial production
Import of investment goods

5. Various proxies for the real sector

Telecommunication services
Electricity generation
Petroleum consumption
Diesel consumption
Import of motor vehicles

6. Expectations

Consumer confidence index
Producer confidence index
Inflation expectations

7. External sector

Real exchange rate
Imports
Exports
Capital account

8. Etc.

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