

India Economics

Excess success? The outlook for growth, inflation and rates

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- ▶ **India's economy will slow further as the rate effects are felt in full...**
- ▶ **...while inflation will strengthen on higher food & fuel prices...**
- ▶ **...posing a policy dilemma for the RBI. We look for modest rate hikes from here**

Has the RBI got it right?

Having tightened policy through 2006 and early 2007, in reaction to the widespread signs of cyclical excess, the Reserve Bank is now anxiously awaiting the effects. On the basis of a model we have created as well as a look at "customer-facing" interest rates and debt developments we expect the impact on growth to be more severe than most. Meanwhile, measured inflation rates will probably pick up from here, posing a problem for a central bank interested in both strong growth and low inflation.

India's fabulous long-term growth story is not in doubt but cyclical ups and downs are inevitable and we believe the country has entered a softer phase. So far, the slowdown can only be described as one from an extremely strong growth rate to a strong one, but the full effects of the interest and exchange rate rises have yet to be felt. We expect average GDP growth of 8.3% in 2007/08 and 7% in 2008/09. Although the latter may feel a bit like a recession given that optimism has run so high, it should provide the basis for a renewed upturn by helping remove some of the bottlenecks.

At the same time, the best of the inflation news may already be behind us and we expect higher food and fuel prices to deliver a return to rates of WPI and CPI inflation in excess of 5% and 8%, respectively, next year. We should also not forget about the risks posed by the 6th Pay Commission which is due to report by April 2008.

A background of weaker growth and higher inflation will provide an interesting test of the RBI's policy priorities. We have modelled the Bank's past "reaction function", which suggests that it would typically raise rates under the environment we envisage. A global credit crunch would of course stop this but we continue to expect a couple of hikes for now. We are also looking for a renewed bout of rupee appreciation later this year.

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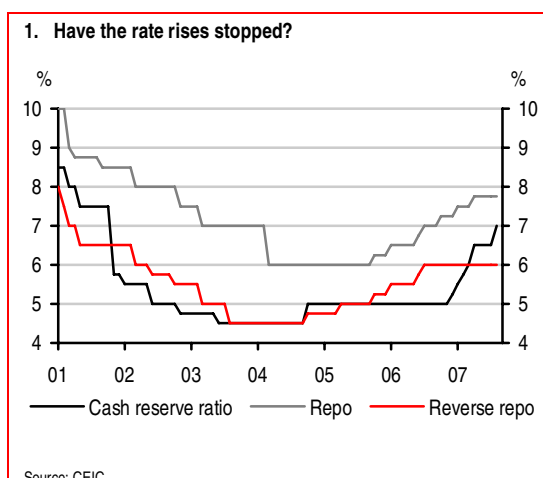
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Rate pause or peak?

- ▶ Having tightened policy aggressively at the beginning of the year, the RBI has subsequently sat largely on the sidelines...
- ▶ ...as the regional elections have passed, inflation has fallen and the Bank awaits evidence on the impact of the rate hikes
- ▶ But has the RBI done enough to sustainably reduce inflation and remove the cyclical excesses in the economy?

RBI: Changing tack?

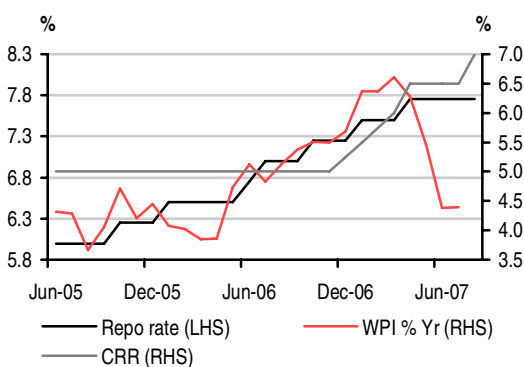
What a difference a few months can make. After the flurry of interest rate hikes between December and March, which saw the Cash Reserve Ratio raised by 150bps in three steps and the repo rate by 50bps in two, the Reserve Bank of India (RBI) has been largely inactive, raising the CRR just once more in early August (chart 1). The whiff of panic at the beginning of the year has seemingly given way to a period of relative calm.



Conspiracy theorists have suggested that the apparent change in mood is largely explained by the political timetable. Surging food prices became a political hot potato ahead of key regional elections in April/May meaning that the government had to be seen to be doing everything possible to counter the ensuing squeeze on rural incomes, including putting pressure on the Central Bank to tighten policy. With these elections now out of the way, the argument runs, and the general election not due until 2009, the priority has switched back to growth and, in particular, to preventing further currency appreciation.

There is a more straightforward explanation as well – inflation has fallen. Chart 2 shows the recent development of Wholesale Price Inflation (WPI), which is the RBI's preferred price measure, as well as the CRR and repo rates. Having peaked at 6.6% in March the headline WPI rate had dropped close to 4% in early August, comfortably below the "around 5%" RBI projection for this year.

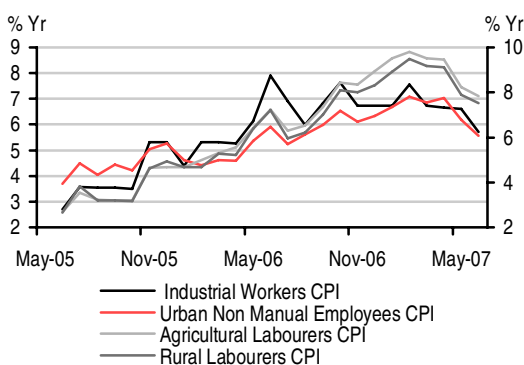
2. The rise and fall of WPI inflation



Source: CEIC

There has also been some improvement in CPI inflation, raising hopes that price pressures are easing more generally. Chart 3 tracks the four main measures for the different groups of workers, all of which are down from their recent highs.

3. CPI inflation is turning as well



Source: CEIC

A third reason why the Central Bank might be taking a more relaxed attitude is that it is waiting to see what impact its monetary tightening will have on economic growth, as a lead indicator of inflation. As far as we know, the RBI conforms to the widely held view that it takes a year to eighteen months for the full effects of interest rate measures to feed through to the economy. Bearing in mind that most of the tightening was done in the early part of this year it won't be until mid-2008 that the Bank can feel confident that the interest rate lags have largely unwound.

All over now?

With all this in mind, the aim of this report is to address a number of related questions. In particular:

- ▶ What is the likely impact of the rate hikes to date on GDP growth?
- ▶ Is the economy heading for a hard, soft or no kind of landing at all?
- ▶ Will inflation continue to soften from here or is this just a temporary downturn?
- ▶ Has the RBI done enough to remove the other signs of cyclical excess in the economy?
- ▶ Will the next move in rates be down or are we simply witnessing a pause in the rate tightening cycle? If the latter, how long is it likely to last?

For ease of reading, we have split the report into three sections. The first considers the outlook for growth, the second inflation and the third policy interest rates as well as the exchange rate.

Growth: What kind of landing?

- ▶ Economy has slowed, albeit from a very strong growth rate to a strong one
- ▶ Lagged effects of rate rises and currency appreciation have yet to play out...
- ▶ ...meaning that that activity will probably weaken further

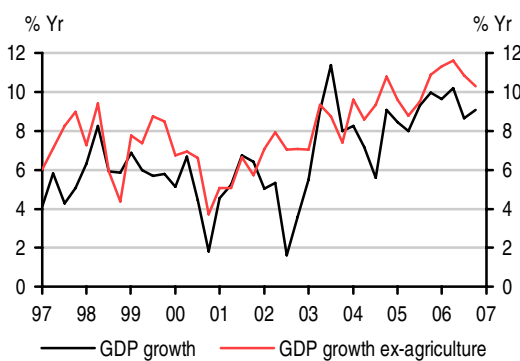
Is the economy cooling?

Superficially at least the Indian economy continues to perform extremely impressively with no sign of a downturn. We have shown the year-on-year GDP growth rate for the economy as a whole as well as the ex-agriculture sector in chart 4. These amounted to 9.1% and 10.3% respectively in the January-March quarter of this year, with GDP excluding agriculture showing its fifth consecutive quarter of double-digit growth.

since the ex-agriculture growth rate began trending higher in 2000.

Looking at the expenditure breakdown of GDP growth offers further encouragement in the sense that it is investment, rather than private consumption that is the key driver behind the expansion (chart 5). To the extent that capital spending is being used to increase the productive capacity of the economy this should bode well for the future.

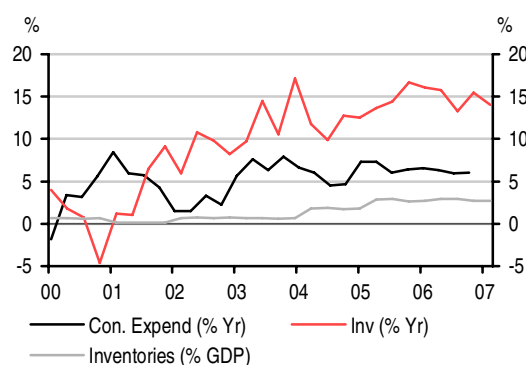
4. Ex-agriculture still expanding at a double digit rate



Source: CEIC

Although both year-on-year growth rates are a little below their peaks of July-September last year, this could simply prove to be another minor aberration of the sort India has seen several times

5. Investment growth is outpacing consumer spending



Source: CEIC, HSBC

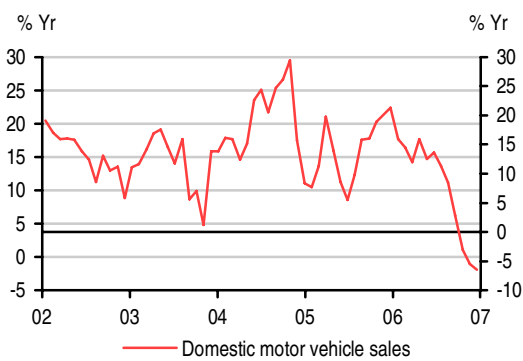
An involuntary stock build?

But it is perhaps not all good news. A closer look at chart 5, for example, shows that inventories have apparently been rising by the equivalent of

more than 2½% of GDP every quarter for two years now. Of course this may be nothing more than a statistical miscalculation in that much of the expenditure allocated to inventories should instead have been assigned to investment, consumption and/or exports. The more worrying conclusion, however, would be if the increase in stocks is genuine and reflects involuntary actions on the behalf of companies surprised that domestic demand is not increasing even more rapidly than it is.

This would certainly seem to be a possibility in the auto industry at least, where domestic motor vehicle sales have collapsed recently (chart 6). According to data from the Society of Indian Automobile Manufacturers (SIAM), domestic registrations fell 6.2% in the year to July and were down 6.5% on average over the last three months. The latter is comfortably the weakest since the series began in 2001.

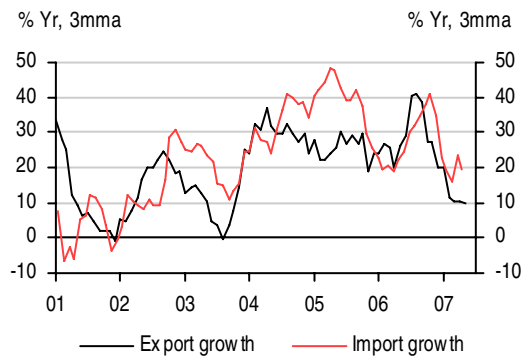
6. Motor vehicle sales are contracting



Source: CEIC

Export growth has also softened somewhat over the last year, with chart 7 showing that the value of goods exports expanded by its lowest rate in the three months to May since October 2003. The weakness in exports has in turn dragged down import growth, although the latter continues to expand at twice the rate of the former.

7. Export growth has slowed sharply

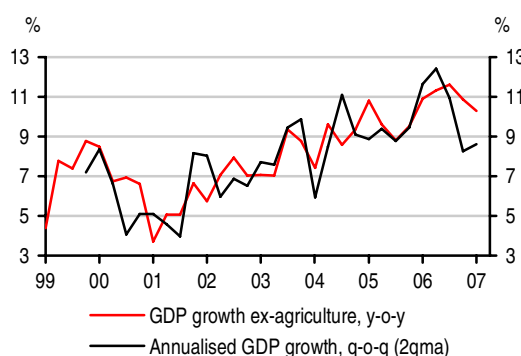


Source: CEIC

What about the q-on-q?

Meanwhile, although year-on-year GDP growth has held up extremely well there are some signs of softening if we look at the half-on-half and quarter-on-quarter rates. India doesn't publish a seasonally adjusted GDP series but we have created our own measure on the basis of a statistical package that uses the so-called X-11 method. The results are shown in chart 8, where we have annualised the ensuing quarter-on-quarter changes.

8. Growth has slowed a bit on a q-o-q annualised basis

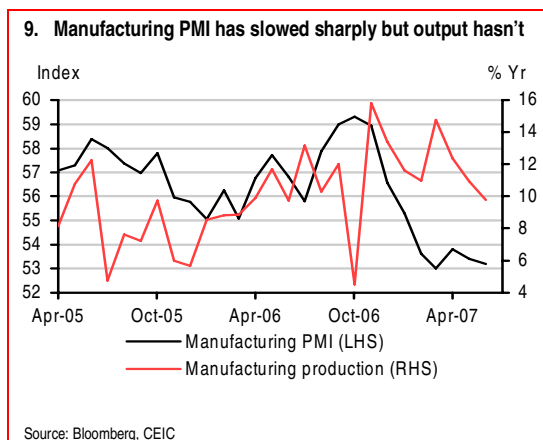


Source: HSBC, CEIC

On this basis, GDP growth slowed from an annualised high of 12.4% in April-June 2006 to 8.3% in October-December before improving slightly to 8.6% in January-March this year. If this is correct, then it represents the biggest slowdown in growth the country has experienced in the last seven years, albeit from an extraordinarily strong growth rate to a still impressive one.

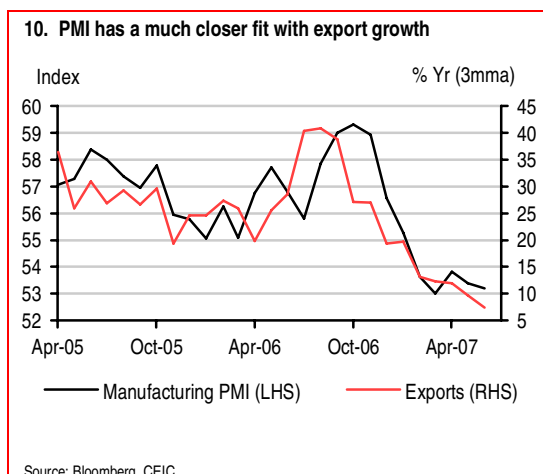
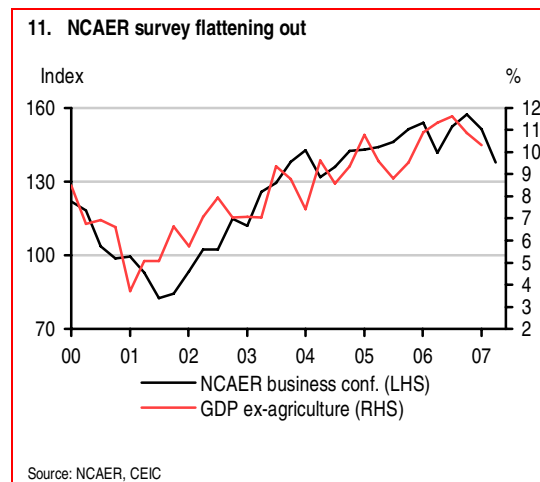
Business survey evidence

Some business surveys have also softened recently, although their relationship with official measures of output growth is often far from perfect. This is well illustrated by chart 9 which shows that while the manufacturing PMI has fallen sharply since October last year, production growth has held up reasonably well.



The series actually has a much better fit with export growth than manufacturing output, although it looks as though it is more of a lagging indicator than anything else (chart 10).

The same may also be true of the quarterly NCAER business confidence series which we have plotted in chart 11. There is really only one turning point here but the survey started improving nine months later than ex-agriculture GDP growth which started in 2000. As such, while it remained strong in the first half of 2007 this may only be telling us what the economy was doing in the middle of last year. It is, however, worth noting that the latest figure for July saw its biggest percentage drop since the equivalent survey in 2001.



From very strong to strong

Overall, it seems to us that the economy has slowed, or at least parts of it have, over the last nine months. But the slowdown can really only be described as one from an *extremely* strong rate of expansion to a strong one.

A few factors may have played a role in this minor downturn:

- ▶ The lagged effects of the modest rise in the repo and reverse repo rates towards the end of 2005 and early 2006.

- ▶ The squeeze on real incomes, particularly in the agricultural sector, resulting from the strong rise in inflation which may have hit consumption.
- ▶ The downturn in the world trade cycle, coupled with the strength of the rupee, looks to have had a dampening effect on exports.

The start of something bigger?

The question we need to address now is whether the slowdown to date will continue, perhaps ending in a hard-landing, or whether the economy is already at or close to the bottom of another mini-cycle.

This is never a particularly easy question to answer at the best of times, let alone for an economy that has such significant data limitations and is so strongly trended as India. We have also established that the survey evidence tends to be of limited use, either having a poor fit with the “hard” data and/or lagging reality. As a result, any conclusions must inevitably be treated with a greater degree of caution than is normally the case.

Model answers...

With that caveat in mind, however, we have attempted to investigate how things may develop over the next eighteen months by first estimating a model of Indian ex-agriculture GDP growth. The reason for stripping out agriculture is that it will inevitably be impacted by non-economic factors such as the weather. Agriculture is also a much less important sector than it was, accounting for 18% of GDP in 2006/07, compared with 27% for industry and 55% for services.

The equation itself relies on various interest rate variables, the exchange rate and the oil price, all which have the advantage that they take time to impact growth. This means that we don't have to

do much forecasting of the explanatory variables in order to generate a year ahead GDP view.

Despite trying several different series, we couldn't find a statistically significant role for global growth developments. Although slightly unsatisfying it probably reflects the relatively closed nature of the Indian economy. In 2006/07, exports of goods and services still only represented 17% of GDP.

The variables we did find to be significant are shown in table 12, along with their estimated effects on GDP growth. The real interest rates were calculated by deflating the relevant nominal rate with manufacturing WPI inflation, while the WACC rate is our own estimate of the Weighted Average Cost of Capital. This is derived from various “customer facing” interest rates, including the mortgage rate, the prime lending rate for companies and the borrowing rate against fixed deposits.

12. GDP growth: estimated elasticities

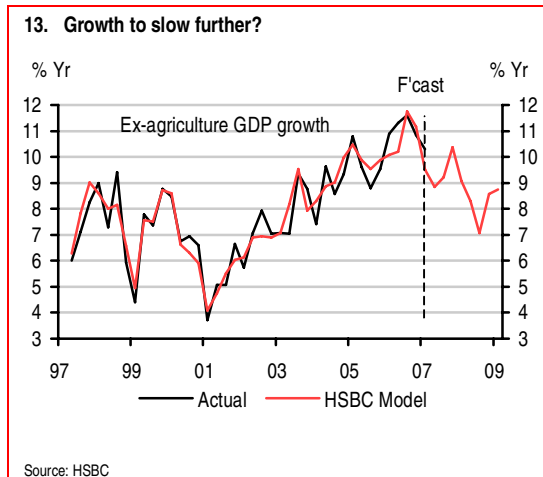
	Impact on year average GDP* growth	
	1 st year	2 nd year
1% rise in real 3m money	0.0%	-0.3%
1% rise in real 5yr yield	0.0%	-0.2%
1% rise in real 10yr yield	0.0%	-0.2%
1% rise in real WACC**	0.0%	-0.3%
1% rise in real ex. rate	-0.2%	-0.2%
10% rise in oil price	-0.1%	0.0%

Source: HSBC. * GDP ex-agriculture growth. ** HSBC estimate of the weighted average cost of capital. We weighted up the different borrowing rates facing corporates & households

It is noticeable that none of the interest rates impact GDP growth within the first year. Our analysis suggests that it takes between four and eight quarters for the effects to come through. Changes in the real exchange rate and the oil price have quicker effects, although it requires big moves in the latter to have any noticeable impact on growth according to the equation.

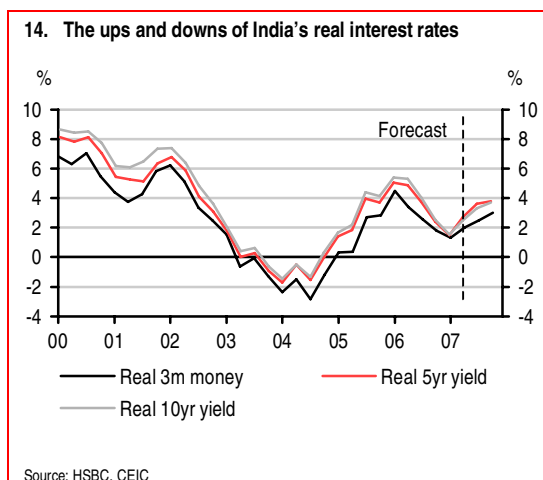
The fit of the model, which passes all the normal statistical tests and is estimated as far back as the quarterly GDP data go (1997Q2), is shown in

chart 13. We have also used the model to provide a forecast for growth until 2009Q1.



There are a number of points to make:

- ▶ The equation appears to explain what has happened to growth over the last ten years fairly well. It has an R-squared of 0.90.
- ▶ It suggests that ex-agriculture GDP growth will have slowed further in the first quarter of the 2007/08 fiscal year (April-June), possibly to around 9% from the 10.3% outturn of the previous quarter.



- ▶ It then points to a bounce in economic growth in the second half of calendar 2007, followed by renewed weakness through much of 2008. The latter largely reflects the rise in real

interest rates (chart 14) as well as the lagged effects of the stronger real exchange rate.

- ▶ The fiscal year averages for ex-agriculture growth given by the model are 9.4% in 2007/08 and 8.2% in 2008/09, down from 11% in 2006/07.
- ▶ Over the last five years, total GDP growth has averaged roughly 1.5ppts less than the ex-agricultural rate. And applying this difference to the numbers above would give overall GDP growth of 7.9% in the current fiscal year and 6.7% in the following year.

...but how plausible are they?

If these numbers are right they imply a smallish downside surprise relative to the current consensus forecast of 8.3% average GDP growth in 2007/08 and a much bigger one for 2008/09, where the market is expecting an 8% rise. The RBI's own projection for the current fiscal year is even stronger at 8.5%, while the government's 5-year plan, which started last year, envisages average GDP growth of 9% over the whole period, reaching double-digits by the end of it.

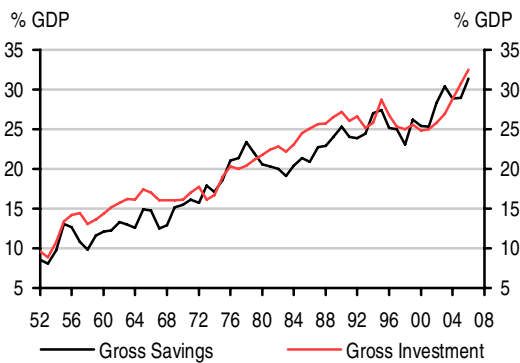
As a test of the reliability of the model we have investigated how it would have performed over the last twelve months, by estimating it up to the January-March quarter of 2006 and then letting it solve for the rest of the period. The good news is that there is no evidence of the equation becoming statistically inappropriate at any time. But still it did under-predict year-on-year GDP (ex-agriculture) growth by an average of 0.8ppts a quarter.

Looking ahead, therefore, the question we need to address is will this under-prediction continue?

And in order to answer it we really need to understand why the under-prediction happened in the first place. There are two possible explanations.

- ▶ First, that it is indicative of an improvement in the trend rate of growth, which is not yet sufficiently large or long-standing to show up as a structural break in statistical terms. Some point to the recent surge in India's investment share in GDP, largely justified by higher savings, as evidence that the sustainable growth rate is likely to have improved (chart 15).

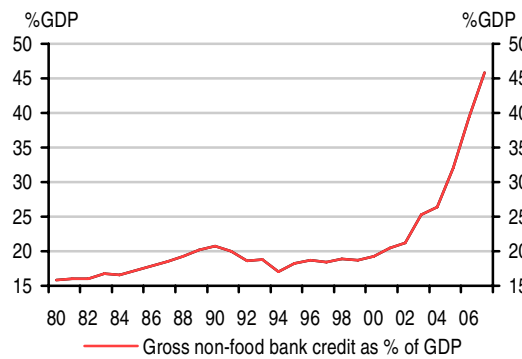
15. The rise & rise of India's investment share in GDP



Source: CEIC

- ▶ Second, that it reflects nothing more than economic “froth” perhaps resulting from over-optimistic profit and/or income expectations that are encouraging excess-investment or investment in “non-productive” sectors. If correct, the recent rise in the investment share in GDP is likely to reverse and the model may actually start *over-predicting* the growth rate.
- ▶ A similar danger is implied by chart 16, which is effectively the flip side of the rise in investment. This shows how debt levels have soared over the last few years, making the economy more sensitive to a given change in interest rates than was previously the case. The worry is that at least part of the strength also reflects a relaxation of lending standards.

16. Debt levels have soared

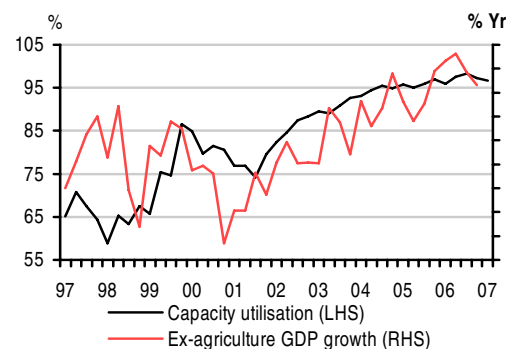


Source: HSBC, RBI

It is impossible to be sure which explanation is right at this stage and indeed we shouldn't expect a definitive answer for months if not years.

Nevertheless, considering what is happening to capacity utilisation in relation to GDP growth may provide some clues. The NCAER Research Institute publishes a quarterly survey asking companies whether they are “operating at or above an optimal level of capacity utilisation”. The results are shown in chart 16 and we have tracked them against the ex-agriculture growth rate.

17. Few signs of over-investment at a whole economy level



Source: NCAER, CEIC

On this basis, it would be hard to suggest that there has been over-investment in India. After all, this measure of capacity utilisation was a staggering 96.6% in the last survey for July. Clearly the situation is very different from 1997/98 when, despite strong GDP growth, capacity utilisation was comparatively low (although we need to be a little careful in making comparisons given that there have been methodological changes in the capacity series).

At the same time, however, it is surprising that the strong growth in fixed capital investment is seemingly not easing the capacity constraints at all. In practice, this may just reflect the fact that it takes time for capacity to be added, but it could also reflect a misdirection of investment. It is noticeable, for example, just how strong bank lending to the real estate sector has been over recent times. And although a huge expansion of the housing stock and commercial office space is clearly essential the worry must be that some of the investment is based on an unsustainable rise in property prices and hence vulnerable to a sharp correction at some point.

Slowdown showdown

In this section, we have argued that the economy has softened from the hectic pace of the first nine months of calendar year 2006, although growth could hardly be described as weak. We have explored whether the economy is likely to carry on cooling or to pick up from here, arguing that the lagged effects of higher real interest rates and

the stronger currency mean the downturn is not over yet. Finally, we have suggested that our model-based approach is likely to be much better at telling us about the short-term direction of growth than the exact outcome.

So where does all this leave us with respect to our own growth forecasts? In the last edition of the *Asian Economics Quarterly* (2007Q3) we predicted that Indian real GDP growth would slow from 9.4% in 2006/07 to 8% in the current fiscal year and 6.5% in 2008/09. We have decided to edge both numbers slightly higher to 8.3% and 7% respectively, which leaves us roughly in line with the current consensus for 2007/08 but still quite a lot softer than most for the following year. Our numbers are detailed in table 18 below.

An election effect?

The main reason for upping our projections is to take explicit account of a probable fiscal boost ahead of the 2009 general election. If we are right in suggesting that growth will soften further from here then the government seems likely to respond by easing the budgetary reins, particularly as it has more room for manoeuvre than it expected only a few months ago in the end-February budget.

At that time, the government forecasted a budget deficit of 3.8% of GDP in 2006/07, whereas it actually turned out to be 3.5%. The official target for the current fiscal year is 3.4% of GDP at present, which would seem fairly easy to achieve even taking account of a likely rise in the debt-

18. GDP growth forecasts

% Fiscal Year	2006/07	2007/08	2008/09	Jan-Mar 07	Apr-Jun 07	Jul-Sep 07	Oct-Dec 07	Jan-Mar 08	Apr-Jun 08
GDP	9.4%	8.3%	7.0%	9.1%	8.8%	8.5%	8.4%	7.5%	7.3%
<i>Sector breakdown</i>									
Agriculture	2.7%	3.7%	2.5%	3.8%	5.6%	4.5%	3.3%	1.3%	2.2%
Industry	11.0%	10.0%	8.5%	11.2%	11.1%	10.5%	9.5%	8.9%	8.7%
Services	11.0%	9.1%	7.8%	9.9%	9.8%	9.3%	8.8%	8.6%	8.5%
% Calendar year	2006	2007	2008						
GDP	9.6%	8.7%	7.1%	-	-	-	-	-	-

Source: HSBC

servicing bill resulting from the higher interest rates. Although it is extremely early days, data for the first two months of the 2007/08 fiscal year are extremely encouraging, showing central government revenues up 44% year-on-year and spending down 1.3% year-on-year.

In “*India’s budgetary balancing act*”(21st February 2007) we argued that the fiscal stance could be eased by around 1% of GDP in 2007/08 while remaining loyal to its fiscal objectives and are happy to stick with that view here. This is the kind of easing we anticipate over the next two years.

A pause that refreshes

With GDP growth as strong as it has been and optimism about the near term future still extremely buoyant, even 7% GDP growth is going to feel a bit like a recession in India. But what goes up must come down at some point and a period of sub-trend growth is ultimately what India needs to ease many of the excesses we referred to in “*India: Too fast, too loose*” (23 October 2006). This then should provide the basis for a renewed, strong upturn in the country.

India’s fabulous long-term growth story is not in doubt as far as we are concerned but cyclical ups and downs are an inevitable feature of all economies. We believe the country has entered one of those down phases.

Inflation: Dead or alive?

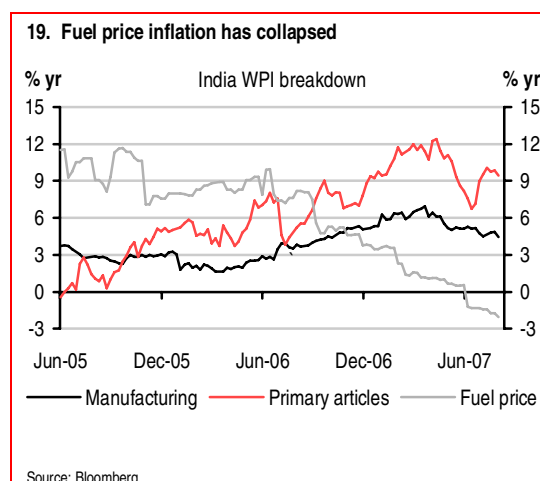
- ▶ WPI inflation has bottomed, although any pick up will be modest during the rest of fiscal 2007/08
- ▶ CPI developments depend crucially on food price inflation which we expect to remain strong given lagged demand effects
- ▶ The outcome of the 6th Pay Commission is an important wild-card

Wholesale collapse?

Unusually, the key inflation measure in India is Wholesale Prices, rather than the CPI. This is the indicator most closely watched by the Reserve Bank which argues that the WPI has the advantage of being available on a weekly basis, with a lag of just two weeks, while the CPI is a monthly series that is only released three weeks after the end of the relevant month. There is also no single national CPI series but rather four different ones covering agricultural labourers, rural workers, industrial workers and urban non-manual employees. In addition, the basket of products making up the WPI is more up to date (or rather less out of date) than the various CPI measures, using 1993-94 weights rather than those of the mid-1980s.

As we pointed out at the start of this report, WPI inflation has fallen from its highs at the beginning of this year and is currently below the Central Bank's 5% objective for 2007/08 (it was 4.1% at the beginning of August). Looking at the breakdown of the index, the drop has reflected declines in each of the three main components – “primary articles”, “fuel, power, light and lubricants”, which has turned negative, and “manufactured products” (chart 19). The first two

sectors have respective weights of 22% and 14% in the overall index with the rest made up by manufacturing.

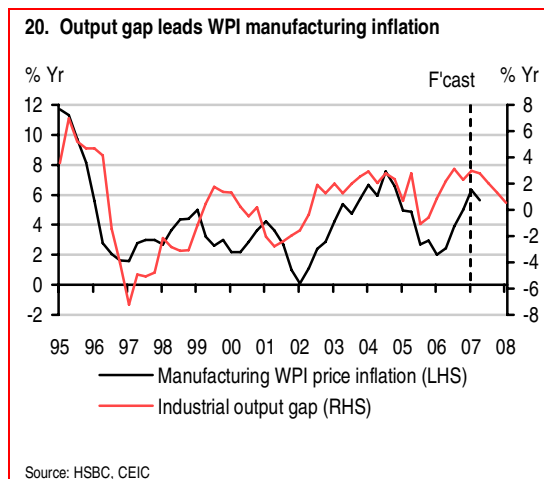


Manufacturing: carry on falling

Looking ahead, we believe there is a good chance that the manufacturing component will continue to trend lower in the next few months. This is based largely on a model we have been using successfully for some months now.

The model incorporates the nominal effective exchange rate (we couldn't find a separate role for the rupee-US dollar rate), the oil price (reflecting the fact that oil is an important component of

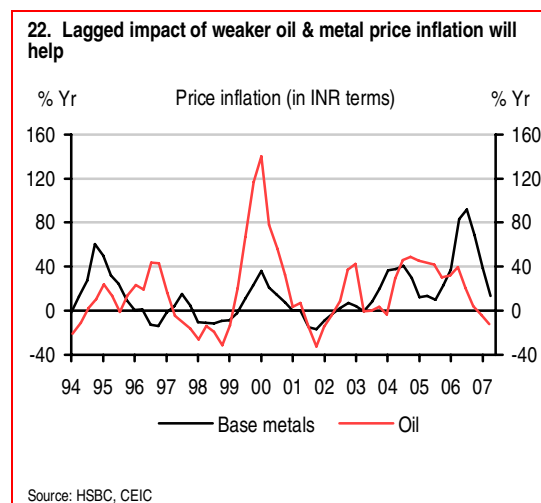
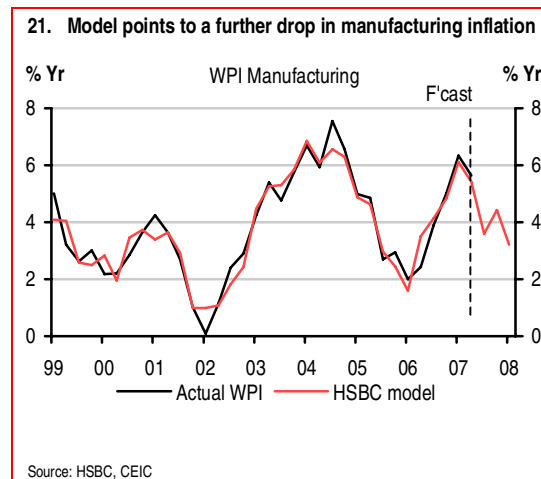
manufacturers' costs), base metal prices and a measure of the industrial output gap. The last of these is calculated as the difference between the year-on-year change in industrial production and the estimated trend growth of the sector, which we have taken to be the 3-year moving average of output growth. Chart 20 suggests that the output gap often leads movements in wholesale manufacturing price inflation by 6-12 months and should exert some further downward pressure as the year progresses.



We have shown the fit of the equation and the model-generated projections up to and including the January-March quarter of 2008 in chart 21. It should be noted that a couple of the explanatory variables are included as contemporaneous terms in the equation while others are not lagged that much, meaning that we have to do a fair amount of forecasting work to generate the WPI numbers for the year ahead. For the record, we have a built in an oil price of USD75 per barrel, with the base metal price index rising 10% by the end of 2007 and the trade weighted exchange rate remaining at current levels.

On this basis, the model suggests that manufacturing price inflation could drop to around 4% later this year, falling further in early 2008. We have already suggested that a narrowing of the industrial output gap will drive

part of the decline, while the strength of the currency and the lagged effects of the drop in both oil and base metal price inflation (chart 22) are further reasons to believe that price pressures will continue to ease in the short term.



Using the equation, we have shown the typical impact of changes in the various explanatory factors on WPI manufacturing price inflation in table 23. It is interesting to note just how sensitive the inflation rate is to changes in India's trade weighted exchange rate, presumably reflecting the fact that so many of the items included in the WPI basket are imported. Not surprisingly, the demand effects take some time to come through but when they do are reasonably powerful.

23. WPI manufacturing: estimated elasticities

	Impact on year average WPI inflation Year 1	Year 2
1% rise in nom. ex. rate	-0.7%	-0.7%
10% rise in metal price	0.2%	0.6%
10% rise in oil price	0.4%	0.2%
1% rise in output gap	0.0%	0.5%

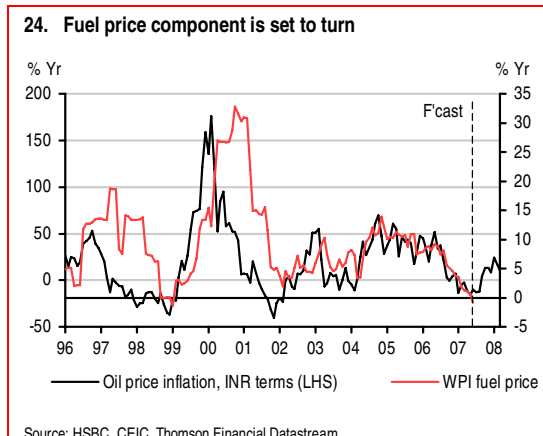
Source: HSBC

So if the omens for the manufacturing component are reasonably encouraging what about fuel and primary articles?

Fuel: How big an oil threat?

We mentioned earlier that the fuel component of the headline WPI had softened significantly and is actually now falling in year-on-year terms. At the same time, however, the RBI and others appear to be increasingly concerned that the recent bounce in oil prices will lead to a renewed spike in this series. So just how serious is the threat from this source?

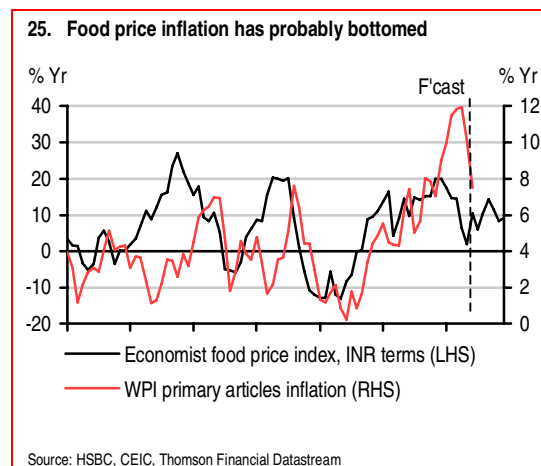
In chart 24 we have tracked the year-on-year change in the rupee-denominated oil price against fuel price inflation in the WPI, extending the former on the assumption of an unchanged oil price of USD75 per barrel and a USD-INR exchange rate of 40. Clearly there is a pretty good relationship, particularly over recent times, and the chart suggests that fuel price inflation is indeed likely to have bottomed.



Reading off the right hand scale our oil and currency price assumptions are consistent with the year-on-year WPI fuel price rising to around 5% in the first quarter of next year from -0.8% in June. This in turn would normally be enough to add nearly 1 percentage point to the headline WPI rate.

Food concerns?

In trying to get an idea of where the headline WPI rate is heading the biggest uncertainty relates to the “primary articles” component, 70% of which is food. Nevertheless, some help is provided by the year-on-year change in the *Economist* food price index in rupee terms. Both variables are shown in chart 25 where it is evident that the *Economist* index has led turning points in primary articles inflation even if it has frequently erred as far as getting the precise magnitudes correct. With this in mind it must be of some concern that the *Economist* index has picked up in year-on-year terms.



We have extended the black line on the basis that the *Economist* index rises by the same amount in the second half of this year as it did in the first (nearly 10%). If this assumption is anywhere near right then it seems unlikely that the primary articles component of the WPI will be serving to drag the headline rate lower over the coming year. We should also bear in mind that unusually heavy

flooding in parts of the country recently will have damaged crops and could place further upward pressure on food prices.

Flattening out

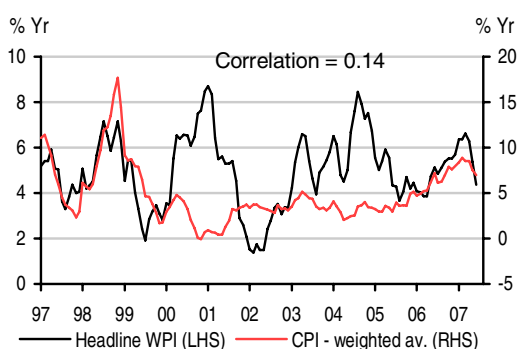
Bringing all this together, it seems to us that the most probable scenario is for a combination of higher fuel price inflation and stable to higher primary articles inflation to more than offset the impact of weaker manufacturing price inflation. This would then leave the headline WPI rate slightly higher than where it is now by the first quarter of next year (see page 17 for the detailed projections).

Don't forget the CPI

Although consumer prices certainly play second fiddle to the WPI, the policy makers do pay some attention to them and hence so should we.

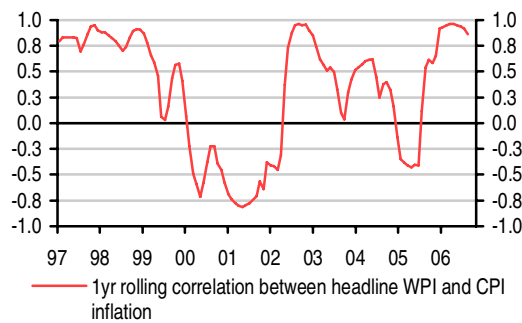
Chart 26 tracks the relationship between the headline WPI rate and our own estimate of national CPI inflation, which we derived by weighting together the four individual series. Clearly there is far from a perfect relationship between the two inflation measures, which is confirmed by chart 27 showing the 1-year rolling correlation. The latter is often low or even negative, although it has been strongly positive recently. There is also no evidence to suggest that WPI inflation leads the CPI rate.

26. Little relationship between WPI and CPI inflation



Source: HSBC, CEIC

27. 1-year correlation strong now but for how long?



Source: HSBC

As well as measuring prices at contrasting stages of the production process, the other key difference between the two series is the hugely higher importance given to food in the CPIs (table 28). Even for urban non-manual employees, food accounts for more than three times the weight it does in the WPI, while for agricultural workers it is close to five times higher.

28. The contrasting role of food prices

	Weight of food in the price index
WPI	15.4
CPI – agricultural labourers	72.9
CPI – rural workers	70.5
CPI – Industrial workers	60.2
CPI – Urban non-manual employees	47.1

Source: Ministry of Statistics

In attempting to forecast CPI food prices one key issue we need to consider is the extent to which the series is demand and/or supply determined. Are prices purely a function of the output of food, or is demand important too? We have attempted to answer this question by estimating an equation for CPI food.

Having experimented with a number of different domestic and international factors we found three to be important.

- ▶ The *Economist* measure of food price inflation in rupee terms, helping pick up price movements in imported food products.

- ▶ Agricultural GDP growth, which is designed to proxy domestic supply developments. It has a negative coefficient in the equation indicating that higher agricultural production does indeed tend to depress prices.
- ▶ Ex-agricultural GDP, which we used as a proxy of demand in the equation. This was also highly significant and had a much bigger coefficient than the domestic supply term. The equation suggests, however, that it takes nearly two years for the effects of changes in demand to impact the food CPI.

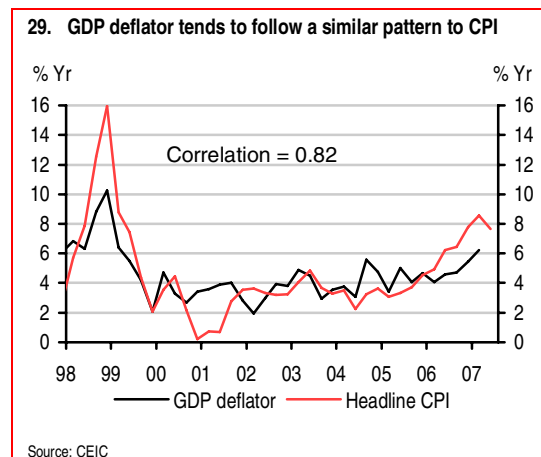
Clearly, predicting supply developments is never going to be easy, particularly in a country like India where output remains highly dependent on the monsoons. Nevertheless, on the basis of this analysis, we can at least be confident that the lagged effects of demand are likely to put upward pressure on food prices for some time to come.

With lagged demand effects also likely to be influential when it comes to other elements of the CPI and with fuel price inflation set to rise as well, it seems to us that headline CPI inflation will remain reasonably high over the coming months.

And last but not least...

The other measure of inflation worth a brief mention is the GDP deflator (effectively the difference between the growth in nominal and real GDP). While it tends to receive little attention as it is only available quarterly and with a sizeable lag it does have the advantage of being the widest measure of price developments in the economy. It

is shown in chart 29, where we have tracked it against our aggregated measure of headline CPI inflation.



The GDP deflator was up 6.2% in the year to the January-March quarter of 2007, which is the highest rise for eight years, driven partly by a 6.4% increase in the private consumption deflator. As the chart makes clear, it has a fairly close relationship with CPI inflation - the correlation is 0.82 over the last ten years. This compares with a correlation of 0.32 with WPI inflation.

The forecasts

Having tried to identify some of the key drivers behind the various measures of inflation in India, it's time to come up with some more detailed projections. Our forecasts are shown in table 30 with the highlights as follows:

- ▶ Despite a likely drop in the manufacturing component of the WPI, an expected sharp turn in the fuel price series means the headline rate has probably now bottomed.

30. Inflation forecasts

	2006/07	2007/08	2008/09	Jan-Mar 07	Apr-Jun 07	Jul-Sep 07	Oct-Dec 07	Jan-Mar 08	Apr-Jun 08
WPI – headline	5.4%	4.9%	5.5%	6.4%	5.3%	4.5%	5.0%	4.6%	5.0%
WPI – manuf'g	4.4%	4.5%	4.8%	6.3%	5.6%	4.5%	4.3%	3.5%	4.2%
CPI – headline*	7.3%	7.6%	8.3%	8.6%	7.7%	7.5%	7.5%	7.5%	8.0%
GDP deflator	5.3%	5.7%	6.3%	6.2%	6.0%	5.8%	5.7%	5.5%	6.0%

Source: HSBC. * Weighted average CPI

We expect it to move largely in a range of 4.3%-5% between now and 2008Q1, before breaking decisively higher from the second quarter of calendar 2008 and moving well away from the RBI's 4-4.5% medium term objective.

- ▶ If we are right in suggesting that food price inflation will stabilise if not move higher from here, then the chances are headline CPI inflation will do something similar. Now at 7%, we are looking for our weighted average measure to rise back up to 7.5% in the near term, perhaps taking another leg higher in 2008.

Labour market effects?

The reader will note that we haven't mentioned wage growth or any other labour market indicators for that matter in this section. This might seem strange but reflects the dearth of data in this area. India doesn't publish a national wage or unemployment series, for example, while the employment and vacancy data are close to a year out of date and, in any case, only cover a small part of the total labour market.

Although this is far from ideal, the demand variables used in the various equations should pick up most of the effects. Having said that it is important to mention one potentially significant development which the models certainly can't hope to capture – the outcome of the Sixth Pay Commission.

6th Pay Commission – an upside risk

The Commission was constituted in October last year and is due to report its recommendations for the pay of up to 5.5 million central government employees by April 2008.

The last Commission, which reported in 1997, resulted in a 44% increase in the public sector wage bill and is widely thought to have added to inflation as well as leading to a sharp deterioration in the public finances during the late 1990s. Most State governments, which employ roughly 15 million people, also replicated the rise (see appendix for details of the Pay Commission system and results).

In 1997, the real wage increase was based heavily on the inflation-adjusted rise in per capita national product since the previous Commission. And if the same principle were applied this time then the recommended wage hike would amount to more than 50%!

Such a formulaic approach may of course not be taken this time while judging exactly when the increases will be implemented is very difficult. As such, we can't really incorporate anything into the central forecast at this stage. But suffice to say the Commission's results represent an upside risk to the inflation projections set out in table 30 and we would be surprised if an interim increase, possibly of 10-15%, didn't materialise before the general election in 2009.

As a partial aside, higher public sector wages will also add modestly to the growth rate of the economy. This is because changes in the wage bill are used to proxy movements in the value added of the public sector.

Rates: What happens next?

- ▶ RBI has a number of different objectives, including inflation, growth and the exchange rate, which sometimes conflict
- ▶ The Bank is in pause mode at present, but we are looking for the repo rate to rise by 50bps in the first half of next year
- ▶ Policy could start to be eased in 2009, ahead of the elections

Back to basics

In order to determine what the Reserve Bank might do from here, a useful starting point is to remind ourselves of the Central Bank's responsibilities in relation to its role as the country's Monetary Authority. According to the RBI's website it has twin objectives of *"maintaining price stability and ensuring adequate flow of credit to the productive sectors"*. In other words low inflation and strong growth.

No more detail is given on the site, but Dr. Rakesh Mohan, Deputy Governor of the RBI, has provided further insight in a paper entitled *"Monetary Policy Transmission in India"*, presented in December 2006. Here he argued *"given the overarching consideration for sustained growth in the context of high levels of poverty and inequality, price stability has evolved as the dominant objective of monetary policy. The underlying philosophy that it is only in a low and stable inflation environment that economic growth can be sustained"*.

Policy framework

In order to achieve its goals, the RBI has switched from a *"loose and flexible monetary targeting"* framework, which it operated from 1985 to 1997,

to a *"more broad-based multiple indicator approach"* (Mohan, 2006). The deputy governor added that the indicators monitored included *"credit extended by banks and financial institutions, the fiscal position, trade and capital flows, inflation rate, exchange rate, refinancing and transactions in foreign exchange and output"*.

In contrast to many other central banks, India does not have an explicit inflation target. According to Dr. Mohan this is explained by a number of factors including India's *"record of moderate inflation"*, the absence *"of an efficient monetary transmission mechanism"*, the importance of *"significant supply shocks related to the effect of the monsoon on agriculture, where monetary policy action may have little role"* and the difficulty in coming up with *"a universally acceptable measure of inflation"*. The bottom line seems to be that given the difficulties in defining inflation and the problems in influencing it, a specific target would lack credibility.

Nevertheless, the RBI has recently become more specific about its inflation objectives, perhaps reflecting criticism that it lacks transparency. In the end-July First Quarter Review of the Annual Policy Statement, for example, the Bank indicated, *"holding inflation (by which it means*

the WPI rate) *within 5.0% in 2007-08 assumes priority in the policy hierarchy, while reinforcing the medium-term objective to condition policy and perceptions to reduce inflation to 4-4.5% on a sustained basis*".

It may be, of course, that these objectives are changed or dropped at a later stage but at least for now it looks as though the RBI is operating an inflation target in all but name.

Too many objectives

This does not mean, however, that the growth objective has been completely forgotten about. Apart from the fact that the RBI has argued that low and stable inflation is an important prerequisite to strong growth it has also been trying to manage the exchange rate, fearing that too strong a rupee will hurt exports. Our impression is that the policy authorities are extremely keen to prevent the currency from breaking 40 against the US dollar, effectively drawing a metaphorical line in the sand at the current exchange rate.

The defence of that line has, however, required huge currency intervention judging by the fact that FX reserves grew by a whopping USD13.8bn in June and July combined. And herein lies the rub. The liquidity flows resulting from the intervention were not sterilised leading overnight interest rates to fall a little too close to zero for a country growing by 9% and with inflation far from dead.

In similar fashion to many other emerging markets, the Indian authorities are effectively grappling with the so-called "Impossible Trinity", wishing to control both the currency and inflation in the absence of strong new capital controls. With the government keen on promoting Mumbai as a major global financial centre, introducing new obstacles to foreign inflows of funds would seem a strange thing to do (although it has recently introduced new curbs on External

Commercial Borrowing to prevent firms borrowing more than USD20m per financial year from abroad. Overseas loans of less than USD20m now require permission from the central bank).

A losing battle?

Assuming the inflows continue, which remains our central view despite the recent re-pricing of global risk, we suspect the authorities are ultimately fighting a losing battle.

The fine line currently being trod by the RBI was very well illustrated at the last policy meeting. While attempting (successfully) to push overnight interest rates to 6% by raising the CRR and removing the INR30bn daily cap on reverse repo auctions it opted not to raise either the repo or reverse repo rates despite indicating that it remained very worried about inflation. This no doubt reflected the fear that policy rate hikes would serve to push the rupee higher.

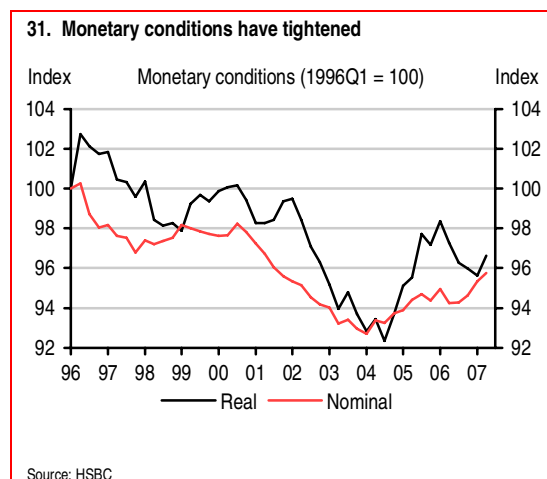
In our view, the best the authorities can hope for is to smooth the exchange rate, rather than change its direction. The currency team are expecting the rupee to hit 39 by the end of calendar 2007 and 38.5 by mid-2008.

What about rates?

But would such a move be enough to prevent policy rates from rising further? Are we now at the peak of the rate cycle? The answer is likely to depend partly on how the RBI views the overall policy stance and, in this context, it is useful to calculate an aggregate monetary conditions index for India, which combines the impact of interest rate and currency effects on the economy.

Chart 31 reveals the results of that work, showing our estimate of both nominal and real monetary conditions. The series are indexed such that 1996Q1=100 and we have weighted together the interest rate and currency terms on the basis of the

coefficients in our earlier growth equation. This gives a 100bp change in interest rates more than four times the importance of a 1% change in the trade weighted exchange rate, reflecting the fact that India is still a relatively closed economy. A rising line indicates a tightening of policy conditions and vice versa for a drop in the series, with the change in each index equating roughly to the effect on ex-agricultural GDP growth. In other words a fall from 95 to 93 should be roughly equivalent to a two-percentage point addition to growth.



Both measures bottomed in 2004 and have been trending higher since then (although real monetary conditions did ease temporarily in 2006 thanks to the rise in manufacturing WPI inflation at the time). It is effectively the lagged effects of this tightening which we expect to dampen growth somewhat over coming months.

Policy conditions are, however, apparently not as tight as they were during the second half of the 1990s and the first couple of years of the new millennium. The result being that the level of both indices is a little below the average of the whole period.

So does this mean that monetary conditions, while more restrictive than they were, are still the looser side of neutral? Not necessarily. In order to be

able to draw such a conclusion from chart 31 the trend rate of GDP growth would need to have been constant throughout the period, while the start and end of the period would have to represent equivalent points in the economic cycle. Clearly both conditions are highly debatable.

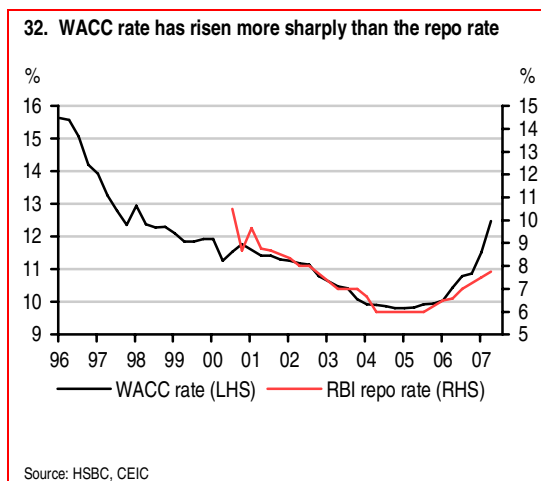
Where's neutral?

The traditional way of determining whether interest rates *levels* are restrictive or stimulative is to compare them with trend GDP growth. The theory being that GDP represents the broadest measure of the return on capital and the interest rate is obviously the cost of capital. If rates are below GDP growth then the cost of capital is less than the return on that capital, encouraging greater investment and vice versa if they are above.

The problem of course comes in determining what the trend growth rate is, while there are also issues concerning which interest rate(s) one should use. We argued in *India: pitfalls & possibilities* (July 2006) that trend real GDP growth was in the order of 6.5-7% and rising, based on estimates of the expansion in the working population and capital stock as well as estimated total factor productivity growth. This is now deemed extremely conservative, although one wonders whether estimates of trend growth are being influenced too heavily by cyclical developments. Nevertheless, let's assume that the underlying growth rate is 8.5% in real terms and 12.75% on a nominal basis (the latter builds in a 4.25% trend inflation assumption which is the midpoint of the RBI's medium term range).

As for the interest rate, economists commonly use the policy rate, of which there are two in India - the reverse repo, currently at 6%, and the repo rate, now at 7.75%. On this basis, policy would appear to be incredibly stimulative given the reverse repo is less than half the neutral rate, while the repo rate is more than 400bp below this measure of rate neutrality.

But perhaps this is unfair. After all, the policy rates are not necessarily that representative of the interest rates received/paid by most individuals and businesses. Earlier on in the report, we mentioned that we have calculated a Weighted Average of Cost of Capital (WACC) based on actual “customer-facing” interest rates. This is shown in chart 32, along with the repo rate which we have put on a different scale.



Having risen sharply through 2006 and the first half of 2007 (more so than the repo rate), we estimate the WACC stood at 12.5% in the second quarter of this year, up 250bp since the end of 2005, but marginally below the estimate of trend nominal GDP given above. It suggests that interest rates are only slightly stimulative at present.

So is this appropriate bearing in mind where India is in the economic cycle?

Taylor rule...

One method commonly used to determine the appropriateness or otherwise of the level of interest rates in a country is the Taylor rule. This aims to link rates to the amount of spare capacity in the economy and where inflation stands relative to target. It is shown below:

$$\text{“Appropriate” rate} = \text{Neutral rate} + 0.5 * \text{Output gap} + 0.5 * (\text{Current inflation} - \text{targeted inflation})$$

If we assume that the neutral rate is 12.75%, as discussed, while targeted inflation is 4.25% against a headline WPI rate of 4.4% in July, this just leaves us needing to know what the output gap (the percentage difference between actual GDP and estimated trend GDP) is – sadly not an easy task! Our own estimates, based on a trend growth estimate of 7%, would put it at +3-4%, while the likes of the RBI would no doubt argue that it is much smaller than this. In the context of the widespread signs of cyclical excess in the economy, however, we would have thought it hard to argue that GDP is actually below trend at present and hence guess that that the Central Bank would work with a gap of about +1%.

Plugging all these numbers into the equation above gives an “appropriate” rate of 13.3% using the likely RBI numbers and 13.1% for us (bearing in mind we have assumed a lower neutral rate of 11.25%, based a weaker estimate of trend growth). Both are obviously well above the policy rates but reasonably close to the current WACC rate.

...doesn't explain past behaviour...

In practice such a simple formulation is unlikely to explain movements in interest rates and, sure enough, when using the rule it doesn't fit well with what the RBI has actually done over recent years. We also tried freely estimating the rule by running a regression equation designed to explain the repo rate on the basis of the headline WPI rate (relative to target) and the output gap (which we took to be the difference between GDP growth and a two year moving average of year-on-year growth). This failed dismally as well.

...or does it?

But before ditching the rule altogether, we investigated the extent to which we could improve

34. Interest & exchange rate forecasts*

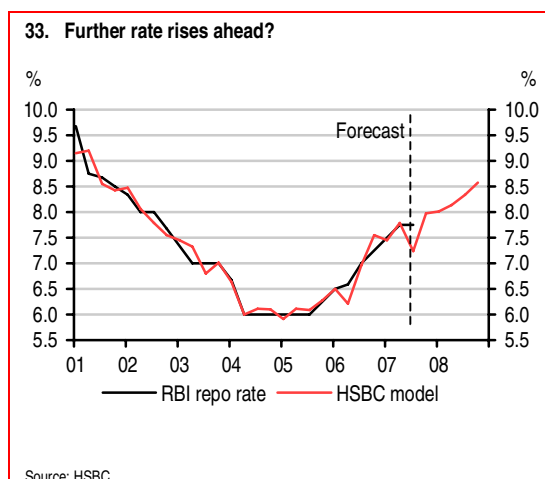
	2006/07	2007/08	2008/09	Jan-Mar 07	Apr-Jun 07	Jul-Sep 07	Oct-Dec 07	Jan-Mar 08	Apr-Jun 08
Repo	7.5	8.25	8.0	7.5	7.75	7.75	7.75	8.0	8.25
Reverse repo	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
CRR	6.0	8.0	7.75	6.0	6.5	7.0	7.5	8.0	8.0
10-year yield	7.9	8.3	8.4	7.9	8.2	8.2	8.0	8.3	8.4
Rupee-USD	43.6	38.5	38.0	43.6	40.0	39.5	39.0	38.5	38.5

Source: HSBC. * All end-period numbers

the explanatory power of the equation by adding other variables to it. The results were interesting and tend to support the view that the Central Bank focuses on a number of different indicators.

Having experimented with several different series we found an explicit role for the rupee-dollar exchange rate (but not the trade-weighted one) as well as industrial workers CPI inflation and the oil price. Interestingly, the latter had a negative sign, suggesting that in the past at least the RBI has tended to react to higher oil prices by cutting rates rather than raising them, presumably fearing the negative effects on growth of higher energy prices. We could find no role for either total credit or non-food bank lending.

The fit of the equation, together with some projections based on our forecasts for the explanatory variables, is shown in chart 33. It has an R-squared of 0.95, although this is inflated by the fact that it includes the lagged dependent variable.



We certainly wouldn't pretend that we have stumbled upon the perfect model to explain and forecast movements in the repo rate, but hopefully it provides some clues. The suggestion is that if growth, inflation and the exchange rate pan out in the way we have described in this report, the risk is that rates will rise further from here. The key lies with the expected pick up in both WPI and CPI equation, while the equation suggests that the RBI is slower to respond to growth developments no doubt reflecting data lags and the difficulty in knowing exactly which direction the economy is heading in.

All our rate forecasts, along with the exchange rate and 10-year bond projections, are shown in table 34. We haven't followed the model slavishly but do anticipate two 25bp repo rate hikes in the first half of 2008 (to 8.25%), with the CRR going up another 50bps later this year and 50bps next as the RBI continues to mop up liquidity. These projections are obviously premised on the assumption that a global credit crunch is not the end result of the current US sub-prime problems and ensuing market turmoil.

The reader will note that we have also pencilled in a small *reduction* in both the repo and CRR rates at the end of 2008/09. At that time, it seems likely that the weakness of growth and an impending general election will hold sway.

Appendix

Pay Commissions: the history

India's Pay Commission is designed to revise the pay and allowances of central government employees. Basic pay levels remain unchanged between reviews, which is often more than a decade, although some "instalments" are usually made. State governments often follow what is agreed at the central government level.

The country has had 5 Commissions since the Second World War, with the timing detailed in the table below. The reader will note that it has usually taken at least two years for the results to be finalised.

India's Pay Commissions

	Appointed by the government in	Time taken
First	May 1946	1 year
Second	August 1957	2 years
Third	April 1970	3 years
Fourth	July 1983	3 years & 11 months
Fifth	April 1994	2 years & 9 months

Source: HSBC

The outcome of the last Pay Commission, which recommended a 31% rise in real salaries, had major implications for the public finances as well as adding to inflation.

The table shows the additional per annum expense resulting from the Commission's recommendations. It is widely thought to have been a major factor behind the deterioration in the public finances in the late-1990s, with the public sector wage bill rising more than 40% between 1994 and 2000. The ensuing increase in interest rates may also have served to crowd out investment.

Financial implications of the 5th Pay Commission (per annum)

	INR bn	% share
Revision to pay scales	30.0	34
Pension benefits	11.7	13
House rent allowance	20.0	23
Medical benefits & other allowances	23.0	26
Upgrading of posts & categories	2.0	2.5
Income tax liability on grant of allowances	1.3	1.5
Total	88	100

Source: HSBC

Sixth Pay Commission

The sixth Pay Commission was constituted on 5 October 2006, nearly four years after the fifth Commission had suggested that it should be. According to its terms of reference, the sixth Commission should make its recommendations within eighteen months (by April 2008) for up to 5.5 million central government employees.

Assuming the government accepts the recommendations then it must decide when they should be implemented. This could involve retrospective payments just as it did in 1997, when the government paid out INR55bn. Indeed it is not impossible that such payments will be backdated to 1 January 2006, which is when the previous Commission suggested they should come into effect.

Notes

Disclosure appendix

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