

Should China Tolerate High Inflation?

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To determine whether high inflation is the appropriate policy for China one must do more than point out that several Asian economies have achieved a high GDP growth rate despite high inflation. Among a sample of rapidly growing East Asian economies (Indonesia, Hong-Kong, Japan, Malaysia, Singapore, South Korea and Taiwan) only Indonesia and South Korea have had inflation rates that averaged more than 10 percent in the 1963-1992 period.¹ Both have had high GDP growth rates -- but so have the two low inflation countries, Malaysia and Singapore. Hence such a simple look at foreign experience is not informative. A much more extensive analysis shows that it is very difficult to draw any conclusion about the relation of inflation to growth by comparing the growth rates of high and low inflation countries, or by comparing growth rates in periods of high and low inflation within a country. Insofar as any conclusion can be drawn, and it is far from certain that it can, it is that high inflation inhibits growth.

Given these difficulties of measuring the effect of inflation on growth empirically, an analysis of the various ways in which inflation can affect economic growth is needed. Such an analysis must distinguish carefully between high inflation and rising inflation. These have very different consequences. As discussed below, rising inflation is likely to raise the growth rate of real GDP temporarily, but high inflation is more likely to reduce than to raise GDP. Moreover, at least in principle, high inflation can continue indefinitely, but rising inflation cannot, because it leads eventually to hyperinflation and a breakdown of the monetary system. To see why high inflation and rising inflation have very different effects it is useful to step back and look at the problem in terms of the price level, its first derivative--inflation, and its second derivative--the rate of change in the inflation rate. Much confusion results from ignoring this distinction.

The price level itself has no effect on the functioning of the economy; it is neutral. If all prices were expressed in hundreds of yuan instead of yuan nothing would be changed except the numbers on price tags, invoices, etc. That is shown by the experience of countries that changed their unit of account. For example, France, whose currency had been highly inflated during World War II, dropped two zeros from the French franc. As one would expect, this had no effect on the French economy.

Now consider the first derivative of the price level, i.e., the inflation rate, starting with the purely theoretical case of an inflation rate that is constant, say 30 percent, and has been 30 percent for, say a hundred years. In this case it is reasonable to assume that everyone is aware what the inflation rate is, and that all formal and informal contracts (including wage agreements between enterprises and their workers) and all relevant institutions (such as the tax system and the accounting system) that can be adjusted for inflation, have been so adjusted. What effects would such an inflation have?

I. Stable Inflation with Full Adjustment

The answer is, not many. Wages would rise automatically by 30 percent each year, and interest rates would be 30 percent higher than they would have been without inflation. Nobody would lose or gain much, and whether prices rise by 3 percent, 30 percent, or by 300 percent would not be an issue that most people would be concerned about.

This is not to say that it would have no effects at all. Shops would face the cost of frequently changing price tags to keep up with inflation, and in-between price changes prices would be away from their equilibrium levels. In addition, since interest cannot easily be paid on currency, people would lose as the currency in their pockets loses some of its value each day. Moreover, the government would gain more revenue from seigniorage as inflation drives up the nominal demand for currency.

Even though high but stable inflation does little damage, such a policy cannot be recommended. It is an interesting theoretical concept, but not an achievable policy option. In practice, high inflation rates are not stable inflation rates. To see why, contrast the political pressures on monetary policy in two countries, country A with a 2 percent inflation rate, and country B with a 20 percent inflation rate. Suppose that in country A the central bank makes a mistake and the inflation rate rises by 2 percentage points to 4 percent. This would be perceived as a major change in the inflation rate. The central bank would be much criticized, and it would be under strong pressure to bring the inflation rate back to 2 percent. By contrast, in country B, if the inflation rate rises by 2 percentage points from 20 percent to 22 percent, this would not be considered a major change, so that there would be little pressure on the central bank to change its policy. And without such pressure the inflation rate is likely to keep on rising.

Moreover, the very fact that at some time in the past, country B had allowed its inflation rate to rise to 20 percent will make its citizens suspect that in the future its central bank will again give in to inflationary pressures. Hence, they are more likely than citizens of country A to respond to any increase in the inflation rate by raising their expectations of future inflation, and thus to increase their prices and wage demands right away whenever inflation rises. It is therefore not surprising that the empirical evidence generally shows a positive correlation between the level of the inflation rate and its variability. The historical record does not provide any examples of high but very stable inflation.

The only policy options that are worth discussing are therefore low inflation (which may, or may not be variable), or high and variable inflation. In the latter case neither expectations, contracts nor institutions will have fully adjusted to the current inflation rate. Since the more important effects of inflation are due to these adjustment lags, it is worth looking at the reasons why expectations, contracts, and institutions do not adjust right away.

II. The Adjustment of Expectations, Contracts, and Institutions

There are several reasons why institutions, contracts, and expectations do not adjust immediately to changes in the inflation rate. In principle, expectations could adjust rapidly. Imagine if the government announces that the inflation rate will be 30 percent tomorrow instead of the previous 3 percent. And assume further that the government has been absolutely correct in all its previous announcements, so that the public trusts it completely. In this case expectations would change immediately. But that is surely an improbable case. The government is not likely to announce that it is raising the inflation rate, because it is not eager to take the blame, and also because it can obtain certain benefits from the actual inflation rate exceeding the expected rate. And even if the government would want to tell the public what the inflation rate will be, it could not know this with any degree of precision. Moreover, the public is not likely to believe the government knowing that the government has an incentive to understate the inflation rate.

How fast expectations adjust depends, in part, on what they have to adjust to. It is much easier for the public to realize what the new inflation rate is if inflation has jumped from one fairly stable rate to another fairly stable rate. But if the inflation rate fluctuates greatly, then it is much more difficult to extract

the signal of the new mean inflation rate from the variation around this mean. Similarly, it is harder for expectations to adjust to a constantly rising inflation rate, than to a simple once-for-all jump in the inflation rate.

Even though for these reasons it is highly unlikely that inflation expectations change immediately to the correct figure, it does not follow that when the inflation rate rises, the public will necessarily underestimate the inflation rate. In the economics literature the error-learning model of expectations formation that has this implication has, rightly or wrongly, lost out to the rational expectations model that does not imply such an error.² The latter does not claim that expectations are always correct, but merely that overestimates and underestimates are approximately equal. However, they are equal only for an average of the changes in the inflation rate. Sometimes when the inflation rate changes the average expectation will be too low, at other times it will be too high. Thus, when the inflation rate changes it is by no means clear whether one should assume that inflation expectations fall short of, are approximately equal to, or exceed the actual inflation rate.

Contracts normally adjust only slowly as old contracts expire and are replaced by ones written after expectations have adjusted. In some cases it might be in the interest of both parties to rewrite unexpired contracts to take account of inflation. But since the costs of agreeing on a new contract can be high, there will be a strong tendency not to rewrite contracts, unless the inflation rate rises sharply, or it is clear that it will remain at its new level for a sufficiently long time.

It is obvious that institutions will adapt only slowly to changes in the inflation rate. Suppose that the inflation rate rises from, say 5 percent to 50 percent. It may now be worthwhile to keep most accounts in real rather than in nominal terms, to index wages and interest payments, and to change the tax system, so that those nominal gains that do not represent real gains are not taxed. But such changes are costly, and some of them will appear worthwhile only when it becomes clear that the inflation rate will continue to be high. Even then the changes will be slow because, while it may be easy to say in general terms what changes should be made, determining the specifics of the changes is sometimes extremely difficult. Moreover, the government may refuse to adjust certain institutions since it benefits from the lack of adjustment. For example, if the accounting system and the tax system are not adjusted to record real values rather than nominal values, government revenues increase when the inflation rate rises. The government may also be pleased to see inflation eat away at the real value of its outstanding debt, and at certain programs that provide excessive benefits—benefits that the government is afraid to reduce in the more visible way of cutting their nominal values.

In summary then, when the inflation rate changes it is plausible that price expectations will adjust to the correct figure only with some lag, and that they may overadjust or underadjust for some time. Moreover, before they have had time to zero in on the actual inflation rate, that rate itself may have changed. Since contracts can change only when expectations have changed, and since they are expensive to change, they are likely to take substantially longer than expectations to adjust to a new inflation rate.³ Institutions, being much harder to change, will adapt only with a much longer lag.

III. The Benefits and Costs of Rising Inflation

As previously described, even a high inflation rate will have only small effects on the economy once expectations, contracts, and institutions are fully adjusted to it. But, as just explained, these adjustments take time. One can therefore analyze the effects of a change in the inflation rate by seeing how the imperfect adjustment of expectations, contracts, and institutions affects the economy. To do so one needs to look only at the effect of rising inflation, as the effects of falling inflation are similar.

But one does need to distinguish between several cases that differ in the extent to which expectations, contracts, and institutions have adjusted. The first case is one in which much of the adjustment has already taken place. Both expectations and contracts have fully adjusted, only institutions have not. In the second case, the adjustment is less; although expectations have fully adjusted, and there is no uncertainty about the current and future inflation rate, contracts as well as institutions are not fully adjusted. Moreover, certain prices and wages are held down by government controls. In the third case, not even expectations have fully caught up with the higher inflation rate. In addition, the public is uncertain about the future inflation rate. Finally, in the fourth case, the public overestimates the inflation rate, and is again uncertain about it.

These are not the only possible cases; for example, one could also consider the case in which inflation expectations are correct on the average, but some people overestimate and some underestimate the inflation rate, and there is much uncertainty. But consideration of these four cases suffices to bring out the salient issues. In each case, in addition to the effects of the incomplete adjustment pertaining to that particular case, we have the effects (set out in Section I) that inflation has under conditions of full adjustment. These are the costs of frequently changing price tags, and of lags in adjusting prices, of low holdings of currency, and of increased seigniorage.

A. Full Adjustment Except for Institutions

In this first case, an important set of institution that has not adjusted consists of accounting rules. Thus, the depreciation rates that are set for fixed capital, as well as the valuation of inventories, do not take into account the rising prices at which fixed capital and inventories will have to be replaced. As a result, the profits of enterprises are overstated, while losses are understated. One effect is the tax system becomes distorted since enterprises have to pay taxes on the spurious profits that result from under-reporting of depreciation expenses and, depending on how the accounting system treats inventory profits, perhaps also on spurious inventory profits. Moreover, the income taxes for enterprises that are net debtors are too low if they are allowed to deduct all nominal interest payments from taxable income, even though some of these nominal interest payments represent real loan repayments rather than real interest payments. Conversely, net creditors are taxed on spurious gains.⁴

If investors (either private investors, local governments, or the state) do not make allowance for these accounting distortions, investment will be misallocated. For very high rates of inflation that could be a serious problem (cf. Plessner, 1994). Capital intensive enterprises will then attract excessive investment, because they will seem more profitable than they actually are. But if investors do make sufficient allowance for the accounting distortions, then the taxes that these enterprises pay on their spurious profits discourage investment in them.

The failure of the tax system to be fully adjusted for inflation affects not only the distribution of the tax burden, but also the total receipts of the government. The net effect on the central government's revenue is not clear at present. In Western market economies with their heavy reliance on income taxes that are not fully indexed, the government usually gains.⁵ Insofar as the new (1994) tax reforms make the Chinese tax system similar to Western ones, the central government should also gain from inflation. Under the previous system, with its heavy reliance on negotiated enterprise taxes, the effect on the government's revenues depended in large part on whether during its negotiations with the enterprises the government took full account of the inflation rate, and set the enterprises' nominal payments high enough to compensate for the declining real value of a given nominal tax liability.

The distribution of total tax receipts between the central government and the provinces is also affected, if the provincial governments transmit the taxes they collect for the central government with a lag. For example, if the revenues that are due the central government are transmitted, say once a month and the

inflation rate rises from 1 percent per month to 2 percent, then the central government loses 1 percent of the real value of these revenues. At least partially offsetting, and perhaps more than fully offsetting these losses to the central government, are the gains from the seigniorage effect already discussed in connection with fully anticipated inflation.

B. Contracts and Institutions Not Fully Adjusted

In the next case, not only institutions but also formal and informal contracts, as well as certain prices controlled by the government, have not yet adjusted to the higher inflation rate. Only expectations have adjusted.

As a result, a rise in the inflation rate not only has the effects discussed in the previous section, but has important additional effects on employment and output; on the savings rate and hence the stock of capital; on the efficiency with which resources are used; on the distribution of income; and on government finance.

Employment and Output

With formal and informal labor contracts not having fully adjusted, the real wages of some workers fall. And in industries whose output prices are controlled and who have a hard budget constraint, wages may be very slow to adjust. At the new, lower real wage, the demand for labor is greater, so that previously unemployed workers now find jobs. This expansionary effect of lower real wages operates not just across the board. It also ameliorates sectorial and regional problems. Suppose that demand had previously shifted away from a certain industry. This industry now has a pool of unemployed workers who can be drawn back into employment as their real wage falls, even though overall there are relatively few unemployment workers in the economy as a whole. It is this favorable effect of inflation on unemployment that advocates of inflationary policies point to, and with some justification, because it can under certain conditions be a powerful effect. What they often fail to realize is that this is not the effect of high inflation, but of rising inflation, because it lasts only until wage contracts are adjusted.

Moreover, it is not **necessarily** true that the decline in real wages will raise total employment and therefore GDP, because employment depends upon supply as well as demand. It is possible that at the lower real wage fewer people may want to work, so that total employment falls even though unemployment also falls. even though unemployment also falls. This supply effect may take the form of surplus labor being less willing to leave agriculture. On the other hand, it is possible that the labor force expands instead of contracts as real wages fall. In an attempt to maintain their real incomes more family members may enter the labor force, and workers may take on additional jobs. Thus Gavin Peebles (1991, p. 201) explains the "moonlighting craze" of the late 1980s as a response of "state employed skilled workers, administrative personnel and teachers" to the erosion of the real wages by inflation. In principle, it is therefore not possible to say whether a rise in the inflation rate will necessarily raise or lower employment. It depends upon the particular circumstances, for example, the extent to which there is excess labor in agriculture.

A policy of allowing the inflation rate to rise reduces unemployment also in an indirect way. When making policy the People's Bank of China (PBC), like all central banks, faces much uncertainty and its estimate about whether aggregate demand will be excessive or deficient at the time its policy takes effect is subject to much error. If it is more willing to bear the costs of inflation than the costs of recession, it will tend to respond to situations of doubt by adopting expansionary policies. Some of the time these policies will offset a decline in aggregate demand that would otherwise have occurred, and not be inflationary. But at other times, when demand would have been sufficient even without the expansionary policy, a higher inflation rate will result.

A willingness to allow the inflation rate to rise also reduces unemployment when a supply shock occurs. When faced with a supply shock, the PBC has a choice of either allowing the price level to rise, or of adopting a restrictive policy that will offset the rise in the prices of those goods that are affected by the supply shock by forcing prices of other goods to decline relative to what they would otherwise have been. Since such a restrictive policy will reduce output and employment, a greater willingness to tolerate inflation leads to a lesser rise in unemployment when a supply shock occurs.

The Capital Stock

The effect of a rise in the inflation rate on the savings ratio, and therefore on the capital stock is equivocal. As the higher inflation rate lowers the return on savings some people may decide to save less and to consume more, particularly by purchasing consumer durables to beat further price increases. However, other people who want to attain a certain stock of real financial wealth, perhaps so that they can at some future date supplement their pensions, may react by saving more. A number of studies of how the savings rate responds to changes in the real yield on saving have been undertaken for the U.S. economy, but their results are ambiguous.

The effect that a rising inflation rate has on the incentives to invest is also ambiguous. On the one hand, in the case where wage contracts have not yet adjusted to the higher inflation rate, profits rise, so that the funds that enterprises have available for investment increase. Moreover if they expect profits to stay high they have an obvious incentive to invest more. On the other hand, the lower real wage reduces the incentive to install labor-saving equipment.

The relation between the inflation rate and the capital stock depends also in an important way on the source of the inflation. Suppose, as is usually the case in China, the inflation is due to a stimulus to investment as the government or the banking system provide enterprises with more funds for fixed investments. The growth rate of the capital stock and the inflation rate then both rise. It is true that the higher inflation rate does not "cause" the increase in the capital stock, in the usual sense of the term "cause." The rise in the inflation rate is not even a necessary condition for the rise in the capital stock, since the additional investment could have been financed by raising taxes. All the same, if the government is unwilling to raise taxes or to spur private saving, the increase in the capital stock would not occur unless the inflation rate were allowed to rise.

Efficiency in the Use of Resource

A rise in the inflation rate affects not only the supply of labor and capital, but also the efficiency with which they operate. One way it does so is that the decline in real wages lowers the morale of the labor force, and hence its willingness to work hard. Workers who feel unfairly treated are less efficient (see Akerlof, 1984).

A second factor that reduces efficiency results from real wages declining at unequal rates. In some industries and in some enterprises wages are set at frequent intervals rather than by longer-term contracts. In addition, some contracts are close to their termination date when the inflation rate rises, while others have almost their entire life ahead of them. So real wages fall at different rates in various enterprises. This generates a misallocation of resources as industries and sectors whose real wages fall more than others find it difficult to hold on to their labor force. At the same time, workers crowd into occupations, such as self-employment, where nominal incomes respond more flexibly to the rise in the inflation rate.

The government sector is a particularly strong example of such wage distortions. As the inflation rate rises the government usually urges wage restraint on the other sectors of the economy. To make its urgings more compelling, it tries to set a good example by holding down the wages of its own employees, particularly those of its better paid employees who cannot make a powerful case for wage increases on the basis of needs. As government wages fall, the government loses some of its best employees. The resulting increased workload and general decline in morale then induces other government employees to leave too.

As the real value of government salaries falls, corruption increases. One reason is that government employees are unwilling to accept a large cut in their standard of living. A second reason is that, since they perceive themselves as treated unfairly, they feel less guilty about accepting bribes. A third reason is that one of the punishments for corruption, loss of the government job, no longer seems so damaging. As previously honest government employees become aware that more of their colleagues are now accepting bribes, their own inhibitions about accepting bribes are weakened.

As a result of its losing some employees and the corruption of some of others, the government's decision-making process degenerates. While the private sector gains from being able to hire those who have left their government jobs, its efficiency suffers because it is now operating under less efficient and less honest government rules. For example, the allocation of investment may be distorted by bribes.

Another source of inefficiency is that with the prices of some products being free to vary, and hence rising, demand shifts to those products whose prices have not risen, or have risen less because they are constrained by government controls. Since this shift in demand does not reflect a change in buyers' tastes, or a change in costs of production, but merely that buyers can gain at the expense of producers, it is not conducive to efficiency. For example, suppose the price of bricks is fixed by government controls that assume a 10 percent inflation rate, while the price of concrete is free to vary. If the inflation rate rises to 20 percent the price of bricks falls relative to concrete, so that, if bricks are available, buildings that would otherwise be made out of concrete are now made out of bricks. But the rise in the inflation rate has not increased the efficiency of bricks relative to concrete, so that too many buildings may be made of bricks. Or conversely, as may very well happen, if brick producers cut output because of the lower relative price of bricks, too few buildings will be made from bricks. To be sure, it might happen that the relative prices of bricks and cement were distorted to start with, and bricks were overpriced so that inflation brings the price of bricks and cement into a more appropriate relationship. However, that would be a fortunate accident.

What makes this problem particularly severe is that as the inflation rate rises the government is tempted to keep certain highly visible prices from rising. This is done, in part to set an example, in part to keep certain basic items affordable, and in part to escape blame for rising prices in sectors over which it has substantial control. For example, in many countries transportation rates and rents are held down. As a result, relative prices are distorted. Bottlenecks develop in transportation, which may seriously inhibit productive efficiency. Housing shortages interfere with labor mobility as workers are reluctant to move to jobs where it will be difficult for them to obtain satisfactory housing.

That type of problem is especially likely to arise in a country, such as China, that is in the process of shifting to a socialist market economy, because such a country is less reluctant to interfere with market processes than a capitalist country. In particular, the Chinese government is greatly tempted to hold down food prices when the inflation rate rises to protect urban living standards.

As demand shifts to industries whose prices have not risen, or have risen less because of government controls or long term contracts, supply in these industries is likely to be inadequate. Being squeezed between stable output prices and rising prices of inputs, they have an incentive to reduce, not to increase production. Hence, shortages develop and lead to black markets. The efficiency of the economy is then lower, both because of the direct effect of shortages, such as enterprises having to cut back operations because they lack necessary inputs, and because transaction costs in black markets are higher than in legal markets. Moreover, black markets create resentment and further damage morale.

Another problem is that the quality of products sold under fixed-price contracts may deteriorate because those enterprises that are squeezed between fixed prices of their output and rising prices of their inputs may decide to cut corners.⁶ If an enterprise can sell all it can produce at the price it is allowed to charge, even if the quality of its output is low, it does not have much of an incentive to improve its output quality.

An additional distortion is that both households and enterprises have an incentive to accelerate their purchases and to stockpile goods, thereby tying up resources in excessive inventories. Thus in August 1988, there were reports of panic buying in China (Peebles, 1991, p. 200). What ameliorates this problem is that in recent years China has generally raised the nominal interest rate on deposits sufficiently to keep the actual real rate positive, so that households have less of an incentive to switch from holding deposits to holding real assets. But enterprises still have an incentive to hold excessive inventories unless the interest rate they have to pay is increased.

Furthermore, as enterprises selling under fixed-price contracts become less profitable, investment in these enterprises falls. It does so, in part, because they have smaller profits, or no profits at all to plough back, and in part because lenders are less willing to lend to them. But that these industries are not able to raise prices has not reduced the social profitability of investing in them. Hence, the capital stock will not be allocated efficiently.

The allocation of capital is also distorted by the redistribution of income from creditors to debtors caused by inflation. With such a redistribution the profitability of enterprises is no longer a reliable signal of their social productivity. An enterprise does not become more productive when its profits increase merely because the real value of the interest payments it has to make has fallen. But an enterprise that gains in this way from inflation will draw to itself a disproportionate volume of investment, both because it will have larger profits that it can invest, and also because it will be more easily able to attract investment funds from others.

If the interest rates are held down for enterprises that can borrow at these low nominal rates--rates that may be low enough to correspond to negative real interest rates--then these enterprises stand to earn excess profits. And, even more important, they have an incentive to borrow and invest more than is optimal from the viewpoint of society as a whole. Even in the absence of inflation Chinese state-owned enterprises tend to demand too much credit because they have a soft budget constraint (Yusuf, 1994). Rising inflation without a corresponding rise in the interest rate on enterprise borrowing exacerbates this bias toward excess credit demand. This has several costs. Insofar as the government satisfies the demand for more investment, it imposes an undue burden on the present generation, and also raises the inflation rate. In addition, a greater incentive for enterprise investment puts a bigger burden on the credit allocation system, diverts management attention away from increasing the productivity of current facilities, and encourages the substitution of capital for labor, something that is hardly appropriate for a country with as much excess labor as China (see Jefferson and Rawski, 1994).

Moreover, the lowering of the real rate of interest distorts the pattern of investment. Since interest costs are a more important component of the total costs for long-term investment than for short-term investment, the lower real interest rate biases enterprises to favor long-term investment over short-term investment.

Households, too, may be driven to invest at a negative real rate of return, thus misallocating the country's flow of saving. If the inflation rate exceeds the

interest rate that households can earn on deposits or on other financial assets, then households are better off investing in real estate and other nonfinancial assets even at a real rate of return that is negative, as long as it is not as negative as the rate of return on financial assets. Here, too, the government's tendency to raise deposit rates is an important ameliorating factor. However, insofar as deposit rates are not raised sufficiently or fast enough, inflation reduces the role of financial intermediaries and of financial assets in general. This inhibits the development of a sophisticated financial system, and thus results in a less efficient allocation of investable funds.

Both the profitability of borrowing at fixed low interest rates, and the tendency to flee from financial assets may explain the frequent observation that inflation leads to excessive speculation, disproportionate increases in assets prices, and excessive investment in real estate. For example, suppose that the inflation rate rises from 5 percent to 15 percent, but that the interest rate charged by banks is allowed to rise only from 8 percent to 10 percent. With the real interest rate now being minus 5 percent, enterprises have an incentive to borrow from banks to develop real estate (which they can use as collateral for the loan) even if, were it not for the artificially low interest rate, the real yield on this development would be negative. They also have an incentive to buy other assets that they can use as collateral, driving up the prices of those assets.

Income Distribution

While these effects of a rise in the inflation rate on the economy's efficiency can be serious, they are not as visible and as likely to cause discontent as are the effects on the distribution of income. One of these is the already discussed decline in real wages. Another well-known effect is that creditors who are holders of unindexed government bonds lose, while debtors gain.

A further effect that is more specific to China is that peasants are likely to lose from a rise in the inflation rate because the government is prone to hold down the prices of agricultural products. With the prices of their output held down, while the prices of their productive inputs rise, peasants suffer an even greater loss than do fixed income groups, such as pensioners. Suppose, for example, that a peasant produces a crop worth 100 using inputs valued at 30, so that his net income is 70. If the price of his crop is fixed, while all other prices rise by 10 percent, his nominal net income falls to 67 (100-33) and his net real income falls to 60.3 (67 x 100/110). This is a 14 percent decline, and thus 140 percent of the 10 percent decline in real income suffered by a pensioner.

In addition, sometimes households are tied into some contracts, such as rental contracts and pensions. These households therefore suffer losses if the inflation rate rises above that assumed when the contract was made, while others are unjustifiably enriched.

What needs to be emphasized about all these redistributions of income is their arbitrary nature. There is no way one can justify the gains of debtors or the losses suffered by creditors, and by those whose wages are set by contracts that still have a long time to run, or who work in sectors in which the government controls prices. Quite apart from the fact that great injustice is being done to many people, such redistributions generate great resentment and political conflict. Inflation is a potent destroyer of social harmony.

C. The Underestimation Case

In this case, unlike in all the previous cases, the inflation rate is higher than the public -- on the average -- expects. Moreover, there is now uncertainty about the inflation rate, so that while most people underestimate it to varying degrees, some overestimate it. Since enterprises have better information, at least about their own selling prices, it is reasonable to assume that they underestimate the inflation rate less than their employees do.

The effects that occurred in the previous case where expectations were correct, occur in this case too, but they do so on a larger scale than in the previous case. Now most wages fail to adjust fully, so that real wages fall more generally than in the previous case, and the demand for labor therefore rises more. Assuming that enough people are willing to work at the lower real wage, employment increases more. But the uncertainty created by rising inflation is likely to discourage some investment.

It is not only the general underestimation of the inflation rate that distorts resource allocation, but also that different enterprises underestimate the inflation rate to a different extent. Some enterprises substantially underestimate it, and thus substantially overestimate the real interest rate implied by the nominal rate, while others underestimate the inflation rate much less. The former then cut back investment relative to the latter, so that the allocation of investment is again distorted.

Moreover, what determines the success of enterprises is now not only their ability as producers of needed goods, but also how well they predict the inflation rate (see Patinkin, 1993, p. 113.) Some otherwise inefficient enterprises are therefore able to flourish, while those who guessed the inflation rate badly may fail, even though they are using resources efficiently to produce the goods the economy needs. This gives enterprises an incentive to devote managerial resources to guessing the inflation rate instead of to improving productivity.

Enterprises have to worry, not only about the inflation rate itself, but also about how the government will respond to it. Will it allow the higher inflation rate to persist, will it continue to raise the inflation rate with the danger of an eventual collapse of the monetary system into hyperinflation, or will it lower the inflation rate by generating a recession that may reduce the enterprises' market, and hence make expansion of its capacity unwise? Or will it impose price controls, so that it would be advisable to raise prices now, ahead of controls?

For households, too, uncertainty about the inflation rate creates serious problems. One example is when confronted with a higher price tag, a shopper does not know whether this is merely the result of inflation, or whether it represents a rise in the good's relative price, so that she should see if it is cheaper elsewhere, or whether she should perhaps buy something else instead.

Moreover, if they are uncertain about the inflation rate, households do not know how much to save for future needs, and in particular for retirement. The availability of indexed deposits and bonds ameliorates this problem to some extent, but not entirely.⁷ Hence, high inflation results in disappointed expectations for some people, and greater uncertainty for all people. As a result, a feeling of being treated unfairly and of not being in control of one's life becomes widespread and social cohesion is reduced.⁸ Though economists generally pay little attention to such effects because they cannot be modeled, they may be extremely important.

There is also a tendency for rising inflation to undermine popular support for market liberalization (cf. Griffin and Kahn, 1993, p. 7; Blejer et al, 1991, p. 16). Moreover, when the inflation rate is rising, the government is tempted to impose controls over prices, wages, and investment, and generally to reverse the process of liberalization (Cf. Hussain and Stern, 1991, p. 154).

The uncertainty that rising inflation causes is also likely to discourage foreign investors. They do not know whether the government will allow a corresponding

depreciation of the yuan, or whether it will impose exchange controls that limit the remittance of profits and withdrawal of capital, or whether it will impose import restrictions that may interfere with production. And they, too, may worry about the danger -- even if it is only a small probability -- of hyperinflation. More generally, rightly or wrongly, some foreign investors are likely to treat high and rising inflation as a symptom of a serious weakness in the economic and political system.

D. The Overestimation Case

The final case, in which the public overestimates the rise in the inflation rate, is by no means implausible. If people behave rationally they should err approximately as much by overestimating the inflation rate as by underestimating it. A particularly important situation in which the public may overestimate the inflation rate is when the government changes its policy, and now aims at a lower inflation rate.

This case in which the public overestimates the inflation rate is in many ways a mirror image of the previous case in which the public underestimated it. Thus real wages rise, but so does unemployment, and unless production was previously limited by a shortage of labor or other inputs, the growth rate of GDP declines. Debtors lose and creditors gain. In addition, resource allocation is distorted for reasons described above. However, there is now one additional effect. Interest rates that are set by the market, and perhaps also those set by the government incorporate an adjustment for the expected inflation rate. If the inflation rate is lower than was expected when the loan contract was written, then the actual real interest rate exceeds the real rate that borrowers expected when they took out the loan. This will not only reduce their profits but may force some enterprises to default on their liabilities, or at least to cut back production. Again, real GDP is reduced and unemployment rises.

Perhaps the solution for some of these problems is to announce the shift to a disinflationary policy. It would almost certainly help, but it is not clear by how much. If the government has said many times in the past that it is taking steps to reduce the inflation rate, without actually doing so, then the public will not believe it. Despite announcements that they were reducing the inflation rate, neither the United States during the Reagan administration, nor Britain during the Thatcher government, succeeded in reducing the inflation rate without causing substantial unemployment.⁹ Perhaps that was due mainly to the existence of long-term contracts, rather than to the public not trusting the government to stay with a restrictive policy; that is hard to say. It is possible, but by no means obvious, that China would have more success with an announced policy of reducing the inflation rate. In general, the Chinese government seems less prone to making unkept promises to reduce inflation. In addition, monetary policy does seem to lower inflation much faster in China than in the western economies. Hence, in China an announced policy of reducing the inflation rate may well be more successful.

IV. Summary and Policy Implications

As discussed at the beginning of this paper, the experience of Asian countries cannot be used to argue that high inflation is good for economic growth. Indeed, insofar as one can glean information from the relation between inflation rates and growth rates from the data, inflation is bad for growth.

In deciding how a high inflation rate is likely to affect the Chinese economy, one must distinguish sharply between high inflation and rising inflation. Rising inflation, if it is unexpected, initially lowers unemployment by reducing real wages. That, however, is an once-for-all effect, and to lower unemployment year after year would require a continually rising inflation rate. And even that would not work once wage contracts take into account that it is not just the price level, but also the inflation rate that is rising.

The policy choices that China faces can be clarified by considering four policies. One is to try to obtain the initial benefit of rising inflation as often as possible by allowing the inflation rate to rise continually, perhaps even at an accelerating rate. The second is to raise the inflation rate occasionally and then, each time, to stabilize it at its new higher level. The third is to keep the inflation rate at its prevailing level, and the fourth is to lower the inflation rate.¹⁰

The first of these policies, continually rising inflation, can be easily dismissed because it would eventually lead to hyperinflation.

The second policy, occasional increases in the inflation rate, is not so easily dismissed. Such a policy might even raise GDP permanently to a small extent because part of an initial rise in GDP will be invested. To use some illustrative figures, suppose that raising the inflation rate increases real GDP by, say 1.5 percent for each of two years. If one third of this 3 percent gain in GDP is invested, and if the marginal productivity of capital is 20 percent, then GDP rises permanently by 0.2 percent.

One might also try to argue in favor of a policy of allowing the inflation rate to rise a few times by saying that a higher inflation rate is an unintended, but unavoidable by-product of a policy that raises the GDP growth rate by following a high investment strategy. As investment rises above what the public wants to save, demand at the inflation rate that would otherwise prevail becomes excessive, and the inflation rate rises. The resulting fall in real wages then releases the resources needed for investment.

But there is much to be said against such a policy. The aim of economic policy should be to maximize, not economic growth, but welfare. The Chinese public already has an admirably high savings rate, and it is far from clear that imposing sacrifices on the current generations for the benefit of future generations is appropriate. Second, if all the same, investment is to be increased, inflation is not the only way to free resources for it. Another possibility is raising taxes or cutting government expenditures that are unrelated to investment.

Moreover, while a shift to a higher inflation rate lowers unemployment at first, it may subsequently raise it above what it would have been had the inflation rate not risen. This will occur if the rise in the inflation rate this year induces the public to expect that it will rise again next year -- a by no means unlikely occurrence. In that case, next year when the inflation rate is stabilized at its new, higher level the public will overestimate inflation and, as discussed above, that will then result in rising unemployment. Second, even if such a policy succeeds in lowering unemployment it may reduce rather than raise GDP because both the rise in the inflation rate, and the permanently higher inflation rate that follows, reduce the efficiency of the economy. Third, even if such a policy would raise GDP, it may still be bad policy because a rise in the inflation rate unfairly redistributes income, creates feelings of uncertainty and helplessness, and disrupts social cohesion.

Fourth, a policy of raising the inflation rate occasionally, and then stabilizing it may be extremely difficult to carry out. The government may find it easy to decide to raise the inflation rate, but when the time comes to stabilize it at the higher level, it may be reluctant to do so, because that means foregoing the temporary benefits of rising inflation. And even if that difficulty is overcome, there would be the temptation to raise the inflation rate, not only a few times, but often. One might well argue that a policy option that is so tempting should, on general principle, be ruled out by adopting a fixed rule against raising the inflation rate. Or, perhaps more realistically, one might argue that there should be a strong presumption against allowing the inflation rate to rise, so that it would be permitted to rise only at times when it is clear that special circumstances prevail, such as a large supply shock.

If one therefore decides that a policy of raising the inflation rate is inappropriate, except perhaps under special circumstances, this still leaves the question of what to do after the inflation rate has already risen. More specifically should China maintain its current inflation rate, or bring it down to a (perhaps low) single digit rate?

One factor that is relevant for this choice is the rate at which the future benefits of a lower inflation rate are to be discounted. Another is the extent to which expectations, contracts, and institutions have already adjusted to the prevailing inflation rate. Since the prevailing inflation rate in China is substantially higher than it was a few years ago, it is likely that not much adjustment has yet taken place, and that argues for lowering the inflation rate.

A useful way of posing the question whether China should stabilize the inflation rate at its current high level or lower it, is to treat that decision, not as an once-for-all decision made at a particular time, but as part of a consistent long-run policy, which the public will eventually discover. One objection to a consistent policy of not reducing the inflation rate is therefore that if the inflation rate is never brought down again after it has risen, it will become higher and higher over time, and that would create great uncertainty about what the inflation rate will be in the long run. And such a long run is relevant for young households saving for retirement.

It is therefore not surprising that in recent decades China has, by and large, opted for reducing the inflation rate once it has risen. Such a stop-go policy has been followed by other countries, too, a notable example being Britain until the 1980s. But it is an expensive policy, because of the decline in real GDP growth during the "stop" phase. There is no reason to think that the rise in GDP during the "go" phase more than makes up for that decline. And compared with a policy of steady low inflation, such a policy creates inequities, uncertainty and social disruption.

Endnotes

1. For Korea the data start only in 1967.
2. For a survey of the empirical evidence see Mayer (1992, pp. 106-108). All of this evidence relates to developed market economies. I know of no empirical studies of the rationality of expectations in China. Given the limited role of markets and the short period they have been in operation, sufficient data for such a study are not available.
3. This is not necessarily the case. If the public overestimates the change in the inflation rate and contracts have adjusted only partially to this overestimate, they might be correctly adjusted to the actual inflation rate.
4. For example, suppose that the inflation rate is 10 percent, and real interest rate 3 percent, so that the nominal interest rate is 13 percent. The lender of a 1000 yuan then pays tax, not on her true income of 30 yuan, but on an "income" of 130 yuan.
5. In countries where a progressive personal income tax plays a large role, tax revenue increases substantially as inflation moves households into higher tax brackets and also erodes the real value of exemptions, unless tax brackets and exemptions are indexed. Even if they are indexed, inflation increases tax revenues in countries in which capital gains are taxed, because it generates nominal capital gains that are taxed. Moreover, corporate income tax revenue rises because, with depreciation being understated, corporate profits are overstated. However, if there is a significant lag between the time the tax liability is incurred and the tax is paid, then there is also an offsetting factor: inflation lowers the real value of tax liability by the time it is paid. If the inflation rate is high and the lag in tax collections long, then inflation may reduce rather than raise real tax revenues.
6. In normal times an enterprise is reluctant to lower the quality of its products because it does not want to lose its reputation. But when the viability of an enterprise is threatened, it may abandon its "investment" in reputation.
7. Deposits are only partially adjusted because the indexing feature comes into play only when the real rate would otherwise be negative. Moreover, there is much regional variation in the inflation rate. This is a reason (but not the only reason) why for many savers the price index to which deposits and bonds are linked is not the relevant index.
8. In the U.S., as the Economic Report of the President put it:

The corrosive effects of inflation eat away at the ties that bind us together as a people. ... All have to plan for the future.... The future is uncertain enough in any event, and the outcome of our plans is never fully within our own control. When the value of the measuring rod with which we do our planning--the purchasing power of the dollar--is subject to large and unpredictable shrinkage, one more element of command over our own future slips away. It is small wonder that trust in government and in social institutions is simultaneously eroded. (Executive Office of the President, Economic Report of the President, Washington, D.C., 1979, p. 7).

Similarly, Don Patinkin (1993, pp. 112-13) in discussing the Israeli inflation, which at one time reached an annual rate of almost 500 percent, wrote, "I can testify to one, most intangible cost: the feeling of malaise that beset us from the constant changes in prices and exchange rate that were taking place, a malaise that was in part generated by fears that the increase in one's nominal income might lag behind the rate of inflation."

9. A case in which the government appears to have been believed is the termination of the German hyperinflation in 1923. When the German central bank announced that it would terminate the inflation this was plausible for three reasons. First, the central bank had not previously used up its credibility by claiming to fight inflation when it did not actually do so. Second, the hyperinflation had created a situation that was obviously not tolerable. Third, other countries provided a stabilization fund for Germany, and in return were allowed to supervise German monetary and fiscal policies. These factors make the German case distinct from the situation facing China.

10. Another possible policy is to index all formal and informal contracts, and all institutions that can be indexed. Although such a policy attracted much interest at one time, it no longer does so because it would cause a too rapid acceleration of inflation, particularly in the case of a negative supply shock. In any case, if, as in China, inflation is due to an attempt to invest more than the available resources permit at the prevailing price level, then indexing would not be feasible. The only way investment can be raised in such a case is by reducing consumption. But indexing, if successful, protects consumption by keeping real incomes constant.

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