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Toward Reducing the Losses from Disinflation in Some Developing Countries

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A widespread impression about disinflation is that it requires a particular loss of real wages by the groups initiating the sequence of nominal wage-rate adjustments. Either that sacrifice must be imposed, through a system of wage restraints, or those who are to spearhead the adjustment process must be induced to moderate their wage increases by the appearance of a slump in economic activity. A corollary, then, is that disinflation is apt to entail, via recession or else the inefficiency of controls, a general sacrifice of real income as well. But it does not appear that these beliefs are based on any thorough examination of the logic, or "arithmetic", of disinflation--where by "disinflation" we mean the move from one inflation equilibrium to another equilibrium with less or no inflation.

This paper will analyze, in Part I, the workings of a disinflation scheme that challenges the above beliefs in the necessity for sacrifice. The scheme is simple enough in its mechanics to make the analysis of possible gains and losses from its operation fairly transparent--and to make possible its actual implementation in some of the more controlled economies often found among the less developed countries. The tentative conclusion indicated by this analysis is that such a scheme could, if implemented in the appropriate circumstances, achieve disinflation with the likely prospect of protecting every wage or profit earning group from any appreciable loss of real wages and real margins--and with neither a recession nor a permanent distortion of the wage structure in the process.

The gist of the scheme is this: It deals with the momentum behind the prevailing inflation in economies where wage setting is "staggered" rather than synchronous. To end altogether the process of "leap frogging" among the overlapping wage rates the scheme mandates that, in successive months, currently determined wages increase by just enough to "catch up"

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to the previous month's. By the conclusion of one wage-setting cycle, all the wage rates are thus brought into simultaneous parity--into the relationship that they had averaged over the cycle during the preceding inflation. Then there will no longer be any advanced frogs to leap over or even catch up to. 1/

It should be noted that, in the version examined here, the scheme envisions government intervention in new wage decisions over successive months, at least for the transitional period of the disinflation. Indeed, the scheme would be most readily applied in those economies, typically some of the developing economies, where government participation in wage determination has already been in effect, so that the past cyclical pattern of relative wages is known to the government. Such a program of wage slowdown could not reliably be achieved by means of demand management alone, it appears, owing to the inevitable uncertainty that would face the government over the appropriate path of monetary exchange and fiscal restraint--together with the doubts of private transactors about the ability (or even willingness) of the government to choose that path. 2/

A model of "painless" disinflation raises questions on another level: How can it be supposed that a disinflation would be politically acceptable and not undone if achieved? If the government purposefully (not inadvertently) took the actions that created the inflation, might it not be because there are compelling gains from continuation of the inflation which the government would not want to relinquish or because there were gains realized in the creation of the inflation (or losses averted) which the government would seek to realize again by inflating anew as soon as disinflation was complete? It is possible, we must acknowledge, that the prevailing inflation may represent a singular political equilibrium, and be difficult or infeasible to combat, short of foreign pressure. However it is also possible, we suggest, that the recent worldwide outbreak of rapid inflation is, in a certain sense, a disequilibrium phenomenon or but one equilibrium among others--and thus an outcome capable of permanent correction through learning and reputation building. Part II of this paper will develop the argument.

1/ To moderate the rate of inflation the scheme would arrange the wages in a less "flat" alignment. The examples and formulae in the next section will dispel any murkiness in this description.

2/ If, for example, there is too little prospective demand restraint by the end of one wage-setting cycle and beyond notwithstanding the first-best dosage of early restraint, then the early moderation of wages increases will likely be too little in relation to the early demand restraint--too little to avoid a fall of real cash balances, real property values and the real price of foreign exchange, and a consequent slump. It may be that the failure of wages and the prices of nontradables to slow down in parallel with the scheduled slowdown of the exchange rate in Argentina during the first months of the "tablita" might be due, in part, to such a flaw.

I. The Arithmetic of an Illustrative Disinflation Process

We consider in this section the mechanics of an illustrative disinflation scenario--especially its implications for real wages, employment, and the price level. It is convenient to expound the essentials in terms of an abstract model, putting aside discussion of applications to actual economies.

The supply side can be described by a supply-price equation and a wage-adjustment rule. The notion of a normal, or "natural," level of employment, given the working-age population, and a production function, are implicit in these relationships. The cost of importables, in the form of finished goods or intermediate goods, figures in the price level. The exchange rate, which determines the home-currency cost of importables, is treated as a policy parameter under the control of demand management. The supply-price equation is

$$p = (1-\Omega)\bar{w} + \Omega e + \gamma n, \quad 0 \leq \Omega < 1, \quad \gamma > 0, \tag{1}$$

where p is the log of the general price level in the current period; $\bar{w}$ is the log of the (geometric) average of the nominal wage rates prevailing currently; e is the log of the nominal exchange rate (the cost of foreign exchange); and n is the log of employment per unit of capital (which is taken as given). A doubling of wages and the exchange rate will double the height of this aggregate supply curve at every level of employment and corresponding output level.

It will be expedient to regard the exchange rate as the object of monetary policy, rather like the money supply in a closed economy. Since the average wage level moves sluggishly, the central bank, by manipulating the nominal rate, can also disturb the real exchange rate. Hence we can regard the nominal exchange rate as the result of the current-period choice of the real exchange rate. Hence

$$e = p + \varepsilon, \tag{2}$$

where ε is the log of the real exchange rate.

Then by (1) and (2),

$$p = \bar{w} + \frac{\gamma}{1-\Omega} n + \frac{\Omega}{1-\Omega} \varepsilon \tag{3}$$

In the absence of any desired change in the real exchange rate, therefore, the price level is proportional to the average wage level at any given

level of employment. Let n* denote the natural level of employment, the level prevailing in a steady-state equilibrium inflation--a state of fulfilled expectations. And let ε* denote the corresponding real exchange rate in such steady states (with their differing steady rates of inflation). Then, with a suitable choice of the units, we have 1/

$$n^* = 0, \quad \varepsilon^* = 0, \quad p^* = \bar{w} \tag{4}$$

A central feature of the model is the staggered, cyclical character of wage setting. The average wage level here is a geometric average of the currently prevailing wages set currently, those set one period ago and still effective, those set two periods ago, and so on up to the common time-span of firms' wage commitments, denoted by N. Of course, this is a weighted average, weighted by number of jobs covered; but it will often be convenient to suppose that wage setting is distributed uniformly over the N-period cycle. Thus,

$$\bar{w} = \frac{1}{N} \sum_{j=1}^{N} w_{-(j-1)} \tag{5}$$

where w_{-i} denotes the log of the (average) level of the wages set i periods ago, i = 0, 1, 2, ..., N-1.

The country most closely approximating the model--a case of nature imitating art--is Brazil, where (outside agriculture) there is a regular cycle of monthly wage setting by successive cohorts, according to a government formula, with N equal to six months; so there is the January-July cohort, the February-August one, and so on. In most other countries wage setting is likewise found to be staggered, not synchronized; but without government intervention there is apt to be some dispersion in the span of firms' wage commitments, and in some countries there are intervening mid-span cost-of-living adjustments to the relatively long wage commitments.

It will be convenient henceforth to normalize the individual wage levels, in a process similar to seasonal adjustment, by measuring each of these nominal wages as a ratio to what it would have been in a hypothetical base year free of wage inflation; thus we abstract from an aspect that is of no essential importance--that some cohorts (e.g., those receiving wage increases in January and July) might be better or worse paid than the others. Hence, the w_i's are the logs of index numbers, say W_i, all with

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base of 100. Expressed another way, in a steady state (inflationary or non-inflationary) equilibrium, the real value of every cohort's W_i has the same average level over the N-period cycle, say V*. In logarithms,

$$w^*_{-j} - \frac{1}{N} \sum_{i=-j}^{-j+N-1} p^*_i = v^* \quad \text{for all } j = 1, 2, \ldots N, \tag{6}$$

where the Σp^*_{-j} gives the log of the average price level over the span of the j-old wage, and v* is the log of the corresponding real value of the wage index when employment stays at the natural rate, n*.

The scheme to be examined here calls for the individual wage indices corresponding to the N cohorts to "catch up" to the highest previously attained index--hence the index of the last cohort to adjust its wage prior to introduction of the scheme, barring irregular cases--until the wage indices of all the cohorts have been brought into equality. After that juncture the built-in forward momentum of wages and prices, a purely mechanical momentum originating in the lag of "old" wages behind "recent" wages, will have been eliminated from the wage-price process; only structural forces originating in monetary fiscal policy could start the inflation up again, or so it will be argued at any rate. Thus, except in irregular cases, the scheduled wage adjustments under this scheme, introduced at month $t = t_0$, are to follow a simple rule for the next N-1 months:

$$w_s = w_{t_0-1}, \quad s=(t_0, t_0 + 1, \ldots t_0 + N-2). \tag{7}$$

If all goes according to schedule, after N - 1 months all the pre-existing wage indices will have been equalized. If so, relative wages will then be in the balance required for a stationary, inflationless equilibrium. Then, provided that in each month firms and workers are led to expect and experience the normal levels of employment and capacity utilization, no firm would be motivated to offer a wage increase--since relative wages will be "right" and no further wage inflation will then be expected. Hence, on the above conditions, the scheme of wage controls can then be allowed to lapse, having achieved its goal. (With an equation describing wage behavior when uncontrolled, such as that added later in a footnote, this last argument could be made more specific.) Alternatively, a new regime of wage controls can be instituted without the overhang of past wage and price increases requiring catch-up provisions to deal with.

For example, suppose that N = 12 months and inflation has been steady at 12 percent per annum. Then, instead of the accustomed 12 percent increases, wages in the first month of the scheme would be mandated to increase by 11 percent, since they must be that much "behind" the wages

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set the previous month before the introduction of the disinflation scheme. In the second month the scheduled wage rise would be 10 percent, and so on until the eleventh month when the wage increase would be 1 percent. Then all wages would be in simultaneous balance.

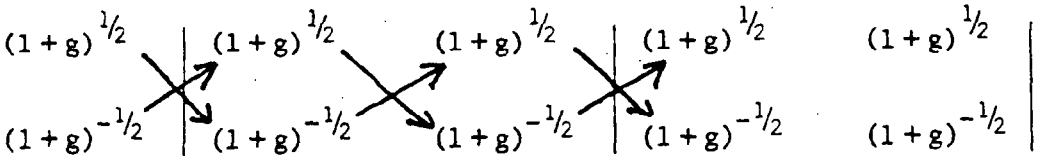
Another example more suited to some recent Latin American data: Suppose N = 6 months and inflation has been steady at 7 percent per month, about 50 percent per semester. When the scheme is announced, the pre-existing wage indices of the cohorts would form a series like 1.00, 1.07, $(1.07)^2, \ldots, (1.07)^5$. Instead of increasing to $(1.07)^6$--from 1.00 to 1.50--the wages in the first month's cohort would increase to $(1.07)^5$, or about 1.40; hence they would be cut back by 7 percent of what they would have been, i.e., reduced by one month's accustomed growth. The second month's wage, in rising to the same level, $(1.07)^5$, would be reduced by two month's accustomed growth (compounded); and so on to the fifth and final month of the disinflation program. Thus the "sacrifice" of nominal wages as a fraction of the accustomed increase by the successive cohorts is 1/6, 2/6, 3/6, 4/6, 5/6, respectively. Thereafter, if equilibrium conditions prevail, all nominal wage increases are "sacrificed."

THE INCIDENCE OF THE DISINFLATION SCHEME

There is naturally much interest in the consequences of any disinflation method for the path of unemployment rates and real wage rates. We first address the issue of real wages, although a complete analysis must ultimately bring in the employment factor. Here, employment is assumed to be constant.

Real wage redistribution

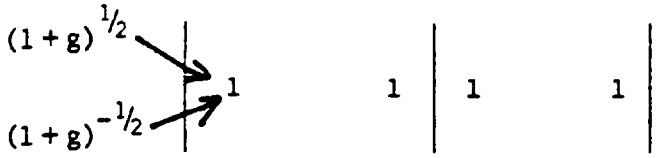
Consider first the case N = 2 periods. Every period the average wage and price level has been rising by the factor $(1 + g)$ as the two cohorts alternate at raising their wages by $(1 + g)^2$ every two periods. The respective indices of real wages in the two cohorts follow a see-saw motion. First a cohort's real wage is multiplied by $(1 + g)$, then divided by $(1 + g)$. The diagram plots the cycle of each cohort's real wage.



(8)

The disinflation scheme breaks the cycle by permitting nominal wages in the upcoming cohort (whose turn it is) to rise only by $(1 + g)$, not

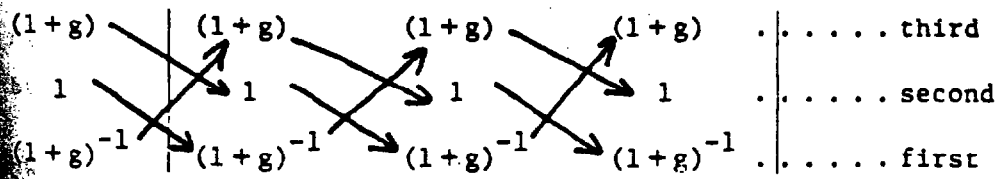
$(1 + g)^2$; hence the average price and the average wage level, being a geometric average, rise by only $(1 + g)^{1/2}$, i.e., the square root of $(1 + g)$, not of $(1 + g)^2$. This brings money wages and real wages into equality simultaneously:



(9)

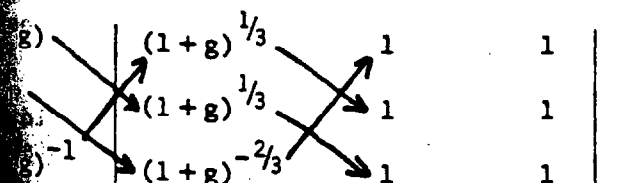
An implication is that neither cohort experiences a loss or gain of real wage income as a result of the disinflation scheme. It can be argued that there is a small welfare loss for the first cohort since its real wage gain is no longer "front-loaded" onto the first period; but this effect seems minor enough to be neglected.

Consider now the more general case, for which N = 3 periods is sufficient. As before, the average wage and price levels having been increasing at the geometric rate g per period. During the steady inflation the real wage pattern is:



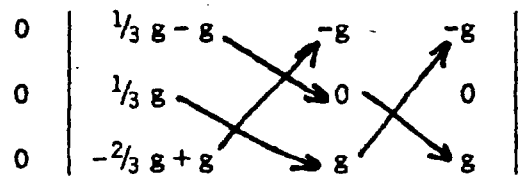
(10)

ere the disinflation scheme breaks the cycle by raising the nominal ges of the first cohort subject to the scheme by only $(1 + g)^2$, not + g)^3; hence the average price and wage levels rise by only $(1 + g)^{2/3}$, (1 + g)$^{3/3}$. Then the nominal wages of the next cohort are raised by (1 + g), not $(1 + g)^3$, and hence the average price level then rises ther by $(1 + g)^{1/3}$, not $(1 + g)$. At that point, all nominal and real es are equalized. Upon dividing nominal wages by price level each od we obtain the corresponding real wage pattern during disinflation:



(11)

Subtracting the entries in (10) from the corresponding ones in (11) and approximating $(1 + g)^a$ by $1 + ag$, we can calculate for each period the algebraic gain, if any, to each cohort from the slow-down of wages and the price level. The difference are:



(12)

Consider the fortunes of the first cohort. It gives up the fraction g through its nominal wage sacrifice, and through the price level gets back only $\frac{1}{3}$ g, hence gives up $\frac{2}{3}$ g in real terms the first period. But next period the next cohort's nominal wage sacrifice is twice as great, so the price level slows by a further $\frac{2}{3}$ g, rising by $\frac{1}{3}$ g instead of g; so the first cohort suffers no loss in the second period compared with the inflation scenario. Then, in the third period, the further slowdown of the price level (no change instead of growth by g) produces a gain that actually exceeds the loss suffered during the first period.

The last cohort, by contrast, gains $\frac{1}{3}$ g in the first period, then an additional $\frac{2}{3}$ g for a total of g in the second period. In the third period, this cohort gains an additional g on the price front, as the price level doesn't rise at all, giving a cumulative price-level slow-down of 2g, while it sacrifices entirely its accustomed 3g wage increase, so there is a real loss in the third period of g. But this loss is less than the sum of the previous two gains.

Curiously, the middle cohort suffers a net loss on the whole. It enjoys a gain of $\frac{1}{3}$ g in the first period. But the further slowdown of the price level in the second, by an additional $\frac{2}{3}$ g for a total of g, does not prevent its nominal wage sacrifice of 2g from causing a loss then--namely g--that exceeds the former gain. The next slowdown of the price level, by g, permits this cohort to break even in the third period. So the aggregate loss to this cohort is $\frac{2}{3}$ g, or $\frac{2}{9}$ g per period on average. The implication of loss is obvious once we recall that the other cohorts experience an overall gain, and note that the aggregate gain or loss must equal zero every period.

Before considering the significance of this result, we should record that it "generalizes" to larger N. In fact, the result is immediately obvious for larger N. For example, let N be 12 months. If monthly

inflation has been regularly 1 percent prior to the introduction of the scheme, say, then wages in the first cohort subject to the slowdown will go up by only 1 percent less, a trifling sacrifice, while inflation will be steadily disappearing for a year. Wages set 12 months later will not go up at all, which by itself will cost the cohort 11 percent in real terms; but the cumulative slowdown in inflation will have been

$\frac{1}{12} \cdot 11 + \frac{2}{12} \cdot 10 + \frac{3}{12} \cdot 9 + \ldots + \frac{10}{12} \cdot 2 + \frac{11}{12} \cdot 1$, which is much

greater than 11; so this last cohort also gains. As before, then, it is the cohorts coming up in the middle of the cycle who lose.

Is this redistribution of real wages large enough to be significant? In our example with $N = 3$ months and $g = 7$ percent monthly, we found that the middle cohort lost approximately $\frac{2}{9}$ g, averaged over the cycle, hence less than 2 percent for N months. Probably no one would regard a temporary loss of that magnitude as serious. On the other hand, with larger N or still larger g the redistribution would be greater.

If, as a consequence, it should be desired to re-redistribute the above redistributions back to their original recipients, that could be done most simply by levying a temporary sur-tax on the take-home pay of each cohort that would otherwise gain in the amount of the calculated gain and, with the resulting tax revenue, to pay temporary bonuses to the cohorts that would otherwise lose.

Employment aspects and demand management

In an open economy the nominal exchange rate is the main instrument with which the government can control the demand--or "demand price"--for domestic output. During the disinflation the demand price (at n^*) is required to slow down pari passu with the supply price, modeled in the first equation, if there is to be no deviation in the level of employment in the process. If we abstract from the effects (if any) of the disinflation (and post-disinflation prospect) on the equilibrium value of the real exchange rate, the requirement is that the nominal exchange rate must slow down in step with wages. If, for example, the government slows the exchange rate (the cost of foreign exchange) only as sharply as the slowdown in the average money wage, there will be no tendency for money wages to grow excessive in relation to monetary conditions, i.e., for the demand price to fall behind the supply price--thus no fall in the real cash balances, and no rise in the real exchange rate nor average real wage; hence there will be no reason for any reduction in the total employment that firms will be willing to offer. Firms will presumably economize more on labor in cohorts that can be expected to be temporarily costlier, especially as the increased costliness materializes, but economize less on labor from the less fortunate cohorts that becomes (temporarily) a bargain.

It is nevertheless worth noting that if it were desired to decontrol wages but induce firms (through business prospects) to choose voluntarily the same slowdown of wages, cohort by cohort, contained in the foregoing scheme, then a constant-employment policy in demand management would not be possible: Paradoxically, it would be necessary to engineer a temporary demand stimulus, tapering to zero at the end of the disinflation. The reason is that the firms must offer workers in each subsequent, successive cohort an above-average money wage for the duration of the disinflation, since it is only at the end of the disinflation that all wages will have pulled up to the highest level; such money wage offers the firms would be willing to make only if they foresee boom conditions, dwindling to zero over the length of the wage-setting cycle as the need vanishes. 1/

In a setting of controlled (and staggered) wages such as the one here, however, no such boom disinflation is required or implied. The successive wage increases are mandated, not induced, so the central bank does not need to stimulate employment. 2/ But neither is it precluded. It is true that the uncertainties in fine tuning make any such boom an undependable outcome. However, to the extent that a temporary rise of employment and production is created by demand management or good luck, the extra tax revenue resulting can serve as another source of financing for real-wage compensation to "losing" cohorts. On the other hand, some extra revenue would be needed to the extent that prices rise above wages when demand lifts employment temporarily about the normal. Conceivably, the resulting increase in the price-wage ratio could cause a decrease of the real wage bill that equals or exceeds the increase of tax revenue resulting from the increased taxable income. Furthermore, it can be argued that if a temporary boom is justified by this worthy social cause, perhaps seeming to offer a "free lunch", it will likewise be justified constantly (for other social causes) in the future; and, in view of that, such a temporary boom is not actually justifiable if, instead of being a unique departure from the rules, it would operate as a precedent that

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1/ The argument is sketched in Phelps (1980).

2/ It is a natural mistake to suppose that the wage-setting equation in the uncontrolled economy with staggered wages, say

$$w_j = \frac{1}{N}\sum_{i=j}^{j+N} \bar{w}_i + \frac{\alpha}{N}\sum_{i=j}^{j+N} (n_i - n^*),$$

can be inverted to yield a Lucas-type equation in implied, or required, employment,

$$n_j - n^* = \frac{\alpha^{-1}}{N}\sum_{i=j}^{j+N} (w_j - \bar{w}_i) - \frac{1}{N-1}\sum_{i=2}^{j+N} (n_i - n^*),$$

that is valid no matter whether wage rates are mandated or induced. But the latter equation is a valid inference about employment only if the former equation is valid, and the government intervention in wage setting invalidates the former relationships.

precipitates a constant succession of booms thereafter--unless the level of employment, n*, at which the economy has been operating is inefficiently low, which is the improbable case of the "free lunch". 1/ Although such an argument may not be convincing, it is clear that a case for "boom disinflation" would not have clear sailing. To avoid needless controversy we will continue to envision the disinflation scheme here as operating alongside a demand-management policy aimed at maintaining the normal level of employment.

A conceivable objection

It is easy to anticipate the following objection to the workability of the above disinflation scheme. Once the programmed equalization of wage rates has been accomplished, it might be argued, wage receivers may feel they have caught up with the average wage level but possibly not with the price level. There may be a perception by workers that the previous inflation had kept their real wages unnaturally low, and with price level no longer a moving target, always receding and dancing about, workers will make greater efforts and take larger risks to secure a real wage increase. So the inflation will not be ended, and may in time resume its former pace.

It would be idle to pretend that economics offers a complete understanding of the determination of real wages, much less the popular perception of real wage determination. Many people do believe that every rise of the price level reduces the average real wage and their own real wage pro tanto, so that if the inflation is stopped they expect their money wages not to stop at the same time but, rather, to go ahead by some amount--to catch up finally to the price level. Of course, sheer wishing for a further money-wage gain will not make it happen, but the wish may be father to strikes and quitting, which is a serious concern.

In response it can be said that in economies where the government regularly intervenes in wage setting, effectively determining maximum wage increases, this problem may not arise in serious form. Money wages will not be pushed up by the discontent of wage receivers. At worst, there will be protests, stoppages and quitting--what Keynes vaguely termed "resistance"--but, in the intervention case, to no avail. Presumably the newfound discontent with the same old before-tax real wage will not long persist.

Economies where intervention is limited to the interim process of disinflation or where such limitation is desired pose a harder case for economic statesmanship. The government then needs to combat the above

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1/ The counter-argument is that a permanent increase of n*, engineered by an increase of ε, say, might in fact be warranted, and might even permit an all-around gain (Pareto improvement). In that case, the first benefits of that policy shift could be directed to those who would otherwise lose something during the disinflation.

perception. "There is no evidence that real wages are systematically depressed by inflation. Besides, if price stability should ever be proven beneficial it cannot be because a further wage push will not be passed on in high prices--but because mark-ups by business are lowered." In fact, it could be added that, as the next section notes, present-day economic analysis finds reasons for believing that inflation, if caused by government spending, may raise real wages. In this event a post-disinflation task is to win acceptance of a lower real wage not to combat demands for a "recovery" of real wages.

II. Structural Effects, Real and Alleged, of Reduced Inflation

Most academic discussion of inflation theory has focused on the effects of inflation under controlled conditions: disposable income or net government revenue, appropriately conceived, is to be held constant across different inflation/money paths. In such analyses, the main effects of a lesser rate of inflation, once anticipated, fall on the tax mix, with a resulting impact upon after-tax factor prices (including the famous price of liquidity, the nominal interest rate). Any change in before-tax relative prices would only be the result of supply responses to the impact on after-tax prices. 1/

Discussions of inflation that make reference to developing countries tend, in sharp contrast, to be structuralist. 2/ They take the inflation to be an effect, alongside some real allocative effects, of a fiscal problem: There is some residual deficit that the government prefers to finance rather than close by increased tax rates or decreased outlays, and some fraction of that deficit is judged to be worse to finance by borrowing at interest in credit markets, if that is feasible, than by money creation. Money and prices therefore rise. Consequently, reduced inflation, in this view, depends on a reduction of the deficit (absent the willingness or ability to finance more by borrowing). Thus, when it is suggested that disinflation entails some real costs, which may be offset by real benefits for some or all groups, it is often meant that the reduction of the deficit, which must be part of the inflation remedy, will have some disadvantageous structural effects on some groups in the society.

This section will take up some hypotheses about such structural effects since they evidently bear on the political acceptability and permanency, and even the desirability, of any plan for reducing inflation to a lower rate.

The first observation that needs to be made is that the deficit may be unsustainable because, as long as it continues, the monetary financing is causing the inflation rate to increase until collapse. This is a case, presumably the case, of hyperinflation, in the sense of "limitless

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1/ Phelps (1973), for example.
2/ Dornbusch (1982) contains a good exposition.

inflation". In this case it can be seen that the government has no choice but to disinflate. Then questions of the political viability or costliness of disinflation are beside the point.

Let us therefore turn our attention to cases of limited inflation. Two such cases are portrayed in Figure 1. The curve measures the required (proportionate) growth rate of the money supply if real indebtedness to the public is always at some constant ceiling. Using the familiar relation $M \cdot V(r+\pi) = P \cdot Y$, and with output quickly gravitating to the natural level, Y^*, we have

$$\frac{\dot{M}}{M} = \frac{V(r+\pi)}{PY^*} [rP\beta + PG - PT(Y^* + r\beta)]$$

where r is the real interest rate, π the inflation rate, P the price level, G the real level of government expenditure, and T the real level of tax collections. The parameter β is the actual and maximum level of real loans the government can obtain from the public. Thus interest outlays are $(r+\pi)\beta$ in real terms but $\pi\beta$ can be borrowed afresh as inflation erodes old nominal debt. The diagram can be used, in conjunction with the equilibrium relation, derived from $M \cdot V(r+\pi) = P \cdot Y^*$,

$$\pi = \frac{\dot{M}}{M} + \frac{V'(r+\pi)}{V(r+\pi)} \dot{\pi},$$

to shed light on stability. In the following discussion it will be supposed that $\pi = \pi_1$ or that π is on a path approaching π_2. It can be seen that a reduction of the deficit, e.g., a reduction of G, by shifting down the $\dot{M}/M$ curve, reduces π_1, although, paradoxically, it increases π_2. I shall first focus on the case of $\pi = \pi_1$, returning later to π_2. Then reduced π implies deficit reduction.

A much discussed effect of deficit reduction, particularly the reduction of government expenditure, is a real depreciation of the home currency. There are three channels by which when governments expand spending they might appreciate the currency in real terms: First, the government may spend disproportionately on non-traded goods, causing a fall in the "real" price of traded goods, hence a fall in the real value of foreign exchange (given foreign nominal prices). Second, the government, by crowding out exports, may drive up real export prices for reasons of monopoly power. A possible third channel is the effect of the resulting inflation in conjunction with a lag in the devaluation of the currency for various reasons. To this extent, reduction of deficit spending and inflation moves relative prices against export industries in favor of the rest.

It follows that if non-export industries are comparatively labor intensive, which is often the case, the real depreciation entailed by reduced deficit spending will reduce real wages at the natural level of employment. (This condition, though sufficient, is not necessary where the channel is the second one.) Consequently the real wage at n^* may depend on G indirectly through an effect on ε^*. In any case it is not generally true that disinflation carries no adverse implications for real wages. The price level may have to rise relatively to the average wage level via the implied rise of ε^*.

But is it invariably true that reduced inflation reduces the revenue from inflation, thus requiring a reduction of government spending? The previous diagram warns that the answer must be no. We saw that in the neighborhood of π_2 a small reduction of inflation would permit a small increase of G. An explanation is that at π_2 inflation is counterproductive at the margin, being above the level, π, where further inflation ceases to add revenue and instead actually lowers revenue because π, which gives the equilibrium $\dot{M}/M$ if π is constant, increases less than the required $\dot{M}/M$ shown by the curve.

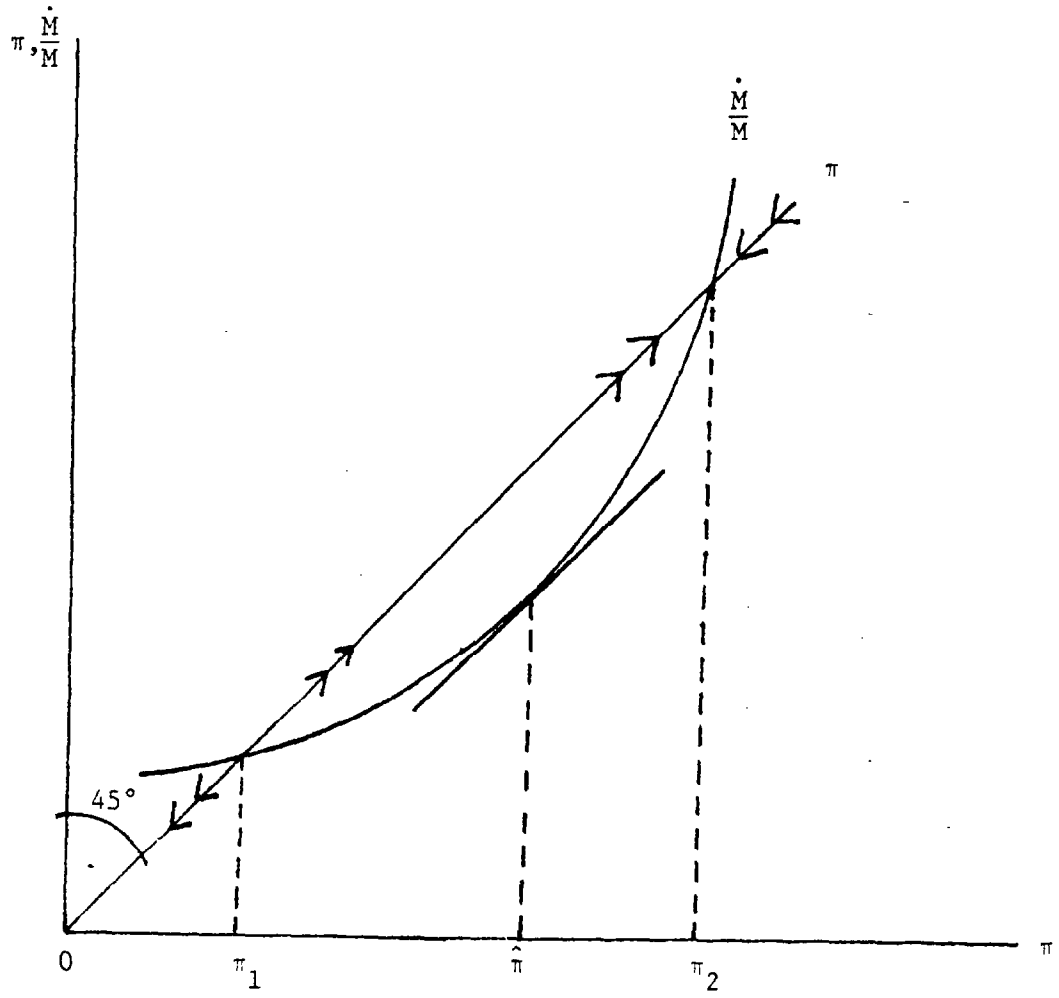
A further point is that the above model of government finances ignores certain elements. It leaves out the seignorage earned by the central bank on its holdings of earning assets. If the inflation rate is reduced, the central bank must acquire more of these assets to support aggregate demand. Also, the model leaves out the lags in the collection of taxes. With inflation lower, taxes when collected would be greater in real terms. Finally, by reducing the "liquidity tax" the government would contribute to economic efficiency, hence to real factor rewards.

Hence it is possible, in extreme cases certainly, that reduced inflation, to a point, would not entail trying structural effects. The initially prealling inflation rate may exceed the rate that maximizes sustainable overall government revenue per year.

How could such an outcome have come about? It is shown in Phelps (1967) that "discounting the future" will cause a government to abandon the best sustainable rate of inflation in order to enjoy certain short-run gains--at the cost of an ultimately worse situation with higher inflation. In that model it is costly to disinflate even a little, so the inferior situation is stable.

But where intervention in wage setting might be able to disinflate at negligible cost, there seems to be no good objection to going ahead with disinflation, notwithstanding the possibility that in the future a government may resume excessive inflation.

Figure 1



Rate of Inflation

The possible importance of credibility:

The last conclusion needs a qualification if the government intends to abandon all wage (and any price) controls at the termination of the disinflation program, N months from its start. Since the government will not have "earned" the reduction of inflation expectations by having demonstrated its willingness to endure a long slump until the public has learned the lesson that the government wants to teach, it would be natural for the public to place some bets on the possible resumption of inflation, causing wages to push up against demand with the result that a slump sets in (provided the government stands firm).

The government in this event must persuade the public that if inflation were to resume the disinflation exercise would then be repeated, just as the government is now planning to disinflate. By persuading the public of its determination to do that--to stay the course--the government can make it "non-rational" for the public to speculate that it will not do so. In contrast the public cannot so easily threaten to be irrational since individual agents, once they feel less sanguine, will "defect" by reducing the wage premium adopted as an inflation hedge.

The discovery of the magic bullet of disinflation via controls alters the public's reasonable calculation of the "stable" rate of inflation.

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