Inflation and Disinflation by Steps in Israel

by

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ABSTRACT

Both the inflation and the disinflation processes in Israel appear to have followed a stepwise pattern. In this paper we test statistically the stepwise representation and analyze the different economic nature of the steps during the inflationary era and during the post-1985 stabilization period. We claim that in the inflationary era the steps were motivated by a quest for temporary stability in an environment of political and economic instability. The shifts to higher steps, in this period, have been associated with balance of payments crises. A major indicator of the unsustainability of the underlying inflationary process was the secular growth of the ratio of the public debt to GDP.

By contrast, the disinflation process has been characterized by a declining debt ratio, which probably entailed a downward trend of the underlying inflation rate. Yet the process got stuck on long steps. In our view, this was because the public realized that there is no political and social consensus for bearing the cost associated with reducing inflation from moderate to low levels. A critical mass of favorable shocks was required to reduce inflation to a lower step in 1992, and one may speculate that a similar phenomenon is taking place at present (1997-98).

Inflation and Disinflation by Steps in Israel

It has been observed by various studies of the Israeli inflation process prior to the 1985 stabilization that the inflation path appeared to follow some weak form of a step function (see figure 1) with distinct jumps from one step to another [see for example Bruno and Fischer (1986) and Liviatan and Piterman (1986)]. These jumps coincided with external and internal crises which were viewed as consequences of endogenous processes and exogenous shocks. As the inflationary process gathered momentum the jumps became more violent and the duration of the steps shortened (Bruno and Melnick, 1995). (For the purpose of our analysis we don't in fact need **strict** constancy of inflation along the step.)

It was thought that the major stabilization of 1985 will bring an end to the foregoing pattern and that the economy will settle down on a stable low inflation plateau. It turned out, however, that the disinflation process has exhibited again a stepwise path, this time in the downward direction. The first step, of close to 20% annual inflation, following the 1985 stabilization, lasted for about six years and was brought to an end with the massive immigration wave of the early 1990's when inflation settled on a 10% to 12% plateau which has prevailed since.

The purpose of this paper is to analyze the phenomenon of inflation and disinflation steps with the emphasis on the latter. In our view there is a common feature to these steps and this is the desire of policy makers to attain a stable level of inflation whereby a "stable level" we mean mainly "trendless", which we call an inflation step. But the policy maker (PM) is also interested in stability around the inflation step. (This is a distinction of stability with regard to the first and second moments).

While the desire for some form of stability is common to the process as a whole we see a fundamental difference between the nature of the steps in the inflationary era (the one before the 1985 stabilization) and the one that followed it. This is due to the fact that prior to 1985 the inflationary process was unsustainable, which rendered the

steps very vulnerable to shocks, which was not the case after 1985 when each step was potentially sustainable.

During the inflationary era the policy makers' desire for temporary stability had to overcome the force of a rising underlying inflation trend. This required the creation of a "cushion", in the form of a temporary erosion of real wages, a cut in subsidies and a real depreciation, in the beginning of each step.

By contrast, in the post-1985 era the underlying trend has been in the downward direction. Yet the disinflation process got stuck on inflation steps because of credibility problems with regard to the government's resolve to deal actively with inertial forces which retard the reduction of inflation. This can be understood in view of the lack of consensus about the cost-benefits balance of further reduction of inflation from its relatively low level. This can be described as a situation of multiple equilibria where the inflation step represents the unfavorable outcome relative to the potential one. Moreover, in this situation there is also the risk that an adverse shock may move the system to a higher inflation plateau.

The interest in the nature of the inflation steps of the post stabilization era is not purely academic. In particular, the question which is often debated is whether inflation in Israel can be brought down from its present step by monetary policy alone or whether this aim requires a comprehensive program or supply shocks such as the immigration wave, or a favorable terms of trade shock. Those who view the present step as representing a political-economic equilibrium would doubt whether monetary policy alone is capable of reducing the current basic inflation level.

According to the latter view, the most that monetary policy can achieve is to prevent an acceleration of inflation above its present plateau. Those who support this view would point out that the reduction of the inflation plateau in 1992 was mainly the result of the massive immigration wave and its effect on the labor market and on the growth of the economy, rather than of monetary policy. The opposite viewpoint is that inflation can be reduced gradually to OECD levels within the present framework of an inflation-target regime, based mainly on tight monetary policy, without the need

for something bigger. We shall discuss this issue in a more detailed manner based on the evidence from the developments in the two post stabilization steps. It is however clear that there can be no conclusive evidence as to whether the phenomenon of inflation steps will continue in the future.

The paper is organized as follows. We first present some econometric tests about the validity of the representation of the inflation and disinflation processes as step functions. We then discuss the basic difference between the nature of the steps in the inflation and disinflation eras. It is because of these differences that we found it reasonable to deal first with the inflationary era, and then discuss separately, in greater detail, the two post stabilization steps and their policy implications.

1. Testing the inflation steps representation

Before we embark on the economic analysis of the inflation steps it is natural to discuss the statistical basis for regarding the inflation process as being capable of a representation as a step function. Previous studies [see Bruno and Fischer (1986)] have defined the steps on the basis of "eye econometrics" and summary statistics as well as on the acquaintance with the economic background. However we will begin by approaching the problem, in a more objective manner, by taking a purely statistical point of view, and letting the data tell the story. We will present a number of statistical tests to support the validity of the step-function representation.

Figure 1 shows the quarterly rate of inflation from 1964 until 1996[1]. The first obvious observation is the positive trend in the rate of inflation from the beginning of the sample until 85:3 (we will use this notation to be understood as the third quarter of 1985) and the a sharp decline in the rate of inflation after the stabilization of July 1985 followed by a mild decline after that. By observing Figure 1 it is clear that the process of change in the rate of inflation is not smooth and one can distinguish different sub-periods that are more homogeneous in the behavior of inflation. Bruno and Fischer

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[1] All rates of change in this study are measured as the first difference in logs.

(1986) divided the process from the 60's until 1983 into different sub-periods [see also Melnick (1988)]. We shall compare their definition of the steps with the definitions which emerge from our tests.

The first test we will like to present is a Chow test (Table 1) for the change in the mean of inflation. The procedure we adopted is a maximum likelihood procedure based on search for the date that produces highest F value, that is statistically significant at five percent level, over the complete sample. If a date is found we split the sample into two sub-periods and perform a new search for each sub-period. The procedure stops when we cannot reject the hypothesis that the mean inflation is constant within all the sub-periods or when the sub-period is shorter than two years.

The Chow test divides the inflationary developments since 1964 into 7 distinct sub-periods, which differs from Bruno and Fischer in two important cases. In their work the period defined here as period 1 (Table 2) is divided into two sub-periods: the recession until 67:2 and recovery after that. The same is true for our period 3; they cut this period in 77:3 defining the first part as "war and first oil shock" and the second part as "traverse". Their sub-division is logical from general economic reasoning but from a statistical point of view the mean inflation cannot be rejected as being equal in their sub-division.

A remarkable empirical finding is that the different sub-periods of inflation are characterized by lack of serial correlation; except for period 5, which is the shortest (8 quarters) , the D.W. statistic shows no evidence of serial correlation. Consistent with this finding is the t value for testing the presence of a trend within each sub-period, which indicates that we cannot reject the hypothesis that the rate of inflation is a trendless. This finding supports the hypothesis that the process of inflation can be characterized by a step function. The ADF unit root test, within each period, reveals an important difference between the pre and post stabilization periods. For the periods after the stabilization the unit root hypothesis is strongly rejected, this means that in the two sub-periods after the stabilization the rate of inflation is stationary around a constant mean, strongly supporting a stable step-like behavior of the rate of

inflation. For the periods before the stabilization, although there is no trend, the ADF statistic is very close to the five percent critical level, for period 5 the unit root hypothesis is not rejected. This short period can be hardly called a step. This period is an "inflationary crisis" defined in what follows.

The previous statistical procedure presented strong evidence in favor of a step-like function for the rate of inflation. Still it is possible that the more general specification could be superior to the step function. We deal with this possibility by applying a test for a step function in the identified sub-periods against a free and flexible specification. The test is a simple omitted-variables F test for a step function, defined with dummy variables in the identified (by the Chow test) sub-periods, and a polynomial of degree 6, which is the same number of coefficients as in the step function, (a polynomial of degree 6 should be flexible enough to capture even a complex functional form).

The test is presented in Table 3. It is quite clear that the polynomial does not have any additional explanatory power beyond the step function (F=0.49). The omission of the dummies is strongly rejected (F=100.18). We perform the same test for the period of acceleration of inflation (64:1 - 85:2), reaching a similar conclusion, namely the omission of the polynomial is not rejected (F=1.56) and the omission of the step dummies is rejected (F=4.78). For the acceleration period, taken by itself, the rejection is statistically significant although the polynomial specification captures quite well the positive trend in inflation.

A more efficient statistical procedure can be obtained by the following test that jointly estimates all the dates of the structural break and the size of the jumps. This test is performed using a logit type specification[2],

$$(1) \quad f(t) = \beta(\frac{1}{1 + e^{-(\gamma - t)}})$$

When t → -∞ then f(t) → β, for t → ∞ then f(t) → 0, and when γ = t then f(t) = β/2. β is the size of the jump of inflation that occurs at time γ. Specifying a non linear functional form that contains 6 elements like equation (1) we endogenously estimate 7 steps, with 6 location parameters (γ's) and 6 jump parameters (β's). The γ's estimated by this procedure coincide in three occasions with those estimate by the Chow test and in three cases it deviates by one quarter. The fit is quite remarkable, Figure 2, R^2 = 0.91 compared with a R^2 = 0.93 for the dummy variable specification.

Turning to the two steps of the post 1985 era (see Table 5 for general background data on this period,) we find in Table 6 very strong support for the inflation step phenomenon. The residuals from the first step are quite similar to those of the second step, and they seem to belong to the same distribution. The transition from the first step to the second is very sharp. It is well known that the power of unit root tests is not strong and that they can be misleading when a structural break is present in the data, see Perron (1990)[3]. We applied the Perron and Vogelsang (1992) test for the post-stabilization period and obtained a t-value larger than -5 (in absolute value) supporting our conclusion that the series are stationary with a one time break at the end of 1991.

2. The nature of the inflation steps.

There exists considerable evidence that, as a rule, the government tried to prevent the acceleration of inflation along a given step. This is a common feature of both the inflation and disinflation phases (i.e. before and after 1985). By contrast, there was only a single serious attempt to reduce the basic inflation level by an active policy, which is of course the 1985 stabilization where the government implemented a most comprehensive policy package.

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[3] In Perron (1990) the typical problem is that the stationary series with a structural break could be diagnosed as a unit root process. In our case the unit root hypothesis, in the post-stabilization period, is rejected therefore the alternative of stationarity is not rejected although there is a structural break.

We should mention that there were half-hearted attempts to bring down the basic inflation level by purely nominal policies, but these were short lived. We include in this category the introduction of the crawling peg regime of 5% monthly devaluation in 1982-83, the price-freeze within the framework of the social pact in the first half of 1985 and the peg of the exchange rate to a basket of currencies in 1988. In each of these cases the policies were abandoned soon after their negative consequences became obvious. These experiences combined with the statistical evidence presented earlier lead us to the working hypothesis that the inflation steps represent some sort of a political-economy equilibrium which is robust for some time span.

In order to investigate the nature of this equilibrium we note that both the government and the private sector are interested in the stability of the rate of inflation at any stage of the inflation process. Under the prevailing indexation schemes the real costs as well as the political costs of inflation are substantially reduced when inflation is non-accelerating.

In particular, the stabilization of inflation reduces the political costs of distortions in the distribution of income and is therefore very desirable from the government's point of view. Secondly, a stable rate of inflation creates the impression that "things are under control" and there is no reason to panic and run on the foreign exchange reserves, which is again a relief to the government.

In our view, the phenomenon of the inflation steps is characteristic of "chronic inflation" economies (such as Chile, Argentina and Brazil), which accept the fact that they have to live in an inflationary environment for a long time, as opposed to hyperinflationary regimes where inflation may accelerate continuously. This quest of the PM for stability makes sense for the short run even when the inflation process is (rationally) viewed as unsustainable in the long run. Even if the PM is fully aware of the risk that a temporary stabilization may lead to a crisis [a la Calvo (1987)], it may still be rational for him to opt for this route when his planning horizon is short because of political instability (which was in fact prevalent in the inflationary era).

It is clear that in order for the inflation step to be an equilibrium for a given time span it is necessary that the public should believe in the government's ability to defend the inflation step against destabilizing pressures. Thus even if the inflation step is viewed as unsustainable in the long run it may be credible in the short run if the central bank has large foreign exchange reserves or if the public is willing to finance government deficits by acquiring its bonds without a substantial rise in the risk premium (as was in fact the case in the early stage of the inflationary process).[4]

In the post stabilization era, the government did not face a rising inflation trend which rendered the steps unsustainable, so the problem became one of preventing the transformation of temporary adverse shocks into a longer term plateau. This have been in our view the *de facto* behavior although the official rhetoric has usually stressed the goal of reducing the long term inflation trend.

In symmetry with the rising underlying inflation trend of the inflationary era, has there not been a falling underlying trend in the post-stabilization era which has been somehow suppressed? This is the issue of whether the latter era has been characterized by the existence of multiple equilibria where the inflation step represents a relatively bad (Nash) equilibrium which is supported by inertia and lack of credibility in the government's resolve in its disinflation policy. Under these circumstances a big favorable shock may cause a step reduction in inflation. This is an open question to which we shall return later.

As for the ability to defend the recent steps against adverse shocks, this has been closely related to the (revealed) resolve of the Bank of Israel (BOI) in using monetary policy to keep inflation in line with the prevailing step.

In the following discussion we shall adhere to the basic distinction concerning the inflation steps, namely the one between steps which take place during the

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[4] A factor which helps to lock-in the inflation step is the cost of deviation from the existing plateau by price setters, which may lead to a Nash equilibrium where no one is willing to be the first one to deviate.

unsustainable phase of the process and those that we observed after 1985. The best single indicator of the unsustainability of the first phase is the ever-increasing ratio of the public debt to GDP (Figure 2)[5] which reflects mainly the input from the large fiscal deficits prevailing at the time. Thus in 1974-80 these deficits averaged around 17% of GDP dropping to 14% in 1980-84, while the revenue from money creation was fairly stable in the range of 2%-2.5% of GDP (Bruno-Fischer *op. cit.* and Bank of Israel Annual Report 1988).

In view of these facts it is compelling to associate the rising long term trend of inflation in the pre-1985 era with the dramatic growth of the public debt, and not with the dynamics of the fiscal deficit, which did not exhibit a rising trend in the course of the inflationary era. Similarly, the stable path of seigniorage cannot provide an explanation for the inflation path. By symmetry, it makes sense to relate the ability to consolidate the relatively low inflation in the post-1985 era to the reduction in the debt ratio. It is interesting to note that in spite of the fact that the statistics about the debt were known before the 1985 stabilization, there was no attempt in the literature of that time to develop a theory that relates the acceleration of inflation to the growth of the public debt. In what follows we shall have to say something on this issue in the light of more recent theoretical developments. It is important to stress that the existence of an underlying <u>accelerating</u> trend is essential for the analysis of the inflation steps in this era since this is the basis for the unsustainability of the steps.

Since the nature of the inflation steps in the inflationary era differs in some basic aspects from the steps in the post-stabilization era, we shall deal first with the former. We shall begin with the relation of the long-term inflation trend with the growth of the debt ratio. This will provide the background for the discussion of the short-term policies related to the inflation steps in this era.

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[5] The public debt is a key variable in the Dahan and Strawczynski (1997) approach. We thank them for providing us with the cumulative measure of the public debt. We calibrated this variable at 1996.

I. Pre-Stabilization Era

3. The regime of accelerating inflation.

The theoretical link between the growth of the debt ratio and the rising inflation trend is not a simple one. One possible approach is through the rising interest burden of the growing debt. The latter increases the fiscal deficit, which in turn increases the incentive to use seigniorage as a means of finance. Note, however, that as long as the government can finance the rising interest service by issuing new debt at a constant real interest rate there need not be an increase in seigniorage over time, especially if we consider the incentive of "smoothing" the inflation tax. This was pretty much the case in the early years of the inflation process. Figure 3 shows that the real interest rate on domestic public debt started rising in 1979, so that this could potentially explain a rise in inflation in the subsequent years; but even then seigniorage did not increase nor did the fiscal deficit, which raises some question marks about the empirical importance of this channel.

Another possible link between public debt and inflation is through the public's perception that a larger debt creates a stronger incentive for the PM to use surprise inflation tactics in order to slow down the growth of debt. In this Barro-Gordon setting inflation can rise even though the PM is unsuccessful, in equilibrium, in achieving his aim.

The well-known Sargent-Wallace (1981) model of "unpleasant monetarist arithmetic" may provide, under certain conditions, another link between debt and inflation acceleration [see also Liviatan (1984)] even when the primary deficit is constant and seigniorage is not increasing. According to this model and its extensions along the lines of Drazen and Helpman (1990), (henceforth DH), an increase in the fiscal deficit which is not accompanied by an increase in the rate of monetary growth (so that money becomes relatively tight) will induce an increasing path of the public debt ratio which will have to be stabilized when it reaches some critical level. If the stabilization of the debt ratio is carried out by an increase in the rate of monetary

growth (with seigniorage substituting for bond finance), then inflation will rise (to a stable level) in the post-stabilization phase. Since this is assumed to be realized by forward-looking rational agents, it will generate a rising inflation trend in the pre-stabilization period.

It seems that Israel was approaching a situation which resembles the critical debt ratio in the 1983-85 period. Indeed, it can be seen from Figure 3 that the real interest rate on government bonds increased sharply in since 1982. The difficulties in the debt-finance of the deficit led the government to draw in 1984 on its foreign exchange reserves and resort to short term external borrowing. At that time there was a tightening of monetary policy to discourage capital flight which caused a jump in real short term interest rates to unprecedented levels (Figure 3). The risk premium on international borrowing increased concomitantly. These developments were a major factor for the launching of the 1985 stabilization.

In should be noted, however, that the above version of the Sargent-Wallace (SW) model is not directly applicable to the Israeli inflation because the fiscal deficit was much higher than the estimated maximal (steady state) inflation tax. This problem can however be rectified if we assume, as in the influential work of DH, that part of the eventual stabilization will be fiscal- based (so that the extreme deficit of the inflationary regime is viewed as temporary). The remaining seigniorage-based component of the stabilization package may still generate the rising inflation trend. In Helpman and Drazen (1988) the authors point out that a rising inflation trend may be generated prior to stabilization without an eventual increase in seigniorage if the stabilization is carried out by a swap of bonds for money jointly with a reduction of inflation.

3a A modified forward-looking approach

It should be noted, however, that the foregoing results with regard to the acceleration of inflation prior to stabilization are not robust. One can show that usually, when part of the stabilization relies on a cut in the fiscal deficit, it is not

necessary to have prior acceleration. In the search for a forward-looking explanation for the rising inflation trend let us follow DH by introducing uncertainty about the date of the stabilization of the debt ratio. This by itself is not sufficient to create a rising trend in the absence of a seigniorage-based stabilization. So let us, in addition, distinguish between the stabilization of the debt and the implementation of the fiscal adjustment associated with the transition to the new steady state.

Specifically, suppose that the public assigns a positive probability to the event that at the time when no more debt-finance is possible, it will still be impossible to perform fully the required fiscal adjustment; thus there may be some time lag between the stabilization of the debt and that of the deficit[6]. During this time interval, which we call the "inflationary crisis", the deficit has to be financed (temporarily) to a large extent by money creation leading to very high inflation rates. We note that a sharp jump in inflation to very high levels may erode the indexation of the debt (as was in fact the case in Israel) and thus provide temporary fiscal revenues, which may exceed the loss of tax revenues due to the Tanzi effect. Clearly, the erosion of an indexed debt involves much higher acceleration of inflation than the erosion of non-indexed debt.

Now, under rational expectations, current inflation is a weighted average of current and future rates of growth of the money supply, with declining weights for more distant periods. Therefore, assuming along with DH that the probability (i.e. the hazard rate) of debt stabilization increases with the debt ratio, we obtain that the weight of the anticipated inflationary crisis in the formation of current inflationary expectations (prior to the inflationary crisis) increases with time. In other words, a rising inflation trend is created even when the ultimate stabilization is entirely fiscal-based.

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[6] The reason for this delay may be related to the lack of consensus about who should bear the cost of stabilization, as in Alesina and Drazen (1991).

It is reasonable to suppose that an adverse external shock will raise the likelihood of an early need to stabilize the debt ratio, which tends to cause a jump in the underlying inflation. This may explain the long term inflationary effects of external shocks during the inflation process in Israel.

3b. Underlying inflation and the inflation steps.

In view of the foregoing discussion we take it as a working hypothesis that during the inflationary period there existed an underlying inflationary trend even when inflation appeared to be relatively stable. Indeed we view the latter periods as attempts on the part of the PMs to prevent the acceleration of inflation that would have otherwise taken place. Assuming that people expected a secular rise in inflation, the attempts to stabilize inflation by means of slowing down the rate of devaluation or freezing publicly controlled prices, were clearly unsustainable in the longer term. Yet for PMs with a short horizon this could have been a sensible policy.

It should be noted that the strategy of temporary stabilization required the creation of an initial "cushion" in the form of a real devaluation or a cut in subsidies in order to prevent a non-acceptable distortion of relative prices, such as an extreme real appreciation. This was made possible by devaluation shocks[7] and by temporary tightening of fiscal policies.

Paradoxically, the opportunity for creating the cushion may be facilitated by a balance of payments (BOP) crisis, which provides the required social consensus for the implementation of substantial (albeit temporary) cuts in the fiscal deficit and for the tightening of monetary policy. The crisis is as a rule associated with an initial overshooting of inflation (following the price shock) which provides the cushion for the new step.

It is usually the case that the public is more willing to accept restrictionary measures that are associated with a BOP crisis than with an acceleration of inflation.

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[7] See Rodriguez (1978) for a model of stationary inflation-devaluation cycles.

It is this fact that enables the policy maker to create the cushion for the inflation step, even though he does not possess the political power to redress the long term problem.

With regard to the causes of jumps in the inflation steps during the era of accelerating inflation we find a combination of endogenous and exogenous elements, which are well documented in the literature (Bruno and Fischer *op. cit.*). The main exogenous shocks were the outbreak of the Yom-Kippur war and the two oil shocks of the seventies, which were associated with the 1974 and 1979 jumps. The latter jump was also affected by the premature financial liberalization which caused a decline in the demand for money. This can be considered as containing both endogenous and exogenous elements. The 1983 jump was entirely home-made, resulting from the implementation of a Tablita-type policy. All the above steps were associated with balance of payment crises and initial price shocks following massive devaluations and subsidy cuts.

3c. Stabilizing the steps in the inflationary era.

Figures 3 to 8 present the empirical evidence on the policies associated with the inflation steps. (In the following analysis of the results we shall deal only with the three steps beginning in 1974). The common feature of these steps is that all of them were preceded by a deterioration of the current account and a rise in the civilian import surplus, which were due both to endogenous developments and external shocks (an exception to the latter shocks was the 1979-83 step). In each of these cases we can observe an initial temporary erosion of the real wage (relative to trend) which was brought about by the price shock which resulted from the government's response to the external crisis. This erosion is one of the expression of the cushion created at the beginning of the step. The data shows that in general the stabilization policies varied across the different steps. Thus the erosion of the real ER played a dominant role only in the 1979-83 step, while tight money (as reflected by the high interest rates) was prominent mainly in the 1983-85 step. An important anchor in this era were the government-controlled prices which were used very effectively in this role in the first

two steps; Figure 5 shows clearly how controlled prices formed a cushion in the early phase of these steps, which was eroded drastically along the step.

Table 7 provides some information about the inflation steps by means of standard deviations of some key variables, which can be interpreted in terms of the models presented earlier. These standard deviations (SD) are all divided by the SD of inflation to facilitate the comparison. Note first that in most cases inflation is more stable than the other nominal variables, the ratios in the table being greater than unity.[8] This can be explained in part by means of the fact that inflation is a weighted average of the nominal variables which determine it (when the goods market is in equilibrium). This implies that independent variation in the latter variables will lead to a relatively smaller variance of inflation. Another explanation which follows from the models is that, on average, these variables have not been used as rigid anchors, but rather as stabilizers of inflationary shocks.

The low variance of the rate of devaluation in the 1979-83 step is consistent with the notion that the 1979-83 step used the ER as anchor, while the closeness of all the SD's to that of inflation in the 1983-84 step indicates the strong incentive to protect the relative prices (such as the real ER) when inflation is going out of hand.

II. The Post-Stabilization Era

4. The disinflation regime.

The nature of the inflation steps in the post stabilization era is quite different than in the inflationary era. In this phase the public debt is on a declining trend and there is no obvious reason why the inflation step should not be sustainable. However, the relevant question is why didn't inflation drop immediately to OECD levels once the

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[8] The relative stability of the rate of inflation is not only an Israeli phenomenon. We have observed it for other coutnries as well.

fiscal fundamentals were apparently put in place by the 1985 stabilization, instead of being stuck for many years on the two inflation steps.

In symmetry with the rising underlying inflation trend in the inflationary era, one may expect that with the falling debt ratio in the post-stabilization era we should have an underlying decelerating inflation trend in the latter era. So what can account for the stepwise behavior in that era? One possible explanation is in terms of political economy. The big political payoff to the policy makers is in the reduction of inflation from three digit inflation rates to moderate rates of (say) 20% in annual terms. The further reduction of inflation to 15%, or even 5% does not carry great political dividends and may involve considerable recessionary costs if it is faced with credibility problems. However the latter problems are most likely to arise precisely because the public is well aware of the policymaker's dilemma.

Looking at this issue from the purely economic viewpoint we note that there is no consensus in the profession about the significance of the economic benefits of the transition from moderate to low inflation. It is therefore not easy to convince the public about the need to embark on a campaign of reducing inflation to low levels. This may lead to an equilibrium solution at a moderate inflation rate. This is an asymmetric equilibrium in which the public may believe that the government will fight against an acceleration of inflation to a new plateau but will not fight to bring down the basic inflation level, which we relate to the inflation step.

This may lead to a multiple equilibrium situation where the economy is stuck on an inflation step while, potentially, there exists a lower inflation equilibrium which is not attained because of the transition costs. The transition to the latter equilibrium can be facilitated by a favorable external shock such as the immigration wave of the early nineties or by favorable changes in the fiscal regime. It is important to note that in order to sustain the equilibrium even in the observed relatively higher, inflation equilibrium the government has to demonstrate its willingness to implement appropriate stabilization policies (which will normally be in the sphere of monetary policy) and bear the associated costs. If this is not done there is always the danger

that the government will lose its control on the current inflation step. The reason is that a passive attitude to adverse shocks may raise inflationary expectations which may in turn lead to an entrenchment of inflation at a higher plateau [this is in line with the expectational model of multiple equilibria presented in Blanchard and Fischer (1989), pp. 611-13.]

4a. The nature of the step reductions.

We note that unlike the drastic reduction of inflation in 1985 which led to the first post-stabilization step, the transition to the 10%-12% step in 1992 was not part of any conscious disinflation plan on the part of the government. We emphasize this point because it is relevant for the current debate about the strategy for further reduction of inflation. What was it then that brought inflation down from the 20% plateau to the current one? It appears that there was quite a number of factors that contributed to the step-reduction of inflation, but the main one was the surge of massive immigration from the former Soviet Union which began in 1990. Some of the policy measures that were implemented at the same time and which are sometimes considered as independent contributors to the disinflation were essentially made possible by the immigration shock.

The main channel through which the immigration affected the disinflation process was through its downward pressure on real wages (in a Phillips curve framework with increased unemployment), and through its effect on the flexibilization of institutional labor market rigidities (note the break in the real wage curve in the early 90's in Figure 4). The more indirect channels included the stimulation of sustainable medium term growth (which is conducive to disinflation in many ways), and the granting of US guarantees for international borrowing which stabilized the external financial position which bears on inflationary expectations. The law of the gradual reduction in the fiscal deficit which is considered as an important contributor to the step reduction of inflation was also indirectly related to the immigration wave, since it was motivated

by the need to indicate that the growth in the deficit was due to the absorption of immigrants and was therefore only temporary.

It is interesting to note that monetary policy contributed to the step- reduction by limiting the pace of the reduction in nominal interest rates, which raised real rates. However, this was only a supporting role. A more significant contribution of monetary policy (in cooperation with the fiscal authorities) to disinflation in the post 1992 period has been the implementation of an inflation-target regime. In practice, as we shall argue below, the inflation targets were means to stabilize the inflation step rather than to reduce its basic level. Taking a broader view, we may consider the 1992 step-reduction as a change in the long term political-economic equilibrium, which includes the inflation rate, as a result of a permanent shock to the labor market. If we view this equilibrium in a broad policy game framework [as for example in Kiguel-Liviatan (1994)], we realize that the long term inflation rate can be affected by structural changes in the labor market. Monetary policy can accommodate this change and consolidate it, but it cannot generate a change of this sort without a corresponding change in the fundamentals of the political-economic equilibrium.

4b. Stabilization policies in the two recent steps.

The two inflation steps of the post 1985 era took place in a different economic regime- one of reasonable fiscal balance and declining debt-GDP ratio; indeed, the latter has returned to the level prevailing at the start of the inflationary era (Figure 2). Another indication of the sustainability of the steps is the fact that the real ER (in terms of deviation from trend) and real prices of controlled items have not gone out of line along the step (see Figures 5 and 6). It is characteristic of this era that the corrective real devaluation (again relative to trend) in the beginning of the second step took place jointly with a reduction of inflation; recall that in the inflationary era the same phenomenon was always associated with a jump in inflation. In contrast to the shortening of the duration of the steps in the inflationary regime, we witness now long

steps- the first one lasted six years and the current one has lasted five years and is still going strong.

Thus the main difference between the steps in the inflationary regime and the present one is that in the latter regime the step is potentially sustainable[9], with the prevailing view being that in the long run inflation will go down rather than up. In the short run, however, the PM has to deal with shocks that may destabilize the system. We view the inflation step in the post stabilization era as being embedded in a multiple equilibrium framework in which the PM must use an active policy to prevent adverse shocks from destroying the relative stability of the step and trigger a transition to a higher step. This is very different from a strategy of reducing the basic inflation level, as the one implemented in 1985.

Our view is that the limited goal of stabilizing the inflation steps has been the de facto policy followed by the government after 1985, because the Israeli society could not reach a consensus about the desirability of implementing a more aggressive disinflation policy. This view, if correct, has far-reaching implications for the role of monetary policy. Specifically, according to this view, monetary policy is intended to prevent acceleration of inflation but not to reduce its long term level. With an improvement of fundamentals, as was the case with the immigration wave of the early 90's, the basic level of inflation will come down. Thus if monetary policy will take care of the adverse shocks and consolidate favorable shocks then inflation will come down in the long run. This may be termed "a strategy of consolidating successes".

The first (post stabilization) step.

During the first step (1986-91) the basic nominal anchor was the ER which was pegged to the dollar in the early post-stabilization era and later to a basket of

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[9] Note that the reduction of the current account surplus and the growth of the import surplus (Figures 7 and 8) in the present step is not necessarily an indication of non-sustainability since this reflects to a large extent the increased investment for the absorption of the immigration wave. This did not create BOP pressures because of the availability of long-term finance, as can be seen from the basic account curve in Figure 7.

currencies. It can be conjectured that the government genuinely tried to "bend" the inflation step which began to consolidate on the 20% annual rate, by being tough on the ER policy. But these attempts proved to be too difficult and costly, as can be seen by the occasional step-devaluations which were undertaken in this period (Figure 6). As can be seen in Figure 6, the erosion of the real ER resulting from the tough ER policy was arrested in 1989.

Table 7 shows that the variability of the ER, as measured by the standard deviation (SD), was almost double that of inflation, which indicates that effectively (on average) the ER was not a strict anchor during this step. We interpret this as meaning that the political-economic equilibrium was not consistent with the extra tough ER policy and admitted only the post 1989, more compromise-inclined, solution. The behavior of the real price of controlled items (Figure 5) tells a similar story- after being used as anchor in the early phase of the step, the policy is reversed and the controlled prices start a steep increase in real terms.

The present step.

After the step reduction of inflation in 1992, under the impact of the immigration wave, there were significant changes in the nominal regime. First, the nominal strategy changed from a complete reliance on the ER anchor to a regime based on an inflation target which is supposed to reflect the consensus of the treasury and the Bank of Israel. The other important change was the introduction of a crawling band for the ER, which widened over time from plus and minus 3% to 7% of the mid-value. The rate of crawl is pre-announced and is determined, in principle, by the difference between the inflation target and foreign inflation. The rate of crawl of the band has been 6% annually for the last three years.

Within the framework of the inflation target regime interest rate targeting became the main policy instrument of the Bank of Israel (BOI) with the money supply as an important element among a group of indicators (such as an estimate of inflation expectations and the state of the real sector). However the simultaneous existence of

the inflation target and the ER band tend to lead to inconsistencies which limits the ability of the BOI to conduct an independent monetary policy. Specifically, the implementation of very tight-money policy tends to induce large capital inflows (as in models with a high degree of capital mobility) which the BOI has to sterilize and thus incur embarrassing quasi fiscal losses. Under the present monetary regime, the parameters of the ER band are determined jointly by the BOI and the treasury. Under this setting the implementation of very tight monetary policy, to which the treasury is typically opposed, tends to render the system into one of a crawling peg.

Thus, following the tight money policy of the BOI in its attempt to control inflation, the ER got stuck recently on the lower (appreciated) limit of the band, which crawls at the rate of 6% per year. Therefore it is statistically difficult to distinguish between the two recent steps. Thus Table 7 shows that the structure of the relative variances of the nominal variables in the two steps is amazingly similar in spite of the fundamental difference in the strategic approach of the BOI.

The nature of the new strategy of the Bank can be seen clearly in Figure 9 which shows the relation between inflation and the nominal interest rate on BOI funds and Figure 10 which shows the relation of inflation with the corresponding real rate (with the interest on the monetary loan of the BOI being deflated by expected inflation derived from the difference between the indexed and non-indexed instruments). It can be seen that in the major inflationary shocks of 1994 and 1995 the BOI reacted swiftly with an increase in interest rates, which contributed to bringing inflation back in line with the upper part of the band of the inflation target (see Figures 11 and 12 on the relation of expected and actual inflation to the target).

In spite of the stubborn efforts of the BOI to deal with inflation by means of tight money, the fundamental statistical fact stands out very clearly--since 1992 inflation is basically stuck on a 10%-12% plateau. Effectively, the policy of the BOI performed the role of stabilizing the inflation step without affecting the inflation trend, which is what the policy has been all along the inflationary history in Israel, with the obvious exception of the 1985 stabilization.

Clearly, the most important feature of the disinflation policy associated with the present step has been the introduction of the inflation target regime. What has been the impact of this regime-change on the fundamental dilemma of dealing with the deviations from the inflation step versus trying to reduce the step itself? Figure 12 shows that there has not been a significant tendency of reducing the inflation target. Although its lower limit was reduced, this is not very meaningful since the true commitment is to the upper limit of the target band which exhibits no tendency of declining along the step. Since it is the upper limit of the band which represents much better the real consensus between the treasury and the BOI (the lower limit is more in the nature of "wishful thinking") we see that the implicit policy objective, which has been binding politically, was to stabilize the existing step and not to try actively to bring it down.

The dilemma of stabilizing the inflation step versus that of reducing it is still very much alive even in the present inflation target regime. One expression of the difference of attitudes towards this issue is in the BOI's pressure to adopt a multi-year inflation target which stipulates the planned inflation path towards OECD levels (to be reached around the year 2001) and the treasury's more vague approach to this objective. Another expression of the foregoing dilemma is in the implementation of the strategy of keeping inflation inside the target band. It turned out that even within the framework of the inflation target regime there exists a constant tension between the more aggressive disinflation policy, as represented by the stance of the BOI, and the more lenient one as represented by the treasury. This may again reflect the different attitudes towards the dilemma of consolidating the existing inflation step versus the desire to reduce it.

This problem may be illustrated by the present stance of monetary policy as reflected in the level of real interest rates on central bank funds. It can be seen from Figure 3 that these went up a step since early 1995 and the high rate policy has continued even in recent months when inflation has stayed close to upper limit of the

target range; moreover, the high rates persisted in the present year even though the public finances have been burdened by the sterilization of massive capital inflows.

One view of this policy is that the BOI has been trying to ensure that inflation "will not raise its head", but another one is that it has been trying to reduce the inflation trend at a faster rate than the one warranted by the implicit consensus. The uncertainty concerning this issue creates a constant tension in the macro management of the economy. It seems that the economy could benefit from greater cooperation between the BOI and the Treasury.

Epilogue

After this paper was finished, at the end of 1997, it seems that the rate of change in the CPI declined. It is possible that the rate of inflation is declining to a new lower step, the third step after the 1985 stabilization. What are the possible reasons for this decline?. And is this decline consistent with the analysis we have presented?.

In this short epilog we will argue that the transition to a new lower inflation step may be the result of a combination of a declining underlying trend for the rate of inflation (see Figure 2) and an accumulation of disinflating elements that formed the trigger of this possible transition.

The latter elements include:

- Fiscal consolidation. In 1997 the budget deficit was cut to the level required by law. This was accomplished by a combination of tax increases and expenditure cuts that helped the government to regain control on the budget and renew the trend decline in the public debt. This supported both the declining underlying trend and the trigger for the timing of a step-reduction.

- Monetary restraint. Monetary policy was highly restrictive, resulting in high real interest rates and reduced rate of exchange rate devaluation.

- A rise in unemployment. The combination of macroeconomic policies , among other things, resulted in an increase in the rate of unemployment, creating a downward pressures on prices.

- A sharp rise in foreign workers. This created a favorable supply shock of the kind caused by the immigration wave in the early nineties.

- A decline in the rate of investment. This decline is due to a transition to a lower long-run growth due to a reduction in the flow of immigration and a related adjustment of the desired rate of growth of the capital stock, both in the business sector and in housing.

- Decline in world inflation.

This critical mass of elements, all operating in the same direction, on the background of a declining underlying inflation trend may be the explanation of the sharp decline in the rate of price increases at the end of 1997. If this is correct there is an immediate policy implication of taking advantage of this favorable trend and bringing down the rate of inflation in 1998 to a lower plateau, without a further increase in the rate of unemployment. This scenario of consolidation of successes contrast with the view of gradual disinflation till 2001. It suggest the need for a coordination effort to consolidate the step-reduction by adjusting wage contracts and the policy relating to public sector prices as well as the projected inflation in the government budget and the slope of the exchange rate band.

Tables

Table 1. Sequential Chow Test for the Inflation Mean, 1964-1996

Date of Break*	70:4	73:4	79:2	83:4	85.4	91:4
F value	21.77	25.02	103.66	96.90	67.06	21.20
* The date represents the beginning of a new period.						

Table 2. Summary Statistics of Inflation in the Identified Sub-Periods, 1964 - 1996

Period	1 64.1- 70:3	2 70:4- 73:3	3 73:4- 79:1	4 79:2- 83:3	5 83:4- 85:3	6 85:4- 91:3	7 91:4- 96:4
Observations	26	12	22	18	8	24	21
Mean	1.08	3.59	8.68	20.00	39.61	4.44	2.55
St. Dv.	1.36	1.89	3.78	2.56	7.32	1.72	0.89
Coef. of Var.	1.26	0.53	0.44	0.13	0.18	0.39	0.34
D.W.	1.92	1.85	1.96	2.17	2.74	2.39	1.96
t on Trend	-0.72	0.93	0.97	0.31	-0.41	-0.22	0.29
ADF	-3.17	-3.29	-3.04	-3.04	-2.75	-17.82	-5.39

Table 3. Specification Test for Step-Like Functional Form, 1964-1996

Specification	Steps and Polynomial	64:1-96:4 Steps	Polynomial	Steps and Polynomial	64:1-85:2 Steps	al
Constant	0.023 (0.34)	0.011 (1.95)	-0.070 (-1.27)	0.017 (0.65)	0.012 (1.55)	0.028 (1.11)
D70:4-73:3	0.023 (1.15)	0.025 (2.56)		0.013 (0.47)	0.026 (1.77)	
D73:4-79:1	0.051 (1.66)	0.076 (9.32)		0.036 (0.81)	0.079 (6.71)	
D79:2-83:3	0.147 (3.89)	0.189 (21.90)		0.103 (1.93)	0.201 (16.05)	
D83:4-85:3	0.346 (8.05)	0.385 (33.84)		0.242 (3.62)	0.382 (21.95)	
D85:4-91:3	0002 (0.04)	0.034 (4.22)				
D91:4-96:4	-0.024 (-0.46)	0.014 (1.74)				
t	0.002 (0.36)		0.024 (2.21)	-0.001 (-0.21)		-0.004 (-1.08)
t^2	-0.0002 (-0.60)		-0.002 (-2.72)	4.25E-05 (0.14)		0.0002 (1.33)
t^3	9.41E-06 (0.82)		5.57E-05 (3.02)	-1.55E-07 (-0.03)		-4.21E-06 (-1.31)
t^4	-1.47E-07 (-.93)		-7.47E-07 (-3.01)	4.18E-10 (0.01)		2.95E-08 (1.61)
t^5	1.01E-09 (0.97)		4.51E-09 (2.82)			
t^6	-2.57E-12 (-0.98)		-1.01E-11 (-2.54)			
R^2	0.931	0.928	0.581	0.897	0.888	0.870
D.W.	2.43	2.40	0.64	2.35	2.37	1.66
F test	---	0.49	100.18	---	1.56	4.78

* t values in parenthesis.

Table 4. Endogenous Steps Estimation

LS // Dependent Variable is Inflation (DP)
Sample(adjusted): 1964:1 1996:3

DP=C(1)+C(2)*@LOGIT(C(3)-T)+C(4)*@LOGIT(C(5)-T)
+C(6)*@LOGIT(C(7)-T)+C(8)*@LOGIT(C(9)-T)
+C(10)*@LOGIT(C(11)-T)+C(12)*@LOGIT(C(13)-T)

	Date	Coefficient	Std. Error	t-Statistic	Prob.
C(1)		0.025339	0.007876	3.217406	0.0017
C(2)		-0.051283	0.014501	-3.536584	0.0006
C(3)	70:2	37.19499	1.812076	20.52617	0.0000
C(4)		-0.020462	0.014131	-1.448015	0.1503
C(5)	73:2	25.18564	4.510401	5.583903	0.0000
C(6)		-0.117857	0.011674	-10.09581	0.0000
C(7)	79:1	59.97906	0.753885	79.56001	0.0000
C(8)		-0.253687	0.023091	-10.98643	0.0000
C(9)	83:4	79.02348	0.426116	185.4505	0.0000
C(10)		0.414818	0.022784	18.20629	0.0000
C(11)	85:3	86.16493	0.256989	335.2869	0.0000
C(12)		0.013042	0.010669	1.222492	0.2240
C(13)	91:4	111.3213	6.715781	16.57607	0.0000

R-Squared   0.907235   Durbin Watson stat 2.517454
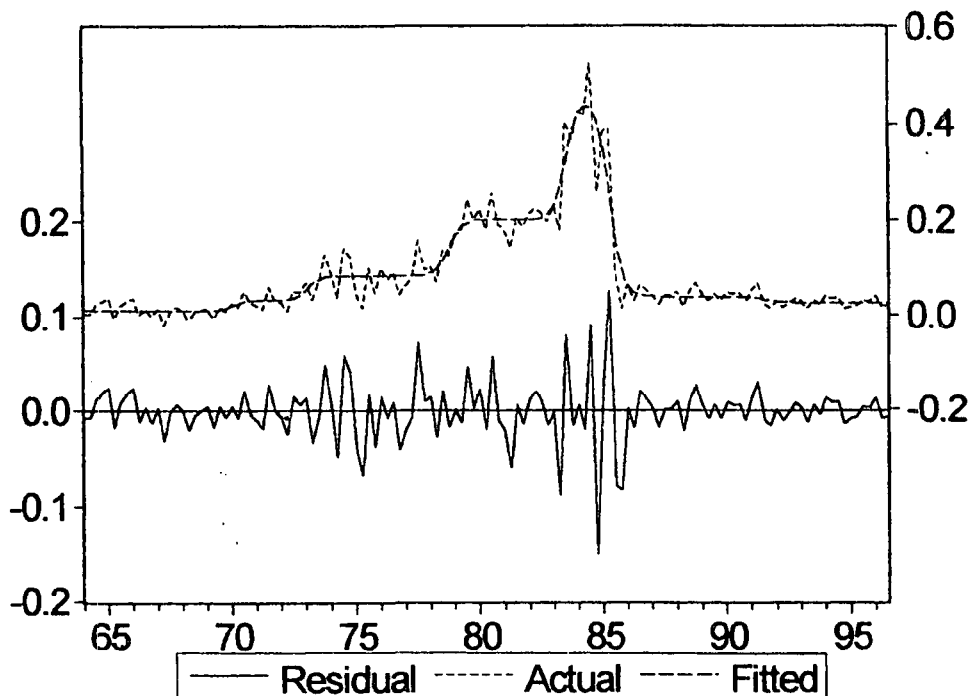
				TABLE 5						
				INFLATION AND OTHER VARIABLES,MEANS						
				AND STANDARD DEVIATIONS						
				TABLE 5A						
YEAR	CPI	M1	M2	UNRESTRICTED	EXCHANGE RATE		INTEREST RATE		NOMINAL WAGE PER	
				LOCAL-CURRENCY	DOLLAR	CURRENCY	OVERDRAFT	MONETARY	EMPLOYEE POST	
				CREDIT		BASKET	FACILITIES	LOAN	TOTAL	BUSINESS
1987	19.9	60.1	65.8	55.1	6.6	11.3	61.9	NA	29.3	29.6
1988	16.3	31.8	31.6	44.8	1.3	3.0	46.2	NA	23.2	21.8
1989	20.2	27.8	19.9	39.4	19.0	15.6	34.3	14.2	18.7	18.3
1990	17.2	28.3	26.1	35.8	5.0	10.8	29.6	15.3	16.1	15.5
1991	19.0	26.7	33.6	34.7	13.8	12.4	29.9	15.3	15.3	12.7
1992	11.9	22.4	24.3	21.8	8.6	10.8	22.0	11.8	13.4	14.0
1993	10.9	25.9	29.7	39.0	13.9	11.1	18.1	11.3	11.5	11.3
1994	12.3	19.6	43.2	33.8	5.8	7.9	19.8	13.3	15.2	11.9
1995	10.0	9.6	37.9	26.4	0.3	4.6	22.4	15.5	12.4	10.8
1996	11.3	18.3	33.9	21.3	5.9	3.2	23.0	16.1	12.8	12.7
MEAN										
87-91	18.5	34.4	34.5	41.8	9.0	10.5	39.9	14.9	20.4	19.5
92-96	11.3	19.0	33.6	28.3	6.8	7.5	21.0	13.6	13.0	12.1
STD										
87-91	1.7	14.2	17.8	8.4	7.1	4.7	13.8	NA	5.8	6.5
92-96	0.9	6.1	7.3	7.8	5.0	3.6	2.0	2.2	1.4	1.3

YEAR	CONSUMER PRICE INDEX			BUDGET PRICES		GDP	BUSINESS
	TOTAL	HOUSING	EXCL. HOUSING AND FRUIT & VEG	PURCHASES	PUBLIC SECTOR WAGE	PRICES	SECTOR-PRODUCT PRICES
1987	19.9	20.4	17.7	17.2	17.2	20.5	18.7
1988	16.3	16.0	17.0	12.0	21.0	19.9	18.5
1989	20.2	18.9	32.3	18.0	20.0	20.2	18.5
1990	17.2	14.3	34.2	14.0	20.0	16.1	13.2
1991	19.0	15.9	31.6	19.0	19.0	20.6	19.0
1992	11.9	11.9	11.2	16.0	15.5	12.1	11.7
1993	10.9	9.0	19.3	4.0	3.0	11.5	10.2
1994	12.3	8.7	23.6	9.0	16.4	12.3	8.1
1995	10.0	9.3	14.3	12.5	22.0	9.2	6.6
1996	11.3	10.2	15.9	8.5	13.0	11.2	9.9
MEAN							
87-91	18.5	17.1	26.3	16.0	19.4	19.4	17.6
92-96	11.3	9.8	16.8	9.9	13.8	11.3	9.3
STD							
87-91	1.7	2.5	8.4	2.9	1.4	1.9	2.5
92-96	0.9	1.3	4.8	4.5	7.0	1.2	2.0

TABLE 5B

TABLE 5C									
YEAR	CPI	GDP	BUSINESS SECTOR PRODUCT	DOMESTIC PUBLIC SECTOR DEFICIT (% OF GDP)	DOMESTIC BUDGET DEFICIT (% OF GDP)	PRIVATE CONSUMPTION	REAL WAGE PER EMPLOYEE POST		UNEMPLOYMENT
							TOTAL	BUSINESS	
1987	19.9	6.3	8.5	1.7	2.1	8.9	7.9	8.2	6.1
1988	16.3	3.5	3.7	4.1	0.8	4.5	6.0	4.8	6.4
1989	20.2	1.2	1.0	8.2	4.4	0.4	-1.3	-1.6	8.9
1990	17.2	6.1	7.6	7.6	4.6	5.6	-0.9	-1.4	9.6
1991	19.0	6.3	7.0	7.7	4.7	7.2	-3.1	-5.3	10.6
1992	11.9	6.6	8.2	6.4	6.0	7.8	1.3	1.8	11.2
1993	10.9	3.5	3.7	4.1	3.2	7.3	0.5	0.3	10.0
1994	12.3	6.8	7.9	2.4	2.4	9.2	2.6	-0.4	7.8
1995	10.0	7.1	8.9	4.3	3.3	7.3	2.1	0.7	6.9
1996	11.3	4.4	5.0	5.3	4.5	5.5	1.4	1.3	6.5
MEAN									
87-91	18.5	4.7	5.6	5.0	3.3	5.3	1.6	0.8	8.3
92-96	11.3	5.7	6.7	4.5	3.9	7.4	1.6	0.7	8.5
STD									
87-91	1.7	2.3	3.2	2.8	1.8	3.2	4.9	5.4	2.0
92-96	0.9	1.6	2.3	1.5	1.4	1.3	0.8	0.9	2.0

Table 6. The Post Stabilization Steps

LS // Dependent Variable is Inflation (DP)
Sample(adjusted): 1986:1 1996:3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.043121	0.002538	16.98734	0.0000
D91D96D	-0.017862	0.003722	-4.798889	0.0000

R-squared	0.359668	Durbin-Watson stat	2.187448
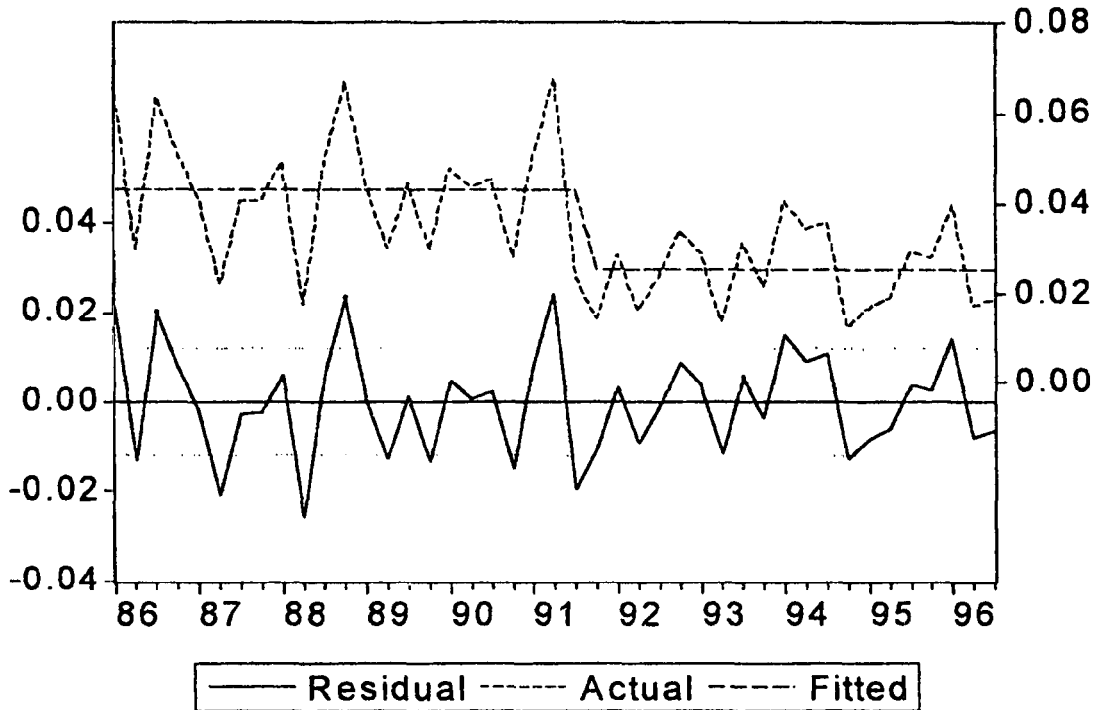
Table 7. Relative Standard Deviation
(SDV of CPI in the denominator)

Sample	Controlled Prices	Dollar Exchange Rate	Basket Exchange Rate	Business Sector Wage	Money Supply
91.4-96.4	1.16	2.70	1.93	1.80	4.80
95.4-91.3	1.16	2.28	1.76	2.60	4.81
83.4-85.3	.99	1.13	1.05	1.21	1.19
79.2-83.3	2.18	1.08	.77	1.90	2.35
75.4-79.1	1.34	2.07	2.23	1.33	.90
70.4-73.3	1.04	1.88	2.00	1.84	1.09

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Figure 1. Inflation in Israel 1964:1 - 1996:4
(The vertical lines are the inflation sub-periods)

Quarterly rate - log differences
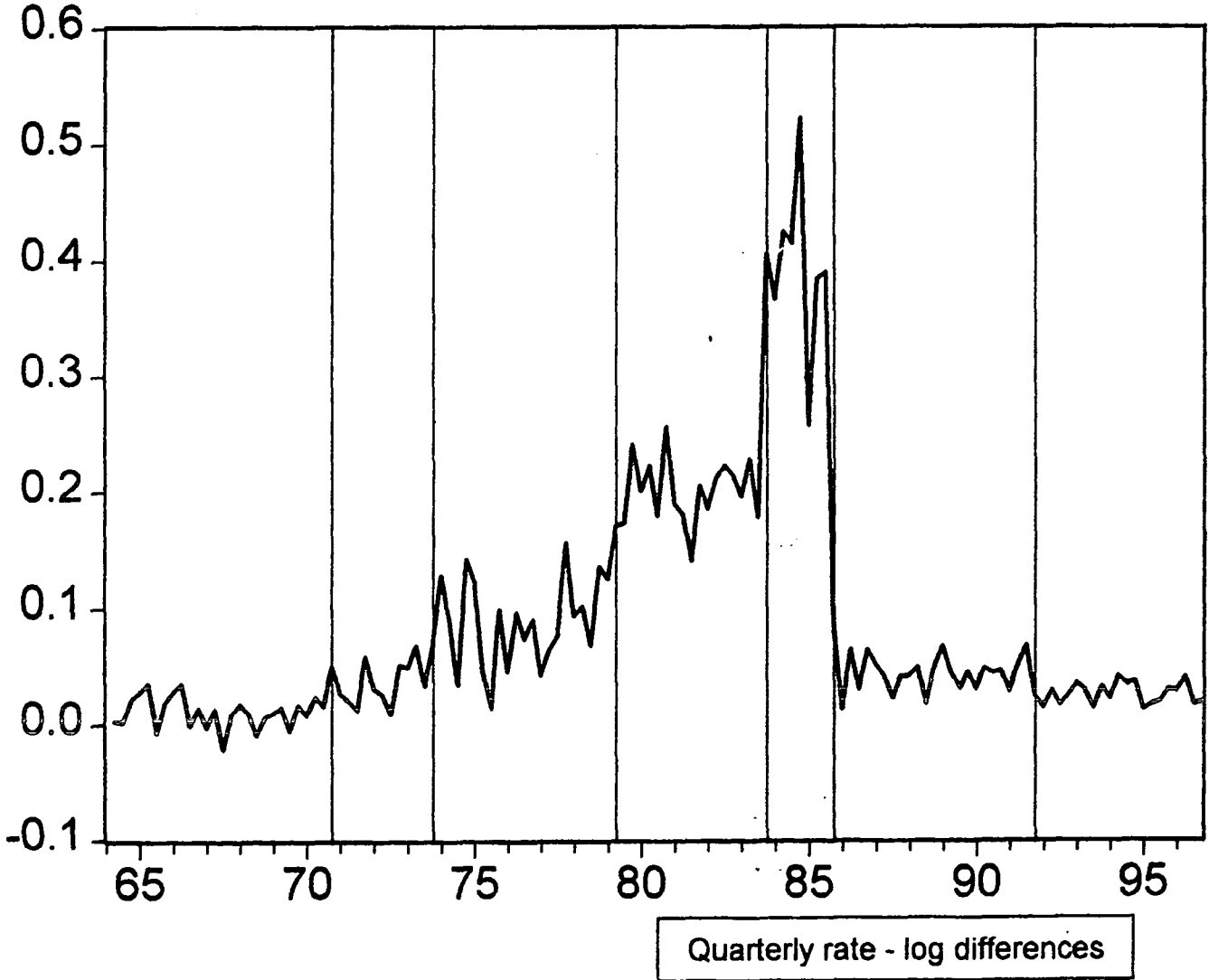
Figure 2. Public Debt Relative to GDP (percent)
(The vertical lines are the inflation sub-periods)

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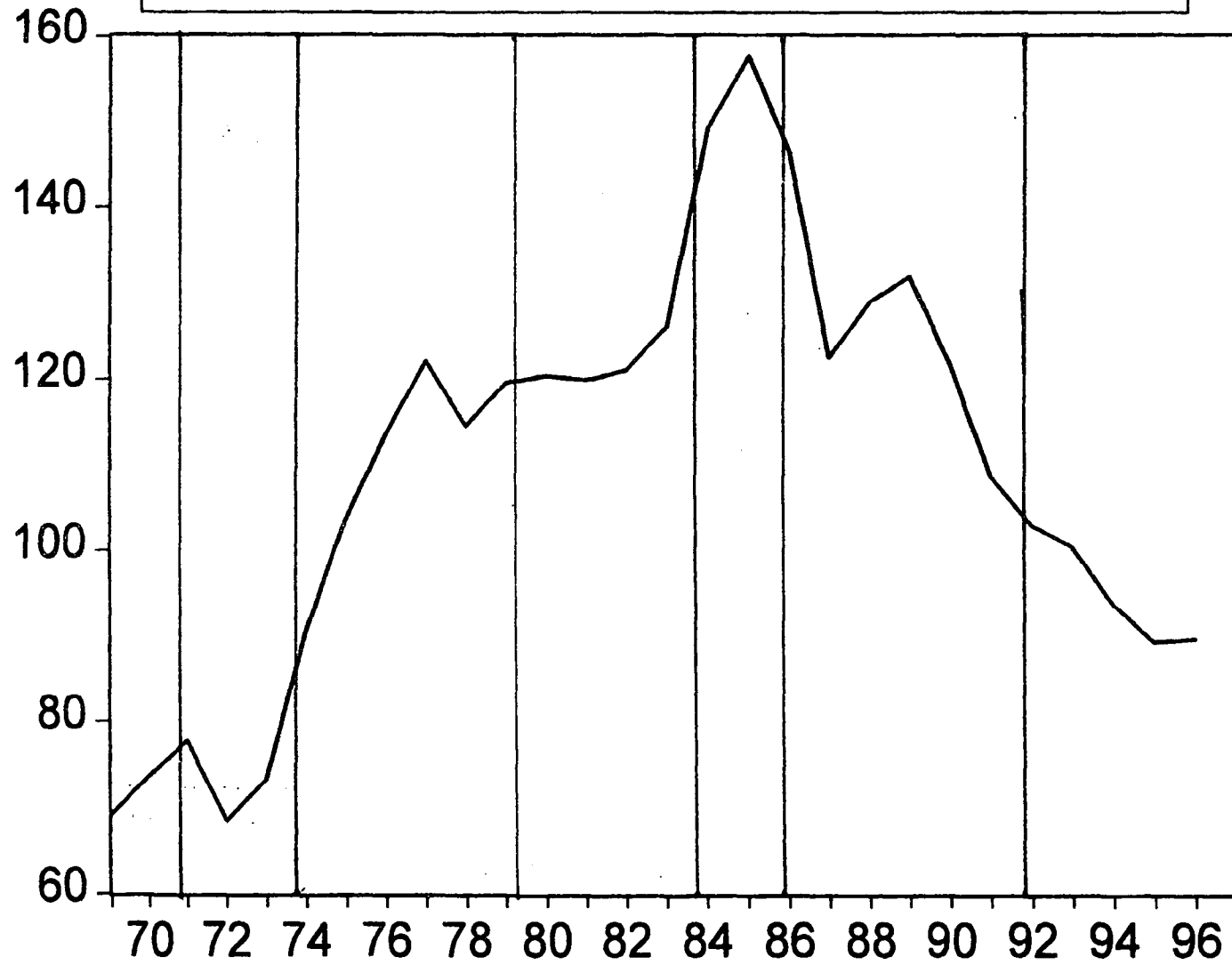
Figure 3. Real Interest Rates 70 - 96
(The vertical lines are the inflation sub-periods)
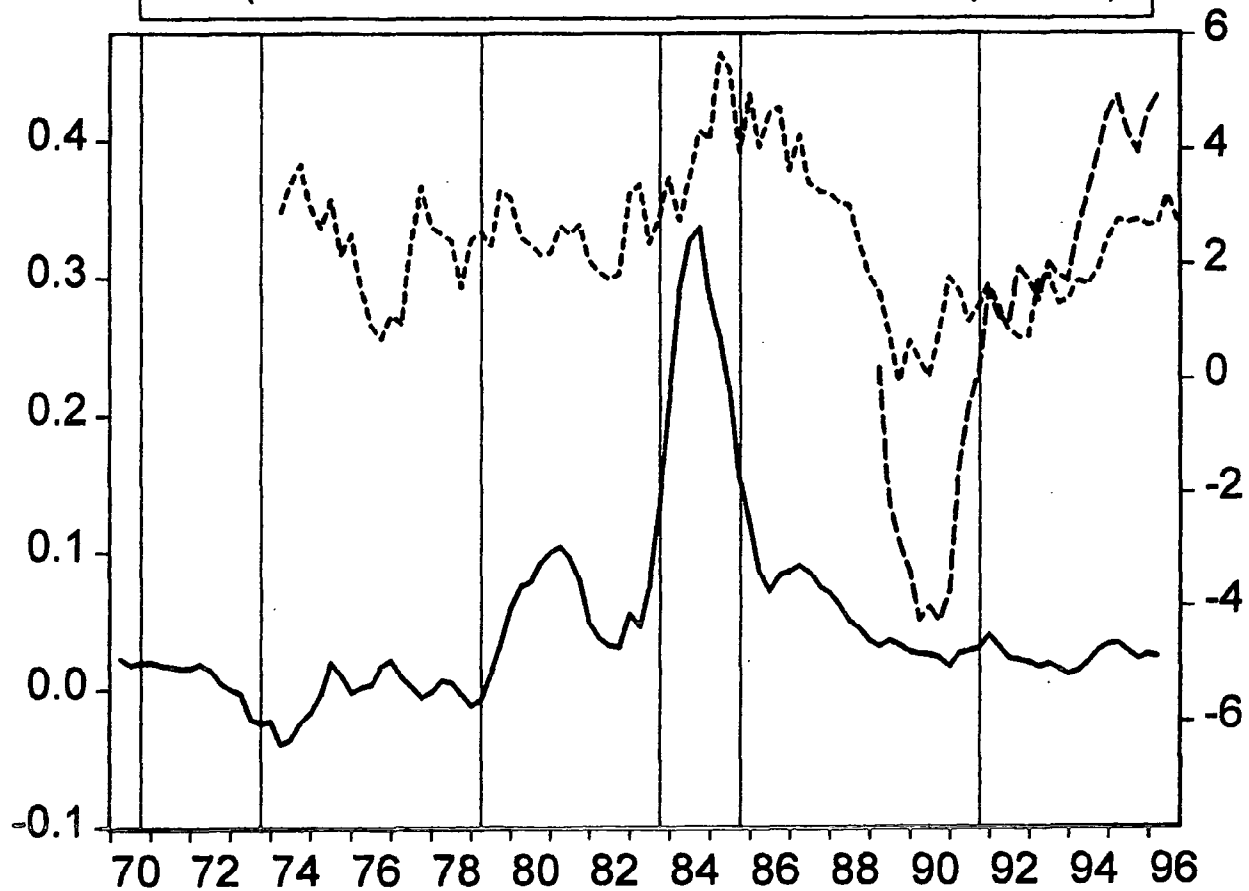
Overdraft-left quarterly rate
10 years bond-right An. rate
Monetary loan-right An. rate

Figure 4. Real Wages in the Business Sector - Index
(The vertical lines are the inflation sub-periods)
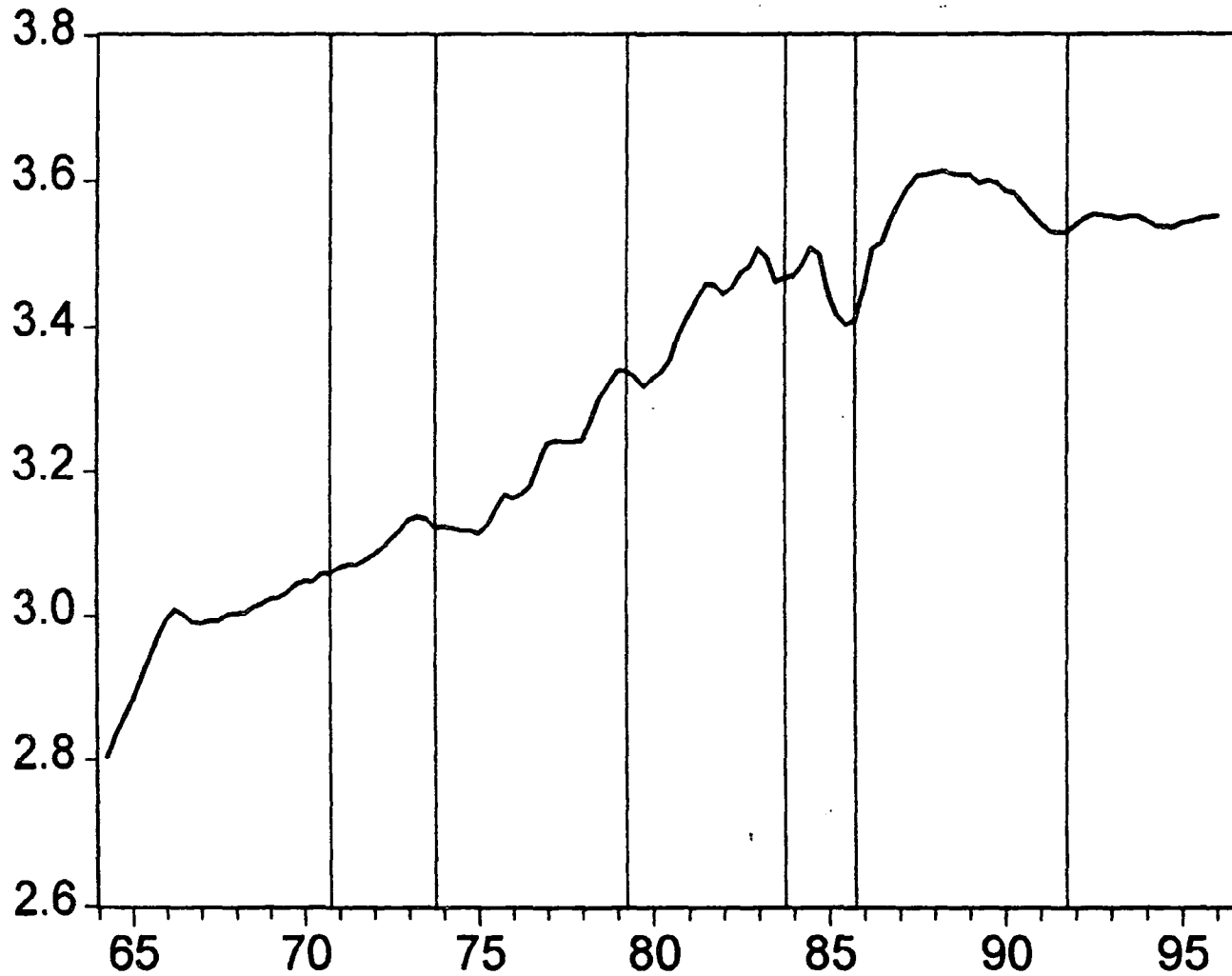
Figure 5. Controled Prices Relative to CPI - Index
(The vertical lines are the inflation sub-periods)

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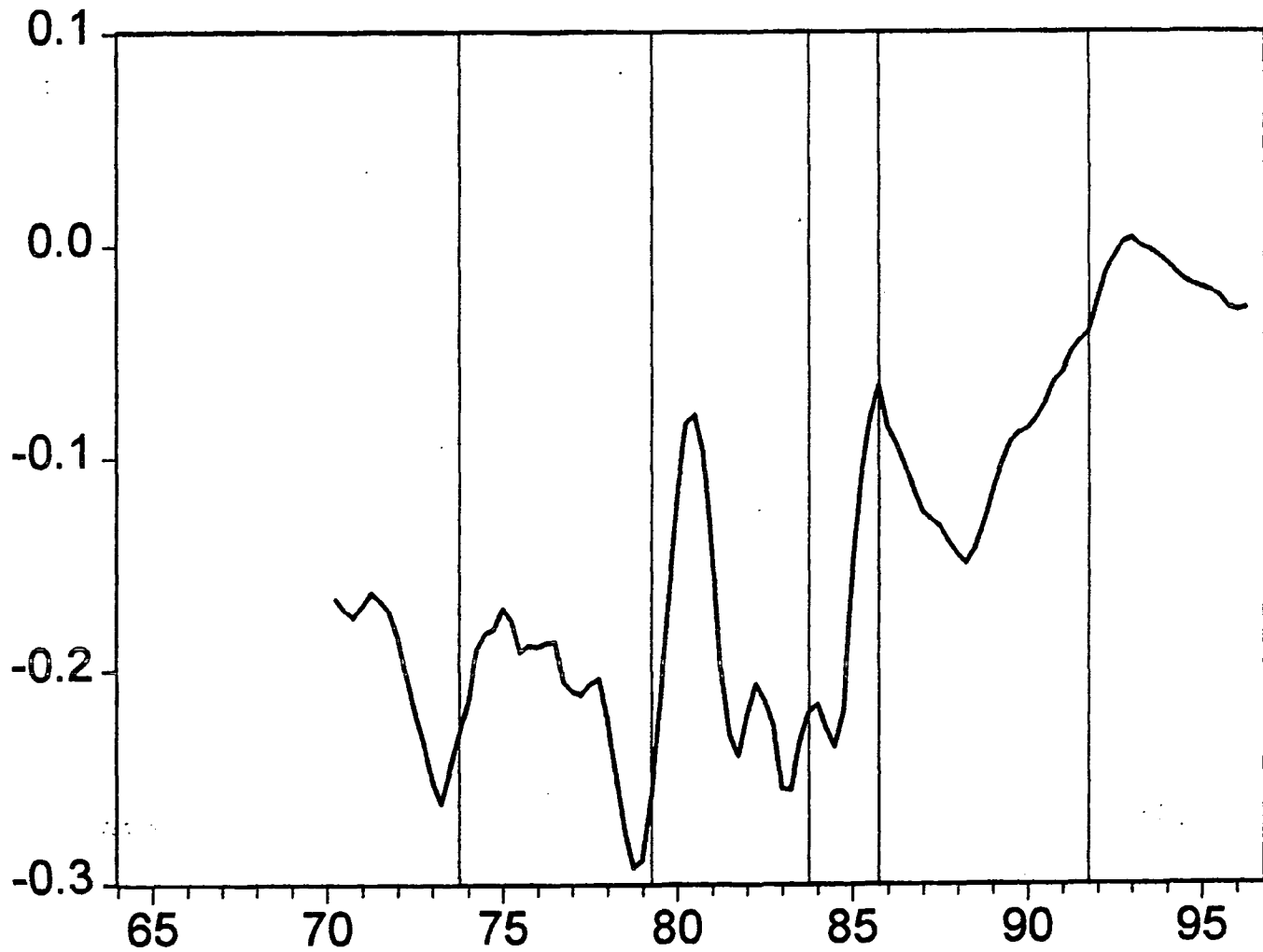
Figure 6. Deviation of the Real exchange Rate from Trend (The vertical lines are the inflation sub-periods)
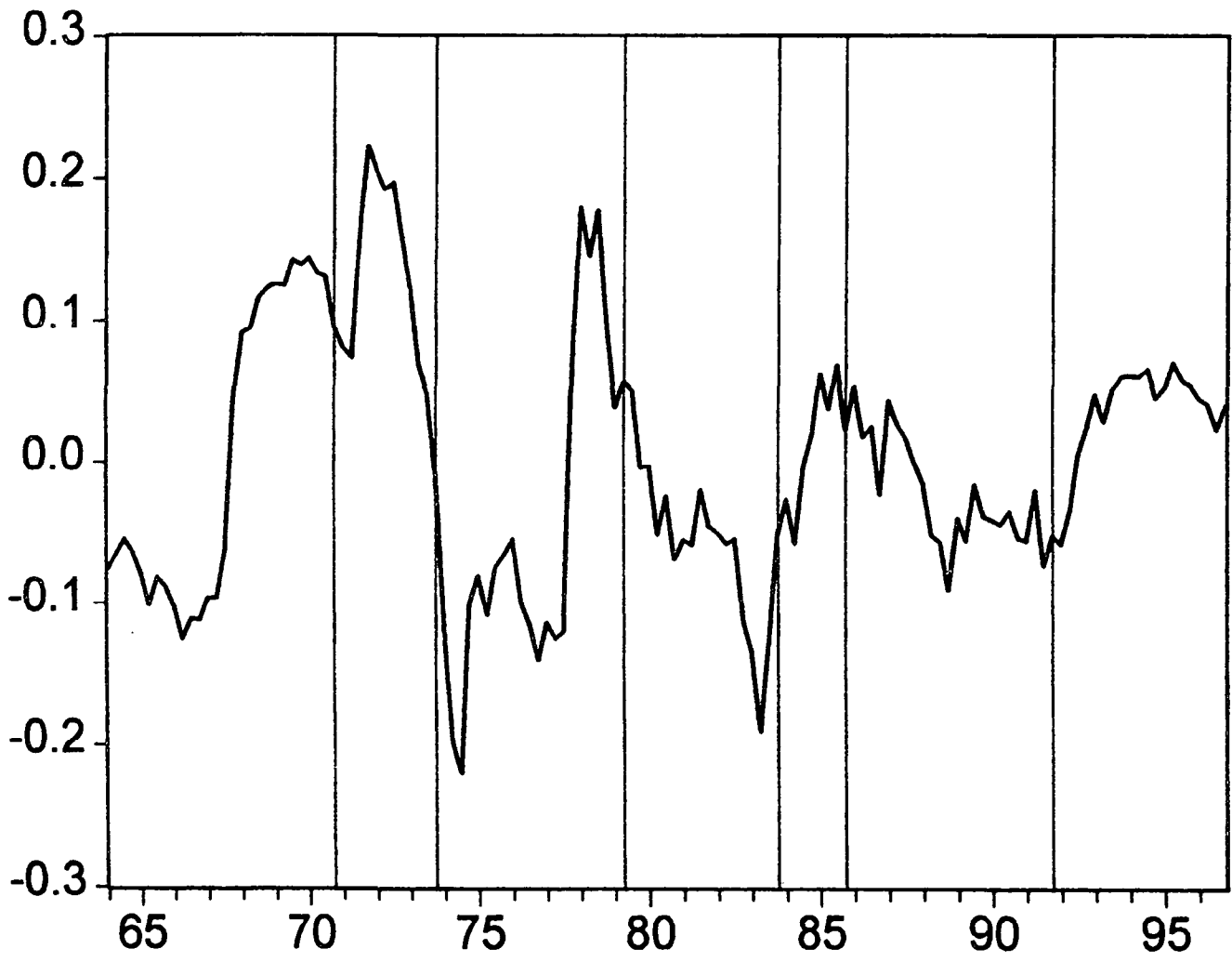
Figure 7. Current and Basic Accounts GDP ratios 64-96
(The vertical lines are the inflation sub-periods)

—— Basic Account
----- Current Account.
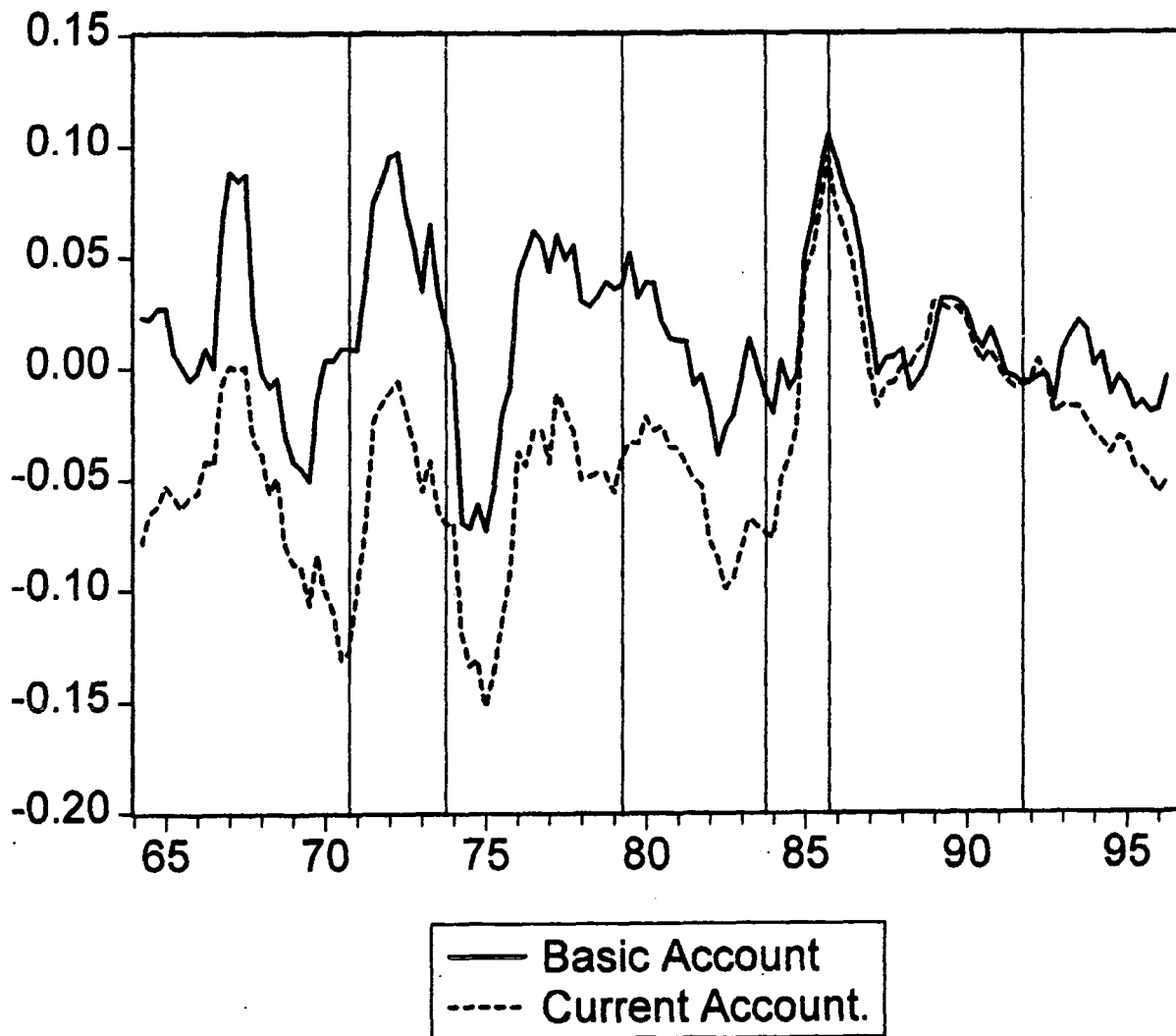
Figure 8. Civilian Import Surplus (percent of GDP)
(The vertical lines are the inflation sub-periods)

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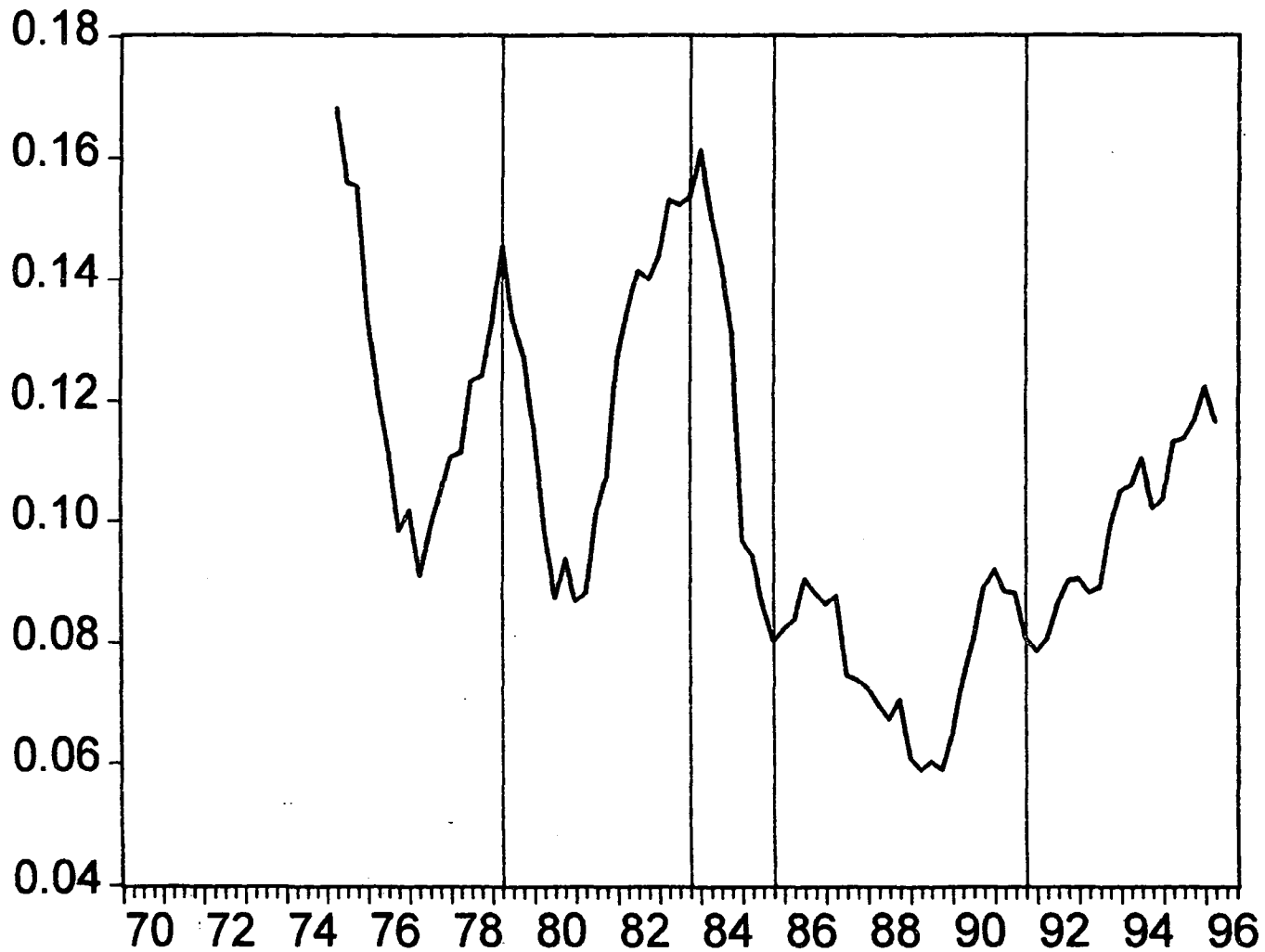
Figure 9. Expected Inflation and Monetary Loan Rate
(Annual rate - Percent)

Monetary Loan Rate ----- Expected Inflation

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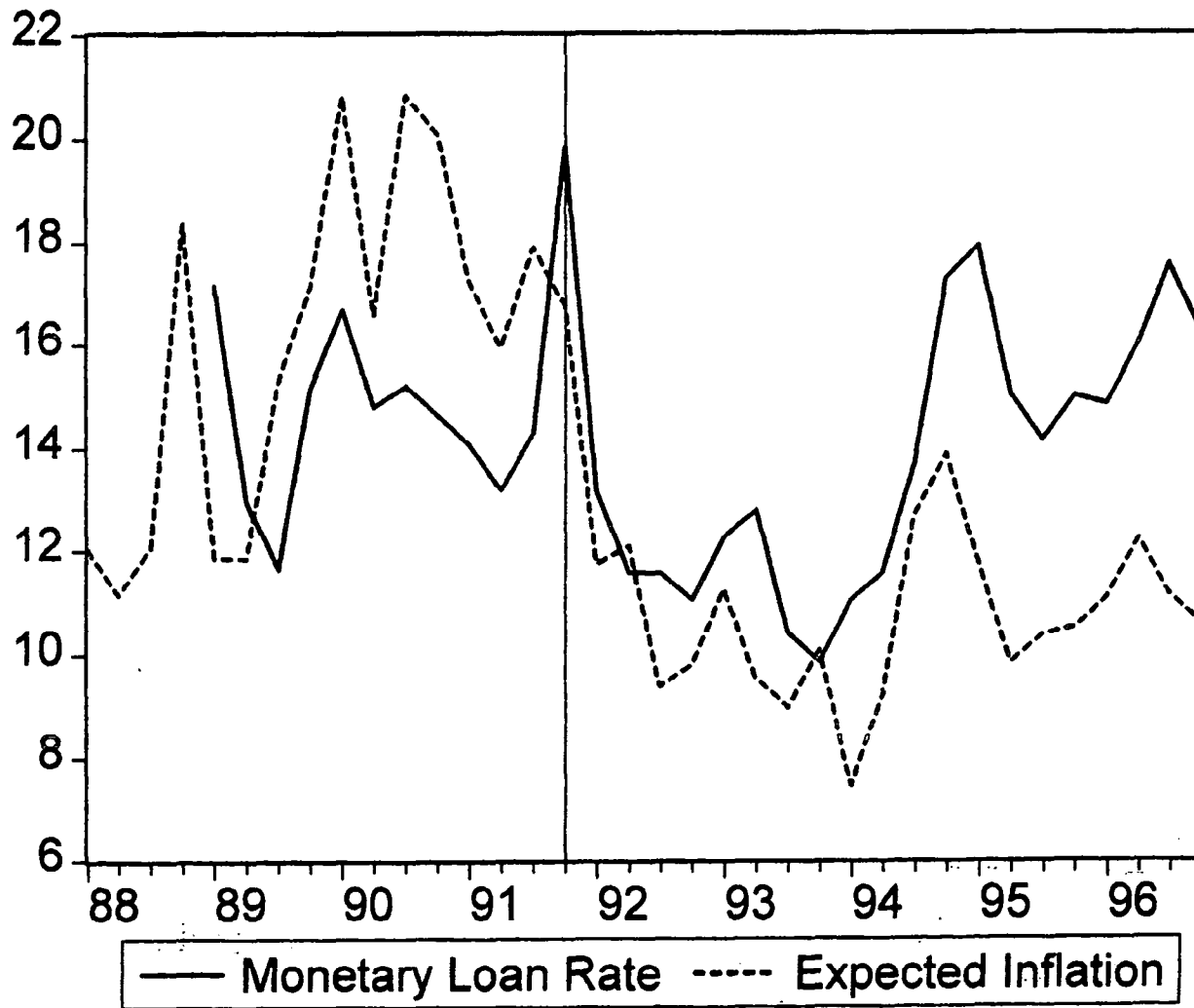
Figure 10. Inflation and Real Monetary Loan Rate
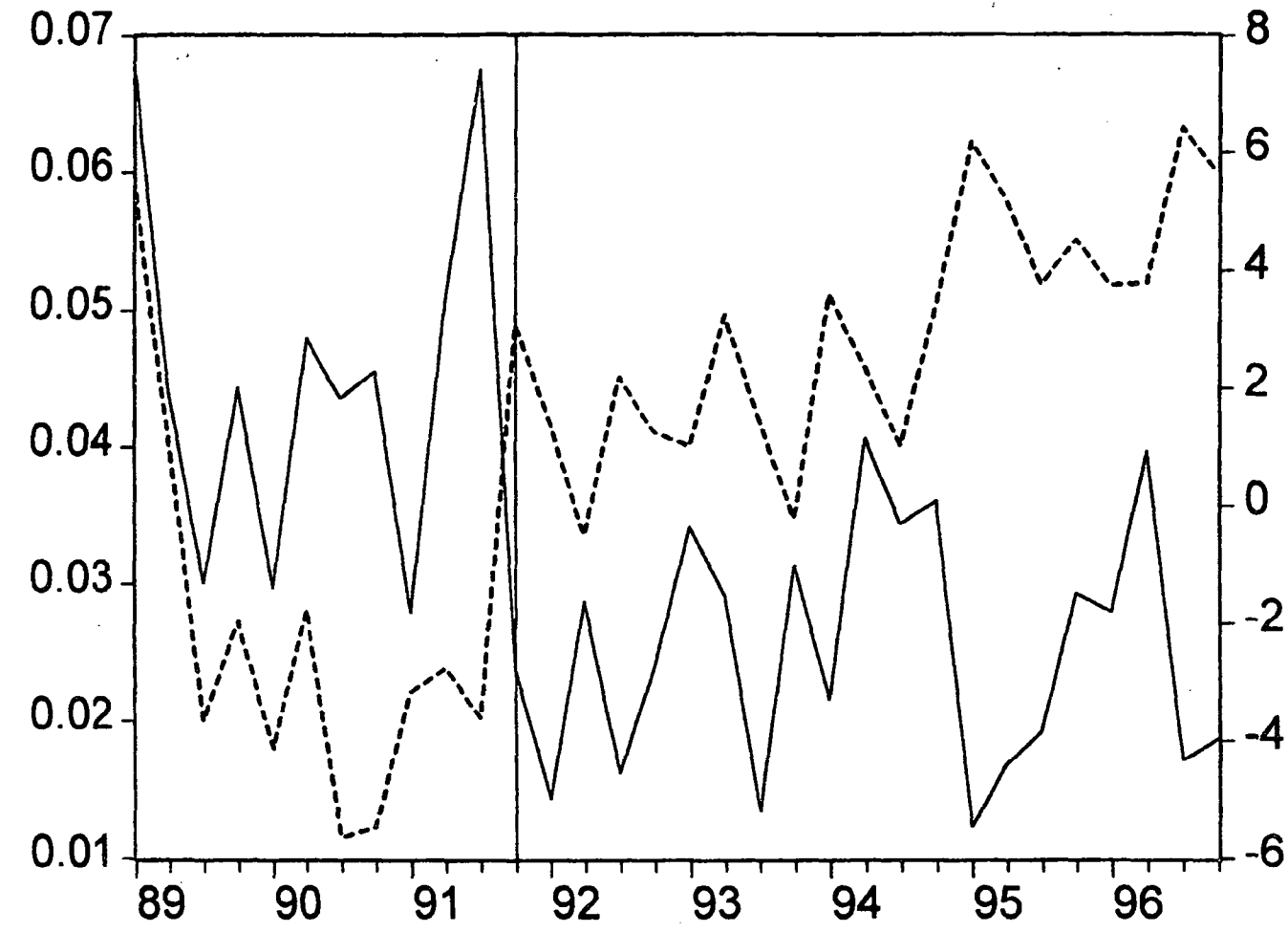
— Inflation left quarterly rate   ---- Real Mon. Loan Rate right

Figure 11. Inflation and Expected Inflation After 1985
(Quarterly inflation, average quarterly expected
inflation at annual rates - percent)
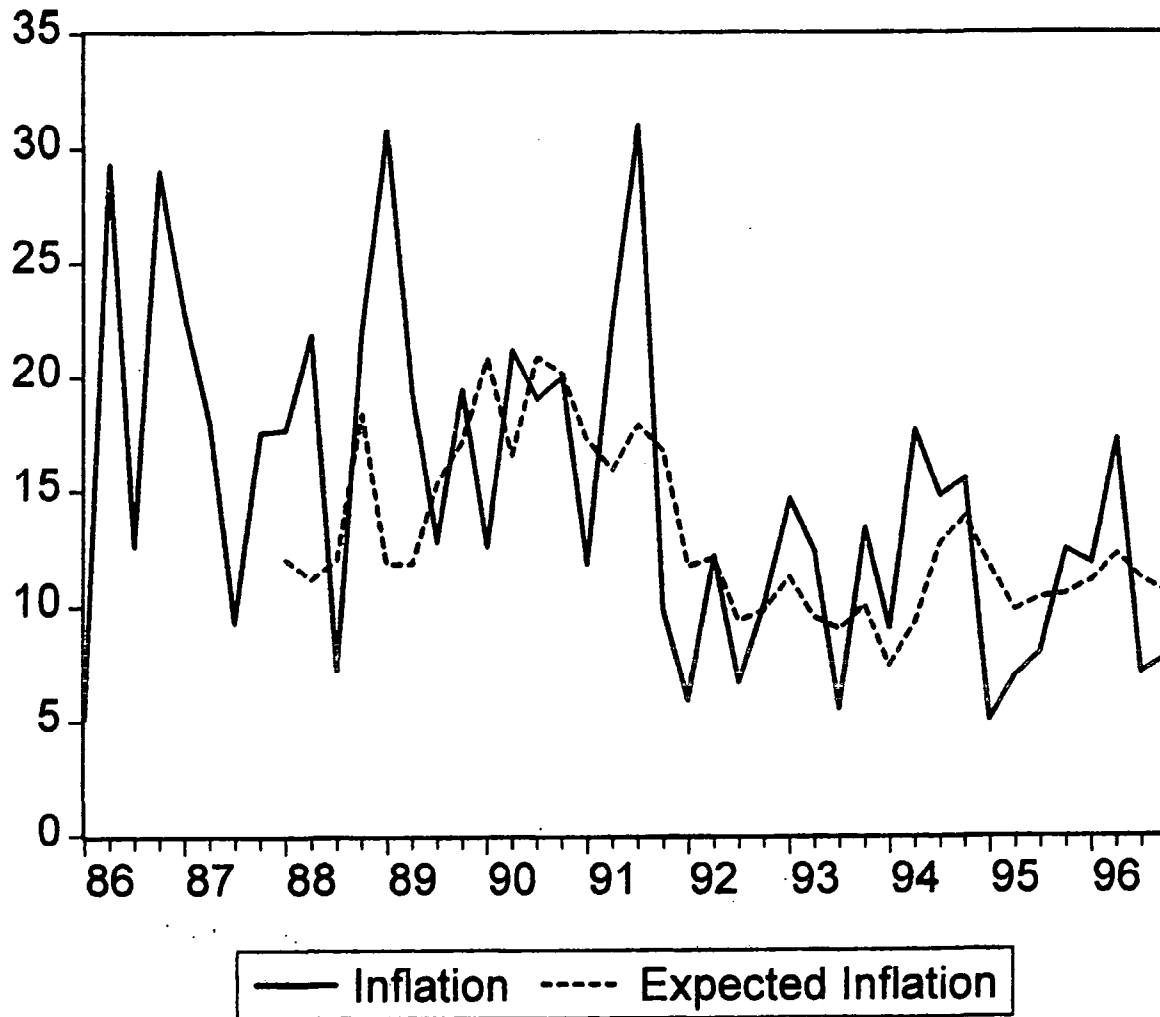
Figure 12. Inflation, Expected Inflation and Inflation Target 92:01-97:04
(Rolling 12 month CPI inflation, 12 month expected inflation - percent
annual rates - Inflation targets horizontal lines)
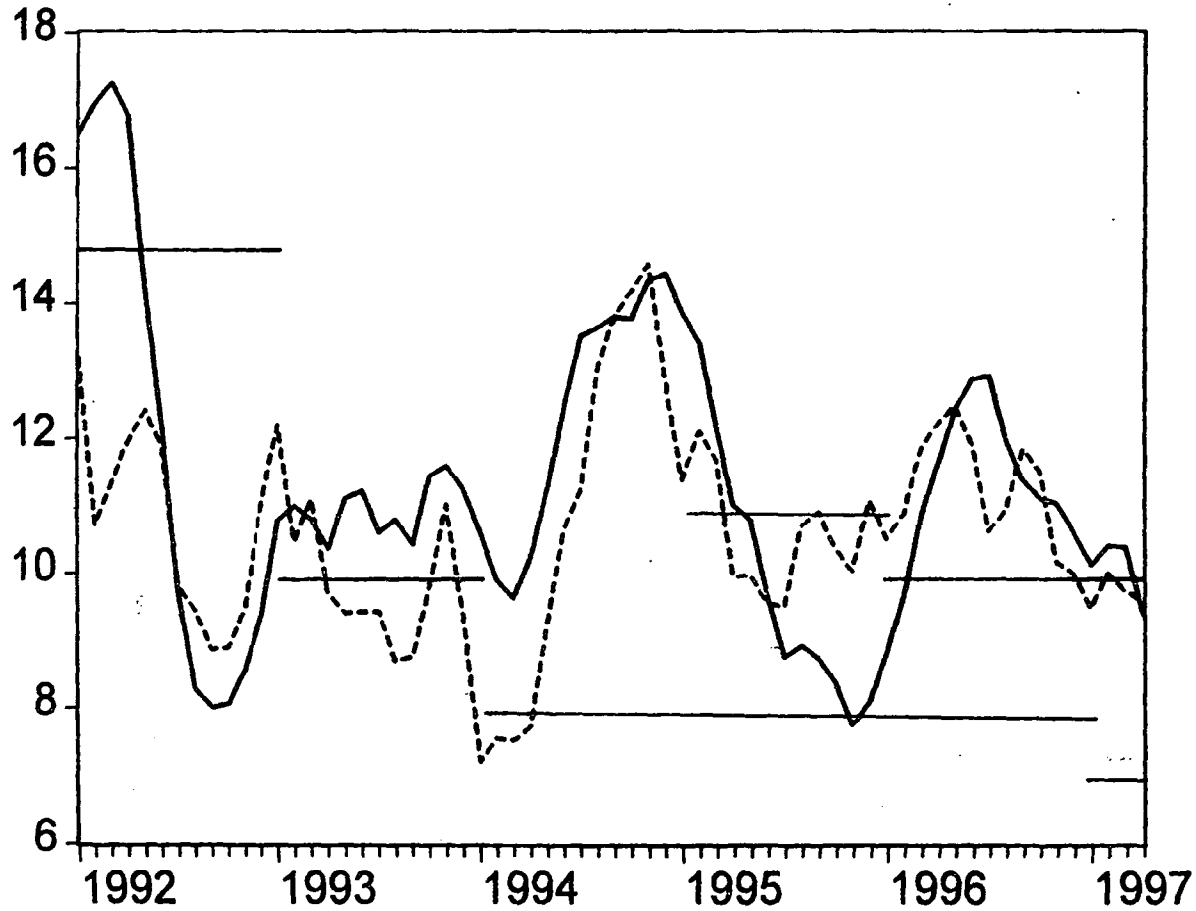
—— Last 12 month inflation   ----- 12 month expected inflation

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