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WORKING PAPERS

Macroeconomic Adjustment and Growth

Macroeconomic Adjustment, Stabilization, and Growth in Reforming Socialist Economies

Analytical and Policy Issues

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This paper develops simple models, reviews empirical evidence, and discusses policy issues relevant for socialist economies undergoing a process of economic reform.

This paper — a product of the Macroeconomic Adjustment and Growth Division, Country Economics Department — is part of a larger effort in PRE to conduct research on macroeconomic adjustment in reforming socialist economies. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Emily Khine, room N11-062, extension 39361 (41 pages with figures and tables).

Current attempts at reform in Eastern European countries raise important issues of macroeconomic management in the transition from central planning to a market, or mixed, economy.

Solimano develops simple models, reviews empirical evidence, and discusses policy issues associated with traditional socialist economics and those undergoing reform.

Those issues involve inflation, growth, money overhang, disequilibrium in goods and labor markets, and interactions between stabilization and growth.

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1. Introduction

The recent attempts to move the socialist economies (SEs) away from a system where major decision are made on the basis of quantity signals, command rules and state ownership to a system where relative prices and decentralized markets play the major role in economic decision-making poses some important questions for macroeconomic management. What are the initial rules of behavior of the firm, government and household sector when these economies enter into the reform process? What are the major macro imbalances faced by the SE at the beginning of the reform process? What instruments of macroeconomic control are available in these economies? What are the potential conflicts between stabilization and reform? How is it possible to characterize inflation in SE -- a phenomenon that now affects several socialist economies? What are the determinants of growth in SE? These are some of the major questions involved in the topic at hand.

Unstable macroeconomic conditions tend to undermine the reform process in several ways. A primary goal of the reform process is to give relative prices a major role in economic decisions. High and erratic inflation rates however reduce the informational content of relative prices. Unsustainable current account deficits may reduce the future access to foreign borrowing thus making adjustment more costly in the medium term. Large fiscal deficits tend to be inflationary and often lead to the postponement of structural reforms. In general, those macro imbalances increase the probability of future policy reversals as domestic agents and foreign creditors start to cast doubts on the sustainability of the reform process. Slow growth, in turn, undermines the prospects for successful economic transformation in SE.

This paper seeks to provide a simple analytical framework for examining problems of macroeconomic adjustment, stabilization and growth in socialist

economies undergoing a process of reform.

In Section 2, using a simple macro model as a benchmark for the "classic" socialist economy entering a reform process, we try to identify the nature of major macro imbalances in the goods, labor and foreign exchange markets and describe the underlying rules of behavior of households, firms and the government. We then discuss the scope for policies that attempt to modify the real exchange rate, real wage and aggregate demand. The role of microeconomic reforms and changes in rules of government behavior are also discussed.

The issue of the money overhang, defined as a process of accumulation of money balances by the public reflecting the difference between intended expenditure and actual purchases is examined. Alternative measures designed to eliminate the accumulated money overhang such as currency reform, price deregulation, financial deepening and auctions of public sector assets are discussed. The impact of eliminating fiscal deficits and structural reforms on the money overhang is also explored.

In Section 3, the inflationary trends in Eastern Europe and the Soviet Union are reviewed, and a simple model of the inflationary process is developed. The model encompasses expectations, inertia, the interaction of adverse external shocks, devaluation and the financing of loss-making public enterprises. An extension for the case of hyperinflation is carried out in order to illuminate some key features of the inflation process in quasi-hyperinflationary socialist economies. Some policy implications for stabilization in SE are also discussed.

In Section 4, after briefly reviewing the empirical record of growth, investment and technical progress in Eastern Europe and the Soviet Union in the past three decades we take up the issue of growth in a socialist economy from three different perspectives: the supply side, the savings availability and the

investment response. From the perspective of the supply side, we try to explain the coexistence of relatively modest GDP growth with high rates of capital accumulation - a trend observed since the mid-seventies in several socialist economies. In addition, the issue of extremely low (even negative) recorded rates of technical progress in those economies is addressed. From the perspective of the saving availability, the lack of foreign savings needed to import capital and modern technology, and the difficulty of mobilizing domestic savings into productive investment is discussed in the context of a two gap model with fix prices and non-shiftable capital and in the context of a simple growth model with price flexibility and malleable capital. Lastly, from the investment perspective, credibility problems associated with systemic uncertainty concerning the final fate of the reform process are singled out as additional constraints to growth in reforming socialist economies. The paper concludes in Section 5.

2.   **A simple benchmark model for analyzing macroeconomic adjustment in reforming socialist economies**

In this section we develop a simple macro model incorporating aggregate demand, aggregate supply, the labor market, the money market and the balance of payments. This aggregate macro model, though perhaps a better descriptive of a market economy, is still useful as a benchmark from which we can compare some actual features of macro behavior in traditional socialist economies, such as, the existence of disequilibrium in the goods and labor market, the problem of money overhang, labor hoarding, and the soft budget constraints of firms. Moreover, a market economy seems to be the system that reforming SEs are

approaching.

Let us turn to the benchmark model. Aggregate demand in the goods market, Y^d, is made a function of the stock of real balances, M/P, a vector of fiscal variables, Z, including real public spending and taxes, the real exchange rate affecting transactions with the convertible currency area, EP^*/P and the level of income of the trade partners, Y^*. A shift factor, q, is introduced to reflect demand shocks.

(1) $Y^d = f(M/P, Z, EP^*/P, Y^*, q)$

Aggregate supply, Y^s, is made an inverse function of the real wage, W/P, the real price of imported inputs, equal to the real exchange rate for simplicity, EP^*/P, and a factor u reflecting the effects of supply shocks.

(2) $Y^s = g(W/P, EP^*/P, u)$

Equation (2) implicitly assumes profit maximization by firms (or at least cost-minimization); again though this may not describe the objective function of the traditional socialist firm (see chart 1.), the reformed firm sector is intended to start behaving as such. The characterization of equilibrium between aggregate demand and aggregate supply will depend on whether prices (and wages) are flexible or not, say

(3) $Y =$ $\begin{cases} \min \ [Y^d, Y^s] & \text{when prices are fixed} \\ Y^s = Y^d & \text{with flexible prices} \end{cases}$

Turning to the labor market, the underlying demand for labor function associated with (2) is given by:

$$(\cdot) \qquad L^d = h(W/P, \ EP^*/P)$$

Labor market equilibrium (at full employment) is given by

$$(5) \qquad L^s = L^d \ [(W/P)_e, EP^*/P]$$

where L^s is the exogenous labor supply in the economy and $(W/P)_e$ is the equilibrium level of real wages.

In most socialist economies the government pursues a policy of guaranteeing "full" employment in the economy more as an administrative practice rather than as the outcome of profit maximization by firms. In practice this policy usually leads labor employment beyond its optimal level where $W/P = \delta Y/\delta L$. The difference between the optimal employment level (namely that arising from equating real wages with the marginal product of labor) and the observed employment level, will be termed as redundant labor . Another reason to observe "redundant" labor is the practice - widely recognized in the traditional socialist firm - of hoarding labor as a cushion to prevent unfulfillment of the physical production targets of the plan because of shortage of labor (for a formal model of a socialist firm factor demand and output supply under uncertainty, a soft budget constraint, and the availability of bailouts see Goldfeld and Quandt, 1988; see also Kornai, 1982).

The balance of payments in the economy, B, is written as the sum of the trade balance with the convertible currency area, TB, the trade balance with the non-convertible currency area, TB_{nc}, interest and factor payments abroad, r^*D^* and the net flow of capital from abroad, F.

The only endogenous component of the balance of payments is the trade balance with the convertible currency area. It will be assumed that TB depend on the real exchange rate and the levels of domestic and foreign income (of the countries in the convertible currency area).

(6) $TB = TB(EP^*/P, Y, Y^*)$

Therefore the balance of payments will be equal to

(7) $B = TB(EP^*/P, Y, Y^*) + TB_{nc} + r^*D^* + F$

It becomes clear from inspection of equation (6) that the lower the size of the trade with the convertible currency area, the less the impact of changes in the real exchange rate - depreciation or overvaluation- on the balance of payments.

Figure 1 shows the "equilibrium" of the system. In quadrant (a) the upward sloping schedule BB in $(EP^*/P, Y)$ space represents the balance of payments, the downward sloping schedule Y^sY^s is the aggregate supply function and its negative slope reflects the adverse effect on the supply of output of an increase in the real exchange rate resulting from the increase in the relative price of imported inputs, a complementary factor to labor in production. The upward sloping schedule Y^dY^d is the aggregate demand schedule reflecting substitution away from

foreign goods when the real exchange rate depreciates. In Figure 1, at the real exchange rate $(e_R)_A$ there is both an excess demand for goods and a balance of payments deficit. Clearly at the level of output Y_A a combination of expenditure switching - a depreciation of the real exchange rate -- and expenditure reducing policies are required (to shift the $Y^d Y^d$ schedule up to the left in order to intersect the other two schedules at E). Quadrant (b) depicts an inverse relationship -obtained from equation (2)- between real wages, W/P and the real exchange rate, EP^*/P. This relation is independent of the level of output under the assumption of constant returns to scale. Quadrant (c), in turn, depicts the labor market where the downward sloping schedule is the notional demand for labor, equation (5), and the vertical line is the exogenous labor supply function. Furthermore, at the "excessive" level of real wages, $(w_R)_A$ -- associated with an overvalued real exchange rate $(e_R)_A$ -- there is unemployment in the labor market, the latter being of a classic nature (real wage higher than marginal product of labor at full employment). In the terminology of disequilibrium theory (Benassy,1982) the economy would be in a regime of "classic unemployment", combining excess demand in the goods market and excess supply in the labor market (for two different views on how to characterize macroeconomic equilibrium in a socialist economy, see Kornai, 1982, and Portes, 1986). However, the important point here is to recognize that at $(W_R)_A$ the labor market would be in a state of excess supply (employment being at $L_A < L^S$) if firms were profit maximizing units.

Nevertheless, in a traditional socialist economy one is likely to observe an state of excess demand for labor at the real wage $(w_R)_A$ provided the demand for labor tends to depart from profit maximization in favor of labor hoarding and/or overemployment.

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Figure 1. Macro Equilibrium in a Socialist Economy
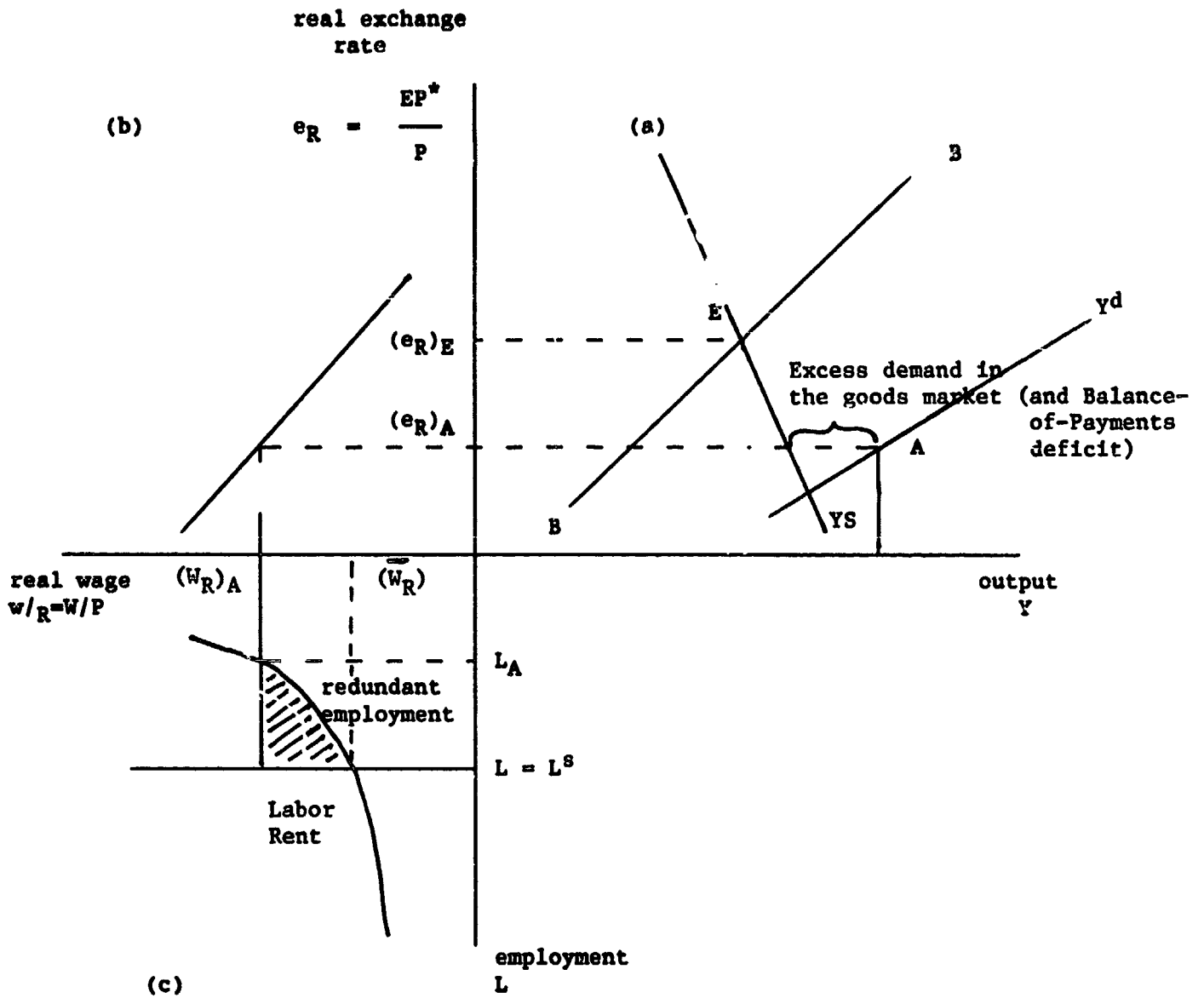
The nature of the disequilibrium in the goods and labor markets discussed above may shed some light on the problem of "forced" savings and money overhang. The argument can be illustrated by Quadrant (c) in Figure 1: the $L - L_A$ units of labor which are paid at a real wage higher than the marginal product of labor. MPL, contribute to output by

$$MPL \times (L - L_A)$$

but those workers receive a level of real income given by

$$(w_R) \times (L - L_A)$$

since $(w_R)_A > MPL$, there is going to be an extra income unmatched by a corresponding increase in output (imports are assumed to be restricted)[1]. Therefore, when the workers who receive this kind of "labor rent" try to spent the extra income in the goods market, the results will be an excess demand at the ongoing fix prices. Therefore, forced savings arises as the result of purchasing power unable to be spent in the goods market rationed by supply.[2] In terms of financial assets, the forced savings mechanism associated with frustrated consumption decisions takes the form of hoarding of money balances leading to a situation of money overhang as labeled in literature. The fact that domestic money is the "only" asset available for accumulation by the private sector is a consequence that in a traditional socialist economy physical capital accumulation -- machinery, equipment, housing and land is, in general, carried out by the state. In turn, financial intermediation conducted through the public banking system is reduced to deposit accounts and credit operations with state-owned enterprises. Moreover, the possibility of hoarding durable goods is prevented by the fact that the markets for those goods are, in general, rationed by supply.

Chart 1

Firm Behavior under Alternative Economic Systems

a)

Objective Function Constraint	Profit Maximization	Meeting Physical Production Targets
Hard Budget Constraint	Competitive Firm	
Soft Budget Constraint		Traditional Socialist Firm

b)

Wage Rule Employment Decision	Equalization Marginal Product of Labor	"Fairness" Criteria + Productivity Bonuses
Technical Labor Requirements + Hoarding		Traditional Socialist Firm
Profit Maximization Level	Competitive Firm	

The problem of the money overhang may be of less importance once the existence of black markets for foreign exchange and other assets or goods becomes officially tolerated, hence reducing the costs of engaging in those portfolio activities. On the other hand, highly inflationary socialist economies like Poland or Yugoslavia, with a tendency toward dollarization as reflected in the widespread emergence of dollar denominated assets in the banking system, may have jumped from a money overhang situation, to a state of demonetization as real balances started to be heavily taxed by inflation.

The previous analysis suggest that the traditional socialist economy exhibits at least the following short run macroeconomic disequilibrium (the issue of inflation and fiscal deficits will be dealt with in Section 3).

- excess demand in the goods market

- money-overhang and forced savings

- misalignments between real wages and labor productivity resulting in labor redundancy

How to "restore" macroeconomic equilibrium? In the classic centrally planned economy, the standard tools of macroeconomic management that rely on the price mechanisms have a limited role in the determination of macro equilibrium. In particular, monetary policy is reduced to setting the stock of credit available to the firms, government and household sectors. Interest rates play no role as transmission mechanism of monetary policy in economies where bonds markets and commercial lending are practically absent. In turn, exchange rate policy (accompanied with the corresponding expenditure reducing policies) oriented to realign the real exchange rate and real wages will have little impact on the system if the trade sector is regulated through exports and imports quotas and labor hiring is not governed by considerations linking real

wages with labor productivity.

At this point, structural reforms and macroeconomic policies need to be closely interconnected. In fact, the transition from a central planned to a market-oriented economy will change the way macroeconomic policies are to be conducted. In particular as relative prices -- included the real interest rate as an intertemporal relative price - start to play a key role in the resource allocation process, the standard tools of macro management like monetary, exchange rate and wage policy may become effective instruments. In practice, for this to happen, both changes in market structure and in the rules of behavior of the firms sector at microeconomic level are required. Markets should become more competitive, for example, through the opening of the economy to foreign trade. The individual firms, in turn, should behave as profit maximization units (or at least cost minimizing ones) and their budget constraint must turn binding or "hard" using Kornai (1980, 1982) terminology.

The basic idea would be to replicate a competitive equilibrium where firms are price takers and the property structure of firms is such that incentives mechanisms actually work.[3] In this context, market survival requires efficient (i.e profit maximization) firm behavior. Of course in such circumstances relative prices will play a key role in output supply and factor demand decisions by firms.

On the contrary, if firms keep their standard behavior of a centrally planned economy, namely meeting quantity production targets and employing labor on different criteria from the equalization of real wages with the marginal productivity of labor -either because of labor hoarding or because administrative practice directed to fulfill the socialist goal of providing every one a job-a policy package oriented to expenditure switching and supply

enhancing will be basically futile.

The Money Overhang problem

Let us assume now that the microeconomic and institutional reforms at the level of the firm take place and that markets start to play a dominant role in economic decisions so that realignment in relative prices does indeed make sense. The next question is what problems of macroeconomic adjustment does the money overhang pose (in SE economies in which price increases have not already eliminated it) and what can be done to counteract it.

The notion of money overhang needs to be defined more precisely. Here we will distinguish the flow and stock dimension of it. The flow of money overhang refers to the rate at which the public is holding money balances per period of time, say ΔM. This increase in the stock of money is in turn reflection of an excess of intended expenditure, PE, over actual purchases, PY. Then

$$\Delta M = PE - PY$$

The stock of money overhang is, in turn, the accumulation of the stock of real balances over time, say the integral of Δ M/P.

There are several ways the money overhang (as an excessive stock of real balances) could be eliminated:

a) Monetary reform.

b) Allowing prices to jump so to clear the goods market.

c) Portfolio diversification.

Monetary Reform. A monetary reform, of the type implemented in West Germany after World War II, specifically in 1948 , amounts to a reduction in the stock of nominal balances in order to restore equilibrium in the money market at the

existing price level. In the case of Germany 1948, the monetary reform amounted
to a reduction close to 90 percent of the stock of money existing at the time
of the monetary reform (see Wallich, 1954). The basic measure taken during the
currency reform was the confiscation of a large proportion of time and savings
deposits held by the public in the banking system, through a rate of conversion
of 100 Reichsmark to 6.5 new Deutsche Mark. The political feasibility of such
a drastic move is an obvious draw back of the policy, though in principle,
monetary illusion aside, cutting real balances through a cut in M is not
different from doing it through a rise in P.

Price Deregulation Another way to restore balance in the money market is to
allow controlled prices to jump (including the official exchange rate) while
maintaining the same level of the money supply. In practice the level of
uncontrolled prices - particularly the free market price of the dollar- already
reflects a price adjustment to monetary imbalances. Moreover, allowing
controlled prices to jump , would produce a drop in the free market quotation
of the dollar.

On the other hand it is worth recognizing that a sudden jump in the price
level (also the monetary reform) may entail a large drop in real wages and a cut
in domestic demand. That may be the necessary cost of correcting macroeconomic
imbalances, but it is important to be aware of the associated costs.

Portfolio Diversification. A third avenue to reduce the money overhang is by
introducing other assets in the system in order to allow wealth holders to
diversify their portfolios away from highly liquid assets. The creation of a
domestic capital market would be functional in that regard and several actions
could be devised. Among them, the selling-off of shares of public enterprises
to the public, the issuance of government bonds, the auctioning of state-owned

housing and the creation of foreign currency linked financial instruments by domestic banks. In these cases sterilization of the proceeds of the auctions of public assets is required.

All these measures will be short lived if some structural corrections are not made in order to avoid a resurgence of the money overhang problem. The most obvious way money is being pumped into the economy is through the monetization of fiscal (and quasi-fiscal) deficits. To avoid this problem, public enterprises must be moved from a practice of soft budget constraints to that of the "hard" budget constraints. The system of widespread price controls set at excess demand levels, the tendency to generate excess demand for goods as a consequence of an excessive investment drive, the practice of guaranteeing " full employment" at a level of real wages inconsistent with the marginal productivity of labor, and the system of financial repression that leaves money as the basic asset for accumulation are all "structural" factors behind the money overhang problem.

Financial deepening in a reforming economy

Financial deepening e.g., an increase in the menu of assets available to wealth holders, can be oriented to eliminate the money overhang. Standard arguments in favor of financial deepening in a market economy refer to its potentially beneficial effects on the efficiency of investment achieved through "deepen" financial intermediation (some also argue that it would bring an increase in savings). In the context of the transition from a centrally planned to a market or mixed economy, financial deepening goes beyond a simple increase in the menu of assets available for wealth holders and/or the elimination of certain regulations of the financial system. It involves the creation of

capital markets, a crucial step in the way to introduce private property in the system and certainly a strong departure from previous dominant orthodoxy where private property was severely restricted and discouraged. From a macroeconomic perspective there are important transitional issues involved in financial liberalization that are worth spelling out.

First, financial reform will produce a change in the property structure and the distribution of wealth in the socialist economy. Distributional shifts are associated, for example, with the acquisition by certain segments of the population of physical assets previously held by the state. In societies that formerly placed strong emphasis in equity considerations, the public perceptions on the new property structure that will arise from the reform process is an open question. On the other hand, once the decision to start changing the property structure towards private property has been made, the pace at which to proceed with privatization and (the experiences of Chile and the U.K. in the last two decades suggest that privatization is a slow process) whether public enterprises should be made profitable before selling them or whether privatization of public firms should be undertaken quite independently of its current financial situation must be addressed.

Second, the impact of interest rate deregulation on savings, is a priori, ambiguous since the interest elasticity of savings can be either positive or negative as wealth and substitution effects usually go in opposite directions. Empirical evidence on interest elasticity of saving for non-socialist economies have found low positive values for that parameter.

Third, the firm sector holding outstanding debt with the banking system at negative real interest rates, will experience an adverse financial shock as financial reform involving interest rate deregulation is implemented. Moreover,

if the public sector bails out some of those indebted firms, there will be a negative financial transfer from the point of view of the public sector associated with the financial reform. Even though the practice of bailing out unprofitable productive (or financial) units departs from the spirit of a market economy, externality arguments and costs of adjustment considerations may lead a reformist government to follow this course of action.

Fourth, a positive pricing of public sector lending will have a favorable budgetary effect since subsidized credit constitutes an important source of fiscal deficits (including the Central Bank) in socialist economies.

Fifth, the issuance of dollar denominated (or dollar-indexed) domestic assets may help to prevent capital flight by creating a domestic asset denominated in foreign currency that can be acquired by nationals. Nonetheless, the financial and fiscal effects of real depreciation when part of the liabilities of the banking system and/or the government is denominated in dollars and its assets are in local currency is a feature not to be disregarded when examining the convenience of introducing such assets.

Sixth, financial deepening in a highly inflationary situation when the economy is demonetized amounts to an inflationary shock, as the increase in the menu of assets available to wealth holders induces a rise in money-velocity. In order for financial deepening to make sense, it must be preceded by fiscal reform thus avoiding a conflict between financial reform and stabilization.

3.   Inflation in Socialist Economies

The problem of open inflation in socialist economies is a rather new phenomena, though the pervasive existence of excess demand, rationing and black markets for goods - symptoms of repressed inflation- is an old story in those

economies. In the seventies, with the exception of Yugoslavia, there was no serious problem of open inflation in most socialist economies (see Table 1). Nonetheless, in the eighties, inflationary pressures become more important in countries like Poland, Yugoslavia and Hungary. In particular Yugoslavia in 1989 was in hyperinflation with 2,700 percent inflation and Poland exhibited a quasi-hyperinflationary rate of inflation of around 700 percent in 1989. Clearly, Poland and Yugoslavia have already joined the club of very high inflation countries.

Table 1   Inflation in selected socialist economies
            (average annual rate of change in the consumer price index,   %)

	1970-75	1976-80	1981	1982	1983	1984	1985	1986	1987	1988	1989
Hungary	2.5	6.3	4.6	6.9	7.3	8.3	7.0	5.3	8.6	15.7	19.6
Poland	2.2	6.8	24.4	101.5	23.0	15.7	14.4	18.0	25.2	60.0	700.0[a]/
Yugoslavia	17.7	18.3	39.8	31.5	40.2	54.7	72.2	89.8	120.8	194.1	2,700.0
East Germany	-0.3	0.1	0.0	0.0	0.0	0.0	0.0				
Soviet Union	0.0	0.6	1.0	3.0	1.0	-1.0	1.0				

Source: M. Bleany (1988) and World Bank.
[a]/ Estimated

This table suggests that there is considerable cross country variability in inflation rates within the socialist area. On the one hand, reported inflation rates in countries like East Germany and the Soviet Union is almost nil; on the other hand, Yugoslavia in the last couple of decades and Poland in the eighties, have experienced inflation rates well above (East and West) European standards.[4] It is interesting to note that socialist countries that tried economic reform -- within a socialist framework -- in the eighties and well before, as the case of Yugoslavia, are the ones that exhibit more

accentuated inflationary trends within the socialist area.

To deal formally with the issue of inflation in socialist economies, let us obtain first the price level, P, that equilibrate aggregate demand with aggregate supply in our model of Section 2.

$$(8) \quad P = P \ (\ M, \ EP^*, \ W, \ Z, \ q,u \ )$$

This equation shows that a discrete devaluation, a once and for all increase in the stock of money or a supply shock, will produce a jump in the price level. Therefore adjustment of controlled prices, the elimination of subsidies to consumer goods or an exchange rate adjustment, in the wake of a reform package, will produce just temporary "inflation" (as measured in discrete time intervals) but it will not per se produce a sustained inflationary process.

The causes behind a sustained process of inflation can be understood by expressing equation (8) in terms of rates of growth. Denoting g_x as the rate of change in the variable x, say $g_x = \delta x/x$ and the rate of inflation by π we have:

$$(9) \quad \pi = \pi(\ g_m, \ g_w, \ g_e, \ g_{p*}, \ \epsilon)$$

where g_m is the rate of growth of the money supply, g_w is the rate of growth of nominal wages, g_e is the rate of devaluation, g_{p*} is the rate of foreign inflation and ϵ represents random shocks in aggregate supply and aggregate demand.

The model can be extended to encompass various stories about the inflationary process:

Inflationary Inertia

If there is wage, exchange rate and monetary indexation mechanisms in place geared to past period inflation and inflation also respond to expectations π^e then the rate of inflation may be written as a linear combination of π_{-1} and π^e (see Bruno and Fischer, 1987) :

$$\pi = \alpha \, \pi_{-1} + (1-\alpha) \, \pi^e$$

If expectations are adaptative this equation may capture the dynamics of inflation in an economy with a relatively long experience with inflation and strong elements of inertia embedded in. This specification, in turn can be a useful description of what is likely to be the dynamics of inflation in socialist economies that start to put in place indexation mechanisms as way to adapt to inflation.

Fiscal Deficits, External Shocks and Inflation

Equation (9) also can be linked to the financing of fiscal deficits. Assuming that a fraction β of the fiscal deficit ratio, ϕ, is monetized, then,

$$\delta M/M = g_m = \text{(monetization share)}\text{(fiscal deficit/GDP)}\text{(velocity)} = \beta \, \phi \, V$$

This equation states that the rate of money growth is a non-linear function of the fiscal deficit and the income velocity of money. Plugging this relationship in equation (9), the rate of inflation will be a function of the share of the fiscal deficit financed through money creation and the velocity parameter (besides of other "cost push" variables):

$$\pi = \pi(\, \beta, \, \phi, \, V, \, g_w, \, g_e, \, g_{p*}, \, \epsilon \,)$$

The inclusion of fiscal deficits in the inflation equation, besides calling attention to the fiscal and monetary causes of inflation, provides a very relevant link between currency devaluations, external shocks and inflation. Some of the transmission mechanisms at work in this regard are:

- a currency devaluation may increase the fiscal deficit ratio and inflation as long as the increase in the domestic currency value of external public debt outweighs a potential increase in foreign sector tax revenues.

- changes in the financing mix of public sector deficits, associated with a cut off in foreign borrowing and its replacement by credits from the central bank will be inflationary. In other words the lack of fiscal adjustment in face of a (permanent) cut down in the foreign transfer to the public sector is an important factor behind inflationary acceleration.

- the financing of losses of public enterprises out of the public sector budget is inflationary. The intertemporal distribution of inflation associated to the financing of losses of public enterprises will depend on whether those losses are financed with money creation today or tomorrow when public debt come due (e.g Sargent-Wallace unpleasant monetarist arithmetic).

Hyperinflation

A recent trend observed in some socialist economies is the slide into hyperinflation, the most eloquents case of that being Yugoslavia and Poland in 1989. Some of the features of hyperinflation that can be captured by the model are:

- When the tax system is not indexed, at high rates of inflation the fiscal deficit tends to worsen (the Olivera-Tanzi effect). In a traditional socialist economy this effect seems to be less important, however in a reformed system with a new tax structure this effect may appear. The ensuing endogeneity of the fiscal deficit with respect to the inflation rate can be written as :

$$\phi = \phi \ (\pi)$$

- the assumption of a constant income velocity of money becomes clearly unrealistic in a highly inflationary situation. A better specification in that case is to make velocity a function of expected inflation:

$$V = V \ (\pi^e)$$

- another well recognized feature of a hyperinflation is the collapse of the contract structure. Basically any medium term contract structure disappears and the exchange rate (usually the black market quotation) becomes the de-facto escalator to which most prices and even wages use as a reference for adjustment. This can be formalized by assuming that

$$g_w = g_e.$$

Plugging those functional forms for $\phi(\bullet)$, $V(\bullet)$ and g_w into the inflation equation we get:

$$\pi = \pi \ (\beta, \ \phi \ (\pi), \ V(\pi^e), \ g_e, \ g_{p*}, \ \epsilon)$$

Furthermore assuming that $\pi^e = \pi$, we get :

$$\pi = \pi \ (g_e, \ \bullet)$$

That equation states that a key determinant of price increases during hyperinflation is the rate of depreciation of the exchange rate[5]. The key policy

implication here, is that to eliminate hyperinflation the exchange rate has to be stabilized. Fiscal reform and adequate external financing become the cornerstone of successful stabilization.

Stabilization

From the viewpoint of stabilization in inflationary socialist economies these simple models suggest that attacking the sources of money growth , namely consolidated fiscal deficits (including the quasi-fiscal deficit of the Central Bank), is a basic condition for assuring low and stable inflation in the medium run. However, the transition from a high inflation equilibria to a low inflation equilibria is often a complicated task as the experience with economic stabilization in chronic inflation countries shows. The existence of indexation mechanisms, inertia in the contracts structure and credibility problems are all elements that tends to slow the disinflationary process in spite of corrections in fundamentals. Whether this transitional problems could be less important in socialist economies with a shorter inflationary history is something that still remains to be seen.

The potential difficulties in correcting fiscal deficits and the abandonment of accommodative credit policies, should not be underestimated. In fact, public enterprises in socialist economies have followed for decades the practice of soft budget constraints covering losses- many of them induced by distortive pricing imposed on them by the government - with automatic credit lines and grants. To change this, new rules for the public sector are required including the strict enforcement of the budget constraints. The costs of changing the rules is undoubtly a factor that will make stabilization a hard task.

Another factor that may ease the cost of stabilizing and contribute to a

more rapid disinflation is the provision of adequate external financing. Such financing would help support the exchange rate and would avoid part of the "replacement problem" from foreign financing to the inflation tax that is behind the acceleration of inflation in several highly indebted socialist economies in the eighties. Of course, the last solution will be the correction of fiscal imbalances that forced governments to resort to the inflation tax to begin with.

4. The Problem of Growth

The problem of growth in socialist economies has both trend (secular) and cyclical dimensions. On the one hand, it becomes apparent that a slowdown in the rate of GDP growth in several SE represents a downward trend that can be traced back to the mid-seventies (see table 2). On the other hand, in the eighties the slowdown is more pronounced and negative growth rates have been observed in several years. One striking feature of this, is that the slowdown in growth in these economies has coexisted with high investment rates, at least by market economies standards (see table 3).

Table 2   GDP in selected socialist economies
           (average annual growth rates, %)

	1960-65	1965-70	1970-75	1975-80	1980-85	1986	1987	1988
Hungary	4.3	3.1	3.4	2.3	0.9	1.5	3.4	0.1
Poland	4.1	3.8	6.6	0.9	1.2	4.2	1.9	4.0
Yugoslavia			5.7[a]	5.2	1.0	3.4	-0.5	-1.0
East Germany	2.9	3.2		3.5	2.4	1.7		
Soviet Union[b]		5.0			2.2	1.8	3.9	0.5

Source: M. Nuti (1988) and World Bank.
a: 1971-75
b: the periods correspond to 1966-70, 1976-80, 1981-85.

Table 3   Gross investment ratios in selected socialist economies

                     (share of GDP, %)

	1966-70	1971-75	1976-80	1981-85	1986	1987	1988
Hungary	32.9	35.9	37.2	31.0	26.9	26.7	25.0
Poland	25.3	36.4	30.7	24.6	28.9	28.8	32.5
East Germany	27.6	28.7	30.6	25.0			
Soviet Union	27.0	29.9	30.3	29.8			

Source: M. Nuti (1988) and World Bank.

Examining the causes underlying the slowdown in growth in socialist
economies, let us start with the supply side.   The starting point is an

aggregate production function. Assuming away imported intermediate inputs, it can be written as:

(10) $Y = F [L, K, A]$

where K denotes the capital stock, A is a parameter representing the state of technology in the economy and L, as before, is the level of employment. Differentiating (10) we get:

(11) $g_y = \eta_{F,L} \, n + \theta \, I_N/Y + \eta_{F,A} \, g_A$

where g_y is the rate of growth of output, n is the rate of growth of population, I_N/Y is the ratio of net investment to output and g_A is the rate of technical change. The parameter $\eta_{F,x}$ (x = L, A) is the corresponding factor-output elasticity and θ is the marginal productivity of capital ($\theta = \delta F/\delta K$). The empirical observation of low growth rates (low g_y) coexisting along with a high rate of (net) investment may be due to:

- low productivity of capital (a low θ)

- a low rate of technological change, g_A

- a slow pace of population growth.

- the distortive effect of accounting relative prices of capital different from their scarcity value and reflected in high investment shares.

The exact weight of each of these factors in explaining the trend toward slow growth in socialist economies observed since the mid-seventies is expected to vary from country to country.

However, the general picture that emerges from Table 4 concerning the productivity of capital is the following: in most countries of East Europe

capital productivity increased in the fifties and sixties namely in their first phase of adoption of the socialist model (in the Soviet Union the period of faster productivity growth was in the thirties -- specifically between 1933 and 1937 -- where manufacturing output per man-hour grew at an average annual rate of 6.5 percent, Bleaney, 1988).[6]

Nevertheless, as Table 4 shows, the initial trend of productivity growth in Eastern Europe started to be reversed in the seventies - in the Soviet Union that process already started in the fifties - with the rate of growth of capital productivity turning very low and even negative.

These empirical findings are a bit puzzling in terms of a source of growth methodology like equation (11). In fact, they may imply negative rate of technical progress over time (i.e., $g_A < 0$). On the other hand, if technological progress were "embodied", namely it could not take place without investment, it remains to be explained how the high investment rates observed in socialist economies are associated with so low or even "negative" rates of productivity growth. The issue clearly requires more research if we want to get a fuller explanation of the phenomena.

Table 4   Capital productivity in selected socialist economies
            (annual average growth rates of output per unit of
            capital, %)

	1950/52-67/69	1971-75	1976-80	1981-85	1986
Hungary	0.7	-2.9	-3.1	-3.1	-3.0
Poland	2.6	1.9	-5.5	-3.4	2.7
East Germany	2.8	-0.4	-1.5	-0.4	0.5
Soviet Union	-1.1	-2.8	-2.9	-1.8	-1.5

Source: M.Bleaney (1988)

Let us take a look now at the problem of growth from the perspective of the availability of domestic and foreign savings. Two issues stand as relevant here:

- the elimination of the money overhang and the need to channel domestic savings into productive investment.

- the need for foreign exchange to import capital goods and to pay for foreign technology in order to boost growth.

These issues can be dealt with in a more systematic way with three equations from the previous model, written in a slightly modified way. Starting with the investment = savings equality, (normalized by the level of GDP), or goods market equilibrium condition, we have:

(12) $S^D/Y + F/Y = I/Y$

where S^D/Y represents the domestic savings ratio, F/Y denotes the amount of foreign savings as share of output and I/Y is the gross investment ratio.

The second equation is the balance of payments (normalized by the level of output). Now the current account depends on the investment ratio (through the import of capital goods), the real exchange rate, the share of interest payments abroad and the other arguments expressed in equation (7) :

(13) $B/Y = ca\ (e_R,\ I/Y,\ TB_{nc}/Y,\ r*D*/Y) + F/Y$

where ca denotes the current account deficit as share of GDP.

The third equation is given by (11). It links GDP growth with the rate of investment:

(14) $g_Y = \theta\ I/Y + h$

where $h = \eta_{F,L}\ n + \eta_{F,A}\ g_A - \theta\ DEP/Y$

and DEP/Y = replacement investment as share of GDP

Figure 2 (a) depicts in (I/Y, F/Y) space equations (12) and (13), namely the investment = savings condition and the balance of payments, drawn for given values of e_R, TB_{nc}, $r*D*/Y$ and F/Y.   Figure 2 (b), in turn, shows the relationship between the rate of GDP growth and the investment ratio - equation (14)- draw for a given h:

Figure 2 Growth in a fix price model

(b)   (a)
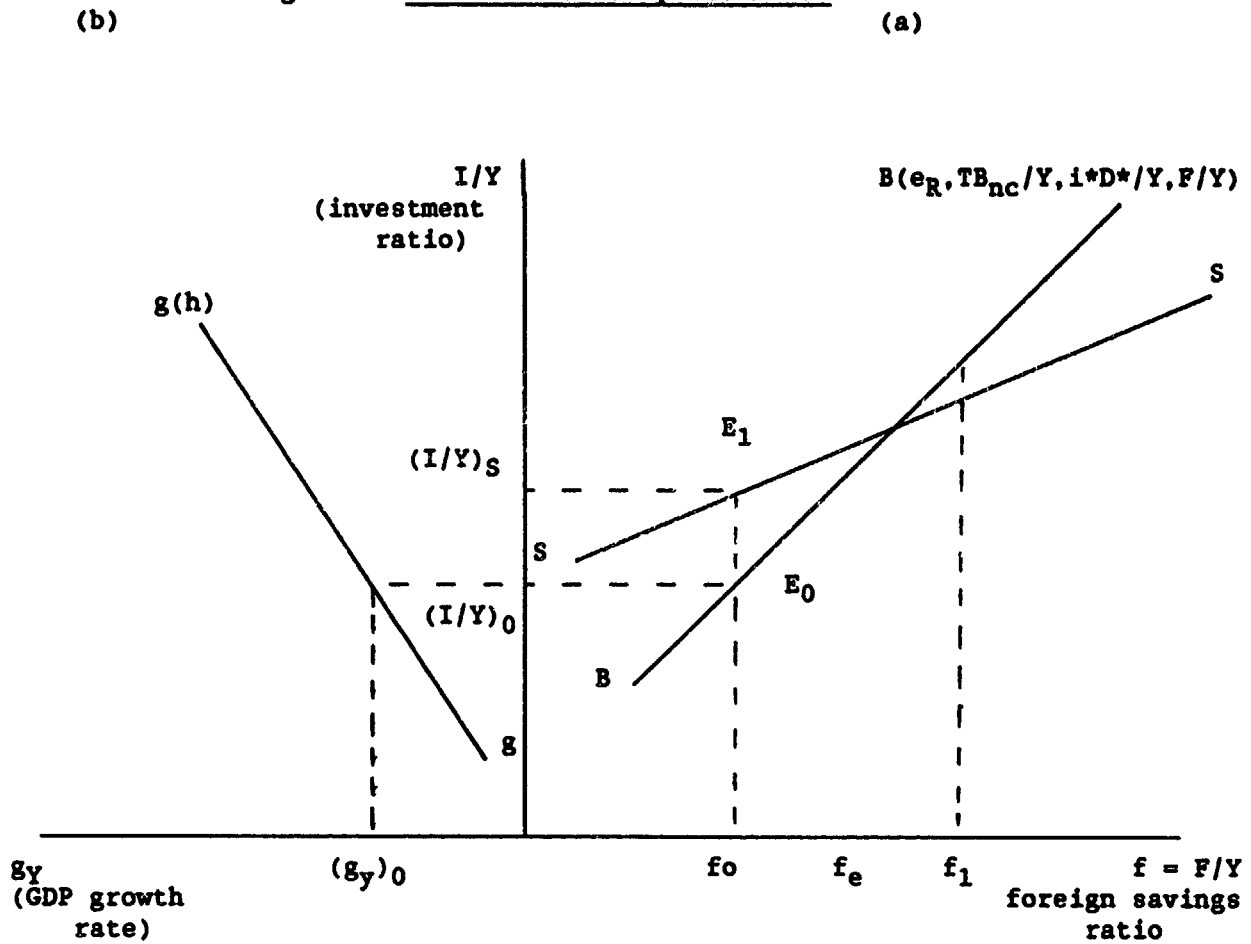
Furthermore, let us assume that in the socialist economy the investment ratio is determined by the condition:

$$I/Y = \min\{ (I/Y)_B, (I/Y)_S \}$$

where $(I/Y)_B$ is the investment ratio consistent with the "external gap", namely its satisfies equation (13). The ratio $(I/Y)_S$ satisfies the savings-investment condition or "internal gap" given by equation (12). In this setting, given the
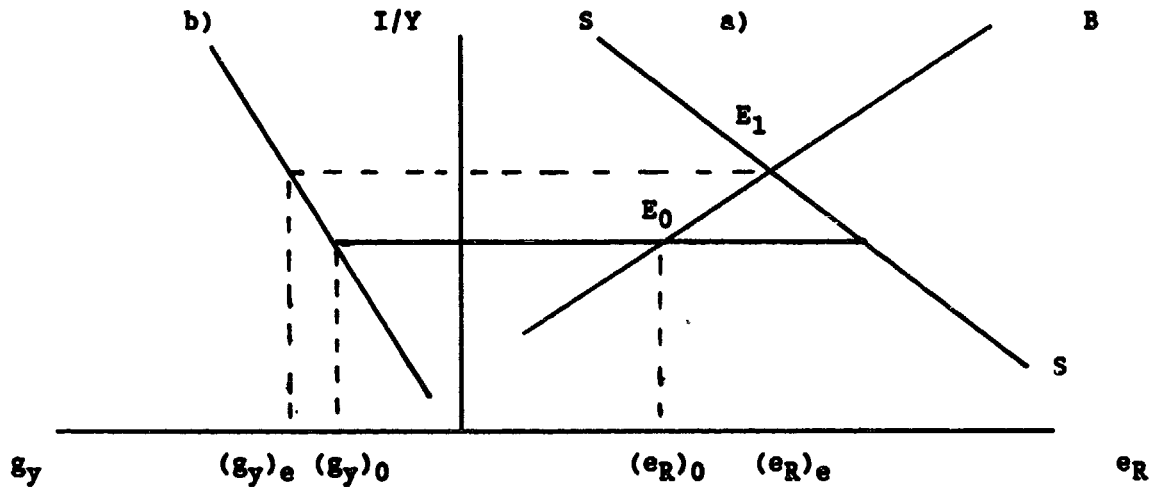
real exchange rate, the rate of investment is determined by the constraint that is binding: when the limiting resource is the availability of foreign exchange to import machinery and equipment the external gap is binding (more relevant this case for SE that produces a narrow range of capital goods at home). Conversely, when the lack of domestic savings is the binding constraint to finance domestic capital formation, then the internal gap is limitative.

In terms of Figure 2 (a), the external gap is binding for an availability of foreign savings $f_0 < f_e$. Therefore $(I/Y) = (I/Y)_B = (I/Y)_0$ and $g=(g_y)_0$. It is interesting to notice that for $f = f_0$, $S^D/Y > (I/Y)_0 - F/Y$. Namely, when the external gap is dominant there is an excess of domestic savings over investment (net of foreign savings) that is not translated into higher growth. In a socialist economy this excess of domestic savings may take the form of a money overhang. The banking system will accumulate deposits in domestic currency but the economy is still locked in a trap of low growth because of the lack of foreign exchange to import capital goods. How to speed up growth in these conditions? In terms of figure 2 (a), a real depreciation of the exchange rate, a reduction in interest payments abroad or a relaxation of credit constraints in international capital markets can do the job by shifting the BB schedule upward to the left to intersect at E_1.

The case of a binding internal gap corresponds to ratios of foreign savings to GDP larger than f_e, where $S^D/Y < (I/Y)_1 - F/Y$. How to increase domestic savings and get "savings mobilization"? An increase in public savings (e.g., a reduction in the fiscal deficit) and financial reform could increase domestic savings shifting the SS locus up to the left in order to finance a higher rate of investment, which, for points to the right of f_0, is limited by the availability of domestic savings.

A flexible-price version of the problem of low growth is displayed in Figure 3 by replacing in the horizontal axis F by e_R -- the real exchange rate. Figure 3 is drawn by assuming that total savings <u>fall</u> when the real exchange rate is depreciated. This could be rationalized by noting that the current account deficit is expected to fall with depreciation, therefore, reducing the contribution of foreign savings to total savings. In addition, public sector saving may fall with a real devaluation if the increase in the real domestic currency value of foreign debt interest payments dominates a potentially positive effect of increased revenues from trade taxes. In this case, the SS schedule slopes downwards.

Figure 3. Growth under price flexibility

At a real exchange rate $(e_R)_0$, the lack of foreign exchange constraints growth below $(g_y)_e$. Moreover, at $(e_R)_0$ there is an excess of total savings over investment (ex-ante) or, in other words, an excess supply develops in the goods markets. In the context of price flexibility the excess supply in the goods market induce a depreciation of the real exchange rate through deflation of

domestic prices(the nominal exchange rate is assumed to be predetermined and foreign prices are given). In turn, the deflation-induced increase in external competitiveness improves net exports generating more foreign exchange needed to increase the imports of capital goods and speed up growth. In addition, the real depreciation will reduce total savings eliminating the excess supply in the goods market thereby restoring internal and external balance at E_1. What adjustment mechanism is a better description for a socialist economy? Certainly the fix-price setting with low substitutability between domestic and imported capital goods that underlies the two gap model fits better the actual working of a centrally planned economy than a flexible-price, mobile capital alternative.

However, the flexible-price description has more chances of being observed in a reformed socialist economy where the market mechanism is expected to play a greater role in allocative decisions. Nevertheless, caution is required at this point since nominal wage and price rigidities are also a well known feature of the actual working of a market economy (incidentally, in the latter, those rigidities are singled out by macroeconomic theory as an important underlying factor in producing macroeconomic fluctuations).

Until now the discussion of growth in socialist economies has been conducted either by looking at the sources of growth (a supply side view) or the domestic and foreign savings availability (a savings gap view). Let us now take a look at the willingness to invest as a key factor that may impinge upon or speed up growth. The basic argument here is that nothing guarantee per-se that in an economy where savings are available that they will be invested at home. In other words a "confidence gap", that precludes an increase in investment, may be the limiting factor for a resumption of investment and growth.

A "confidence gap" tends to appear whenever there is a combination of uncertainty regarding the structure of incentives and/or the degree of macroeconomic stability (or whatever other factor is deemed to be considered as important by investors) and the fact that capital accumulation is, to a great extent an irreversible process. This irreversibility feature means that once an investment decision is made it can not be undone or "reversed" unless you incur a sizeable cost. The basic implications of the irreversibility argument are: i) investment will be particularly sensitive to risk factors; ii) the value of waiting increases substantially with an increase in uncertainty; and iii) a slow take off of investment is likely to be observed under unstable macroeconomic conditions.

In the case of socialist economies undergoing a process of reform two difficulties for a vigorous resumption of private investment appear as very relevant. First, a great deal of systemic uncertainty is present: the final fate of the reforms is still an open question and the possibility of policy reversals should not be dismissed. Moreover, in several SE initiating a reform process, there are serious initial macroeconomic imbalances so that the permanence of a new incentives structure hinges upon the successful stabilization of the economy. Second, in a traditional SE the private sector is limited to small segments in the service and agricultural sectors; therefore, for most practical purposes, a class of entrepreneurial investors, able to commit resources quickly and effectively in response to a new set of incentives, is virtually inexistent. Therefore, the creation of a sector of "Schumpeterian entrepreneurs" that invest and innovate may be a slow process that could delay the investment response to the reforms with an obvious cost in terms of foregone growth. Although it is important to ensure an adequate availability of savings to finance the

investment effort and to enhance efficiency on the supply side, only when there is a supportive macroeconomic environment can private investment be encouraged if the resulting in a reform process that leads to growth. On the other hand, the very fate of the reform attempt will depend on whether growth can be achieved and sustained.

5.   Final Remarks

This paper seeks to provide a simple framework suitable for examining questions of macro adjustment, stabilization and economic growth in reforming socialist economies. Excess demand in the goods market, employment redundancy, money overhang and forced savings are some of the key macro imbalances in a pre-reform, centrally planned economy. Realignments in key relative prices like real wages, the real exchange rate and corrective demand policies are required steps to produce macro equilibrium in socialist economies entering into a process of reform.

For those policies to become effective tools of macroeconomic management some basic changes in the rules of behavior of firms, the government and the structure of markets are required. The establishment of competitive markets, the abandonment of accommodative credit policies to the public enterprise sector, a change in the objective function of the firm toward profit maximization or cost minimization and the enforceability of "hard" budget constraints are key policy measures in that direction.

The problem of money overhang, in its flow dimension, refers to the rate of acquisition of monetary balances by the public associated to the excess of intended expenditure over actual purchases. The (stock of) money overhang could be eliminated and equilibrium in the money market restored through: i) currency

reform aimed at reducing the stock of <u>nominal</u> money balances so to restore money market equilibrium at the current price level; ii) the deregulation of controlled prices in order to achieve money market equilibrium at the existing level of the money supply; the elimination of excess real balances will be carried out by the jump in the price level; and iii) the selling off of certain assets of the public sector in order to alter portfolio composition of the public away from money.

A medium-term solution to avoid the reappearance of the money overhang requires fiscal reform in order to eliminate the sources of excessive money creation. Another steps in that direction are the abandonment of a system of widespread price controls at excess demand levels, the correction of the excessive investment drive that characterize traditional socialist economies, the misalignment of real wages with respect to labor productivity, and an increase in the menu of physical and financial assets available to the private sector.

The acceleration of inflation in several socialist economies since the mid eighties- some of them like Yugoslavia and Poland in hyperinflation in 1989 - is also another major macro problem for successful reform. The cut-off in foreign lending to public sectors that did not adjust afterwards, currency devaluation, increased losses of state-owned public enterprises and accommodative credit policies seem to have been major factors underlying the recent acceleration of inflation in several socialist economies. The standard prescription of correction in fundamentals- namely fiscal deficits- as a requisite for low and stable inflation in the medium run is also relevant for reforming SE. However the transition from a high inflation equilibrium to a low inflation equilibrium may be a complicated task. In chronic inflation countries

(also in other countries) inertial elements in the contract structure, indexation mechanisms and credibility problems pose serious problems for quick disinflation in spite of corrections in fundamentals. The fact that inflation is a relatively new phenomenon in several SE, might make stabilization easier in these economies than in chronic inflation country, though this still remain to be seen. On the other hand, the elimination of fiscal deficits and accommodative credit policies may be a complicated process in economies that are accustomed to such practices for a long period of time.

The problem of growth is another important issue concerning the transition from a centrally planned economy to a market oriented one. A growth decomposition exercise shows that the record of low GDP growth coexisting with high rates of capital accumulation -- a trend observed in several "mature" socialist economies -- is consistent with a low level of technical progress and a rather slow pace of population growth. Empirical evidence on the evolution of capital productivity in socialist economies confirms the contribution of a low pace of technical progress to the slowdown in secular growth. On the savings side, since the debt crises the lack of foreign savings -- needed to import capital goods and modern technology -- seems to be an important constraint to growth in several socialist economies. On the other hand, the mobilization of excess domestic savings away from "liquid" assets into physical productive assets becomes another policy priority to speed up growth. A third potential constraint to growth refers to the reduced "willingness to invest" in economies with considerable systemic uncertainty as is the case of socialist economies undergoing a process of reform whose final fate is still uncertain. The value of waiting tends to increase under these circumstances leading to a postponement of investment and growth. An additional complication for a take-off of private

investment in reforming socialist economies is the lack of a sizeable sector of domestic private investors with experience and skills to capture newly profitable investment opportunities. The formation of such a group is certainly a pending issue in the resumption of growth in reforming socialist economies.

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1. The counterpart of paying higher real wages than the marginal productivity of labor will be a loss for (public) enterprises hiring labor at that level of real wages. This, in turn, will be a cause of fiscal deficits.

2. Another element that explains why there is excess demand in the goods market (the single good serves for consumption, investment and export purposes) is the excess demand for investment " the investment hunger" feature that is generally ascribed to the working of a socialist system (see Kornai, 1982).
The forced savings hypothesis is not the only one for explaining the high savings rate in SE. There is also a competing view that the high savings rate just reflect private sector preferences for a pattern of consumption more tilted to future than present consumption in SE. On the other hand, high government savings in traditional SE may be simply reflecting the high investment drive of the planners.

3. See Hinds (1989) for a discussion of the role of private property in reforming SE.

4. Some care should be taken when interpreting this data since they may underestimate the actual rate of inflation. These inflation rates are the ones recorded in the official price indexes which do not consider the free market prices for goods traded in parallel or black markets where many transactions seems to take place in socialist countries.

5. See Dornbusch and Fischer (1986), Sachs (1986), Solimano (1989).

6. Some argue that the high measured capital productivity growth in the fifties and sixties in large part represent an overestimation in the rates of growth of GDP in these countries.

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