# THE WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN BUSINESS SCHOOL

# The End of Moderate Inflation in Three Transition Economies?

*By Josef C. Brada and Ali M. Kutan*

Working Paper Number 230
April 1999

**Comments Welcome**

# THE END OF MODERATE INFLATION IN THREE TRANSITION ECONOMIES?*

## by

**Josef C. Brada**
**Arizona State University**

and

**Ali M. Kutan**
**Southern Illinois University – Edwardsville**
and
**Federal Reserve Bank of St. Louis**

# THE END OF MODERATE INFLATION

# IN THREE TRANSITION ECONOMIES?

by

**Josef C. Brada**
**Arizona State University**

and

**Ali M. Kutan**
**Southern Illinois University – Edwardsville**
**and**
**Federal Reserve Bank of St. Louis**

## NONTECHNICAL SUMMARY

Most transition economies have had difficulty in reducing inflation to single-digit levels. After an initial burst of inflation when they liberalized prices, many transition economies reduced inflation to low double digits, but could do no better. At the end of 1998 and the beginning of 1999, however, inflation in a number of these economies, including the Czech Republic, Hungary, and Poland, saw inflation fall to single-digit levels.

We argue that this is not the result of effective monetary policy but rather of luck. Monetary policy has been rather ineffective because the mechanisms and institutions, including the banking system and the capital markets, that transmit monetary policy into economic outcomes in these countries are rather weak. Moreover, monetary policy has been used mainly to support the exchange rate and to make up for shortcomings in fiscal policy. Thus it seems unlikely that it could have had such a sudden and dramatic effect on inflation in the recent period.

We investigate this issue by means of an econometric model that views inflation as the result of past inflation, which fuels expectations of future inflation, of money growth, wage growth and of foreign prices. We find that the largest influences on current inflation stem from past inflation and from foreign prices. This means that monetary policy, which works through the size of the money supply is relatively ineffective in controlling inflation. The population's expectations of future inflation, however, are very

important as are prices of imports. Since the latter have fallen considerably in recent months, we find them to be the real cause of falling inflation in these three countries. This result suggests that the decline in inflation may be temporary, and that inflation will return when foreign prices increase again.

**ABSTRACT**

Although the rate of inflation has declined in the more advanced transition economies such as the Czech Republic, Poland and Hungary, it continues at moderate rates that are sufficiently high by regional standards to pose economic problems for these countries. In this paper, we examine the reasons for the persistence of this moderate inflation including passive fiscal polices, inappropriate exchange rate policies, and weak mechanisms for the transmission of monetary policy. We also use econometric methods to determine the causes of inflation. The persistence of inflationary expectations and the nominal exchange rate are found to play a much more significant role in the persistence of inflation than do monetary policy and nominal wage growth. These findings suggest that the role of monetary policy in halting inflation is limited at best.

## I. INTRODUCTION

A number of transition economies, the Czech Republic, Hungary and Poland among them, have seemingly stabilized their economies, built up the institutions required for the functioning of a modern market economy, privatized the greater part of their productive assets, restructured their industries and integrated themselves into the global economy. These countries apparently have not only succeeded at this great change in their economic system but also in introducing democracy and in generating rates of growth of economic output well above those they had experienced in the last decade of central planning and in the years immediately following the onset of the transition. One of the fruits of this success is that these countries have been able to sign Association Agreements with the European Union (EU) and are in the beginning stages of negotiating toward membership in the EU.

Each of these three countries will have to make significant changes in its laws and institutions to become eligible for membership in the EU, and a measure of economic convergence will also be required. Thus, it is anticipated that levels of *per capita* income will rise more rapidly in these three countries than in the EU so as to bring them closer to the EU average and that their inflation rates will drop to levels that better approximate those of the EU members and especially of those who will be participating in the

exchange rate mechanism (ERM) of the European Monetary System (EMS). While the convergence of *per capita* incomes is a long term goal, the moderation of inflation rates in the three transition economies to single digit levels may be seen as a goal that is both feasible in the short run and one that offers significant benefits to these countries, benefits that can be obtained at a low cost.

One of these benefits is that convergence to the inflation rates of these EU countries participating in the EMU would strengthen the benefits of EU membership. Of course, there is no requirement that the East European countries joining the EU meet the Maastricht criteria, but, by doing so, they will gain a measure of exchange rate stability *vis a vis* the Euro that will intensify the benefits of economic integration with the EU. Moreover, the current deflationary climate in world markets, marked by low interest rates and falling energy and raw materials prices, is one that seems propitious for the success of efforts at disinflation. The recent rates of inflation in the three countries have imposed some costs in terms of resource allocation, the behavior and expectations of economic agents and problems faced by policy makers, so that there is some preference on the part of policy makers to see inflation reduced below the "moderate" levels of 15 to 30 percent *per annum* (see, *e.g.,* Medgyessy, 1998) and, consequently, reducing these rates to single-digit levels is seen as a desirable policy option. There are, of course, costs to bringing such "moderate" rates of inflation down to lower levels (Dornbusch and Fischer, 1993; Ball, 1994;Burton and Fischer, 1998), but recent evidence suggests that the costs of disinflation to transition economies may be lower than previously thought (Christofferson and Doyle, 1998).

During the early stages of transition, the three countries in question implemented stabilization programs based on nominal anchors such as the exchange rate, and they relied largely on controls and quantitative restrictions to implement monetary policy. Subsequently, as stabilization took hold and as their financial institutions and markets matured, all of them have abandoned the pegging of their nominal exchange rates and adopted indirect methods of monetary control.[1] In this paper, we examine whether a program of disinflation intended to reduce inflation to single digit levels, or even to low single digit levels, is, indeed, feasible in the policy and institutional environment of these countries. We consider the instruments of monetary policy and argue that the transition may not have progressed sufficiently to allow indirect instruments of monetary policy to reduce inflation to the levels being sought. Moreover, we are not sanguine about the ability of monetary instruments to root our moderate inflation, in part because, as we argue below, monetary policy seems overburdened by having to pursue multiple objectives and because it is inadequately supported by fiscal policy. We also examine whether approaches such as inflation targeting can be used effectively by transition economies. We close by investigating the root causes of inflation in transition economies and conclude that much of the problem of inflation seems to be beyond the control of the monetary authorities.

## II. THE FRAMEWORK FOR MONETARY POLICY

### A. The Institutional Basis for Monetary Policy

---

[1] For the Czech Republic, see Begg, 1998 and Brada and Kutan, 1998; for Hungary, see Szapary and Jakab, 1998 and, for Poland, Wellisz, 1997.

While we accept the notion that the long-run effect of monetary policy is to be found in the movements of prices and not of real output, there are important short-term links between the real and monetary spheres in transition economies. On the one hand, the rate of inflation does influence the decisions of firms and consumers about the level of saving and investment as well as about the specific form that these will take. At the same time, the effectiveness of monetary policy depends to a large extent on the behavior of the real sector. The effectiveness of indirect methods of monetary control now employed in the three countries under consideration also depends on the effectiveness of monetary institutions, including capital markets and the banking system.

While there has been some tightening of the budget constrain for firms in all three countries, it is uncertain whether budgets are sufficiently tight. Firms continue to run losses that are sometimes covered by government subsidies, sometimes by loans from banks and sometimes by other enterprises.[2]  In such circumstances, firms lack the incentives to restructure and thus to respond appropriately to changes in interest rates. Indeed, they may behave perversely, engaging in more risky investments, including leveraged takeovers of rivals, as the interest rate increases. Privatization has also reduced the effectiveness of monetary policy by placing many firms in the hands of foreign MNCs and thus enabling them to evade home-country monetary policies through their access to parent-company funds (Hawkins, 1974; Estrin *et al.*, forthcoming). There is also evidence that the real sector, meaning non-financial firms, is to a large extent self - financed, as the net flow of funds has been largely from the non-financial sector to banks

---

[2] While explicit subsidies have been reduced, there are implicit subsidies in the form of tax-payment arrears, guarantees of loans using government-owned stock, etc. The lack of effective bankruptcy procedures and so-called creditor passivity continue to play an important part in all three economies.

rather than the other way (Dittus, 1995). Moreover, there is compelling evidence that it is less efficient firms and unprofitable firms that receive a disproportionate share of loans that are made to businesses (see, *e.g.,* Bonin and Schaffer, 1994).

The distortions evident in the real sector also have their counterparts in the monetary sector. Commercial banks in the three countries face a number of problems. Relative to their bad loans, they appear to be under-capitalized. In Hungary and the Czech Republic, they have had to have some of their bad loans written off, while in Poland they have been encouraged to attempt to work out problem loans.[3] Neither approach has entirely resolved the problem, and much new lending in all three countries continues to go to firms that are likely to become problem borrowers in the future. In part, this is due to the fact that the banks are captives to enterprises to which they have lent in the past and whose outstanding loans they continue to roll over through new financing rather than writing them off. In part, it may be due to the fact that the commercial banks simply lack the personnel needed to make better lending decisions. Finally, the pattern of privatization in the transition economies also plays a role in the lending policies of commercial banks. Especially in the Czech Republic, the banks, although "privatized" have the state as their largest share holder, and thus the state's preferences regarding lending decisions may play a an important role. Czech commercial banks not only lend to firms, but in many cases they are also their largest share holders, creating further incentives to continue lending to problem firms.

The existence of sizable problem loans has led monetary authorities to maintain high spreads between lending and borrowing rate so as to boost banks' profits and thus

---

[3] For bank reforms and behavior, see van Vijnbergen (1995) and the special issue of the *Journal of Comparative Economics* (1996) dealing with commercial banking in transition economies.

their ability to build up their reserves. However, in addition to discouraging savers from placing funds with the banking system and firms from borrowing from it, both of which reduce the effectiveness of monetary policy, the creation of these artificial profits in the banking sector has had three other negative consequences for the effectiveness of monetary policy. One is the emergence of small under-capitalized banks that lack the skills and perhaps even the desire to make prudent loans; many of these banks have gone under or have had to be absorbed by larger banks. However, their presence in the financial system has undermined the efficiency with which credit is allocated to non-financial firms and impeded the functioning of the inter-bank credit market. A second consequence has been the entry of foreign banks, which have been alleged to engage in "cherry picking" to the detriment of local banks. The third consequence has been that local firms have tended to borrow abroad, thus bypassing local banks and therefore also domestic monetary policy.

Exacerbating the manifest weaknesses of the credit markets is the fact that stock markets in the three countries do not provide a viable substitute. They are thin and subject to extreme swings in prices, often as the result of inflow and outflows of foreign capital. Moreover, these stock markets have not been very effective in raising funds through IPOs. In part this is due to the rather disappointing returns they have generated.

The foregoing discussion suggests that, to the extent that monetary policy needs to influence the behavior of banks and non-bank actors in the economy to be effective, there is reason to doubt that there has been sufficient progress to date to ensure that such influences will be sufficiently predictable and strong to guarantee that indirect tools of monetary policy can reduce the observed rates of inflation. Moreover, the fact that

monetary policy is to some extend dictated by the need to encourage the restructuring of firms, to recapitalize the banking system and to enable the government to finance its deficits suggests that the monetary authorities in these countries are likely to face severe conflicts in the formulation of monetary policy.

## *B.  Coordination of Fiscal and Monetary Policy*

A fair view of economic policy in the three countries suggests that monetary policy has had to bear the brunt of the stabilization effort while governments have been relatively unwilling to make unpopular decisions to reduce fiscal deficits. In the case of Poland, Wellisz (1997) notes that, during the 1991-93 period,"[i] t is clear…that the monetization of the fiscal deficit acted as the 'motor of inflation'" (p. 165) while subsequently the government borrowed from commercial banks, driving up interest rates so that "fiscal policy…. is at the root of the credit tightness decried by borrowers" (p. 169). Of course, this same credit crunch constrains the monetary policies of the National Bank of Poland (NBP). While the government's deficit is not especially high, it is expanding as a share of GDP and thus can hardly be viewed as contributing to the fight against inflation.

Much the same can be said about the contribution of fiscal policy to stabilization in Hungary, where the general government deficit reached 8.4% of GDP in 1994 (Haggard *et al.*, 1998). It was only an impending economic crisis that led to the Bokros package of reforms that, according to Kornai (1997), "…brought to an end the habitual (fiscal policy-*our insert*) conduct of decades – the policy of 'muddling through'" (p.125).

Nevertheless, despite Kornai's optimistic assessment, the Hungarian deficit has grown of late, thus leaving the battle against inflation largely to monetary policy.

In the Czech Republic, fiscal deficits have been small but increasing. During the period leading up to the speculative attack on the koruna in May 1997, the government proved unable to act to tighten fiscal policy, and it was only in the aftermath of the attack on the koruna that measures were taken to reduce the deficit (Brada and Kutan, 1998). Despite this harsh lesson, the newly-elected government has enacted a more expansionary budget for 1999.

In sum, while monetary policy has been tight in all three countries, the same cannot be said for the trend in fiscal policy. In part this may reflect the desire of central bankers in the region to create some credibility for their institutions, but it also reflects a propensity on the part of politicians to evade difficult choices and to rely on monetary policy to make up for their unwillingness to tighten fiscal policy.

## C. Exchange Rate Policy

The conduct of monetary policy has also been complicated by exchange rate policy and by the opening up of these countries rather fragile financial systems to international capital flows. High interest rates and either fixed exchange rates or pre-announced crawling pegs have led to significant inflows of short-term capital. In order to avoid inflationary pressures from the inflows of foreign capital, central banks have engaged in sometimes massive sterilization.[4] Not only has this sterilization been costly for the central banks, but it also has not been entirely successful, so that targets for monetary growth have often been exceeded, and interest rates have remained high in

---

[4] For the Czech case, see Begg (1998), for Hungary, Szapary and Jakab (1998) and Wellisz (1997) for the Polish case.

order to prevent sudden outflows of foreign capital. Of course, such high interest rates tend to increase costs of production, thus reducing exports and making these countries' currencies more vulnerable to speculative attack.

In sum, the foregoing discussion suggests that monetary policy in the three countries considered in this paper as yet rests on relatively weak financial markets and institutions and operates in an environment where the agents it seeks to influence may react to monetary policy in undesirable ways or not at all. Moreover, monetary policy is unsupported by fiscal policy and has to seek a multitude of often conflicting objectives.

## III. CAUSES OF INFLATION AND APPROACHES TO DISINFLATION

### A. Causes of Inflation

In order to understand the role that monetary policy can play in reducing the rate of inflation, it is worthwhile to examine what the root causes of inflation in transition economies are. As the discussion below shows, there are some causes that are specific to the transition economies and that do not appear to be easily combated by means of indirect monetary tools. Moreover, it does not appear that the growth of the money stock is the main source of inflationary pressures.

1. *Undervaluation of the Exchange Rate*. Some observers, such as Desai (1998) and

%%BeginPaperSize: Letter

Richards and Tersmann (1996), argue that inflation in transition economies is largely the
%%EndPaperSize
%%PageBoundingBox: 0 0 1168 64 0 15   625.9199

result of the initial over-depreciation of their currencies. This inflation is not the outcome of the usual wage-price spiral induced by devaluation, but, rather, it is the result of the workings of the law of one price, or commodity arbitrage, which creates domestic inflation to as to reestablish purchasing power parity. Wellisz (1997) describes the process

in the case of the Polish crawling peg thus: "As long as the rate of slide is set so as to result in  the continuing real overvaluation (*sic!* – although the subsequent sentence indicates that this should be *undervaluation*) of the zloty,  international prices exercise an upward pull on domestic prices" (p. 168).

2.  *Large Relative Price Changes*. A characteristic of transition economies is that their relative prices were badly distorted. Given the downward stickiness of prices, the bulk of price readjustment in the course of transition thus occurs as some prices increase by large amounts and others either remain constant or increase by relatively smaller amounts. These large price changes, usually price increases due to the stickiness of prices, have a disproportionate effect on the price index.

Pujol and Griffiths (1998) find that sectoral price changes in Poland during 1989-1995 were, indeed, quite skewed, suggesting that, in this period, some sectors were experiencing relatively large price changes while the price changes of other sectors were closely bunched. Moreover, the standard deviation of sectoral price changes around the mean was quite large, and this high standard deviation did not decline much over their sample period. However, Coorey *et al.* (1998) find that the variance of relative prices does have a significant impact on the rate of inflation in  21 transition economies only when they consider the period immediately following the initial period of price liberalization when there was a burst of inflation and a period of large relative price changes. For the period of late transition, neither the variance nor the skewness of sectoral price changes appears to have had a significant impact on the rate of inflation, suggesting that perhaps it is this initial burst of inflation and relative price realignment that drives the results obtained by Pujol and Griffiths.

3. *The Freeing of Controlled Prices*. A variety of prices, mostly having to do with government and municipal services, utilities and rents, and energy were not fully liberalized in some transition economies during the initial price liberalizations. Instead, governments either froze these prices or adopted a program of phased liberalization. In some cases, controlled prices were to be increased in an *ad hoc* manner until they reached equilibrium, and then decontrolled. In other cases, increases were based on a formula whereby prices would increase by a factor equal to the previous years' inflation plus some pre-specified percentage, so that they would outpace inflation but by only a limited amount and thus move toward equilibrium at a controlled pace. Often rents and municipal services were priced on a cost-plus basis (see Czech National Bank, 1998, Table 3b). Such a price setting pattern leads to the persistence of inflation because a part of the consumer price index (CPI) market basket consists of goods whose prices by definition must grow at rates that exceed the past inflation rate. Consequently, changes in the prices of regulated goods are both inimical to reductions in the rate of inflation and exogenous as far as monetary policy and its impact on inflation are concerned. The existence of these goods makes it extremely difficult to reduce inflation quickly because the burden of slowing price growth below the rates of past inflation falls on those goods in the consumer price index whose prices are not set in this way. Moreover, as prices of controlled goods are freed up, large one-time increases move the CPI upward in a way that disguises the broader tendencies in prices.

4. *Wage-Pull Inflation.* Nominal wages in the three countries have grown more rapidly than has the CPI, so that real wages have grown steadily since the early transition. Productivity gains have been alleged to be lower than the gains in real wages. Some

observers (Begg, 1998; Drabek, forthcoming) argue that real wage growth is the result of poor corporate governance, which leaves managers with few incentives to resist workers' demands for wage increases. Moreover, in some countries, the Czech Republic in particular, it is the government sector that has set the pace for large wage increases.

## B. What Kind of Monetary Policy for Disinflation?

Whatever institutional and environmental obstacles the monetary authorities face in their efforts to reduce inflation to single-digit levels, they also have to decide what kind of monetary policy to implement. In the early transition period, monetary policy was implemented within the context of a heterodox stabilization program utilizing multiple nominal anchors. However, the alleged use of nominal anchors, especially of the nominal exchange rate, was discarded fairly early in Poland, later in Hungry and only on 1997 in the Czech Republic.[5] The abandonment of the nominal exchange anchor left central banks with the need to determine some other target for monetary policy. The money stock was regarded as an unsatisfactory target because velocity was perceived as being too variable. Interest rates, too, were problematic, in part because of the tenuous links between exchange rates and the behavior of economic agents and the constraints on interest rates, both of which we have discussed above.

Consequently, an approach that has been adopted explicitly by the Czech National Bank (CNB) and that perhaps may be adopted by the Polish and Hungarian monetary authorities in the future is inflation targeting. The CNB's new policy approach was

---

[5] Although the use of the exchange rate as a nominal anchor was seen as a key element of credibility for the transition economies' stabilization programs, in practice the exchange rate never served that role. For the Czech case, see Janackova (1996) and Brada and Kutan (1998). Wellisz (1997) aptly sums up the Polish experience.

announced in a press release on December 22, 1997. The concept of net inflation, which excludes from the computation of the rate of inflation the increases in the prices of price-regulated goods, is a key component of the new policy because all inflation targets are set in terms of net inflation. The Bank set two targets, a "control" target of 5.5-6.5% net inflation at the end of 1998 and a three–year target of 3.5-5.5% net inflation by the end of 2000 (Czech National Bank, 1998) . The CNB has stressed the advantages of inflation targeting over more traditional approaches to monetary policy, one of them being its greater transparency relative to policies that target either monetary aggregates or the exchange rate. In its adoption of inflation targeting, the CNB was in fact joining a number of central banks in developed market economies where countries as diverse as Canada, the United Kingdom, Germany and New Zealand all use inflation targeting (Mishkin and Posen, 1997).

The essence of monetary policy in countries following inflation targeting is to set inflation targets and then to pursue them without regard to output or employment objectives targets (McDonough, 1997). This requires that the central bank must have considerable independence in conducting its monetary policy, including the absence of what Masson *et al.* (1997) call fiscal dominance, the reliance of the state on either central or commercial bank financing. The central bank must also forego any nominal targets other than the price level. Moreover, the central bank is able to understand the functional relationship between its policy instruments and future inflation.

In order to evaluate the feasibility of using inflation targeting, or even of more traditional and backward- looking approaches to monetary policy, in these transition economies, we estimate a VAR model of the price level in each of the three countries

under discussion. This model will enable us to determine which causal factors are the most important sources of continuing inflation these countries and thus enable us to evaluate the feasibility of reducing their levels of inflation to West European rates.

## IV. METHODOLOGICAL ISSUES[6]

Recent VAR specifications impose the assumption that series under consideration are difference-stationary (DS) [*e.g.,* Feldstein and Stock (1994)]. Several studies, however, question this assumption due to the low power of unit root tests [Dejong, *et al.* (1992), Dejong (1992), Dejong and Whiteman (1991 a,b), and Rudebusch (1993)]. These studies suggest that it is difficult to distinguish between DS as the null and trend-stationary (TS) as the alternative hypothesis. For example, DeJong and Whiteman (1991a) used a Bayesian approach to determine how fragile are the inferences derived from classical unit root tests. When a zero-trend prior was assigned to trend-stationary alternatives, DeJong and Whiteman found that the data supported the unit root hypothesis. When this prior was relaxed, however, the data often rejected the unit-root hypothesis. DeJong and Whiteman also experimented with different priors to determine how robust their results were to these changes. Despite the variety of priors used, they found most of the series to be trend-stationary and concluded that "the death of trend-stationarity appears to have been greatly exaggerated." (p.252) In contrast, Ohanian (1991) used a simulation procedure to study the sensitivity of results to assuming a DS or TS specification. He concluded that assuming trend-stationarity may bias test results, leading researchers to not reject causality too often. Finally, Rudebusch (1993), using simulated data from both a TS and a DS model, found that a unit root test is not able to distinguish between DS and TS specifications.

More recently, Hansen (1998) extended Nelson and Plosser' (1982) seminal study, which argued that most major macroeconomic series are difference stationary. Using a grid bootstrap model, Hansen found that updating the Nelson and Plosser sample period yields results that suggest that the series are trend-stationary.

Given the uncertainty about the existence of a unit root in economic time series, we examine the relation between inflation and its potential determinants by specifically considering the consequences of assuming that the series are either TS or DS. Such an research strategy is important if we are to distinguish between the possibility that permanent (temporary) changes in explanatory variables may create permanent (temporary) shifts in inflation. For example, if variables contain a unit root, i.e., they are best represented by the DS model, and then permanent shocks to explanatory variables may produce permanent shifts in inflation. In other words, the permanent shocks may have a long-run impact because they affect the stochastic trend component of the price level and thus change the inflation rate for all future horizons. On the other hand, if inflation and other series are best represented by a TS model, fluctuations around a trend level of these series are stationary or mean reverting. In such a model, a transitory shock to explanatory variables may only have a short-run impact on inflation as it quickly returns to its trend level.

Note that under either the TS or the DS specification we may observe some persistence in the inflation rate. For a DS model, the persistency would be permanent whereas it would be only transitory under a TS model. Dornbusch and Fischer (1993) provide indirect evidence on this issue from 12 moderate-inflation countries, including Hungary. They find that inflation persists at moderate levels for more than a decade,

---

[6] This section draws on Hafer and Kutan (1997).

supporting partial evidence for the appropriateness of a DS specification for these countries during their sample period.

To analyze the sensitivity of our results to the various stationarity assumptions used, we estimate two VAR systems. One system uses the log-levels of the variables along with a deterministic time trend. The other uses the log-difference of the series and excludes the trend term. The first system represents the TS specification and the second one represents the DS specification. There is some evidence that VAR models may be sensitive to the presence of a deterministic trend term [*e.g.*, Eichenbaum and Singleton (1986), Stock and Watson (1989)]. More recently, Hafer and Kutan (1997) examined the sensitivity of the money-output link results to different stationarity assumptions employed by researchers. Using annual data for 1915-93 and quarterly data for 1960-93 for the United States, they demonstrate that the supposed breakdown in the money-output relationship stems from the stationary assumption imposed on the data. Assuming difference-stationarity produces results consistent with those found in a number of recent studies. Assuming trend-stationarity, however, produces results indicating that money and output remain statistically related. The stationarity assumption used also affects the quantitative importance of interest rates in explaining output.

Our study also contributes to this literature by providing additional evidence from transition economies on the effects that the two different stationarity specifications would have on statistical inferences from VAR models.

## V. DATA AND CAUSALITY TESTS RESULTS

## A. Data

A data set consisting of monthly observations for M2, the broad nominal money supply, the Consumer Price Index (CPI), nominal average wages, and import prices is used in the analysis. Because no monthly data are available for import prices, following previous studies, *e.g.,* Laursen (1998), this series was constructed using the exchange-rate-adjusted foreign wholesale price index. Specifically, the German wholesale price index, adjusted for changes in the domestic currency (forint, koruna zloty)/DM rate, was used as a proxy for import prices in all the estimations. The domestic currency/DM exchange rate is obtained using the $/domestic currency and DM/domestic currency rates assuming arbitrage. The sample period runs from 1990 to 1998 for Hungary and Poland, and 1993 to 1998 for the Czech Republic. All data are taken from the Harver data set, which is based on OECD data, of the Federal Reserve Bank of St. Louis, except wages, which were compiled from various issues of PlanEcon Reports. The data were seasonally adjusted using the multiplicative (ratio-to-moving average) seasonal adjustment technique. All estimations were carried out using the E-Views 3.1 software package.

## B. Causality Test Results

Given the ongoing methodological debate discussed in the preceding section, two VAR systems were estimated. One system used all variables in log-levels and included a time trend. This system represents the trend-stationary specification. Under this specification, the dependent variable is the price level (CPI) and series are assumed to have no stochastic trends in the sense that the fluctuations around a trend are transitory. In other words, the impact of a shock on the price level is only temporary. The other system

uses first differences of the data and excludes the time trend. This system represents the difference-stationary specification. Under this specification, series possess stochastic trends in the sense that the fluctuations are not mean-reverting over time. Put another way, the impact of a shock on inflation rate is permanent. Each system, TS or DS, includes a constant term in the specification. We note that the standard causality tests based on the level, *i.e.,* TS, specification are valid only if the series are trend-stationary, *or* if they are difference stationary *and* cointegrated. In other words, if the series are nonstationary but they are not cointegrated, then standard F-statistics are not valid since they do not have the correct distribution.

Because the VAR results are sensitive to the lag length, we use the Akaike information criterion to select the optimal number of lags in the estimated VARs. All VAR specifications also include two (0,1) dummy shift variables to capture administrative increases in the prices of fuel and electricity as well as the introduction of, or rate changes in, VAT and excise taxes for all three countries. In addition, a dummy variable is used to account for the May 1997 currency crisis in the Czech Republic. Anticipating the discussion of our results, we note that all the dummy variables were significant at the 10 percent level or better. By accounting for the impact of administrative price changes at the outset, we are more likely to capture the impact of changes in monetary policy measures on inflation. Such measures include changes in exchange rates, wages, and the money supply. Therefore, once we account for the impact of administrative actions on price changes, our dependent variable better corresponds to the so called "core-inflation" used in earlier inflation studies of transition economies (Laursen, 1998).

Tables 1 through 3 report the causality test results for the Czech Republic, Hungary, and Poland, respectively. Because our focus is on the relationship between the instruments of monetary policy and inflation, the tables report only results for the latter variable. According to the results in Table 1, both import prices and own past lags are significant determinants of Czech inflation at the 5 percent level or better, regardless of the TS or DS specification employed. The outcome on the significance of money and wages depends on the stationarity assumption used, however. Only when the difference-stationary assumption is imposed on the data does money become a statistically significant cause of inflation at the 5 percent level. On the other hand, wages are statistically significant at the 10 percent level only if one assumes trend-stationarity.

The causality results reported in Table 2 for Hungary paint a similar picture. Both import prices and own lags significantly affect inflation behavior in Hungary. Wage movements do not Granger cause price movements, however, regardless of the specification used. Again, the statistical significance of money depends on the specification employed. When one assumes trend-stationarity only, M2 has a marginal impact at the 10 percent level . This finding implies that M2 growth would best have a transitory impact on inflation under the assumption that the TS model is a better characterization of the data.

Table 3 presents the results for Poland, which are quite similar to those for Hungary. Import prices as well as own inflation lags, but not wages, are significant determinants of inflation in Poland. This results holds under either TS or DS specification. The significance of money is sensitive to the stationarity assumption is used, however. Only under DS specification , money supply movements Granger cause inflation at the 5

percent level. This means that M2 growth rate would have permanent, long run impact on inflation if one believes that series are best represented by a DS model.

Overall, the causality tests results indicate that import price changes and the persistence of inflationary expectations and behaviors have significantly influenced the consumer price level and inflation over time in all these three countries. With respect to import prices whose movements are dominated by exchange rate changes, our results suggest that exchange rate policy has been a major factor on affecting inflation rate in the region. To the extent that inflationary expectations are assumed to be adaptive, the significance of own past price lags in our estimates implies that inflationary expectations have been very persistent and this persistency has played an important role in inflation behavior.

Although the statistical significance of import prices and past inflation is robust across countries and for both the DS and TS specifications, this is not the case for wages and money supply variables, however. The results indicate that wage movements seem to have played no statistically significant role both in the Polish and Hungarian inflation, regardless of the TS or DS model assumed. The significance of wages in the Czech Republic is sensitive to the specification used. Only under the TS model do wages turn out to have a statistically significant impact on inflation. This finding suggests that wage changes could have only temporary impact, if any, on inflation in the Czech Republic during our sample period. Thus, we can conclude that changes in nominal wages have not had a significant , permanent impact on inflation in any of the countries in our sample.

Broad money supply, M2, is significant for both the Czech Republic and Poland only under the DS model. The economic interpretation of this finding is quite significant,

if one believes that the DS model better captures the true underlying data generating process for inflation and other variables in our system, because it would imply that M2 growth rate have had a permanent and long-run effect on inflation both countries during the 1990-98 period. On the other hand, for Hungary, M2 is significant only if one assumes trend- stationarity, implying that M2 growth could have only transitory impact on inflation in Hungary.

## VI. VARIANCE DECOMPOSITIONS

The previous tests were useful to determine the extent to which import prices, wages, or broad money (M2) are statistically significant in explaining the behavior of inflation. A natural question to ask is whether a change in these variables is quantitatively important in affecting inflation, meaning does a shock to the money stock or to import prices generate an economically significant change in inflation. To address this question, variance decompositions from the different VAR models are calculated, using the Cholesky decomposition procedure. Two orderings are used. One ordering is prices (CPI), wages, import prices and money (M2). As a check on the results, an alternative ordering of money, import prices, wages and prices also is used. Again, Akaike's criterion is used to select the number of optimal lags in the estimated VARs.

Tables 3 through 6 report the variance decompositions, using up to twelve-month horizon. Results are reported for four subperiods, each of the two possible orderings, and whether the data are assumed to be trend- or difference-stationary. Looking first at the results for the Czech Republic in Table 4, the variance decompositions generated by the first ordering, CPR, wages, import prices, M2, in the upper part of the table in panel A

indicate that shocks to M2 account for about 11 and 3 percent of the variation in inflation under the DS and TS assumptions, respectively. The wage shocks play a very limited role in inflation variation, regardless of the stationarity assumption, consistent with the evidence from the causality test results. The limited impact of money stock and wage shocks on the rate of inflation stand in stark contrast to the strong impact from shocks to the import prices, which account for about 23 and 35 percent of the variation in inflation under the DS and TS models, respectively, over the 12-month horizon. Finally, the own past shocks, representing persistency in inflation over time, account for about 61 percent of variation in inflation at the end of 12-month horizon regardless of the stationarity assumption.

Changing the ordering of the variables, as shown in the lower part of Table 4 in panel B, does not significantly change the results. While the effects of M2 are increased by about 6 percent under the DS model, note that the re-ordering does not enhance the role of the wage shocks. At best, wage shocks account for only about 2-6 percent of the variation in inflation. The import price shocks and persistency in inflation continue playing a large and significant role in explaining the variation in inflation.

Comparing our decomposition results with those of the causality test results, we confirm that nominal wage changes have not had a significant role in explaining the trend behavior of inflation in the Czech Republic. Although M2 growth had a permanent and statistically significant effect on inflation, its quantitative role has been quite limited, however. At best, changes in M2 can explain about 12.8 percent of the total variation in inflation rate during the entire sample period. Thus, the persistent inflationary expectations

and growth of import prices have been the main causes of inflation in the Czech Republic during the 1993-98 period.

The decomposition results for Hungary are reported in Table 5. When the panel A ordering is used, M2 shocks account for about 6.6-8.0 percent of the variation in inflation over the 12-month horizon, depending on whether the difference-stationary or trend-stationary assumption is used. The effect of wages is weak, accounting for 6.3 and 11.4 of the variation in inflation under the DS and TS models, respectively. Again, import price shocks and own past innovations have the biggest impact on inflation variation. Over the 12-month horizon, the import price shocks accounted for about 7 and 57 percent of inflation variation depending upon the DS and TS assumption is used, while own past innovations accounted about 80-24 percent variation in inflation under the DS and TS specifications, respectively. The results are robust to re-ordering. Switching to the alternative ordering in panel B slightly decreases the significance of M2 from 8 percent to 2.4 percent under the TS assumption.

Note that the effects of changing the stationarity assumption are more marked for Hungary than for the Czech Republic. If one assumes trend-stationarity, shocks to import prices have a very small impact on inflation in panel A, about 7 percent. When one imposes difference stationarity on the data, however, the impact of shocks to import prices is increased to about 57 percent. These results are again robust to the re-ordering in panel B. Similar results hold for past innovations in the rate of inflation. Given the difficulty in distinguishing between TS and DS specifications, the variance decomposition results reveal that conclusions that might be reached regarding the importance of import prices,

own past innovations, and other variables in explaining the behavior of inflation could have been greatly exaggerated depending upon the stationarity assumption used.

The upshot of the results in Table 5 can be summarized as follows. Given the relatively insignificance of wages and M2 growth in explaining inflation variation in Hungary, the results suggest that inflation behavior in Hungary has been heavily influenced by the persistent inflationary expectations and import prices. Moreover, given the dominance of own lags under the DS specification and of import prices under the TS specification in Table 5, one could infer that import price changes had a very significant but transitory impact, while inflationary expectations had continued to have a permanent effect the inflation rate in Hungary during our sample period.

Finally, Table 6 presents the variance decompositions for Poland. Using the panel A ordering, the effect of an M2 shock on inflation is about 11 and 2 percent under the DS and TS assumptions, respectively. The wage shocks have a very limited role in explaining inflation variation regardless of the specification used. Again, import prices and own price shocks have the strongest impact on inflation variation in Poland. The results for the import price shocks are also sensitive to the stationarity assumption employed, however. The effect of an import price shock falls from 35.0 percent to 22.6 percent when we impose the difference-stationary assumption. Using the alternative ordering produces very similar results. Now the significance of M2 shocks goes up to 17.5 percent. If one believes that the DS model is a better representation of data, then our results suggest that within all the countries in our sample, the Polish money growth appears to have had the strongest impact on inflation (between 11 and 17.5 percent, depending upon the ordering assumed) during our sample period. However, when it is compared with import prices and past

inflationary expectations within its own system, money growth continues to play a smaller role in driving the Polish inflation.

Overall, the variance decomposition results indicate that import price shocks and own past innovations, *i.e.*, persistency in the rate of inflation, have played the most important role in explaining the dynamics of inflation in all the countries in our sample. The relative effects of variables on inflation also are affected significantly by the stationarity assumption employed, while re-ordering of the variables in the estimated VAR systems did not change the results qualitatively. For example, if one assumes trend-stationary, shocks to import prices have a much larger impact on inflation than do shocks under difference-stationarity and this result is quite robust with respect to the ordering of the variables. Again, the result that import prices have a larger role under the TS specification in explaining inflation variation suggests that the import price changes had a very significant transitory impact on inflation in all the countries. Permanent or long-run changes in inflation were driven mainly by persistency in inflationary expectations.

## VII. POLICY IMPLICATIONS AND CONCLUSIONS

Nominal wage growth and the money supply are quantitatively unimportant contributors to the inflationary process in the three countries we examine.[7] This suggests that monetary authorities in these countries will find it difficult to reduce inflation by means of traditional indirect monetary policy instruments because these two causal factors are relatively easy for monetary authorities to influence.

---

[7] It is surprising not to observe a more significant relationship between money growth and inflation. The assessment of the impact of money growth on inflation is likely to be complicated by several institutional changes that have taken place since the beginning of the transition.

The dominance of import prices, which are driven by the exchange rate, in the TS specification suggests that changes in import prices brought about by changes in the nominal exchange rate are the principal source of transitory shocks to the rate of inflation. This may explain why the Czech Republic, which maintained a nominal peg the longest and which, by virtue of the peg's design, actually experienced significant periods of appreciation *versus* the DM has the lowest inflation rate of the three countries.[8] At the same time, the predominance of the exchange rate in causing inflation in this specification suggests that nominal appreciation or at least a fixing of the nominal exchange rate is the appropriate policy. There are two problems with this. First, such a policy stance would hardly differentiate a forward-looking inflation targeting policy form the old one of a nominal exchange rate anchor. Second, it implies a real appreciation of the transition economies' currencies, an appreciation that seems incompatible with current account equilibrium, with promoting export-led growth and with preventing massive capital outflows.

The longer term implications seem to be equally disappointing for monetary policy advocates. The main source of current inflation is its past path, which can be interpreted to represent the inflationary expectations of the population. Masson *et al.* (1997) offer some insights on why inflationary expectations may persist. Among the causes of the persistence of inflationary expectations they cite are:

-symptoms of fiscal dominance, meaning the government's use of the central bank or of commercial banks to finance its deficit (p.8);

-poor starting conditions, especially levels of inflation in excess of 10% (p. 20);

---

[8] The Czech koruna was pegged to a basket made up of the US$ and the DM. Given fluctuations in the $/DM rate, the koruna's value *versus* the DM actually fluctuated significantly during the

-a failure to eradicate the fiscal roots of inflation (p.22).

These factors can be found to a greater or lesser extent in each of the three countries we have examined. Moreover, none of them can be resolved by the monetary authorities. Indeed, with the exception of the second factor, the responsibility for creating the appropriate conditions rests squarely with the governments of these countries. Given the importance of foreign prices and the current deflationary trend in these countries, a window of opportunity may exist to obtain some exogenous support for disinflation, but the opportunity to seize it is in the hands of the governments rather than in the hands of the central banks of these countries.

```
%%BeginPaperSize: Letter
                %%EndPaperSize
                        %%PageBoundingBox: 0 0 416.640015 625.9199
```

period when it was pegged.

# REFERENCES

Ball, Laurence, "Credible Disinflation with Staggered Price Setting", <u>American Economic Review,</u> Vol. 84, No. 1 (March, 1994), pp.282-289.

Begg, David, "Pegging Out: Lessons from the Czech Foreign Exchange Crisis". <u>Journal of Comparative Economics</u>, Vol. 26, No. 4, December, 1998.

Bonin, John and Mark Schaffer, "Banks, Firms, Bad Debts and bankruptcy in Hungary: 1991-1994". World Bank Working Paper, 1994.

Brada, Josef C. and Ali M. Kutan, "The Persistence of Moderate Inflation in the Czech Republic and the Koruna Crisis of May 1997".Federal Reserve Bank of St. Louis Working Paper 98-021A . Forthcoming, <u>Post-Soviet Geography and Economics , 1999.</u>

Burton, David and Stanley Fischer, "Ending Moderate Inflations" . In Carlo Cottarelli and Gyorgy Szapary (eds.) <u>Moderate Inflation: The Experience of Transition Economies.</u> Washington: IMF and National Bank of Hungary, 1998.

Christofferson, Peter, and Peter Doyle, "From Inflation to Growth: Eight Years of Transition". *International Monetary Fund Working Paper WP/98/100.* July, 1998

Coorey, Sharmi, Mecagni, Mauro, and Offerdal, Erik, "Disinflation in Transition Economies: The Role of relative Price Adjustment". In Carlo Cottarelli and Gyorgy Szapary, eds., *Moderate Inflation: The Experience of Transition Economies.* Washington, D.C.: International Monetary Fund and National Bank of Hungary, 1998.

Czech National Bank, *Inflation Report,* April, 1998

DeJong, David N. "Co-integration and Trend-Stationarity in Macroeconomic Time Series: Evidence from the Likelihood Function." <u>Journal of Econometrics,</u> June 1992, 347-70.

DeJong, David N., John C. Nankervis, N.E. Savin, and Charles H. Whiteman. "The Power Problems of Unit Root Tests in Time Series with Autoregressive Errors." <u>Journal of Econometrics,</u> July-September 1992, 323-43.

DeJong, David N. and Charles H. Whiteman. "Reconsidering Trends and Random Walks in Macroeconomic Time Series'." <u>Journal of Monetary Economics,</u> October 1991a, 221-54.

DeJong, David N. and Charles H. Whiteman. "The Case for Trend-stationarity Is Stronger than We Thought." <u>Journal of Applied Econometrics,</u> 6(4), October-December 1991b, 413-21.

Desai, Padma, "Macroeconomic Fragility and Exchange Rate Vulnerability: A Cautionary Record of Transition Economies". *Journal of Comparative Economics,* Vol. 26, No. 4, December, 1998, forthcoming.

Dornbusch, Rudiger and Stanley Fischer. "Moderate Inflation" <u>The World Bank Economic Review,</u> 7(1) , 1993, 1-44.

Drabek, Zdenek, "The Persistence of Moderate Inflation in the Czech Republic and the Koruna Crisis of May 1997: Commentary". <u>Post-Soviet Geography and Economics</u>, Forthcoming, 1999.

Eichenbaum, Martin and Kenneth Singleton. "Do Equilibrium Business Cycle Theories Explain Postwar U.S. Business Cycles?" <u>Macroeconomics Annual</u> (1986, Cambridge, Mass. NBER)

Estrin, Saul, Xavier Richet and Josef C. Brada, (eds.) ,<u>Foreign Direct Investment in Central Eastern Europe.</u> Armonk and London: M. E. Sharpe, forthcoming

Feldstein, Martin J. and James Stock. " The Use of a Monetary Aggregate to Target Nominal GDP," in N. Gregory Mankiw, ed., <u>Monetary Policy</u> (Chicago: University of Chicago Press for the NBER, 1994.)

Hafer, R.W. and Ali M. Kutan "More Evidence on the Money-Output Relationship." <u>Economic Inquiry</u>, January 1997, 48-58.

Haggard, Stephan, Robert Kaufman and Matthew Shugard, <u>Hungarian Fiscal Policy Making in Comparative Perspective</u>, Collegium Budapest, Discussion Paper 151, 1998.

Hansen, Bruce, "The Grid Bootstrap and the Autoregressive Model", Working Paper, Department of Economics, University of Wisconsin, Madison, August 1998.

International Monetary Fund, *Czech Republic: Selected Issues. IMF Staff Country Report No. 98/36.* Washington D.C.: International Monetary Fund, April, 1998.

Kornai, Janos, "Adjustment without Recession: A Case Study of Hungarian Stabilization". In Salvatore Zecchini, ed., <u>Lessons from the Economic Transition.</u> Dordrecht: Kluwer, 1997.

Laursen, T. (1998), "Inflation and its Determinants in the Czech Republic: Selected Issues", IMF, April 1998.

McDonough, William R., "A Framework for the Pursuit of Price Stability". *Federal Reserve Bank of New York Policy Review*, Vol. 3, No. 3, August, 1997, pp. 1-8.

Medgyessy, Peter, "Opening Address". In Carlo Cottarelli and Gyorgy Szapary (eds.) <u>Moderate Inflation: The Experience of Transition Economies.</u> Washington: IMF and National Bank of Hungary, 1998.

Mishkin, Frederic S., and Posen, A. S., "Inflation Targeting: Lessons from Four Countries". *Federal Reserve Bank of New York Policy Review*, Vol. 3, No. 3, August, 1997, pp. 9-110.

Nelson, C.R. and C. I. Plosser. "Trends and Random Walks in Macroeconomic Time Series", Journal of Monetary Economics, 1982, 139-162.

Ohanian, Lee E. "A Note on Spurious Inference in a Linearly Detrended Vector Autoregression." <u>Review of Economics and Statistics</u>, August 1991, 568-71.

Pujol, Thierry, and Griffiths, Mark, "Moderate Inflation in Poland: A Real Story". In Carlo Cottarelli and Gyorgy Szapary, eds., *Moderate Inflation: The Experience of Transition Economies.* Washington, D.C.: International Monetary Fund and National Bank of Hungary, 1998.

Richards, Anthony J. and Tersman, Gunnar H. R., "Growth, Nontradables, and Price Convergence in the Baltics". *Journal of Comparative Economics*, Vol. 23, No. 2, October, 1996, pp. 121-145.

Rudebusch, Glenn D. "The Uncertain Unit Root in Real GNP." American Economic Review, March 1993, 264-72.

Stock, James H. and Mark W. Watson. "Interpreting the Evidence on Money- Income Causality." Journal of Econometrics, January 1989, 161-81.

Szapáry, György and Jakab, Zoltán M., "Exchange Rate Policy in Transition Economies: The Case of Hungary." Journal of Comparative Economics, **26**, 4: December, 1998.

Wellisz, Stanislaw, "Inflation and Stabilization in Poland, 1990-95". In Mario I. Blejer and Marko Škreb (eds.) Macroeconomic Stabilization in Transition Economies. Cambridge: Cambridge University Press, 1997.

**Table 1:** Causality Test Results: F-Statistics – The Czech Republic

Monthly Data: January 1993 – June 1998

| | | Independent Variables | | | |
|---|---|---|---|---|---|
| **Stationary Assumption** | **Dependent Variable** | Money | Wages | Import Prices | Own Lags |
| DS | Inflation rate | 3.30 (0.02)** | 1.28 (0.28) | 8.31 (0.00)* | 2.60 (0.05)** |
| TS | Price level (CPI) | 1.87 (0.15) | 2.36 (0.08)*** | 8.92 (0.00)* | 8.36 (0.00)* |

Notes:
1. DS represents difference-stationary while TS indicates trend-stationary. The optimal lag length in estimated VARs is chosen based on the minimizing the Akaike's information criterion and it is 3 and 4 for the TS and DS specifications, respectively.
2. All VAR estimations included three (0,1) dummy shift variables to capture the May 1997 currency crisis, the administrative price hikes for fuel and electricity, and VAT and excise taxes. The results (not reported) showed that all the dummy variables were significant at the 10 percent significance level or better.
3. Since there is no quarterly data available for import prices, following previous studies (e.g., Laursen, 1998) this series was constructed using the exchange rate adjusted foreign wholesale price index. Specifically, German wholesale price index adjusted for changes in the koruny/DM rate was used as a proxy for import prices in all the estimations here and that follow. The koruny/DM exchange rate is obtained using the $/koruny and DM/koruny rates assuming arbitrage.
4. The values in parentheses are the p-values for the statistical significance of the variables.

**Table 2:** Causality Test Results: F-Statistics – Hungary
Monthly Data: December 1990 – June 1998

| Stationary Assumption | Dependent Variable | Independent Variables | | | |
|---|---|---|---|---|---|
| | | Money | Wages | Import Prices | Own Lags |
| DS | Inflation rate | 0.58 (0.74) | 0.69 (0.65) | 2.01 (0.07)*** | 2.23 (0.05)** |
| TS | Price level (CPI) | 2.02 (0.08)*** | 1.31 (0.27) | 3.13 (0.01)* | 29.98 (0.00)* |

Notes
1.     See Table1.
2.     Lag length for both specifications was six based on the Akaike's criterion. Sample period for Hungary starts in December 1990 because there was no monthly published data available prior to this date. The National Bank of Hungary has also stopped publishing figures for M2 in the end of 1997. The figures for 1998 were compiled using the individual components of M2 published by the Bank.

**Table 3:** Causality Test Results: F-Statistics – Poland
Monthly Data: January 1990 – June 1998

| Stationary Assumption | Dependent Variable | Independent Variables | | | |
|---|---|---|---|---|---|
| | | Money | Wages | Import Prices | Own Lags |
| DS | Inflation rate | 2.29 (0.04)** | 1.05 (0.40) | 6.86 (0.00)* | 37.1 (0.00)* |
| TS | Price level (CPI) | 1.68 (0.13) | 0.37 (0.89) | 2.13 (0.06)*** | 82.58 (0.00)* |

Notes:
1. See Table1.
2. Lag length for both specifications was six based on the Akaike's criterion.

**Table 4:   Variance Decompositions for Inflation: The Czech Republic**

Panel A: Ordering- CPI, Wage, Import Price, Money

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 15.1 | 1.7 | 0.1 | 3.7 | 19.2 | 9.6 | 65.6 | 85.0 |
| 6 | 13.3 | 3.6 | 11.2 | 8.7 | 23.5 | 24.2 | 52.0 | 63.4 |
| 9 | 12.8 | 6.7 | 11.2 | 13.3 | 26.4 | 23.3 | 49.5 | 56.7 |
| 12 | 12.8 | 7.7 | 11.6 | 14.8 | 26.7 | 23.3 | 48.9 | 54.2 |

Panel B: Ordering – Money, Import Price, Wages, CPI

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 13.4 | 2.1 | 2.1 | 15.8 | 23.0 | 10.8 | 61.4 | 71.3 |
| 6 | 12.3 | 4.0 | 8.7 | 20.8 | 30.0 | 21.3 | 49.1 | 53.8 |
| 9 | 11.8 | 7.0 | 8.8 | 18.2 | 31.4 | 28.9 | 47.8 | 45.9 |
| 12 | 11.8 | 6.9 | 9.1 | 18.0 | 31.7 | 31.8 | 47.4 | 43.4 |

**Table 5: Variance Decompositions for Inflation: Hungary**

Panel A: Ordering- CPI, Wage, Import Price, Money

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 3.1 | 0.6 | 0.1 | 2.4 | 2.6 | 1.3 | 94.3 | 95.6 |
| 6 | 3.3 | 9.7 | 5.8 | 7.4 | 3.5 | 20.0 | 87.0 | 63.4 |
| 9 | 5.8 | 10.8 | 6.0 | 7.5 | 5.6 | 48.5 | 82.6 | 33.2 |
| 12 | 6.6 | 8.0 | 6.3 | 11.4 | 6.8 | 56.7 | 80.2 | 24.0 |

Panel B: Ordering – Money, Import Price, Wages, CPI

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 5.5 | 0.9 | 0.7 | 6.8 | 5.3 | 6.9 | 88.4 | 85.3 |
| 6 | 5.4 | 5.2 | 6.7 | 11.8 | 5.5 | 29.2 | 82.4 | 54.0 |
| 9 | 6.7 | 3.8 | 6.7 | 11.8 | 8.0 | 49.8 | 78.6 | 34.5 |
| 12 | 8.1 | 2.4 | 7.0 | 16.7 | 8.7 | 53.7 | 76.3 | 27.2 |

**Table 6: Variance Decompositions for Inflation: Poland**

Panel A: Ordering- CPI, Wage, Import Price, Money

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 11.5 | 3.2 | 0.3 | 1.0 | 14.6 | 14.7 | 73.7 | 81.0 |
| 6 | 11.3 | 2.2 | 2.9 | 0.8 | 20.9 | 27.2 | 64.8 | 69.0 |
| 9 | 11.3 | 2.2 | 4.3 | 1.0 | 21.7 | 33.7 | 62.7 | 63.1 |
| 12 | 11.1 | 1.9 | 5.5 | 1.7 | 22.6 | 35.0 | 60.7 | 61.5 |

Panel B: Ordering – Money, Import Price, Wages, CPI

% of inflation explained by innovations in:

| Horizon | Money | | Wages | | Import Prices | | CPI | |
|---|---|---|---|---|---|---|---|---|
| | DS | TS | DS | TS | DS | TS | DS | TS |
| 3 | 16.4 | 3.0 | 0.5 | 0.5 | 13.0 | 13.1 | 70.0 | 83.5 |
| 6 | 16.5 | 2.5 | 3.2 | 0.4 | 18.5 | 25.0 | 61.7 | 72.1 |
| 9 | 17.4 | 2.4 | 4.3 | 0.6 | 19.3 | 31.5 | 59.1 | 65.5 |
| 12 | 17.5 | 2.5 | 5.3 | 1.4 | 20.0 | 32.7 | 57.2 | 63.3 |

# THE WILLIAM DAVIDSON INSTITUTE
## AT THE UNIVERSITY OF MICHIGAN BUSINESS SCHOOL

## DAVIDSON INSTITUTE WORKING PAPER SERIES

CURRENT AS OF 4/29/99

| Publication | Authors | Date of Paper |
|---|---|---|
| *Replacing Nos. 1-2 & 4-6:* **Journal of Comparative Economics** *Symposium on "Bank Privatization in Central Europe and Russia." Vol. 25, No. 1, August 1997.* | *Jeffery Abarbanell, John Bonin, Roger Kormendi, Anna Meyendorff, Edward Snyder, and Jan Svejnar* | *August 1997* |
| *\*No. 3: Bank Privatization in Hungary and the Magyar Kulkereskedelmi Bank Transaction* | *Roger Kormendi and Karen Schnatterly* | *May 1996* |
| *\*No. 7: The Foreign Economic Contract Law of China: Cases and Analysis* | *Dong-lai Li* | *June 1993* |
| *In place of No. 8:* **Journal of Comparative Economics**, *"A Theory of Ambiguous Property Rights in Transition Economies: The Case of the Chinese Non-State Sector." Vol. 23, No. 1, August 1996, pp. 1-19.* | *David D. Li* | *June 1996* |
| *\*No. 9: Corporate Debt Crisis and Bankruptcy Law During the Transition: The Case of China* | *David D. Li and Shan Li* | *December 1995* |
| *In place of No. 10:* **Comparative Economic Studies**, *"Russian Firms in Transition: Champions, Challengers, and Chaff." Vol. 39, No.2, Summer 1997, pp. 1-36.* | *Susan J. Linz* | *July 1996* |
| *\*No. 11: Worker Trust and System Vulnerability in the Transition from Socialism to Capitalism* | *Andrew Schotter* | *August 1996* |
| *In place of No. 12:* **Journal of International Marketing**, *"Executive Insights: Marketing Issues and Challenges in Transitional Economies." Vol. 5, No. 4, 1997, pp. 95-114.* | *Rajeev Batra* | *April 1997* |
| *\*No. 13: Enterprise Restructuring and Performance in the Transition* | *Lubomir Lizal, Miroslav Singer, and Jan Svejnar* | *December 1996* |
| *\*No. 14: Pensions in the Former Soviet Bloc: Problems and Solutions* | *Jan Svejnar* | *November 1996* |
| *\*No. 15: Marketing in Transitional Economies: Edited Transcript & Papers from 1 April 1996 Conference in Ann Arbor, Michigan* | *Compiled by The Davidson Institute* | *December 1996* |
| *\*No. 16: Banks in Transition—Investment Opportunities in Central Europe and Russia Edited Transcript from 31 May 1996 Conference in New York City* | *With commentary and edited by Anna Meyendorff* | *January 1997* |
| *In Place of No. 17:* **Post-Soviet Geography and Economies**, *"Russia's Managers in Transition: Pilferers or Paladins?" Vol. 37, No.7 (September 1996), pp. 397-426.* | *Susan J. Linz and Gary Krueger* | *November 1996* |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| *No. 18: PPF a.s., The First Private Investment Fund (joint publication with Czech Management Center) | Michal Otradovec | November 1995 |
| *No. 19: První Investiční a.s., The First Investment Corporation (joint publication with Czech Management Center) | Jaroslav Jirásek | August 1995 |
| *No. 20: YSE Funds: A Story of Czech Investment Funds (joint publication with Czech Management Center) | Michal Otradovec | November 1995 |
| *No. 21: Restructuring of Czech Firms: An Example of Gama, a.s. (joint publication with Czech Management Center) | Antonín Bulín | June 1996 |
| *No. 22: Czech Investment Fund Industry: Development and Behaviour (joint publication with Czech Management Center) | Richard Podpiera | May 1996 |
| *No. 23: The Role of Investment Funds in the Czech Republic (joint publication with Czech Management Center) | Dušan Tříska | June 1996 |
| *No. 24: ZVU a.s.: Investment Funds on the Board of Directors of an Engineering Giant | Tory Wolff | August 1995 |
| *No. 25: Cultural Encounters and Claims to Expertise in Postcommunist Capitalism | Michael D. Kennedy | February 1997 |
| *No. 26: Behavior of a Slovenian Firm in Transition | Janez Prašnikar | February 1997 |
| *No. 27: East-West Joint Ventures in a Transitional Economy: The Case of Slovakia | Sonia Ferencikova | March 1997 |
| *No. 28: Ownership and Institutions: Evidence from Rural China | Hehui Jin and Yingyi Qian | January 1997 |
| *No. 29: The Czech Crown's Volatility Under Modified Exchange Regimes | Evžen Kočenda | March 1997 |
| *No. 30: Convergence in Output in Transition Economies: Central and Eastern Europe, 1970-1995 | Saul Estrin and Giovanni Urga | February 1997 |
| *No. 31: Towards a Model of China as a Partially Reformed Developing Economy Under a Semifederalist Government | Yijiang Wang and Chun Chang | March 1997 |
| *No. 32: What Can North Korea Learn from China's Market Reforms? | John McMillan | September 1996 |
| In Place of No. 33: **Journal of Comparative Economics**, "Quantifying Price Liberalization in Russia." Vol. 26, No. 4, December 1998, pp. 735-737. | Daniel Berkowitz, David DeJong, and Steven Husted | December 1998 |
| No. 34: The East-West Joint Venture: BC Torsion Case Study | Sonia Ferencikova and Vern Terpstra | December 1998 |
| *No. 35: Optimal Restructuring Under a Political Constraint: A General Equilibrium Approach | Vivek Dehejia | January 1997 |
| *No. 36: Restructuring an Industry During Transition: A Two-Period Model | Richard Ericson | September 1996 |
| *No. 37: Transition and the Output Fall | Gérard Roland and Thierry Verdier | March 1997 |

| | | |
|---|---|---|
| In place of No. 38: **The Quarterly Journal of Economics**, "Disorganization." Vol. 112, No. 4, November 1997, pp. 1091-1126. | Olivier Blanchard and Michael Kremer | January 1997 |
| *No. 39: Privatization and Managerial Efficiency | Olivier Debande and Guido Friebel | May 1997 |
| *No. 40: The Tragedy of the Anticommons: Property in the Transition from Marx to Markets | Michael Heller | February 1997 |
| *No. 41: Labour Market Characteristics and Profitability: Econometric Analysis of Hungarian Exporting Firms, 1986-1995 | László Halpern and Gábor Kőrösi | May 1997 |
| *No. 42: Channels of Redistribution: Inequality and Poverty in the Russian Transition | Simon Commander, Andrei Tolstopiatenko, and Ruslan Yemtsov | May 1997 |
| *No. 43: Agency in Project Screening and Termination Decisions: Why Is Good Money Thrown After Bad? | Chong-en Bai and Yijiang Wang | May 1997 |
| *No. 44a: The Information Content of Stock Markets: Why do Emerging Markets have Synchronous Stock Price Movements? | Randall Morck, Bernard Yeung, and Wayne Yu | February 1999 |
| *No. 45a: Decentralization in Transition Economies: A Tragedy of the Commons? | Daniel M. Berkowitz and Wei Li | September 1997 |
| *No. 46: Strategic Creditor Passivity, Regulation, and Bank Bailouts | Janet Mitchell | May 1997 |
| *No. 47: Firms' Heterogeneity in Transition: Evidence from a Polish Panel Data Set | Irena Grosfeld and Jean-François Nivet | May 1997 |
| *No. 48: Where Do the Leaders Trade? Information Revelation and Interactions Between the Segments of Czech Capital Markets | Jan Hanousek and Libor Němeček | May 1997 |
| *No. 49: The Evolution of Bank Credit Quality in Transition: Theory and Evidence from Romania | Enrico C. Perotti and Octavian Carare | October 1996 |
| *No. 50: End of the Tunnel? The Effects of Financial Stabilization in Russia | Barry W. Ickes, Peter Murrell, and Randi Ryterman | March 1997 |
| *No. 51: Incentives, Scale Economies, and Organizational Form | Eric Maskin, Yingyi Qian, and Chenggang Xu | May 1997 |
| *No. 52: Insecure Property Rights and Government Ownership of Firms | Jiahua Che and Yingyi Qian | May 1997 |
| *No. 53: Competitive Shocks and Industrial Structure: The Case of Polish Manufacturing | Pankaj Ghemawat and Robert E. Kennedy | May 1997 |
| *No. 54: Decentralization and the Macroeconomic Consequences of Commitment to State-Owned Firms | Loren Brandt and Xiaodong Zhu | June 1997 |
| *No. 55: Corruption and Reform | Susanto Basu and David Li | June 1996 |
| *No. 56: Taxes and Government Incentives: Eastern Europe vs. China | Roger H. Gordon and David D. Li | April 1997 |
| *No. 57: Politics and Entrepreneurship in Transition Economies | Simon Johnson, Daniel Kaufmann, and Andrei Schleifer | June 1997 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| *No. 58: Dissuading Extortion: A Theory of Government Ownership | Jiahua Che | August 1997 |
| *No. 59: Institutional Environment, Community Government, and Corporate Governance: Understanding China's Township-Village Enterprises | Jiahua Che and Yingyi Qian | April 1997 |
| *No. 60a: Enterprise Investment During the Transition: Evidence from Czech Panel Data | Lubomír Lízal and Jan Svejnar | December 1997 |
| *No. 61: Economic Transition, Strategy and the Evolution of Management Accounting Practices: The Case of India | Shannon W. Anderson and William N. Lanen | April 1997 |
| *No. 62: What Can We Learn from the Experience of Transitional Economies with Labour Market Policies? | Tito Boeri | 1997 |
| *No. 63: How Taxing Is Corruption on International Investors? | Shang-Jin Wei | February 1997 |
| *No. 64: Foreign Ownership and Profitability: Property Rights, Strategic Control and Corporate Performance in Indian Industry (will be published in a forthcoming **Journal of Law and Economics**) | Pradeep K. Chhibber and Sumit K. Majumdar | April 1997 |
| In place of No. 65: **Industrial and Corporate Change**, "On the Sequencing of Privatization in Transition Economies." Vol. 7, No. 1, 1998. | Gautam Ahuja and Sumit K. Majumdar | April 1997 |
| In place of No. 66: **Post-Soviet Geography and Economics**, "Red Executives in Russia's Transition Economy." Vol. 27, No. 10, November 1996, pp. 633-651. | Susan J. Linz | January 1997 |
| *No. 67: Between Two Coordination Failures: Automotive Industrial Policy in China with a Comparison to Korea | Yasheng Huang | Spring 1997 |
| *No. 68: The Political Economy of Central-Local Relations in China: Inflation and Investment Controls During the Reform Era | Yasheng Huang | Spring 1997 |
| *No. 69: Russian Managers under Storm: Explicit Reality and Implicit Leadership Theories (A Pilot Exploration) | Igor Gurkov | October 1998 |
| *No. 70: Privatization Versus Competition: Changing Enterprise Behavior in Russia | John S. Earle and Saul Estrin | Spring 1997 |
| *No. 71: Giving Credit Where Credit Is Due: The Changing Role of Rural Financial Institutions in China | Albert Park, Loren Brandt, and John Giles | March 1997 |
| No. 72: Law, Relationships, and Private Enforcement: Transactional Strategies of Russian Enterprises | Kathryn Hendley, Peter Murrell, and Randi Ryterman | November 1998 |
| In Place of No. 73: **Economics of Transition,** "The Restructuring of Large Firms in Slovak Republic." Vol. 6, No. 1, May 1998, pp. 67-85 | Simeon Djankov and Gerhard Pohl | May 1998 |

| | | |
|---|---|---|
| *No. 74: Determinants of Performance of Manufacturing Firms in Seven European Transition Economies* | Stijn Claessens, Simeon Djankov, and Gerhard Pohl | February 1997 |
| *No. 75b: Test of Permanent Income Hypothesis on Czech Voucher Privatization* | Jan Hanousek and Zdeněk Tůma | October 1997 |
| *No. 76: Chinese Enterprise Reform as a Market Process* | Gary H. Jefferson and Thomas G. Rawski | June 1997 |
| In Place of No. 77: **Economics of Transition,** "A Gini Decomposition Analysis of Inequality in the Czech and Slovak Republics During the Transition," Vol. 6, No.1, May 1998, pp. 23-46. | Thesia I. Garner and Katherine Terrell | May 1998 |
| *No. 78: The Relationship Between Economic Factors and Equity Markets in Central Europe | Jan Hanousek and Randall K. Filer | June 1997 |
| *No. 79: Foreign Speculators and Emerging Equity Markets | Geert Bekaert and Campbell R. Harvey | August 1997 |
| *No. 80: The Many Faces of Information Disclosure | Arnoud W.A. Boot and Anjan V. Thakor | October 1997 |
| *No. 81: Determinants of Unemployment Duration in Russia | Mark C. Foley | August 1997 |
| *No. 82: Work Incentives and the Probability of Leaving Unemployment in the Slovak Republic | Martina Lubyova and Jan C. van Ours | June 1997 |
| *No. 83: Which Enterprises (Believe They) Have Soft Budgets after Mass Privatization? Evidence from Mongolia | James Anderson, Georges Korsun, and Peter Murrell | October 1997 |
| *No. 84: Start-ups and Transition | Daniel M. Berkowitz and David J. Cooper | September 1997 |
| *No. 85: Was Privatization in Eastern Germany a Special Case? Some Lessons from the Treuhand | Uwe Siegmund | September 1997 |
| *No. 86: The Effect of Privatization on Wealth Distribution in Russia | Michael Alexeev | February 1998 |
| *No. 87: Privatisation in Central and Eastern Europe | Saul Estrin | June 1997 |
| *No. 88: Gender Wage Gaps in China's Labor Market: Size, Structure, Trends | Margaret Maurer-Fazio, Thomas G. Rawski, and Wei Zhang | July 1997 |
| *No. 89: The Economic Determinants of Internal Migration Flows in Russia During Transition | Annette N. Brown | July 1997 |
| In place of No. 90: **China Economic Review,** "China's State Enterprise Reform: An Overseas Perspective." Vol. 8, Spring 1997, pp. 89-98. | Thomas G. Rawski | July 1997 |
| *No. 91: China and the Idea of Economic Reform | Thomas G. Rawski | April 1997 |
| *No. 92: Expatriate Management in the Czech Republic | Richard B. Peterson | September 1997 |
| *No. 93: China's State-Owned Enterprises In the First Reform Decade: An Analysis of a Declining Monopsony | Xiao-Yuan Dong and Louis Putterman | October 1997 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| *No. 94: Pre-Reform Industry and the State Monopsony in China | Xiao-Yuan Dong and Louis Putterman | October 1997 |
|---|---|---|
| *No. 95: Czech Money Market: Emerging Links Among Interest Rates | Jan Hanousek and Evžen Kočenda | November 1997 |
| *No. 96: Resource Misallocation and Strain: Explaining Shocks in Post-Command Economies | Daniel Daianu | November 1997 |
| *No. 97: Structure and Strain in Explaining Inter-Enterprise Arrears | Daniel Daianu | November 1997 |
| *No. 98: Institutions, Strain and the Underground Economy | Daniel Daianu and Lucian Albu | November 1997 |
| *No. 99: Proceedings of the Conference on Strategic Alliances in Transitional Economies, held May 20, 1997 at the Davidson Institute | Edited by Cynthia Koch | May 1997 |
| *No. 100: Romanian Financial System Reform | Anna Meyendorff and Anjan V. Thakor | November 1997 |
| *No. 101: Depreciation and Russian Corporate Finance: A Pragmatic Approach to Surviving the Transition | Susan J. Linz | November 1997 |
| *No. 102: Social Networks in Transition | Lorena Barberia, Simon Johnson, and Daniel Kaufmann | October 1997 |
| *No. 103: Grime and Punishment: Employment, Wages and Wage Arrears in the Russian Federation | Hartmut Lehmann, Jonathan Wadsworth, and Alessandro Acquisti | October 1997 |
| *No. 104: The Birth of the "Wage Curve" in Hungary, 1989-95 | Gábor Kertesi and Janos Köllö | October 1997 |
| *No. 105: Getting Behind the East-West [German] Wage Differential: Theory and Evidence | Michael Burda and Christoph Schmidt | May 1997 |
| In Place of No. 106: **Journal of Comparative Economics,** "Job Creation, Job Destruction and Growth of Newly Established, Privatized and State-Owned Enterprises in Transition Economies: Survey Evidence from Bulgaria, Hungary, and Romania," Vol. 26, No.3, September 1998, pp. 429-445. | Valentijn Bilsen and Jozef Konings | September 1998 |
| *No. 107: The Worker-Firm Matching in the Transition: (Why) Are the Czechs More Successful Than Others? | Daniel Münich, Jan Svejnar, and Katherine Terrell | October 1997 |
| In place of No. 109: **Industrial and Labor Relations Review,** "Markets for Communist Human Capital: Returns to Education and Experience in Post-Communist Czech Republic and Slovakia." Vol. 51, No. 3, April 1998, pp. 401-423. | Robert S. Chase | October 1997 |
| *No. 110: Long-Term Unemployment and Social Assistance: The Polish Experience | Marek Góra and Christoph M. Schmidt | April 1997 |
| *No. 111: Unemployment Benefits and Incentives in Hungary: New Evidence | Joachim Wolff | October 1997 |

| | | |
|---|---|---|
| *No. 113: Preliminary Evidence on Active Labor Programs' Impact in Hungary and Poland | Christopher J. O'Leary | October 1997 |
| *No. 114: Employment and Wage Behavior of Enterprises in Transitional Economies | Swati Basu, Saul Estrin, and Jan Svejnar | October 1997 |
| *No. 115: Enterprise Performance and Managers' Profiles | Simeon Djankov and Stijn Claessens | December 1997 |
| *No. 116: Labor Demand During Transition in Hungary | Gábor Kőrösi | October 1997 |
| *No. 117: Notes for an Essay on the Soft Budget Constraint | Lorand Ambrus-Lakatos | January 1997 |
| *No. 118: Industrial Decline and Labor Reallocation in Romania | John S. Earle | October 1997 |
| *No. 119: Institutional Upheaval and Company Transformation in Emerging Market Economies | Karen L. Newman | March 1998 |
| *No. 121: Local Labour Market Dynamics in the Czech and Slovak Republics | Peter Huber and Andreas Wörgötter | November 1997 |
| *No. 122: A Model of the Informal Economy in Transition Economies | Simon Commander and Andrei Tolstopiatenko | November 1997 |
| *No. 123: Considerations of an Emerging Marketplace: Managers' Perceptions in the Southern African Economic Community | Brent Chrite and David Hudson | February 1998 |
| *No. 124: Financial Discipline in the Enterprise Sector in Transition Countries: How Does China Compare? | Shumei Gao and Mark E. Schaffer | February 1998 |
| *No. 125: Market Discipline in Conglomerate Banks: Is an Internal Allocation of Cost of Capital Necessary as Incentive Device? | Arnoud W. A. Boot and Anjolein Schmeits | November 1997 |
| *No. 126: From Federalism, Chinese Style, to Privatization, Chinese Style | Yuanzheng Cao, Yingyi Qian, and Barry R. Weingast | December 1997 |
| *No. 127: Accounting for Growth in Post-Soviet Russia | Daniel Berkowitz and David N. DeJong | January 1998 |
| In place of No. 128: **Comparative Economic Studies,** "Job Rights in Russian Firms: Endangered or Extinct Institutions?" Vol. 40, No. 4, Winter 1998, pp. 1-32. | Susan J. Linz | January 1998 |
| *No. 129: Restructuring Investment in Transition: A Model of the Enterprise Decision | Richard E. Ericson | January 1998 |
| *No. 130: Changing Incentives of the Chinese Bureaucracy | David D. Li | January 1998 |
| In place of No. 131: **Comparative Economic Studies,** "Will Restructuring Hungarian Companies Innovate? An Investigation Based on Joseph Berliner's Analysis of Innovation in Soviet Industry." Vol. 40, No. 2, Summer 1998, pp. 53-74. | John B. Bonin and Istvan Abel | March 1998 |
| *No. 132: Interfirm Relationships and Informal Credit in Vietnam | John McMillan and Christopher Woodruff | February 1998 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| *No. 133: Management 101: Behavior of Firms in Transition Economies | Josef C. Brada | March 1998 |
| *No. 134: To Restructure or Not to Restructure: Informal Activities and Enterprise Behavior in Transition | Clifford Gaddy and Barry W. Ickes | February 1998 |
| *No. 135: Radical Organizational Change: The Role of Starting Conditions, Competition, and Leaders | Karen L. Newman | January 1998 |
| *No. 136: The Political Economy of Mass Privatization and the Risk of Expropriation | Klaus M. Schmidt | March 1998 |
| *No. 137: Reform Without Losers: An Interpretation of China's Dual-Track Approach to Transition | Lawrence J. Lau, Yingyi Qian, and Gérard Roland | November 1997 |
| *No. 138: Ownership and Employment in Russian Industry: 1992-1995 | Susan J. Linz | March 1998 |
| *No. 139: The Failure of the Government-Led Program of Corporate Reorganization in Romania | Simeon Djankov and Kosali Ilayperuma | September 1997 |
| *No. 140: Employment, Unemployment and Transition in the Czech Republic: Where Have All the Workers Gone? | Vit Sorm and Katherine Terrell | October 1997 |
| *No. 141: Collective Ownership and Privatization of China's Village Enterprises | Suwen Pan and Albert Park | April 1998 |
| *No. 142: Industrial Policy and Poverty in Transition Economies: Two Steps Forward or One Step Back? | Susan J. Linz | March 1998 |
| *No. 143: Optimal Bankruptcy Laws Across Different Economic Systems | Elazar Berkovitch and Ronen Israel | March 1998 |
| *No. 144: Investment and Wages in Slovenia | Janez Prašnikar | May 1998 |
| In Place of No. 145: **Economics of Transition,** "Women's Unemployment During the Transition: Evidence from Czech and Slovak Micro Data," Vol. 7, No. 1, May 1999, pp. 47-78. FORTHCOMING | John Ham, Jan Svejnar, and Katherine Terrell | May 1998 |
| *No. 146: Chief Executive Compensation During Early Transition: Further Evidence from Bulgaria | Derek C. Jones, Takao Kato, and Jeffrey Miller | June 1998 |
| *No. 147: Environmental Protection and Economic Development: The Case of the Huaihe River Basin Cleanup Plan | Robert Letovsky, Reze Ramazani, and Debra Murphy | June 1998 |
| *No. 148: Changes in Poland's Transfer Payments in the 1990s: the Fate of Pensioners | Bozena Leven | June 1998 |
| *No. 149: Commitment, Versatility and Balance: Determinants of Work Time Standards and Norms in a Multi-Country Study of Software Engineers | Leslie Perlow and Ron Fortgang | April 1998 |
| *No. 150: Tax Avoidance and the Allocation of Credit | Anna Meyendorff | June 1998 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| *No. 151: Labor Productivity in Transition: A Regional Analysis of Russian Industry* | Susan J. Linz | May 1998 |
| In place of No. 152: **Comparative Economic Studies,** "Enterprise Restructuring in Russia's Transition Economy: Formal and Informal Mechanisms." Vol. 40, No. 2, Summer 1998, pp. 5-52. | Susan J. Linz and Gary Krueger | April 1998 |
| In place of No. 153: **Journal of Comparative Economics,** "Causes of the Soft Budget Constraint: Evidence on Three Explanations." Vol. 26, No. 1, March 1998, pp. 104-116. | David D. Li and Minsong Liang | March 1998 |
| *No. 154: The Model and the Reality: Assessment of Vietnamese SOE Reform— Implementation at the Firm Level* | Edmund Malesky, Vu Thanh Hung, Vu Thi Dieu Anh, and Nancy K. Napier | July 1998 |
| In place of No. 155: **Oxford Review of Economic Policy,** "From Theory into Practice? Restructuring and Dynamism in Transition Economies." Vol. 13, No. 2, Summer 1997, pp. 77-105. | Wendy Carlin and Michael Landesmann | June 1997 |
| In place of No. 156: **Leadership and Organization Development Journal,** "Leading Radical Change in Transition Economies." Vol. 19, No. 6, 1998, pp. 309-324.. | Karen L. Newman | June 1998 |
| *No. 157: Baby Boom or Bust? Changing Fertility in Post-Communist Czech Republic and Slovakia* | Robert S. Chase | April 1998 |
| *No. 158: Structural Adjustment and Regional Long Term Unemployment in Poland* | Hartmut Lehmann and Patrick P. Walsh | June 1997 |
| *No. 159: Does Market Structure Matter? New Evidence from Russia* | Annette N. Brown and J. David Brown | June 1998 |
| *No. 160: Tenures that Shook the World: Worker Turnover in the Russian Federation and Poland* | Hartmut Lehmann and Jonathan Wadsworth | June 1998 |
| *No. 161: Corruption in Transition* | Susanto Basu and David D. Li | May 1998 |
| *No. 162: Skill Acquisition and Private Firm Creation in Transition Economies* | Zuzana Brixiova and Wenli Li | June 1998 |
| No. 163: European Union Trade and Investment Flows U-Shaping Industrial Output in Central and Eastern Europe: Theory and Evidence | Alexander Repkine and Patrick P. Walsh | April 1998 |
| *No. 164: Finance and Investment in Transition: Czech Enterprises, 1993-1994* | Ronald Anderson and Chantal Kegels | September 1997 |
| *No. 165: Disorganization, Financial Squeeze, and Barter* | Daniel Kaufmann and Dalia Marin | July 1998 |
| *No. 166: Value Priorities and Consumer Behavior in a Transitional Economy: The Case of South Africa* | Steven M. Burgess and Jan-Benedict E.M. Steenkamp | August 1998 |
| *No. 167: Voucher Privatization with Investment Funds: An Institutional Analysis* | David Ellerman | March 1998 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| In place of No. 169: **American Economic Review**, *"Unemployment and the Social Safety Net during Transitions to a Market Economy: Evidence from Czech and Slovak Men." Vol. 88, No. 5, Dec. 1998, pp. 1117-1142.* | *John C. Ham, Jan Svejnar, and Katherine Terrell* | *December 1998* |
| *No. 170: Privatization, Ownership Structure and Transparency: How to Measure a Real Involvement of the State* | *Frantisek Turnovec* | *May 1998* |
| *No. 171: Framework Issues in the Privatization Strategies of the Czech Republic, Hungary, and Poland* | *Morris Bornstein* | *June 1998* |
| *No. 172: Political Instability and Growth in Proprietary Economies* | *Jody Overland and Michael Spagat* | *August 1998* |
| *No. 173: Intragovernment Procurement of Local Public Good: A Theory of Decentralization in Nondemocratic Government* | *Chong-en Bai, Yu Pan and Yijiang Wang* | *June 1998* |
| *No. 174: Ownership and Managerial Competition: Employee, Customer, or Outside Ownership* | *Patrick Bolton and Chenggang Xu* | *June 1998* |
| *No. 175: Privatisation and Market Structure in a Transition Economy* | *John Bennett and James Maw* | *June 1998* |
| *No. 176: Chronic Moderate Inflation in Transition: The Tale of Hungary* | *János Vincze* | *June 1998* |
| *No. 177: Bureaucracies in the Russian Voucher Privatization* | *Guido Friebel* | *June 1998* |
| *No. 178: Output and Unemployment Dynamics in Transition* | *Vivek H. Dehejia and Douglas W. Dwyer* | *January 1998* |
| *No. 179: Organizational Culture and Effectiveness: The Case of Foreign Firms in Russia* | *Carl F. Fey and Daniel R. Denison* | *January 1999* |
| *No. 180: Financing Mechanisms and R&D Investment* | *Haizhou Huang and Chenggang Xu* | *July 1998* |
| *No. 181: Delegation and Delay in Bank Privatization* | *Loránd Ambrus-Lakatos and Ulrich Hege* | *July 1998* |
| *No. 183: Investment Portfolio under Soft Budget: Implications for Growth, Volatility and Savings* | *Chongen Bai and Yijiang Wang* | |
| *No. 184: Investment and Wages during the Transition: Evidence from Slovene Firms* | *Janez Prasnikar and Jan Svejnar* | *July 1998* |
| *No. 185: Firm Performance in Bulgaria and Estonia: The effects of competitive pressure, financial pressure and disorganisation* | *Jozef Konings* | *July 1998* |
| *No. 186: Performance of Czech Companies by Ownership Structure* | *Andrew Weiss and Georgiy Nikitin* | *June 1998* |
| *No. 187: Corporate Structure and Performance in Hungary* | *László Halpern and Gábor Kórsöi* | *July 1998* |
| *No. 189: Russia's Internal Border* | *Daniel Berkowitz and David N. DeJong* | *July 1998* |

| | | |
|---|---|---|
| *No. 190: Strategic Restructuring: Making Capitalism in Post-Communist Eastern Europe | Lawrence P. King | September 1997 |
| *No. 191: Teaching the Dinosaurs to Dance | Michal Cakrt | September 1997 |
| *No. 192: Russian Communitariansim: An Invisible Fist in the Transformation Process of Russia | Charalambos Vlachoutsicos | July 1998 |
| *No. 193: Building Successful Companies in Transition Economies | Dr. Ivan Perlaki | January 1998 |
| *No. 194: Japanese Investment in Transitional Economies: Characteristics and Performance | Paul W. Beamish and Andrew Delios | November 1997 |
| *No. 195: Insider Lending and Economic Transition: The Structure, Function, and Performance Impact of Finance Companies in Chinese Business Groups | Lisa A. Keister | December 1997 |
| *No. 196: Understanding and Managing Challenges to the Romanian Companies during Transition | Dan Candea and Rodica M. Candea | January 1998 |
| *No. 197: Organizational Changes in Russian Industrial Enterprises: Mutation of Decision-Making Structures and Transformations of Ownership | Igor B. Gurkov | January 1998 |
| *No. 198: The Application of Change Management Methods at Business Organizations Operating in Hungary: Challenges in the Business and Cultural Environment and First Practical Experiences | Dr. János Fehér | January 1998 |
| *No. 199: The Emergence of Market Practices in China's Economic Transition: Price Setting Practices in Shanghai's Industrial Firms | Douglas Guthrie | February 1998 |
| *No. 200: Radical versus Incremental Change: The Role of Capabilities, Competition, and Leaders | Karen L. Newman | February 1998 |
| *No. 201: Foreign Direct Investment as a Factor of Change: The Case of Slovakia | Sonia Ferencikova | February 1998 |
| *No. 202: Corporate Transformation and Organizational Learning: The People's Republic of China | Meinolf Dierkes and Zhang Xinhua | March 1998 |
| *No. 203: Emergent Compensation Strategies in Post-Socialist Poland: Understanding the Cognitive Underpinnings of Management Practices in a Transition Economy | Marc Weinstein | March 1998 |
| *No. 204: Human Resource Management in the Restructuring of Chinese Joint Ventures | Nandani Lynton | April 1998 |
| *No. 205: Firm Ownership and Work Motivation in Bulgaria and Hungary: An Empirical Study of the Transition in the Mid-1990s | Robert A. Roe, Irina L. Zinovieva, Elizabeth Dienes, and Laurens A. ten Horn | May 1998 |
| *No. 206: Why Do People Work If They Are Not Paid? An Example from Eastern Europe | Irina L. Zinovieva | May 1998 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| | | |
|---|---|---|
| *No. 207: From Survival to Success: The Journey of Corporate Transformation at Haier | Arthur Yeung and Kenneth DeWoskin | July 1998 |
| *No. 208: A Cultural Analysis of Homosocial Reproduction and Contesting Claims to Competence in Transitional Firms | Michael D. Kennedy | July 1998 |
| No. 209: Inherited Wealth, Corporate Control and Economic Growth | Randall K. Morck, David A. Stangeland, and Bernard Yeung | September 1998 |
| No 210: Values, Optimum Stimulation Levels and Brand Loyalty: New Scales in New Populations | Steven M. Burgess and Mari Harris | September 1998 |
| No. 211: Bankruptcy Experience in Hungary and the Czech Republic | Janet Mitchell | October 1998 |
| No. 212: The Marketing System in Bulgarian Livestock Production – The Present State and Evolutionary Processes During the Period of Economic Transition | Yordan Staykov, Team Leader | October 1998 |
| In Place of No. 213. **Journal of Comparative Economics,** "Effects of Active Labor Market Programs on the Transition Rate from Unemployment into Regular Jobs in the Slovak Republic." Vol. 27, No. 1, March 1999, pp. 90- | Martina Lubyova and Jan C. van Ours | December 1998 |
| In Place of No. 214. **Journal of Comparative Economics,** "Does the Slovenian Public Work Program Increase Participants' Chances to Find a Job?" Vol. 27, No.1, March 1999, pp. 113- | Milan Vodopivec | December 1998 |
| In Place of No. 215. **Journal of Comparative Economics,** "Active Labor Market Policies in Poland: Human Capital Enhancement, Stigmatization or Benefit Churning?" Vol. 27, No. 1, March 1999, pp. 61- | Jochen Kluve, Hartmut Lehmann, and Christoph M. Schmidt | December 1998 |
| In Place of No. 216: **Journal of Comparative Economics,** "Labor Market Policies and Unemployment in the Czech Republic." Vol. 27, No. 1, March 1999, pp. 33-60. | Katherine Terrell and Vit Sorm | November 1998 |
| In Place of No. 217: **Journal of Comparative Economics,** "Returns to Mobility in the Transition to a Market Economy" Vol. 27, No. 1, March 1999, pp. 4- | Tito Boeri and Christopher J. Flinn | January 1999 |
| No. 218: Competing Strategies of FDI and Technology Transfer to China: American and Japanese Firms | W. Mark Fruin and Penelope Prime | January 1999 |
| No. 219: Household Structure and Labor Demand in Agriculture: Testing for Separability in Rural China | Audra J. Bowlus and Terry Sicular | January 1999 |
| No. 220: Managerial, Expertise and Team Centered Forms of Organizing: A Cross-Cultural Exploration of Independence in Engineering Work | Leslie Perlow | January 1999 |

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)

| No. 221: Technology Spillovers through Foreign Direct Investment | Yuko Kinoshita | January 1999 |
|---|---|---|
| No. 222: The Relationship between Opaque Markets and High Speed Growth: How Good Information Interferes with Investment in a Rapidly Changing Environment | Rodney Wallace | January 1999 |
| No. 223: Product Market Competition in Transition Economies: Increasing Varieties and Consumer Loyalty | Mitsutoshi M. Adachi | March 1999 |
| No. 224: Measuring Progress in Transition and Towards EU Accession: A Comparison of Manufacturing Firms in Poland, Romania, and Spain | Wendy Carlin, Saul Estrin, and Mark Schaffer | March 1999 |
| No. 225: Transition at Whirlpool-Tatramat: Case Studies | Hans Brechbuhl and Sonia Ferencikova | March 1999 |
| No. 226: Unemployment Benefit Entitlement and Training Effects in Poland during Transition | Patrick A. Puhani | March 1999 |
| No. 227: Ownership Concentration and Corporate Performance in the Czech Republic | Stijn Claessens and Simeon Djankov | April 1999 |
| No. 228: The Enterprise Isolation Program in Russia | Simeon Djankov | April 1999 |
| No. 229: Back to the Future: The Growth Prospects of Transition Economies Reconsidered | Nauro F. Campos | April 1999 |
| No. 230: The End of Moderate Inflation in Three Transition Economies? | Josef C. Brada and Ali M. Kutan | April 1999 |
| No. 231: Investing in Turbulent Times: The Investment Behavior of Polish Firms in the Transition | Josef C. Brada, Arthur E. King, and Chia-Ying Ma | April 1999 |

To order a working paper, or have your name added to the Davidson Institute's newsletter mailing list, please contact the Davidson Institute at e-mail wdi@umich.edu or tel. *734-763-5020*

Publications denoted by an asterisk are available on the Kresge Library webpage
(http://lib.bus.umich.edu)