CREDIT REDISTRIBUTION AND MONETARY TARGETS UNDER CENTRAL PLANNING IN CZECHOSLOVAKIA

ALEŠ BULÍŘ *

An independent monetary policy and monetary targeting are thought to be inconsistent with central planning. But this view seemed to be challenged by the experience of the basic monetary target in Czechoslovakia. The use of the target as originally defined in the late 1970s was altered in 1988 and terminated completely in 1990. This very monetarist instrument related the growth of domestic credits in the production sector to that of net material product. The target was aimed at containing credit redistribution from net creditors to net debtors rather than at controlling inflation. This paper argues that, despite a seemingly successful performance, the effect of the target was mainly cosmetic.

1. Introduction

Most economists believe that monetary policy played, at most, a limited role under central planning because prices and interest rates were set centrally. In the former Czechoslovakia, however, some attempts to reduce the inefficiencies in centralized credit allocation were made in 1976–1989. The authorities, as in other socialist countries, were well aware of their inability to allocate resources efficiently through centralized rationing.[1] However, some Czech economists and policy-makers shared the feeling that a restrictive monetary policy accompanied by "full khozraschet"[2] would serve as a sufficient proxy for a market-based allocation. As a result, in the 1980s, certain credit measures were targeted by the State Bank of Czechoslovakia (SBCS) and its credit policy was somewhat reshaped.

[1] All Central and Eastern European socialist countries attempted several times—and failed—to reform the planning system. See Adam (1993).

[2] The common meaning of "khozraschet" was the relative financial independence of state-owned firms. While all firms' expenditures were to be financed from retained earnings and credits, the firm would not be able to exercise all property rights. It should be noted, however, that the concept of "full khozraschet" was never introduced in practice.

This paper focuses on monetary policy in the 1970s and 1980s in Czechoslovakia and the experiments with monetary (credit) targeting. After reviewing the literature and discussing the issue of credit redistribution, the paper defines the basic monetary target (BMT) and its rationale. It then discusses the relationship between the BMT and the actual credit and payment arrears developments and presents an empirical analysis of credit suction, credit seasonality, and credit-arrears substitution. Finally, it considers the changes in policy which occurred in 1988.

2. Credit redistribution and monetary targeting in Czechoslovakia

2.1. Review of the literature

Western economists tend to believe that an independent monetary policy and monetary targeting are inconsistent with central planning.[3] Since traditional planning systems were based on supply-side discretionary decisions, money and indirect policy instruments did not play a significant role and planned systems were viewed as if functioning without money.[4]

The main feature of the socialist economies was the allocation of resources by the planning authority. The economies usually had stable and regulated official prices, fixed exchange and interest rates, and controlled wages.[5] Since the supply side planning and the planning of financial flows were tied together, the allocation of credit amounted to the allocation of real resources. In a sense, granting a credit amounted to giving final approval to buy inputs (not necessarily guaranteeing their quality or availability) and its absence meant the withdrawal of this right.[6] Hence, if the credit expansion exceeded the rate of growth of the net material product, the result was a redistribution of the available products through the credit allocation from those who had to bear the resulting cost of disequilibrium caused by credit expansion (shortages, queues, higher prices and/or lower quality) to debtors.

The former Czechoslovakia offers a case study of an ambitious monetary policy under central planning: In the late 1970s, growth rates of credit aggregates were used as indicators of monetary policy stance within the so-called "monetary planning" and, in the 1980s, these same growth rates were used as

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[3] A good summary of this position is presented by Volcker (1990) and Meltzer (1990).

[4] Where money was introduced, it was usually in a very passive way; see, for example, Lin (1992). Econometric models of planned economies did not incorporate a money demand function. See Maříková-Leeds and Kmenta (1987).

[5] The economic system had two nominal anchors: prices and wages. For a discussion of the consequences of this setup see Sahay and Végh (1995).

[6] A typical Czechoslovak firm in the 1970s and 1980s could get centralized in-kind allocation of some basic materials and semi-automatic credits for these deliveries. The rest of inputs would have to be purchased in a market, usually with the help of credit. If some 'efficiency' or quantity thresholds were not met, the credit application could have been rejected [see Kroupar (1987) and Adam (1989)].

targets [see Stejskal (1986)]. Restricting access to credit was supposed to harden the firms' budget constraints. These were mostly pragmatic suggestions, unique in the CMEA, although some theoretical underpinning followed later.[7] Moreover, this line of thought was consistently pursued in monobank's policy announcements throughout the 1970s and 1980s.

In order to simplify the understanding of credit policies in the 1970s and 1980s, we will argue that the monobank was engaged in a three-sided cooperative game, the two other players being the firms and the planning authority. Although planning was initially the substitute for both the price and allocation functions of the market, its inadequacy for a growing multi-product economy was discovered soon after the task of the post-war recovery had been accomplished in the early 1950s and the two-sided game, between the planning authority and state firms, was introduced.[8] It balanced the material flows but could not ensure their efficient use without the concept of interest rates and economic costs [see Garvy (1966)]. The Czechoslovak authorities acknowledged the inefficiencies of this model as early as in 1958 [see Adam (1993)]. The remedy, repeated then in all reform attempts, was to be a combination of freedom given to firms over their decisions and of a more prudent credit allocation through the monobank. While the central planning was by no means viewed as defunct, the relative freedom given to state firms was to be supplemented by a financial control. The SBCS was to ensure that resources employed in the economy were being employed "efficiently" (the bank's staff was supposed to review the financial side of both the plan's requirements and the firms' actions) and that adequate financing was provided. The former was clearly an overly ambitious task and the monobank quickly became the third player seeking a consensus.

All three sides realized that the total payoff would decrease if a non-cooperative action was to be taken by any player. On the one hand, planners knew that too ambitious ("tight") a plan would fail, creating shortages and "bottlenecks" in the economy. Similarly, an unambitious plan, not delivering any growth, would anger the party authorities that oversee planners. The latter's reputation (and perks) would be tarnished in either case. On the other hand, firms knew that non-compliance with the plan might lead to personnel changes in the management, and lower wage and fringe benefits. Similarly, a significant over-fulfillment would risk a tighter plan, lower input allocation, or lower profit margin in the future and was equally undesirable from the firms' perspective [see Hlaváček (1990)]. Hence, planners and firms concentrated on

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[7] See Kočárník (1979), Klaus and Rudlovčák (1979), Kočárník and Petřivalský (1983), and Klaus and Tříska (1989). The authors assumed that these policies would be both credible and sustainable. This assumption was earlier criticized by Ickes (1986), Linz (1988), and Mlčoch (1990).

[8] The formally supervising but poorly informed principal might be more interested in fulfilling the plan than the supervised agent; this creates a moral hazard problem [see Linz (1988), Mlčoch (1990), Wiseman (1991), and Bulíř (1992)].

the pre-plan negotiation period and tried to maximize the probability of an exact plan fulfillment.

How did the monobank contribute to the consensus? A tight credit policy would endanger the plan fulfillment and, as the experiences of 1982–1983 and 1987–1989 periods confirm, lead to surging interenterprise payment arrears. An accommodative policy, however, would create excess demand, shortages, and inflationary pressures. Hence, the equilibrium of this game was a "just right" plan and a "just right" amount of credit aimed at minimizing compliance problems for every principal and every agent in the game.

Monetary targeting in the former Czechoslovakia did not have the same objective as in a market economy where a money supply rule can be a nominal anchor for prices and the Central Bank ignores the microeconomic consequences of its actions.[9] The "monetary planning" of credit growth amounted primarily to a guided reallocation of resources to a less expansionary use. The authorities did not intend to limit aggregate demand or to influence the price level because their links were not clearly recognized at the time. There was, of course, a relationship between credit growth and inflation. If more credits were granted to enterprises, there was higher monetary demand for inputs. Shortages emerged and the "market" was cleared either through some rationing mechanism (unlikely in the 1980s) or through higher prices.[10] The fact that shortages and inflation remained relatively subdued despite credit expansions can be attributed primarily to sound incomes policies[11] and mediocre ambitions of central planners.[12]

2.2. Redistribution through credit in the Czechoslovak economy

This section explains why the Czechoslovak authorities were concerned with the credit growth exceeding the rate of growth of the NMP, the latter being a proxy for non-inflationary financing, and with the lack of evidence that credit was granted to the efficient sectors.

Although the 1950s redistribution was realized mainly through the usual "real side" measures like crop expropriation, direct allocation of labor, of fixed capital, and of raw materials, over time the "financial side" measures like profit leveling, differentiated turnover and income taxes, or centrally allocated credits

[9] See, for example, Fischer's (1990) review of the pros and cons of discretionary and rule-based policy-making.

[10] However, these higher prices were not necessarily reflected in a price index [see Kornai (1980)]. A variety of barter markets emerged in 1980s as less goods were centrally rationed than previously. The following papers discuss the role of credit in redistribution and disequilibrium in Czechoslovakia: Vintrová, Klacek and Kupka (1980), Kočárník (1983), Šrytr (1986), and Klaus (1987).

[11] See Dyba and Švejnar (1991), Drábek, Janáček, and Tůma (1994), and Sahay and Végh (1995).

[12] A recent paper by Čihák and Tůma (1994) argues that it was precisely the lack of planners' ambitions in the 1980s that stabilized the economy and brought the social product (inflationary) gap close to zero.

were gaining in importance. In the 1970s and 1980s, the predominant method of redistribution was through the government budget and monobank credits. We will concentrate on two issues: The overall growth of credits and the efficiency of their allocation.

Ever since 1971, credit in the economy grew faster than the NMP and this gap further widened during 1976–1985. Unlike in market economies, lower productivity leading to lower profits and to lower retained earnings tended to increase the demand for credits. Although the annual rate of growth of the NMP decelerated in the 1980s compared to the 1970s, the rate of growth of the demand for credits increased as firms were not constrained by the prevailing interest rates. While the quality of its loan portfolio, as measured by arrears to the monobank, was gradually worsening, there was no immediate impact on the monobank's profits: The loans in effective default were rolled over or the firms were recapitalized and restructured. Not a single state firm was closed during this period.

The main credit redistribution flow in Czechoslovakia was from households to the economy. While households received about 2 to 4 percent of total credits, they held more than 50 percent of the nation's deposits bearing mostly zero or a negative real interest rate. State firms, which dominated the Czechoslovak economy, were receiving slightly below 75 percent of total credits from 1966 to 1989 with some decline in the last few years (Table 1). The actual share of resources redistributed to state firms was, however, higher because the so-called "foreign credits" were essentially trade credits used as export subsidies. Hence, the credits, directly or indirectly accruing to state firms, were over 80 percent of the total for much of the period and were increasing steadily as a percentage of the NMP.

The second credit redistribution flow was from coops to state firms. We will attempt to show that the faster growth of credits to state firms compared to that of coops during 1981–1989 cannot be explained by their relative economic performances (contribution to growth and credit dependence, Table 2).[13] Although the growth rate of state firms (measured by their contribution to the NMP) was somewhat higher during 1976–1985, coops (both agricultural and non-agricultural) grew slightly faster during 1971–1975 and significantly outperformed state firms subsequently during 1986–1989. There appears to be no obvious correlation between the supply of credit to a sector and the sector's contribution to the NMP growth.

Three caveats, however, should be borne in mind when comparing nominal rates of growth. The NMP measure neglects services, one traditional area of coops' business activity, and thus their contribution to the gross domestic product is likely to be underestimated.[14] Moreover, unlike producer prices, prices

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[13] For this purpose we have to restrict our analysis to the only two sectors for which comparable data were available.

[14] In the 1980s, agricultural coops engaged in a variety of business activities ranging from food processing and catering, public transportation and international travel services to com-

in agriculture were held stable from the 1950s. Finally, the boom in coops' output during 1986–1989, when more entrepreneurial behavior was allowed (and included in the official statistics), shows how much coops were held back previously in comparison to state firms.

TABLE 1

Sectoral credit shares in Czechoslovakia, 1953–1989

	1953–55	56–60	61–65	66–70	71–75	76–80	81–85	86–89
	(In percent of total credits)							
State firms	71.4	65.2	65.4	75.8	73.1	71.4	72.6	68.8
Foreign trade credits	1.1	3.1	5.9	4.9	9.2	9.8	7.5	12.1
Non-agricultural coops	11.8	9.4	5.4	4.7	6.9	6.5	6.4	6.3
Agricultural coops	6.4	13.1	12.9	3.7	2.6	3.9	4.8	4.4
Consumers	5.2	4.2	3.5	3.4	5.1	6.5	6.5	6.5
Other	4.2	4.9	6.8	7.5	3.1	1.8	2.2	1.8
	(In percent of net material product)							
State firms	33.9	27.3	31.7	63.1	59.8	70.8	82.2	79.7
Foreign trade credits	0.5	1.3	2.9	4.1	7.5	9.7	8.5	14.1
Non-agricultural coops	5.6	3.9	2.6	3.9	5.6	6.5	7.3	7.4
Agricultural coops	3.1	5.5	6.3	3.1	2.1	3.9	5.4	5.1
Consumers	2.5	1.8	1.7	2.8	4.2	6.5	7.3	7.5
Total	47.5	41.8	48.4	83.2	81.7	99.2	113.1	115.9
	(Average annual percentage change)							
Memorandum items								
Consumer prices[a]	5.6	−1.8	0.1	1.7	0.2	2.1	2.0	0.5
Producer prices[b]	n.a.	n.a.	0.7	7.4	−0.1	1.5	4.4	−0.2

[a] 1954–1989; [b] 1961–1989.
Source: Federal Ministry of Finance (1990); author's computations.

In the same vein, credit dependence (as measured by the credit to the sector over the sector's contribution to the NMP) can be used as a measure of sectoral productivity. However, credit dependence reversed its trend from the

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puter assembly and software production. A significant part of these activities was neglected in the NMP statistics. According to the modest estimates of the Federal Statistical Office, services contributed about 25 percent to the GDP in factor costs in 1989 [see Statistická ročenka (1991)].

period 1966–1975 and was higher for coops than for state firms from the mid-1970s.[15] The relative credit dependence began to change in the 1980s: Whereas the coops' credit dependence decreased from 130 percent in 1981 to about 90 percent in 1989, state firms' credit dependence increased from 100 to over 110 percent.

TABLE 2

Performance of state firms and coops in Czechoslovakia, 1961–1989

	1961–65	66–70	71–75	76–80	81–85	86–89
	(Average annual percentage change)					
Credit to						
State firms	5.0	10.0	6.6	5.1	3.1	0.7
Inc. foreign trade credits	5.9	10.6	6.8	5.0	3.7	3.2
Coops	1.9	7.4	7.0	7.4	3.6	1.1
Non-agricultural	5.0	21.0	7.3	4.3	4.1	1.9
Agricultural	0.6	−5.0	6.2	13.2	3.0	0.1
Contribution to NMP						
State firms	2.0	12.8	5.7	3.7	2.7	1.3
Coops[a]	−0.9	11.0	6.1	3.4	2.4	11.0
	(In percent of sector's contribution to NMP)					
Credit dependence[b]						
State firms[c]	39.7	76.3	76.4	91.9	99.3	105.5
Coops	82.9	65.8	73.4	103.4	122.5	110.3
	(Average annual percentage change)					
Memorandum items						
Total credits	7.8	9.4	6.5	5.3	3.5	3.1
Nominal NMP	1.4	12.1	6.3	3.2	2.0	3.1

[a] Non-agricultural and agricultural coops. [b] The periods 1961–1965 and the rest of the sample are not directly comparable due to administrative changes in the use of credits. [c] Including foreign trade credits.
Source: Federal Ministry of Finance (1990); author's computations.

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[15] However, much of the jump in coops' credit dependence was caused by the one-off credit windfall from the mid to late 1970s when credit to agriculture tripled in just five years. Growing isolationist tendencies in the CMEA prompted the Czechoslovak government to announce the goal of "full food independence" and, consequently, agriculture temporarily became the priority sector.

2.3. Formulation of the basic monetary target

In the mid-1970s it became obvious that credit expansion was being used as a substitute for lower direct budget subsidies in the face of declining profits.[16] The massive redistribution from net creditors to net debtors and the lack of market allocation of credits were identified as the "financial-side" culprits for the slowdown in economic growth and the prevailing shortages.

A simple rule was sought for the monetary policy in order to shield the monobank from excessive demands for additional credits and to simultaneously limit the extent of redistribution. The basic monetary target, BMT (*základní monetární kritérium*) was defined as a relationship between the growth rate of credit lent to the enterprise sector and the growth rate of the net material product.[17] Although the BMT was not defined in any law, it was annually stipulated between the monobank and the planning authority, and eventually decreed in the Economic Memorandum of the government. For example, the former chairman of the SBCS praised the SBCS that "[during 1981–1985] the credit growth was lower than that of the nominal NMP" and outlined the preliminary BMT's for 1986–1990.[18] Next year he specified: "... This year we want the growth rate of credits to be lower by 1.3 percentage points than the growth rate of the net material product".[19]

One can rewrite this as:

$$U_{t+1}^* = U_t \cdot (1 + r^*),$$

where U_{t+1}^* is the targeted stock of credits on December 31 in year $t+1$; U_t is the actual stock of credits on December 31 in year t; and r^* is the government's policy-based coefficient derived from the expected (or planned) growth rate of the net material product (r^e).

The difference between the targeted and the initial stock of credits was called the "credit target" (*úvěrová směrnice*), ΔU^*:

$$\Delta U^* = U_{t+1}^* - U_t.$$

The BMT was apparently governed by a simple equation of exchange stating that the growth rate of the nominal net material product must equal the growth rate of credit supply,[20] given a constant velocity and assuming $r^* = r^e$. The BMT differed, however, from its counterpart in standard theory. The targeted

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[16] See Šrytr (1986), Štěpánek (1988), and Bulíř (1990).

[17] The BMT was later supplemented by several microeconomic criteria, the so-called criteria of credit efficiency. See Kroupar (1987).

[18] See Stejskal (1986, pp. 75 and 77). Note, however, that his definition of credits was different from that used in Table 2. Most notably, he excluded the foreign trade credits and the investment credits for the CMEA projects.

[19] See Stejskal (1987, p. 77).

[20] In a planned economy dominated by a monobank, it was the credit stock that was easily controllable and more relevant than money. See Alexander et al. (1995).

growth of credits focused solely on the enterprise sector, and consequently, both the households' and foreign sector's impact on aggregate demand were disregarded.[21] One can support this omission on the basis of the following phenomena peculiar to centrally planned economies: (i) the separation and the relative independence of price levels (wholesale, retail, and international prices) under central planning; and (ii) the incompatibility of money demand functions (demand for cash in the household sector and demand for non-cash liabilities of the monobank in the enterprise sector).[22]

2.4. Systemic flaws associated with the basic monetary target

The BMT failed to satisfy several preconditions which were implicitly posited by the Czechoslovak authorities: Price stability, controllability of monobank credits, and stability of the credit turnover (velocity). It is unlikely that a stable and predictable link existed between the amount of credits lent to enterprises and the level of (nominal) economic activity in the 1970s and 1980s. Without having a clear relationship between a monetary aggregate and the real output in the short run and a monetary aggregate and the prices in the long run, there is very limited room for an intermediate target.

First, the BMT assumed stable prices.[23] This precondition obviously was not satisfied in the long run, although one can hardly identify one precise price index for the 1970s and 1980s. Not only open inflation, but also hidden inflation (inflation not shown in the price index) should have been taken into account. While there are reliable estimates of hidden inflation in the household sector,[24] no comprehensive information is available on producer prices.[25] The presence of hidden inflation overstates the growth rate of the real product because higher prices or lower quality are not encompassed in the price index and are reported as the real output growth instead. Consequently, the BMT derived from the biased real NMP growth overstated the non-inflationary credit financing.

Second, credits to enterprises were assumed to be under the monobank's control. In reality, most activities stipulated in the state plan were automatically entitled to a proportionate amount of credit. Although the monobank became less subordinated in the late 1970s and especially in the 1980s, calls for "lending according to the Plan" never vanished completely. Moreover, payment arrears were substitutes for monobank credits, especially in the 1980s. As it will

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[21] Over the whole period, government accounts were in surplus and no credit to government was granted.

[22] For both arguments see Adam (1974) and Garvy (1966).

[23] Conversely, one could assume that the ultimate monetary goal of the State Bank was zero inflation. Note, however, that most prices were fixed or controlled and a stable connection between credit and the ultimate monetary goal would be difficult to justify in practice.

[24] See Nuti (1986) and Dlouhý (1988). Havlik (1985) estimated the hidden inflation in consumer markets to be almost 2 percent annually during the period 1964–1980.

[25] From 1970 to 1985, prices in machinery and construction rose by "hundreds of percent", [Mlčoch (1990)]. Also see Drábek, Janáček, and Tůma (1994).

be shown later, a surge in interenterprise payment arrears could have reversed the stance of monetary policy.

Third, the assumption of a stable turnover of monobank credits was substituted for the usual assumption of stable or predictable money velocity. After a sharp fall in the period of 1971–1980, the ratio of the net material product to credits stabilized in the 1980s. This evidence is, however, less convincing than it seems because one cannot say whether a stable credit turnover rate was close to the steady state growth rate of the economy. The monetary authority was able to impose—at least in the short run—a situation analogous to a credit crunch without visible real effects. The rise of interenterprise payment arrears in the 1980s also distorted the information contained in the seemingly stable NMP/credit ratio: When these arrears were added to credits the ratio continued to fall.

3. Credit developments under monetary targeting

This section provides a quantitative analysis of the results of monetary targeting in Czechoslovakia.

3.1. Credit developments

Unlike in most developed countries, the BMT had an ambiguous follow-up—it was defined only as an annual variable for December 31. If the actual increase was twice as big in March as the December target, no corrective policy action was required by the monobank. It is in this perspective that one should assess the claims that the BMT was officially satisfied during 1981–1985: "... in every year of the 7th Five-Year Plan the BMT was fulfilled."[26]

Was the BMT fulfilled only formally? More specifically, were there links between the target and credit developments during the year? We will argue that there was, indeed, a stable link facilitated by the fact that the monobank did not have to compare the target either with its maximum or with the actual developments over the year, notwithstanding the ambiguous follow-ups by the government and the Parliament.

For the purpose of our analysis we define the December maximum, and average credit aggregates, ΔU^A, ΔU^{max}, and $\Delta \bar{U}$, as increases over those of December of the previous year. They are computed as

$$\Delta U^A = U_{t+1,12} - U_{t,12},$$

$$\Delta U^{max} = \max_i [U_{t+1,i} - U_{t,12}],$$

$$\Delta \bar{U} = \frac{1}{12} \sum_{i=1}^{12} [U_{t+1,i} - U_{t,12}],$$

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[26] See Činčera and Pecháček (1986, p. 443).

where $i = 1, \ldots, 12$; and $\max_i$ is the operator which picks up the highest monthly increase of the stock of credits in the course of the year.

While the overall performance of the BMT was based on the "total credits to enterprises" aggregate, the monobank set two targets: One for total credits and the other for their subset, non-investment credits. The monobank granted two distinctive forms of credits: Credits used for financing "working capital" (non-investment expenditures) and "fixed capital" (investment expenditures).[27] While the former were not linked to the material plan and though more credit could easily create shortages in input markets, the latter were tightly planned and the centralized allocation of investment was (obviously wrongly) assumed not to lead to shortages and price pressures.

As far as the volume of credits is concerned, 70 to 75 percent of total credits comprised non-investment credits, and their share was rising in the 1970s and 1980s. Moreover, non-investment credits fluctuated due to factors other than those which affected investment credits.[28] While the demand for non-investment credit was mainly influenced by the expected growth of output (with a stable seasonal pattern), investment credits were influenced by: (i) the long-run substitution of monobank credits for budgetary expenditures which consisted mainly of investment subsidies; (ii) the investment cycle in planned economies;[29] and (iii) the constantly changing (softening) administrative procedures for evaluating the profitability of investments.

The period 1976–1989 can be broken down to three periods of markedly different growth rates (Figure 1). More importantly, the credit impulse measure (CIM) helps to distinguish periods of "tight credit" (the actual credit stock is lower than the expected supply) from periods of "slack credit" (the actual credit stock is higher than expected, Figure 2).[30]

In the first period (1976–1981), total credits rose at an annual rate averaging 6.3 percent and non-investment credits averaged 6.9 percent. At the same time, the growth rate of the net material product declined compared to its trend and in 1981 the economy even shrank by about 2 percent. Nevertheless, there was no sign of a declining demand for credits and Figure 2 suggests that the credit growth was accelerating during 1978–1981. Although the BMT was almost always satisfied, i.e. the December credit aggregate exceeded the target only

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[27] In the early 1950s, two thirds of fixed capital investment were financed from the government budget and the rest came from retained earnings. In the early 1960s, investment loans were introduced but only in the 1970s they became the second most significant source of financing, while the share of budgetary financing gradually dropped below 15 percent.

[28] For example, we were not able to discern any stable seasonal pattern in the investment credit time series.

[29] See Štěpánek (1988) for the former argument and Goldmann et al. (1977), Kýn, Schrettl, and Sláma (1978), Ickes (1990), and Nuti (1990) for the latter.

[30] We computed recursive predictions from the autoregressive equation of total and non-investment credits on its own variables lagged 12 months. The CIM is the difference between the actual end-of-month credit stock and the recursive prediction thereof. This approach implicitly assumes adaptive expectations about credit supply as past shocks to the credit stock translate over time into the predicted credit supply.
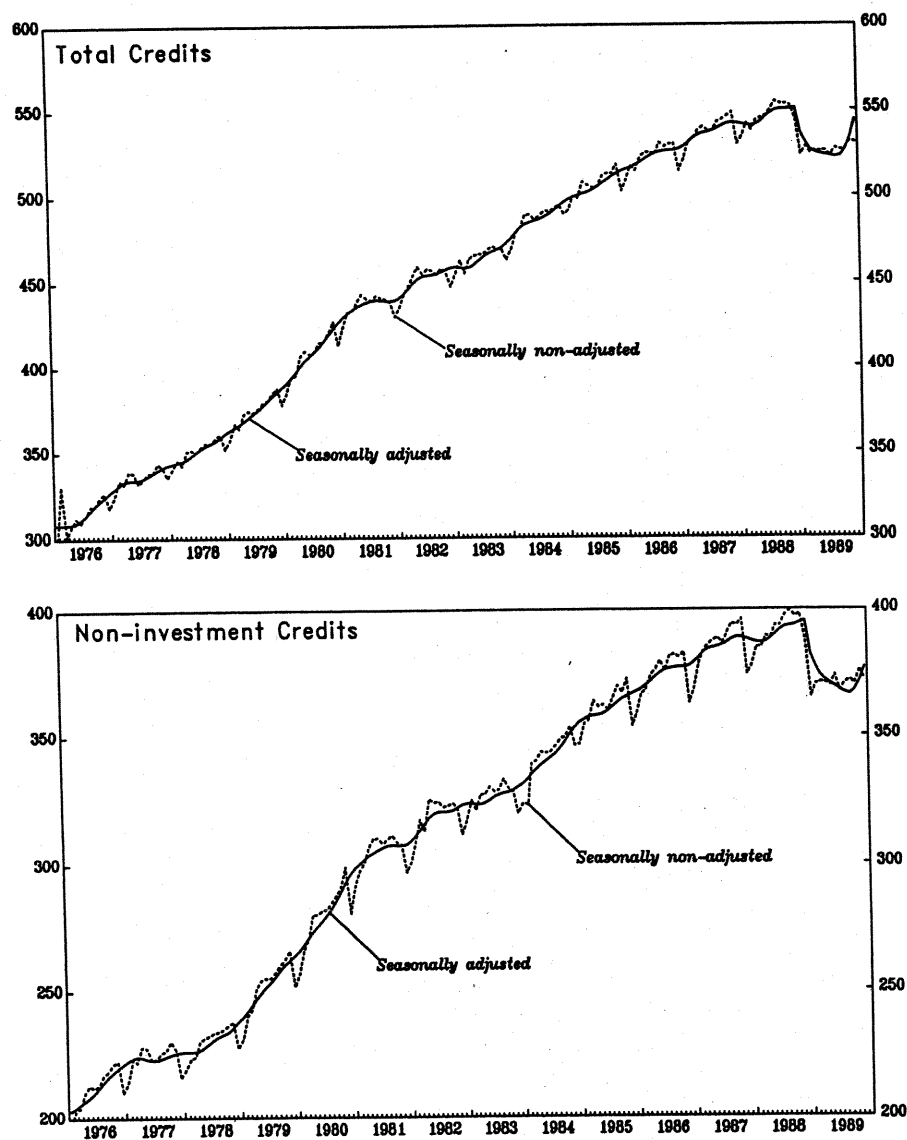
FIGURE 1

Czechoslovakia, credit developments, 1976–1989[a]
(in billions of Kčs)

[a] End-of-month stocks, seasonally adjusted by the X11 procedure.
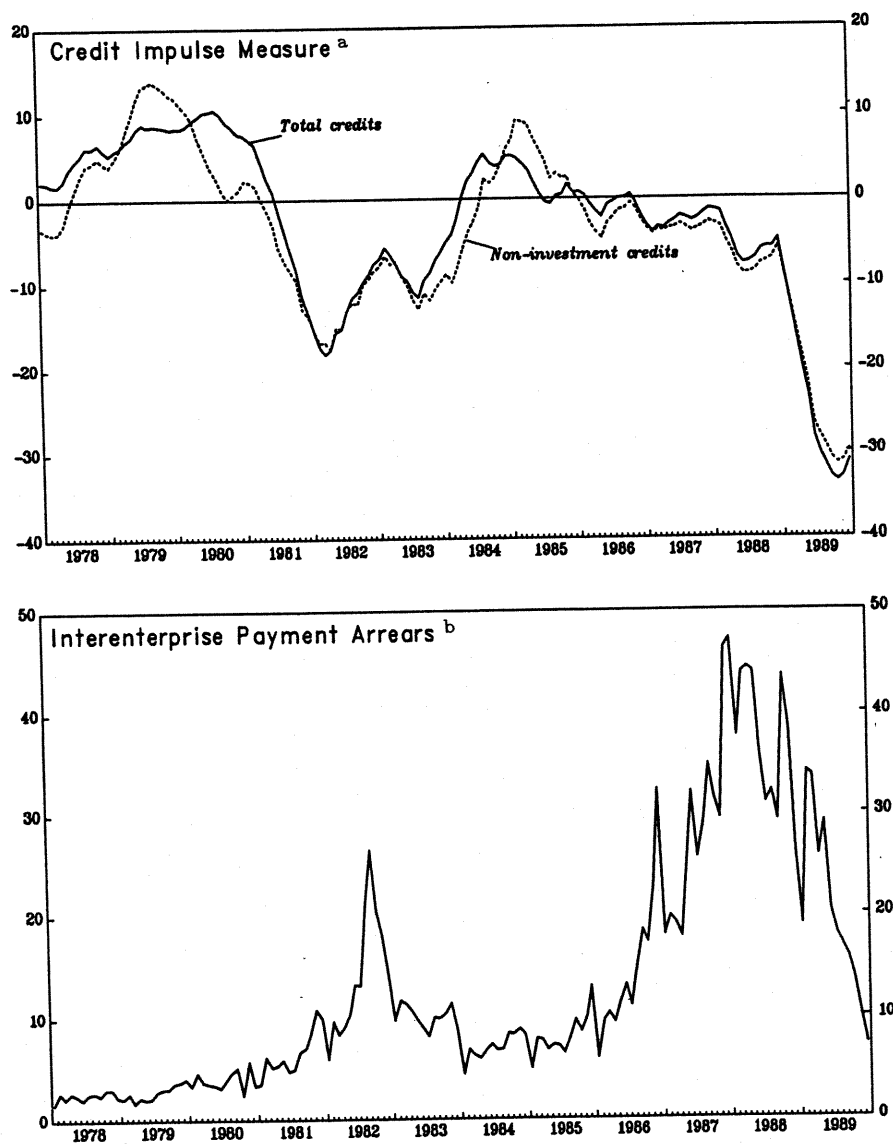*Source:* State Bank of Czechoslovakia; author's calculations.

FIGURE 2

Czechoslovakia, credit impulse measure and arrears in 1976–1989
(in billions of Kčs)

[a] Difference between the actual end-of-month credit stock and the 12-month recursive prediction thereof; 6-month moving average; [b] End-of-month stocks.
Source: State Bank of Czechoslovakia; author's calculations.

in 1976, 1980 and in 1981 (non-investment credits only), the credit maximum always exceeded the target (Table 3).

TABLE 3

Basic monetary target and credit developments, 1976–1989
(In Kčs billion)

Year	Total credits[a]			Non-investment credits[a]		
	Target	Actual	Maximum	Target	Actual	Maximum
1976	25.7	30.1	38.9	10.0	18.4	30.7
1977	23.8	17.4	26.1	13.4	5.5	20.0
1978	24.8	16.9	25.4	15.6	11.6	22.1
1979	26.9	26.1	35.8	20.5	24.8	38.0
1980	26.3	35.0	49.1	17.7	29.0	47.4
1981	19.8	17.0	30.5	15.2	16.3	30.6
1982	13.2	17.8	29.3	8.2	14.7	28.3
1983	18.1	15.2	23.2	10.4	7.9	21.3
1984	25.1	26.6	31.8	26.3	26.7	34.3
1985	13.8	13.1	15.7	9.0	7.7	27.6
1986	12.6	11.9	28.3	9.2	9.2	29.3
1987	13.9	19.7	33.7	8.9	11.3	33.0
1988	5.7	14.0	24.7	6.2	12.9	25.0
1989	−5.8	−13.0	−12.4	−5.2	−15.2	−10.9

[a] Computed as the increase over December of the previous year.
Source: SBCS; and author's calculations.

During the second period (1982–1986), the monobank tied the growth of credits more successfully to the growth of the net material product, and the credit growth was mostly below its recursive predictions. The annual growth rate of total and non-investment credits averaged only 3.1 and 4.1 percent, respectively. During 1983–1985, targets and credit maxima converged somewhat but they began to diverge again in 1986. It is clear, however, that the period of relative adherence to the target was achieved primarily by reducing investment credits—the total fixed capital investment in percent of the NMP decreased by 3 percentage points from its peak in the late 1970s and the share of investment credits in total credits decreased even more. Expectedly, the mid-1980s was a period of low absorption as the Czechoslovak authorities were forced to repay foreign debt accumulated in the late 1970s. While the overall redistribution from savers to (real) investors was limited, the redistribution from creditors to those who borrowed for non-investment purposes increased.

During the last period (1987–1989), attempts were made at an economic reform and the credit growth was tightened. The growth of total and non-investment credits averaged 1.1 and 0.8 percent, respectively, but the maximum aggregates over the year were again significantly higher than the BMT. For 1988, the BMT was set as an average of monthly aggregates, but the monobank did not enforce the policy too strictly and the target was overshot significantly (see below). In 1989, on the other hand, economic activity and the stock of credits declined and the target was easily attained.

3.2. Credit suction, seasonality of credits, and interenterprise payment arrears

In this section we will present some quantitative results of the links between the target and actual credit developments, and relate them to interenterprise payment arrears.[31]

While the maximum, average, and December aggregates were endogenous variables for the monobank, the target was exogenous. Specifically, the variable ΔU^A is a leading variable, not known at the time when ΔU^{max} or $\Delta \bar{U}$ is achieved. We believe, however, that the value of ΔU^A was projected by planners, economic agents, and the monobank as part of the three-sided game: There is supposed to be a mutual willingness to meet the target. The maxima in the i-th month were set in such a way as to enable the monobank to lower the credit stock to the preset target and not to disturb the planned production.

Let us call the system's ability to obtain more credits than were set by the BMT the "suction effect", S. As such, this effect would approximately measure the redistribution of resources to net debtors. Moreover, there should be a relationship between the average and maximum aggregates on the one side and the targets and December aggregates on the other, and the size of the overshooting would depend only on the relative tightness of the target.

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[31] We also tested the link between the stance of credit policy (CIM) and the shortages. While one measure of shortage, namely the inventories depletion, seemed to be inversely related to the tightening of credit supply, some other measures exhibited opposite behavior [see Šíp and Žďárek (1987) and Žďárek (1989) for data]. Whereas all measures of shortage are normally open to criticism, the overall results were inconclusive. Moreover, the issue of causality emerged despite the seemingly successful tests: Spells of high inventories (low shortage) coincided with economic slowdowns (low NMP gaps) as well as with periods of tight credit. If the SBCS tightened its policy only during the centrally-engineered slowdowns, as suggested by the outcome of the three-sided game, the effect of credits on shortage cannot be discerned from the effect of planners' actions. Indeed, high correlation coefficients found for the credit impulse measures, the NMP gaps, and various measures of inventories depletion suggest robust multicollinearity.

Formally:

$$S = \left\{ \sum_{t=1}^{n}(\Delta \bar{U} - \Delta U^{T}) \right\} \Big/ \left\{ \sum_{t=1}^{n}(\Delta U^{T}) \right\} \cdot 100$$

or

$$S' = \left\{ \sum_{t=1}^{n}(\Delta U^{max} - \Delta U^{A}) \right\} \Big/ \left\{ \sum_{t=1}^{n}(\Delta U^{A}) \right\} \cdot 100,$$

where S is a number showing the percentage increment of the average (maximum) credit aggregate over the target (the December aggregate).

Using the numbers from Table 3, the relative size of the "suction effect" can be estimated (Table 4). During 1976–1989, total and non-investment credits overshot their targets on average by 7 and 45 percent, respectively. The corresponding ratios for the maximum aggregates and the targets were a stunning 56 and 128 percent. The results are virtually unchanged when the actual end-of-year stocks are used.

TABLE 4

Credit suction, 1976–1989

	Total credits	Non-investment credits
	(in percent of the target)	
Average overshooting	7.3	45.0
Maximum overshooting	55.7	127.8
	(in percent of the December stock)	
Average overshooting	5.6	32.6
Maximum overshooting	53.3	108.4

Source: Table 4, author's calculations.

The previous section showed that even a seemingly successful compliance with the BMT did not translate into an effective control of credit expansion: The monobank was unable to restrain the redistribution operating through the allocation of non-investment credits and the BMT was not an effective constraint on the expansion of credits. The procedure could, however, contribute to the basic understanding of non-inflationary monetary policy.

There were three main factors affecting credit developments in the 1970s and 1980s:

(a) a general tendency to use credits as a "soft" or "cheap" financial resource compared to budget subsidies[32] and firms' profits. The coefficient on the time trend should be positive as this factor contributed to the persistence of credit expansion;

(b) an indifference of the monobank to the "policy quasi-seasonality" of the credit growth. Firms were able to "suck" more credits during the year than at the end of the year or temporarily substitute payment arrears for them. This phenomenon contributed mainly to peaks (U^{max}) during the year;

(c) the truly seasonal patterns affecting the demand for credit: Inventory buildup at the end of each quarter, production peaks, etc.

One can sum up all three factors and model them as a function of time and seasonal dummies:

$$\ln U_t = \beta \; TIME_t + \gamma_i D_{t,i} + \delta D_{refarm} + u_t$$

$$[i = 1, 2, \ldots 12; \quad t = 1, 2, \ldots n],$$

where $\ln U_t$ is the log of the monthly credit stock; $TIME_t$ is a linear time trend $(1, 2, \ldots, 180)$; $D_{t,i}$ are seasonal dummy variables; D_{refarm} is the intercept stock dummy reflecting the impact of reforms during 1989–1990 on credit growth (zero until December 1988, 1 thereafter), and u_t is a random variable with standard assumptions about its mean and variance. Hence, the parameter β measures the monthly growth [factor (a)] and dummies model the seasonal factors (b) and (c) as differences over the means. One cannot, however, distinguish the true seasonal factors from "quasi-seasonal" ones.

The estimates of the above equation allow us to construct a typical pattern of growth and of seasonality for both credit aggregates (Table 5). First, both total and non-investment credits grew at around 5 percent annually. Second, both credit series tended to be seasonally "high" through November, starting in the second quarter. October and/or November were also the months when the credit stock was highest. While total credits' seasonal peak was in May, non-investment credits seasonally peaked in April. Third, both aggregates then dropped suddenly in December thus approaching the target. Note, however, that credits did not return immediately, in January, to the seasonally adjusted pre-drop level but, rather, they caught up slowly with the trend during the first quarter. Finally, although the slowdown in 1989 brought down the level of credits back to the 1987 level, the "quasi-seasonal" pattern remained unchanged.

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[32] In the budgetary process, substantial bargaining costs were involved: Namely, firms had to reveal both their long-term plans and short-term resources. The budgetary bargaining costs frequently exceeded, at least in Czechoslovakia, the interest rate and the bargaining costs of new loans.

TABLE 5

Seasonal pattern of total and non-investment credits
(percentage change over the mean)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total credits	−0.93	0.65	−0.43	0.77	0.85	0.04	0.11	0.58	0.14	0.30	0.19	−2.24
Non-investment credits	−2.58	−0.54	−0.26	1.09	0.78	1.00	0.50	0.89	1.06	0.74	0.87	−3.55

Notes: The estimated seasonal effects are based on the antilogs of the regressions of logs of monthly stocks of total and non-investment credits on time, twelve seasonal dummies (D_i), and one intercept dummy (D_{reform}), estimated over 1976:1–1990:12. Estimation is performed by maximum likelihood (Newton-Raphson) procedure with a second-order autoregressive process.

One can rule out the possibility that a genuine seasonality in the credit demand caused the December decline of credit stocks. There is evidence that transitory dips of credit supply were followed by interenterprise payment arrears shocks as the latter were imperfect substitutes for monobank credits: Lowering total or non-investment credits by 1 Kčs in December of the previous year would increase payment arrears in January by about 0.7 Kčs, (Table 6).[33] The estimated marginal propensities are based on the equation:

$$\Delta A_t = \alpha + \beta \Delta U_t + \gamma D_{87} + u_t,$$

where ΔA_t is the change in interenterprise arrears in January of the next year over December of the base year, ΔU_t is the change of total and non-investment credits in December of the base year over November of the base year, and D_{87} is an intercept dummy (1 for 1987 and 0 otherwise) capturing the effect of the centralized settlement of interenterprise arrears in January 1987.

We used the change of payment arrears in January over December rather than in December over November for two reasons. First, interenterprise payment arrears also exhibited a strong seasonal drop in December. Second, until 1990, every invoice sent became automatically due in two weeks and, hence, a late December credit crunch constraining firms' liquidity would show up as interenterprise payment arrears only in early January.[34]

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[33] Albeit illegal, the practice of informal trade credits was widespread. The maximum volume and duration of such lending was, however, limited: The credit was not negotiable and, at some point, the resulting lack of liquidity would constrain the creditor at wage and other payments.

[34] However, the crediting firm might decide to postpone sending the invoice after consulting the potentially-illiquid debited firm and so the payment arrears would rise with an even bigger lag or, maybe, not rise at all (if credit supply increased in the meantime). Indeed, there has been some anecdotal evidence that the actual flow of arrears has been higher than officially reported.

TABLE 6

Substitution of payment arrears for credits
(estimated over 1981–1989)

Constant	Change in credits		D_{87}	R^2	D.W.	Standard error of regression	N
	Total	Non-investment					
2.078 (1.13)	−0.689 (4.02)		−13.235 (4.41)	0.79	2.61	2.346	9
0.265 (0.16)		−0.673 (4.58)	−13.429 (4.94)	0.83	2.84	2.126	9

Notes: The dependent variable is the change in payment arrears and the independent variables are the changes in total and non-investment credits and one intercept dummy, D_{87}. Estimation is by ordinary least squares with t-ratios in brackets. D.W. is the Durbin-Watson coefficient of autocorrelation and N is the number of observations.

The substitutability of interenterprise payment arrears for monobank credits can also be observed during the two spells of "tight credit" in the 1980s (Figure 2.) Payment arrears made up for declining credits, albeit with some lags and overshootings thus keeping the level of liquidity relatively insensitive to monobank's credit policy. For example, deceleration of the credit growth during 1981–1983 not only led to a spike in 1982 but also lifted the stock of arrears to a higher plateau. During this period, however, credit policy remained restrictive—payment arrears did not make up fully for the lower credit growth. Deceleration of the credit growth over the period 1986–1988, though, was more than offset by surging arrears and, during 1986–1987, the overall credit stance became eventually more expansionary than in the early 1980s.[35]

3.3. The 1988 episode: Towards a new design for the BMT

In 1988, the SBCS decided to improve its use of the BMT. The BMT was set as a maximum increase over December 1987 and was applicable to every end-of-month observation. This change was supposed to reduce firms' access to new credits and to diminish planners' discretionary power in the course of the year. In 1989, the BMT was effectively abandoned, a conclusion based on the fact that it was not included in the Economic Memorandum of the government, although it continued to be used by the SBCS as an indicator.

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[35] The level of liquidity (total credits plus payment arrears) became, of course, much more volatile. This volatility was further exacerbated by occasional centralized settlements of interenterprise payment arrears.
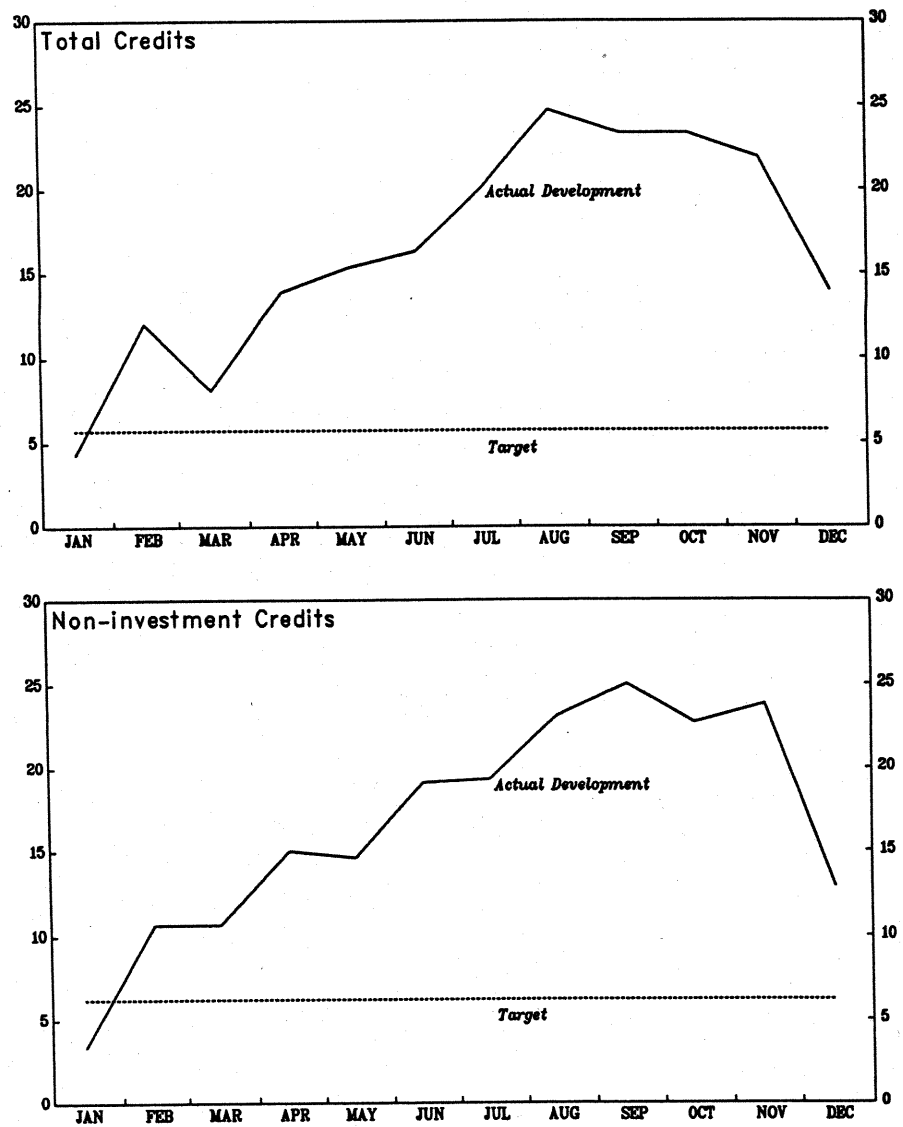
FIGURE 3

Czechoslovakia, credit developments in 1988[a]
(in billions of Kčs)

[a] Increase over December 1987.

Source: State Bank of Czechoslovakia; author's calculations.

The decision to back away from the target can be more clearly understood by looking at the performance of the newly designed target. In 1988, the BMT was set at 5.7 billion Kčs of the average increase of total credits and 6.2 billion Kčs of the average increase of non-investment credits (Figure 3). The change of the targeting procedure did not change the "quasi-seasonal" pattern of behavior: The sharp end-of-the-year decline continued, still accompanied by a temporary surge in payment arrears.

There were other problems connected to the newly implemented procedure as well: (i) in 1988, both output growth and labor productivity unexpectedly accelerated somewhat compared to 1987 and these innovations could not be reflected in the BMT; (ii) the SBCS was not as committed to the BMT in 1988 as it had been in previous years, probably due to political pressures; (iii) the change of the operating procedure was not spelled out publicly and was not well understood by monobank's branches. Oddly enough, the "quasi-seasonal" character of the credit growth with credit-arrears substitution was preserved even in 1990 when no aggregate target was set.

It is questionable, though, that a superior form of the BMT would make much of a difference. While taking into account seasonal factors and designing appropriate monthly (quarterly) BMTs would have probably led to less cumulative discrepancies between the targets and actual credit outcomes, it is unclear what would have been the impact of such a target on the real economy and on payment arrears. Assuming that the industrial output is largely insensitive to credit shocks (due to little profit motivation and non-existing bankruptcy procedures), credit impulses would have been primarily channeled into interenterprise payment arrears, leaving unchanged the overall level of liquidity.[36]

4. Concluding remarks

The paper has presented a discussion of the basic monetary target which was introduced in the mid-1970s in Czechoslovakia. The target was primarily aimed at reducing the redistribution from net creditors to net debtors. We tried to evaluate its relative success.

First, the annual growth of nominal credits was relatively stable, although it decelerated somewhat in the 1980s. In the short run, the monobank was seemingly able to pursue a relatively tight monetary policy.

Second, the monthly data indicate that the enterprise sector was consistently able to "suck" more credits than the amount targeted by the monetary authority. Credits rose throughout the year and then plummeted at the end of the year when interenterprise payment arrears were substituted for credits thus offsetting the effect of credit tightening. Although both the monobank and state firms were interested in formally fulfilling the target, redistribution

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[36] Expectedly, volatility of this combined measure of "liquidity" (credits plus payment arrears) was higher during 1976–1989 than that of credits only.

through credit allocation was not prevented and was, at best, stabilized during this period.

Finally, although the BMT was merely cosmetic, it probably contributed to the basic understanding of non-inflationary monetary policy, at least within the State Bank. Consequently, the BMT gave some leverage to the monobank in its negotiations with the planning authority. However, BMT's impact on prices and macroeconomic equilibrium is not measurable and the BMT can hardly be regarded as a major contribution to Czechoslovakia's overall stability under central planning.

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Zusammenfassung

Es wird im allgemeinen angenommen, daß eine unabhängige Geldpolitik und monetäre Zielvorgaben mit zentraler Planung unvereinbar sind. Diese Sichtweise schien aber durch die Erfahrung mit Geldmengenzielvorgaben in der Tschechoslowakei herausgefordert zu werden. Der Einsatz dieses Ziels, das ursprünglich in den späten 70er Jahren definiert worden war, wurde 1988 geändert und 1990 vollständig beendet. Dieses an sich monetaristische Instrument knüpfte das Wachstum der inländischen Kredite im Produktionssektor an das des Nettomaterialprodukts. Anstatt die Inflation zu kontrollieren, sollte dieses Geldmengenwachstum aber vielmehr die Kreditumverteilung von Nettogläubigern auf Nettoschuldner eindämmen. Dieser Beitrag argumentiert, daß trotz einer scheinbar erfolgreichen Leistung die Wirkung des Geldmengenziels hauptsächlich kosmetischer Natur war.