Distorted Macroeconomics of Central Planning

The pitfalls for those who analyze Soviet-type economies within a coherent framework have often been underestimated and are of two main kinds: the difficulty of explaining macroeconomic relationships in terms of either neoclassical or Keynesian received theory and the distorted official data. Both stem from the same sources. It is system-specific features that make the characteristic macro effects — excess demand, shortage, uncertainty — to mean something different under central planning from what is generally understood by Western economists. The same features also generate quantity and price distortions that make statistics in STEs[1] differ from those in market economies.

The article sets these differences and distortions into an explanatory framework and, while received theory is applied, the impact of institutional differences is also taken into account. Empirical support for the framework is given with attention drawn to distortions in prices and especially quantities, since the latter are less evident.

Every effort has been made to avoid both types of pitfalls. System-specific terminology and theoretical concepts that render otherwise valuable East European contributions incomprehensible to Western readers have been eliminated or explained.[2] In addition, more comprehensible, but equally unsatisfactory, simplistic applications of Western disequilibrium theory have been rejected.

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[1] The terms Soviet-type economies (STEs), centrally planned economies (CPEs), and East European economies all refer to the Soviet Union and the six smaller countries: Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, and Romania.

[2] There are of course exceptions in this respect, too. In the East it is official propaganda apparatus and shrinking numbers (especially in Hungary and Poland) of economists; in the West it is a small minority of the latter, of which PORTES (1974, 1977, 1979, n.d.) has been most prolific in his refutations of the existence of system-specific sources of excess demand. A critique of Portes by this author, see WINIECKI (1985).

1. The Permanence of Excess Demand: a Static Picture

Excess demand has been a feature of STEs almost from the start. A great deal has been written in both the East and the West to explain its sources and concomitants. It is even possible to distinguish a kind of consensus explanation, especially on the incentive structure that generates excess demand.

To summarize, certain system-specific features result in what Kornai (1970, 1972, 1979, 1980) has called "rush growth" and a group of Polish economists originally associated with Wakar (Wakar, ed., 1959, Romuald [3] Bauer *et al.* 1972, Beksiak and Libura 1974, Libura 1979, Beksiak 1982) has dubbed "expansive formulas of management". According to these authors, enterprises in STEs have always been influenced by incentives encouraging them to expand production at almost any cost. In other words, incentives to achieve and exceed plan targets have been positively correlated with the volume or value of production, but not negatively correlated with production costs. This structure of incentives has remained substantially unchanged and has been dominant under both traditional command-type and modified command/parametric-type policy instruments.

Central planners' fundamentally autarkic approach results in their usually reacting to perceived needs by trying to increase the production of the needed goods. Often plans are drawn up where economic growth rate and the production structure (especially the latter!) cannot be achieved owing to the shortage of resources.

This may have several causes. Firstly, because the *quantities reported earlier by enterprises were partly fictitious*. A perennial problem of STEs is that everybody, from managers down to workers, has an interest in doctoring performance figures.[4] This may involve pure fiction, *i.e.* reporting higher production volumes as occurred in Poland and Romania a couple of years ago for coal. Much more frequently, however, hidden inflation is used, *i.e.* reporting an increase in production value that is higher than the actual increase in volume.

Secondly, the *resources may not be of the right quality*. Continuing with the example of coal, enterprises may seek to achieve or exceed

[3] The first name is put here to differente Romuald Bauer from the Hungarian economist Tamas Bauer.

[4] Not surprisingly, statistical journals in Eastern Europe devote considerable space to proper statistical reporting and the best techniques of reporting control to reveal irregularities.

their plan targets by lowering the quality of output by adding non-coal ingredients. This not only wreaks havoc with central planners balancing activity but also has negative repercussions on domestic coal users.[5] And, if such possibilities exist for homogeneous goods like coal, they are all the greater for differentiated products.

Thirdly, the *resources may not be of the right type*. Suppliers usually prefer to produce as few types, grades and sizes as possible. STE enterprises often have to choose, for example, between using more costly materials, more labor and more capital, or not producing at all. STE enterprises' inability to obtain the right inputs is not only due to compulsory single sourcing since the other suppliers behave in the same way. This situation explains the persistent preference for imports, and especially for imports from the West.

Fourthly, *resources may not be available at the right time*. Even the most centralized planning cannot allocate everything in detail and the task is left to enterprises. It can obviously make a difference to an enterprise's production schedule whether its suppliers ship the inputs it needs at the beginning, in the middle or at the end of a planning period — whether a month, a quarter or a year. Orders for inputs do not specify such details and, of course, suppliers are themselves having to cope with shortages of their own.

Lastly, *resources may not be at the right place*. In the aggregate there may be enough inputs of the right quality and type to allocate among enterprises, but general precedence (intermediate and investment goods), specific precedence (priority listed investment projects) and *ad hoc* precedence (created by political interventions, see next section) may result in misallocation.

The first three causes are rooted in the system-specific structure of incentives, while the last two stem from the other institutional and policy characteristics of STEs. They also imply that a plan cannot be fully implemented even if it is (theoretically) feasible, *i.e.* the aggregate amount of inputs is exactly that called for by the plan (cf. Erison 1983).

The above shortages interact to create *a general climate of shortage*. This is aggravated by enterprises all trying to minimize the risk of falling short of plan targets by making excessive demands for labor, spare parts and other inputs, so that demand escalates (on hoarding and inventories, see Goldmann and Kouba 1969, Kornai 1980, Porket 1984 and Winiecki 1982). STE shortages are relative rather than absolute since inputs per unit of output are disproportionately large, as Table 1

[5] STE users cannot count on obtaining regular quality coal from other suppliers.

TABLE 1

RESOURCE INTENSITY OF SOVIET-TYPE ECONOMIES AND EUROPEAN MARKET ECONOMIES: ENERGY (1979) AND STEEL (1980)

Countries	Energy intensity in 1979 (in kg. of equivalent coal consumption per 1,000 US dollars[b] of GDP)	Steel intensity in 1980 (in kg. of steel consumption per 1,000 US dollars[b] of GDP)
Soviet-type economies[a]		
Bulgaria	1,464	87
Czechoslovakia	1,290	132
Hungary	1,058	88
East Germany	1,356	88
Poland	1,515	135
Soviet Union	1,490	135
Unweighted average (6)	1,362	111
European market-economies		
Austria	603	39
Belgium	618	36
Denmark	502	30
Finland	767	40
France	502	42
West Germany	565	52
Italy	655	79
Norway	1,114	38
Sweden	713	44
Switzerland	371	26
United Kingdom	820	38
Unweighted average (11)	660	42

[a] Excluding Rumania; [b] US $ of 1979.
Sources: World Development Report 1981, Appendix, Tables 1 and 7; *Yearbook of International Statistics*, Warsaw 1982, Table 110 (in Polish), my calculations.

shows for energy and steel. Inventories per unit of output are also much higher than in market economies; in Hungary, for example, the ratio is more than two to one (Kornai, 1982). This is clearly a consequence of the general climate of shortage, and it is not surprising that the actual figures for inventories are those that deviate the most from plan targets. In three consecutive five-year plans in Poland actual figures for inventories were between 23.5% and 48.8% in excess of the targets

(Maciejewski and Zajchowski, 1982). But even though shortages are more relative than real, excess demand is very real, since resources of the right quality and type are not always available at the right time and place.[6]

One important result is *higher production costs* as enterprises strive to achieve or exceed planned quantity targets or catch up the time lost owing to late deliveries of material inputs. Another is *lower quality* when enterprises decide not to wait and use substandard inputs. Lower quality is, of course, also inherent in rushed production. However, suppliers' careless attitude to cost and quality is due not only to specific supply problems but also to the general pressure for more output. The lack of concern tends, in turn, to demoralize the labor force, which becomes equally careless about materials and equipment since not only enterprises but also workers enjoy a sellers' market.

Cost overruns are the normal outcome and they are offset at higher levels of the bureaucratic hierarchy by granting subsidies, lower taxes or price increases on the tacit understanding that quantity — always in short supply — is what counts most. Thus "hard" direct orders to produce are accompanied under central planning by "soft" budget constraints on input costs (Kornai 1979, 1980). Quantity performance becomes almost completely divorced from financial performance, potentially forever. Even under Hungary's modified system, there was hardly any change in the list of the enterprises making the largest losses from 1968 to 1980, just before the next phase of systemic modifications (Csaba, 1983).

I have so far considered only the producer goods market. This is a legitimate approach since the world of central planners (lumped together here with the intermediate levels of the bureaucratic hierarchy) and enterprises accounts for most of the fundamental distortions. Nonetheless their consequences spill over into the consumer goods market.

Higher production costs resultant from shortages, as described above, spill over into the consumer goods market through labor hoarding and overtime, which cause plan targets for wage fund growth

[6] This is why disequilibrium empiricists' attempts to apply their theory to STEs by adding excess supply here and excess demand there completely miss the point. There are no forces in the economy to produce equilibrium by reallocating excess supply to reduce excess demand. For criticisms of this approach, see KORNAI 1982, KEMME and WINIECKI 1984, and WINIECKI 1985.

to be exceeded. For instance, in Poland the wage fund and average wages were among the aggregates, together (and not by chance, cf. section 3) with investment, that deviated the most from yearly plans in 1960-1975 (Maciejewski and Zajchowski, 1982). Since increased incomes were not matched by commensurate increases in consumer goods, excess demand was created on the demand side.

Kornai (1979, 1980) strengthens the case when he notes that producer and consumer good enterprises often compete for "universal" material inputs. The general climate of shortage and central planners' deeply rooted preference for producer goods lead to policy interventions during yearly plans to reallocate inputs from consumer to producer goods. An inflationary gap is thus created on the supply side as well, since not only is demand greater than planned but supply also often falls short.[7]

2. Central Planning and Uncertainty: The Twin Brothers

As early as 1963 Grossman stressed the sisyphean nature of Soviet central planners' efforts to maintain the semblance of balance in the national economy in the absence of scarcity prices.

With millions of intermediate and final products being manufactured in STEs,[8] the thousands of so-called material balances drawn up by central planners at every level of the bureaucratic hierarchy inevitably leave a wide margin of uncertainty. Everybody makes this point when discussing the balancing problems of central planning, but equating size with complexity in this way is based on two assumptions: first, that the data used for material balances reflect reality; and second, that the macroeconomic balance between supply and demand excludes shortages.

[7] It is worth mentioning that linkages between the two sectors are not only through earnings but also through spending. Enterprises and bureaucratic institutions buy consumer goods (radio and TV sets, carpets, etc.) thereby increasing the inflationary gap. On the other hand, consumers obtain otherwise unavailable goods spirited away from factories and construction sites, thereby decreasing the gap.

[8] Some 20 million in the Soviet Union (Wiles, 1977), 8-10 million in Poland (Lipowski, 1981), 5 million in Czechoslovakia (privately supplied figure) and 2 million in Hungary (Wiles, 1977).

The discussion so far suggests that neither of these assumptions holds for STEs. The structure of incentives causes the reports on plan results to overstate quantity and/or quality and thus put balancing activities on a very shaky ground.

A balance at the planning stage will often hide excess demand that appears during implementation, either because the quantity falls short of the planned amount or because lower quality has to be made good by a larger quantity. Moreover, even if the quantity and quality in the balance are achieved, the existence of macroeconomic balance does not mean that inputs of the required quantity, quality and type will be delivered at the right time in the right place. Even excess supply does not exclude microeconomic shortages,[9] since, in the absence of a proper price system and hard budget constraints, there are no forces in STEs to make enterprises shift the excess supply to where it is needed.

Thus, system-specific features heighten the problems arising from the size of the economy and make uncertainty the twin brother of central planning at both the formulation and the implementation stage. This uncertainty is not only high, but tends to increase with the level of the bureaucratic hierarchy.

The direct (or, in modified STEs, indirect) subordination of enterprises to the higher levels of the hierarchy does not mean they have no cards to play. Indeed, they can usually, in the objective matrix game, manage to keep out of the central planners' quadrant (minimum input/maximum output) and establish a favourable target in the maximum input/minimum output quadrant.[10]

It is worth noting, however, that, despite pressure from above, the middle levels of the hierarchy usually support the resource claims of "their" enterprises.

But if higher production growth figures are adopted owing to pressure from above, uncertainty is increased throughout the system and not only among enterprises, since they can usually find reasons to justify plans not being achieved in full (when cannot be reported as such). They can be reasonably sure shortages will occur during the period of the plan and allow them to blame somebody else, have their targets reduced and receive most of the plan-related rewards.

[9] Owing, for instance, to excessive inventories in STEs, a point made by Grossman as long ago as 1963.

[10] This point is well made in Soos (1985), which I received after writing the above.

The game described above is not new in the literature, dating back to the early works of Berliner on Soviet enterprises (1952, 1956, 1957), but it is important for its impact on the distribution of uncertainty. When all but the highest level of the hierarchy seek to report better-than-actual performance,[11] the only undistorted figures are those at the enterprise level or, to be more exact, those remaining *within* enterprises (figures reported upwards are often doctored). The relative strength of enterprises lies precisely in the fact their information is less unreliable.

Enterprises maintain their relative strength during the implementation of plans since they can count on less distorted data than those responsible for assessing the prospects of achieving plan objectives. Managers know the true levels of employment (often not reported upwards for fear of orders to "compress it"),[12] productive capacity (affected, however, by machinery breakdowns and variable input quality) and inventories (but not the variable quality of stocked inputs). Uncertainty is greatest with regard to inputs from other enterprises. On the other hand, there is almost no uncertainty about output. Enterprises can count on there being demand for almost anything they care to produce in the prevailing sellers' market.[13] Goods are shipped to purchasers almost as fast as they are produced. The data for STEs and market economies on shares of inputs and products in the inventories of manufacturing enterprises confirm this, with the STE shares of product inventories between 1/2 to 1/3 of the market economy shares (see Table 2).

The situation is different at higher levels of the hierarchy. The higher you go, the more aggregated and distorted the figures. They probably look better, with some enterprises exceeding their monthly or quarterly plan targets and offsetting the shortfalls of others. These figures are misleading, however, because they include an unknown proportion of nonexistent and substandard products that will upset production elsewhere.

[11] The economic history of Eastern Europe offers several cases of self-deception at the top, but usually the center wishes to know the real situation, even if it subsequently tries to deceive others (the country, the world at large, etc.).

[12] One the code words for redundancies.

[13] If demand fails to materialize, there will be almost no financial consequences owing to the flexible budget constraints in STEs.

TABLE 2

THE STRUCTURE OF INVENTORIES IN INDUSTRY IN SELECTED SOVIET-TYPE AND MARKET ECONOMIES (in percentages)

Countries	Year	Share of total stocks in industry			
		Raw materials, purchased intermediate products, fuels, etc.	Unfinished production, produced intermediate products	Spare parts for equipment	Finished products, goods for resale
1	2	3	4	5	6
Czechoslovakia	1981	64.5	21.3	n.d.[a]	10.4
Hungary	1976	n.d.	n.d.	n.d.	11.9
Poland	1970	63.0	21.9	n.d.[a]	15.1
	1980	63.5	24.5	n.d.[a]	12.0
	1983	62.9	23.2	n.d.[a]	13.9
Soviet Union	1970	59.3	22.3	3.9	14.6
	1980	57.7	23.5	4.9	14.3
East Germany	1963	n.d.	n.d.	n.d.	15.4
Austria	1976	n.d.	n.d.	n.d.	32.1
Canada	1970	n.d.	n.d.	n.d.	31.3
Japan	1975	n.d.	n.d.	n.d.	53.2
Sweden	1977	n.d.	n.d.	n.d.	38.2

[a] Included in column 3.

Sources: For Czechoslovakia, Poland and the Soviet Union, National Statistical Yearbooks and my calculations; for the other countries, KORNAI (1982).

Thus, aggregate economic growth figures may not deviate significantly from plan owing to the offsetting described above together with upwardly distorted reporting. However, aggregate plan indicators that are not affected by such distortions will deviate markedly from the plan, as will less aggregate indicators.

Remarkably candid data on the scale of these deviations recently published in Poland, covering 182 plan indicators for the period 1960-1976, prove the point. According to Maciejewski and Zajchowski (1982), only in 19.3% of the total cases was the deviation from plan less than 1% (Table 3). In 39.1% of the cases the deviation exceeded 5% and in 19% it was over 10%. Thus, the number of cases of exact plan

TABLE 3

THE PATTERN OF DEVIATIONS OF ACTUAL PRODUCTION FIGURES FROM PLANNED AND PREDICTED[a] ONE FOR 198 POLISH INDICATORS FOR THE YEARS 1961-1976

The range of deviations in percentages	The deviations from the plan	The deviations from the predictions
1	The percentage of cases within a given range 2	3
0 - 1	19.3	36.6
1 - 2	14.2	19.7
2 - 3	11.5	11.3
3 - 4	8.4	6.9
4 - 5	7.5	4.6
5 - 6	5.7	3.6
6 - 7	4.9	3.4
7 - 8	3.5	1.7
8 - 9	3.0	2.4
9 - 10	3.0	1.7
10 and more	19.0	8.1

[a] Predictions made in September each year.
Source: MACIEJEWSKI and ZAJCHOWSKI (1982).

achievement was equal to that of shortfalls and overshoots in excess of 10% (which, of course, have the same disequilibrating effects in a basically closed economy).

Significantly, the same publication shows considerable uncertainty about actual results continuing almost until the last moment. No less than two thirds of the September predictions of end-year production were more than 1% off the mark and in 20.9% of the cases by more than 5% (Table 3).

Uncertainty is widespread under central planning and, like shortage and excess demand, endogenous to the system. Those who maintain that growth maximization strategy, a policy-specific rather than a system-specific feature, is at the root of these phenomena would see them all persisting under "slack", "modest" or "reasonable" plans, as well as under more familiar "taut", "ambitious" and "optimistic" ones. The whims and wishes of the center (central planners and their political masters) can affect economic performance, but this is *over and above the*

problems the system itself endogenously generates. Shortages, excess demand and uncertainty existed in Poland under both cautious Gomulka and reckless Gierek.

3. Investment Cycles and Excess Demand: A Dynamic Picture

In the foregoing I have depicted STEs as suffering persistently from shortages, excess demand and uncertainty for system-specific reasons. But, although true, this picture is a static one. STEs undergo rapid accelerations and decelerations, above all in the investment component of their GNP equivalent (net material product-NMP). I shall argue that these fluctuations have exerted a powerful and growing influence on the pattern of shortage and excess demand under central planning.

Many different reasons have been advanced for the cyclical fluctuations in investment in STEs (see Bajt 1971, Tamas Bauer 1978, Dahlstedt 1980 and Winiecki 1982). I shall therefore begin by refuting some of the most commonly held views and then restate my own view on investment fluctuations,[14] both in general and specifically in relation to five-year planning horizon, describe the "model" investment cycle and try to explain deviations from it.

The most common view is that excess demand for investment stems from perceived shortages indicating the need to increase production. It is this demand, augumented by all the formal and informal incentives encouraging enterprises (and their superiors in the bureaucratic hierarchy) to boost investment, that gives rise to recurrent over-expansion followed by cutbacks. However, regardless of whether the advocates of this view see excess demand positively as a "right to grow" (*e.g.* Pajestka 1975) or negatively as a "growth psychosis" (*e.g.* Romuald Bauer *et al.*, 1972), they miss the most important point.

If production growth is so highly regarded by the multi-level bureaucratic hierarchies of STEs, why does it have to be achieved through investment, and preferably new investment? An obvious alternative is through innovation, *i.e.* technology changes and/or the

[14] For a more detailed treatment, see my earlier study (WINIECKI, 1982).

reorganization of the production factors and inputs already available.[15] Hence, it is not production growth *per se* but production growth through investment that enterprises seek.

Another explanation of the excess demand for investment is that it used to involve no costs for enterprises since most investments were financed from the state budget (Khachaturov, 1975). Cost, *i.e.* financial considerations, cannot be taken too seriously, however, when enterprises' budget constraint is soft. Moreover, changes in central planning in the 1960s and 1970s increased the role of self-financing and credit, while investment has nonetheless continued to be the preferred method of expansion. Thus, the causes of the excess demand for investment must lie elsewhere. The structure of incentives appears to be also the main source of excess investment demand.

In an earlier study [16] I stressed the importance of risk-averting behavior under central planning. Managers assess growth potential within the framework of present and future plans primarily with the aim of *minimizing the risk* of failing to achieve production targets in the short term. The smaller the risk, the lower the probability of losing premiums and bonuses tied to the achievement of the plan (as well as the good opinion of superiors). From the standpoint of managers the risk of expansion through (preferably new) investment is by far the smallest.

First, technical and managerial [17] innovations have to be introduced into the existing production facilities and the workers operating these facilities are primarily interested in achieving the targets of the current planning period (given the incentive system). Even if innovation would increase production in the end, there is the risk of too long a gestation period and disturbances to production schedules. Moreover, experience has taught that higher productivity only leads to higher targets in the next planning period (commonly known as the "ratchet" principle). In other words, an extra effort this year could make it more difficult to achieve the following year's targets and earn premiums and bonuses.

[15] In economic theory the latter has been called "learning-by-doing" (ARROW, 1962) or the "Horndal effect" (LUNDBERG, 1961).

[16] For somewhat similar explanations, see also TAMAS BAUER (1978), LIBURA (1979) and WINIECKI (1982).

[17] The latter ought really to be called entrepreneurial.

By contrast, expansion of production capacity through new investment costs little effort and, more importantly, is risk free. A new plant or an expansion of the existing one is *outside* the existing facilities and does not interfere with their production schedules. Even if production from new capacity is included in a plan but fails to materialize owing to delays in its completion, the responsibility lies with a construction enterprise and the rewards for achieving or exceeding plan targets with existing capacity are not lost.

The analysis of excess investment demand in terms of risk-averting behavior also explains the general preference for new investment over less costly modernization projects and shows why various reforms in the 1960s and 1970s designed to limit the *absolute* attractiveness of investment were doomed to fail. A reduction in the *relative* attractiveness of investment compared with innovation, coupled with other far-reaching changes in the system, would be required to reduce the demand for investment of risk-averse managers. It should be noted in passing that even the farthest reaching reforms of the period, *i.e.* the Hungarian reforms of 1968, produced little (or no) reduction in the excess demand for investment (see Drecin 1971 and Drecin and Tar 1978). Nor were the modifications in Hungary and elsewhere in the late 1970s and early 1980s any more successful. Although investment growth rates fell significantly in the STEs, with absolute declines in some, the results were almost always above plan targets (Economic Survey of Europe, 1982, 1983 and 1984).

I now turn to the question of the cyclical expansion and contraction of investment and for this purpose shall set the risk-averting behavior of enterprises in the framework of planning with its typical five-year time horizon. During the preparation of the investment part of a plan enterprises obviously present their investment demands to the higher levels of the hierarchy in the best possible light. Thus they often underestimate the costs of projects and/or overestimate the benefits. It is the time-honored method of "hooking into the plan", based on the belief that cost overruns will be tolerated since abandoning of unfinished projects would incur the losses for the national economy.[18] This is just another manifestation of Kornai's soft budget constraint principle.

[18] Such behavior has been repeatedly highlighted in East European literature (see KHACHATUROV, 1975, for the Soviet Union; TAMAS BAUER, 1978, for Hungary and Czechoslovakia; and Krawczyk (ed.) 1981 for Poland).

Though central planners set preliminary limits for individual ministries, and the latter for unions of enterprises, they are mostly disregarded since the incentive system causes every enterprise to vie to expand production. Thus, when the demand for investment is aggregated at the central level, it usually far exceeds the funds (and capacity) earmarked for investment in the next planning period and cuts are ordered down the line.

However, central planners are not in a position to assess individual projects (though this is done in general terms for a few major projects). Cuts are normally financial; ministries are ordered to cut planned expenditure by a specified amount or percentage. This is repeated at each level until, in the end, a few projects are dropped while all the others receive less than requested. *Cuts from above increase the distortions built-in from below* since the real cost of planned investment has usually been underestimated at the start.

Accurate estimates of these underestimates are rarely made but a 20-50% range of project cost overruns has been mentioned for Hungary (Brody, 1983), while for industrial investment projects in Czechoslovakia in the late 1970s we have an estimate of 25.4% (Srejn and Novotny, 1980). The corresponding figure for the Soviet Union in the late 1960s was 37.4% (Plyshevsky (ed.), 1972). Projects incur not only cost overruns but also completion delays. Completion is often from 50% to over 100% longer than planned (see Brody, 1983 for Hungary and Khachaturov, 1975 for the Soviet Union). Thus, project cost increases come over a longer period, while yearly expenditure overruns include not only cost overruns on planned projects but also the cost of originally unplanned projects.

Five-year plans thus start with significant built-in distortions in the investment component, which exert a cumulative pressure on aggregate equilibrium (or, rather, a lower level of disequilibrium).[19] Shortages multiply and excess demand begins to grow; the producer goods and construction sectors try to meet investment demand but it is here that underestimated costs and/or overestimated results produce their greatest impact. On the one hand, new factories whose output has been included in planned production do not reach expected capacity or sometimes even start production; on the other, expenditures have already been incurred and wages, premiums and bonuses paid.

[19] Outlining his four phase cycle, TAMAS BAUER (1978) used two independent variables: the number of investment projects started and the total value of investment in each period. The former, however, is not available as a series for longer periods or across countries. Moreover, it is of minor importance for the scale of disequilibrium, though this is increased by excessive inventories of materials at too many project sites (here again, of course, the netting out of inputs does not make sense!).

Aggregate disequilibrium usually reaches its peak in the middle of each medium-term plan (five-year since the early 1960s). Critics of this assertion, who note, for example, that investment projects take shorter or longer than five years, should realize that a five-year horizon acts as a corset on real economic processes and strongly influences the behavior of economic agents and central planners. The latter see investment cost and wage fund increases substantially exceeding targets, while new capacity is late in coming on stream to relieve shortages of both producer and consumer goods. In addition, input shifts (see section 1) aggravate the situation in the consumer goods market. When half the planning period has gone and new capacity is still long way off, there is a tendency for planners to intervene. Since some investment projects will not be completed by the end of the five-year plan, they concentrate on those deemed most important and/or on decreasing the disequilibrium on the consumer goods market. If the second goal is pursued, it naturally affects the selection of projects to be given priority. Many projects are "mothballed" until the next plan, while others are abandoned. It is at this point that the economy begins to bear the burden of so-called "costs without benefits", since mothballed and abandoned projects appear only on one side of the account.

In the rest of a five-year plan no major investment projects are usually started while those selected are completed. If the cuts are substantial and enough consumer goods' projects are completed, the excess demand for producer goods is reduced as is the inflationary overhang in the consumer goods market. Sometimes, however, the inflationary overhang is so large that it cannot be eliminated through increased supply alone; the excess demand also has to be reduced simply to return to a lower level of disequilibrium, and price increases are announced. Thus, by the end of the plan period equilibrium or a low level of disequilibrium is restored, ready for the start of the next cycle.

4. Investment Cycles: Facts, Nature and Implications

The model outlined in the preceding section considers the investment cycle under central planning as an endogenously generated phenomenon. Actual cycles may, of course, deviate from the model in their timing, but they generally conform to the pattern described above.

Table 4 shows that the average investment growth rate of the 2nd and 3rd years of five-year plans exceeded that of the 4th and 5th years in over 60% of the five-year plans between 1961 and 1980.

Moreover, the concordance ratio is significantly higher when the cases of investment growth rates influenced by factors exogenous to the cycle are excluded.[20]

In addition to these cases affected by timing changes, it is also necessary to exclude those distorted by major changes in central planning institutions and instruments, especially when these did not coincide with the beginning of a plan. In practice all the systemic changes in the smaller STEs were introduced in the middle of plans.

Partial decentralization giving enterprises greater scope (without imposing a corresponding hard budget constraint) invariably led to an acceleration of the investment growth rate. The introduction of the "New Economic System of Planning and Management" in East Germany in 1963 more than doubled the growth rate of investment in the next two years. The more far-reaching changes made in Hungary in 1968 had the same effect — starting from an already high rate of 10.5% in 1967-68, investment growth doubled to 25% in 1969-70. It took longer to curb this investment boom — investment increased by a further 11% in 1971 (the first year of the next plan) and only slowed in 1972-73. In this case the exogenous disturbance distorted the investment pattern of two consecutive five-year plans.

Czechoslovakia's 1966-70 plan could be excluded on the same grounds, since the 1968 reforms came in the middle of a plan and investment accelerated immediately. However, the Soviet invasion resulted in the reforms being abandoned in 1969 and a freeze on investment reduced its 1970 growth rate to only 1% (compared with 13% in 1969).

Although Poland did *not* introduce any reforms in 1968, it did make a strategy change with the aim of increasing the specialization of its economy. This was doomed to failure for system-specific reasons, but the change nonetheless resulted, as might have been expected, in the investment rate rising in 1969-70 compared with the already high average rate of 9% in 1967-68. The strategy was abandoned with the fall of Gomulka and did not affect the investment pattern of the subsequent plan.

Thus, even ignoring the Polish changes but excluding four cases (five five-year plans in view of the carry-over effect in Hungary), the concordance ratio rises to over 73%. However, all or most of the 1971-75 plans might well be excluded as well.

Central planners are well known to dream of implementing *just one* five-year plan without having to curb the investment program and thus complete all the planned new productive capacity. The extra resources needed both to prolong the investment expansion and to reduce the inevitable excess demand in the consumer goods market came, more or less by accident, in the 1970s, when the combination of *detente* and surplus liquidity (caused by the first oil price explosion) allowed all the

[20] To begin with, the 1961-1965 Soviet plan should be excluded since the 1959-1965 seven-year plan was started and then abandoned; and because a separate plan was drawn up for 1964-1965. The 1956-1960 and 1961-1965 periods were only presented in Soviet statistics as five-year plans *ex post*. Consequently, investment increased rather fast in 1959-1961, while plan changes slowed the rate of growth (with investment accelerating again during the 1964-1965 plan). On these changes, see DAHLSTEDT (1980) and the sources he cites.

TABLE 4

AVERAGE ANNUAL INVESTMENT GROWTH RATES FOR THE 2ND AND 3RD YEARS AND THE 4TH AND 5TH YEARS OF EACH FIVE-YEAR PLANNING PERIOD

Countries	Years within the planning period	Average growth rate			
		1961-65	1966-70	1971-75	1976-80
Bulgaria	2-3	11.0	17.0	8.5	5.0
	4-5	9.5	6.0	12.0	3.0
Czechoslovakia	2-3	–7.0	7.5	9.5	3.5
	4-5	9.0	7.0	6.5	2.5
East Germany	2-3	3.5	10.0	6.5	3.5
	4-5	9.0	11.5	4.5	1.5
Hungary	2-3	11.5	10.5	1.0	8.0
	4-5	2.0	25.0	7.5	–2.5
Poland	2-3	7.0	10.0	24.0	3.5
	4-5	6.5	11.0	18.5	–8.5
Rumania	2-3	10.5	14.5	9.0	14.0
	4-5	9.0	9.5	14.0	3.5
Soviet Union	2-3	5.0	8.0	6.0	5.0
	4-5	9.0	16.5	8.0	1.5

Source: CMEA *Yearbooks*, various years and National Statistical Yearbooks, various years.

STEs to borrow capital in the West. At least five countries (Bulgaria, Hungary, Rumania, Poland, and the Soviet Union) borrowed relatively large sums during their 1971-75 plans, enabling investment growth to continue at a high rate in 1974-75, *i.e.* in the last two years of their five-year plans. The dream did not come true because investment problems multiplied, but the investment cycle was exogenously disturbed by the strategy change. If the 1971-75 plans are excluded (Hungary's was already out on other grounds), the concordance ratio rises to over 84% (16 out of 19 cases).

The few remaining deviations from the model may have been caused by policy mistakes of one of three kinds: first, investment cuts may be made late so that their effects carry over into the following plan; second, investment cuts may be too small to reduce the excess demand in the markets for producer and consumer goods and restrictions have to be maintained into the subsequent plan; and, third, investment cuts may actually increase excess demand if central planners and their political masters decide to press on with large priority projects in the producer goods and infrastructure sectors at the expense of projects in the consumer goods and non-productive sectors. This choice is bound to increase disequilibrium and later require deeper cuts and longer periods of restraint affecting also the subsequent plan.

The superficial similarity of investment fluctuations in STEs and market economies appears to have led some authors to equate the problems these two systems have to cope with (*e.g.* Brody, 1983). Nothing, however, is farther from the truth.

Business cycles in market economies provide continuous tests of efficiency and of the "creative destruction" process, as Schumpeter called it. They ensure that firms that underperform for any reason pay in lost markets, sunk costs due to abandoned investment projects and, ultimately, in lower profits; while those that failed disappear. This process continuously weeds out inefficiency from the marketplace. Nothing even remotely similar is simulated under central planning, where neither the profitability of projects, nor even that of investing enterprises, is considered while deciding on investment cuts.

Central planners decide on investment cuts in the same way as on investment in general, on the basis of an overabundance of ill-defined priorities and rudimentary requirements for what passes as balance in STEs (*i.e.* a lower level of disequilibrium), with more compelling requirements for external balance. The lack of scarcity prices and the uncertainty generated by the system-specific features described in

section 2 allows little else. Actual practice, however, is even *less* satisfactory since the pressure of interest groups, coupled with incomplete and distorted information, usually prevents the center from choosing solely on the basis of its own, albeit vague, criteria.[21]

Generally speaking, while the market leads to the survival of the fittest, *i.e.* the most efficient, central planning leads to the survival of the strongest, *i.e.* those with the most backing by economic and/or political hierarchies. Without scarcity prices, almost anything can be "proved" by "*economic efficiency calculus*". Consequently, in a bureaucratic sense, every investment project is defensible (see Libura, 1979).

The wastefulness of the investment process under central planning is clearly revealed by the fact that changes in STEs' GNP equivalent (NMP) are more strongly correlated with investment *efforts* than with investment *effects*. NMP growth rates are much more closely related to *unlagged* investment growth rates than to those lagged by one or two years. Thus, it is investment activity itself that primarily contributes to economic growth, while just when the effect of earlier investment could be expected to make itself felt most strongly (as new capacity is put into commission), the correlation becomes weaker and sometimes even nonexistent. Table 5 shows the correlation coefficients for these two variables with and without lags in 1961-77 and 1961-83.

It is interesting to note that the process is not only wasteful but also *increasingly wasteful*. Addition of the six years not only increased the correlation coefficients considerably but also improved their significance. *As the complexity of STEs increases, efforts seem to yield diminishing returns*. For investment this means not only worsening ratios of outlays to returns but also lengthening completion periods with their deleterious effects on equilibrium in both producer and consumer goods markets, on the modernity of the technology adopted and longer payback periods, etc. That the long completion periods commonly complained about in East European publications on investment (Stojkov 1983 for Bulgaria; Peknik 1983 and Srejn and Novotny 1979 for Czechoslovakia; Kornai 1982 and Soos 1983 for Hungary; Khachaturov 1975 and 1979 for the Soviet Union, etc.) are growing longer is confirmed by the statistics showing the ratio of expenditures on unfinished investment to yearly investment expenditures. Although not

[21] This is a complaint heard from the center everywhere under central planning (for the Soviet Union, see KHACHATUROV, 1975).

TABLE 5

CORRELATION COEFFICIENTS (r)[1] BETWEEN ANNUAL GROWTH IN NET MATERIAL PRODUCT AND INVESTMENT IN: 1961-1977 AND 1961-1983 (in percentages)

Countries	1961-1977			1961-1983		
	With no lag	With investment lagged 1 year	With investment lagged 2 year	With no lag	With investment lagged 1 year	With investment lagged 2 year
Bulgaria	0.46[2]	0.12	–0.12	0.52[2]	0.09	0.12
Czechoslovakia	0.53[2]	0.55[2]	0.31	0.77[4]	0.66[4]	0.39
East Germany	0.41	0.37[2]	–0.46	0.49[2]	0.37	0.37
Hungary	0.31	–0.15	–0.07	0.64[4]	0.23	0.23
Poland	0.43[2]	0.52[2]	0.09	0.90[4]	0.78[4]	0.54[3]
Rumania	–0.14	–0.27	–0.33	0.59[3]	0.45[2]	0.06
Soviet Union	0.46[2]	–0.02	–0.23	0.56[3]	0.19	0.07

[1] r = Pearson correlation coefficient.
[2] Correlation coefficient significant at the 0.05 level in two-tailed test.
[3] Correlation coefficient significant at the 0.01 level in two-tailed test.
[4] Correlation coefficient significant at the 0.001 level in two-tailed test.
Sources: see Table 4.

internationally comparable owing to different accounting practices, the STE ratios in Table 6 highlight the increase in every country since the early 1970s.

In view of the waste it entails, the burden central planning imposes on the national economy grows heavier over time. Costly projects based on obsolete technology need modernization almost from the start. Thus, each new planning period is seen as "obviously" requiring a further rapid rise in investment. The long run that should bring a substantial increase in consumption as a result of earlier periods of high investment never comes.[22] Investment becomes not so much deferred consumption as *deferred further investment.*

[22] In a similar vein see LIBURA (1979) and, more obliquely, SREJN and NOVOTNY (1979).

TABLE 6

RATIO OF UNFINISHED INVESTMENT[a] TO ANNUAL INVESTMENT[b] IN SELECTED STEs IN THE 1960-1983 PERIOD[c]

Year	Unfinished to annual investment ratio			
	Bulgaria	Czechoslovakia	Hungary	Soviet Union
1960	0.64	n.d.	0.59	0.69
1961	n.d.	n.d.	0.67	0.76
1962	n.d.	n.d.	0.74	0.76
1963	n.d.	n.d.	0.64	0.72
1964	n.d.	n.d.	0.65	0.68
1965	0.72	n.d.	0.67	0.69
1966	n.d.	n.d.	0.70	0.71
1967	n.d.	n.d.	0.69	0.72
1968	n.d.	n.d.	0.79	0.77
1969	n.d.	1.16	0.76	0.80
1970	0.87	1.20	0.78	0.73
1971	1.07	0.88	0.79	0.74
1972	1.13	1.00	0.83	0.78
1973	1.22	0.96	0.79	0.77
1974	1.05	1.03	0.83	0.77
1975	1.01	1.01	0.73	0.75
1976	1.13	0.87	0.76	0.80
1977	1.03	1.05	0.79	0.85
1978	1.06	1.06	0.84	0.85
1979	1.13	1.37	0.88	0.91
1980	1.03	1.31	0.94	0.87
1981	1.03	1.28	0.98	0.86
1982	1.01	1.39	1.03	0.84
1983	n.d.	1.26	0.95	0.80

[a] In actual prices of machinery and costs to the builder.
[b] In current prices.
[c] The indicator is not really internationally comparable owing to different accounting practices for uninstalled machinery.
Sources: National Statistical Yearbooks. My calculation.

5. Beyond Quantity: An Impossible Dream?

Before leaving the question of quantity under central planning and turning to that of quality and innovation, one theoretical issue is worth mentioning, especially as it also has an important bearing on quality. It is the effect of frustrated consumption expectations upon production. Obviously, households form consumption expectations and, if these are frustrated by large increases in excess demand (shortages, long searches, etc.), they react by reducing both the quantity and the quality of labor supplied.[23] The lag with which such reactions occur is difficult to estimate (and may differ from one STE to another), but it can be assumed to be shorter than the horizon of a planning period. In turn, the reduction in the labor supply affects the level of production. This situation is comparable to expected and unexpected money supply growth in a monetarist model of a market economy. An unexpected increase in the level of shortage may cause no immediate labor supply reaction. However, as time passes and the situation does not improve or even gets worse, households come to expect the new level of shortage to continue and reduce their labor supply.[24]

The reduction in labor supply also entails lower quality, because workers frustrated by the increasing level of shortage not only decrease the time they spend working (staying longer in the canteen, slipping out to queue for goods and taking more sick leave, etc.), but also work less hard and neglect product quality. Managements tolerate such behavior in view of the excess demand for labor and the stress placed on achieving plan targets regardless of cost. Thus there is a twofold negative impact on workers' attitudes toward quality under central planning — stemming from both production and consumption experience.

Low quality even afflicts recent developments such as the production of goods under licence from Western firms. The Bulgarian party leader, Todor Zhivkov, used the term "Bulgarisation" to describe the rapid deterioration of quality following the departure of Western specialists and the substitution of local materials and components for imported ones. Such downgrading is, of course, also notorious in the other STEs.[25]

[23] LIBURA (1979) stresses that households react (obviously in the longer run — J.W.) not only to frustrated private consumption expectations but also to frustrated public consumption ones.

[24] It follows that household may continue their labor supply reaction some time after a subsequent decrease in the level of shorthage, *i.e.* until they adapt their expectations to the new conditions.

[25] See MONKIEWICZ (1983) for Poland and DEZSENYI-GUEULLETTE (1983) for Hungary.

The increasing frequency of such signals and criticism is hardly surprising in view of the growing complexity of economic activity and the increasing sophistication of products. Higher input standards and more components per product entail greater complexity, while the ability of STEs to cope with it is simultaneously diminished by their slow-moving multi-level hierarchies. Moreover, not only quantity but also quality difficulties are aggravated by the long-term impact of central planning itself.

The above considerations obviously do not mean that STEs are completely unable to produce goods of normal or even high quality. Indeed, Soviet weaponry, as well as some East European manufactures exported to the West, proves that they can. The point I want to make is that *system-specific reasons prevent STEs from producing normal, i.e. world standard, quality goods at a normal cost.* The military products and goods for export that are made to meet lower-to-medium world quality standards entail a high extra cost in terms of both higher quality material inputs (or the screening of a much larger quantity) and additional labor inputs in assembly, finishing, quality control, and packaging.

A popular myth among central planners and their political masters (as well as many orthodox economists in Eastern Europe) is that the basic cause of the quality problem is excess demand and that excess supply would bring a great improvement. Accordingly, they press for even larger quantity increases.[26] This view is entirely mistaken, however. On the infrequent and shortlived occasions that there has been an excess supply of some consumer goods, the market was flooded with goods of equally poor quality as under conditions of excess demand.

The reasons for the lack of quality improvement should have been obvious from the start. Without scarcity prices serving, among other things, to differentiate between products of different quality, without hard budget constraints forcing enterprises to stop unwanted production under the threat of bankruptcy and, last but definitely not least, without domestic and foreign competition coupled with hard budget constraints combining to put pressure on enterprises to raise product quality, nothing will change for the better. The bureaucratic measures and propanganda campaigns beloved by communist apparatchiks are of no help. Neither new laws on product quality nor the declarations of

[26] For an early critique of this view, see BEKSIAK and LIBURA (1974).

party plenary meetings on the need to pay more attention to quality will change established practices in STEs in the absence of market discipline. The increasing frequency of such exhortations is just another signal of the growing problems STEs face in this area.[27]

In discussing the inability of STEs to produce goods of acceptable quality without special effort, I was using the term quality in a narrow sense. I suggested that what was unattainable under central planning was an acceptable quality of materials and labor (craftsmanship). But the term quality, especially when contrasted with quantity, has a broader sense that extends to the technological sophistication (or level of modernity) of products and processes. It follows that the issue of innovation as a factor contributing to quality needs to be considered.

I have already shown how the structure of incentives strongly discourages technical change, and the innovation problem is even more intractable than that of quality in the narrower sense. The same factors — the structure of incentives, soft budget constraints and lack of competition — combine to stifle interest in innovation. New products and processes are accepted most easily when new plants are specially built for them.[28] In this way they come under the heading of investment rather than of innovation. Underpaid engineers and technicians [29] show scant interest in applying their knowledge to anything except routine activities. And when they do, they come up against the barrier of disincentives at the enterprise level.

Thus, except when pressed from above to upgrade technology, enterprises promote technical changes in existing facilities that are compatible with their basic risk averting behavior. This means that technological change should not be on too large a scale. Small changes

[27] The quality differences between East German and Czechoslovak products on the one hand and, say, Bulgarian and Soviet ones on the other are sometimes seen as being due to the "different stage of socialist development" rather than the effect of socialism itself. However, East German and Czechoslovak goods are themselves of lower quality than those produced in the West, and in any case the difference *did not exist before World War II*. Consequently, today's quality gaps reflect different stages of *capitalist* development. In other words, the labor force in countries that industrialized before communist rule has an industrial tradition that prevents them conceiving that they could worsen their performance much more, while, lacking this tradition, the labor force in other STEs can downgrade their performance much more (and from a lower initial level to begin with).

[28] A survey of managers of Czechoslovak enterprises conducted by the Planning Commission and Ministry of Labor and Social Welfare showed that a large majority indicated they would not introduce more technologically sophisticated products on their own initiative if it entailed abandoning any of those already in production (LEVCIK and SKOLKA, 1984).

[29] Not only are they underpaid but their salaries tend to decline relative to workers' (*e.g.* in Poland and the Soviet Union) or are already at or below this level (*e.g.* in Bulgaria and the GDR).

in products and processes minimize the risks of failure, delay or other reward-threatening disturbance. A special, and highly profitable, change of this kind involves making a small scale technical change to look like a large one, *e.g.* introducing of a pseudo-new product whose price increase relative to that of the old one by far exceeds the improvement in use value.[30]

Under the circumstances technical change is slow in STEs, and the new products and processes that are introduced are mostly marginal improvements over existing ones. What is heralded as new in an enterprise or even in an STE is rarely new in the world market.[31] In general, *closing the quality gap, whether in the narrower or the broader sense, has proved beyond reach for STEs*. The distance does not even seem to decrease, notwithstanding a decade of relatively heavy technological borrowing.

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[30] On pseudo-innovations, see CSIKOS-NAGY (1975) and GROSSMAN (1977).

[31] Czechoslovakia is a case in point. The share of new products in the gross value of industrial production in the late 1970s was 6.7% for products that were new at the enterprise level and 5.8% for products that were new at the national level, but only 0.3% for products that were for products that were new in the world economy (KLVACOVA, 1982).

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