

**TOWARD MODELS FOR ANALYSIS  
OF CORPORATE RESTRUCTURING**

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**VERS DES ANALYSES MODELISEES  
DE LA RESTRUCTURATION DES ENTREPRISES**

**RESUME**

Une série de modèles, élaborés par différents auteurs et ayant pour objectif l'analyse de quelques aspects de la restructuration dans les Pays d'Europe Centrale et Orientale, est présentée dans ce texte. Les modèles retenus ici sont ceux qui rendent compte de la spécificité de l'entreprise dans ces pays depuis la disparition de la planification centralisée. Le comportement de ces entreprises diffère de celui modélisé de façon usuelle dans la littérature sur l'économie industrielle à cause du changement brutal de l'environnement (libéralisation, privatisation, ouverture des marchés), du changement des objectifs de fonctionnement et de gestion, et à cause de l'apparition de nouveaux produits et de nouvelles formes d'organisation du travail. On examine ici l'approche modélisée en tant qu'outil d'analyse de la réalité complexe de ces économies de marché imparfait.

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**ABSTRACT**

Several models, elaborated by different authors for the analysis of corporate restructuring in Central and Eastern Europe are surveyed in this paper. The models presented here are those which reflect the specificity of corporate behaviour in these countries since the collapse of central planning . Given the sudden change of environment (liberalization, privatization, the opening of markets) the behaviour of the firm differs from the behaviour usually modelized in industrial economics; their objectives of management and production also change, and new products are introduced. We will discuss appropriateness of modelling as an instrument for the analysis of complex restructuring problems in such economies with imperfect markets.

*Mots clés:* Restructuration de l'entreprise, Modélisation, PECO

*Key words:* Corporate restructuring, Modelling, CEEC

J.E.L. Classification: D2 - B4 - P2

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## INTRODUCTION

The major negative economic consequences of centrally planned economy that led to its crisis and collapse were shortage, weak diversification of consumption goods and sluggish incentive. From a structural point of view we may also indicate some principal deficiencies such as an exaggerated importance given to heavy industry, a deformation of management criteria, and an enormous concentration of capital providing economic power for some firms. Economists are analysing the possibilities of solving those difficulties in Central and Eastern European Countries (CEEC).

This text surveys some recent works on modelling the corporate restructuring in CEEC and in Russia. Immediately we may indicate that Russian economy presents the most problems, and therefore, their formalization is rare. An effort to establish the restructuring problems on the basis of plurality, that is to assume the existence of several ways of managing the transformations, implies taking into account different theoretical approaches without endorsing any. The relevance of each approach depends upon hypotheses on the particularities of firms in CEEC. In this area the main efforts were devoted to building static models for comparative analysis of the rules of early management (through central planning) and of expected new market behaviour, represented by competitive equilibrium models. The specificity of such models consists in modelling radically new economic conditions of enterprises such as their adaptation to price liberalization, the modification of a firm's objective function, the privatization or the decentralization of the decision process. Some clever devices were introduced in the main modelling practice often without modification of known methodologies. On the other hand, the recent advancement in the theory of corporate organisation and finance, whose purpose is not the restructuring in formerly centrally planned economies, provides some new methodological suggestions for modelling.

As the restructuring and the transformation of CEEC economies constitute essentially a dynamic process, efforts were made to introduce explicitly dynamic models. For example, general equilibrium non-linear modelling is a recent field in economics; its utilisation can be recognised, even if the social and economic aspects of transitions don't appear clearly yet. This is probably due to conceptual problems related to restructuring because the notion itself is not yet precise. When the technological restructuring is considered, the endogenous growth model can be used for such a purpose. Ownership diversification,

modifications of the balance sheet of enterprises or general institutional restructuring could be introduced as shocks, but on which structure? Probabilistic models are, for the present, of little use, because previous data are not available, and even if they were, there would be breakpoints in qualitative and quantitative dynamics of most fundamentals. It is consequently natural to presume that real progress in the area of dynamic models will be hard to achieve. Nevertheless, a modelling that would synthesize some logical approach with inductive econometrics would be a magnificent tool for policy analysis in unstable situations. It seems to me that the implications of it for methodology and for forecasting improvements of economic transformations are vast. This puzzle leads certainly admitting the impossibility of exhaustive reading of firm theories. The topic is currently undergoing rapid development; the number of publications is increasing. At the same time, among the works reported here some are not concerned with modelling, but are elaborated by their authors for illustrative purposes.

With regard to the behaviour of enterprises, the models deal with two realms. The first one is the analysis of a firm's insiders' incentives, whereas outsiders are viewed as parts of a passive environment. Those models are mainly concerned with the consequences of central planning collapse. In the second realm, the insider develops his positions in response to outsiders such as consumers (demanders), labour force (suppliers), lenders (saving suppliers), and other firms (inputs and outputs). Those models attempt to specify different stages of market development.

In this paper I begin with the description of several models and we conclude with an analysis of the pertinence of these approaches to explain the economic performance in CEE countries.

## **LITERATURE ON MODELLING OF CORPORATE RESTRUCTURING**

### **I. INSTITUTIONS, REFORMS AND MARKETS**

#### **1. Planning**

Models for planning in centralized economies supposed that the centre specifies and realizes the objectives concerning production and consumption for all agents. Conceptually the management of such an economy, at least in the short run, looks like the management of a large firm. In both cases the aim is to elaborate a detailed program of behaviour for each participant of the system, so as to achieve the best result following given objectives and under fixed prices and wages. In a long run dynamic perspective planning was related to working up an optimal growth trajectory. The considerable effort involved in modelling in CEEC and in Russia in previous period is not applicable in restructuring problematic, because the restructuring in CEE coincides with decentralisation. The elaborated methods of operational research modelling are useful in inside firm planning, especially since the large development of computer and information networks allowing determining precise tasks for firm departments. We will not stop on that aspect of mathematical economy although it continues its own improvement in CEEC's science.

#### **2. Repressed inflation**

One other problematic only overlooked in this text is modelling of repressed inflation. A large literature is concerned with this very specific problem of centrally planned economies, which is the generation of an excess demand. Usually disequilibrium models are used to formalize this phenomenon (Kornai (1984), Sah (1987), Polterovich (1993), Entov (1994), Charemza (1990), Goldfeld - Quandt (1990), Barro - Grossman (1974), Stahl - Alexeev (1985), Charemza - Quandt (1982)). It continues to be interesting to treat this question theoretically, but the phenomenon cannot be grasped sharply, the problem is shifting from inadequate goods supply to deficient demand and open inflation, traditional for economics. Besides, the studies have been oriented on description of consumer behaviour, but our task is to display corporate restructuring models.

### 3. Prices' liberalization

One of the first government acts to provoke firms' restructuring was prices liberalization, and some models preceded and prescribed this political act.

Calvo and Frenkel (1991) choose a model describing the early stage of transformation, expecting an imminent liberalization. In their article, a market economy is associated with external openness of a country. A peculiar accent is put on the assets market, but the purpose is to study the macroeconomic and income distributional consequences of a price reform. The model contains four equations. The first one represents assets market equilibrium when the rate of evolution of the nominal exchange rate is function of the ratio of domestic currency assets to foreign currency assets and of the rate of interest of domestic currency. The second and the third ones reflect the dependence of demand for tradable and non-tradable goods on the real exchange rate and on the real wage. Finally the rate of accumulation of foreign exchange (foreign currency denominated assets) is specified as a function of the excess supply of tradable goods. The rate of interest, wages, prices and domestic currency assets are exogenous variables. For a constant nominal exchange rate and stock of foreign assets they determine the value of the nominal exchange rate giving the equality between the demand and domestic supply for tradable goods and derive the corresponding steady state. Then the authors analyze the price increase, reflecting the "true" production cost that liberalization make possible. In one of two examples they assume indexation of wages. The demand for tradable goods and the changes in the holdings of foreign exchange are functions only of the modification in the real exchange rate. Along the path to a new steady state the exchange rate rises, foreign currency holdings fall and the domestic currency value remains unchanged. Wage independence is assumed in another example. It follows that the rise of prices lowers post-reform real wages and consequently the demand for tradable goods. The accumulation of foreign assets can increase. The policy consists in finding the possibility to get the real exchange rate falling in order to contend the volume of demand.

The model is for illustration purposes, and does not seek to be useful for empirical study. It depicts some possible post-reform economic situations under some simple hypotheses. An excessive simplification is to consider the surplus of supply of CEEC domestic goods as marketable on world markets. The expectation functions are not introduced in the model; therefore the modifications are

examined as exogenous shocks.

A non-linear model of heavy and light industries evolution after price liberalization has been considered by Gourieroux - Gousseva - Peaucelle (1994). It is assumed that unemployment does not exist and wages are price-linked. The aim is to see, using a simple equilibrium model, if in a market economy, oriented to satisfy the demand; it is possible to maintain simultaneously an input-producing sector and "social advantages" in the long run. The simulation displays that for the long run survival of heavy industry, it is not realistic to maintain full employment and wages indexation. But it is conceivable that heavy industry, if its importance is big enough at the beginning, delays its decline and even continues, for a relatively long period, to increase (its outputs and prices) in comparison with other (output producing) sectors. The impacts of wages' cost on inflation and on economic fundamentals were not introduced in this model.

#### **4. Privatization**

Other ideas relate rapid and successful restructuring with privatization. The link between competitiveness and private ownership of enterprises is an old question involved in economic theory, but the unanimity is not yet achieved. In the recent literature we find arguments in favour of market socialism that does not necessitate firm privatization. For this school of economists, the problems of socialist countries were not the poorly motivated workers and managers, but the lack of markets. A public firm, like a private one, in a market economy, operates on output, labour, and inter-enterprise markets. But it is usually advanced that a non-privatized firm could not attend capital market and the state, its real owner, operates on this market (Bénard (1989)). Such system is conceivable, but it may be convenient for short and middle run equilibrium, when only current decisions about the affectation of goods and labour can be taken. Enterprises can't manage by themselves saving, investment, development, contraction or liquidation of activity, because these decisions need access to the capital market. Thus was Lange's (1936/37) model, which did not study the set of implementable investments. Lange considered that the investments were too important to be left to myopic behaviour of private firm owners since they are too sensitive to risk.

Ortuno-Ortin - Roemer - Silvester (1990) offer an interesting comparative analysis of private and public ownership economies. Their model is a two period model. In the first period private firms

producing a multiple output makes investments using the production of one input producing firm. In the next period they have some increase of productivity, and Walrasian equilibrium level of investment can be estimated for each output producing firm. In public ownership economy, the state chooses the investment level for firms, and in general does not reach a Pareto optimal allocation. The authors study the existence of constrained equilibriums (because the investments are imposed) for different situations, corresponding to economic policies through prices or interest rate, control through instruments (quantities) or taxes (parameters). All firms maximize profits, public firms share their profits in accordance with political principles, i.e. profit shares are exogenous, outputs and labour are allocated through markets, and state balances its budget. The evaluation of various policies is performed in terms of investment vectors. Different economic policies are compared:

1) the so called Walrasian constrained mechanism, when the state imposes a lower bound on investment of each firm, but a firm chooses the complementary investment;

2) the exactly Walrasian constrained mechanism, when the state decides on the level of investments;

3) the so called (by Ortino-Ortin and alii) Lange mechanism, when the state determines the level of interest rate;

4) the pro-investment Lange mechanism, when the interest rate proposed by the state is below the market level.

The Lange mechanism is more powerful than the exactly constrained one, and the pro-investment Lange mechanism is more powerful than the Walrasian constrained one. Those results are obtained under the assumption that the state can tax profits at rates higher than 100%. Furthermore, Lange mechanisms give more flexibility, and their monetization provides more endogenous links between investment, income, or taxes. Direct investment mechanism is also analyzed in the paper. In the general case it is shown that it is more powerful than pro-investment Lange one.

It might be preferable to study restructuring as long run equilibrium of capital allocation with interest rate adjustment, as classical economists did. The capital allocation occurs through the creation, activity and disappearance of firms. Even if the capital market is more complex than the goods markets, its creation may be rational (contrary to Lange's point of view) because it allows the rhythm of restructuring to be less dependent of political successors (Bénard (1990), Cohen - Michel (1991)).



Liberal economists are favourable to capital market emergence, and from their point of view capital markets can't exist without firm privatization. In this perspective privatization is discussed in connection with long run equilibrium, industrial restructuring and independence of ideological positions of the governments.

On the list of the problems inherited by centrally planned economy one finds the workers incentive problems and weakness of incentive management mechanisms. Some authors postulate the greater efficiency of private firms and study directly the speed of privatization (Laban and Wolf (1993), Aghion and Blanchard (1994)).

Aghion and Blanchard (see also Chadha - Coricelli (1994)) propose an elegant model of privatization as an instrument of labour market transformation. They assume that productivity is high in private sector and wages are high also, so the movement from state firms to private ones is manifest. The speed of transition is estimated as a differential in state employment decreases. They construct a normative equilibrium model of government behaviour maximizing the present discounted value of output. It is assumed that unemployment is important and that the government searches to keep it low. For this task the government combines the taxes and unemployment benefits mechanisms. Such a policy implies that higher unemployment decreases job creation into private sector, thus the private firms' revenues are sharply taxed. The equilibrium is defined through the equality between the increasing rate of unemployment and the increasing rate of job creation into private sector. Finally, in the paper the optimal level of unemployment is compared with the unemployment level of equilibrium. It appears that the unemployment level of equilibrium is higher than the optimal one. And as it is too high, some policies have to be taken to lower it.

Despite the originality of this model, I suggest some criticisms. They concern the main assumptions. The restructuring is associated with a transformation of ownership, but it is not clear why, without innovations, the productivity will become higher in the privatised sector, or why the incentive to work for a capitalist (shareholders) is higher than the incentive to work for the state (state control a joint-stock). If the private sector corresponds to the collective ownership of firms, it is usually the case, but it does not explain why the transition of labour to the private collective sector implies a phase of unemployment and the associated increase of state unemployment benefits. The private sector is likely considered by the authors as small business. It seems unrealistic to suggest that the big state industrial

complexes existing in all ex-socialist countries may be transformed into small private firms.

## **II. INSIDERS MOTIVATIONS FOR RESTRUCTURING**

### **1. Modification of the firm's objectives**

We now look for another aspect of the transformation process related to the change of management objective when central planning exists no more. Such an analysis may be performed through an optimization model of the firm with a mixed objective function, combining the ratio of profit and the ratio of value added to engaged capital (Gourieroux - Gousseva - Peaucelle (1994)). The first ratio reflects the capitalist management criterion; the second one corresponds to the labour-managed firm criterion. (Scholars have analyzed firm organizational forms in which workers play a prominent role in management: Vanek (1970, 1971), Jones - Svejnar (1982), Bonin - Putterman (1987), Ellerman (1990), Weisskopf (1992)). During a transition period the firms pass from one extreme objective function to another. The possibility to reveal the underlying objectives using data on firms' accounts is also described in this paper.

In a comparative analysis of behaviour (Gourieroux - Gousseva - Peaucelle (1994)), of equivalent monopolistic firms retaining different objectives, it is established that profit maximization implies linked evolutions of wages and investments, but that the evolution of investments is autonomous when the value added is maximized. Therefore, in the perspective of a transition towards a non-participative economy, it is possible to take progressively into account the labour cost. The prices influence via the evolution of capital helps to reach asymptotically the regime corresponding to profit maximization.

### **2. Corporate financing**

Recently economists have begun developing studies on the role of the financial aspects of the real sector and especially on firms' values. (The state of art is described, for example, in Tirole - Rey - Jullien (1994) and Demange - Laroque (1994)). As the financial sector is developing currently in CEEC,

it is interesting to foresee its impact on required economic restructuring of firms, using existing models. One problem is to know the potential influence of financial structure for developing profitable activity (Harris and Raviv (1991) overlooked the theoretical literature on optimal capital structure), one another is to consider the investment possibilities for modernization. We consider here the case of new decentralized economies without direct government investments. The firm assets are covered by net worth (shareholders equity) and debt. The debt is seen as a claim below a particular level of the firms' incomes. The shareholders receive any profit, if debt is repaid. Managing the debt capacity is more complex than constituting a net worth through privatization for instance. Looking only on financial ratios, in the G7 countries' debt represents an average a doubling of firms' equity. The firm, as a borrower, has to choose among the lenders: banks, private institutions such as life insurance companies and among the various financial instruments: issued bonds, short or long credits. It may issue various combinations of short and long-term debt; restrict its possibility of decisions by transferring some control rights to lenders through covenants. It may use its assets or some specific investments as collateral, especially for risky operations, to diminish the risk associated with default or bankruptcy. The possibility given to the lenders to appropriate some firms' assets in distress (caused for example by mismanagement) increases the debt capacity and allows for a diminution of the proposed interest rates. So, credit analysis requires the estimation of the value of the collateral.

Two contributions by Shleifer and Vishny (1992) and Kiyotaki and Moore (1993) treat this interesting point for firms' financial and economic restructuring by modelling the links between collateral value and investments.

Shleifer and Vishny analyze this problem for industries where assets are specialized and therefore are not redeployable (oil rigs, steel plants have no other uses than their original ones). What could be the prices of non-redeployable assets relative to their value in best use? When firms have trouble with their debt payments, their assets have value only to other firms of the sector. But these firms can have the trouble too if the causes of sellers' distress is industry-wide and they will try to fetch the price. Even if buyers can raise funds, sometimes government regulations might prevent them from purchasing (antitrust policy, for example). It implies that forced liquidations can have significant private costs to the asset seller, but also social costs, when the assets would not be owned by the best user. In depression periods, assets are often sold to a manager who does not belong to the sector and therefore this asset will not be used in an optimal way.

Authors prove that an industry might have an optimal debt capacity even when its individual firms do not.

Kiyotaki-Moore article analyzes the case of perfectly redeployable assets. They study the productive value of assets and their values as collateral. The latter one depends on the state of the economy. The firms' current debt capacity and investment depends positively on the value of the secured assets in the future (because assets are used as collateral). But new investments in the economy raise the demand for these assets, used in production, and therefore their prices (debt capacity depends negatively on the assets' rental rate). The authors show that multiple equilibria and cycles can exist in those conditions.

The model by Petrov (1990) differs on several features of the models previously described. The major one is that he does not explicitly model the rationality of agents' behaviour. The model construction is based on a direct dynamic specification of the behaviour of relationships. The approach is called systemic analysis of evolutive economy. The model combines mathematical descriptions of technological processes and of control mechanisms, and is written in terms of differential equations.

A long-run dynamic describes the life cycle of a firm. One part of the model concerns the behaviour of economic agents during central planning period, another one, their behaviour in a market economy. The aim is to reproduce the modifications or/and persistency during the transition to a market economy. Nine equations are common to two parts and exhibit an idea of partial similarity of those two systems of industrial management. Twenty-eight equations describe the planned economy and may be used for simulation. At some initial date the prices, interest rates and wages take the equilibrium values of the planning model. After that the behaviour is considered to be changed and another system of thirty-three equations describes a market economy. Then the author analyses the dynamics of this new model by means of simulations.

Only one good is produced, consumed and used for investment. The author is interested in the firms' production capacity, capital and debt. It is assumed that the firm is created by borrowing from a bank. Some periods later the firm is liquidated, either by bankruptcy or may be selling, releasing exceeding profits at that moment. In the planned economy the state decides the dates of firms' liquidations, as well as their prices, wages and interest rates. The main planning indicators are the GNP and the state consumption rate of growth. Firms' creations are spread over time and investments are a

function of planned rate of growth. The household planned consumption is defined as a residual between the production and the whole consumption including the state consumption and the investment. Employment is a function of capacity utilisation and of labour participation. The non realisation of the plan signifies that the real demand is below the planned consumption.

The bank allocates credits in such a way, that the firm debt would be less than its profit. The firms' net profits compose the state budget. All macroeconomic values are obtained by aggregation on the firms, created at different periods.

In the market economy, the firm is autonomous. It may borrow from a bank during its life at some level of interest rate, or may decide to reduce its debt. The borrowing level is assumed to be less than its security. The firm decides also on the demand for labour. Expected profit rate is larger than credit rate. The household expenditure is a function of employment and of the wage evolution.

The models were simulated, but the scenarios of evolution had not the aim (in the 1990 version) to be a help for economic policy.

Despite our interest for such modelling, we may indicate some weaknesses of this version of Petrov's models. (A new version of the model exists, but we know only the principles of its construction (Petrov and alii (1995)). The hypotheses concerning the market economy are often unrealistic ones, for example, ones describing credit operations, such as the condition of strict inequality, at each moment, between the rate of profit and the rate of credit. This condition does not take into account the multi-period aspect of loan refunding, and corresponds to naïve credit demand behaviour, when the firm considers only its next period profit. We note also that the author considers market economy as absolutely flexible, which can realise total break in production for some periods, instantaneous taking on and disengaging of labour. These hypotheses which have an important impact on the dynamics induce an extremely chaotic evolution during the transition.

### **3. Pricing**

Planned systems had its reduced schedule of goods, all sold at fixed prices. Price liberalisation, enterprises autonomy and large world market openness induce now the new goods explosion. It is interesting to know what the consumer demand for new products is and to analyse their price formation. Firms have to know also the products that are likely to disappear after the introduction of new ones on

the market and be prepared for restructuring they supply. To answer such interrogations concerning enterprises production modifications we have to perceive the consumer reactions through their forward behaviour in situations, where the products still do not exist. To establish this link between these two different situations Gourieroux - Gousseva - Peaucelle (1994) considered in their formulation that each good is identified by some underlying characteristics that are essential for determining the demand and than the prices. The idea consists in deducing from the observations on previously existing goods the "implicit" prices of the characteristics, then knowing the characteristics of new goods in inferring their prices. This approach of firm pricing, especially in monopolistic case, has some similarity with the hedonistic indexes literature. The method by Gourieroux and alii was not yet applied for price evaluation in a real economic situation.

## CONCLUSION

The papers surveyed here are mainly theoretical ones. They have been chosen to illustrate the relevance of their premises with known specificities of CEE economies (see table 1 and table 2). The hypotheses respect generally one or another aspect of small country corporate restructuring: openness of markets, direct foreign investment, preponderance of small businesses,.... . Their realism is appreciated a priori without empirical verification, because the econometric tests are difficult to perform. The models differ in their attention to suggest government economic policies to sustain the transformations: expenditure, taxes or monetary instruments. In other words these models give micro-economic foundations for coherent macro-economic policies. In some sense the recent developments of economic theory seem to provide some suitable tools to model the restructuring of ex-centrally planned economies, because incomplete, monopolistic, gradually adjusting markets were analyzed. All those imperfections introduced in walrasian equilibrium method are combined in real CEE economies. The modelling of market imperfections shows various implications for economic policy. It allows analysing the effects of a policy even if it is not possible to know, especially with non-linear dynamic, whether the effects are good or not. Such ambiguity means that modelling is only one of possible and indispensable approaches of corporate restructuring analysis. It has to be developed jointly with econometric,

socioeconomic analysis.

Some years after the beginning of transformations in CEE countries it is possible to appreciate the ability of modelling to explain actual economic situation. Indeed, the period from 1985 to 1996 may be considered as a transition of economies from one kind of disequilibrium to another with an additional recession. The initial economic problems were briefly presented in the introduction of this paper. The current ones are characterised by a stagnation or a decrease of output in a large number of sectors, accompanied by unemployment; stagnation of final and especially intermediate consumptions, credit rationing, investment reduction, inflation and firms debts' of low quality. Different types of reasons for such a recession could be advanced:

- 1) mistakes in economic policies of liberal governments;
- 2) the weight of economic history;
- 3) the turbulence due to adaptation to a new regime, that every dynamic simulations reveal;
- 4) finally, some causes specific to these new economies.

The first reasons can't be recognised by modelling; the second one should eventually be stressed by evolutionary modelling, but we have not found any example. As for models presented in previous sections they advise on some origins of recession and they forecasted some features of fourth type.

The models comparing competitive and monopolistic behaviour foreseen that after the collapse of centrally planning, that assessed the volume of production for each firm, the monopolies will reduce their production. For example, in Gouriéroux-Gousseva- Peaucelle (1994) models on inventory management and modification of objective function such situations are analyzed. The model, by the same authors, describing dynamics of output, employment, prices and investment in heavy and light sectors after price liberalisation shows (under some conditions) the relative vivacity at the beginning, but the inevitable decline of the heavy industry, preceding the fluctuations in light industry.

The employment is very often linked to output through a production function, so the results of simulations indicate their correlated drop. In reality the collective ownership of firms in CEE yields employment evolution largely independent on output (Weisskopf (1992)). This aspect, dampening the effect on unemployment, is not taken into account in the surveyed literature.

The investment weakness is predictable in labour controlled firms. This statement is reflected in the model of objective function modification (Gouriéroux- Gousseva- Peaucelle (1994)). Indeed, in the case of value added maximisation, that is often the objective of labour owned firms, an evolution of

investment independent of economic results can be observed. The Ortuno-Roemer-Silvestre (1990) model demonstrates the advantage of public forms of capital ownership for investment in a market economy. The Shleifer and Vishny (1992) paper sheds a different light on the problem, relating the firms' investment and credit problems to the distress in their sectors or in the whole economy. The research of optimal level of taxes (Laban and Wolf (1993)) may carry the important foreign investments.

Finally, we may acknowledge that modelling of transitional economies is an arduous task, and therefore any model could not elucidate the complexity of the last ten years' development.

**Table 1**  
**ANALYSES OF CORPORATE TRANSFORMATIONS**  
**RELATED TO INSTITUTIONAL REFORMS**

	Authors	Principal assumptions	Theoretical foundations and modelling specificity	Eventual consequences or recommendations
States market control	Kornai (1984), Charemza (1990)	Two markets: state-controlled and free	Disequilibrium model, Empirical modelling	Persistent shortages
Price liberalization	Calvo and Frenkel (1991)	Two markets: foreign assets and goods	Equilibrium model	Demand depends on wages indexation



Privatization	Laban and Wolf (1993)	Private sector provides higher productivity and wages, private sector = foreign capital	Equilibrium model, comparative static	Taxation attractive for foreign capital
	Aghion and Blanchard (1994), Chadna and Coricelli (1994)	Private sector provides higher productivity and wages, two sectors: state and private	Equilibrium model, comparative static	Moderate taxes in order to control unemployment
	Polterovich (1995)	Restrictions on the volume of individual property	Comparative static	Restrictions on rich people is unfavourable to poors

**Table 2**  
**OBJECTIVES AND METHODS OF CORPORATE RESTRUCTURING MODELLING**

Analyzed aspect of restructuring	Authors	Principal assumptions	Theoretical foundations and modelling specificity	Eventual policy recommendations
Diversification of industrial goods, Technological modernisation	Gourieroux - Gousseva - Peaucelle (1994)	Two sectors: heavy and light industries, prices are liberalized	General equilibrium, non-linear, simulations	Existence of heavy industry depends on wages policy
Forms of incentive, Labour flexibility	-	-	-	-
Demonopolization, Vertical control	Stahl - Alexeev (1985), Sah (1987), Polterovich (1993)	Different kinds of goods-market competition	Consumer behaviour, comparative static	State chooses market structure depending on social preferences
	Gourieroux - Gousseva - Peaucelle (1994)	Monopolistic and competitive management of inventories	Non-linear, general equilibrium, dynamic, simulations	Tax policy to reduce monopolistic behaviour
Management innovations	Goldfeld - Quandt (1990)	Planned economy, output is target, there is rationing on inputs	Comparative static, disequilibrium	Inventories management by firm
	Gourieroux - Gousseva - Peaucelle (1994)	Monopolistic firm changes its objective function	Comparative analysis of dynamics	Wage policy in transition
Firm price policy	Gourieroux - Gousseva - Peaucelle (1994)	Choice by consumer of new goods	Hedonic prices	Price policy for new goods development

Firm financing	Ortuno - Roemer - Silvestre (1990)	Firm operates on goods and labour markets; the state chooses the firm's investment policy	Constraints in equilibrium, comparative static	State investment policy at micro level
	Shleifer - Vishny (1992)	Bankruptcy of one non-redeployable assets firm, two states of a world: prosperity, depression	Adverse selection and moral hazard	Firm's debt creation for investment
	Aghion - Blanchard - Carlin (1995)	Bank finances two enterprises of different efficiency	Adverse selection and moral hazard	Conditions for financing one or two enterprises

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