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**“Markets and networks in Romania
– life after disorganisation”**

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**MARKETS AND NETWORKS IN ROMANIA –
LIFE AFTER DISORGANISATION?**

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Markets and networks in Romania

– life after disorganisation?

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Introduction

The level of development of Romania is at the moment somewhere in between the one of the fast reforming economies in central Europe and the late reformers in the ex-USSR. Behind this statement however, one can find an uneven growth process, with multi-dimensional distortions and pronounced polarisation. The overall underdevelopment when comparing Romania with Central Europe is the statistical result of a melange of highly efficient performers on one hand and loss-making, strongly resisting to restructuring, economic agents on the other hand, acting together in an unfriendly and unpredictable business environment. There is no doubt that a mix of legal, institutional and political factors, as well as social and cultural ones, contributed to this outcome.

In this paper we attempt looking at some aspects of industrial networks integration during transition. Our hypothesis is that, after a stage that could be better characterised, for reasons that will be outlined further, *as an incomplete Blanchard disorganisation*, the growth of private sector did not compensated for the decline in state sector output. Various constraints and modifications of behavioural characteristics of economic agents affect its potential growth. A stance that reflects a permanent and complex effort of adaptation to pronounced incertitude, and that we call *systemic unrest*. The main consequence is that the economy is evolving as a chaotic system. Both vertical and horizontal links between economic agents are established under a high moral hazard in an uncertain environment. Due to the implied significant instability of those links, the formation and alignment *networks*, as it is described by the western literature, is only emerging.

The paper is organised as follows. **In the first section**, we outline the main general characteristics of the process of disintegration-reintegration of Romanian industrial networks and refer briefly to the integration of Romanian industrial networks into global, national and local environments. We discuss the potential impact of those phenomena on the domestic growth. We

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state that the importance of the foreign direct investment, although of a rather low level, is crucial, as it might create clusters, around which a more ordered system has chances to evolve. Specific examples are given. **The second section** is concerned with a short case study on the textile and clothing industry in Romania, and **the last section** concludes.

Needless to say, our paper only rises a research *problematique and perspective*, which to our knowledge has not been developed in Romania so far. Some of the important issues like the design of privatisation, entry, merger and operational barriers, characteristics of innovation process are barely mentioned. Little is said on the path dependence in the re-structurisation of networks. Much time and effort is still needed for a deeper, crucial understanding of the complex implications of industrial networks' formation and integration.

1. Networks integration and alignment

The internal market dimension

The enterprises

Romanian transition after 1989 meant the transformation of one of the most rigid industrial structure towards a market led one. Inevitably, as many works show [BLANCHARD AND KREMER (1997) *and cited literature*, a.o.] this implies the transition from the artificially constructed industrial networks between big integrated companies usually acting as state monopolies towards spontaneously formed structures comprising independent agents following utility maximisation objectives. Simultaneously, liberalisation of external markets put them in a market shaped relation with the world economy.

Far from being smooth, this transformation undergoes several stages and processes that shape at any moment the evolution of industrial networks. From these processes we mention:

- In the first years of transition, a complex and large process of administrative breakdown of communist production units was recorded. Usually, the business services separated themselves from the producing units in the first-run, in many cases the production lines that could operate independently decided to separate. Such a process was recorded especially in wood processing, but also in textile and clothing, some metal construction and foodstuff. Without contributing significantly to the increase in the efficiency this process instead increases artificially the number of companies, giving a false impression of growing entrepreneurship and accentuated the effects of deployment of previously existing distributional links. In addition, as in the case of Hungary [see WHITLEY AND CZABAN (1999)], the companies kept the rather high specialisation of their product inherited from the communist time.
- In 1992-1995 period, the number of companies (net) increased more than twofold, with decreasing annual rate. There is a process of convergence towards the structure on size of enterprises in Romanian industry towards the one in EU, although the big-sized companies appear to be highly inefficient¹, at least at the nation-wide

¹The table below illustrate this statement

Size of company	Turnover (share in total)	Profit rates
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level. Since 1997, the process of growth in the net number of enterprises stagnated, at a level much below the EU counterpart (in Romania there are currently less than 15 active enterprises /1000 inhabitants, as compared with 45-50 in the EU countries). If the decrease in the average size of the companies and the growth in their number before 1996 is consistent with BLANCHARD AND KRAMER (1997) disorganisation type of process, the stagnation of their number simultaneous with an intensification of exit/entry rates signal a different type of evolution².

Table 1: Average employment / company (industry)

	1989 (1990 for EU)	1999 (1996 for EU)
Romania	1756	52.9
EU	17.9	15.3

Source: MARIN ET AL. (2001) and EUROSTAT SME Database

Table 2: Breakdown of number of industrial enterprises and turnover on size

Employees	Number of companies			Turnover		
	0-49	50-249	250+	0-49	50-249	250+
Romania (1999)	88.9%	7.4 %	3.6%	11.5%	12.4 %	76.1%
- private sector only	Na	Na	Na	21.7%	21.9%	56.3%
EU (1996)	96.1%	3.1 %	0.8%	20.2%	20.3 %	59.4 %

Source: Romanian Statistical Yearbook (2000) and EUROSTAT SME Database

- One interesting conclusion is that Romanian private industry has almost the same structure of turnover on size of enterprises as the EU one. The distortions are induced by the state sector, inefficient and heavily concentrated in the energy and raw materials producing branches, dominated by very big enterprises. From the total industrial turnover in 1999, 52% is produced by the private sector. Still, 92% of the turnover produced in the industrial enterprises with less than 500 employees is produced by the private sector while 85% of the turnover produced by the enterprises with more than 500 employees is hold by the state. As it will be shown later, this is important from the networks' formation point of view. The networks usually form around a big-size enterprise that needs to hold a stable, leading position on the market, for the network to stabilise and evolve through knowledge transfer and collaboration. This is not the case of the state-owned firms: they don't have either the financial resource nor the willingness implied by profit maximisation behaviour to actively involve in networks formation. They survive through subsidies but they are very often deployed of their resources by so-called tick firms³ (see box 2) that we give as an example of adverse integration.

The state

Both in most of western capitalist economies and transition countries, the state keep the ownership and/or the control over sectors providing "essential goods and services", even when they prove to be inefficient, as their

	1996	1997	1998	1999	1996	1997	1998	1999
0-49	36.2	34.1	37.1	37	6.4	4.9	1.5	1.4
50-249	12.1	11.1	14.9	16.2	8.2	6.7	2.8	0.3
250-499	6.1	6.3	6.4	7.2	7.5	2.9	4.6	1.4
>499	45.4	48.4	40.8	39.1	-0.4	0.4	-3.1	-4.0
Total	100	100	100	100	3.6	2.8	0.1	-0.9

Source: MARIN ET. AL (2001)

One important aspect to be mentioned is that barriers seems to affect the enterprise growth besides the existence on the market of big inefficient enterprises *per se*. The growth of the market share of small and medium-sized enterprises after 1998 is due to the collapse of some of the big state-owned companies, not to a growth of SMEs.

² From 1997 to 1999 the newly created enterprises represented approx. 6.5% of the total number;

³ Therefore, by supporting the big enterprises through subsidies, the state is redistributing the losses caused by private appropriation of state-owned firms resources to the entire private sector

closure without a serious damaging effect on the entire economy is quasi-impossible [BÖS (1994)]. Keeping such companies in public ownership is also seen as a means of limiting monopolistic behaviour, allowing them to remain competitive and profitable without affecting the development of the rest of the economy (*ibid.*). A transition-specific view would argue that state ownership of sensitive sectors alleviates the social cost of disinflation [ROLAND, (1994)]. Complex mechanisms of gradual price liberalisation and subsidisation is put in place. However, in Romania the asymmetric position of the state favoured the emergence of a strong dichotomy between state and private sectors in what concerns pricing and wage setting, access to credits, speed of restructuring, complying with the economic legislation etc. [TURLEA and DE SOUSA (2001)] While this might prevented the state sector to collapse even further⁴, at the same time it crowded out the chances of the private sector to grow.

The fact that the state kept the property of the big enterprises, concentrated in the first levels of production chain *and* accommodated their monopolistic behaviour is the main factor that prevented the growth process to resume sooner and has implications in the process for networks formation and integration. We add to the BLANCHARD AND KREMER (1997) framework two specific hypothesis: (1) at each stage of the production chain, more than one use of the intermediate good is possible and (2) the private opportunity is allowed to intervene mainly at an upper level in the production chain⁵. In this case, the rent extracted by the energy and raw material producing sectors will not be the smallest, but the highest in the system, while the competition for the supplies will be tougher in the more processed goods. In this case, the imposition of monopolistic/oligopolistic prices from the bottom of the chain will diminish the profit margins and ultimately will chase out of business companies that act on a more competitive market.

During communism, the central planner decides both relative wages and relative prices with low, if any, correspondence with each other or with competitiveness criteria. This situation is mediated by a permanent transfer of value added from the more profitable sectors to the others, through various redistribution channels of the central administration [KORNAÏ, (1980), (1986)]. With the transition process, the liberalisation of prices and economic structures has a favourable net effect especially on utilities, and some raw materials, of which prices are in process of liberalisation to their world market equivalent [PUJOL, (1994)]. Therefore, even if these sectors would experience a tightening budget constraint, which is not particularly the case in Romania, the strong rise in their relative prices gives scope for maintaining a good position on the market and lowers the potential incentive to restructure, despite a strong decrease in demand and production.

The entrepreneurs

Theoretically, the transition should generate changes in the objective function of agents from complying with the plan requirements to profit maximisation. As it is widely known [DOBRESCU (1999), MARIN ET AL. (2001), DAIANU (1999), TURLEA AND DE SOUSA (2001) if we would cite only some of Romanian literature], often, and especially in the case of state-owned enterprises, taken over by insiders, the transition was made towards a different objective function – maximisation of insiders utility. To put it in a different form, lacking incentives to restructuring, state managers collapsed to the organisational stress. For sectors as metallurgy, electricity etc. labour costs amounts to as much as 80-90% of total value added. The role of state in preventing monopolistic behaviour is not fulfilled

⁴ Blanchard and Kremer (1997) suggest that a gradual liberalisation could help the state sector to follow a smooth decline.

⁵ Besides, in an unstable environment, the private capital will tend naturally to locate into areas where the entry costs on the market are low and the business is adaptable to demand shocks, allowing a quick and efficient response to the rapid structural changes.

especially when the weak budget constraints allow firms to avoid needed restructuring also by increasing arrears⁶ and by other non-price means.

MARIN ET AL. (2001) discuss the financial stance of the companies and reveal the behavioural pattern of companies according to their size and ownership, as well as their loss making character. Their clear-cut conclusion is that, the main functional problem of Romanian industry⁷, are the very big state-owned enterprises.

Table 3

- % of turnover, 1999, companies with > 499 employees -

	General profitability	Gross operating surplus	Financial expenditures⁸	Gross arrears (due payments)	Net arrears	Investment
Private ownership	1.4	11.2	10.0	23.9	2.2	11.1
Public ownership	-10.8	3.1	8.8	43.7	4.8	10.1

Source: MARIN ET AL. (2001)

Corporate governance in Romania is short-term oriented and the decisions of the agents are mostly reactive, and sometimes strategic, while decisions towards long-term investments are very seldom made. The myopic agents can hardly detect long-term trends, as in the hyperinflationary context the price signals are distorted and difficult to interpret.

On the other hand, the state took very few responsibilities in orienting the structural evolution of Romanian industry. More than that, subsidisation of the energy-intensive and extraction sectors had a reverse effect on the process of structural change.

⁶ According to the IMF report (2000) in 1999 the inter-enterprise arrears amounted to 42% of GDP

⁷ The big loss-making companies cover 13.1% of the total turnover in industry and 21% of the Romanian direct exports.

⁸ Expenditures with interest payments, losses from foreign currency exchanges other financial expenditures

Table 4: The top 10 of loss making companies, 2000⁹ (mld. ROL)

NACE	Company	Location	Area	Loss	%in GDP
<i>Metallurgy</i>	SIDEX Steel mill	GALATI	South-East	7774.15	0.98
<i>Extraction</i>	National Pitcoal Company	PETROSANI	South-West	5941.31	0.75
<i>Transport means</i>	DAEWOO Romania	CRAIOVA	South-West	3629.88	0.46
<i>Energy production and distribution</i>	National Company of Electric Energy Production	BUCHAREST	Bucharest	3551.65	0.45
<i>Extraction</i>	National Lignit Company "Oltenia"	TG-JIU	South-West	2222.31	0.28
<i>Energy Production and Distribution</i>	Energy Distribution Company - Bucharest	BUCHAREST	Bucharest	1467.12	0.18
<i>Foodstuff and Tobacco</i>	National Tobacco Company	BUCHAREST	Bucharest	1197.97	0.15
<i>Petroleum processing coal coking</i>	RAFO	ONESTI	North-East	1151.34	0.14
<i>Petroleum processing coal coking</i>	PETROMIDIA	NAVODARI	South-East	864.55	0.11
<i>Transport means</i>	DACIA SA	MIOVENI	South-West	847.83	0.1
TOTAL	10 companies	4 regions		28648.1	3.6

Source: CEMATT

⁹ The presence of automobile producers in between the big losers is conjectural for year 2000.

Box 1: A short profile of the Romanian entrepreneur

COSTARIOL (1993) shows two main specific features of the Romanian entrepreneur, features that differentiate him from the western/American type: a) different social origin and b) different attitude and expectations. Typically, the Romanian entrepreneur was previously occupying a managerial position in a state enterprise or is a young university graduate. The explanation is that during communism time the workers and technicians had no knowledge or involvement on the management of their enterprise, therefore a whole class of potential entrepreneurs lacks completely basic understanding on the markets and pricing, suppliers and clients, financial instruments, legislation etc. Giving their origin, Romanian entrepreneurs are reluctant to associate and integrate, and prefer when possible to use in business relations their personal connections, crucially valuable in an unstable environment. This ability allows little change after transition in the profile of the entrepreneur or ventilation in this social class. The Romanian entrepreneurs on the other hand lack practical skills and are looking for quick benefits, both a cause and an effect of the given instability. Perceiving the markets as unstable, the entrepreneurs orient towards activities that have lower entry-exit costs. At the same time they perceive the business environment as a scene for a tough competition and only very little cooperation is actually taking place. More than that, moral hazard is tolerated by the business community and understood as exploitation of an opportunity. This hinders both vertical and horizontal integration and weakens the already fragile private sector. However the most dangerous consequence of the profile of Romanian entrepreneur is that, coming from the state sector, he preserve a particular relation with it. This case of adverse integration will be discussed further [DOCHIA, (1999b)]

Finally, there is an organisational stress that affects the activity of Romanian managers and entrepreneurs. Their employees form a group whose organisation and social dynamics is often incompatible with the market economy. Especially the perception of the enterprise as a social protection institution, inherited from the communist time, creates unjustified pressure in the functioning of the enterprise. Caught between unstable markets and the stress from the inside of enterprise, the entrepreneur forms its objective function, which is very seldom pure profit maximisation (usually it becomes maximisation of insiders utility)

Previous distributional channels, administratively imposed during communism as part of an artificial economic engine, were disrupted, while a modern structure of mediators started only recently to be put in place. The wholesale trade seems comparatively well developed when compared to the western counterpart. The ratio of turnover in the wholesale trade and the turnover in industry is 0.3 in both EU15¹⁰ and Romania¹¹. The retail trade, characterised by pronounced atomisation plays a role in meeting the supply with the final consumption, but, also by its nature, does not respond to the complex needs of mediating inter-firm interactions. Diverse professional associations exist and become more active on the market. The Chambers of Commerce and Industry help in disseminating the information on the economic activity in Romania and organise periodically specialised fairs and exhibitions in order to contribute to meeting supply and demand. These efforts however seemed yet insufficient for significantly contributing to creating solid ties between firms and their supplier and customers.

Nor the financial intermediation is better adapted – the banking system is weak and affected by periodic crises, interests for credits are currently very high¹². Insurance sector is facing low demand while policies as insurance against managerial risk (malpractice) are not sold in Romania, which lowers even further the incentives of state-owned managers to restructure their companies and to make long-term investments. Structures as venture capital that could provide funding for the entrepreneurs in new economic areas (IT, and especially software, but also other niches that Romania could enjoy) do not exist. The stock exchange market is underdeveloped and few companies are actually traded. Therefore, a process of emergence of credible, market-type alternatives did not follow the collapse of previously existing investmental incentives and channels.

¹⁰ EUROSTAT, Enterprises in Europe, 2001, data is for 1996

¹¹ Romanian Statistical Yearbook, 2000, data is for 1999

¹² In the first years of transition the interest rates were sometimes negative, but the banking system was state-owned, and the access to credit was rationed.

With the disruption of systemic relationships and various formal and informal barriers to build new ones, the system of companies in Romania evolve almost as a chaotic structure characterised by:

- lack of stability of market shares and of economic performance at company level from one year to another;
- fragile links between suppliers and customers, not sealed by trust and fair business conduct. The contracts are not respected and legal procedures are long and costly;
- consequently, contracts between domestic agents are typically short-term cash-based ones – firms are often facing dramatic and unexpected changes in their portfolio of clients and suppliers and effects of moral hazard;
- by corruption, subsidies, preferential credits, tolerance towards the practice of arrears and generally asymmetric position of the state, value added transfers from the new private and profitable sector to the inefficient part of the economy continues to exist. Due to the simultaneity of the subsidy mechanisms and other form of protection of state enterprises, the price mechanisms is not the main driving force of the resource reallocation;
- besides the usual market imperfections, agents are facing pronounced asymmetric information and the stress of an immature, evolving institutional framework, including legal instability;
- inherited structural bias and resistance to adjustment, partially motivated by factors described above;
- Romanian economy is undercapitalized – most of the companies are operating at zero financial reserves, which increase their risk aversion and the probability that firms will build arrears as “emergency buffers”.

We will call this set of behavioural characteristics “systemic unrest”¹³. This *systemic unrest* seems to be more intensive at the upper levels in the production chain. From the analysis of market shares and concentration, we can deduct that the higher the level of processing of a good, the higher the competition on its market and the lower the state property (see table 4). This is not a surprise in itself – rather the size of the effects, the emerging behavioural pattern of all the agents involved (state, private sector, big state owned enterprises) are features that gives to the Romanian case its particularity. The structure of inputs in the production process for many industrial companies is inherited from the communist era. The technologies from '70ties and '80ties are typically energy consuming and not environmental friendly. Therefore, while at each stage of processing, economic agents receive price shocks from their suppliers, they can either transfer to a certain degree the shock into their own prices or investing in modern technologies that reduce the consumption of the expensive input. The possibility of transfer depends on the level of competition on the given market, but also on the price elasticity of demand. Typically, the higher the level of processing of a given good, the higher the elasticity of demand to the price increase. This leads to a situation where companies operate with over 50% of capacities not used¹⁴. On the oligopolistic markets, there is a strong competition between firms on costs, while on the markets with higher competition the number of actors is shrinking.

Romanian industry has a segmented labour market, with strong unions concentrated in the big, state-owned inefficient companies, with high insider-outsider effects. Contrary, the manufacturing consumption goods producing

¹³ The difference from Blanchard and Kremer (1997) concept “*disorganisation*” is, in the first run, the fact that our concept of “*systemic unrest*” does not refer to the reasons causing existing networks to break-up, but to those preventing new, stable ones to form. Secondly, the “*disorganisation*” that precede the formation of the new networks has some specific features Corroborated with a system of subsidies, barriers to entry and protection from external competition, the process lead to a differentiation of the type of bargaining from monopoly at the level of raw materials production to almost perfect competition at the most processed output levels. The value of surplus is not distributed as in Blanchard and Kremer (1997) and Blanchard and Kremer’s private opportunities have not free access along the production chain.

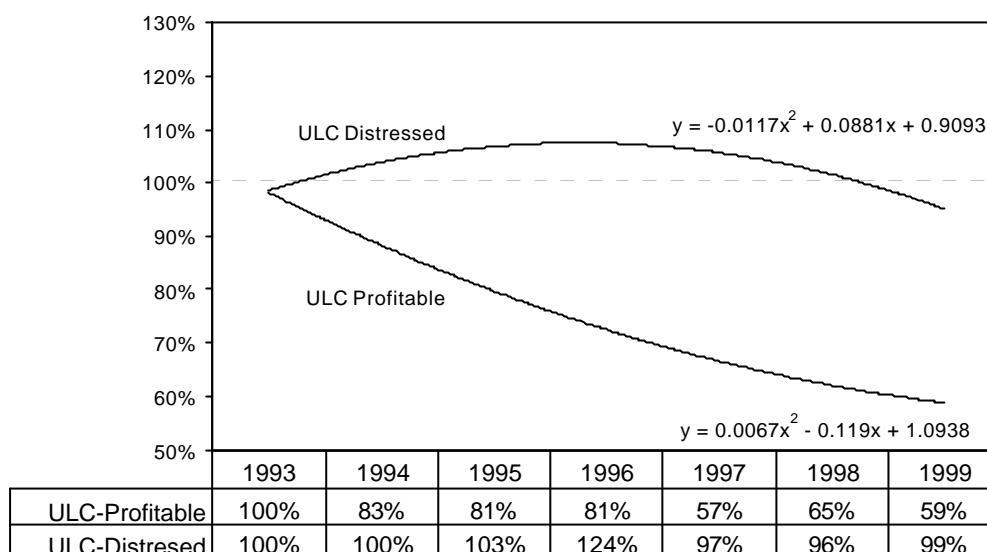
branches feels the pressure of the unemployment on the wages, pressure that holds the wage low. This effect allows the firms in the more competitive sectors to alleviate the shock of increasing inputs price, by not increasing the wages. Still, the organisational stress is growing.

One of the most used indicators of both competitiveness and restructuring is the unit labour cost. TURLEA AND SOCHA (2001) divide the manufacturing sectors into *competitive* and *distressed* and compare the relative evolution of the ULC in the two parts of the economy. This division corresponds to a large degree to the distinction *state-private*, as well as to the one *raw materials+semi-processed goods – processed goods*. TURLEA AND SOCHA (2001) consider in the “profitable” part the sectors: food, beverages and tobacco, textiles incl. fur, leather and footwear, pulp, paper and cardboard, publishing and printing on supports, other products of non-metallic minerals, machinery and equipment, electric and optical instruments, transport means, and furniture and other industrial activities. The “distressed” sector comprises extraction industries, wood excl. furniture, petroleum and coal processing, chemical products, metallurgy, metallic construction and metallic products and electric and thermal energy, gas and water. As a particular feature, the labour intensive industries are profitable. Capital intensive sectors are both profitable and distressed. What have in common the distressed sectors is their lower level of processing and their high level of energy consumption.

The graph below shows the *restructuring disequilibrium* over the 1993-1999 period. By restructuring disequilibrium TURLEA AND SOCHA (2001) understand the gap between the evolution in the ULC in the two aggregated sectors (1993=100%).

¹⁴ OECD (2000) appreciate the average level of capacity utilisation at 59%

ROMANIA - ULC growth in distressed and profitable sectors - trendlines



Source: Turlea, De Sousa, 2001

Although is the evolution of productivity that drives the gap in the ULC, in the case of Romania this does not mean, as suggested by LANDESMANN (2000) mainly a comparative gain in high and medium tech industries. One of the particularities of Romania is that the bulk of the most profitable industries are some of those included in the low-tech group by LANDESMANN (2000) – food and tobacco, textile and textile products, leather and leather products – and one from the resource intensive group – other non-metallic mineral products. These branches covered in 1999 50.6% of the production of the profitable sector.

Table 5: The wage and VA productivity growth (1999/1993)

	Real (consumer) wage growth	VA productivity growth
Profitable sectors	8%	51%
Distressed sectors	16%	-10%

Source: TURLEA AND SOCHA (2001) database

On the other hand, the distressed sector contain mostly resource intensive industries¹⁵ to which add extraction and energy production. As already stated, the resource-intensive branched are dominated by big state owned enterprises and barriers to the access of private capital.

The big state-owned companies are hinder from restructuring by the appropriation of profits by wage earners. The rest of agents are affected by the steep increase in their inputs costs, expensive credits and organisational stress. The agents producing more processed goods are those more eager to find the smallest strategic advantage. They bear the cost of their own restructuring and the cost of maintaining loss –making firms on the market, but the environmental and managerial stress is overwhelming. Here the *systemic unrest* is the highest.

The importance of this peculiar developments on the integration of industrial networks are multiple: on one hand, the *vertical integration* is difficult since the lower layers of the production chain are not open to the private opportunities and especially since the supply shocks are still multiple and unpredictable. The firms prefer keeping

¹⁵ as defined by LANDESMANN (2000)

their smaller size and/or have a pronounced propensity to collaborate with the external markets, for rationales connected with contractual trust, lower risk of arrears and a more pronounced stability of markets. On the *horizontal integration* side, the firms are reluctant to merge and associate for the same reasons outlined above.

Typically domestic industrial networks in Romania are temporary and fragile vertical and horizontal links between independent, opportunistic agents acting on unstable markets.

Box 2. **Adverse integration – the tick firm and the state capitalism** (extracted from Dochia [1999])

By far the most significant consequence of the white-collar, managerial origins of the Romanian private entrepreneur is its special relation with the state and state companies. Many private ventures were from the start conceived to gravitate around a state company. Although some of them are legitimate and respectable businesses, in a very large number of cases they are simply devices aimed at siphoning profits and assets from state companies into private hands. The simplest and best known mechanism is the “tick firm”:

Two SRL (limited liability companies), usually having deep roots in the political environment, were placed on the “inputs” and the “outputs” circuits of a state enterprise. The first one is selling the raw materials at higher prices. The second one is buying the production cheaply. The “tick firms” are prospering, and the guest company becomes, in a few years, a true “black hole”. (Cercesescu, 1999)

Some authors go even further and consider that:

after 1989 the capitalist class was formed mainly on the account of the state by rape of real estate, fixed assets and even social capital of state enterprises and organizations. ...[...] (Brucan, 1999, p.37)

The “special relation” is not limited to state companies but is spilling over to all state institutions

the only form of survival (for the private entrepreneur) was, during the last ten years, the alliance with the political-administrative apparatus. The entrepreneurs that resisted in time did comply with that unwritten rule. (Margarit, 1999)

prompting some analysts to declare that

Romanian capitalists are a product of the Romanian State and, as such, they are an annex of the state. (Boari, 1999)

When the political dimension is added to the list of “special relations” between the private sector and the state, the resulting picture is what is usually called “crony capitalism”. In fact, “crony capitalism” is the continuation of the old “kinship socialism”. [...]

An extremely severe diagnostic is derived from this analysis.

Today, in Romania, we are dealing with a **closed economy** that relies in its functioning on the collusion of interests between the state apparatus and an exclusive category of “entrepreneurs”. **This alliance sets the structural conditions for the functioning of the economy in Romania.** (Boari, 1999) [...]

In general,

Against a background of absence of an anti-state spirit, we do find an activism dedicated to promoting and concluding “deals” with the state to reap privileges, favors, protectionism and rents. (Munteanu, 1999)

The collusion between the state and the private sector also accounts, at least partially, for the aggravation of the crisis during the downturn after 1997. Because of its dependency on the state, the private sector was not capable of taking over and playing a locomotive role in restructuring. Instead, the private sector was itself severely hit and contributed to the economic contraction.

The affinity of the private sector to state firms makes the two almost indistinguishable in their manners; many state companies take the liberty of behaving like private firms and some private entities enjoy the privileges of state protection and support. [...]

But maybe the most harmful consequence of the “state capitalism” system that dominates economic life is that it makes it very hard for many other entrepreneurs who are not “part of the system” to survive and prosper and for free markets to function properly. The media has recorded hundreds of examples of Romanian or foreign entrepreneurs who give up or are defeated in the battle with the “state capitalism” system. Genuine success stories are rare, but very precious because they give reason for hope.

¹⁶ for the manufacturing branches, the share is in total manufacturing

Table 6: Sectoral markets structure, 1999

	Number of economic agents	Degree of concentration (Ginni ¹⁷ coefficient)	Share of the market leader	Export (% in total export)	Share in industrial turnover ¹⁸
Textile and clothing	7222	0.057	2.4	26.67	8.6
Wood processing	1669	0.058	1.7	4.95	3.6
Foodstuff and tobacco	10880	0.077	5.2	2.48	25.0
Metallic construction and products	3282	0.078	3.3	2.29	3.6
Furniture and other industrial activities	3503	0.079	2.8	6.16	4.5
Leather and footwear	1476	0.100	5.7	7.91	2.0
Paper and cardboard; printing and publishing	2822	0.108	4.8	0.65	4.3
Electrical and optical machinery and equipments	1366	0.131	5.2	0.76	5.6
Machinery and equipments	926	0.137	6.1	10.07	5.3
Rubber and plastic	1544	0.156	8.7	0.92	2.6
Other non-metallic products	1338	0.161	12.5	3.12	4.9
Chemical Industry, synthetic and artificial fibres	1037	0.195	14.7	5.97	7.9
Transport means	461	0.246	16.5	5.16	8.6
Petroleum processing coal coking	19	0.372	30.3	4.75	3.0
Metallurgy	417	0.404	37.4	17.7	10.5
Total manufacturing	37962	-	-	-	100 (69.77)
Extraction	252	0.636	62.6	0.31	11.08
Energy, gas, water	322	0.436	30.7	0.14	20.13

Source: CEMATT database

¹⁷ $G = \sqrt{\frac{2}{n \sum g_i^2}}$, where n is the number of branches and g_i is the share of sector i in total turnover. If sectors have equal shares, then $G=0$. If all turnover is produced in one sector only, then $G=1$ ($n=2, g_1=1, g_2=0$). The highest Ginni is the highest the concentration.

¹⁸ for the manufacturing branches, the share is in total manufacturing

The world market dimension

The products and the exporters

As for all the CEECs, the collapse of the CMEA meant also the collapse in a rather integrated system of international industrial relations. The position of Romania was favoured, as the external trade was substantially more western oriented than for other countries in Eastern Europe. A more pronounced reorientation of trade towards other markets was done in Romania rather quickly, but implied structural change. The export regime was liberalised in the early stages (although simultaneous with a control of deficit through various import restrictions). Several general remarks can be made. Manufacturing industry covers¹⁹ 67.4% of the total Romanian exports. From those, two industrial branches, *clothing* and *metallurgy* represent one third. Six branches (out of 32) cover 60% of the industrial exports, namely *clothing, metallurgy, chemical industry, furniture and other non-elsewhere classified activities, machines and equipments, transport means other than road*. MARIN ET AL. (2000) construct a structural diagnosis analysis, based on financial results and classify the enterprises in given branches by comparison with the national average from A+ (best performers) to C (worst performers). The important conclusion is that almost 30% of the total manufactured exports are made by C sectors. From the 6 branches listed above, *clothing, furniture and other non-elsewhere classified activities* and *transport means other than road* are classified as A (only *clothing* is A+) and they cover 27% of the manufactured products. In fact, the highest and almost equal share in total manufacturing exports is supplied by the A+ sectors (7 sectors – 28% of manufactured exports) and C- sectors (5 sectors – 29% of manufactured exports). It is hard to explain this polarisation. Probably, it resides in the divergent way in which Romanian sub-systems of companies connect to the external environment. The best performers are those that received most of FDI, restructured and have low cost of labour. They are to an important degree integrated in the western networks, not only through commercial relations, but also through vertical integration. Sometimes, Romanian firms are integrated horizontally, especially if they are part of a TNC. The worst performers are facing the shrinking of their demand and they address the external market mainly by practising prices below the costs and cumulating losses. The aggregate study of the European Institute in Romania (2001) demonstrate that two of this leading exporters are net losers of the commercial integration in Europe: *chemical industry* and *furniture*. On the other hand, one of the most difficult to restructure branch, *metallurgy*, seems to enjoy benefits from the trade liberalisation²⁰.

A highly important mean of integration of Romanian economic agents is the OPT production. As it results from the table below, some of the sectors that produce in OPT, are those that registered also a positive growth in 1999. Especially *clothing* and *leather and footwear*, but also *electrical and optical equipment* seems to be positively affected by the integration into world economy. They are also top Romanian exporters. Some special cases worth to be mentioned: *foodstuff* production grew, fuelled by the growth in demand and FDI. The Romanian agriculture is a good supplier for the industry, in the same time mostly targeting the domestic market. *Textile industry* saw a pronounced decline since 1995. One of the reasons is the change of consumer preferences away from the synthetic fibre production. Foreign capital is oriented towards natural fibre production and only specific enterprises or production lines, which covers a low part of the total production²¹. Nevertheless, all major products saw a decline. The apparent growth in *metallic construction* is conjectural: it follows few years of major decline (to 50%) beginning in 1997. A special case is the *transport industry*: it will be discussed later

Table 7: Production growth and OPT production

¹⁹ Data for 1999

²⁰ The quoted study rely on estimated values of a comparative advantage

²¹ We face therefore an aggregation effect

	Production growth, 1999/1998	OPT production index²², 1999 %
Manufacturing – total	98.84%	12.1
Foodstuff and tobacco	115.87%	2.3
Textile and clothing	92.47%	68.3
17 – Textile industry	75.10%	20.2
18 – Clothing industry	105.51%	86.3
Leather and footwear	101.70%	76.3
Wood processing	98.41%	2.9
Paper and cardboard, printing and recording	95.52%	0.0
Petroleum processing, coal coking and treatment of nuclear fuels	74.40%	17.0
Chemical industry, synthetic and artificial fibres	102.12%	1.2
Rubber and plastic	78.20%	1.7
Other non-metallic products	88.42%	0.0
Metallurgy	63.28%	3.2
Metallic constructions and products	116.86%	1.6
Machinery and equipments	85.01%	0.1
Electric and optical machinery and equipments	104.69%	13.9
Transport means	98.35%	0.0
Furniture and other industrial activities	105.73%	2.8

Source: CEMATT and Romanian Statistical Yearbook (2000)

The state and external policy

Romanian external trade policy was inclined towards stronger protection of raw materials and intermediate goods producing sectors against the international competition through higher import taxes²³. Generally, Romania, as developing state, was allowed within Uruguay Round to a more protectionist trade system. As a consequence, Romania has an important protection of domestic industry:

Table 8: Weighted average of import custom taxes for all industrial products (%)

Before Uruguay Round	11.7
After Uruguay Round	33.9

Source: NEGRESCU at al. (2001)

An important specific feature of Romanian custom system is the excessive differentiation of import taxes layers (NEGRESCU at al, 2001). At the end of 1999, Romania had 81 different import taxes, from which only 31 were applied, compared with the majority of countries where there are no more than 10 different rates applied (*ibdm.*) Finally, what distinguish Romania from this point of view are the slightly higher import taxes for the raw materials

²² Index of OPT production is the share of foreign client expenditures in total production costs: $I_1 = \frac{I_{rc}}{I_{rt}} \times 100$

²³ many import duties were lifted from the 1st of January, 2002

and semi-processed goods. As stated by NEGRESCU et al. (2001) this is an example of negative protection and is part of the asymmetric attitude of the state towards different sectors.

The table below reveals the specificity of Romanian trade policy in this respect:

Table 9: Simple mean of import duties

	Raw materials	Semi-processed goods	Manufactured goods
Czeck Republic	0,9%	4,2%	4,9%
South Korea	8,7%	8,0%	14,3%
Filipines	19,0%	23,4%	29,1%
India	41,3%	52,4%	65,1%
Mexic	33,8%	34,8%	34,9%
Poland	6,2%	9,3%	11,6%
Romania	31,2%	31,9%	30,1%
Thailanda	17,9%	26,9%	29,3%
Turcia	20,9%	40,4%	46,9%
Tunisia	29,1%	32,5%	35,5%
Ungaria	5,3%	5,4%	8,9%

Source: Market Access: Unfinished Business. Post-Uruguay Round Inventory and Issues, WTO Special Studies 6, 2001; p.14-16 (extracted from NEGRESCU et al. (2001))

Exchange rate policy had also a role to play in export and integration of Romanian industrial branches. From 1993 to 2000, the exchange rate appreciated by 5% if deflated with the price index of textiles and ready-made clothes and by 22% if deflated with the price of extraction industry products. The external competitiveness of manufactured products was helped by a lower appreciation of the exchange rate policy when deflated with their production prices, while the internal producers of raw materials were protected through import barriers.

Therefore the external competitiveness of Romanian products is insured by low prices, corroborated with, in a part of the manufacturing industry, increase in quality and management²⁴. Co-operation with western partners (through direct investment, OPT production or direct privatisation) is essential.

The Romanian government encourages the FDI mainly through fiscal incentives. The new Investment Law in Romania for the promotion of direct investment was promulgated in June 2001 and provides fiscal incentives on investments exceeding US\$1 million. The investor is permitted accelerated redemption of 50% of the value of fixed assets, exemption from customs duty and delayed payment of VAT on local procurement. Government also offers professional advice to accompany foreign investors in the initial set-up phase of their business to facilitate the interaction with Romanian governmental bodies. The measures did not succeeded however in attracting foreign investment on a comparative size with other CEECs. To these facilities can overlap those granted for disadvantaged areas, industrial parks and free trade zones. Companies established in the free trade zones receive incentives regarding the payment of VAT, excise, income tax, customs duty, the repatriation of profits and 100% foreign ownership throughout the period of their activity. Very few special incentives on economic sectors are granted²⁵, but supplementary incentives are usually negotiated during privatisation.

The role of FDI

²⁴ Which can be afforded especially for the products with high share of labour input

²⁵ See the wage tax exemption for IT personnel

The vicious cycle can be broken by investment in new technologies that would diminish the energy and raw materials consumption. Since national investment in long-term restructuring is expensive and risky, due to the market volatility, the role of FDIs is critical. The FDIs can create, as stated in chaos theory, *attractors*, around which the economic system could form stable structures, following laws of trend evolution. Such process started in several branches, of which we will detail some examples, but according to some authors [MARIN ET AL. (2001)] their dimension did not reach yet the critical level to drive effects on the national economy as a whole.

Greenfield foreign investment contribute 80%, other 17% are oriented towards privatisation²⁶ and the tiny rest act on the capital markets [DOCHIA (1999a)]. The foreign investment is also very concentrated: the main foreign investments in Romanian industry (top 100- 1% of the total number of investing companies) covered at the end of 2000 71% of the total capital subscribed since 1991. From these major investments, 50.25% were made in industry. Data, in mill. USD, as recorded at the end of 2000, are presented in the table below:

Table 10: Share of top foreign investments

Total capital subscribed in hard currency	Capital subscribed by the top 100 foreign direct investments	Capital subscribed by the top 100 foreign direct investments in industry
5001.9	3574.46	1796.4

Source: Chamber of Commerce and Industry, Foreign Investments in Romania, bulletin no. 35 and Business Review, vol. 4, nr. 45

From the total FDI, 80% was subscribed by European investors – implicitly, is on European markets where the Romanian firms tend to integrate the better.

The structure of FDI on sectors is close to the one in other countries in Eastern Europe:

Table 11: Sectoral foreign investments (total, %):

	Romania	Central and Eastern Europe
Heavy industry	23.3	17
Light industry	10.2	14
Foodstuff industry	11.8	11
Agriculture	3.5	3
Construction	5.2	N/A
Trade	18.2	12
Tourism	2.8	N/A
Transports	7.8	9
Services	17.3	14

Source: MARIN ET AL. (2000)

The top investments in industry range from 252 mill. USD invested by Renault France in car manufacturing until the end of 2000 to 7.9 mill. USD invested by Ganahl, Austria in manufacture of paper and cardboard.

²⁶ Privatisation contribution to attract foreign investment is relevant only after 1997, when the privatisation of bigger SOEs started de facto

The top foreign direct investments in industry are distributed on main sectors as follows:

Table 12: Major investment and export

Industrial branch	Branch Export, mil. USD (2000)	Nr. of top foreign investors	Share in total top foreign investment in industry
Foodstuff and tobacco	147.6	22	27.02%
Transport means	569.7	4	25.94%
Metallurgy	1590.7	7	9.95%
Other non-metallic products	206.8	7	7.60%
Chemical industry, synthetic and artificial fibres	631.9	7	7.56%
Rubber and plastic	90.2	5	6.32%
Petroleum processing, coal coking and treatment of nuclear fuels	695.5	2	5.09%
Electrical and optical machinery and equipments	929.1	4	2.58%
Wood processing	531.6	2	1.90%
Paper and cardboard, printing and recording	81.3	5	1.56%
Furniture and other industrial activities	516.3	1	1.55%
Extraction industries	34.4	2	1.25%
Metallic constructions and products	163.8	2	1.03%
Machinery and equipments	516.3	2	0.60%
Energy	46.7	1	0.02%
Leather and footwear	836.2	1	0.01%
Textile and clothing	2506.0	0	0.00%

Source: authors calculations from data published by Romanian Business Review, vol. 4, nr. 45 and CEMATT Database.

A detailed table with information on sectoral investors is provided in Annex. The investors are ranked according to their total investments in Romania²⁷. The conclusions we draw is that, with the exception of *foodstuff* and *mean of transportation industry*, primarily oriented to the domestic market, the top FDI helped the Romanian producers to penetrate foreign markets as exporters (*metallurgy, chemical industry, petroleum processing, electrical equipment*). Still, when possible and efficient, OPT production was used rather than pure FDI (*leather and footwear, textile and clothing*)

FDI as attractor: the case of car industry

The car industry attracted the biggest foreign investments so far. French car giant Renault purchased a majority stake (51%) of the local top car builder Dacia Pitesti, followed by an other package up to 92%. The investment was one of the most successful investments in Romania ever. Dacia currently holds 62% of the Romanian market. The level of investment from 1999-2004 is planned to 515 million Euro (270 already spend) with the intention of turning it into a major exporter. An additional 350-450million Euro will be invested into the new X90 model, to be launched

²⁷ The top will be reversed by the biggest privatisation deal not only in Romania, but in the whole South-Eastern area, the selling of the Sidex steel mill for almost 500 millions USD to the LNM Holding Company. The company

in 2004. According to the communication director of Renault Romania, Romania is the country where Renault registered the highest growth in 2000 and 2001. The other second investor in the car industry is the South Korea's Daewoo Motor who invested more than 850 million dollars between 1994 and June 2001. More investment (20 million dollars) is to be done in the incoming years. The US Trinity group invested from 1990 in the railway industry (See Annex).

As a consequence of the presence of these companies, the transport means industry was one of the three industrial branches that recorded growth between 1994-1999 (74%²⁸ comparing to -18% for the average manufacturing). Although Romanian producers (Daewoo and Dacia Renault) dominate the automobile market the competition from abroad is though. The local producers are addressing the market by producing average and good quality cars at affordable prices. As economic strategy, they typically reduce the overstaffing to increase productivity and to adjust the production to the market demand. From 1999 until March, 2002, Dacia Renault alone will lay off 5600 of its 22000 employees. There are positive effects on other branches: rubber processing especially. Since the foreign investment in car industry, tyre producers as Continental²⁹, Germany from 1998 and Michellin, Switzerland, from 2001 penetrated Romanian market. Other investors provide spare parts, rubber and plastic products etc. Production and sales of oil increased. Transport means producing industries have typically have strong influence on numerous other branches, and particularly in Romania, foreign investment in car industry seems to play the role of a real attractor.

produces 4% of Romanian GDP and it is estimated to account for 80% of losses by state-owned enterprises in Romania.

²⁸ 1999 against 1994

²⁹ Although the connection of Michellin with Renault rises no doubt, there is little evidence of Continental entering the Romanian market for becoming supplier of Daewoo. This aspect needs further investigation.

Table 13: Basic data on the car market in Romania (number of cars)

	1998	2000	2001	2002 ³⁰
Sales on Romanian market	aprox. 160000	84199	91525	125000
Imports (new products)	20661	20230	30992	>40000
Imports ³¹ (second-hand products)	62000	22500	45000	Significant decrease
Internal production	127000	77012	68761	85000
Exports	9300	Na	14000 ³²	-
Import duties				
- for manufactured cars	30% (12% for imports from EU and CEFTA countries)			
- for parts	30% (10.5% for imports from EU and CEFTA countries)			

Source: Romanian Association of Producers and Importers of Road Cars (APIA)

The optimist forecasts are very much connected with the compulsory complying with Euro 3 standards³³ for imports of new products and second-hand ones, but depends also on the stability of domestic growth as well as on the plan of eliminating duties for car imports from EU countries.

The domestic producers are using imported parts or, when possible, domestically produced ones (given the important import taxes). This encouraged to some extent the supplying firms to penetrate Romanian market. However, given the high level of technological integration in Romanian car industry, some of the components can be and are internally realised. Romanian state attempted to encourage the internal producers by offering fiscal incentives for firms that use more than 60% of their components produced in Romania. The legislation had to be quickly withdrawn under the pressure of *aquis*. What is interesting to note is that in order to benefit of the incentives, Daewoo chose to fully internalise some of the first-tier suppliers, instead of developing relationships with independent firms. From Renault inputs, about 30% are now produced in Romania. Although still modest, the effects of network formation are present. On the other hand as shown by UN (2001), many countries encourage OPT in their car industry. It was not the case of Romania, but the overall effect of this policy is hard to evaluate, as the short-term advantages of OPT might not be worth postponing the long term effects of developing pylons for future networks.

The FDI as domestic consumer oriented investment

Brau Union Romania, founded in 1998 as a subsidiary of the Austrian Group BBAG, is currently the leader of the Romanian beer market with a market share of 36%. The leadership position came as a result of the acquisitions of the breweries based in Arad, Constanta, Craiova, Reghin, Bucharest, Miercurea Ciuc and Hateg. From the beginning of its presence on the Romanian market, Brau Union invested over 100 million USD, from which 18 million only in 2001 and occupies the 12th position in the first 100 top investments in Romania. Brau Union invested in product quality and technological transfer – it now produces in Romania under licence Kaiser beer, a representative brand of the group.

The Romanian beer market significantly developed since 1997. The domestic production grew from 7.5 million hl. to 12.1 million in 2000. This sector is considered as one of the most competitive sectors in Romania, with around 40 beer producers, many small regional breweries. However, 60 % of the total market is controlled by international

³⁰ APIA forecasts

³¹ Unofficial data from APIA

³² Export in 2001 consisted mainly in Daewoo cars

³³ (Mainly) Pollution standards for car builders currently enforced in EU.

beer producers. The external competition in this area is hindered by very high import taxes 248% (55% for imports from EU)

The regional dimension

A distinctive feature of Romanian industrial development is the regional location. As known from economic geography literature (GLAESER, 1992, COMBES, 2000, BATISSE, 2001) three factors influence the development of local economy: labour market pooling, importance of geographical proximity in supplier-customer relationships and innovation-knowledge spillovers. To these add the industrial-regional development programmes promoted by the national-local authorities. The recent literature stresses the alternative importance of agglomeration or Marshall-Arrow-Romer externalities (where regional growth is stimulated by agglomeration of firms in the same sector and competition between them) and urbanisation or Jacobs's externalities (where variety of activities located in the same area stimulates the growth of the region). Giving an answer to a similar question for Romania would necessitate a dedicated econometric-panel study as in BATISSE (2001) for China, and, to our knowledge, it was not yet done for Romania. According to the study of MARIN et al (2000), based on three financial indicators (general profitability, due payments and net arrears), the regional diversity in what concerns economic performance is clear-cut³⁴: regions with the best performance are Bucharest, Center, Nord-West, (A+) average performance is recorded in the South (B). This NW-S line cut separates the country's two C- areas: West and South West on the left side and North East and East on the right side. The polarisation of the Romanian development is again obvious.

³⁴ the classes of performance are established from A+ to C-, so that B signifies the equivalent of the national average

Table 14: Regional/sectoral structure

Industry	Main areas of localisation
Foodstuff and tobacco	Bucharest, Center
Textile and clothing	North-East, Bucharest
Leather and footwear	Bucharest, North-West
Wood processing	North-East, Center
Paper and cardboard, printing and recording	Bucharest
Petroleum processing, coal coking and treatment of nuclear fuels	South, South-East
Chemical industry, synthetic and artificial fibres	South-West, Center
Rubber and plastic	Bucharest, South
Other non-metallic products	Bucharest, North-West
Metallurgy	South-East
Metallic constructions and products	Bucharest, Center
Machinery and equipments	Center, South
Electric and optical machinery and equipments	Bucharest
Transport means	South
Furniture and other industrial activities	North-West, Center
Energy	Bucharest
Extraction industries	South-East

Source: Authors' calculations

However, the regional specialisation index, the Ginni coefficient³⁵, corroborated with the regional concentration of branches (see table 16³⁶) seems to show that urbanisation effects are present in the Bucharest and Central areas, concentrated primarily on manufactured, final consumption oriented branches, while zones with narrower specialisation in extraction and heavy industry (SW, SE) do not show significant agglomeration effects. NE and S regions are an exception to this rule. Their lower Ginni coefficient³⁷ does not mean urbanisation effects, but industrial underdevelopment, these regions being mostly agricultural. The distribution of turnover of their few industries (light industries insuring a minimum level of supply of consumption goods) do not show any outlier, which lead to a low Ginni coefficient.

³⁵ if the foodstuff branch is excluded, the Ginni coefficient drops to 0.22 for Bucharest and 0.20 for N-W regions

³⁶ The regional specialisation is evaluated based on the sectoral distribution of value added in the region

³⁷ The Ginni coefficient gives the concentration of turnover on a certain branch. Its formula is:

The information on the concentration should be corroborated with the total level of activity to give a complete image.

Table 15: Regional specialisation again (branches covering at least 50% of the turnover produced in the region)

Region	Specialisation	%	Number of sectors
Total	Foodstuff and tobacco, metallurgy, textile and clothing, transport means	52.7	4
Bucharest	Foodstuff and tobacco, electric and optical machinery and equipments , textile and clothing	50.2	3
Center	Foodstuff and tobacco, chemical industry, textile and clothing, transport means	51.5	4
Northeast	Foodstuff and tobacco, textile and clothing, chemical industry	50.7	3
Northwest	Foodstuff and tobacco, textile and clothing, metallurgy, other non-metallic products	54.2	4
South	Foodstuff and tobacco, transport means, petroleum and coal processing	49.6	3
Southeast	Metallurgy, foodstuff and tobacco	56.2	2
Southwest	Transport means, chemical industry, foodstuff and tobacco	56.8	3
West	Foodstuff and tobacco, electric and optical machinery and equipments , metallurgy	49.7	3

Source: CEMATT

The well known specialisation of Romania is revealed: foodstuff and tobacco, textile and clothing and energy-intensive branches (metallurgy and chemical industry).

JACOBS (1969) argue that is the general economic environment that favours growth in a given sector. Localisation of different activities in a given areas mean competition on factors, especially on labour force, which is therefore stimulate to invest in skills and training. Jacobs also suggest that diversification of activities in a given area promote innovation and knowledge diffusion from suppliers to the clients. PORTER (1990), who claims that local competition on factors is more growth conducive than a monopoly, supports this view. Such effects are to be seen in areas like Bucharest. Is not only that the location of headquarters of most foreign investors³⁸ that helped the development of services, trade, foodstuff and clothing producing units, but also the physical proximity of potential suppliers for these big investors that plays a role. An effect of both competition and cooperation is favouring the development of urbanisation effects.

The areas more specialised are also those with the lowest revenue. The explanation for this should be looked for in the barriers of emergence of specific Marshall-Arrow-Romer agglomeration externalities, namely accumulation of knowledge, constitution of an information network and facilitation of innovation transfer from firms in the same activity (BATISSE, 2001). Industries that dominate the poorer regions are state-owned, inefficient and face a shrinking demand. Little innovation and accumulation of knowledge is actually taking place as the firms have both little incentive and means to stimulate it.

With concentration of some regions on lower value added industries, inter-regional complementarities were not achieved. Instead with self-sufficiency of more developed, less specialised areas, a growing regional disparity arises.

The underachievement of agglomeration effects in more specialised areas and growing regional disparities underlie three problems of industrial development and integration in Romania: (1) lack of distributional/informational

³⁸ 57% of the companies receiving investments from the top 100 investors are located or have they headquarters in Bucharest

networks between potential suppliers and clients, (2) behavioural patterns originating in the communist heritage and (2) inefficiency of regional development policy.

Table 16: Regional specialisation

Cod CAEN	Bucharest	Center	NE	NW	S	SE	SW	W
Foodstuff and tobacco	31.2	22.0	22.5	29.8	20.1	19.2	13.4	23.3
Textile and clothing	7.6	10.8	15.6	9.4	5.8	6.2	3.5	10.0
Leather and footwear	3.4	2.7	1.6	4.3	0.3	0.1	0.9	4.1
Wood processing	1.2	8.5	10.3	6.9	2.5	2.1	1.6	4.9
Paper and cardboard, printing and recording	9.6	3.5	4.8	3.4	1.4	2.3	1.6	1.3
Petroleum processing, coal coking and treatment of nuclear fuels	0.0	0.7	5.6	1.8	9.5	7.5	0.0	0.0
Chemical industry, synthetic and artificial fibres	7.1	10.9	12.6	4.4	4.6	3.3	19.9	2.0
Rubber and plastic	3.4	2.6	1.2	3.1	3.8	1.5	1.6	2.9
Other non-metallic products	6.5	5.1	3.5	7.2	5.8	1.9	2.4	5.6
Metallurgy	1.4	4.0	4.5	7.8	6.5	37.0	19.1	11.5
Metallic constructions and products	6.5	5.6	5.0	4.9	5.4	4.4	4.3	4.3
Machinery and equipments	4.4	7.1	3.6	4.9	6.5	0.7	1.3	3.9
Electric and optical machinery and equipments	11.4	3.3	2.0	3.1	4.6	0.8	4.9	14.9
Transport means	3.0	7.8	3.1	2.4	20.0	10.5	23.5	7.3
Furniture and other industrial activities	3.3	5.4	4.1	6.6	3.2	2.5	2.0	4.0
Ginni Indicator (regional specialisation)	0.290	0.201	0.232	0.262	0.227	0.377	0.311	0.237
Turnover in manufacturing (% in total)	18.9%	13.1%	10.9%	12.3%	14.9%	12.7%	10%	7.2%
Ratio regional/national per capita turnover in manufacturing	1.77	1.063	0.615	0.93	0.919	0.925	1.53	0.751
Regional value added (% in total GDP)	16.8%	12.7%	12%	12%	13.3%	13.1%	9.6%	9.6%
Ratio regional/national per capita value added	1.63	1.079	0.761	0.945	1.048	1	0.897	1.048

Source: Authors' calculations from CEMATT database

The areas preferred by the foreign investors are Bucharest, the western Romania and the free trade zones (Arad-Curtici, Giurgiu and Timisoara). Availability of an educated workforce and the proximity of EU countries make Western Romania attractive. But also the more stable administration, Timisoara being one of the few areas with the same local administration over the recent years. Consequently, firms like German Continental (with almost 100 mil. USD investment so far), Kromberg & Schubert Holding, Siemens Automotive, Solectron, Alcatel and many others are located in Timisoara. The free trade zones have their attractiveness due to the incentives granted. Free trade zone Curtici-Arad attracted 19 concession contracts and 8 rental contracts. Free trade zone Giurgiu is set to receive further 200 mill. USD after expanding its industrial park (see Box 3 on the legislation recently introduced).

Box 3: Industrial parks

Government Ordinance no. 65/2001 on the organisation and operation of industrial parks (“GO no. 65/2001”) provides for new incentives granted on certain investment.

According to GO no. 65/2001, industrial parks are limited zones in the boundaries of which economic, scientific research and/or technological development activities are performed by using the human and material potential available in the region.

The land related to the industrial park has to comply cumulatively with all the following conditions:

- (a) ensure the access to national or European roads;
- (b) have a surface of at least 10 ha (this conditions is not applicable to industrial parks focusing on scientific research, technological development and/or information technology purposes);
- (c) will be owned or used for at least 30 years by the company requesting the industrial park license;
- (d) lacks any encumbrances;
- (e) does not make de object of any pending litigation in respect of its legal status.

The Ministry for Development and Prognosis (“MDP”) is the specialised central public authority in charge with promoting and establishing the industrial parks and managing the necessary resources for its development.

An industrial park is operated by commercial agreements concluded between the managing company and Romanian legal entities or branches/representative offices of foreign companies, where applicable, able to perform specific activities inside industrial park.

Companies operating in industrial parks benefit from the following incentives:

- (a) exemption from payment of charges levied for changing land destination or land removal from the agricultural circuit, applicable to the park managing company;
- (b) deduction from the taxable profit of a 20% rate from the value of the investment performed in the industrial park, after GO no. 65/2001 entered into force. Such exemptions applicable only to construction investment activity for transport and distribution of electric and thermal power, natural gas and water. Deduction for these utilities shall be calculated solely for accounting purposes for the month the investment was commissioned in, by recording it in the tax statement under deductible expenses of the company. Fiscal loss may be recovered from taxable profits obtained during the following 5 years;
- (c) postponement until 25th day of the month following full investment commissioning of the VAT payment obligation for materials and equipment necessary for the park’s connection to main roads or existent utilities networks or the providers of such facilities. This specific incentive implies postponement of the right to deduct the VAT value corresponding to same investment until the same date.

GO no. 65/2001 provides that if more than one incentive regime is applicable to an investment, the company performing it has to explicitly opt for one of them. [MUSAT SI ASOCIATII, 2001]. This implies that, for instance if an industrial park is located in a disadvantaged area, the investor can choose either the regime of investments for parks of the one for disadvantaged areas.

The first industrial parks will be opened in Galati and Bacau in the near future.

2. Case study – the clothing and textile industry

From the regional specialisation data, it appears that indeed, *textile and clothing* is one of the main sectors of Romanian industry. A regional specialisation also exists: four of the Romanian geographic regions covers 69% of the total turnover and export (Northeast, Bucharest, Centre and Northwest).

As in case of IT branches, textile and clothing did not attract single “top” investments, but numerous smaller ones. The investments, both internal and foreign, had an important contribution to the technological transfer and restructuring. Especially the clothing industry benefited in the 1992-1999 period of one of the highest growths of investments: 5.7% in 1995 and 9.8% in 1999.

However, since 1996, Romania represents the second biggest supplier for clothing subcontracting in the EU, after Poland, with a contribution of approx. 870 mill. DM (440 mill. EURO). This is the main characteristics of the sector, the OPT production represented in 2000 74.6% of the total local production, from which 26.1% of textile products and 89.8% from clothing.

Textile and clothing is also the main single exporter of Romanian manufacturing industry. Its share in total Romanian exports grew from 15.9% in 1994 to 24.2 % in 2000. It particularly covers as much as one third of Romanian exports in the EU. Essentially, the entire Romanian export of the *textile and clothing* sector is directed now to the EU.

Table 17: Export indicators for Textiles and Clothing mill. USD

Indicators	1994	1995	1996	1997	1998	1999	2000	Volum indices
Export - total, From which:	6151	7910	8084	8431	8302	8487	10367	1.69
E.U.	2965	4283	4569	4768	5358	5562	6618	2.23
Share UE/total, %	48.2	54.1	56.5	56.6	64.5	65.5	63.8	
Export - EB, From which:	1156	1570	1733	1942	2162	2197	2506	2.17
EU	980	1337	1527	1718	1950	2009	2271	2.32
Share EU/total EB, %	84.8	85.2	88.1	88.5	90.2	91.4	90.6	

Source: CEMATT database

It is worth noted however, that the decline in the share of EU in both total and *textile and clothing* exports, does not represent a saturation of EU market. With the simultaneous growth in the volume of export, it actually shows a slight tendency of Romanian exports to address more diversified markets, especially in Eastern Europe.

Table 18: The share of Textile and Clothing sector in total exports (%):

Indicator	1994	1995	1996	1997	1998	1999	2000
Share of <i>textile and clothing</i> in total export	15.9	19.8	21.4	23.0	26.0	258.9	24.2

Share of <i>textile and clothing</i> export to UE in total export to UE	33.1	31.2	33.4	36.0	36.4	36.1	34.3
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Source: CEMATT database

The main trading partners of Romanian *textile and clothing* exports are Italy, Germany, Great Britain and France, that represent together over 90% of the total Romanian export from the *textile and clothing* sector to EU and 80% of the total Romanian *textile and clothing* export.

Clothing industry represents 91.9% of total exports of the sector in 2000 (from 84.8% in 1994). The Romanian export specialisation refers mostly to products from NACE 18 – *Clothing, fur and leather wearing apparel*.

Table 19:

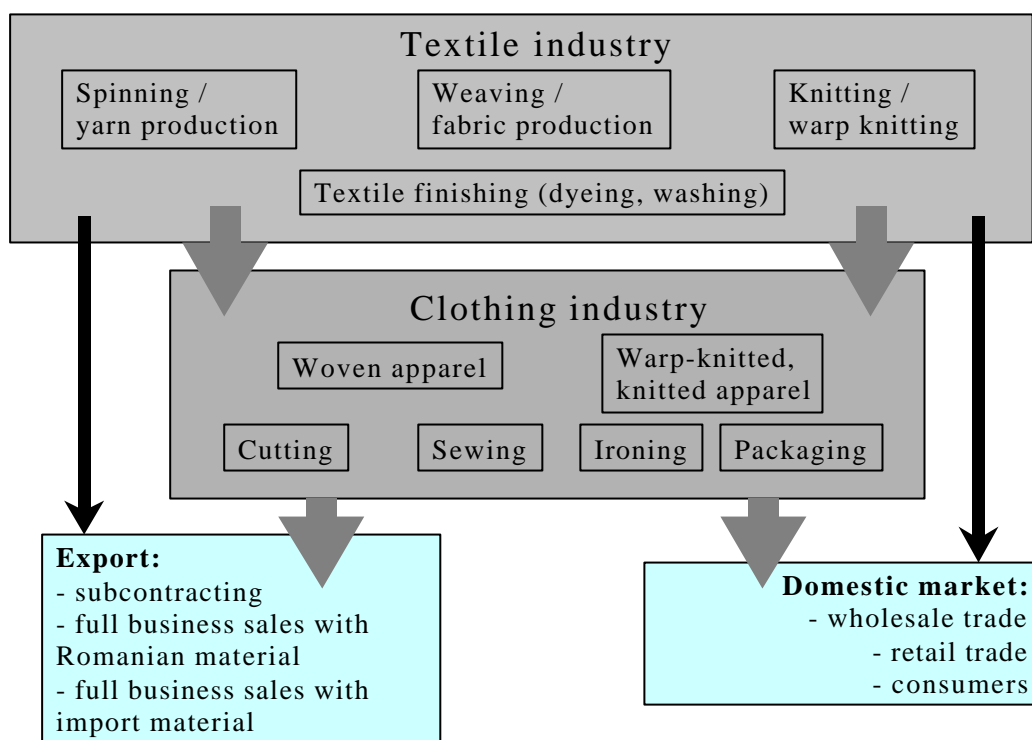
1999 (mill. USD)	TEXTILE	CLOTHING
Import	1410	214
Export ³⁹	370	1824

Source: Romanian statistical publications.

As it appears clearly from these aggregate data, while the Romanian clothing industry mainly focuses on export, the textiles industry mainly supply the domestic market. Still, most of the internal demand for textile industry products is covered from imports.

On the internal market exist however economic agents that could supply the entire chain of production as it is shown in the graph below. They have nevertheless old technology with a degree of degradation of over 50%. In these conditions, producing quality textile domestically is expensive. National production declined while imports grew.

³⁹ in 2000, export increased to 2081.6 mill. USD in clothing and 424.4 mill. USD in textiles



Source: IBD "Textile and clothing industry in Romania", 1998

Table 20: The main economic indicators of the textile and clothing sector (for 1999):

Characteristics	Value	Share, %
Number of companies - total, from which:	7222	100.0
in companies with 0 - 49 employees	6095	84.4
in companies with 50 - 249 employees	778	10.8
in companies with ≥ 250 employees	349	4.8
Turnover - total (bill. lei), from which	3714	100.0
in companies with 0 - 49 employees	3534	14.9
in companies with 50 - 249 employees	4547	19.2
in companies with ≥ 250 employees	15633	65.9
Employees total, from which	372303	100.0
In companies with 0 - 49 employees	38316	10.3
In companies with 50 - 249 employees	87962	23.6
In companies with ≥ 250 employees	246025	66.1
Export - total (bill. lei), from which	14136	100.0
In companies with 0 - 49 employees	718	5.1
In companies with 50 - 249 employees	2610	18.5
In companies with ≥ 250 employees	10808	76.4
Turnover on ownership - total (bill. lei), from which:	23714	100.0
Majority state owned, bill. Lei	1561	6.6
Majority private, bill. Lei	22153	93.4

Source: CEMATT database

Although small sized enterprises represent 95.2% of total number of enterprises they cover only 34.1% of total turnover. Export is being realised mainly (76.4%) by big and very big enterprises. The main reason of this situation is not the inner performance of the SMEs in the sector. Two main explanations exists: in the first run, bigger firms have negotiation power on the external market and more solid supply-customer relationships, secondly, the lack of fiscal incentives for export in Romania.

Export intensity by enterprise size:

- big enterprises (over 250 employees): 69.1%
- medium sized enterprises (50-249 employees): 57.4%
- small-sized enterprises (0-49 employees): 20.3%
- total enterprises: 59.6%

The sector is basically entirely private, the share of turnover in private sector representing 93.4% of total turnover. One particularity of Romanian system of private companies is that it consists of private companies and cooperatives. This however has no major implication besides the fact that cooperatives are joint property of employees and the "UCECOM" associations, therefore, they can not be sold to a private owner.

Recently, Marin et al. (2001) analysed comparatively 46 subsystems (industrial branches) of Romanian companies. They use a breakdown of companies in five groups from C (position significantly defavourable) to A+ (position significantly favourable), using a diagnostic-type of economic-financial analysis. The sector 18 (clothing) was found with an A+ position, while 17 (textile) is at the opposite pole, with C-. Boscaru et al. (2000) shows econometrically that in case of *textile and clothing* sector, subcontracting is the driving force of the sector's growth. The *textile and clothing* sector and its components is the perfect example of a profitable development due to the orientation towards the export and to the transfer of technology and know-how through subcontracting and foreign investment

A SECO (Germany) analyse based on interviews with western companies which have their products made by Romanian subcontractors for several years, revealed the following perceived advantages granted by the cooperation with Romanian partners:

- very good products and production /performance ratio, when compared with more reformed economies as Poland or Hungary (where price and costs have risen significantly) and with newly reformed countries as Russia or Ukraine (where the manufacturing quality is still poor and adequate equipment is lacking);
- many years of production experience, especially in subcontracting with German and Italian clothing manufacturers ("traditional business");
- relative proximity to the EU;
- free trade with EU for both subcontracting and own collections
- Romanian companies present high flexibility to customers requirements, delivery terms, amendment options, etc.

Still, some niches could be better exploited. One example is hemp and linen, ancient tradition in Romania. The country enjoys temperate climate and good natural conditions for the hemp and linen planting and inherited

craftsmanship. However, the production downsized to one third to its 1989 level. Some companies, joint-ventures with US and German partners, succeeded nevertheless to build a profitable business on this niche. The quality of yarn (hempen yarn in particular) has been considerably improved. Romanian hemp and linen industry offer environmental friendly output to a sensitive market. Investments are nevertheless still needed in labour protection and waste water treatment. The practice of melting hemp fibres in water, not used in EU due to the high labour costs, makes the quality of Romanian fibres among the best in the world. The availability of cheap work force could offer a comparative advantage of Romania on international market.

Table 21: Production of flax and hemp yarns and flax and hemp type yarns (thou tonnes)

1993	1994	1995	1996	1997	1998	1999
9	7	8	7	5	5	4

Source: National Commission for Statistics

The foreign investment in the sector

Total foreign investment in the Textile and Clothing sectors (NACE 17-18=EB) represent 211.9 mill. USD, namely 4.2% of the total capital subscribed as FDI. It breaks down in 55.3% in textile industry (NACE 17) and 44.7% in clothing (NACE 18). The sample⁴⁰ of the top 100 investors covers 76.4% of the total (161.9 mill. USD), divided into:

Textiles - 90.6 mill. USD (56 %)

Clothing - 71.3 mill. USD (44 %)

The sample is representative, which makes the conclusions drawn from the analysis applicable for the whole sector.

Table 22: Distribution of foreign investment in textile and clothing according to the country of origin:

Country	Number of investors	Total investment (mil. USD)
Germany	22	36.69
Italy	28	32.55
Switzerland	5	24.70
Holland	4	10.60
Austria	2	7.58
Liechtenstein	2	7.53
Great Britain	6	6.05
Czech Republic	1	5.59
Belgium	3	5.52
Virgin Islands (Britain)	3	5.01
USA	2	4.93
France	4	3.53
Turkey	5	3.37
Cyprus	5	2.98

⁴⁰ Source of the top 100: Romanian Chamber of Commerce and Industry, cumulated from 1991-to end 2001

Luxembourg	1	1.15
Panama	1	0.78
Israel	1	0.77
Greece	1	0.71
China	1	0.57
Hungary	1	0.48
South Korea	1	0.44
Canada	1	0.39
TOTAL	100	161.9

Source: Authors' calculations

The concentration of FDI on the origin country is remarkable: 5 countries (Germany, Italy, Switzerland, Holland and Austria) cover 53% of the investment in the sector. 9 of the total 15 countries of the EU are present in the sample, covering together 64.5% of the total investment and 71% of the number of companies.

Table 23: *Distribution of foreign investment in textile according to the country of origin*

Country	Number of investors	Total investment (mil. USD)
Germany	9	23.01
Switzerland	4	21.195
Italy	13	18.12
Austria	2	7.58
Netherlands	1	6.82
Belgium	3	5.52
France	3	2.48
Luxembourg	1	1.15
Turkey	1	1.15
Israel	1	0.77
Liechtenstein	1	0.56
Cyprus	1	0.55
Hungary	1	0.48
South Korea	1	0.44
Virgin Island (Britain)	1	0.44
Canada	1	0.39
TOTAL	44	90,65

Source: Authors' calculations

Table 24: *Distribution of foreign investment in clothing according to the country of origin*

Country	Number of investors	Total investment
Italy	15	14.42
German	13	13.68
Liechtenstein	1	6.97
Great Britain	6	6.06
Czech Rep.	1	5.59
U.S.A.	2	4.93
Virgin Island (Britain)	2	4.57
Netherlands	3	3.78
Switzerland	1	3.51
Cyprus	4	2.43
Turkey	4	2.23
France	1	1.05
Panama	1	0.78
Greece	1	0.71
China	1	0.57
TOTAL	56	71.27

Source: Authors' calculations

A very important correlation exists between the distribution on countries of the investment in textile and clothing and the distribution of exports: the integration of industry into the European markets through FDI and OPT production is obvious.

Table 25: *Export of textile and clothing by main country of destination in 2000 (72.5% of total export of textile and clothing):*

- Italy 815.4 mill. USD
- Germany 703.4 mill. USD
- Great Britain 298.7 mill. USD

Through investment in modern technology, organisation and competitive management and with the low cost of the labour in Romania, investors have successfully imposed products realised in Romania on the western markets.

Table 26: *Investments and economic development in textile and clothing*

Region	Number of investors	Total investment	Share in total turnover in textile and clothing
Northeast	13	49.91	20.49
Bucharest	22	25.38	18.21
Center	14	25.04	16.69
West	10	15.54	13.51
Southeast	13	15.28	9.31
Northwest	12	15.02	9.18
South	13	12.71	8.61
Southwest	3	30.42	4.00
Total	100	161.92	100.00

Source: The Chamber of Commerce and Industry, Bucharest
 The Spearman coefficient between the investment and the turnover is 0.8 (significant at 2%). The development of this sector is clearly driven by foreign investment and OPT, that integrate Romanian agents into European networks.

3. Conclusions

In this paper we made an overview on the signals of the networks' formation and the relation of this process with markets' liberatisation and evolutions. We follow the three dimensional (global-national-regional) approach of network alignment in KIM AND TUNZELMAN (1998) Lacking direct evidence we rely of available (indirect) data to investigate the emergent new structures of firms. We consider that the basic pre-conditions of vertical and horizontal integration and alignment (lack of entry-exit barriers, coherent competition-enhancing governmental policy, modern system of commercial mediators other elements of the institutional framework, including managerial culture) are underdeveloped and not fully functional. On the other hand, the early liberalisation of external trade and the incentives for the FDI allowed to the best performing economic agents to integrate into the world and primarily European markets. On the national and regional level, little arguments exist to sustain an advanced process of formation of stable networks, except for the "relational networks" based on personal contacts of the managers. In

addition, the business environment is unstable, unfriendly and the Romanian society is characterized by multidimensional polarisation.

In this conditions, we concentrate mostly on the external factors as business catalysts and stabilizers, by analysing three different cases: *FDI as attractor* (namely as a center around which suppliers and clients could organise themselves in stabile structures) taking for example the car industry, *FDI as domestic customer oriented investment* (namely as a business determined to occupy and dominate a stable market of an popular consumer good), and we referred to the beer market, and finally we construct a small case study on the *OPT production* as a mean to integrate Romanian businesses directly into foreign networks – *the textile and clothing industry* .

We feel that it is in these points where the formation and alignment of the networks started. It however needs a less uncertain environment, a more even attitude of the state, enforcement of fair competition policy and an acceleration of institution building to continue and succeed.

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Annex: Top 100 investors in industry in Romania (end 2000) – mill. USD

Industrial sector	Investor	Activity	Investment
Transport means	RENAULT, France	car manufacturing	251.16
	DAEWOO MOTOR COMPANY LTD., South Korea	car manufacturing	156.12
	TRINITY INDUSTRIES INC. USA	railway industry	44.30
	DAMEN SHIPYARDS GROUP N.V., The Netherlands	ship building	12.40
Total		4	463.97
Chemical industry, synthetic and artificial fibre	MARGA BV, The Netherlands	production of detergents and cosmetic	34.46
	EBRD(VIROLITE POLIMERI FUNCTIONALI S.A. Romania)	chemical products	35.00
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	paint and industrial coatings	6.59
	PROCTER & GAMBLE EASTERN EUROPE, INC., USA	production of detergents and cosmetic	38.08
	SMITHLINE BEECHAM INVESTMENTBV, The Netherlands	medicines manufacturing	0.12
	RICHTER GEDEON VEGYESZETIGYAR RT SA, Hungary	medicines manufacturing	12.55
	COLGATE PALMOLIVE INC., USA	production of cosmetic products	8.32
Total		7	135.11
Foodstuff and tobacco	EBRD (DANONE, Romania)	food products manufacturing and distributions	7.84
	EBRD (PARMALAT ROMANIA SA, Romania)	manufacturing of diary products	2.88
	BRAU UNION AKTIENGESELLSCHAFT, Austria	beer production	50.00
	PHILLIP MORIS HOLLAND BV, The Netherlands	tobacco industry	69.31
	CC BEVERAGES HOLDINGS II BV, The Netherlands	soft drinks manufacturing	50.81
	MOLINO HOLDINGS SA, Luxemburg	soft drinks manufacturing	46.76
	BRITISH-AMERICAN TOBACCO (HAMBURG INTERNATIONAL) Germany	tobacco industry	43.96
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	diary products	0.25
	EUROPEAN CONNECTION ASSOCIATES INC., USA	soft drinks manufacturing	39.29
	INTERBREW CENTRAL EUROPEAN HOLDING BV, The Netherlands	beer production	30.55
	DELTA INTERNATIONAL HOLDINGS SA, Luxemburg	ice-cream production	26.29
	AGRANA ZUCKER UND STARKE AGSA, Austria	sugar manufacturing	18.25
	KRAFT FOODS INTERNATIONAL INC., USA	sweets manufacturing	17.61
	SUCRE-EST DEVELOPPEMENT SA, France	sugar manufacturing	14.05
	NATURAL DORNA INVESTMENT HOLDING SA, Luxemburg	diary products manufacturing	13.53
	SOCIETE GENERALE ROMANIA FUND, France	diary products manufacturing, mineral water	1.64
	PINAT GIDE SANAYI VE TICARET AS, Turkey	food production	10.43
	BONIFAZ KOHLER GMBH, Germany	diary products manufacturing	10.21
	AXIS INVESTMENT LIMITED, Cyprus	sweets and similar product manufacturing	10.18
	HCS HANDELS CONTOR SCHORSCH GMBH, Germany	meat processing	9.02
	GUAPA HOLDINGS SA, Switzerland	drinks manufacturing	9.50
	EFES BREWERIES INTERNATIONAL B.V., The Netherlands	beer production	0.895
Total		22	48.33

Electrical and optical machinery and equipments	EBRD (ARTIC SA, Romania)	home appliances manufacturing	3.09
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	precision molds equipment	0.35
	LISA DRAXLMAIER GMBH, Germany	production of wire & electric cable	36.24
	SOCIETE GENERALE ROMANIA FUND, France	lighting equipment	6.54
Total	4		46.23
Energy	EBRD (DALKIA ROMANIA SRL, Romania)	water energy	0.34
Total	1		0.34
Other non-metallic products	HEILDERBERGER ZEMENT AG, Germany	cement manufacturing	40.88
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	porcelain production	1.31
	HOLCIM LTD., Switzerland	cement manufacturing	41.67
	HENKEL CENTRAL EASTERN EUROPE GMBH, Austria	cement manufacturing	1.69
	LAFARGE GROUP, France	cement manufacturing, constructions materials production	18.99
	VILLEROY & BOCH AG, Germany	sanitary products manufacturing	19.80
	ZALAKERAMIA RT, Hungary	construction materials	11.54
Total	7		135.86
Metallurgy	TIMKEN COMPANY, USA	bearings manufacturing	57.40
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	pipe production, metal protection, galvanizing	4.25
	KVAERNER ROMANIA NV, The Netherlands	metallurgical industry	29.32
	KOYO SEIKO CO LTD, Japan	bearings manufacturing	28.78
	TUBMAN (INTERNATIONAL) LIMITED, Gibraltar	steel pipes, metallurgic industry	28.22
	PIRELLI CABLE HOLDING N.V., The Netherlands	wire production	15.17
	MYTILINEOS HOLDINGS SA, Greece	metallurgic industry	14.78
Total	7		177.91
Petroleum processing, coal coking and treatment of nuclear fuels	PETROTEL LUKOIL HOLDING BV, The Netherlands	oil manufacturing, crude oil processing	53.34
	ROMPETROL GROUP BV, The Netherlands	crude oil processing and associated services	37.76
Total	2		91.10
Rubber and plastic	CONTINENTAL AKTIENGESELLSCHAFT, Germany	tire manufacturing	50.01
	ROMANIAN AMERICAN ENTERPRISE FUND, USA	rubber products manufacturing	5.00
	QUARTERMAINE INVESTMENT FUND BV, The Netherlands	tire manufacturing	32.50
	COMPAGNIE FINANCIERE MICHELIN, Switzerland	tire manufacturing	23.45
	SOCIETE GENERALE ROMANIA FUND, France	plastic items manufacturing	2.10
Total	5		113.05
Machinery and equipment	ROMANIAN AMERICAN ENTERPRISE FUND, USA	high-precision hydraulic parts production	2.67
	INTRACOM SA, Greece	telecom equipment	8.02
Total	2		10.69
Extraction industries	ROMANIAN AMERICAN ENTERPRISE FUND, USA	mining, construction materials	0.02
	LINDE AG, Germany	industrial gas production	22.36
Total	2		22.38

Paper and cardboard, printing and recording	ROMANIAN AMERICAN ENTERPRISE FUND, USA	super-wide format digital printing	0.35
	SIKOR FRANCE, France	paper and cardboard manufacturing	19.58
	CME ROMANIA BV, The Netherlands	film production	0.02
	SOCIETE GENERALE ROMANIA FUND, France	printing	0.01
	GANAHL, Austria	manufacture of paper and cardboard	7.98
Total	5		27.94
Leather and footwear	ROMANIAN AMERICAN ENTERPRISE FUND, USA	shoes manufacturing	0.2
Total	1		0.2
Furniture and other industrial activities	RPR GMBH REMMERT RECYCLING ROMANIA, Germany	waste management	27.79
Total	1		27.79
Wood processing	FRATI LUIGI SPA, Italy	wood processing	17.79
	KASTAMONUENTEGRE AGAC SANAYI VE TICARET ANONIMS, Turkey	wood processing	16.28
Total	2		34.06
Metallic constructions and products	KRUPP HOESCH FEDERN GMBH (KHF), Germany	spare parts manufacturing	17.39
	KVAERNER ROMANIANV, The Netherlands	manufacturing of metallic construction	1.04
Total	2		18.43

Source: Authors calculation from data in Business Review, vol.4, number 45, December 2001