

Economy of Transition: Bulgarian Perspective

TOWARDS A NEOSCHUMPETERIAN MODEL OF POST-SOCIALIST ECONOMIC TRANSITION

IVAN TCHALAKOV

Abstract: The survey results of the year 2000' study of the firms in the advanced computer communications in Bulgaria, Macedonia, and Romania are presented. Focusing on the relationships of the firms with their partners, unique configurations were revealed, named *network profiles*, in which properly economic, political and technological relationships are closely interwoven in various ways. The profiles provide evidence in support of both 'neo-classic' and 'neo-statist' models of post-socialists transition, while at the same time suggesting a new, neoschumpeterian model.

DESIGN OF THE STUDY

The economic' models of the transition prevailing by the early 1990s can be broadly classified in two large groups – neo-classical liberal models and neo-statist models. The traditional market -state opposition is characteristic of both groups. As Koleva pointed out, "... for the neo-liberalists, the state is an end in itself and is destined to be forced out of the field of economic activity and out of the theoretical schemes of analysis. (Kosolowski 1992; Sachs1996). Conversely, for the neo-statists the establishment of a powerful and coherent state is the sole alternative to the weak markets, an efficient means of resolving the problems they have generated, and a reliable tool for reforming the entire society. (Koleva 2000: 11). The two approaches clashed during the first years of Eastern European transformation. However, the 'neo-liberal fallacy' (Hirszowicz, Mailer 1994) was dominant, perhaps because it identified the triumph of capitalism with the triumph of the market. It took notice only of the market revolutions of Reagan and Thatcher (Stark 1992), overlooking the industrial transformations in Germany, Japan and France, which were neither solely market nor hierarchical ones.

Ten years later both models have been subjected to numerous critiques, one of the main being almost complete ignorance of the role of technologies in the process of transition. Recently Janos Kornai in his discussion on the persistence of what he

called ‘soft budget constrains’ in East-European countries proposed the following remedy for coping with the unsatisfactory level of understanding of post-socialist economic transition: “... It needs interdisciplinary research to link theories of economists, political scientists and sociologists and create new, common theories that explain the situation” (Kornai 2000).

In our study we took the ‘back door approach’ of actor-network theory (ANT) as outlined by Bruno Latour: “...No one has succeeded in such a task so far [building a powerful narrative of transition that meets the contradictory demands of economics, political science and sociology]¹. Instead of a powerful synthesis or an overarching metatheory, Michel Callon and I believed it possible to approach the same task through the back door, so to speak, by looking for the *weakest possible infra-theory*... [Its] vocabulary does not aim at describing or explaining but at creating the relativist space in which the actors themselves may be deployed” (Latour 1993:1).

Hence we define our task as an analysis of the emerging techno-economic networks in post-socialist economies and becomes our aim to build such a ‘relativist space’ that may apprehend the actors’ manifestations and their accounts of the world they are living in. There might then be hope of breaking through the existing models and to find what are perhaps strange but certainly solid and vital new actors and new forms of interaction, etc. Only after this task is accomplished can we attempt to shake free from the models of transition and call for a reconsideration of the policies they prescribed.

In the turbulent context of past-socialist economy, when the old economic system no longer exists, but the new economic order is far from settled, the relativist space we are aiming at is ‘ontologically valid’ in a sense. It corresponds to the profile of actors’ activities, which in their uncertain and highly risky environment rarely follow ‘canonical models’. David Stark calls this a specific form of organisational hedging. In transformation economies, he wrote, “...firms have to worry not simply about whether there is demand for their products, or about the rate of returns of their investments, or about the level of profitability, but also about the very principle of selection itself... Because there are multiple operative, mutually coexistent principles of justification according to which you can be called to give account of your action, you cannot be sure what counts. By what proof and according to which principle of justification are you worthy to steward such and such resources? ...To gain room for manoeuvre, actors court and even create ambiguity. They measure in multiple units, they speak in many tongues” (Stark 1998: 134-135).

¹ The original text “anthropology, sociology, history and philosophy of science” refers to social studies of science.

THE POST-SOCIALIST FIRMS.
DOMAINS OF RELATIONSHIPS TO BE STUDIED

Justification for Taking the Firms as the Unit of Study

The concrete version of the *actor-network theory* (“weakest vocabulary possible”) that we develop proceeds from the assumption that the key units of analysis are to be *the firms* in the field of advanced communication technologies and telematics (ACT&T). There are several theoretical arguments for this choice.

First, the firm is one of the three fundamental elements of capitalist economy, together with the *market* and the *federation of firms*: “... Profit-oriented firms have always been the main instrument of the capitalist economy for production and distribution of goods and services, as well as for programming (planning) of the future production and distribution” (Coriat & Weinstein 1995: 190-1991). *Second*, the notion of firm provides the necessary uniformity and ‘*commensurability*’ both inside and between the relativist spaces. This is due to its ability to cover almost the entire spectrum of economic agents in a given sector – from micro-firms of self-employed individuals to the large multidivisional firms and local branches of multinational corporations. *Third*, the emergence of post-socialist firms is one of the most significant signs of transition. There is a very important aspect in the claim, which “...enterprises in the Western sense did not exist in socialism. These, basically production and non-business units were part of the hierarchy. Business functions like marketing, finance, and R&D were rudimentarily developed ‘in-house’ or were entirely ‘outsourced’, either to ministries or to other organisations (foreign trade organisations, branch institutes, industry directorates)” (Radocevic 1997). The post-socialist firms that succeeded the former industrial organisations, as well as the newly established ones, had to develop a series of new skills and organisational capabilities in order to respond to the challenges that the emerging markets were imposing upon them.

Defining the Relativist Space of Firms’ Relationships - Five Main Domains

In a recently published volume, a group of French sociologists and economists point at two important aspects of TEN: the *heterogeneity of the actors* involved and the *role of the intermediaries* in their relationships (*Les réseaux et coordination* 1999: 4-5). When interested in the ‘outward’ relationships of the firms, our relativist space should encompass not only the economic domain proper, *but also all heterogeneous flows of interactions* in which the post-socialist firms are embedded. The post-socialist firms were immersed simultaneously in several heterogeneous *regimes of circulation*, centred on specific intermediaries:

1) First, there is the *circulation of economic goods* (of the firms’ own products and services) that forms the relationships with customers and clients as well as with business partners.

2) The *circulation of money* defines another specific domain of the relationships. It is structured by the circulation not just of money but of what Schumpeter called “free purchasing power” (in various concrete forms) to designate the intermediary

that the entrepreneurs need in order to launch innovation. As shown by the studies, the ‘emancipation’ of credit from the successors of the former administrative system became one of the main ‘battle fronts’ against the ex-socialist oligarchy.²

3) The third domain is defined by the established *regimes of circulation of people*, i.e. of human beings with ‘incorporated skills’ and ‘embodied knowledge’. As in the other two regimes, the circulation of ‘able bodies’ defines its own agents, i.e. higher education institutions, research organisations, but, increasingly, fellow firms as well (in the sector an employee possessing a certificate from Cisco or Microsoft is highly valued).

4) The firms maintain various types of *legal relationships embedded in their concrete interactions with other agents* – customers and business partners, government institutions, legislative bodies, etc. Hence *the legal framework* and practical steps for its implementation should be defined as another distinct domain, that sustain various regimes of circulation, makes them manageable and predictable. This is a difficult, laborious endeavour and it presupposes constant efforts of numerous specific actors. It is not the abstract legal rules that should be studied but the set of firms’ relations structured by those rules. The most important are *property rights* relations (Alchian 1987, Hart & Moore 1990), followed by *tax* and *customs relationships*, as well as *labour relationships*. The appropriation of technology in turn is mediated by *standards and licensing regimes*.

5) *Relationships with public powers and state institutions* (or the ‘bandits’ of post-socialist transition,’ as Olson put it) are the other important domain. Numerous studies of post-socialist economy have shown that various post-socialist political elites and state bureaucracies are among the main actors in the economy (Konings 1997, Avramov 1999, Olson 1995, and Kornai 2000). With the collapse of entire industrial branches, the state (including state-owned enterprises) continued to be among the biggest customers. State institutions mediate also most of the resources for modernisation and restructuring that come through various international and bilateral programmes.

Focusing on the post-socialist firms as key actors of economic transformation, we designed a tool to account for their relationships with other agents in the economy and outside it and which captures the heterogeneous nature of transition. The next step, we undertake below, is to delimit a finite number of relational characteristics/variables that sufficed to describe each of the five domains. These variables are to be considered a concrete embodiment of the relativist space we are aiming at. Through the positioning of a sufficient number of ACT&T firms studied, we obtained different configurations of relationships or *network profiles*. Below we present the steps in building firms’ network profiles.

Operationalisation of the Relational Variables and Methods of Data Treatment

Here we provide brief description of the type of data collected, relational variables which operationalised each of the five domains emerging as axis of the aimed relativist space, and the joint use of cluster and multiple correspondence analysis as an indirect method of network analysis. The notion of network profiles is introduced, revealing

² See Winkler 2000, Tchalakov & Kirov 2000.

groups of firms that were similar in the structure of their relationships.

A twofold methodology of data collection was applied. It combined historical analysis of the development of ACT&T technologies in Bulgaria, Macedonia and Romania with case studies of typologically selected firms (20 firms). Taken together, they lay the ground for the representative survey of 724 firms (306 firms in Bulgaria, 280 firms in Romania, and 138 firms in Macedonia) via structured interview with the manager of each firm. The core of the survey questionnaire consisted of 54 empirical variables (open-end questions, nominal and interval scales). They registered relationships of the firms with various actors in the five domains outlined above: business partners and customers, financial partners, public powers, legal relationships, universities and other training institutions, etc.

We developed an *indirect method for network analysis*³, which appeared to be stable and efficient enough. Instead of describing the concrete networks of firms' relationships, we highlighted groups of firms in the samples, that were *similar in the structure of their relationships* with economic actors in the five domains defined above, which we called *network profile*. This procedure was based on a method well known in literature (Lebart in: Greenacre & Blasius 1994), the *joint use of cluster and multiple correspondence analysis* on large sociological data, passing through three consecutive steps.

In the first step, the firms were measured according to 54 empirical variables, which registered their *involvement in different types of relationships*. Most of the scales supposed multiple choice between their modalities (so the managers were able to define the firms in several technological profiles or by several types of customers simultaneously). Through *cluster analysis* of these empirical indicators, we arrived at a reduced number of 25 relational variables (clusters), which categories represent groups of firms with *unique pattern of relationships*. The cluster analysis was also used to build three additional identification variables of the firms' proper economic characteristics.

We assumed that each of the 25 *relational cluster variables* represents the existing networks of relationships between the firms and their partners. Of course, *the clusters are not networks* – they register the presence or absence of a given relationship without saying anything about the specific configurations inside the groups. Nevertheless it registers the *involvement* of the firms in these specific relationships.

The second step consisted in a new regrouping of the firms according to the similarity of their positions in the 25 relational variables *taken together*, using multiple correspondence analysis. We applied *Homogeneity Analysis* (HOMALS) as a SPSS 9.0 software equivalent to the multiple correspondent analysis. To pursue the task of network analysis, we had to explore the interdependencies between relationships with these different types of actors. In this way we obtained groups of firms with same patterns of relationships. They indicated the specific *type of networks* or *network profiles* of the firms (according to the type of customers and business partners, R&D, legal, with public powers, etc.). In accordance with the theory (see Gifi 1984), the first three dimensions should be taken into consideration, i.e. those where the typical 'el-

³ The method was designed in close collaboration with Michel Callon and Philippe Laredo during the meeting for critical discussion in early November 1999, held in CSI, Ecole des Mines, Paris.

bow' appears. However, we also analysed the two following dimensions, because they comprised relational variables with relatively high discrimination measures and whose modalities revealed unique configurations. These two dimensions helped to identify some latent groups of firms with a specific network profile (or variations of the profiles already established in some of the first three dimensions), although with lower explanatory power:

Box 2 – Five analysed HOMALS dimensions and their explanatory power

Dimension	% of explained dispersion
<i>Dim. 1</i> – (Self)isolation of micro-firms v/s networking of the big players	– 22.2%
<i>Dim. 2</i> – Hardware & software importers v/s local high-tech firms	– 13.5%
<i>Dim. 3</i> – ‘Nomenclature’ firms v/s ‘true capitalists’	– 10.9%
<i>Dim. 4</i> – Technology profiles: communication equipment & service providers v/s software & complex hardware SME	– 10.7%
<i>Dim. 5</i> – ‘Nomenclature’ firms v/s ‘true capitalist’ restated: economics & political v/s engineering competencies	– 9.1%

Once *HOMALS* dimensions poles were defined, we used the set of *projected variables* mentioned above for *additional identification* of the firms in each pole according to such characteristics as nationality, technology and product specialisation, share of turnover, presence of foreign or state capital, etc.

The network profiles seemed considerably well defined even for the dimensions with lower eigenvalues. For example, the “*Omnipotent managers*” profile in *Dimension 3* was strongly national specific – the projected ‘*Macedonian firm*’ modality received a quantification of 0.97, the next ‘country’ modality being ‘*Bulgarian firm*’, with 0.461. This means that among the first 50 firms in this profile, 39 were Macedonian, 11 were Bulgarian, and none were Romanian (while the corresponding shares in the sample are 138:306:280). Similarly, in *Dimension 2* the profile of *High-tech exporters* was characterised by *five* R&D modalities with relatively high quantification, so among in the first 50 firms in the profile there are 43 firms declaring R&D activities and 32 having industrial or academic R&D partners! Among the first 50 firms in the opposite profile of *Hardware importers* these numbers are 8 and 2 correspondingly (possessing only one R&D modality with quantification of 0.66).

The brief description of the process of operationalisation and the two steps in data treatment in fact summarise more than a year of intensive work and experimentation. The most interesting part, however, was the comparative analysis of the network profiles and their links with case study an historical analysis, which eventually call for reconsideration of the dominant views on East-European economic transition.

RESEARCH RESULTS

In this section we propose their taxonomy of the network profiles according to the *leading domain* of relationships. This does not mean that we exclude other pos-

sible typologies, where for example the *country localisation*, *types of business collaboration* or *R&D and human resources relationships* come to the fore. In our view, however, this is the most important in the in the discussion about theoretical models of post-socialist transition. Three groups could be distinguished:

Five Economically Defined (in the Narrow Sense) Network Profiles

The first couple (profiles 1 and 2 below) opposes small firms to the biggest players in the sector, and here technological specialisation plays no important role.

<i>Profile 1 – Large networking firms</i>	<i>Profile 2 – Information & communication technology Robinsons</i>
<p>Firms are distinguished neither by the type of their product/services, nor by their technology profile. All, however, are strongly integrated into different types of networks</p> <ul style="list-style-type: none"> • They co-operate with their colleagues in the branch associations in establishing an adequate legal framework, as well as in the field of technologies and logistics. • Most of them are exporters and committed to foreign partners (often being their major shareholders, suppliers or R&D partners). • These are relatively big firms with qualified staff (above 20 people), some having scientific degree or holding certificates from multinational corporations. • There is a division of property rights in most of the firms, which are run basically by professional managers and/or the Board of Directors. Their owners enjoy a limited number of essential rights (distribution of profits, sale of assets, strategic partnership). Few large firms managed by the owners. • They maintain intensive relationships with customs officers, court, licensing bodies, etc. • They maintain contacts with the <i>three levels of public power</i>: cabinet, parliament, and local authorities. • They use specialised legal and financial advice. • Customers cover the entire range of small, medium and large private and state firms. They are distinguished from the rest of the firms by having as customers <i>multinational companies, international organisations and NGOs</i>. <p>These are firms with a turnover above DM 1 million or between DM 200 000 and 1 million. The relative share of Bulgarian, Macedonian and Romanian firms in the <i>network pole</i> is approximately the same.</p>	<p>Firms practically having no relationships with other actors outside the business:</p> <ul style="list-style-type: none"> • Are managed by the owner who exercises all property rights • Do not have permanent partners in the sector and do not co-operate with them • Do not maintain relations with the public powers, which are probably of no importance in the strategy for solving their problems • Do not report any problems with the state offices, i.e. customs, tax, and licensing. (Interviews and case studies witness that many micro-firms are involved in the <i>grey economy</i>.) • Operate on the domestic market only, do not have foreign partners • Compete only in price & quality • Are not interested in the universities from which job applicants graduated (these are firms of self-employed or with only a couple of people on the pay-roll) • Do not use the services of professional financial advisers (too costly) and seldom use professional legal advice <p>These are small, predominantly <i>Bulgarian (3/4)</i> and <i>Romanian (1/4) software firms</i> with a turnover up to 10 000 DM per year, sole traders. Among the first 50 firms in this pole the majority declared 0-1 employees, only few 3 or more! These firms basically count on the attractive ratio between price and quality of their products and services with minimum indirect expenditures.</p>

The big players combine their rich economic relationships with intensive ‘political’ lobbying for improving the legal framework of the market. That is why they merit the name of ‘networking firms’. The opposite profile of micro firms could hardly be said to be a ‘network’ profile; in fact it is *negatively defined* in almost all dimensions of the relativist space, having limited relationships even in their business proper.

The next couple in this group (profiles 3 and 4 below) opposes *export-oriented firms with high R&D investments* for the *importers and domestic market firms*. In these two profiles the dominant ‘economic’ modalities are closely interwoven with ‘technological’ ones. The apparent asymmetry between the two groups reveals intensively ‘networking’ firms, though in a different way:

The network of *profile 3* is entirely centred around one core activity of a double nature (both economic and technological), *export of software and industrial automation product & services*. It selectively strengthens the interactions with some actors in the domain proper (in staff qualification, in R&D partnership, with foreign partners and local firms of the same profile), while at the same limits the number of customers and their relationships with actors in the ‘political’ and legal domains. Hence we have here a kind of ‘specialised’ network profile.

The network of *profile 4* is also centred around a specific core (if loosely defined), *import and supply of standard hardware and software products and computer services on the domestic market*. However, instead of ‘focused’ inter-firm interactions, this activity spreads them to a large number of actors from various domains, both inside and outside the business, a large number of different types of customers, domestic and foreign trade partners, state offices, and public power, legal and financial consulting firms, etc.

<i>Profile 3 – High tech exporters</i>	<i>Profile 4 – Hardware importers</i>
<p>Export-oriented firms, focusing their efforts on development of technology. The network profile of these firms can be identified as follows:</p> <ul style="list-style-type: none"> • Export to developed (Western) markets for a small number of large private customers • Offer original products/services based on their own intensive R&D efforts; • R&D activities often conducted together with academic and industrial (domestic and foreign) R&D partners • Employ high quality personnel and invest in their training and qualification • are <i>open to association</i> with business partners (most of the firms are members of IT branch associations) and <i>allow penetration of foreign</i> 	<p>Firms oriented predominantly towards the domestic market, which are:</p> <ul style="list-style-type: none"> • basically importers and not exporters, with no <i>permanent foreign partners</i> • oriented to the <i>supply of standard hardware and software on the domestic market</i>, (some offers system solutions, information services, and computer skills training) • have problems with the judiciary system and the licensing bodies and are using professional legal advice • maintain relations mainly with officials of the local authorities and Parliament, although this is not a major characteristic • moderate to weak co-operation with sector firms in the development of new products, establishing business ethics, protection against monopolistic actions; weak co-operation in marketing their products • moderate level of R&D expenditure (up to 19%) with <i>no partners in R&D</i>. • Little university graduates in staff, slight preference for

<p><i>capital</i> in their firms</p> <ul style="list-style-type: none"> • have <i>less problems with state offices</i> (customs, taxation, licensing & control bodies) due to their specific technology profile and export orientation (software and industrial automation) • use limited professional legal and economic advice • have limited contacts with the public powers. <p>These are predominantly <i>software and industrial automation firms</i> with different turnover. Most of them are <i>Bulgarian</i> (above 2/3) and <i>Romanian firms</i> (approximately 1/3), some created before or during 1989.</p>	<p>automation engineers. No staff with a scientific degree or a multinationals' certificate – this also did not correspond with the declared level of R&D!).</p> <ul style="list-style-type: none"> • Distinct strategy towards customers – large number of customers, mainly private persons and SMEs in trade and services, together with important portion of customers in the public sector (state firms and institutions). However, they all are <i>lower technological level</i> customers, non having national or international computer network. • Various forms of sharing property rights. Slight prevalence of firms at which the property rights are executed jointly by the owner and the manager. <p>Predominantly small and medium (up to DM 200 000 turnover) <i>Macedonian</i> and <i>Romanian</i> firms, some being joint ventures or branches of larger local or foreign firms. Most of them possess a trade department as a distinct structural unit.</p>
--	---

The unequivocal conclusion is that technological choices are strongly bound to a certain type of economic and 'political' relationships.

Profile 5 belongs to a third dimension and represents firms specialised in their business proper, whose relationships are somewhat more restricted. We are tempted to see in it a kind of '*Western*' economic behaviour, based on economic rationality and business specialisation (communication services and software). It is no coincidence that this profile is opposed to an overtly 'political' *profile 6*.

Profile 5 – Resellers from textbooks

<p>A business strategy that seems to be taken from an economic manual: New firms headed by managers who are not so much focused on technology but pay serious attention to the economic qualification of their employees. They sell licensed communication services on the local markets. They concentrate on their own business in a risky and sometimes hostile environment, restricting the relationships with domestic business partners, and are always trying to find a legally acceptable way out of their problems:</p> <ul style="list-style-type: none"> • strategic preference to the economic qualification of their personnel and only then to different types of ACT&T engineering. • orientation to the local market, to a large number of private customers (big firms incl.). • significant portion of licences on the list of offered products and services. • strategy of <i>independence</i> and <i>limited external contacts</i>: <ul style="list-style-type: none"> – without R&D partners and low level of investment in this field – without external maintenance of their products and services – basically self-financed and almost without any financial partners – absence of permanent business partners in the field of the firm's main activities (technologies, logistics, distribution, and marketing) – weakly manifested partnership within the framework of the IT sector associations. • commitment to the <i>legal network</i>, very often referring matters to court, coupled with extensive use of legal advice and moderate level of relationships with public powers. <p>Projected variables identify this pole as comprising mostly <i>Romanian communication services</i> (cable TV, Internet, media) and <i>software</i> firms, mainly large and medium, with a turnover of more or close to DM 1 million, very often <i>with foreign shares in their capital</i>.</p>
--

Two 'Politically' Defined Network Profiles

These two profiles (6 and 9) represent partly overlapping groups of firms linked with the past and present political establishment. In different degrees, they manifest the phenomenon of 'hidden ownership' as a contemporary manifestation of the persisting local traditions of combining political and economic power in the hands of the same groups of people. This is an indigenous form of exercising property rights (*the appointed managers declare they exercise all property rights!*) and the access to the political resources provides this group with important competitive advantages (favourable access to the credit system and tolerant attitudes of state offices). The firms do not specialise technologically, focusing rather on trade and trade-related activities (assembling PCs, for example) with a higher profit, with a low (or dubious) level of R&D efforts. The two profiles slightly differ in their export orientation, staff qualification, and their business partnerships.

Profile 6 – Omnipotent managers

Clandestine business practices of political elites, marked by unique profiles of property rights. This indigenous network profile is one of the most important findings in the study:

- covering up the real owners (due to links with the former and/or the present ruling elite, e.g. MPs and cabinet ministers who control their firms through others). This results in an *exotic form of execution of property rights* whereby the manager executes all rights, including the right to sell shares and distribute profits.
- high level of using financial services and legal advice, including bank credit – apparently a privileged group because the vast majority of Macedonian and Bulgarian firms (above 80%) complain about the limited access to credit.
- use of *professional legal advice* but *having no problems with state offices*.
- strategy, which does not stem from a certain technological profile or dominating type of activity. Yet competition in the access to components and 'self-organised subcontractors' collaboration indicates a strategy of production and assembly oriented both towards the domestic and foreign market.
- specific profile of foreign trade – large imports from the Western countries (often large multinational companies) and exports to the former COMECON and Yugoslavia.
- declaring higher R&D expenditure, although such a statement is questionable (for the sake of prestige similarly to *Hardware importers* profile, but even more pronounced).
- considering the high share of R&D the non-differentiated attitude to the quality of the personnel is questionable, with significant numbers of engineers who have neither scientific degrees nor multinationals' certificates.

The profile almost entirely consists of different types of Macedonian firms (large, medium and small), together with a few small Bulgarian firms.

Profile 9 – The umbrella of economic competencies & Public authorities

This profile reveals specific pattern of relationships of predominately Macedonian firms (and to a lesser extent Romanian firms) with different technology profiles and turnover. Among these firms the phenomenon of ‘hidden owner’ from *Profile 6* appears again. The difference is in a number of new characteristics:

- orientation towards the domestic market with standard products & services, partly imported or assembled.
- investment in personnel with a high level of economic qualification (Economic universities, economic specialities).
- investments and maintaining intensive contacts with high levels of public power (parliament and government).
- relatively high level of import activities but almost without problems with customs and other state offices (approximately 3 times less intensive than pole 10 (see below)).
- business collaboration in *legal framing of the market*⁴, in logistics and technologies.
- investment in intellectual properties (patents).

These two ‘political’ network profiles are opposed to two other distinct profiles, which are focused in their business proper and whose relationships are somewhat more restricted, though in a different way. The first is the ‘economic’ profile 5 described above (*Resellers from teaching books*), as opposed to *Omnipotent managers* profile 6. The second is ‘technologically’ defined profile 10, as opposed to profile 9.

Three Network Profiles, Where Technology Comes to the Fore

Profiles 7 and 8 distinguish the rather heterogeneous group of *communication equipment & service providers* from the group of *software & complex hardware SMEs*. Technology specialisation strongly shapes these network profiles. They differ in their customers’ relationships: a large number predominantly private SO/HO and corporate clients with lower technical requirements *versus* small to medium number of customers with high technical requirements. This is related to the lack of maintenance services in *profile 7* and the presence of a special maintenance unit in *profile 8*.

<i>Profile 7 – Communication equipment & service providers</i>	<i>Profile 8 – Software & complex hardware SME</i>
Telecommunication equipment & services (including cable TV) providers, which: <ul style="list-style-type: none"> • have a large number of predominately private customers • sell telecommunication and computer communication services without providing maintenance from in-house 	Firms focusing on specific technology with moderate level of R&D efforts and unique preferences in staff qualification. The balance of sales lies between original, standard and licensed products offered to a determinate number of customers. They have specific types of problems with government bodies and try to solve them by increasing business collaboration:

⁴ Co-operation in the development, introduction and promotion of new standards, joint lobbying for the establishment of an advantageous legal framework for the business, defining strategies of economic policy.

<ul style="list-style-type: none"> • maintain both institutionalised and informal contacts with their business partners • are less engaged in collaboration with their business partners, some collaborating only in the field of market self-organisation; • are engaged only in price and quality competition (R&D, qualified staff, etc.), with the exception of; • maintain relations with foreign partners as a result of the very nature of services they are offering (typically, these are not multinational companies, nor R&D partners); some are local branches or joint ventures of foreign firms; • are often serious exporters (above 10% of turnover) to emerging market countries, some also to developed markets countries; • some firms are with R&D, few possessing their own R&D unit. They rarely maintain partnerships in this field; • some firms more open to the public, with <i>auditing</i> as dominant form of financial partnership. Most with own bookkeeping unit. • According to the number of customers, turnover and staff experience, this profile is <i>split into two subgroups</i>: 1) big firms with large turnover; 2) small firms in communication services, their staff possessing experience in the former state-owned PTT sector. The profile is represented in the three countries, although there are slightly more Macedonian and Romanian firms. 	<ul style="list-style-type: none"> • orientation towards a multiple range of activities (production, trade, services); selling licensing or standard products while maintaining some level of original products. • Serving <i>medium number</i> of customers (up to 100) from <i>all economic sectors</i> (except agriculture), with higher technical requirements (all having customers with country computer network). • some firms provide <i>maintenance of software by special unit</i>. • self-financed own R&D at low or moderate level. Some with industrial R&D partners. • Human resources' strategy combines <i>both automation engineering and economics</i> as preferred specialities. • Contacts with <i>local government only</i> in some of the firms (see 8). • Problems with public bodies; first of all <i>with local administration</i>, followed by taxation offices, customs and state control bodies. • <i>Intensive business collaboration</i>; all engaged in legal framing of the business (regulatory framework, lobbying, etc.), some are active members of IT branch associations and collaborate in technology, distribution and marketing. This network profile comprises firms with various volume of turnover, number of personnel and various forms of ownership and management in the three countries. There is a slight dominance of <i>Romanian firms</i>.
--	---

Similar differences are observed in their export orientation, forms of business relationships (they maintain distinct modalities of collaboration and competition, even though both group reveal a significant degree of business associations memberships), in their R&D efforts and staff qualification preferences. In contrast, *both profiles are distanced from the political domain*; some firms of profile 8 have relationships with local governments only.

The last, tiny *profile 10* presents a unique triple combination of high degree of technology specialisation (industrial automation), persisting problems in the relationships with state offices, and a strategy of solving them by self-support inside the business community and improving engineering competencies. It is opposed to 'political' profiles 9, whose firms apply the strategy of improving economic competencies together with lobbying and maintaining high level of contacts with public power (admitting 'hidden ownership').

Profile 10 – Self-organised Bulgarian engineers

Network profile applied predominantly by non-capital Bulgarian firms specialising in the field of industrial automation. Its essence rests on three pillars: 1) stress on original technological competencies and know-how; 2) avoiding contacts with public power; 3) presence of tax, customs and licensing problems with state offices and specific approach to solve them:

- technology development based on R&D with industrial partners in the country and abroad
- significant share of licensed products and services
- investment in staff qualification and high engineering requirements for newcomers. Keep staff with scientific degrees
- no use of specialised economic expertise – no staff with higher economic education and no use (or no access) to specialised economic advice
- no contacts with public power
- having serious problems with state legal & financial offices and with state licensing & control bodies
- significant level of collaboration with business partners in *market self-organisation*⁵

DISCUSSION

The outlined network profiles of ACT&T firms in Bulgaria, Macedonia and Romania offer a different view of the models of post-socialist economic transition. The results also suggest a rather different approach to the emerging markets in (South) Eastern Europe, providing ample evidences about the *diversity of the forms of market organisation*. Hence the more serious research problem is not just to submit the results to some of the “universal” macro-economic models, but to think on another possible theoretical framework that accounts to the registered diversity. Theoretical framework, that bears on the multiplicity of interactions – economic (in narrow sense), political, technological, etc., which constitute the concrete market in given country.

Yet some of our results could be interpreted as evidences that *simultaneously (!)* supports both the neo-classical and ‘neo-statist’ models. The adherents of the neo-classical model undoubtedly will recognise the micro-economic embodiment of some of its key elements in the ‘economic’ and/or ‘universal’ (common for the three countries) network profiles – in *Networking firms*, *Communication equipment & services providers*, *Resellers from textbooks*, and even *IT Robinsons*. These profiles witness the presence of market rules common for the economic actors in each of the three countries and the importance of the legal framework in business relationships, especially the changes in property rights. The registered crucial role of privatisation in shaping economic relationships, the positive effects of opening local markets and foreign direct investments for the improvement of the technological level and imposing

⁵ Joint efforts in combating monopolistic actions, joint efforts in establishing and enforcing certain business rules, agreement for sharing the market, joint protection against political and administrative intervention.

‘economic rationality’ also support the neo-classical model. The very identification of these profiles confirms the existence of ‘*transition*’ towards a market economy.

On the other hand the two ‘politically’ bound network profiles (*Omnipotent managers* and *Umbrella of economic competencies & political power*) are in tune with the worst accusations of the ‘neo-statists’. They show that the neo-liberal imperative of the early 1990s ‘to withdraw the state from the economy’ actually gave birth to centaur-like economic forms of hidden political intervention in the economy for the sake of the personal benefits of the post-socialist political elites. Some relief comes from the fact that these two profiles are not of the dimensions with highest explanatory power, i.e. they are relatively limited in number and, at least in the ACT&T sector of Bulgaria and Romania, they leave enough space for more ‘authentic’ capitalist forms.

However, the most important point of discussion is that our results call for another – *neoschumpeterian*, model of post-socialists economic transition. The evolutionary critique of Stark and Bruszt has already demonstrated the inability of the neo-classical model to account for the indigenous forms of property rights emerging in the course of transition, or to capture a phenomenon like ‘centralised management of liabilities’, a hallmark of Hungarian economic transition in the early 1990s. Here we discovered that technologies strongly shaped firms relationships, not only in three overtly ‘technological’ network profiles presented above, but also in the registered close intertwining of ‘economic’ and ‘technological’ relationships in the profiles of *High tech exporters* (3) and *Hardware importers* (4). These evidences support our view about the importance of technologies in post-socialist economic transition. If we add to these results the findings from case studies and historical analysis, it is possible to advance the ‘*neoschumpeterian model*’ of *post-socialist economic transition* as complementary to the above two models.⁶ Here the classical entrepreneur, as defined by Schumpeter, merges with the “sources of invention”, embodied by ACT&T scientists and engineers from the former IT and PTT industries and their younger disciples. The strong evidences in support of this model became especially important with the study of P. Murrel, who emphasised the absence of Schumpeterian entrepreneurs as the most serious shortcoming of the pre-reformed and reforming socialist economies before 1989 (Murrel 1990).

The main characteristics of the ‘*neoschumpeterian model*’ of the (South) Eastern European transition are the *individual private initiative* and ‘*animal spirit*’, the ability to explore emerging possibilities for “new combinations”, both in the sector proper and outside it.⁷ Another important feature is the *close collaboration inside the business community of fellow firms* (both informal or through the sector associations). Organisations like the Bulgarian Association for Information Technologies

⁶ Philippe Laredo proposed the name of the model during one of numerous discussions we had.

⁷ A telling example was a Bulgarian industrial automation firm in a provincial town, which, after an ‘unexpected’ discovery of its chemical engineers, diversified its activities by going on the detergent market. We also found several IT firms with parallel businesses in lucrative fields like fuel supply, activities that helped them to survive when the banking system in Bulgaria collapsed in mid-1990s.

(BAIT) and the Romanian Association of Software Exporters (ASE) became very popular for their ability to defend the interests of their members, imposing clear business rules in the sector and lobbying before government institutions. The *high level of spending for R&D and staff qualification* is another important feature: it is well pronounced in each of the three network profiles falling under this model. The *neoschumpeterian model* of post-socialist economic transition fits in perfectly with the abundant path-dependent phenomena observed in the network profiles. They confirm the earlier findings (Stark and Bruszt 1998) that *the paths and routines of the network profiles vary, being technological, industrial-organisational, political-institutional, etc.*

The purest manifestation of the '*neoschumpeterian model*' of (South) Eastern European transition is to be found in the indigenous profile 10 of *self-organised non-capital Bulgarian and Romanian engineers*. There is something indicative in the fact that *it is the smallest network profile* (belonging to the fifth dimension), and that it is not presented in Macedonia. Obviously it is difficult for authentic capitalist entrepreneurship to survive in post-socialist economic-political jungles...

Acknowledgements

Support for this work, at different stages, by the European Commission INCO-Copernicus IV Program, NATO Science Fellowships Programme (France) and Centre of Sociology of l'Innovation (CSI), Ecole des Mines in Paris is gratefully acknowledged. I would like to thank Michel Callon and Philippe Laredo from CSI for their critical and helpful comments. I would like also to thank my Bulgarian collaborators Prof. Gerogy Fotev, Svetla Koleva, Donka Keskinova and Todor Galev. Special thanks to *TACTCIS Project* partners Peter Burton, Mileva Gurovska, Ion Glodeanu, and Georgi Nachev.

REFERENCES

- Alchian, A. 1987. 'Property Rights'. In: Eatwell, J., Milgate, M. & Newman, P. (eds.). *The New Palgrave: A Dictionary in Economics*.
- Amsden, A., Kochanowicz, J., Taylor, L. 1994. *The Market Meets Its Match: Restructuring the Economies of Eastern Europe*. MA: Harvard University Press, Cambridge.
- Avrarov, R. 1999. Introductory paper. In: Bochev, St. *The Birth of the Capitalism in Bulgaria*. Sofia: Institute of Liberal Studies.
- Callon, M. 1996. Les statuts économiques des activités de recherche et développement. In: *Reprenter Hybrides*. Paris: Coordiner, CSI-Ecole des Mines.
- Callon, M. (ed.) 1998. *The Law of the Market*. New York: Blackwell.
- Callon, M. 1999. Les réseau comme émergente et comme modalité de coordination: le cas des interactions stratégiques entre firmes industrielles et laboratoires académiques. In: *Réseau et coordination*. Paris: Economica.
- Chalakov, I. & Kirlov, V. 2000. 'Risk Capital and Innovative Entrepreneurship in Bulgaria'. In: Vladimirov, J. (ed.). *Contribution of Social Research to the Economic and Social Recovery Policy*. Sofia: Sofijski Novini Edition.
- Coriat, B. & Weinstein, O. 1995. *Les nouvelles théories de l'entreprise*. Paris: Le Livre de Poche.

- Dosi, G. & Freeman, C. (eds.). 1988. *Technical Change and Economic Theory*. London & New York: Pinter Publ.
- Gifi, A. 1981. *Non-linear Multivariate Analysis*. Leiden.
- Greenacre, M. & Blasius, J. (eds.) 1994. *Correspondence Analysis in the Social Sciences*.
- Hart, O. & Moore, J. 1990. Property Rights and the Nature of Firm, *Journal of Political Economy*, vol. 98, No.4
- Hausner J., Jessop, B., Nielsen, K. 1995. *Strategic Choice and Path-Dependency in Post-Socialism: Institutional Dynamics in the Transformation Process*. England: Elgar, Hants.
- Hirszowicz, M., & Mailer, A. 1994. The Withering Away of the State – A neo-Liberal Fallacy, *Polish Sociological Review*, 3 (107).
- Keremidchiev, S. 1993. Les premiers pas de la privatisation en Bulgarie. *Revue d'Etudes comparatives Est-Ouest*. 3-4.
- Kochanowicz, J. 1993. 'Transition to Market in a Comparative Perspective: A Historian's Point of View'. In: Poznanski, K. (ed.). *Stabilization and Privatization in Poland: An Economic Evaluation of the Shock Therapy*. Boston: Kluwer.
- Koford, K. 2000. Citizen Restraints on "Leviathan" Government: Transition Politics in Bulgaria. *European Journal of Political Economy*, Vol. 16 (2).
- Koleva, S. 2000. 'The State and the Development of Telecommunications and Telematics in the Economies in Transition (The Case of Bulgaria, Macedonia and Romania)'. In: *TACTCIS Theoretical Papers*, TACTCIS CD-ROM (see www.isomatic.co.uk/tactics.htm)
- Konings, J. 1997. Firm Growth and Ownership in Transition Countries. *Economics Letters*, Vol. 55 (3).
- Kornai, J. 1992. *The Socialist System. Political Economy of Communism*. Princeton, N.J.: Princeton University Press.
- Kornai, J., 2000. Hardening the Budget Constraint: The Experience of the Post-Socialist Countries. *European Economic Review*, Vol. 45 (9).
- Kosolowski, R. 1992. Market Institutions, East European reform, and Economic Theory. *Journal of Economic Issues*. 26 (3).
- Latour, B. 1993. 'A "Matter" of Life and Death – or Should We Avoid Hylozoism'. CSI, Ecole des Mines, mimeo.
- Murrell, P. 1990 *The Nature of Socialist Economies. Lessons from Eastern European Foreign Trade*. Princeton: Princeton University Press.
- Nelson, R., Winter, S. 1982. *An Evolutionary Theory of Economic Change*. Cambridge: Cambridge University Press.
- Olson, M., Jr., 1995. Why the transition from communism is so difficult. *Eastern Economic Journal*, 21.
- Radosevic, S. 1995. Science and Technology Capabilities in Economies in Transition: Effects and Prospects. *Economics in Transition*, 3 (4).
- Radosevic, S. 1997. 'System of Innovation in Transformation; from Socialism to Post-Socialism'. In: Edquist, Ch. (ed.). *System of Innovation*. London & Washington, Pinter.
- Réseau et coordination*. 1999. M. Callon, P. Cohendet, N. Curien, J.-M. Dalle, F. Eymard-Duvernay, D. Foray, E. Schenk. Paris: Economica.
- Sachs, J. 1996. *Reforms in Eastern Europe and the Former Soviet Union in Light of the East Asian Experiences*. MA: National Bureau of Economic Research, Cambridge.
- Schumpeter, J. 1934. *The Theory of Economic Development*. Harvard Univ. Press, Cambridge, Massachusetts.
- Smelser, N., Swedberg, R. 1994. *The Handbook of Economic Sociology*. Princeton: Princeton University Press; New York: Russell Sage Foundation.
- Stark, D. 1992. Path Dependence and Privatization Strategies in East Central Europe. *Eastern European Politics and Societies*, 6.
- Stark, D. 1996. Recombinant Property in East European Capitalism. *American Journal of Sociology*. 101.
- Stark, D., Bruszt, L. 1998. *Postsocialism Pathways. Transforming Politics and Property in East Central Europe*. Cambridge: Cambridge University Press.
- TACTCIS Consolidated Report to European Commission 2001*, CSI-Armines report.

Biographical Note: Ivan Tchalakov is PhD and senior research fellow at Technology Studies Group, Dep. “Sociology of Science and Education” at the Institute of Sociology. His research interests are in the fields of science and technology studies, sociology of innovation, and economy of technical change.

Main publications: papers: ‘The Bulgarian Research System – Ten Years Later’. In: Cox, D., Gummet, P., & Barker, K. (eds.) *Government Laboratories: Transition and Transformation*, PREST, University of Manchester, NATO Science Series 4: Vol 34, 2000; ‘Innovating in Bulgaria – Two cases in the life of a laboratory before and after 1989. In: *Research Policy*, Vol. 30/3 2001; *books: Project TACTICS* (Telematics and Communications Technologies in South East Europe – Research Report to European Commission), Sofia, LIK Publishers, 2001 (eds. with Peter Burton); *Making a Hologram: a Book About the Light, About the Scientists, and their World* (Development of Opto-electronics in Bulgaria – 1969-1998), “Marin Drinov” Academic Publishing House, Sofia (in Bulgarian).

Address: Institute of Sociology, BAS, 13A Moskovska Str., 1000 Sofia, Bulgaria.
E-mail: tchalakov@sociology.bas.bg