

## **Economic and institutional implications of network convergence**

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### Abstract:

*Digital convergence is an evidence for the telecommunications-, information-, and media industries. Regulatory institutions seem to be in a slow changing process reacting to converging markets. The presentation shows the ongoing convergence processes influencing the info-communications industry. The proposed co-regulatory approach, seem to fulfil the increased expectations toward regulatory institutions. There are also some special issues to consider, in a just joined EU Member State.*

### **1. Convergence is one of development processes**

The development process flows on different levels. Convergence of the telecommunications-, information-, and media industries are based on common digital technology. The common digital technology makes possible to produce combined products at lower costs. The combined products (tangible products and related services) are able to substitute or complete each others on the market. The changing product-positions change the market structure in longer run. Regulation starts to handle the combined services and market changes too.

The speed and extent of convergence can be measured trough different methods. Our department recently has made a methodology to measure the extent and speed of convergence on three levels:

- on the level of technology, as it is a capacity to produce and provide common products form different converging business lines;
- on the level of market, as the combined products are available at the market, and make effects on the market share, market force, market structure and capital concentration;
- on the level of regulation, which is mainly reaction to the previous levels, such as regulate technical means (scared resources, standards, interoperability) to develop common technologies, and economic regulation to react changes on the market, protect or enhance competition and control capital concentration processes.

These mentioned layers of convergence are related with each others, but they may have different extent and different speed. The extent and speed can be measured by a set of direct questions to well sampled professionals. The answers may give a statistic and give some summarized indexes. (The model is a further step to the study of Samarajiva and others model on World Dialogue on Regulatory Approach published as 2002 Theme)

### **2. Dependency ask for regulation of reliability and security**

The converging and extending info-communications' markets provide new services, new publicity and also new risks for the society. The networked information society depends more and more on these information public utilities. This dependency is similar to the dependency from the other networked industries, such as energy networks, pipelines of drinking water or waste water. These networks provide sustainable urban areas, better life and work conditions in suburbs and rural areas, but only in case they are reliable, safe and secure. In case of info-communications networks became essential network for the everyday life and business, the features of safety and security, personal and business privacy, trust and reliability on information networks and related services become also relevant. People are ready to depend on a network which serves them, but they resist trust on a network which can be unreliable.

### 3. Oligopol markets need regulation of asymmetry

Networked industries are oligopolies: there are only few providers, due to the high sun-cost on the networks. Due to the high cost of innovation, there is also a tendency toward capital concentration: strategic alliances and mergers are common in the info-communications. In oligopol markets, the market power of the players can be very different. Regulation is needed to rebalance the existing and potential differences of market power, enhance competition, slow down the re-monopolization process, protect customers and community rights, eliminate or decrease information asymmetry.

### 4. The stakeholder structure

Related to the info-communications networks there are a set of stakeholders. Their expectations and power to enforce it, influences the regulation regime. The expectation is based on three roots: knowledge, interests and value perceptions. The power of enforcement is also based on three roots: power to choose another solution (switch), power to change rules (co-regulate), power to convince another interest groups to do so (collaborate).

The main stakeholder groups are the followings:

Customer group: individual customer, large consumer, related industry using networked services (banks)

Providers group: network provider, communications service provider, information service provider, content provider, related industries providing substituting products (newspapers), incumbent operators, new-comers, strategic partners, real competitors, co-operators

Suppliers group: constructors, builders, device developers, equipment sellers, distribution channels, advisors, outsourced service providers, other related sub-contractors;

Investors and financial partners group: public owners (if there are), private owners, institutional investor, strategic investor, shareholders, small investors, banks, loan providers, bond issuers

Workers group: managers, professionals, customer care and operational staff;

Redistributors group: tax-offices, general market-regulatory offices, sector-specific regulatory offices, civil organisations in co-regulation, social networks, special and local authorities

General public group: politicians and their voters, civil organisations, potential customers and workers, international communities, journalists.

All these general interest groups have different relation to the convergence process as it is a relevant change on the market.

Customer group: mainly they are happy with the converged markets, because the supply is growing, and increase the customer choice.

Providers group: they may have ambivalent position to the convergence, the incumbent service providers may feel the market share combated by new combined products, the new-comers may see the convergence like an opportunity to rearrange existing market shares.

Suppliers group: they may have the similar ambivalence to the changing process of convergence, because it rearranges the market shares of supply. New-comers might be happy with the new opportunity.

Investors and financial partners group: the risk is growing in the info-communication industry with the convergence. The former situation that all investments could be financed unlimitedly is eliminating now. The reason of the former situation was the

huge unsatisfied but feasible demand on communications services. The saturating market, with growing competition shows more risk for the investors. So the interest and discount rates also should grow.

Workers group: the risk for the workers is also growing, because the converged markets need less staff for the same traffic. On the other hand there are some new opportunities on the customer help side, because the new products need more professionals to install and to train the customer to use it.

Redistributors group: the redistributors are in an embarrassing situation, they are supposed to react on the changes, or predict the consequences of the convergence process, but they are not able to do so. Extension of the related markets needs more general market regulation with less sector specific issues. Capital concentration process as a natural reaction to the convergence would need more sector-specific regulation. The growing dependency of the society implies also more sector-specific regulation on the networked industries. So, the policy, the role of the regulation, the goals and frameworks are changing.

General public group: the politicians, the voters, the journalists, the civil servants are interested in being informed and involved in this changing process.

## 5. Role of regulation in development of info-communications sector

Regulation has different roles in a certain market: *Economic role*: redistribute incomes of market players according the value perception of the decision makers of the society. *Behavioural role*: modify the behaviour of the market players toward expected actions. *Market development role*: provide understandable framework for investment and business activities. *Legal role*: clarify the rights and duties of the players, including the regulator itself too. Regulation regime should fulfil the expectations above, and it also should look for the future enhancing market development.

*Market development* can be measured in different terms: traffic volume, invested capital, earnings on investment, desired market structure, fulfilled human needs. Markets also have life cycles as products do have them. There are also stages of this life cycle of the markets: embryonic, growing, mature, over-matured. Market development theoretically means that the market goes ahead on this life cycle. Regulation may have delay, and has to have defined stages, while development of market is continuous. They do not match each other always well, but they do influence each other. We mean the regulation *effective*, when it has influence (hopefully positive impact) on market development. We mean the regulation *efficient*, when the unnecessary or contradictory regulation is eliminated from the whole regulation regime.

## 6. Historical regulatory approaches of converging markets

Convergence is one of the reasons, because telecommunications-, information-, and media industries need common sector-specific regulation. These industries historically have different regulatory approaches:

- Telecommunications has huge and combined sector-specific regulation, and relatively young antitrust regulation practice.
- Information technology is regulated mainly through self-regulation of the market, and it is the main area of antitrust cases.
- Technical side of electronic media is based on standards and rules of scarce resources.
- Content providing through electronic media is regulated mainly by the traditional rules of paper- & celluloid-based media: such as intellectual property rights, ensure political balance, openness of public information, etc.

To combine the tradition of these four areas is rather difficult. The main issues of regulation are:

- compulsory cooperation in interconnection, safety and security,
- enhance the new entry to the market with new technologies and for new service providers,
- reduce the cases of monopolistic markets, at least keep markets as combatable,
- rebalance the information asymmetry among the players (small and large providers, providers and customers),
- extend the basic services with a transparent cross financing method, due to the positive externalities for the society, but not distort the market structure with this.

## 7. Co-regulation approach to convergence

The converged markets should and could be handled with a co-regulation approach. That means: there is no only one institution responsible for the regulation of the info-communications market.

- *The reason of the co-regulating approach comes from the distributed power theory of sociology sciences. If a market extends and reaches other relevant markets, stakeholders interested on the market should share their power with other stakeholders interested on the other market. Joining several markets sometimes seems to be chaotic. Spontaneous processes are the best to rearrange the situation: industry self regulation, ex-post competition regulation, major complaints of the users.*

The regulation duties should be distributed among co-regulators:

- sector-specific authority of the info-communications,
- general market regulatory authorities (such as competition authority, customer protection inspectorate, data protection office, environment protection authorities),
- industrial self co-regulators like standardization, notification and accreditation bodies, industrial chambers and other industrial associations
- civil society acting as co-regulator mainly on the users side and staff interests (trade unions, scientific associations, etc.)

Most of the co-regulatory group has also international determinations:

- Sector-specific authorities of the info-communications have European network (IRG) and they have to report to the EU administration (ERG).
- General market regulatory authorities (such as competition authority, customer protection inspectorate, data protection office, environment protection authorities), being part of the government of an EU member state, they have to report to their European networks and administrations too.
- Industrial self co-regulators like standardization, notification and accreditation bodies, industrial chambers and other industrial associations have also international determinations.
- Civil associations acting as co-regulators are basically local or at national level, but these organisations may also have their own international networks (as trade unions have).

The co-regulatory approach needs also co-operation mechanism among the co-regulating partners:

- Institutional side of co-regulation should be codified in legislation. But if the legislation is not detailed enough, the institutions may (expected to) contract with each others. There is an under-surface competition between institutions to have more public responsibility, because it might cause more state budget. The relation between the duties and the budget is not so close; so, this competition for the functions is rather weak.
- The industrial self- co-regulation is also mainly codified in other acts, like Act on standardization, decree on industrial chambers, etc. The situation is not so clear: these bodies are fighting for more responsibility, but later they protest for government funding

for these functions. Government is also interested in co-regulation, when the funding is provided by the industrial groups too. In case, the funding of co-regulation comes from the industry, big incumbents may use it to defend their interests.

- Civil associations are less powerful in general, but the general public (such as politicians, voters, journalists), are more sensible on their issues. The main goal of regulation is also to rebalance the differences of market power and information asymmetry. Civil associations can be the main actors of the rebalancing processes. So, they have more informal power to enforce their interests.

## **8. The Globalization of the networked industries**

The info-communications networks (similar to energy networks, banks and financing networks) become more and more Global: designers, operators, owners, competitors, and also consumers are from all over the World. More precisely: from the upper- and middle-income part of the World. The lower income part of the World has to import capital to invest into local networks, so the globalization is there also, but in other situation. The network density can be measured naturally. The internationalization could be also measured by the percentage of foreign investment, of cross-border services or procurement, by the ratio of foreign staff used in a Global industry.

As a consequence of Globalization, traditional state-borders loose from their relevance. As a further consequence, the power of the traditional national government to redistribute incomes might also decrease. The technical development, including convergence, provides more and more solutions to substitute one service or product with each others. So, there is no source of cross-financing any more. The national government has limits redistributing incomes from the international businesses to the local social needs. If they would try it, the international business would be substituted with another or would leave the place.

As a further consequence of Globalization, relevance of industrial co-regulation is growing. Standardisation is typical example, which is the most important place for the multinational electronic device producers, to protect their interests.

Government regulatory institutions are also under international influences. Countries, states participate in international organizations, contracts, give and get information about the national regulation, may see best practices there.

## **9. Global regulatory approaches**

There are global regulatory institutions in info-communications sector, the most important is the ITU (International Telecommunications Union). The major role of ITU is to distribute the scarce resources globally: satellite positions, radiofrequencies, phone numbers. The second role is the standardisation of networks and devices. Standardisation is an issue of industrial self- co-regulation, and ITU has also Sector Members (SM) not only Member States (MS). The third part of ITU is to help the development of the infrastructure globally, and regulation issues are under the ITU-D. ITU has some "coopetitors" (there is new word on co-operation and competition too) in standardisation issues, such as ETSI (European Telecommunications Standardisation Institute).

Another global approach is, the WTO (World Trade Organization) this organisation intends to eliminate the boundaries of the international trade. One of the main topics where: how to eliminate the customs of the information technology devices. Not all the countries joined to these initiatives.

United Nations (UN) has also an initiative of World Summit on Information Society (WSIS). This initiative tries to convince underdeveloped and developed countries to co-operate in information and communications systems. The real process is very slow and full of conflicts,

because the goals are not very clear. It seems to me, the underdeveloped countries try to re-consult many things including human rights, but the developed part of the world speaks about e-government and e-education. ITU is also participating in this process as the sector-specific organisation of the UN.

EU has a rather strong internal market regulation as part of “acquis communautaire”. There are different Directorates responsible for the whole regulation: DG Information Society as the sector-specific one, DG for Competition, DG for Internal Market, DG for Standardisation. All these Directorates are co-regulators for each others and also for the national level of regulation.

US federal regulation can be seen on FCC-s homepage, and it may be used as a comparison for European regulations, but the market situation is different. The US info-communications sector is fulfilled with broadband wired technologies, so broadband regulation could be example for Europe. Europe is more covered with cellular mobile technologies than US, so the wireless regulation seems to have a step forward in Europe. There is one exception: the secondary market for radiofrequencies is everyday life in the US, but there are only pilots in Europe (prepared by UK). The regulatory institutions are completely different due to the differences in history and structure.

## 10. Institutional policy for regulation

*What should be the right policy of the European National Governments on regulatory institutions? We go over the emerging questions viewing the different interest groups, in order to find the sustainable solution.*

*a.) Could we let the spontaneous convergence process to act, and handle emerging market failures under antitrust policy?*

- Customer group: the customers would be served at differentiated levels.
- Provider group: the big incumbents would win, the new-comers could lose, and nobody would pay for regulatory services.
- Suppliers group: stable partners may be good or might be difficult for them.
- Investors group: the risk to invest into new businesses is high, to buy an existing share would be better for them.
- Workers group: the sharp competition would minimize the costs, including staff reduction.
- Redistributors group: nothing relevant to do, only monitoring in case of slow growth, but it could be needed to mediate hard market conflicts among interested parties.
- General public group: social expectations of universal services are not fulfilled.

*b.) Should we extend the existing regulatory institutions toward information technologies and technology issues of media content providing?*

- Customer group: the customers would be served more equally; the small individual customer would get more protection.
- Provider group: the new-comers would win, the incumbents could lose market shares, and both should pay for regulatory services
- Suppliers group: there is a possibility to have new business partners, but the risk is also there.
- Investors group: the risk to invest into new businesses is lower, so innovations get more funding.
- Workers group: the regulated competition allows more staff costs, the new businesses may provide more opportunities also.
- Redistributors group: there are many things to do from monitoring till the universal services funding, through interconnections too.

- General public group: ambitions to influence economic structure, social expectations may be fulfilled
- c.) *Could we merge the existing regulatory institutions of telecommunications and media content providing, just as US did long ago, and UK did recently?*
- Customer group: the merger of regulatory institutions could provide more clear “one stop shopping” regulatory services for the customers
  - Provider group: the merger of regulatory institutions would provide cheaper “one stop shopping” regulatory services for the providers, but the stronger regulator could control the more complex providers too.
  - Suppliers group: the harder regulator could decrease the abuse of market power of the big players
  - Investors group: the merger of regulatory institutions could clear the conditions to invest into complex (converged) industry
  - Workers group: the merger of regulatory institutions would cause staff reductions
  - Redistributors group: the media content providing has a lot of political issues, so it would be risky to merge the two institutions before reaching a calmed political culture.
  - General public group: the expectations to have an efficient and effective administration can be fulfilled.
- d.) *Should we organize a Public Utility Regulatory Institution in a European Member State in a similar way to individual states of US?* In US the sector specific regulations are on the federal level, and at the state level there are only public utility regulatory offices, handling together all networked industries (communications, energy, water). As the EU has different administrative system, we are not able yet to build a sector-specific super-regulator in Brussels, and have smaller utility regulators at national level. (In the far future the possibility is still open.)

After looking the stakeholders' interests in different supposed situations, we are able to formulate the answers based on scenarios:

**A.) Let** spontaneous convergence process would cause a capital concentration process, which could cause huge market failures, without means and institutions to handle it.

**B.) Extend** existing regulatory institutions towards information services and technical issues of media content providing seem to be worthwhile.

**C.) Merge** sector-specific info-communications regulator with content providing media regulator seem to be risky at the present level of political culture.

**D.) Federalization** in EU case has no reason: to build up a huge centralised super-regulator would be unrealistic (ECC similar to FCC).

As a conclusion of this chapter, we are able to advice to **extend the existing sector-specific regulatory institutions** toward converged market in info-communications sector.

## 11. Knowledge management approaches of partnership in regulation

*What should be the focus of an extended regulatory institution system for the converged info-communications and information services sector?*

The main idea is the co-regulation of different governmental institutions, the industrial bodies and the civil society too. There could be different knowledge managements, and different approaches of handling co-regulators as partners:

a.) *Co-regulation is based on the extension of sector-specific regulation*

The regulatory institution has own knowledge: about the technology and the market situation of the converging markets. Co-ordination mechanism is built up to communicate with the other co-regulators.

b.) *Co-regulation is based on industrial bodies together with the sector-specific regulators*

Knowledge mainly comes from the industrial bodies. The staff of the regulatory institution should not have direct knowledge about the market situation. The industry-influenced co-ordination mechanism might cause conflicts between administrative co-regulators (Competition Office, Data Protection Office...)

c.) *Co-regulation is based on the alliance between Competition- and Sector-specific Regulatory Office*

The regulatory institution has own knowledge: about the technology and the market situation of the converging markets. The alliance makes good co-ordination within the state administration. Communicate with other co-regulators could cause some problems. Global players of the industry (incumbents) may try political or informal actions, when their interests seem to be broken.

d.) *Co-regulation is based on communication between the sector specific regulator and the civil society*

The regulatory institution has own knowledge: about the technology and the market situation of the converging markets. The alliance with the civil society could cause political goodwill at the general public, but other co-regulators (industrial groups, competition office) might be forgotten.

We see that these knowledge management approaches are not really different, they have different aspects thought to be more relevant. The author is convinced that there may be more than one attitude, and there is no optimal one.

## **10. CEEC specialities based on Hungarian experiences**

Hungary is a newly joined EU member state, based on the GDP, it is a typical upper-middle income country. The info-communications market opening began only in 2002, four years later than in the EU. The telecommunications incumbent operator is a just fully privatized company. Just the whole ICT industry is foreign invested by Global players. The local informatics industry consists of small enterprises of outsourced operators, application developers, and software or hardware dealers. Media content providing is relatively developed, because the majority of the public can not speak any other languages than Hungarian. There are also media programs for the Hungarian nationalities out of the borders. The institutional questions are influenced by the limited state budget. Now there is a big campaign to decrease state administration. Every government cycle brings changes in staff, ideas and priorities about regulation.

There are some special issues to consider, for the regulatory regime and institutional framework, on the field of info-communications in CEEC:

- *Industrial co-regulatory partners* have rather big influence due to the foreign investments in the sector. Industrial associations are part of the civil organisations and other type of civil society is rather weak.
- *Limited state budget* may lead institutional mergers within the government, but the politically sensitive issues should be handled separately. Economy can not sustain growing government size, although civil servants would not be expensive.
- The slowly saturating telecommunications market will *pay less* and less for the sector-specific regulation. The global and the atomized national informatics sector have no intention to *pay directly* for the regulator.

*Step to step development* seem to be *feasible, to extend the scope of the regulatory regime* from the telecommunication to the whole converged info-communications and media content providing sector.

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