Multiregulation in developing countries

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6th December 2000

1 Introduction

The question of multiregulation in developing countries has many dimensions. First, one can think of geographical decentralization as one aspect of the problem. Should we have in federal states a federal regulation or should we decentralize regulation in each state? For example, should we recommend a federal regulation of telecommunications in Brazil or a two-tier system of state and federation regulation as in the USA or the European Union? Or, for the regulation of electricity, should we recommend a regulation at the level of Sub-Sahara West Africa rather than national regulations? These interrogations show that we must have a clear understanding of the pros and cons of decentralization to deal with our topic.

Second, what is the desirable industrial scope of a regulator, or how many industries should a regulator supervise is also a question to answer when designing regulation. Should we have one regulator per industry or a regulator for all industries as in Panama, Jamaica, Costa Rica or at the state level in USA, Canada, Australia and Brazil? Should the optimal design evolve over time as the recent integration of gas and electricity regulations in the U.K. might suggest?

Third, regulation has several functional dimensions, including regulation of prices, quality, environmental effects, entry and can be ex ante as traditional regulation or rather ex post as competition policy. Should we have a single national body to deal with regulation and anti-trust as in Australia? Should we have separated regulators for price regulation, quality regulation and environmental regulation as in the regulation of water in the U.K.? What should be the

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responsibility of Ministries versus those of independent regulators? These are also questions we would like to answer when designing regulation in a developing country.

These questions are at the heart of current political fights as this quote of Boris Berezovsky opposing Vladimir Poutine shows: "On the whole, the horizontal and vertical division of power is a guarantee against arbitrary rule and the usurping of power... In other words, a "bad" elected leader is better than a "good" leader appointed from above because the system of appointing leaders is defective in principle". "The point of a federal organization of Government lies in the rational balancing of real, objective contradictions between central and local interests" (The Moscow Times - 01/06/2000).

But, they are also as old as economics as this citation of Adam Smith testifies: "Public works of a local nature should be maintained by local revenue" because "The abuses which sometimes creep into the local and provincial administration of a local or provincial revenue, how enormous so ever they may appear, are in reality, however almost always very trifling, in comparison with those which commonly take place in the administration and expenditure of a great empire" (The Wealth of Nations 1776).

Three viewpoints must be integrated when trying to learn lessons from the long experiences of developed countries, the recent often partial experiences of some developing countries or from economic theory.

A first viewpoint is the normative approach of economic theory which, given technologies and available resources, including human resources, looks for the design of regulatory structures which maximize social welfare. A complementary viewpoint is to worry about the political implementation of new institutions such as regulatory rules which immediately leads to a third viewpoint, the historical viewpoint and the path dependence of institutional evolution.

When looking at the available experiences, one would like to disentangle what was due to a lack of understanding of issues, what was imposed by political constraints, what emerged finally from economic logic. Clearly, any set of recommendations should be simultaneously based on our understanding of organization theory, on the local political constraints, and on the initial conditions including the understanding and beliefs of economic actors.

In Section 2 we will review the major historical experiences of regulation in industrialized countries. A synthesis of what we can derive from organization theory will be provided in Section 3. Section 4 will present the most exciting recent experiments in industrialized countries. Selected examples from less developed countries will be discussed in Section 5. Finally, in Section 6, we will attempt to formulate policy recommendations for developing countries.

2 Lessons from history in industrialized countries

Historically, regulatory agencies seem to have sprung in the late XIXth century and in the XXth century in industrialized countries according to needs. The issue of regulatory design is a relatively new one. The degree of centralization of regulatory institutions, as well as the degree of specialization of agencies, have been decided without much reference to a theory of institutions. Looking back at the evolution of regulatory institutions in industrialized countries, a historical path dependence emerges, agencies being created one after another when firms or public pressure demand them.

European countries have typically dealt with strong political constraints that have limited the efficiency of regulation. Their response to this inefficiency has often been to nationalize utilities, especially after World Wars I and II.

The United States have had a more innovative pattern of regulation, creating a quite complex system of overlapping responsibilities between agencies at different levels of the Government, with a tendency to sectoral or industry specific regulation. The US have been quite ahead of other countries regarding the efficiency of their regulation and the reliance on market forces when possible.

2.1 The evolution of political regulation until World War I

Regulation has typically emerged locally, at the level of municipalities, before evolving towards state and federal regulation, when needed. Since regulation entails a power of giving up rents, control by political entities was necessary to ensure some accountability. The allocation of regulatory authority has therefore closely followed the political structure of the states. Regions in France, Länder in Germany have taken up regulatory responsibilities when technical or coordination issues justified it. Intervention by the upper level of the Government has been more or less extensive depending on the degree of political and administrative centralization in the country.

In the case of local services such as buses or waste collection, regulation has often remained local since there were no possible economies of scope in centralized regulation, and therefore no justification for depriving municipalities of their regulatory power. Some degree of centralized regulation of water comes more from a necessity to coordinate extraction and distribution and from environmental concerns than from other economic concerns. Municipalities or regions have therefore often kept control of the design and allocation of concessions.

2.2 Nationalization as a response

2.2.1 An early nationalization: Telecommunications in the United Kingdom

In Britain, the first 30 years of telephony were characterized by formal competition: The Postmaster General began issuing licenses in 1880 to private and municipal suppliers. Yet network effects rapidly gave rise to de facto regional unregulated monopolies. Public pressure then ended in the nationalization of the service in 1912. Statutory monopoly was granted to the Post Office. Telecommunications were in this respect different from other utilities which remained private in the UK until World War II. This came from a quicker perception of the difficulties involved in coordinating private networks than in other industries.

Parliament had a large degree of discretion and made frequent changes in the regulatory legislation. Regulation reflected the will of the Treasury to use the industry as a revenue resource. This explains in particular the lack of investment in the network and of technological upgrading until the 1960s. The industry was then characterized by poor service and long waiting lists. The Post Office, despite its public status, retained a large degree of autonomy, especially concerning technical decisions. Regulation consisted merely only of rate-of-return mechanisms, with intervention on tariffs by the Government for macroeconomic control. Tariffs were also used by the company to lessen demand.

Britain's telegraph company was nationalized as early as 1869, when the Post Office, then a department of the Government, was given monopoly in the industry. The Post Office then kept monopoly over long distance telephony lines, in the view of protecting telegraph investments from a too intense telephony competition. Since the Post Office was a Government department, all its expenses had to be approved by the Treasury and revenues repaid to the Treasury latter. While daily expenses were under complete control of the Treasury, the Parliament could not distinguish between expenses incurred for telephony, telegraph or postal services. Political control seems to have been only formal, actual control belonging to the bureaucracy after 1911 (Hills (1986)).

The election in 1979 of the Thatcher Government ended in the 1981 Telecommunications Act which created British Telecom and opened telephony services to competition. British Telecom was privatized and Oftel, the office of regulation of telecommunications, was established in 1984.

The regulation of railways shows a similar fear that competition could lead to firms' bankruptcy and to an eventual decrease in the number of competitors. A will to maintain the number of firms on the market even though several were not viable by themselves induced a very characteristic regulation of railroads: After a period of 'laissez- faire', begun in 1830, Parliament took measures to ensure that a large number of producers would survive. It used price-fixing as a way

of stabilizing profits, at the expense of actual competition, and encouraged cartels while preventing consolidations. In the end of the XIXth century, Parliament issued a decision to outlaw price discrimination, prevent mergers and enforce cartel agreements. In the 1920s, cartelization was again encouraged and imperiled firms were subsidized. After World War II, most utilities were in public hands, but with a very autonomous management. Subsidies, production quotas and price fixing kept being used in order to protect firms from market pressure until the Thatcher Government when an impressive program of reforms of regulatory institutions and of privatizations was launched.

2.2.2 An example of centralization in France: The regulation of railroads

France has had a tradition of centralized Government for centuries, with frequent intervention of the state in the economy and a particularly well-developed civil service. These features are probably the prominent reasons why railroads and other utilities have developed under tight control of the central Government.

State intervention began in 1823 but was the logical continuation of previous intervention in other transportation modes, such as canals. As stressed by Dobbin (1994) in his interesting comparison of railroads in the US, Britain and France in the XIXth century, the primary concern of French politicians and officials was to develop a coherent and rational rail system. This translated into developing it under Government planning. The Government attracted private capital by guaranteeing a return on capital and restricted entry in the industry, establishing six regional monopolies. The Ponts et Chaussees administrative body designed the routes that appeared most necessary and exclusive concessions of 99 years were auctioned off. A striking fact is that charter granting was done under administrative oversight, by civil servants who had no legislative mandate (see Dobbin (1994), p. 107). Unsolicited applications were systematically refused, until in 1833 Parliament overruled the Ponts et Chaussees to grant a concession. Regional and local Governments were almost completely excluded from the design of railway planning, which was considered to be of national interest. Railways were seen as a way to achieve order and regional integration. Adolphe Thiers, then Minister of Commerce and Public Works, supported public planning on efficiency and political order grounds. This strongly contrasts with the building of railways in the US, where local Governments were very active, and where concessions were granted according to expected financial viability. In France, on the other hand, the main criteria was an optimal use of the nation's resources, given the existing roads and canals.

A debate on whether railways should be public or private arose in 1837 and kept going on in parliamentary commissions. The need for private funds had to be traded with the ability for the central Government to preserve the public interest. A compromise was reached, in which construction was mixed (one half of the capital was provided by the Government, the other half by private investors) and operation was private, under a system of concessions and franchises.

On-going corruption led to several scandals, to which the central Government responded by increased state controls in 1880. This response corresponded to the prevailing feeling that the central Government was benevolent, not corrupted, and was acting in the public interest. This again contrasts with the response chosen by the United States in the same situation and nearly the same period, which consisted in limiting state intervention to remove discretionary power from the hands of local politicians. The Government held complete control over prices and rates. When the first concessions came to an end, the debate about the public or private characteristic of railways arose again and nationalization was decided in 1937, with the creation of the Societe Nationale des Chemins de Fer, still operating nowadays.

When World War I broke, France became a command economy (contrary to the United Kingdom, where firms' freedom was enhanced according to the idea that this would increase their supply). The increase in state control remained after the end of the war. It expanded tutelage over mining, electricity generation, oil, and air transportation in the 1920s. After World War II, and in great part because of the role played by big industrials in collaborating with the Nazis (as was the case of Renault for instance), a series of nationalization took place. The Government choose to regulate the economy with a system of five-years indicative planning. A privatization program began in 1986 and was halted and then resumed due to political changes. Privatization is now a motto for all of the main political parties, but several utilities, including the SNCF, remain publicly owned.

2.3 The creation of the USA complex regulatory system

The United States of America are a very large federal country, in which states are highly autonomous, particularly regarding businesses that remain within the borders of the state. This particular feature explains partly the regulatory system that has emerged in the XX^{th} century. A will to rely on market mechanisms to attain efficiency and a distrust of state intervention are other characteristics that have conditioned the evolution of regulation over time.

The Sherman Act voted at the end of the XIX^{th} century provided a sound framework for dealing with firms' abuse of power. Yet at the time it was seen as insufficient and was not well

enforced to control utilities. Specific regulatory agencies were created to answer the demands of firms. It is indeed a striking feature that some degree of regulation was asked for by firms, to protect them either from local political extortion or from abuse of power by client- or supplier-firms.

2.3.1 The framework provided by the Sherman Act

The Sherman Act passed in 1890 was a very powerful tool to fight collusive agreements and abuse of dominant position. If interpreted in a broad sense, it could even have enabled to fight harmful mergers on monopolization grounds: The Act was potentially more powerful than it appears at first sight, if enforced by judges with a strong conviction about the benefits of competition (see Kovacic and Shapiro (2000)). The general doubt about the benefits and cost of competition may explain in a large part the relatively weak enforcement of the Act until the 1910s, and the necessity to create other judiciary tools.

Indeed, at the time and for the years to come, there was a sharp debate about the costs and benefits of competition. Competition was viewed as potentially very harmful for high fixed or sunk costs industries, in particular railroads and utilities. Indeed fierce competition with little or no interconnection in the late XIX^{th} and beginning XX^{th} Centuries resulted in waste and frequent bankruptcy in railroads and telecommunications. Consolidation soon appeared as a widespread response. Without interconnection, club effects lead naturally to concentration in a few networks. In 1912, the courts decided to react to this trend by imposing interconnection: *Unites States v. Terminal Railroad Association of St. Louis* (224 U.S. 383) obliged railroads that were controlling terminal facilities to offer access to rivals on reasonable terms. The Court also appealed to the Interstate Commerce Commission to set fair access prices. This decision led to the 'essential facilities doctrine'. It moreover reinforced the legitimacy of utility regulators by calling for access regulation in addition to more standard types of regulation. Yet it was seen at the time as proving that the terms of the Sherman Act were too vague and too much subject to interpretation.

Congress passed two laws enabling to reduce the power of judges in 1914: The Clayton Act and the Federal Trade Commission Act.

The Clayton Act reduced the discretion of courts by specifying special per se forbidden practices, such as exclusive dealing, interlocking directorates and mergers resulting from purchasing stock(see Kovacic and Shapiro (2000) for an interesting survey of antitrust policy in the US since 1890).

The Federal Trade Commission Act created the FTC, an independent administrative agency in charge of promoting competition. The mandate of the FTC was de facto very close to the one of the Department of Justice (DoJ) in the part that concerns enforcement of the Sherman Act. The creation of overlapping agencies was publicly motivated by the fact that the DoJ was overloaded by work. Yet it seems reasonable to think that the creation of the FTC has been motivated by some other reason, since in theory creating a specialized bureau within the DoJ would have been sufficient and would have made the separation of tasks easier: specialization needs not imply separation. Moreover, the fact, underlined by Kovacic and Shapiro (2000), that the FTC Act "ended the executive's branch monopoly on public enforcement of antitrust laws" seems to indicate some political motives. Kovacic and Shapiro (2000) argue that this separation comes, at least in part, from the desire to better control antitrust enforcement, after the most debated Standard Oil v. United States (221 U.S. 1 (1911)), and, in a lesser extent, the 1912 Terminal Railway decision.If one accepts this argument, then separation of regulators can be seen as a way of relying on competition between regulators to limit their discretion and avoid contestable decisions. The FTC, being an administrative body, was a priori easier to control by Congress than the DoJ.

2.3.2 Federal sectoral agencies and state multi- sectoral commissions

The overlapping mandates that arose after the creation of the FTC in competition with the DoJ seem quite representative of the general structure of regulation in the US. Such a regulatory structure consisting of overlapping agencies can also be seen in the dual enforcement role of federal agencies and state utility commissions. The first state Public Utility Commissions (PUC) have been set up to answer a need expressed by local firms for more regulation. There seem to have been a general tendency to look for regulation by the 'closest' political body: first municipalities, that owned their regulatory power from their ability to sell and auction concessions for water, electricity, mining, etc. Then when municipalities appeared corrupt, extortive, or unable to deal with firms located in several areas, state regulation began, with the creation of PUCs. They have perdured due to the structure of the political system in the country: The strong autonomy of states in the US gave them the constitutional power to have their own agencies in order to regulate intra-state issues. Potential disagreement with federal rules has been viewed by politicians as a strong reason for not relinquishing the possibility to regulate utilities.

Due to a size effect, the PUCs have remained multi-sectoral agencies, the same PUC taking on new responsibilities when pressure for regulation in an until then unregulated industry arose.

Conversely, the large size of the country made it more realistic to set up sector-specific or even industry-specific federal regulatory agencies.

The 1946 Administrative Procedures Act gave the commissions the authority to make industry-wide rules. Most state commissions still use quasi-judiciary proceedings, with adjudicatory processes, rather than rule-making. They follow in that the example of the Interstate Commerce Commission, who set up a model of regulation in the 1880s. This way of regulating allows to maintain a strong accountability of the regulators, even though they benefit from a large amount of discretion in the US system.

The following subsections give examples of several industries, ending with a quick summary of the present regulatory structure in the US.

2.3.3 Telecommunications

In telecommunications, the end of the XIXth century and the beginning of the XXth century saw a strong competition between local exchange operators, with usually at least two operators in each city (among which a Bell one). Since most companies did not interconnect, Bell used network effects to gain a competitive advantage over independent competitors and a larger consumer base. This advantage was further strengthened by AT&T denying interconnection with its inter-city network to independent companies for long-distance calls. This behavior was challenged by the Department of Justice (DoJ). The Head of AT&T, A. Kingsbury, settled the dispute in 1913 by signing a commitment (the 'Kingsbury commitment') to follow some rules, including offering interconnection to all.

In 1921, a large part of this commitment became irrelevant after forceful lobbying of the Congress ended in the adoption of the Willis-Graham act, which exempted AT&T from antitrust laws when acquiring additional companies. An aggressive policy of consolidation followed, leading to the creation in 1934 by the Communications Act of the Federal Communications Commission (FCC). This Act remained valid for more than sixty years, until the Telecommunications Act of 1996.

The 1934 Communications Act established the FCC, giving it the power to approve new services, compel interconnection, suspend rates and allocate frequencies. The Act required that rates were 'just and reasonable' but no precise definition of these terms was given. It also put 'common carriers' under an obligation to provide service to the public. Indeed at the time, AT&T provided 90% of telecommunications network but covered less than 50% of the country in terms of land area.

The independence of the federal regulator

The 1934 Act ensured independence of the federal regulatory agency by several dispositions:

- First, the FCC is responsible to (and its budget is decided by) the Congress and not the executive.

- The five Commissioners governing the FCC are nominated by the President and confirmed by the Senate. There cannot be more than three of them from the same political party, which constitutes a balance-of- power mechanism and should ensure some insulation from political pressures.

- In order to also prevent capture by the industry, the Commissioners cannot have any financial interest in an industry related to the work of the FCC.

Yet it seems that the regulators had to bear very strong pressures from the extremely powerful AT&T group and from its political supporters, especially when considering the divestiture of long and short distance telephony in the 1970s. One of the main difficulties encountered by regulators was indeed the complexity of the relationship linking AT&T, the Bell operating companies (BOCs), Bell Laboratories and Western Electric. Regulation therefore consisted in a relatively simple rate-of-return regulation. As early as 1938, a report of the FCC (later disapproved by that agency) stressed that the vertical monopoly of the company allowed it to actually escape regulation, AT&T charging very high rates to local operating companies, that could then incorporate these prices in their costs, and therefore in the rate-base used by the regulator. This ended after long and hot debates in the divestiture of AT&T in 1980.

Other difficulties linked to the regulatory framework came from the lack of clear allocation of authority between the different regulators. The 1996 Act has strongly increased the authority of the FCC by investing it with the power and the duty to adopt very detailed rules and standards (see Kerf and Geradin (1999) for a detailed comparison between the American, the Australian and the New-Zealand regulation of telecommunications). This provision should not give rise to much concern about excessive discretion of the Commission since its authority can be challenged by the Department of Justice and the State Commissions. Its main drawback is the amount of work it requires from the FCC. The regulatory costs associated with the design and implementation of these rules are likely to be very important and to prevent giving enough attention to other issues.

An unclear allocation of tasks is also likely to prevent efficient regulation by the FCC.

The allocation of power between the federal and state regulators

As stated in Section 1 of the 1934 Act, the FCC was to regulate entry prices, mergers and

acquisitions, but for interstate services only: Intra-state services remained under control of State Commissions, which frequently decided to grant monopoly licenses to operators (most of them Regional Bell Operating Companies, RBOCs). The 1996 Act modifies this feature by allowing the FCC to intervene in the local exchange market. But the provision lacks clarity regarding the precise allocation of authority between the FCC and the State Commissions, thereby giving rise to judicial uncertainty and potential disputes.

An unclear allocation of authority can be used in an opportunistic manner by firms so as to delay the implementation of regulatory rules or for instance the introduction of competition. A first instance of this is the suit brought by incumbent local exchange carriers and state regulators against the FCC in 1996. According to section 251 of the 1996 Act, the FCC issued a First Report and Order in which it prescribed the use of pricing based on Total Element Long-Run Incremental Cost. This was challenged on the ground that local competition provisions should be designed and implemented by the States and not by the FCC. A decision was taken in October 1996 by the Court of Appeals for the Eighth Circuit, asserting that the FCC lacked jurisdiction to issue pricing rules. A justification given for this decision was that the FCC was likely to lack information on local conditions. This reflects the idea that local or state regulators have better access to information and that centralization of regulation comes at the cost of an informational disadvantage (see Seabright (1996), and Laffont and Zantman (1998) among others for theoretical models on the informational cost of decentralization). The decision was finally overturned by the Supreme Court in January 1999 (525 U.S. 366). This dispute has been very costly and has induced much delay in the implementation of the 1996 Act. Kerf and Geradin (1999, p. 952) report that it is moreover perceived as having discouraged entry in the local exchange market, legal uncertainty being too strong. The advantages of having overlapping agencies can clearly be outweighed by such costs.

The allocation of power between the FCC and the DoJ

Under the 1996 Act, the FCC has to consult the Department of Justice before deciding whether to let RBOCs enter the long-distance market. The FCC and the DoJ have moreover overlapping authority in the area of mergers and acquisitions. Both can review mergers in an independent way and with a distinct statutory authority. This system has costs and benefits. The benefits come from the possibility that the two agencies use different angles of approach, the DoJ focusing more on the competition issue. The costs lie in the duplication of costs, in the delays incurred before reaching a definitive decision, and in the regulatory uncertainty. The overlapping of responsibilities means in particular that inconsistency can occur, especially so since the review

process is different according to the agency. In 1997 for instance, the DoJ approved the Bell Atlantic/NYNEX merger without conditions, contrary to the FCC that required that measures to open markets be taken before accepting the merger.

2.3.4 Railroads

The railways industry is among the very first to be regulated in the US, in the 1870s, some fifty years after the birth of actual railroads. Steam locomotives replaced horse-drawn wagons in 1831. Railroad construction expanded very rapidly in the 1840s and 1850s. State Governments contributed to this expansion by granting liberal charters and by supplying credit. Several states even financed the building of some complete lines. The Federal Government also intervened, reducing the price of iron for rails construction and providing almost 25 million acres of land (see Bryant (1988)). Federal action was slowed by debates within Congress, members from North-East being reluctant to engage spendings in railroads, contrary to members from the South and West. A railroad land program was yet introduced in 1850. The railway system was ultimately largely financed by private investors. The Civil War, breaking in 1861, put under light the superiority of the lines of the North with respect to number, systematic design and operation, and quality. The war having demonstrated the usefulness of a good railway system, construction dramatically intensified after 1865.

Corruption proved to be widespread at the end of the 1890s. A scandal involved for instance the Credit Mobilier, a company that distributed free shares to members of Congress and even to the Vice-President. Corruption generally led to overcapitalization and to manipulation of the prices of securities. Several examples of corruption became public, giving rise to large scandals.

Regulation came as a response to the complaints of small shippers against the use of rebates for large users. Small shippers indeed felt that railways were using their market power to expropriate them. Several groups of farmers, small businesses, grain elevator owners, etc. used pressure on state Governments to obtain regulation of railways. The Granger laws were passed in the 1870s by several states in the Midwest. These laws created state railway commissions to set maximal rates and end discrimination. The Supreme Court upheld this regulation in 1876, in *Munn v. Illinois* but severely limited its powers in 1886 in *Wabash*. Regulation proved very complex and railways tended to simply ignore the rates settled by state commissions. This example show clearly that a too complex regulation may simply be ignored by the firms if enforcement capabilities seem weak or simply if understanding and applying the regulatory rules is more costly for the industry than the expected fine imposed by the regulator.

The 1887 Interstate Commerce Act created the Interstate Commerce Commission, a five-member commission in charge of ensuring that rates were 'reasonable and just', without further definition of the terms. The ICC did not receive power to set maximal rates and had no enforcement power (it had to go to the courts to enforce its decisions). The federal judiciary at first much undermined the efforts of the ICC to effectively regulate the industry, ruling in favor of railroads in 15 cases out of 16 between 1887 and 1905. With the bankruptcy of railway companies that operated one third of the country's system between 1873 and 1897, large consolidation occurred and pressure developed for a federal regulation of the industry. The ICC received expanded mandate in 1910 and 1913, and in the 1920 Transportation Act. Yet at this time the industry's power was beginning to be reduced by competition from other transportation modes. The 1933 Emergency Railroad Transportation Act designed and passed during the New Deal to coordinate rail services had little impact. Waste and duplication were a major problem that the ICC seemed to overlook, continuing to refuse numerous proposed mergers until the 1960s. The Staggers Act of 1980 was a first step at federal deregulation. Large mergers and massive line abandonments occurred in the 1980s.

2.3.5 The Ocean freight industry

In this industry also, regulation was set up to answer a desire of firms to be protected from abuse of power. More precisely, the Shipping Act of 1916 (39 Stat. 728) was voted in response to complaints by shippers against shipping conferences. These shipping conferences were actually cartels of ocean carriers, that were setting rates, allocating sailing and settling disputes among carriers. Shipping conferences were also using deferred rebates, thereby increasing the cost of switching carriers for customers (Larner 1975). The DoJ suited three shipping conferences in 1911 for violation of the Sherman Act[1], going to appeal and then to the Supreme Court in two out of three cases. Following these cases, the House of Representatives demanded that an investigation be opened. The investigation was undertaken by the Committee on the Merchant Marine and Fisheries, and ended in 1914 in the Alexander report, named after the chairman of the Committee, Joshua W. Alexander. This report was crucial in the elaboration of the 1916 Shipping Act. The report viewed conferences as necessary to ensure coordination and regularity of service, as well as stability and uniformity of prices. Yet it recommended a close public supervision to avoid the anti-competitive bad effects of cartel arrangements. The report stated a belief that antitrust laws were not enough to maintain competition (no precise argument is given to support this belief which was rather common for utilities and network industries at

the time). The shippers representatives who were interviewed by the Committee were nearly all strongly in favor of regulation.

The report therefore issued a series of recommendations, that were closely followed by the Shipping Act of 1916. According to the Act, the United States Shipping Board was created to monitor carriers. This agency could forbid or modify any agreement concerning rates or measures controlling competition. Approving or disapproving rates were the only way the Board could influence prices. Antitrust laws did not apply to agreements approved by the regulatory agency.

An interesting thing to notice is that the Alexander Report recommended that supervision of ocean carriers be conducted by the Interstate Commerce Commission (ICC) since the close links between rail and water transportation worked in favor of centralization of regulation rather than of the creation of a specific agency. This recommendation was not followed, the creation of a new commission being favored by Congress.

The effectiveness of the regulation was strongly criticized by two reports, the Celler Report in 1962, issued by the Antitrust Subcommittee of the House Judiciary Committee[2], and a report of the Joint Economic Committee on discriminatory ocean freight rates[3], chaired by Senator Paul H. Douglas, in 1965. The inefficiency of regulation seemed to have stemmed from first the fact that regulation and promotion of the industry were in charge of the same agency until 1961, and second the international characteristic of the industry. Regulation had always been subordinated to promotion of the industry, until the 1961 Reorganization Plan Number 7, which established the Federal Maritime Commission (FMC) as regulator, charging the Maritime Administration and the Maritime Subsidy Board (within the Department of Commerce) of promotional and subsidy programs. Not separating tasks proved to lead to totally inefficient and lax regulation.

The international aspect of ocean shipping raised difficulties since other maritime nations have kept protesting against the US statutory regulation, alleging in particular conflicts of legislation and infringement upon the sovereignty of nations, as well as regulatory dispositions allowing to foster the interests of the United States to the detriment of other nations. Theses other nations themselves rely on agreements between shippers and conferences and not on regulation.

[1]See *United States v. Hamburg-Amerika S.S. Line*, 239 U.S. 466 and 216 Fed. Rep. 971; *United States v. American- Asiatic Steamship Co.* and *United States v. Prince Line, Ltd*, 242 U.S. 537 and 220 Fed. Rep. 230.

[2]See *T*he ocean freight industry, H. Rept. 1419, 87 Cong. 2 sess.

[3]See *D*iscriminatory freight rates and the balance of payments, S. Rept. 1, 89 Cong. 1 sess.

2.3.6 Electricity

Conversely to other industries were regulation was asked for by small firms to protect them from abuse of power by upstream firms or competitors, electricity is a sector in which regulation arose from a desire of firms to be protected from expropriation by municipalities. Regulation by administrative state agencies was promoted in the 1930s by private firms to limit corruption in the previous franchising process, that was controlled by municipalities. Several scandals showed that corruption in the bidding or allocating process of franchises and concessions was wide-spread. Firms could only suit the municipalities in case of disagreement, no oversight body being in charge of controlling the process. Some degree of centralization was then seen as a way to take discretionary power away from the hands of corrupt local politicians.

State regulators turned out to choose pro-producer policies. Public pressure became stronger in the 1970s, leading to changes in regulation: Deregulation began in 1978 with the Public Utilities Regulatory Policies Act and was accompanied by the emergence of strong federal competition policies (See Gilbert and Kahn, eds. (1996) for comprehensive studies of the regulation of electricity in major countries). The existing structure of regulation is thus the result of lobbying by firms that wished to be protected from extortion and corruption at the municipal levels, and of pressure by consumers some forty years later.

2.3.7 The resulting regulatory system

The US legal system of competition policy is an extreme case of decentralization with overlapping mandates. Kovacic (1999) notes that a number of agencies have the authority to contest mergers: the Department of Justice (DoJ), the Federal Trade Commission (FTC), state attorneys general, and private parties can file a complaint against a proposed merger. When the firms concerned belong to regulated utilities, the degree of overlap may even be greater: the relevant Federal Commission and the state Public Service Commissions (PSC) can also intervene. It should be noticed that, surprisingly, some transportation industries are not subject to this overlap: The Department of Transportation (DOT) has sole authority on airline, and the Surface Transportation Board sole authority on railroads (with an advisory role for the DoJ). There seems to be little justification for these exceptions and they probably result more from historical circumstances than from any specificity of the two industries.

The US system appears to have been quite ahead of regulation in other countries. Yet it is still criticized for its complexity, its rigidity and its administrative lengths. It seems to have undergone little changes since it was constituted, following the needs expressed by firms across

time, and constrained by some political struggles for power between federal and state entities. The 1999 OECD Report on regulatory reform in the United States stresses the benefits that could be obtained by simplifying procedures and gaining in flexibility. Rigidity and complexity seem to be the major impediments to efficient functioning, along with unclear allocations of power on some issues.

2.4 Conclusion

Historical evidence show that two main factors have affected the design of regulatory institutions, namely the technical characteristics of the industry and the political organization of the state.

2.4.1 The impact of technical characteristics

Technical characteristics have played an important role in the choice of a regulatory system. Indeed regulation seems to have generally started at a local level, municipalities first beginning to use their power of allocating licenses and concessions and of issuing price and safety regulations. Whether regulation has been taken over by higher levels of Government has depended on the structure of the industry itself. When there were no economies of scale in regulation, municipalities have retained power. Economies of scale arose

- when there were externalities in the operation of firms between neighbor areas and needs for regional coordination (as in the design of railways or in the interconnection of telecommunications and electricity networks),

- or when regulation required specific skills and expertise.

In the case of local transportations and waste collection and treatment, no specific technical expertise was needed to regulate the industry. There were moreover no externalities between municipalities. The latter have therefore kept control over regulation in these industries. Water regulation has also remained at a local level, except regarding environmental concerns. The effects of water withdrawal on the environment are indeed diffuse and can potentially affect several regions. If Britain or France had experienced severe draughts, they would probably have chosen a more centralized system to allocate water across regions. Since water consumption at the level of a given municipality had little impact on other localities, though, it seemed natural for municipalities to retain the power that had initially on the industry[4].

[4]Karhl (1982) also relates how financial constraints have affected the behavior of municipalities in water management in the United States: Private investment has achieved major projects in the XIXth century , but only projects that could use locally available water, without movements of water from one hydrologic basin to another. When the need to move water across basins arose, financial issues arise since firms were not willing to

Railroads, telecommunications or electricity, on the other hand, are industries that operate on a much larger geographical scale. Specific expertise was moreover required to understand the functioning of the industry. Duplicating specific skills at the lower levels of Government would clearly have been wasteful. Economies of scale in having a centralized regulation could easily be perceived by the public opinion. National regulation therefore emerged in Europe. In the United States, the large size of the states can explain why states retained sizeable regulatory powers, federal regulators being in charge of regulation only when inter-states issues arose.

2.4.2 The impact of Governmental and political structures

A second factor that seems to have played a crucial role in the design of regulation in industrialized countries is the general structure of the Government. Effective regulation needs both administrative bodies to execute it and political entities to ensure its legitimacy. Regulatory structures have therefore been closely linked to the organization of the state.

When regulatory needs arose in Europe and in the United States, it was natural to first use the existing structure to quickly deal with problems. Regulation has in general been first undertaken by the local political entities that had the legislative legitimacy required, i.e. municipalities or regions. The case of railroads in France is an exception since an administrative body has first undertaken to regulate the industry without any legislative mandate. But this reflects the informal authority of technocrats in the French state at that time. Once an entity had began regulating an industry, the regulatory structure has been very slow to change.

Indeed regulation entails a strong power of creating and distributing rents. Political and administrative bodies have therefore been very reluctant to relinquish the power they could obtain thanks to regulation. Regulatory structures born from present needs have shown a strong inertia in the sense that it has generally been politically costly to remove authority from an existing structure. This has been easier to do when public opinion was aware of problems in the existing structures. Scandals linked to corruption for instance have usually been followed by a change in the regulatory structure, either towards more centralized regulation, as in France, or towards less public intervention as in the US. A poor quality of service leading to widespread discontent has also helped reforms in the regulatory structure. The allocation of regulatory

invest large amounts given the perceived risks of the projects. Municipalities then intervened to partly finance the investments in construction works to tap distant sources of water when needed. The first municipal waterworks was installed in Bethlehem, Pennsylvania, in 1750. In 1860 only 4 cities out of the 16 largest in the United States did not have a municipally owned water system. Technical issues were the main factor that led to municipal involvement in the industry.

power seems to have been strongly path dependent. It has depended both on the historical evolution of the industry and on the political institutions of the country.

The role of the political structure of the Government can easily be seen. France for instance, with a very centralized political system, has very quickly adopted a national centralized regulation, except for water or local transportation, on which municipalities still retain a large degree of control. The United Kingdom had adopted a centralized regulation but with the creation of regional entities and monopolies that had been given substantial power. This reflects the political autonomy of the regions and their will to receive sufficient regulatory power. In the United States, both the autonomy of the states and their large size justified that they retain large regulatory powers.

The example of railways design and management in France show the importance of the cultural environment in which regulation is chosen: France, having a culture of state intervention and state benevolence reacted to regulatory issues by further increasing the role of Government in economic life, contrary to the United States for instance in which beliefs in market mechanisms have led to very different outcomes. It also shows the path dependence that exists in institutions design. There is a general tendency to expand existing institutions rather than creating new ones. This may be due to the economies linked to avoiding investing in a new structure, or to the efforts of existing institutions to obtain more power by obtaining broader mandates.

It should also be noted than when new institutions have been created, they have usually be designed by copying existing agencies: In Britain, Parliament used the outline of the early factory inspectorates to design the railways regulatory agency. Similarly, the United States have followed the model given by state banking commissions when designing their regulatory agencies. The main structure of the ICC (1887) was later reproduced in the Federal Reserve Board in 1913, in the FTC in 1914, the Federal Power Commission in 1930, or the Federal Communications Commission in 1934, with little adjustments. In these early years of regulation, experimenting in institutional design may have seemed too risky and politically difficult.

It is striking to notice that the notion of independent regulators dates back to the beginning of the Century in the US, and to about 20 years ago only in Europe and elsewhere.

Given the importance of political and historical factors, a caveat is in order, concerning the lessons that can be drawn from the history of regulatory design: Political constraints have a very strong influence on the choice of the regulatory structure. Developing and transition economies may be less constrained than industrialized ones by existing structures. Yet it is likely that their political structure will also determine the implementable regulatory institutions. Reforms are likely to be extremely difficult to implement if no shock in the political system occurs.

A question that arises is whether there exists any economic logic beyond allocation of regulatory power to the political or administrative entity able to retain that power. We will first present the economic arguments in favor and against the various possible regulatory structures, as they can be derived from organization theory. We will then summarize the recent experiments in regulatory design made in industrialized countries and the solutions chosen by developed economies.

3 Lessons from organization theory

3.1 Introduction

When discussing multiregulation, one touches on a immense number of issues and one cannot expect simple answers. In this section, we attempt to review the various trade-offs exhibited by organization theory which affect the choice between a single regulator versus multiregulators. To do so we will proceed in four steps which will enable us to provide a framework for evaluating those various trade-offs. In the first one, we maintain the myth of the benevolent informed Government but we admit that bounded rationality affects its decision making. In a second step we take into account the decentralization of information and the strategic behavior of the agents of the economy with respect to their private information. Still maintaining the benevolence of the Government we assume in step three that contractual incompletenesses affect the mechanisms that can be implemented by the Government. Finally, step four abstracts from the benevolence assumption and takes into account the fact that Governments are under the influence of interest groups. Along the way, we try to see when conclusions are affected by the specific characteristics of less developed countries (LDCs).

3.2 Bounded Rationality and Centralization

As pointed out by Sah (1991), the role of human fallibility or bounded rationality has not been studied in the debates about diversification versus concentration of political authority.

Even if we stick to a view of Government as a benevolent informed principal, taking into account the Government's bounded rationality leads to some insights into the structuring of power.[5] We will rely here[6] on the theory of bounded rationality put forward by Sah and Stiglitz

[5]The multiplication of agencies which have authority to contest mergers in the USA (DOJ, FTC, state attorneys general, private parties) might be an example of multiregulation motivated by bounded rationality argument.

[6]Hart and Moore (1999) provide an alternative model of bounded rationality which also sheds some light on the centralization-decentralization issue. Associated to each project, a decision maker has a probability of taking a

in a series of papers (1986), (1988), (1990) and draw heavily on Sah (1991).

The Government can make two types of errors in a decision problem such as the choice of a project, the choice of a manager, the choice of a rule... The type one error is the probability p_1 of taking a bad decision and the type two error is the probability p_2 of rejecting a good decision.

Suppose we have two available decision makers. Should we organize decision making as a hierarchy, where an acceptance decision has to be made by both or as a polyarchy in which a single decision maker can make the decision and a project which is rejected by one is examined by the other decision maker?

In a hierarchy, the probability of accepting a good project is $(1-p_2)^2$ and the probability of accepting a bad project is p_1^2. In a polyarchy these probabilities are respectively $(1-p_2)(1+p_2)$ and $p_1(2-p_1)$.

Let W and $-V$ the values of a good and bad decision respectively and suppose that ν is the probability of a good project.

In a hierarchy expected social welfare is

$$\nu(1-p_2)^2W-(1-\nu)p_1^2V,$$

instead of

$$\nu(1-p_2^2)W-(1-\nu)(2-p_1)p_1V$$

in a polyarchy.

A hierarchy is better if

$$(1-\nu)(1-p_1)p_1V>\nu(1-p_2)p_2W. \tag{1}$$

A hierarchical decision process corresponds to centralization while a polyarchical one corresponds to decentralization. Formula (1) gives the following insights[7]. When mistakes are very costly and bad projects quite common centralization is better, while decentralization is favored if good projects are common and have a high value. A weak quality of decision making that we can associate with LDCs favors decentralization.[8]

"good" decision (i.e. a decision yielding some value for him). With the complementary probability he can delegate the decision to a subordinate who can also take a good decision (which has value to the subordinate). Also, the value created by a project decreases with the number of projects undertaken. There are also coordination tasks in addition to those "specialization" tasks.

See also Bolton and Farrell (1990), Radner (1992), Keren and Levahri (1979), Bolton and Dewatripont (1994).

[7]See Appendix 1 for more details.

[8]The robustness of this conclusion should be checked in other bounded rationality models.

For questions which can threaten society such as public health or security issues this would favor centralization, while projects which have great potential value and little downside favor decentralization.

Suppose now that the decision makers differ in their abilities to make decisions, and let us now associate decentralization with a larger number of decision makers. Then, if decision makers are chosen randomly a less centralized society has the advantage of a greater diversification of its performances. Welfare will have the same mean but a higher volatility under greater centralization. The effect of human fallibility is that more centralized societies will have more volatile performances. However, decision makers are not chosen randomly and to the extent that the single decision maker of a centralized system can be well chosen (in a good merit-based selection of decision makers), centralization is favored. This is particularly true for decision problems which are well identified ex ante and for which appropriate selection mechanisms can be designed. It is not necessarily true in a changing world where the diversity of decision makers of a decentralized system might induce a greater ability to react to unanticipated events.

So far we have neglected the possibility of gains from coordination and economies of scale which favor centralization. However, centralization requires communication and as communication is also fallible, limiting communication and therefore centralization has also value.

Which lessons can we derive for developing economies? First, the large variability of experiences ranging from highly successful countries (South Korea, Singapore...) to highly unsuccessful ones (in Africa) is consistent with the variability induced by centralization. The greater imperfection of decision making and the higher costs of communication (of the Sah-Stiglitz type) militate in favor of decentralization and also centralization entails more risk since it is likely that the merit-based selection system will be less efficient than in a developed country. Concerning regulation, the extreme lack of human resources in this area and the large opportunity cost of those resources clearly militate in favor of centralization to the extent that economies of scale exist. One should even envision regional regulation encompassing several countries, as well as multisector regulators and even an integrated regulation and competition policy. The perspective of improving quickly the expertise of a limited number of regulators with international support appears great. If new information technologies can be developed in these countries, better communication costs also militate in favor of centralization as well, but not relatively to developed countries. Those regulatory questions, as important as they are do not threaten the survival of those countries. So the added value of hierarchical systems (which multiply decision makers in a centralized way) seems limited.

We obtain conflicting results summarized below.

	Favors Decentralization Relatively More in LDCs
Cost of communications	+
Cost of regulators	−
Imperfection of decision making	+
Quality of selection of large decision makers	+

Summarizing, we can risk the following advice: Given the lack of human resources, the costs of decision making militate for centralized regulation in a first stage during which the emphasis should be placed on developing those human resources and simple regulations should be chosen. In a second stage as regulation becomes more sophisticated a partial decentralization of regulation will be desirable.

3.3 Benevolent Uniformed Government

The next paradigm to discuss our topic is the one of a benevolent Government in a world where the regulated agents have private information.

When all concerned parties are rational agents and when the judicial system is such that complete contracts can be signed, the Revelation Principle gives us a useful benchmark. Any form of regulation by the Government can be replicated by a centralized mechanism in which all agents transmit in an incentive compatible way their private information to the Government who then issues orders for verifiable variables and recommendations for moral hazard variables. Centralization remains optimal despite the superior information of the periphery.[9]

The optimal regulation that the Government can implement entails a trade-off between rent extraction and efficiency. The Government can also have a more proactive behavior with respect to its asymmetric information. It can use intermediaries who will mitigate the extent of the asymmetric information.

Regulatory agencies can be viewed as such intermediaries and we can raise the question of the optimal structuring of these agencies. A few recent papers are relevant for this discussion.

[9]Many papers (Gilbert and Picard (1996) for example) argue in favor of decentralization because information is decentralized to start with. This argument is not valid under the assumptions of the Revelation Principle. A further imperfection must be postulated, costly communication as in Section 2 or some other form of bounded rationality.

From Dewatripont and Tirole (1999), the separation between two bodies is based on the notion of advocate. The rewards to informational intermediaries can only be based on decisions. Two types of information can be searched for. Favorable type 1 information favors decision A, favorable type 2 information favors decision B, while no information or two pieces of favorable information lead to no decision.

The two costly activities of search for information create negative externalities one on the other. Indeed, after finding type 1 information for which he can be rewarded by a payment conditional on decision A, the regulator has no incentive to search for type 2 information, because this could only lead to no decision and therefore to a lower reward (if some incentives for search are to be set up at all).

By having one regulator in charge of searching for one type of information only, and to the extent that these two regulators do not collude, better incentives can be provided. Indeed, when searching for one type of information, one regulator does not internalize the fact that, if he succeeds, he creates a negative externality on the other regulator. The two moral hazard variables (which given the reward system cannot be contingent on the information discovered itself) are the search for information and transmission of this information when the search is successful.

It is often thought that, when two activities —say gas and electricity— interact it is good to have a single regulator (as in England today, and soon in France). However, having two regulators has the value of making it easier to provide incentives to regulators. Similarly, one may want to separate the Ministry of Finances who is in charge of looking for reasons for not spending on a project from spending Ministries such as the Ministry of Industries, Transportation or Agriculture.

To which extent this argument compensates for the loss of coordination separation creates is of course an empirical question.

This idea is close but different from the more common notion of yardstick competition where the multiplication of regulators should yield performance measures which enable the Government to cut down the informational rents of the intermediaries. However, it relies also, in part, on the belief that manipulation of accounts makes more difficult if not impossible to identify the performance of each effort level or individual action when the activities are integrated. The decentralization of regulation in different regions may be an instrument to improve accounting separation. In practice yardstick competition faces the controversial issue of unobservable heterogeneities which weaken considerably the power of these mechanisms. Multiregulation may rely also on the more straightforward ideas, that the disutility of effort functions favors separa-

tion (diseconomies of scope) or on the technological characteristics which affect the information rents (Baron and Besanko (2000)).

In all those cases so, it is fundamentally the same idea of providing better incentives to regulators to carry out their tasks, by inducing a more favorable rent-extraction-efficiency trade-off. The tasks in organization theory are in general productive tasks whose outcomes affect directly agents while, in the context of regulation, the tasks are costly for the regulators but impact outcomes which affect them only through the rewards they may have from the Government.

A related idea has been modeled by Laffont and Martimort (1999) as follows. In their supervision function, regulators have in general some degrees of discretion. Rather than transmitting the acquired information to the Government who can then decrease the informational rents of the agents, the regulators can be captured by the agents for not revealing this information and share the information rents with the agents (Laffont and Tirole (1991)). Laffont and Martimort (1999) show that separating the supervision functions between several regulators makes often side-contracting more difficult, and therefore less distortive the regulatory response of the Government to collusion.

Suppose we have two regulators. By not colluding with the regulated agent (i.e. revealing his acquired information), a regulator does not internalize the fact that it makes more difficult or impossible the collusion of the other regulator with the agent. In other words separation of regulators increases the transaction costs of collusion to the benefit of the Government. Note the importance in the reasoning of taking into account the regulatory response of the Government who makes use of the lack of coordination of the regulators.

Not taking into account this institutional response may lead to the misleading idea that centralized regulation is better for corruption because decentralized corruption leads (with a free riding argument) to excessive corruption (Shleifer and Vishny (1993)).

The activities that interact here are the moral hazard variables of not colluding which must be induced. As they create negative externalities one on the other, separation of powers is beneficial as above.

The major weakness of all the above arguments is that their rely on the implicit assumption that the separated regulators will not collude.[10] Indeed, most of the literature on mechanism

[10]It is very important to take into account collusive behavior in these discussions about structural regulation. In Faure-Grimaud, Laffont and Martimort (2000) we show in a principal-supervision-one agent adverse selection problem, that the optimal collusion-proof contract is equivalent to decentralization to the supervisor of the choice of the agent's contract. In other words, if the principal cannot prevent collusion, he is as well off giving up completely the control of the agent.

design which uses the competition of agents to create incentives has been making this naive assumption. Perfect collusion would bring us back to the single regulator framework. However, to the extent that the Government controls the information technologies made available to agents, it can create asymmetries of information among them. As emphasized in Laffont and Martimort (1998), (2000) asymmetric information between colluding agents creates transaction costs which are beneficial to the principals. So collusion will be imperfect and separation of powers can be designed to be collusion-proof between regulators. Of course, such considerations weaken the value of this institutional design.

Finally, let us note the dangers of reciprocal supervision which favor reciprocal collusive activities at low transaction costs (Laffont and Meleu (1997)).

Which particular insight can we derive for developing countries? In Laffont and Meleu (2000), we show that most characteristics of LDCs (cost of public funds, transaction costs of collusion, size of asymmetric information) favor even more separation in a framework of the Laffont and Martimort (1999) type. Unfortunately, those same parameters make also more costly to implement a collusion-proof separation of powers.

We obtain:

	Favors Several Regulators Relatively More in LDCs
Cost of public funds	+
Transaction costs of collusion	−
Size of agency problem	+
Cost of regulators	−
Enforcement of separation	−

3.4 Benevolent Government with Contractual Constraints

We review here the various types of contractual constraints which affect the optimal structuring of regulation.

3.4.1 Incomplete Contracts

Laffont and Zantman (1999) argue that local politicians are better informed about local conditions than the central Government. The justification given is that local politics create the incentives for information acquisition by these politicians. However, the Constitution does not

allow a complete contract which would enable the center to remunerate those politicians for information transmission. Consequently, despite the fact that they have political biases, it may be better to decentralize to them some collective decisions rather than using a costly supervisor who has no prior information.

Implicitly, the same foundation lies in the trade-off studied by Gilbert and Picard (1996) where local decision makers are better informed, but their objectives are biased and unknown from the central Government. The better information of local authorities is balanced with the greater information rents (capture) that those local authorities leave to regulated firms in Caillaud, Jullien and Picard (1996).

As Aghion and Tirole (1997) pointed out, information structures are endogenous. The choice to decentralize decisions creates also more incentives locally to acquire information. However, the value of this is limited by the fact that local preferences differ from the preferences of the center.

The Tiebout (1956) model of decentralization can also be interpreted as a response to incomplete contracts. There, the difficulty is the elicitation of willingnesses to pay for local public goods to achieve the right partition of the population into communities and the right levels of local public goods within those communities. This could be achieved by a grand mechanism which uses non linear and personalized transfers to elicit the relevant information with the best rent-efficiency trade-off. Alternatively, if payments are constrained to be uniform within each community, decentralization of the level of public goods to communities within which agents selfselect themselves by voting with their feet is a second best mechanism of information revelation.[11]

One can expect contracts between the center and the periphery to be even more incomplete in LDCs than in developing countries, and there is no particular reason why local preferences should be more biased, or coordination problems worse. This would create a bias in favor of decentralization when it is really the case that local information is good. This may justify the trend towards local decision making for managing water resources, forests, etc. On the other hand for many issues, like health, or some environmental issues, one may fear that local information is quite poor, and that the central Government with better access to international information has in fact much better information at least along some dimensions, and this weakens the benefits of decentralization.

[11] Bardhan and Mookherjee (1999) suggest that the role of this type of mobility is less likely to be relevant in developing countries.

3.4.2 Lack of Commitment

We remained quite vague in the last section about the nature of the contract incompleteness. It might have been that some variables were not verifiable or some contracts not enforceable. The lack of commitment is also a particular form of contract incompleteness.

The delegation of authority for decision making to agents who have particular objective functions may be a way to solve commitment deficiency. For example, if the Government cannot commit to resist a merger, then delegating to a competition agency the right to decide may be optimal.[12] Of course, this requires setting up credibly incentives for the members of the agency which will lead them to favor competition.

For a benevolent Government, this argument requires the merger to be ex post efficient. Delegation then is a way to commit to an ex post inefficient decision (preventing the merger) in order to avoid creating bad ex ante incentives. For example, resisting successfully foreign competition is possible by innovation and other efforts to improve ex ante efficiency. Alternatively, one may not make these efforts and benefit from the increasing returns from merger to be able to resist. However, the second strategy is very costly for consumers because of the market power created.

From contract theory (Baron and Besanko (1992) for example), we know that in repeated relationshisp with adverse selection (and perfectly correlated types intertemporally) it is optimal to commit to use the repetition of the optimal static contract in the rent-efficiency trade-off. However, after the first period, the type of the firm is common knowledge, this contract is not ex post optimal, and the partners in the contract would like to renegotiate. It is then important for efficiency that the Government should have the credibility to commit not to renegotiate.

However, a realistic assumption is often that Governments have the ability to commit (remember that we are still assuming that they are benevolent) but not the ability to commit not to renegotiate with the regulated agents. This contractual opportunism emphasized by Williamson (1985) was first modeled by Dewatripont (1989), but the characterization of optimal mechanisms when the Government cannot commit not to renegotiate was achieved in Laffont and Tirole (1990). The first step of that analysis is to show that the optimal mechanism is renegotiation-proof, since the principal can anticipate the outcome of renegotiation and mimic it. The optimal renegotiation proof mechanism leads to semi-separating equilibria in which agents only partially reveal their types in the first period in order to maintain an information rent in the second period.

[12] See also Dewatripont and Tirole (1994).

By inducing a first period equilibrium in which the principal remains uninformed he commits not to extract completely the information rent of to-morrow, since the optimal ex post renegotiated contract entails an information rent for the agent. He commits to some ex post inefficiency.

An even better outcome can be achieved when the agent is performing two actions, if the Government commits to have two regulators each one in charge of one activity. The non cooperative behavior of the regulators in the second period may lead to a higher rent being awarded to the agent, i.e. yields indirectly a commitment to a greater inefficiency (see Martimort (1999)).

Problems of credibility are likely to be even worse in LDCs than in developing countries and this would tend to favor again decentralization. However, the various ways of delegating decision making to overcome lack of commitment are more difficult to implement in LDCs.

The value of a competition agency to this effect depends greatly on its ability to resist capture and one may argue that the transaction costs of capture are lower in LDCs. Similarly the value of creating a multiprincipal regulatory structure to commit not to expropriate a firm ex post relies on the assumption that those principals will not collude.

3.4.3 Collusion

From the point of view of the Revelation Principle, the occurrence of collusion may be viewed as resulting from the inability of the center to control communication within its organization. This is an implicit assumption of the Revelation Principle, and, in a sense, our analysis of separation of powers in order to weaken the costs of collusion belongs to this section as well.

Decentralization can be viewed as an optimal response to collusion as follows. Consider a center who uses a risk averse supervisor to monitor an agent who has private information and suppose that the supervisor and the agent communicate and can collude. Then, Faure-Grimaud, Laffont and Martimort (2000) prove the following. The optimal contract that the center can write with those two agents (which is collusion-proof from the collusion-proofness principle) is actually equivalent to delegating to the supervisor the right to contract with the agent, i.e. to the decentralization of the contract of the agent. In other words, in the presence of collusion there is no point in centralizing the design of contracts.

If furthermore we introduce some imperfection in the design of the centralized contract, we obtain the strict superiority of decentralization (as in Laffont and Martimort (1995)).

Similar insights are obtained in models with moral hazard. Macho-Stadler and Perez-Castrillo (1995) show that when agents can sign side contracts decentralization is equivalent

to centralization.[13] This, of course, does not mean that collusion is good for the center. In the absence of collusion the center would achieve often first best efficiency with revelation mechanisms, and when there is collusion, with no constraints on contract, the optimal allocations can be obtained without collusion (Holmstrom and Milgrom (1990), Itoh (1993)). But, to the extent that collusion is possible communication between agents may be favorable to the center in its construction of a collusion-proof optimal mechanism (Laffont and Rey (2000)).

It is likely that the center will have even greater difficulties to control collusion in LDCs so that the above results favor relatively decentralization in those countries.

3.5 Non Benevolent Government

The next step to discuss our topic is to give up the hypothesis of benevolence for the Government.

For Seabright (1996), "the difference between centralized and decentralized Government is a matter of which groups of electors are collectively given the power". He argues that local politicians have a greater accountability, because they will be controlled (through election mechanisms) by voters who have a greater probability of influencing their reelection than politicians in the central Government. This gain may counterbalance any loss coming from the lack of coordination that decentralization entails.

Note that it is the contractual incompleteness of the Constitution making complete contracts with politicians impossible which is the source of this trade-off.

Once it is recognized that there is some inefficiency at the central and the local levels of decision making due to the political institutions there is clearly room for the superiority of decentralization or centralization.

Bardhan and Mookherjee (1999) use the Bernheim and Whinston (1986) political economy model of capture to compare centralization and decentralization, and argue that, contrary maybe to a widely shared belief, decentralization is not necessarily worse from the point of view of capture.

Crémer and Palfrey (1996) compare from a positive point of view the choice of centralization or decentralization assuming that collective decisions are made by the majority rule (which yields generically decisions different from those which would maximize a social welfare criterion), with the further constraint that centralization requires uniform rules[14] which favor policy moderation. The comparisons are guided by the risk aversion of the agents. Each voter must arbitrate between his forecasts about the identity of the median voter in his region or in the whole country.

[13] See also Baliga and Sjöström (1998).

[14] See also Besley and Coate (1998).

They study how voting procedures affect the choice of centralization or decentralization at the Constitutional level. They show that a two stage procedure in which representatives elected by voters decide with a majority vote is more favorable to centralization than direct voting by agents (the aggregation principle).

Similarly, Bolton and Roland (1997) study for given decision mechanisms for public goods when a region prefers separation. Separation is more likely when the median incomes in regions are different from the aggregate median income (political effect), when positive externalities between regions are low (efficiency effect), and when production levels differ between regions (tax effect).

Laffont and Pouyet (2000) show that the competition between national regulators leads to too high powered incentive schemes as each regulator tries to reimburse less of the cost than the other regulator to induce a strategic allocation of costs. Combining this distortion with a political system, they show that centralization which internalizes externalities between regulators but suffers from an excessive fluctuation of policies due to the majority game can be dominated by decentralization which induces too high powered incentive schemes from the regulators but which destroys the discretion of politicians.

In this model, a high cost of public funds associated with LDCs favors centralization because of the costly high powered incentive schemes of decentralization. However, if the regulated activities entailed moral hazard variables which are complements instead of substitutes as we have assumed here the reverse would hold.

The lack of confidence in Governments leads to a limitation of their mandates. Consequently, Governments can only commit for a short period. In an adverse selection principal agent context this leads to the ratchet effect. The agent hides himself with a mixed strategy to maintain a rent in the future, since he knows that future regulators will leave him no rent if they are fully informed about his type (Laffont and Tirole (1988)).

Olsen and Torsvick (1995) show then that, committing to have several regulators (who will leave in the future more rents to the agent through their non-cooperative behavior if the regulated activities are complements) helps mitigate the ratchet effect. Less pooling in the first period is needed to indirectly commit to the same informational rent in the second period.

Even though on can presume that non benevolence at all levels is an even greater problem in LDCs which lack appropriate institutions and counterpowers, it is not clear in which direction this tilts the choice between centralization and decentralization. "Simple generalizations about relative capture are therefore hazardous on the basis of theory alone" Bardhan and Mookherjee (1999).

4 Recent experiments in industrialized countries

According to the OECD Reviews of Regulatory Reform (2000), 'regulatory reform has been crucial to Spain's high economic growth in recent years'. Spain has indeed undertaken a major program of liberalization of trade and investment, privatization of nearly all its State-Owned Enterprises, but also of re-regulation of specific sectors. It has also increased the stringency of its competition policy and of its enforcement. This policy seems to have been successful. This is only an example of the efforts that have recently been made by industrialized countries to reform and adapt their regulatory structures. The reviews undertaken by the OECD show the importance of regulation in the functioning of the economy as well as the extent to which regulatory systems are evolving in industrialized countries. If some countries like the US have undergone very little changes in their regulatory system, others have chosen to experiment new structures of regulation. The most striking experiments are the ones of Great Britain and of New Zealand and Australia. The way their institutions have been designed, as well as the way in which they are currently evolving, after some years of experimentation, have many implications for regulatory design.

A question that arises is why regulatory agencies are sectoral whereas competition policy authorities are multisectoral. It should be noticed that antitrust agencies are in most countries much more recent than the regulatory ones. It may be hypothesized that progress in communications and in technologies has lead to more interdependence between markets, requiring more coordination of the policy rules applied in each sector. This goes in the direction of the arguments put forward in the debate about the creation of the integrated ACCC in Australia.

Recent changes in the European Commission can also bring some light on the costs and benefits of centralization.

This section will first show the specificity of regulation with independent specialist regulators in the United Kingdom. The experiments undertaken by New Zealand and Australia will then be described and a summary of the arguments for and against decentralization of antitrust enforcement at the European level will conclude.

4.1 Independent industry-specific regulators in Great Britain

The regulatory system in the United Kingdom has been fully designed in the 1980s and has been a model for several developing countries, such as Argentina. This system works as follows:

Regulatory offices are headed by a single Director General that is appointed by the Minister corresponding to the sector he will have to regulate. Directors General can be reappointed and

their independence is strengthened by the fact that they cannot be removed from office unless there is proven incompetence or misconduct. They are ultimately accountable to Parliament and the budget of the office is voted by the Treasury. This design reflects the strong will of the Government to ensure the independence of regulators.

The United Kingdom has a two-party political system with majority control of both the executive and legislative branches of Government. Government has therefore a large amount of discretion since it is able to modify regulatory rules whenever it deems it necessary. This would be a factor of regulatory risk a priori. Yet as underlined by Spiller and Vogelsang (1996) informal norms constitute a strong check on the discretionary power of the Government. These norms include

- the permanency of bureaucracy, most officials remaining in office after majority changes,

- the fact that the Government publishes its intended reforms in white papers, allowing concerned parties to react,

- and an important degree of informal delegation of power from the Minister to regulators.

Judiciary checks are more often effected via enforcement of contracts than through reviews of regulatory decisions, which remain unfrequent. The United Kingdom having a tradition of strong enforcement of contracts, a way to reassure investors has been to rely on regulation by contracts: Detailed licenses are used to impose obligations on utilities. Licenses have been issued as early as 1880 for telecommunications for instance. They usually include maximum prices and a rate of return.

Although UK regulation is based on licenses and compliance with licenses requirements, there is little concern as to the potential barrier to entry that licenses can constitute: Licenses are in practice easy and quick to obtain and of moderate administrative cost. Licenses typically contain price caps. The quality of the judiciary system is a guarantee that the terms of the license can be enforced.

The strong independence of individual regulators may give rise to concerns about abuse of power. The regulatory system in the UK does provide checks on regulators' discretion to protect investors. Oversight of regulators is ensured by the Competition Commission, the courts and parliamentary committees (see Green and Pardina (1999)). Firms can appeal to the Competition Commission (called the Monopolies and Mergers Commission until April 1999).

It is important to note that although Great Britain relied on industry-specific regulators, it has recognized the need for closer cooperation in sectors that are strong substitutes, in deciding the merger of Ofgas, the agency regulating gas, and Offer, the agency regulating electricity, into a new regulatory body, Ofgem (Office of Gas and Electricity Markets) in 1999. The close links

between the different industries in the power sector has generally been assessed as sufficient to necessitate regulation by a single entity so as to ensure that externalities between industries are taken into account.

The debate about regulation of water

Regulation of the water sector has a particular feature that makes it an interesting experiment in regulatory design. Indeed the United Kingdom has chosen to have functional regulation within the water industry. Several distinct agencies have received specific (non overlapping) mandates over the industry according to the function of regulation to be effected: economic regulation, quality oversight, promotion of competition, etc. The Office of Water Regulation, Ofwat, has been given responsibility for controlling prices and ensuring the viability of suppliers, whereas the Drinking Water Inspectorate oversees the quality of tap water and the Environment Agency is responsible for maintaining the quality of rivers, canals, ... The industry is also, as the other utilities, subject to the 1992 Competition and Services (Utilities) Act and the 1998 Competition Act. This separation of regulatory functions in different entities contrasts with the structure chosen for other sectors. The Office of the Rail Regulator for instance is in charge of consumer protection, of enforcing domestic competition laws when railroads are concerned, of safety and health issues and of the environmental effects of railroads. It may of course be argued that environmental concerns are less important in the rail industry than for water, and therefore do not require specific supervision. Yet the experience of the water sector helps put into light the pros and cons of functional regulation. Since the definition of mandates has been quite clear, the issue is not as much overlapping, as for the United States for instance, as the externalities at the firms' level of specialized regulations.

The water industry was constituted until 1989 of ten public water authorities and twenty-nine private supply monopolies. It was then reorganized, all public entities being sold to private investors and regulatory authority being split according to function: The National Rivers Authority became responsible for the main environmental regulation and a new agency, Ofwat, was created to regulate pricing. The mandate of Ofwat only incorporates the financial viability of the suppliers, and no social or environmental concern, so that the allocation of tasks between the two regulators is clear. The Government has shown a strong intent to make the Office independent and has given it a large amount of discretion in interpreting and implementing rules (see van den Berg 1997 for instance for a summary of privatization in England and Wales).

This experiment at having multiple regulators according to the type of regulation to be implemented has lead to a hot debate. Water utilities have obtained very large profits in the first

Table 1: Average price limits set by Ofwat

	1990-1995	1995-2000	2000-2005
Water C^{ies}	6.1%	0.4%	-2.8%
Industry	5.2%	1.3%	-2.1%

period after privatization, between 1990 and 1995, apparently because of a too lax regulation. Ofwat has reacted by setting lower prices limits. As an example of reaction to public criticisms, the evolution of average price limits is given below. More relevant to our study, Ofwat has been particularly criticized for not taking enough into account social and public costs and benefits when considering investment programs in the water sector. The investment incentives given by Ofwat and by the environmental regulator have proved to be often conflicting and unclear. It is in this area that the lack of coordination induced by functional regulation has been most felt.

This corresponds to what could be expected from economic theory regarding functional agencies: the benefits in focused action, clear mandates, specialized staff, have to be traded off with a loss in coordination and conflicts in the incentives provided to the firms by independent regulators.

The regulatory system in the United Kingdom is one of the clearest examples of independent and industry-specific regulators. It contrasts with the experiments undertaken recently by New Zealand and Australia at reducing regulatory scope and relying more on general competition rules.

4.2 The experiment made by New Zealand

A noticeable exception to the general rule of specialization of regulation by industry and by function in large industrialized countries is New Zealand. It has had a very novel approach to regulation, basically using only general competition laws, enforced by courts and by an industry-wide competition authority, to regulate first telecommunications and then power. The notion of 'self-regulation' by the industry has been introduced, with councils composed of participants in the industry using negotiations to set main rules and access conditions. This form of regulation is very innovative and consistent with an idea that these industries will become competitive enough for regulation to gradually disappear. Yet relying on negotiated agreements between firms on interconnection pricing and other such issues has proved rather unsatisfactory and New Zealand has begun to use more specific regulatory tools again.

4.2.1 Telecommunications

Telecom, the incumbent in charge of telecommunications, which is privately-owned, has control over the local loop and competes with other providers for most other services linked to telecommunications. As early as 1988, measures to facilitate competition were taken in the form of undertakings by Telecom, including cost-based charges for interconnection, the obligation to consult the industry to set up those charges and the operation of Telecom's subsidiaries as separate profit centers. These obligations and others, linked in particular to universal service, are known as the 'Kiwi share obligations'.

The original feature adopted by New Zealand was to rely solely on these undertakings and on general competition rules, as written in the Commerce Act of 1986, without sector-specific regulation or legislation. The Commerce Commission was in charge of overseeing not only mergers, but also pricing schedules and access terms related to the telecommunications sector. Telecom is moreover subject to information disclosure requirements.

Self-regulation is another typical feature of New Zealand's experiment: The industry had to negotiate an agreement on the system of telephone numbering without Governmental intervention.

A concern that this form of very light control of the industry has not been sufficient to restrain abused of power by Telecom led to the establishment of a Ministerial Inquiry in February 2000[15]. The final version of the report made by the Inquiry was released on September 29, 2000. Its main results are given, along those concerning electricity, in a following subsection.

The number of cases brought to courts since this type of light regulation was put in place has shown that specific characteristics of the telecommunications industry made it quite difficult to convict a firm of abuse of dominant position, as required by the Commerce Act. The Government has decided to modify competition rules to have them better apply to the telecommunications and electricity industries: Taking advantage of a substantial degree of market power should replace 'abuse of dominant position' in section 36 of the Commerce Act, and section 47 should prohibit acquisitions that would have the effect of substantially lessen market competition in a market, rather than, as now, those that lead to acquisition or strengthening of dominance. Although entry in former monopolies makes antitrust rules relevant for those markets, adjustments have to be made to the competition legislation if no industry-specific legislation is enacted.

[15]The terms of reference of the Inquiry state as the objective of the Government to 'ensure that the regulatory environment delivers cost-efficient, timely, and innovative services on an on-going, fair and equitable basis to all existing potential users'.

4.2.2 Electricity

Following the experiment made in the telecommunications sector, the electric industry sector has also been deregulated. The Government has chosen to rely on negotiated contracts, using general competition rules to regulate those contracts rather than industry-specific rules. Voluntary multilateral agreements are the key institutions governing the wholesale electricity market.

The Commerce Act contains standard dispositions against abuse of dominant position, price-fixing, ..., but also allows for price controls where competition is limited. A bill introduced in 1999 proposes that price controls be imposed on electricity lines businesses, which would constitute a move toward more stringent regulation. The Government will pronounce itself on this bill after a thorough study of the results of the ministerial inquiry in the industry.

Some other laws restrict private contracts: a generic one, the Resource Management Act (regarding emissions from thermal plants for instance) while others are industry-specific: The Electricity Act passed in 1992 removed statutory barriers to competition in retailing and line distribution. The Electricity Industry Reform Act of 1998 requires ownership separation of line companies and generation or retail companies and specifies that price controls can be applied to regulated charges for supply to domestic and rural customers. Last, the Electricity (Information Disclosure) Regulations of 1999 require transpower and electricity lines businesses to disclose financial statements, line charges, terms of contracts and a number of performance measures.

The wholesale electricity market is governed by the New Zealand Electricity Market (NZEM), which is a self-regulated structure that resolve disputes between firms and set rules on offers, dispatch, establishment of prices and clearing and settling transactions.

4.2.3 A return to some specific regulation

A perception of deficiencies in the existing regulatory system led first the Ministry responsible for telecommunications and then the one responsible for electricity to request a ministerial inquiry in these two industries. The reports of the inquiries have been published in 2000, concluding that specific regulation was needed to deal with some particular issues.

The report of the Ministerial Inquiry into Telecommunications (2000) recommends the creation of an Electronic Communications Industry Forum, funded by the industry and with compulsory membership, and that would be responsible for industry self-regulation. Self-regulation should therefore remain a major component of the regulatory system in New Zealand. Yet specific, 'designated', electronic services should now be subject to regulation, including pricing rules. These services are interconnection with Telecom's fixed-wire network and its wholesaling

of retail services. Other services, the 'specified' ones, would be subject to only 'light' regulation (no pricing regulation for instance) and include interconnection between all networks, carrier pre-selection, co-location at mobile cell sites, and some other services linked to cell telephony, but only for a limited time for those latter services. Regulation should be undertaken by an industry-specific regulator, the office of the Electronic Communications Commissioner.

In an important sentence of the report, the Inquiry considers that it is 'the appropriate course of action' to have a specialized stand-alone industry specific regulator 'until such a time as telecommunications markets are fully competitive'. This is a noticeable move from the previous system since it recognizes that specialized oversight of the industry may be necessary, at least until the telecommunication sector gets closer enough to any 'standard' industry for regulation to be useless. The general belief is that the sector should quickly lose its remaining natural monopoly characteristics and that oversight by competition authorities only should be sufficient before long, yet specific regulation is needed to facilitate the transition.

Industry-specific regulation should in particular contain a dispute resolution process, since disputes among telecommunications companies have shown that a general competition authority and non specialized courts were not appropriate for dealing with technical issues. The report of the Inquiry into the Telecommunications states that relying on courts and arbitration to solve disputes had lead to significant delays and costs, and cannot 'provide consistent and clearly articulated guidelines in respect of access issues' (p. 24). This recognizes not only the necessity to use a dispute resolution mechanism sufficiently specialized to be fast and to have the necessary expertise. It also underlines the fact that courts can be slow in setting up precedents to increase judicial security, and that judgements issued by different individuals may well lack coherence and consistency.

The regulatory system should moreover encompass review mechanisms, and an appeal mechanism on regulatory decisions. Yet the Inquiry has been reluctant to grant appeal rights on regulatory decisions because of the substantial delays it generally involves. Courts would moreover be a priori less able than a specialized regulator to judge telecommunications. The Inquiry still recommends to set up appeal rights but only on matters of substance and with a provision that regulatory decisions apply until the appeal has been concluded. The regulatory agency's determination should on the other hand be subject to judicial review.

Tests allowing to determine what specific services should be regulated and when to stop regulation should also be set up, to ensure that regulation be kept at the minimal level.

The report on the Ministerial Inquiry into the Electricity Industry (2000) also insists on the necessity to provide a 'coherent, comprehensible pattern' of regulation. Financial wholesale

markets should not be regulated, contrary to the physical ones. Regulation in the latter markets should cover registration, pool rules, dispatch, security, constraint standards, settlement, a transmission and distribution pricing methodology, and a mechanism for dispute resolution. The market structure accountable for this regulation, called the Board in the report, should be elected by market participants and a majority of its members should be independent from the industry.

The report moreover recommends that the Commerce be given the authority to impose price control[16] on individual distribution companies, and to choose the criteria and thresholds upon which price control should be imposed. This can be contrasted to the structure prevailing in Mexico, where the entity deciding when to impose price controls and when to remove them, the competition authority, differs from the entity in charge of imposing them, the industry-specific regulator. A concern associated to having both responsibilities given to the same agency is that this agency will not choose by itself to relinquish a power it has on the industry. The report partially addresses this issue by recommending that the maximum price control period be of five years. Yet as long as renewing price controls is possible, the Commerce Commission would retain substantial regulatory power. A country willing to keep as 'light' a regulation as possible given the characteristics of the industry should prefer the separation of authorities chosen in Mexico.

The example of New Zealand shows that a very innovative approach of using only well-developed competition authorities to oversight a self-regulating industry may not be deemed to immediate failure. Yet after some years, the Government has recognized the necessity to still have regulatory control in industries which are not competitive enough for the moment. It seems that the transition from protected monopoly to competition is not sufficiently advanced as yet for formal regulation to be suppressed. Relying on competition laws only is inefficient in a transition period, even when these laws are developed and well enforced. This experience was used by Australia when it designed its original regulatory system and parallels the one of Eastern Europe countries, as we will see later (a major difference being that Eastern Europe Governments have set up specific competition authorities with regulatory duties).

4.3 Australia: An original combination

Australia is a very large country, with a small population density. Its Government is a federal one, in which regions have a large degree of autonomy and can follow very different policies.

[16] Targeted price controls in distribution, rather than universal price controls, as being as effective and less risky.

The current regulatory system of Australia has been designed very recently, in such a way as to correct for the perceived problems linked to New Zealand's regulation. Regulation is organized around a federal multi-sectoral agency, the Australian Competition and Consumer Commission (ACCC), specialized agencies, and regional regulation. The system is relatively complex, since some issues are resolved at the national level, while others are left to regional governments. It is also very innovative due to the important role given to the multi-sectoral and multi-function competition authority, the ACCC.

The example of telecommunications

Let us consider the telecommunications industry. It is one in which regulatory reform can be most clearly perceived. Until 1995, the telecommunications industry was under a 'traditional' oversight structure, regulation being in charge of an industry-specific regulator, Austel (set up in the 1989 Telecommunications Act) and allocation of frequencies in charge of the Spectrum Management Agency (SMA). After the 1993 Himler Report recommended an economy-wide regulation of all matters related to competition and access, both Austel and the SMA were suppressed. All the former functions of Austel linked to competition (in particular interconnection) were taken over by the ACCC. A new agency, the Australian Communications Technology (ACA) was given mandate over the technical issues dealt with by Austel, as well as spectrum management. This choice corresponds to the insight that specialized expertise is needed for very technical issues.

The ACCC, a multi-sectoral agency, has been given mandate over the most sensitive issues faced in the industry. The oversight undertaken by this agency entails 'lighter' regulation than would have been effected by a specialized regulatory agency. The law still allows for more standard intervention (on prices for instance) in case this turns out to be needed. The institutional framework is therefore more flexible than in New Zealand.

The law also includes consultory processes to facilitate coordination between the ACCC and the ACA. Moreover, several industry associations have been set up to induce participation in the regulatory process by all members of the industry: The Telecommunications Access Forum deals with access issues, the Australian Communications Industry Forum develops technical and operational standards and the Telecommuncications Industry Ombudsman settles unresolved complaints made by small users such as residential or small businesses consumers (Kerf and Geradin (1999).

The telecommunications, as other sectors in Australia, are also under supervision of regional regulatory agencies, for all intra-regional matters. Regional regulators have a fair degree of

independence for intra-regional problems but general trends seem to be given by the ACCC.

A multi-function and multi-sectoral agency: The ACCC

The ACCC is in charge of competition promotion, safety, intellectual rights, access issues, and of organizing coordination and exchange of information between the different regulators. It is an original integrated structure, composed of sectoral and functional bureaus with coordination entities. It deals with product safety, consumers protection, mergers and restrictive trade practices, access, in sectors as diverse as telecommunications, electricity, gas, transports, airports, ... It was created in 1995, following the recommendations of the Himler Report issued in 1993, by merging the Trade Practices Commission and the Price Surveillance Authority. It has also taken over a non negligible part of specialized regulators' duties by endorsing responsibility for promotion of competition in a large sense. The regulatory body in charge of telecommunications was for instance suppressed after the creation of the ACCC: A smaller separate agency in charge of technical issues seemed sufficient to regulate the industry, since the ACCC was to set rules and solve disputes about interconnection.

The ACCC comprises numerous specialized Commissions and Offices, according to sectors and to geographical areas (e.g. the South Australian Independent Pricing and Access Regulation, the Office of Water Regulation, ...). Offices are located in all the capital cities of the country, plus Townsville and Tamworth. Local offices seem to be needed in this wide country, despite the recent advances in communication and transport technologies.

Coordination of the regulatory activities within the ACCC is ensured by the Utility Regulators Forum. Created in 1997, more than a year and a half after the creation in November 1995 of the ACCC, this division 'was established in recognition of the need for cooperation between State-based regulators in a federal system' according to the Mission Statement on the web site of ACCC (http://www.accc.gov.au, 2000). The need for cooperation is clearly stated: 'rather than operating independently of each other, it was logical to form a group that could take a common approach to looking at the issues and solving the problems'. The aims of the Forum are to improve understanding of deregulation issues, to exchange information, and to improve consistency of decisions and to minimize overlap between agencies. Notice that the previous statements show both a need for sectoral coordination (the Forum includes regulators of different utilities) and for coordination of state regulations.

The justifications given for a multi-sectoral and multi- functionnal agency

The creation in Australia of a comprehensive competition authority has given rise to a debate

about the range of problems that should be tackled by the same agency. The need for a broad agency has been particularly felt with respect to the introduction of competition in regulated utilities. Designing access regimes for electricity or tradeable water rights are given as examples of issues in which regulation and competition are closely related.

Using an integrated structure involves some changes in legislative and political processes. In particular, the following point has been underlined (see for instance Fels 1996): Traditional narrow competition policy rely on independent non political agencies and courts. When moving to a comprehensive view of competition policy (including safety norms, trade policies, regulation of public utilities and so on), it is no longer possible to estrange the agency from political processes. In Australia the ACCC is independent and non political but major policy changes remain determined by legislators and Governments. All the state Governments have agreed in 1996, and for the following five years, to review all the regulations likely to affect competition. The National Competition Council has been appointed to review this review process and administer the access regime (Fels (1996) and OECD (1999)).

In Australia, the Himler committee has based its decision to favor a national authority rather than state agencies on three main arguments. The first one is that markets are now more national than regional, 'particularly as advances in transport and communications permit many firms to develop national trade networks' (Fels (1996)). Second, many goods and services in sectors that are governed by state or territory laws are protected from exposure to competition from other national firms, due to constitutional and ownership limitations. And eventually, a national competition policy allows to ensure consistency of pro-competitive reforms and 'to avoid the costs linked to industry-specific and sub-national regulatory arrangements' (id. supra).

The second argument seems to show defiance from state regulators who may favor regional firms at the expense of other competitors. The third one underlines the difficulty to coordinate the actions of state agencies and the costs of separation across sectors and states. Yet the ACCC has retained regional offices in order to deal with local problems.

The example of telecommunications

Until 1975, post services and domestic telecommunications were operated by the Post-Master General's Department, whereas international services were operated by the Overseas Telecommunications Commissions. Both were public enterprises. Telecommunications and postal services were separated in 1975. Despite a move toward a mode of functioning more similar to that of private firms, a 1988 review showed that competition was nearly non existent. In 1989, the Telecommunications Act liberalized markets and created AUSTEL, a sector-specific regulatory

agency, in order to separate regulatory and operational functions.

The 1993 Himler Report recommended that a cross-sector access regime be adopted to ensure that firms could obtain access at reasonable prices in every industry. The experience of New Zealand showed that enforcement of competition laws by courts would not be efficient when dealing with technical issues such as interconnection in telecommunications. AUSTEL was then eliminated, the ACCC taking over promotion of competition while the Australian Communications Authority was created to deal with technical issues. The ACCC has set up a specialized Telecommunications Group.

Full competition was introduced in 1997. The industry is now subject to the general antitrust rules set out in the Trade Practices Act of 1974, but special clauses have been added to it for the telecommunications industry. Moreover the Telecommunications (Consumer Protection and Service Standards) Act voted in 1999 specify that regulatory intervention remains possible whenever self-regulation appears inappropriate (Kerf and Geradin (1999)).

The complex regulatory system chosen by Australia, composed of a multi-sectoral competition authority and of regional agencies, reflects both the lessons derived from observing New Zealand, and the specificities of a federal Government. Using a competition authority rather than courts to settle disputes and set rules prevents congestion in courts and, more important, allows to still have specialized staff. Yet this multi- sectoral agency benefits from cooperation with specialized regulators and with regional entities. The federal structure of the country allows to rely on local regulators for most technical issues and for price oversight, while the main concern at a federal state lies in potential lack of coordination between regions. A general coordinating office then appears as an adequate solution.

This system can be contrasted with the one of the United States, in which, quite to the contrary, multi-sectoral ruling is done at the state level, and specialized regulation is the responsibility of the federal Government. It is interesting to note that two countries with relatively similar features as to size and mode of Government have chosen opposite regulatory systems. A question is whether the US system arose only from historical circumstances and from the level of development of institutions at the time it was created, or whether it would still be a best-response to the country specificities if it were to be designed from scratch now.

4.4 The new decentralization process by the European Commission

The functioning of the European Competition Policy was characterized up to now by a strong degree of centralization. Notifications in particular were all treated at the European level. The

White Paper on the modernization of the rules implementing articles 85 and 86 of the EC Treaty, of April 28^{th}, 1999, proposes to adapt the existing system so as to alleviate excessive administrative procedures, to allow the Commission to focus on major torts and to develop and stimulate enforcement of competition laws at the national level. The White Paper recognizes that the centralized system, aside from ensuring judicial security to firms, has also been used by the firms to counteract actions engaged by national courts and competition authorities (p. 5). This would be done by suppressing the notification process and by decentralizing to national authorities the responsibility for investigations that concern only a national market. In case of doubt, national authorities can ask a 'preliminary question' to the European Commission, that then gives the norm to follow. It is stressed that the Commission 'should continue to have a directing role in the elaboration of the Community competition policy' (p. 6). It could still intervene in any national procedure and remove a case from the competency of the national jurisdiction if there is some risk of divergence. It is deemed essential that decentralization does not result in incoherence in the application of European competition laws (p. 34). National authorities should therefore have the obligation to avoid conflicts with the European Commission. Yet it should be noted that in the previous system, applied from 1962 up to now, parallel enforcement of EC rules has given rise to nearly no conflict.

A public hearing has been organized by the European Parliament on September 22^{nd}, 1999 and a resolution has been taken on January 18^{th}, 2000 (the VON WOGAU report). There is unanimity of the European Parliament, the Economic and Social Committee (ECOSOC) and all member states to abolish the centralized system and to increase involvement of member states in enforcement. Most submissions by lawyers go the same way. To ensure consistency of national decisions, there should be strong efforts of training of officials, consultation procedures, and there should be use of notices and guidelines by the European Commission to help national courts. Many companies, though, are afraid of inconsistency and of lack of expertise and time on the side of national courts, in case of decentralization. They are moreover strongly concerned that national authorities and courts may take decisions for industrial policy and political reasons. According to companies, national authorities are less insulated from political pressures than the European Commission. They fear that 'forum shopping' will emerge, firms trying to have their case judged by the most favorable authority. Firms show much more concern about harmonization of procedures than member states.

The general feeling about the new decentralization process undertaken by the European Commission is that it answers more practical congestion and overload problems than any theoretical belief in the benefits of decentralization, even less a political will of Governments. It yet

recalls the need to rely on local structure to access information at lower costs, and to ensure enforcement or rules enacted at a central level. These aspects are at the basis of the decentralization movement in Brazil, as well as of the difficulties encountered by the Russian federation in implementing a coherent competition policy. Even when existing political structures do not prevent centralization of regulatory powers, some degree of decentralization remains necessary, due to informational constraints and to the need to have local political supervisors enforcing or monitoring the enforcement of rules. The White Paper of the European Commission is a model of how to decentralize enforcement while retaining large powers at the central level and coherent rules.

4.5 Conclusion

The role of competition laws and authorities in regulating utilities that are opened to competition has been widely discussed in recent years. The experience of New Zealand of relying only on self-regulation by the industry and on enforcement of antitrust rules by courts has been particularly instructive in that respect. The general conclusion that emerges is that courts lack expertise to judge of disputes on very technical issues such as interconnection. Several industries such as telecommunications moreover require for the moment a continuous supervision, even if this need is expected to shrink rapidly.

In countries in which competition rules are less developed and less enforced, which is the case in developing economies, it is likely that relying on competition as a substitute for regulation will not allow to correct for market inefficiencies. This may be the reason why this type of regulation has not been observed in developing countries. Another reason may be the loss of political control that it entails. It is striking that only transition economies, in which the desire to avoid state intervention was very strong, due to historical circumstances, chose to rely on oversight by competition authorities only. Some of these countries are moreover now moving towards more standard regulation. The development of the judiciary and of the industry itself is crucial in determining whether a regulation by antitrust laws can be effective.

An overview of the regulatory structures chosen by developing countries will show again the strong constraints imposed by political and institutional constraints, as well as by the level of development of the legal system and of the industry.

5 Small developing economies

From the results of organization theory described in section 3, a number of reasons can be given why small, less developed countries should rather have multisectoral agencies and centralized regulation. Lack of expertise, the high cost of setting up regulatory agency, as well as the difficulty of avoiding collusion between separated regulators are factors in favor of not separating regulators but rather have most industries controlled by the same body. The same reasons and in addition the high cost of public funds in less develop countries make centralization likely to be more efficient and less costly than a decentralized system.

These theoretical recommendations appear to be corroborated by the choices of several small economies. We will first examine how several small countries have opted for (at least partly) multisectoral agencies, and we will then turn to the possibility of international agreements to achieve supra-national centralization, as may be done in Sub-Saharan Africa.

5.1 Multi-sectoral agencies

Several countries, such as Jamaica, Costa-Rica and Panama, have chosen to have a multi-sectoral regulatory agency rather than specialized bodies. This choice seems particularly rational in small countries in which the duplication costs associated with setting up several sector-specific agencies would outweigh the benefits of focused regulation and in which there is a lack of available human capital and expertise.

5.1.1 Peru

Peru has chosen a mixed system, with a multi-sectoral agency and in addition two specialized departments for regulating electricity and telecommunications.

An integrated organization, the Instituo Nacional de Defensa de la Competencia y de la Protecion de la Propriedad (INDECOPI) is in charge of antitrust actions, protection of intellectual rights, standards and norms, ... but neither electricity nor telecommunications. INDECOPI has been created in November 1992 as both arbiter and promoter of a free market economy. It is divided into two parts, the Economic Policy Units, and the Juridictional Area. The latter includes an independent Tribunal (appeal procedures go directly to the Supreme Court). This structure reflects the small size of the country in terms of regulated economic activities. The fact that telecommunications and electricity have been separated reflects their particular importance relative to the other regulated activities. It may at first sight seem surprising to have a multi- sectoral agency promoting cooperation, but not allowed to organize concerted regulation

of electricity, gas, coal, and other energy sources. Indeed these industries are close substitutes and cooperation may therefore be important to account for the externalities of a regulatory scheme on close sectors. Yet the decision to separate telecommunications and energy may stem from a belief that these two industries will quickly become competitive enough not to necessitate on-going regulation. It may also on the contrary be motivated by a feeling that such changing and complex industries call for specific (and specialized) oversight.

A concern may arise from the fact that the judiciary department belongs to the same overall agency as the regulatory department. Yet appeals are treated by the Supreme Court, which can reassure investors. Moreover whenever disputes concern several firms but not the regulator, the Tribunal may seem particularly fitted to pronounce decisions since it has specific expertise and easy access to information, via the Economic Policy Units.

5.1.2 Jamaica

Jamaica has chosen very early to set up a multi-sectoral agency to regulate utilities: This agency was created in 1966 by the Public Utilities Commission Act and has remained nearly unchanged until then. Given the size of the country, creating specialized agencies would have been extremely costly in terms of duplication of administrative and materiel costs as well as of human expertise. Coordination of policies appears here as a less relevant reason for a multi-sectoral agency than pure cost-benefit analysis and resource constraints.

Several features of Jamaican regulation have been criticized, yet they may answer to the specificities of the country. Spiller and Sampson (1995) show the role of the political structure and of the strength of the judiciary in determining which type of regulation would work best for Jamaica's telecommunications. Telecommunications are operated in Jamaica by a protected monopoly, Jamaica Telephone Company. It has monopoly not only on basic telephony but also on all the associated services, including equipment supply. The firm is also guaranteed a high rate of return, which has been strongly criticized. Yet according to Spiller and Sampson, allowing such a rate-of-return contract with a monopoly may have been the best available regulation given political constraints.

Indeed Jamaica is characterized by a strong judiciary with independent and reliable judges. Yet its parliamentary system gives the Government in office enough power to change the legislation whenever needed. The judiciary cannot therefore guarantee enforcement of current regulatory rules since these rules may be subject to important changes. Although a strong judiciary system may seem at first sight to imply regulatory certainty for regulated firms, this

is not the case whenever laws and jurisdictions can be easily modified by the executive, as in Jamaica. Moreover the political system is composed of two parties that have been alternately in power for short periods of time. Reversals of political majorities in coming elections tend to be extremely frequent, making the political environment very unstable for companies. To add to the fear of regulatory expropriation, telecommunications are a very sensitive area, since it is a service used mainly by middle-class and rich voters, which constitute the swing voters in Jamaica. Each party has therefore strong incentives to maintain low prices in local telephony in order to strengthen its chance for the next elections.

In such a context, the main problem when designing regulatory institutions may be finding commitment devices to reduce uncertainty and possibilities of expropriation by the Government. This was possible in Jamaica by using contracts: Indeed contracts between the Government and the regulated firm cannot be modified unilaterally by the Government and are credible instruments since they can be enforced by the sound judiciary of the country. As underlined by Spiller and Sampson, licenses are long-term contracts that constitute a commitment not to expropriate investors. In addition, granting a monopoly for all services allowed for cross-subsidization, used in order to maintain low prices for local calls. It is moreover a way to attract investors by committing to high rents. The costs of this arrangement are that it requires leaving high rents to the firm and foregoing the benefits of competition for the long period during which the exclusive concession contract is valid.

Both the use of a multi-sectoral agency and the choice of licenses ensuring rather large rates of return appear as optimal choices given the institutional and economic characteristics of the country. Sinha (1995) contrasts the Jamaican case with India, in which the judicial system is also sound, derived from the British common law and with a separation of powers between Parliament and the judiciary similar to that of the United States. Yet the effectiveness of the judiciary in providing effective commitments that investors will not be expropriated is lessened by the long delays of courts in deciding on cases. In such cases, creating a specialized dispute resolution tribunal may help provided it benefits from the same independence and reliability as the courts.

Opting for multi-sectoral agencies seems particularly adequate for small economies in which the lack of skilled staff constitutes a binding constraint and in which the stage of development of the industry is such that expanding production and investments is more an issue than promoting competition or dealing with sophisticated access issues. With further growth of the economy, the need for more specialized regulation may arise but this first stage allows to develop not only

the industries but also the expertise needed for more focused regulation.

Yet an implementation problem may arise. Indeed creating a multi- sectoral body when sector-specific agencies are already established may be quite difficult. As stressed before, regulation is closely linked to power and existing regulators will generally not be willing to relinquish their authority. Sectoral or industrial regulators will generally be backed by the corresponding Ministries if the Government is composed of sectoral departments. While it may be relatively easy to set up a multi-sectoral agency in a country in which all economic (non financial) responsibilities are under the head of a single Ministry, this may not be the case with different organizations of Government. Bolivia is an example of conflict between sectoral regulators and Ministries on the one hand, and the head of Government and non- specialized higher officials. The conflict ended in an original compromise, that may be an optimal structure when political constraints are too strong to implement a more radical reform of regulation.

5.1.3 A compromise between coordination and specialization: The innovative structure of Bolivia

Bolivia has recently set up a regulatory system that constitutes a balanced compromise between a multi-sectoral agency and specialized regulators. It is composed of sector-specific branches that are under supervision of a coordination entity. The structure can therefore be seen as very close to a multi-sectoral agency with specialized bureaus, yet it leaves more independence to the branches, being thereby more acceptable to officials who would be reluctant to forego their regulatory power on an industry.

Regulation is primarily under the Ministerio de Desarrollo Economica (Ministry of Economic Development), composed of four branches:

- Transports, communications and civil aeronautics,
- Energy,
- Minerals and steel,
- Domestic trade and industry.

These four divisions are all supervised by a Vice-Ministry of Sectorial Coordination, that is directly under the Minister of Economic Development.

This innovative structure reflects a compromise between sectoral regulation, demanded by former sectoral regulators, and multi-sectoral coordination, as wished by the upper part of the Government at the time this Ministry was designed, in 1996.

According to the Ley Lope decree (more precisely: DS 25055 completed by DS 24855), the

functions of the Vice-Ministry of Sectoral Coordination are to

- Coordinate the inter-sectoral policies and actions of the Ministry and its institutions,

- Monitor the Ministry development actions in different sectors,

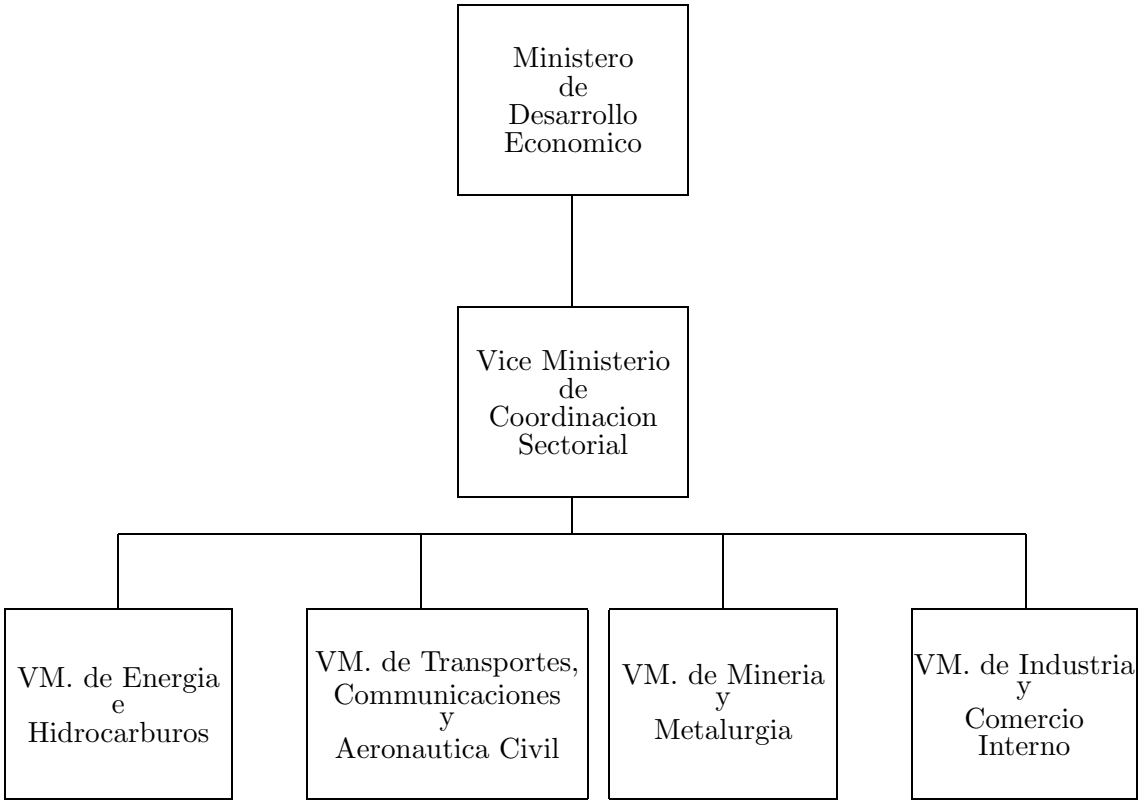
- Establish mechanisms for evaluating the objectives and achievements of the different bureaus,

- Act as secretary for the Ministry Technical Council,

- Coordinate the external relations of the Ministry.

These functions, as stated by the Statement of Aims of the VSC, show the need for coordination and coherence of regulation, as well as for monitoring of the different sectoral bureaus. Monitoring is particularly important when capture of officials by the industry is likely to happen.

A drawback of such an organization is that, if it helps reduce the threat of capture of regulators by the industry, it may not insulate the agency enough from political interference. This may be costly since it increases the risk perceived by investors and therefore the return on capital they will demand before accepting to invest in the country. When the judiciary system is reliable enough, a solution to this issue may be, as in Jamaica for instance, to rely on licenses, that can be enforced more easily than other regulatory rules, subject to unilateral modifications by the Government. If the judiciary is not developed, it will of course be more difficult to commit not to expropriate investors.



Organization of Bolivian Regulation

5.2 Supra-national cooperation in Africa

Most African countries are among the poorest in the world and the growth of their per capita GDP remains much slower than in Latin America or South Est Asia. This may be due among other factors to an inadequacy of formal institutions. Although many international agreements have been signed in the 1960s[17], they have remained of little effect until now. Yet recently a will for more coordination seem to have emerged among Arab and African countries. New agreements have been signed, such as the African Economic Community in 1991 or the West African Economic and Monetary Union in 1994. A desire to enter more effective multi-lateral agreements seems to prevail, although the will to preserve national interests may still limit actual achievements.

The trend in Sub-Saharan Africa today is much more toward centralization (and the creation of supra-national authorities, such as the UEMOA) than decentralization. Indeed Estache

[17]The Organization of African Unity was established in 1963, the Arab Maghreb Union in 1964, the East African Development Bank in 1967, and the Arab Fund for Economic and Social Development in 1968.

(1995) shows that the formal decentralization of power to sub-national levels of Government in the late 1980s and beginning 1990s has generally not been effective, most of the actual power being retained by the national Government. On the other hand, after years of only theoretical cooperation between neighbor countries, actual coordination of policies seem to be felt as a need by Governments themselves. Although the UMOA for instance remained of little other impact than the creation of a common currency, efforts at increasing cooperation, both bilaterally and multilaterally, are becoming more and more frequent, as shown by the appeal of Sub-Saharan African Governments to the World Bank to help them design formal multilateral cooperation. The need for cooperation is easily seen when looking at the specificities of African industries. The very small size of markets implies that inter-country trade is a necessity and that the number of viable firms on those markets will remain limited, at least in the short run. Competition cannot therefore be relied upon as a disciplining device and effective regulation of international markets is much needed.

5.2.1 The example of transports

The problems mentioned above are easy to see in the transportation sector. The liberalization formalized in June 2000 of air transportation remains of little effectiveness, due to the quasi-monopolistic situation of some airlines. Looking at the current market configuration, questions may arise as to whether the main European airlines operating in Sub-Saharan Africa may not have allocated local monopolies to each other. Yet one must bear in mind the very small size of markets in that region: for instance, total passenger traffic in West Africa equals the traffic of the airports of the medium sized French towns of Nantes or Nice[18]. This means that only one operator can successfully invest in that region. Relying on competition to discipline markets then appears totally unrealistic. The same problem of very small market size arises in other sectors, preventing the apparition of more than one operator. For instance the traffic in Sub-Saharan African ports is typically not larger than one million tons of merchandise, except for Dakar (17 million tons) and Abidjan (14 million tons). This prevents entry by more than one operator.

Competition within countries being non existent, competition among countries appears necessary, but probably insufficient: First, total regional market size remains small, and second actual competition may be hard to obtain. Indeed in the port sector, nearly all concessions are won by a powerful foreign group. Multinational enterprises have a very strong bargaining

[18] We owe this comparison to Maryvonne Plessis-Fraissard.

power relative to local Governments. Regional competition seems therefore likely to fail as a disciplining device, unless complex regulation is used in addition. And moreover this regulation will probably be ineffective if not undertaken at the regional level. Having a regional regulation can indeed increase the bargaining power of the regulator *vis-a vis* powerful groups. Yet this will only be the case if the regional entity shows enough internal coherence to be credible.

5.2.2 The West African Economic and Monetary Union

Surprisingly, Sub-Saharan African States have settled a supra-national organization to organize cooperation in one of the most sensitive and difficult area: Monetary policy. The West African Monetary Union (Union Monetaire Ouest Africaine, UMOA) was established very early to deal with the risks associated to the strong variability in monetary rates of the member countries. It was followed by the creation on November 14, 1973, of the West African Development Bank (Banque Ouest Africaine de Développement, BOAD), in charge in particular of managing the common currency. The eight member countries are Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.

Sub-Saharan African countries in general have suffered from a continuous slowdown in growth since the 1980s, and the monetary stability of the countries belonging to the CFA Franc zone has not been enough to markedly affect the trend of decreasing per capita GDP (see Guillaumont, Guillaumont Jeanneney and Varoudakis 1999). The terms of trade have rapidly deteriorated and the devaluation in January 1994 of the CFA Franc showed clearly the need for more economic cooperation. The UMOA was therefore replaced on January 10, 1994, by the UEMOA, West African Economic and Monetary Union. The fourth main objective of the UEMOA is to 'institute a coordination for the national sector-based policies with the implementation of common actions and conceivable common policies, epecially in the following domains: community-based land reclamation, agriculture, environment, transport, infrastructure, telecommunications, human resources, energy, industries, mines, and crafts'. This harmonization of policies will go along with the opening of markets and harmonization of the judicial system, which appear as necessary conditions for regulatory cooperation to work, and are moreover needed to prepare for the creation of a common market similar in many respects to the European Union one.

The model followed is clearly the one of the European Union, that has the advantages of first, having proven its viability and effectiveness, and second, having been accepted by countries politically reluctant to give up their national sovereignty. This model is therefore reassuring and politically much more acceptable by independent countries than American models

of organization. The States have remained very diffident until recently. Countries now seem more willing to sacrifice part of their power at the national level to foster more cooperation. In 1998, Sub-Saharan African heads of Government have asked the World Bank to help them develop cooperative actions at a regional level.

5.2.3 The example of the Southern African power pool

The Southern African Power Pool (SAPP), created in 1995, is a sizable sign of increasing cooperation in Sub-Saharan Africa. It consists in an agreement between Angola, Botswana, the Democratic Republic of Congo, Lesotho, Malawi, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

Cooperation between countries in South Africa has been seen as a necessity in the power sector, due to the geographical configuration of the region (see O'Leary, Charpentier and Minogue 1998 for a presentation of this power pool). The Democratic Republic of Congo and Mozambique have large reserves of low cost hydro-electricity, whereas South Africa can provide cheap coal. The Kariba Dam, in the middle of the region is also an important source of power. The multiplication of bilateral agreements between the countries of the region showed that cooperation could be beneficial.

The structure chosen for the pool after the study made over 1990-1992 at the initiative of the Southern African Development Community (SADC) was published, is based on agreements: SAPP is a 'loose' pool, relying not on central dispatching but on bilateral contracts, with information exchanges and cooperation among members. Disputes are judged by the SADC Dispute Resolution Tribunal. National energy ministers are responsible for cooperation in major policy issues and for admitting new members to the pool. Only national utilities can be admitted as full members, which is a limitation since some other institutions have non- negligible influence. The SAPP operating agreement set out schedule pricing according to the type of transaction.

As underlined by O'Leary, Charpentier and Minogue (1998), 'although a pool can operate where regulatory regimes differ, (...), possibilities for gaming or unfair advantage created by differences in regulatory systems can undermine members willingness to participate'. Coordination of regulation is a necessary first step for ensuring actual cooperation in the pool. Adopting identical rules to set transmission costs is an instance of indispensable harmonization. This is an instance in which too much independence for regulators can be seen as costly since it may prevent the adoption of supra-national agreements backed by political leaders. The design of the coordination center of the pool is also a politically difficult task. The manager should be

both neutral and autonomous, and as insulated as possible from Governmental influences. Although trade within the pool concerned in 1998 only about 3% of total production in the region, sector coordination, both at the regulatory level and between firms, seem to have been greatly improved, and results are encouraging. The small volume concerned is probably due to the fact that membership in the pool was reserved to national utilities only.

Although this is cooperation on a small scale and for a quite specific industry, this example shows that international agreements can indeed be implemented. The future will show if dissents between countries will be strong enough to break this cooperation or not, but its relative success up to now is encouraging.

A general conclusion that arise after the study of economies with very small markets such as those in Sub-Saharan Africa, is that supra-national agreements can be useful tools for increasing the credibility of regulators. With small markets, strong bargaining positions of foreign and multinational firms, and frequent capture of officials, national agencies may not have commitment abilities. Regulatory competition between close countries may moreover be quite destructive if each country competes with the others in order to attract foreign investment. Relinquishing some national authority in favor of a supra-national body may help improving the credibility of the region. It is quite clear that the credibility of such a body, in which national interests are extremely strong, can be quite limited (the European Union has frequently been challenged for that reason). Yet the gains of cooperating may be large enough to prevent deviations from the negotiated agreements.

6 Larger developing economies

We have seen that small economies can find it beneficial to set up multi-sectoral agencies so as not to duplicate common costs. They may have no choice if local expertise is too limited and foreign skilled staff to costly to hire. Some time is needed for local officials to acquire the knowledge necessary for efficient regulation. When the country becomes "larger" in economic terms, it can then have more specialized agencies. Organization theory indicates that the advantages of separating regulators (use of yardstick competition, negative externalities between corrupted supervisors, better focus on specific issues) can outweigh the costs when the costs of setting up separated agencies becomes smaller.

The choices actually made by larger developing economies appear to confirm the theory. Argentina for instance has chosen a regulatory system close to the one that prevails in the

United Kingdom, with industrial regulators. Most medium-size economies have also chosen to have (more or less) specialized regulatory agencies, instead of a multi-sectoral one as in Jamaica. Eastern Europe countries have many specific features that can be due to their political history as much as to economic rationale.

Decentralization also becomes more feasible when the country is more developed, according to organization theory. Its main benefits are a better accountability of regulators, more diversification of regulation and experimentation, decisions more adapted to local conditions when communication costs are high (which is likely to be the case). The size of the country is of course a major variable in determining the benefits of decentralization. The main costs of decentralizing responsibilities (lack of coordination, local capture of governments, loss of power of the central government) may be lower than those benefits at an intermediary stage of development. Notice that when countries get to a later stage of development, centralization may again be preferred since communication costs decrease and coordination of actions may become a more crucial issue in more complex regulatory policies (see the reasons given for a centralized multi-task competition authority in Australia).

The experience of decentralization undertaken by Brazil and Russia, and in many countries for locally-oriented sectors such as local transportation, port management or water, seems to fit in with the theory.

Decentralization and separation of regulators may be chosen in order to increase commitment by the central government not to expropriate investors. This section will also look at the issues associated with designing rules to decrease regulatory risk. Regulatory experience in Chile and Mexico underlines the potential costs of a structure that strongly constrains regulators to avoid expropriation[19].

6.1 Industrial regulators in Argentina

Argentina has chosen a regulatory structure close to the one of the United Kingdom in many respects, but with several innovations. Its experience clearly shows that budgetary autonomy is not enough to guarantee the actual independence of agencies.

Argentina has a federal structure with 23 provinces plus the City of Buenos Aires which obtained a provincial status in 1994. Argentina's Constitution dates back to 1853 but was amended several times, the last amendment being voted in 1994. Its system is a presidential

[19]Such issues are of course also sources of concern to smaller economies but they may not be priorities, and the remedies may not be available if expertise is too scarce to set up independent separated agencies.

one with a bicameral legislature and extended powers at the level of the President. The system appears as highly decentralized since provinces account for about one half of total Government spendings, as in Brazil. Yet although the 1994 constitution tried to increase the autonomy of the governors of the provinces, their position remains actually weak. The Constitution contains a subsidiary principle by which an activity which is not an interstate activity and which has not been explicitly delegated to the federal government is a state responsability. However, in practice the federal Government retains the ability to intervene and control a province, as it has been done for instance in the province of Cordoba for 24 of the past 50 years (see Dillinger and Webb (1999)).

Utilities have been privatized in 1990-92 in Argentina by the federal Government, and regulatory commissions have been set up at that time. The structure of regulation chosen by Argentina can be seen as rather experimental since the different agencies regulating different utilities have different characteristics (see Estache (1997)). Regulatory agencies are constituted by commissions rather than by individual regulators as in the UK, which reduces the discretion of the regulators since members within the commission constitute checks and balances one on another. When corruption is a concern, in particular, having several supervisors with overlapping mandates, or imposing some unanimity rule in an agency, allows to lessen the degree of capture of individuals by the industry, as shown in Laffont and Martimort (1998). Choosing commissions rather than individuals is therefore an understandable choice for developing countries in which corruption tends to be widespread.

All agencies are financed by taxes on firms or end-consumers in their industry, yet their actual level of autonomy varies: The structure of appeal is one of the important factors of regulators' credibility and actual independence[20]. The study of Argentinean agencies highlights the role of different choices of appeal body, since their financial autonomy is otherwise similar.

Argentina has chosen to have two separate agencies created by law for regulating gas and electricity[21], ENARGAS and ENRE respectively. These agencies seem to have been very efficient, especially compared to the telecommunications or water regulators. They may have been given more chances at first than other agencies since they have independent and sufficient funding, a skilled staff, and are autonomous. They are accountable to both executive and legislative branches. Yet the first appeal is the Secretariat, and not courts, which means that the Government may be able to reverse regulatory decisions.

[20] see Levesque and Smith (1998) for a discussion of how international arbitration may help reassuring investors as to the enforceability of contracts.

[21] as was the case in the UK until the merger of Ofgas and Offer into Ofgem in 1999.

The regulation of electricity is divided quite rationally between a federal regulation of transmission, and a state regulation of distribution, even though it creates some problems of coordination for large consumers who can sign contracts with generators outside the state.

But, regulation of gas (transmission and distribution) is a federal responsibility. This seems to be due to the fact that the gas industry was a public firm federally run at the time of privatization and liberalization and the federal government kept the full regulatory powers.

So, not only are electricity and gas not regulated by a single regulator but they are regulated at different levels.

The privatization of telecommunications, the first undertaken by the Government to show its commitment to reform, has been a failure in many respects, even if some of the first difficulties have been solved by now. The regulation of telecommunications is divided between the Comision Nacional de Telecommunicaciones (CNT) and the Secretariat of Telecommunications. The CNT has been created by decree in 1990 and not following a legislative debate, making the agency accountable to the executive only, which implies a much lower level of independence. The CNT has changed ministries twice (due to a merging of the Ministry of Public Works in the Ministry of the Economy) and lacks autonomy and expertise. The first committee was staffed with former members of the Secretariat of Telecommunications, that had not supported privatization. The first years of regulation proved quite unsatisfactory, and the staff of the CNT was changed rapidly. Yet once the credibility of the agency had been lost, it was difficult to regain. The agency has remained very slow in dealing with problems and its accountability is limited.

The separation of regulation between the CNT and the Secretariat has also proven costly: coordination of end-user and of access rates for instance has been difficult to implement. Controversies have arisen between the two regulators. This cost of separation is to be weighed against the benefits in terms of reduced capture and increased enforcement.

The regulation of water suffers from political problems: Indeed, the regulator, Ente Tripartitio de Obras y Servicios Sanitarios (ETOSS) has to defend the interests of the national Government that owns water assets, of the municipality of Buenos Aires, and of the provinces. Since these three layers of Government can de controlled by different political parties, strong tensions may arise. The agency had moreover to hire foreign consultants due to its lack of expertise of its otherwise numerous staff. Some loss of credibility followed the initial failures of the agency.

The provinces have followed different paths as to the structure of regulation. Some states (Cordoba, Salta) have created multi-industry regulators (for distribution of electricity, water and transports) while others have industry specific regulators (Buenos Aires, Tucuman). Fur-

thermore, water regulation is sometimes at the municipality level, sometimes not. This seems to be due to the fact that the subsidiarity principle holds also sometimes within the state and to the origin of the funding (when the funding of the water network comes from the state, the state regulates).

Summing up, Argentina is a excellent example showing the path dependency of the structuring of regulation. It will be interesting to follow in particular two questions: will the states adopt the same multisector structure and will the regulation of gas and electricity converge to a common structure?

6.2 Trading off investors security and excess profits

A main concern of developed countries is how to design regulatory structures so as to lessen the perceived risk of regulatory extortion and attract foreign capital.

Separation of regulators and restrictions on their power may be seen as good guarantees against expropriation by the government. Yet agencies with little power are likely to leave large rents to the firms.

Two types of extortionary behavior may be feared by investors: A regulator that has very little discretion is under direct control of the government and the latter can therefore use pricing and investment requirements, for instance, to extract too much of the firms' profit. On the other hand, a very independent agency may be more easily captured by the industry. The government, having relinquished control over the regulator, will not be able to reduce the rents left to the firms.

The first case will induce very little investment by regulated firms. The changes in investment levels in Chile's telecommunications across time may be explained by a move from the first type of expropriation to a system more favorable to investors. The second situation may lead to political difficulties, consumers and voters being discontented by high prices and large entrepreneurial profits, as in the case of Mexico. Ukraine is one of the many examples of slow growth caused by political interference.

6.2.1 The regulation of telecommunications in Chile

Chile has been among the very first countries to promote competition in utilities and to introduce it in power generation and long distance telephony[22] , as in the US and the UK.

[22]Competition was introduced in data and cable TV services and private networks just following the privatization of the main telecommunications companies in the late 1980s. Competition was allowed in long-distance

Galal (1996) distinguishes between three phases in the regulation of telecommunications in Chile. The first phase goes from the 1930s to 1971 and corresponds to regulation and private ownership. The second one, from 1971 to 1982 is one in which the long-distance operators (CTC, created in 1930, and ENTeL, created in 1964) were nationalized. The nationalization was initiated by socialist president Salvador Allende after his election in 1971, and was not challenged by dictator Augusto Pinochet after his military coup in 1974. In these two phases, growth has been very slow and investments scarce.

In 1982, some deregulation of telecommunications was undertaken. The third phase appear as much more successful than the preceding ones[23].

Extortion and capture in the first phases Chile's telecommunications went through the two opposite types of regulatory uncertainty in a very brief period.

Indeed, the companies first suffered from expropriation of investments in the early 1970s: At that time, the socialist government of Salvador Allende used an adjustment of prices lower than the inflation rate to increase consumers' surplus. This was against the concession contract that guaranteed a rate of return of 10% to the firms.

When Augusto Pinochet came into power in 1974, a reversal of policy occurred. In particular, a state holding company, CORFO, that had became joint owner of CTC and ENTeL, obtained more influence in practice than the regulatory authorities. Although it may seem anecdotical, it tells much about regulation at that period that the owners of CTC and ENTeL were Generals, whereas the head of the regulatory agency created in 1977, Subtel, was only a Colonel ... Laissez-faire was then the characteristic of regulatory intervention.

The current system Since some competition has been introduced in the sector (although entry is still very limited), competition policy is one of the tools used to regulate firms. It has been decentralized with a rather clear allocation of tasks among the different levels. Compliance with competition laws is ensured by Regional Preventative Commissions (one in each capital of the country) for purely regional cases, by a Central Preventative Commission that intervenes whenever cases involve more than one region, and by a Resolutary Commission with large investigation powers (including help by police forces). The Preventative Commissions are chaired by a representative of the Ministry of Economy and each includes a representative of the Ministry

telephony in 1994.

[23]Galal (1996) cites that the number of lines has doubled in four years after the privatization of CTC and ENTeL.

of Finance, whereas the Resolutary Commission is chaired by a Minister of the Supreme Court. This organization takes into account the stakes of the concerned Ministries, while defining the allocation of authority and the preeminence rules. The fact that different Ministries have interests in the Commissions appear as a credible way of ensuring judiciary security. The allocation of tasks is relatively clear and there seems to be a good monitoring of regional agencies.

The same will to design clear rules and decision-making processes can be found in the organization of sectoral regulatory agencies. A particular feature of the Chilean system is that regulators have little discretion since the rules they are to apply are very precise. Pricing for instance has to correspond to the cost of a model operator, according to an average of the estimates of costs given by the regulator on one hand, and the industry in the other. The Economics Ministry intervenes in case of dispute so that the regulator is not ultimately responsible for tariffs. This increases the need for the regulator to explain and justify its decisions. Moreover, since the rules followed by the regulator are usually set in sectoral laws, their legitimacy is reinforced by the legislative process by which they are adopted. Contrary to Argentina for instance where regulators can set tariffs and safety norms, the only discretion the regulator has in Chile lies in its superior information on the industry's characteristics. Chile has chosen to have much certainty in its regulatory environment, at the cost of a lack of flexibility.

Chile's Law also leaves very little discretion to regulators as to the way in which they should implement redistributive policies. Aid is carefully targeted at low-income users through a comprehensive subsidy scheme. A special fund has been created in 1994 to facilitate access to public telephone in rural areas and for low-income urban areas.[24] Such subsidy schemes and investment programs are more costly to set up than downward pressures on tariffs, but it avoids creating distortions in prices. It has moreover the important advantage of reassuring investors since it constitutes a (partial) commitment to cost-covering tariffs: With targeted aid, social motives cannot be used as a pretense for expropriating the firms from their investment[25]. The firms operating in the country perceive the regulatory risk as being much lower than in neighbor countries, and therefore are more willing to invest even when rates of return are lower. An unstable regulatory system, large discretion of regulators or ministries in modifying rules, translate into higher financing costs.

Yet the current system has drawbacks. The boundaries between the segments that should be competitive and where entry should remain restricted are not clear, which is an explanation for

[24] 10% of the population lived in localities in which there were no public phone in 1997 (see Wellenius (1997)).

[25] The same system is used in the United States where low-income households can apply for reduced rates in telephony for instance.

the large number of suits that have been filed against the incumbents CTC and ENTel, mainly on grounds of anti-competitive behavior in providing interconnection. This lack of precision in regulation is quite costly in terms of judiciary disputes, but it may be rationalized by the necessity to keep some flexibility in an industry that is rapidly changing. A blurred definition of segments can be seen as an indirect way of regaining flexibility while giving discretionary powers to the courts rather than to the regulators. This last aspect can be better understood by recalling that Chile has a tradition of a strong and independent judiciary. An example of this independence, pointed out by Galal (1996), is the Congress' refusal of Salvador Allende's attempts at expropriating shareholders in the nationalizations of the early 1970s.

6.2.2 The new regulation of telecommunications in Mexico

A frequent difficulty arising some five years after the privatization of a public monopoly, in developed as in developing countries, is the discontent of the population and even political unrest. Indeed attracting private capital requires committing to high rents, sometimes by granting a monopoly position, or by setting a generous price cap or rate of return for the first years of operation of the privatized firm. But extra high profits are usually seen as a failure of the regulation, or as a sign that the regulator is captured. The example of the regulation of telecommunications in Mexico exemplifies these problems.

Mexican telecommunications services have been operated until 1990 by a State-Owned Enterprise, Telmex. After its privatization in 1990, Telmex has been left nearly unregulated until recently. Following the 1995 Telecommunications Law, telephony markets were opened to competition in 1997. Yet this opening to competition is rather theoretical since in 1998 Telmex still enjoyed a dominant position in five markets according to the CFC, Mexico's competition commission.

In an OECD report on regulatory reform, the 1995 Telecommunications Law is assessed as a good tool but it is underlined that 'the regulator has inadequate powers to regulate, particularly in regard to regulation of the incumbent in markets where it has substantial market power'.

Local population has shown growing discontent due to the high cost of service and its poor quality. In particular, although a regulation allowing Telmex to charge high access rates was justified by the necessity to leave it profits high enough to encourage network expansion, no new line was added neither in 1996 nor in 1997. Faced to harsh criticisms, Cofetel, the telephony regulator, has tried to introduce more stringent obligations for Telmex. Yet the Government appears to fear a negative impact on the Stock market in case of too severe regulations. In

October 1997 for instance, Minister Carlos Ruiz Sacristan replied to pressures for diminishing Telmex market power by asserting that one had 'to be careful not to negatively impact the Stock market'. Here again, the need not to discourage investment appears as a strong constraint on regulation. This argument can of course be used to hide private agenda reasons for helping the firm make large profits.

Attracting investors by reducing too much the effectiveness and scope for intervention of the regulator may be politically very costly and makes it hard to end the 'golden period' that just follows privatization, when introducing competition or adjusting regulated prices becomes necessary.

The costs of political interference are highlighted by the case of Ukraine. Several studies (Johnson, McMillan and Woodruff (1999a), Gros and Suhrcke (2000)) show that Ukraine, as Russia, has has a much lower growth than was expected. Insecure property rights along with the regulatory risk associated to expropriation by the government explain partly this slow growth.

6.2.3 Political interference and the regulation of power in Ukraine

The experience of electricity reform in Ukraine shows that formal independence may not be sufficient to ensure that regulators and regulated firms are indeed protected from political interference. Lovei (1998) analyzes the role of the vertically integrated structure, Minenergo, in ensuring for instance that the National Dispatch Center did not cut off provision of electricity to politically influent bad payers. Parliament and the Government have desired to keep control on this crucial sector and to maintain a unified system across regions. Due to this, much less improvement has been observed than expected.

The 1997 reform of the Ukrainian gas industry has lead to a very ambiguous system, due to a sharp conflict between the advocates of a vertically integrated monopoly, and the ones of a transparent market-oriented gas market. See Lovei (1998). This stresses that reform can be very difficult to formally enact, but also to effectively implement, when its constituency is small. Formal structures that would in theory be the most fitted to the country's characteristics may in practice not be implementable when political constraints are taken into account.

The restructuring of the coal industry in Ukraine in 1995 seems to have been even more politicized than electricity and gas. Before being able to implement the reform, the Government had to split powers across different competing groups (a 'divide and conquer' strategy similar to the creation of separated principals). The Ministry of Finance was the one that, being more sensitive to budget restrictions, was supposed to monitor the restructuring process so as to

avoid large expenses. Yet its weak position within the Cabinet explains why a reform intended at limiting payment arrears was so difficult to put in place: The separation of powers across different agents with different preferences will not be enough to constitute an efficient system of checks and balances if one of the agent is in a weak political position.

6.3 Decentralization of regulatory responsibilities

6.3.1 Decentralization of regulation of local and 'stable' industries

The benefits of decentralization being larger when information on local conditions and preferences matter a lot, when externalities across regions or states are relatively unimportant, and when the industry is not evolving rapidly according to technological changes or scientific discoveries, we can expect to see more decentralized systems of regulation for industries such as local transportation, roads, ports management and water management. These sectors can be considered as 'stable', in the sense that they are not the object of frequent technological change. They are 'local' in the sense that local knowledge appear as more important than national expertise and that regulation in a given region has little impact on the industries in another region. This last argument does not always apply in the case of water, as we will discuss later.

The theoretical prediction is confirmed by the fact that even centralized countries have chosen relatively decentralized structures in those sectors.

Humplick and Moini-Araghi (1996) study the gains and benefits of decentralization in road provision in eight countries. They conclude that maintenance and administration of roads are domains in which decentralization to local authorities is preferable, whereas construction should be either completely decentralized or completely centralized. their findings are in adequation with the conclusions of the theory of organizations. Construction is the only domain of the three in which local information is not crucial. What is actually important in the oversight of construction is that there be sufficient competition in the process of awarding contracts. According to the degree of competition between firms at the local and national level, and to the relative level of capture of local and central authorities, it may be better either to centralize or to decentralize. Across the eight countries considered, the degree of decentralization of construction seems to be positively related to the level of development of the country, the United States having complete decentralization, and Brazil, the Philippines and Indonesia nearly no decentralization. Although the size of the country is likely to play an important role in the choice of decentralizing, it should be noted that Brazil has a centralized management of construction activities, despite its large size and its federal structure with relatively independent states. A reasonable explanation

is that bidding firms would have too much power relative to local governments in a bidding process.

Water is another sector in which many responsibilities have been decentralized in most countries (see the very interesting cross-country study of Saleth and Dinar (1999) for comparison of institutional structures in water management). It should be stressed nevertheless that in some countries in which water is extremely scarce or is an important input in the production of crucial goods, centralized management remains preferred. This is the case for instance in Israel, where political objectives determine, at the level of the central government, the allocation of the resource across sectors and regions. In Chile, due to the geographical structure of the country, a main use for water is hydro-electricity. This has lead to tough conflicts between the irrigation sector and both the power sector and urban users. The responsibility for water management has shifted across Ministries but externalities between sectors are strong enough to make coordination difficult. The water sector has been decentralized very early and private sector participation has been encouraged. A market for property rights on water has been set up. Yet, instead of leading to an efficient allocation of the resource, this system seems to rather have induced destructive competition.

Morocco is an interesting example: Although it has a very centralized government, despite the increased importance of provincial government since the 1960s, it has extremely decentralized water regulation. It has also chosen to have specialized regulators according to the functions to be performed. The agencies are under different ministries, as is often the case in this sector in which different users are competing for a scarce resource. Nine Regional Authorities for Agricultural Development, within the Ministry of Agriculture, are in charge of distribution networks an collect charges. A Directorate general of Hydraulics, within the Ministry of Equipment, deals with technical issues while the National Office of Potable Water, within the same Ministry, acquires and distributes water to households and small urban businesses. Morocco also considers decentralizing the management of its ports. Since the country is otherwise quite centralized, this indicates that decentralization can be considered as beneficial in these specific sectors, whatever the other characteristics of the country.

Decentralization of specific tasks in a centralized country: Mexico

Mexico is a clear example of decentralization of selected tasks in a centralized country. Saleth and Dinar (1999) underlines that, although Mexico has a strongly centralized government, a trend at decentralizing water supply functions to state and municipal governments has emerged. Water resource management is under the responsibility of the central government but actual

management of many tasks is actually done at a local level. Saleth and Dinar nonetheless note that a main challenge faced by Mexico as regards water is to better use local information. They suggest using the information available in the National Registry of Water Users to allocate more efficiently water between competing users. Adequate institutions for allocating water across regions and sectors are still lacking. This suggests that some mechanism to obtain transmission of the information available at the local level is necessary.

The success of the 1982 reform intended at increasing private participation in the road freight industry is examined by Dutz, Hayri and Ibarra (2000). The reform has not only authorized free entry in the industry and moved to a system of market-based price setting, it has also ended in a substantial degree of decentralization, much of it toward the private sector, but also toward local authorities.

The regulation of the seaport industry is also an area in which the government has chosen recently to introduce more decentralization. Trujillo and Nombela (1999) stresses as a factor of success the trend at decentralization that can be observed for the seaport industry in Latin America, particularly in Mexico, Venezuela and Columbia. In the general law of 1992, the Mexican government has chosen to relinquish control over port administration, terminal operation and provision of other services associated with ports. A wave of privatization has been followed by bidding for concessions. Contracts concerning ports administration are indeed almost exclusively all concession contracts, as are recent contracts in road management. Authority is decentralized to Port Authorities that manage the port they are in charge with according to the specification of their concession contract. Such a type of contractual arrangement is particularly adequate for industries in which technological changes are few so that regulation needs not be adjusted on a regular or frequent basis. The containeurization process was such a technological change, but it appears unlikely that a new one affects the seaports industry in the next coming years.

6.3.2 Specific enforcement issues in Russia and the debate on decentralization

An aspect that has not received a thorough treatment in this paper, is the difficulty to enforce regulatory decisions, especially when costs of communication and capture are high. If the central government has only limited power to monitor enforcement agencies, it may be better to delegate decision-making to local authorities, that may have different preferences but have the power to enforce the decisions that suit them.

In a large country such as the Russian federation, in which political and regulatory responsi-

bilities have been recently remodeled, decentralization may be seen by some (such as politician Boris Berezovsky) as a necessary step.

Insecure property rights and enforcement issues in Russia

Gros and Suhrcke (2000) separate transition economies in two groups, the candidates for membership in the European Union, that have been relatively successful in their reforms, and on the other hand the CIS and South-Eastern European countries which have a lower rate of growth, under-developed financial markets and little enforcement of property rights.

This last point is a source of concern frequently related by economists, politicians and entrepreneurs. Johnson, McMillan and Woodruff (1999b) use survey data from Poland, Romania, Russia, the Slovak Republic and Ukraine to assess the enforceability of contracts. The size of trade credit is used as proxi for enforceability. As in Gros and Suhrcke, Russia and Ukraine lag behind Central Europe countries as regards enforcement. This is costly since entrepreneurs use relations as a 'collateral' to substitute for the security that courts cannot provide. This means that new (and unknown) entrants will find it difficult to gain clients. Using the same survey, Johnson, McMillan and Woodruff (1999a) show that insecure property rights are more harmful to growth than a lack of bank finance, since investments to invest are lacking, even if finance is available, when enforcement of rules and contract cannot be relied upon. Russia and Ukraine had access to external finance in the early 1990s, yet they have experienced only slow growth, contrary to the other countries in the survey.

The high cost of public funds, political pressures and corruption worsen the costs of bad enforcement. The jurisdiction lacks autonomy against political pressure, making the regulatory environment risky for firms. Foreign investors seem to evoke more and more frequently regulatory risk as a main concern (see for instance the 1999 business survey of the EBRD), whereas it was expected in 1991 that reforms would help quickly reduce the political risks perceived by investors.

Actual enforcement of regulatory decisions is moreover limited by a lack of clear allocation of competence for the different levels of territorial authorities.

The arguments for and against decentralization

The huge task of reducing state intervention in former communist countries has put under light the necessity to rely on local or regional political entities to speed the process as well as to ensure that it is effectively carried on.

A main issue related by Russian officials is the lack of credibility of any authority that is not supported by local politicians. The size of the federation makes it impossible to have true

oversight of industries, and actual enforcement of regulatory and competition rules without the cooperation of regional and local authorities. In a very large country, decentralization seems difficult to avoid. The case of Brazil is striking in this respect: The federal state has had to grant more independence and power to regional states in the last five years in order to ensure that rules would effectively be enforced. A loss of control in the design of the rules has to be traded against an increase in actual enforcement. This is in a way similar to the recent decision by the European Commission to forego some power by granting again national competition authorities some enforcement power in order to increase flows of information.

The benefits of decentralization in the process of privatization of public enterprises have been stressed by Friebel (1995). He compares privatization in Russia until mid-1993 with the experience of Hungary, Poland and the Czech republic. He shows that decentralization of responsibilities and a large delegation of decisions concerning privatization to local authorities has helped increase the speed of privatization in Russia.

Due to the large size of the country and the difficulty in effectively controlling remote regions, decentralization may also be the only way of differentiating policies according to local characteristics.

Another main benefit of decentralization is that, by giving power to local politicians and bureaucrats, it would decrease their strong resistance to reform. It is unrealistic to expect that reforms will actually be implemented when the staff that should implement them is against them. Letting the agents in charge of implementing regulation control more of the regulatory process is one of the simplest ways of giving them a positive stake in the reform process.

Yet, if decentralization appears as attractive for Russia, its costs are also relatively higher than in many other countries. Decentralization implies a need for more regulators, whereas officials with the relevant expertise are few. The shortage of qualified staff is moreover exacerbated by low civil service wages (Dabrowski (1994)). This is a factor promoting corruption of officials, meaning that rules may often not be applied by the bureaucracy. Yet increasing the incomes in the public service may not be politically acceptable for the rest of the population.

The fragility of the tax base added to the large tax burden and budgets associated to Government intervention make regulation more difficult and costly to manage. The cost of public funds is extremely high and tax evasion is estimated to concern a majority of Russian revenues. The recent decision to decrease the tax rate to 15% has been taken in order to reduce the incentives to hide income. This is a feature of the Russian economy that makes decentralization particularly costly.

It is of course extremely difficult to assess whether the benefits of decentralization outweigh

the costs. It may be that decentralization is extremely costly, but is necessary for reform to be actually implemented.

6.4 The reliance on competition policy in transition economies

The role of antitrust rules in regulating firms' behavior has sharply increased since the wave of deregulation in utilities has opened both industrialized and developing economies to entry and competition. Competition authorities have gained a much stronger influence on economic regulation than twenty years ago. They also participate in the design of regulation. In Venezuela for instance, the competition authority, Pro-Competencia, considers that an important part of her work in promoting competition lies in institutional design. It has a consulting role in all decisions concerning deregulation and privatization, and for sectoral agencies, in order to avoid that these agencies set rules leading to anti-competitive situations.

Yet very few countries have chosen to follow the example of New Zealand or even the less extreme structure of Australia. Transition economies have had a very original behavior in opting for regulation by competition authorities. Their choice is easily explained by the historical circumstances that have lead them to fear excess state intervention in the economy. In order to quickly move toward a market-economy structure, it was natural to reduce as much as possible the role of the Government in industries development. If the choice of institutional structure was political, its consequences highlights its economic costs and benefits.

Eastern Europe countries have chosen, after years of socialist structures of Government, to rely on competition authorities, and not on industry- or sector-specific regulators, to control all industries in the economy, including utilities. The competition rules draw generally much from the European Commission rules, with a view to future partial integration with the European Union. The role of international agreements in helping developing or transition economies commit to reforms has to be underlined again here.

6.4.1 Some general features of competition authorities

The oversight structures have been set up nearly at the same period, and with strong references to the European Commission due to agreements with the European Unions. Therefore, although some differences across countries remain, the general outline of the laws are relatively similar. Differences appear to be often due to political, rather than economic, features of the countries. In general, concessions are used as ways to regulate the industries, competition authorities overseeing all matters not specified in concessions.

In Estonia, the Konkurentsiamet, set up to implement the competition law voted in 1993, follows the European policy rules quite closely. It has nevertheless the particularity of being composed of several sector-specific departments (osakond), one of which deals with energy, transports and communications issues, and another one with media, advertisement and culture, in addition to standard analysis of mergers and collusion. The competition authority is therefore relatively similar to the Bolivian regulator, except that it also undertakes promotion of competition, and more important, that it is much more insulated from state influence, which should reassure investors.

The Hungarian Competition Office enforces the Competition Act and the Act on Price Setting since 1996. It is a budget entity, composed of a Chairman, two Vice Chairmen, nominated by the Prime Minister and appointed by the President of the Republic for six years, and with a staff of more than a hundred persons. The Office has to submit a yearly report to Parliament. It has no regional office up to now. The autonomous regulator has only an advisory role, the Ministry retaining the decision power. Government decrees specify requirements for specific utilities, for instance for interconnection in telecommunications. Local Governments have some power since they can initiate public biddings for concessions if they are not satisfied with the services provided in the telecommunications industry. These concessions have regulatory features since they contain specific obligations and quality of service targets.

In Bulgaria the Law on Protection of Competition, adopted on May 1991, has set up the general rules to be followed, and has created the Commission for the Protection of Competition to enforce them. The Commission is an independent budget entity, composed of a Chairman, two Vice Chairmen, and eight members elected by the National Assembly.

The Russian Federation appeared in 1994 as having the most advanced anti-trust rules and agency among the transition economies in Eastern Europe, according to Schrader (1994). Although the public sector was still responsible for the production of a majority of goods and services in 1994, entry barriers were not higher than in Western countries.Yet the antitrust system may seem closer to a regulatory one than to a Western competition authority. Indeed any firm registered as a monopoly is under the obligation of giving information on prices, costs, qualities and quantities to the anti-monopoly committee. The committee then set the price for the product. This price regulation seems of course not compatible with an objective of price liberalization, especially in the Russian Federation where most enterprises are still registered as monopolies.

The fact that these competition authorities have regulatory responsibilities, and that new specific regulatory agencies are set up, in particular to deal with interconnection, goes against

any clear-cut conclusion on the sufficiency of competition policies to deal with utilities. A general feeling remains that regulatory agencies (or agencies with actual regulatory powers) are still needed.

7 Conclusion

7.1 Centralization v. decentralization

The main arguments in favor of centralization and decentralization fall in one of the categories in table 2.

Table 2: Decentralization versus centralization

Pro Decentralization	Pro Centralization
Differentiation	Coordination
Local information	National expertise
Creative competition	No destructive competition
Enforcement	Control over regions

Differentiation v. coordination

Decentralizing to induce differentiated regulations

Differentiation is a benefit of decentralization that can be understood only if the regulator is bound to use restricted instruments.

According to Warrick Smith (2000)'s excellent discussion, "decentralization allows regulatory objectives and approaches to be shaped by local conditions, priorities and preferences". Yet a priori nothing prevents a centralized regulator to differentiate rules according to regional specificities. Two major arguments may nevertheless comfort this viewpoint; one is bounded rationality. It is costly to transmit and process information, so a centralized regulator will be "obliged" to use uniform rules. Clearly the argument depends on communication technologies but also on the location of expertise. Decentralization is better if local information is what is needed for decisions, but this is not the case if the expertise required is scarce and only available centrally. This corresponds to a second trade-off to be examined in choosing between centralization and decentralization.

The other argument explaining why differentiation may not be feasible in a centralized setting is related to potential capture. Bureaucratization of rules, i.e. uniformization which prevents fine tuning is often an obliged regulatory response when dangers of capture are too high. So, if indeed it is the case, decentralization may be the only way to have a regulation sensitive to local conditions. But, it could be the case that local corruption is great and the local discretion of regulators will be misused, while at the central level political control is of better quality and

does not constrain to uniform policies. Let us here stress again that the impact of centralization on corruption is ambiguous and depends on the relative levels of corruption at the central and at the local level.

So knowledge of both the precise nature of the information required and of the national and local political conditions is needed to conclude whether centralized or decentralized institutions will be better adapted to design regulations suited to local conditions.

Lack of coordination in decentralized systems

Warrick Smith lists the potential advantages of more centralized approaches:

1. Potential misalignment between jurisdictional and industry boundaries.
2. Spillover effects.
3. Inter-jurisdictional trade.
4. Concerns over "destructive competition".

All these arguments describe the negative effects of a lack of coordination between decentralized regulators when spillover effects abound and when excessive competition between uncoordinated regulators takes place. According to these arguments and in a world of benevolent rational regulators, regulation should always be centralized.

Local information v. National expertise

Decentralizing to obtain local information

Another argument cited by Smith (2000), among others, in favor of centralization is that it enables to address information asymmetries vis-à vis firms and consumers. The same general comment as above is valid here too. Furthermore for information asymmetry regarding firms, what is often needed is a high technical expertise to evaluate available information and it can well be the case especially in LDCs, that only national regulators have this type of expertise.

This is less true for information concerning consumers even though here too reliable statistical information might not be available locally. On the other hand local accountability of politicians is certainly greater each time it can be based on information available locally. Indeed local electors are more able to judge the quality of regulation if they share the information on which regulatory choices are based.

Mobilizing regulatory expertise

This is a crucial argument in LDCs which militates strongly in favor of centralization at least in a first step of development. It is an evolving criterion which must be assessed in each specific case and on which the international community can play a great role by transferring technical expertise in those countries.

Creative v. destructive competition

An argument frequently given in favor of decentralization is that it promotes creative competition of regulators. This competition may reduce the discretion of politicians and improve accountability. The efficiency of regulators can then be assessed using yardstick competition.

Yet this competition may be excessive and lead to a waste of resources. A problem that may arise is that of 'forum shopping', i.e. of firms deciding to settle in the localities that have the most favorable legislations and regulations. While this induces competition between regulators in order to attract firms, a consequence may well be a too lax regulation enabling firms to earn extremely large profits. The ability of the central government to still retain enough control to prevent this type of behavior by decentralized regulators is a criterion to be taken into account when considering decentralization.

The balance between the incentive value and better accountability of decentralization on the one hand, and the lack of coordination of regulations on the other hand is highly complex.

Enforcement v. better control by the central government

Decentralization allows better enforcement by local authorities, at the cost of some loss of control. We have seen that large countries such as the United States, Brazil or Russia have or have had to give sufficient responsibilities to their states and regions to induce more participation in enforcement activities at the local level. This implies a loss of control of the federal state in a world of incomplete contracts and asymmetric information, which may be less costly that setting up independent federal enforcement mechanisms.

The ambiguous results on corruption of regulators

Smith cites as a drawback of a decentralized system the potentially greater risk of political and industry capture. Even though it is true that greater proximity may decrease the transaction costs of capture, we have argued that both empirically and theoretically, this is a debatable point. A good knowledge of local politics is essential before one can assess the greater or smaller risk of capture involved in decentralization.

To strike a balance between these various arguments is quite complex and we cannot provide

general rules. With W. Smith, we can only agree that the jurisdictional size, the industry characteristics, the nature of the regulatory issue and the regulatory capacity (including human resources in expertise and vulnerability to capture) will matter.

To conclude, the previous trade-offs that have to be made between the benefits and costs of decentralization have to be assessed for each country, keeping in mind that the institutional structure is important in defining the degree of control that the central government will effectively have. Several African countries have begun decentralizing responsibilities, yet the general consensus is that this decentralization is largely formal and has little actual impact on the functioning of the state. A good knowledge of the country's specificity is indispensable to evaluate the actual consequences of reforms.

Nevertheless there are many cases where the normative conclusions are clear.

For example, telecommunication which is a network industry spanning the whole country and requiring high technical expertise is a leading candidate for national and even federal regulation, and similarly for the regulation of transmission grids in electricity, gas transportation or railways long distance regulation.

At the other extreme, price regulation of the local distribution of water, electricity, gas should be decentralized to benefit from local information and better accountability. This is not incompatible with national or federal oversight concerning corruption issues or some dimensions of regulation requiring a lot of expertise, like quality regulation, certification of operators, etc.

At the implementation level also, one must take into account the initial allocation of responsibilities that political bodies have acquired. Even if one may have in sight a reallocation of powers, the priority may often be to improve the regulations themselves, to favor horizontal or vertical cooperation of existing authorities to prepare the ground for politically acceptable reforms of institutions.

7.2 Industry-specific regulation v. multisectoral agency

In a similar way, the main arguments in favor and against industry-specific regulation can be summarized in table 3.

Differentiation v. dealing with blurring industry boundaries

We will not comment on the differentiation argument since it is similar to the one in favor of decentralization.

Table 3: Arguments for and against industry specific regulation

Pro Specialization	Pro Multisectoral
Differentiation	Blurring industry boundaries
Specific expertise	Sharing resources
Diversification of risks	Better coordination
Creative competition	No destructive competition

Multi-sectoral agencies are more able, when there is imperfect communication and cooperation of regulators, to deal with industries that are currently changing, and whose boundaries are loosely defined and rapidly moving, such as telecommunications for instance. The Report on the Ministerial Inquiry into Telecommunications (2000) in New Zealand stresses this aspect of the industry and has preferred to use the term 'Electronic Communications', in order to avoid restricting its analysis to a part only of the economy.

Industry specific expertise and focus v. sharing resources

Only the bounded rationality of regulators may justify these advantages, since nothing prevents an integrated regulatory agency to have specific departments allowing specialized expertise and differentiated treatments.

But again the issue of availability of regulatory resources for developing countries appears as crucial. There seem to be sizeable economies of scope in regulatory activities and this argument is particularly important in LDCs.

In a similar view, having a multi-sectoral agency may foster expertise in cross-cutting issues, as was argued for Australia after the Himler report was published and when the creation of the ACCC was being considered. This argument is linked to the idea that communication between regulators is not perfect. Notice that sharp competition between regulators may result in limited communication. The communication issue may thus be sharpened by separation of regulators across industries.

Diversifying the risk of institutional failure v. coordination

Having industry-specific regulation may be argued to allow more experimentation in regulatory design. Yet this argument, as in the case of decentralization is not valid in a world of benevolent unconstrained and rational regulators. Here again bounded rationality à la Sah-Stiglitz is a possible explanation for why a multi-sectoral agency may not be able to diversify regulation, so

as to decrease the risk of unadapted regulation.

Yet multi-sectoral agencies may be favored for allowing, as indicated by Smith (2000), to reduce the risks of economic distortions. Reducing economy-wide risks is one of the benefits of better coordination.

Creative competition v. avoiding destructive competition

The argument is also similar to the one described in assessing the benefits of decentralization. Yet the specificity of industries limits the scope of such competition and of yardstick mechanisms.

With W. Smith we conclude that no single approach is always superior and the best solution depends on the size of the economy, the scope of regulatory responsibilities, the nature of the industries, the regulatory capacity.

An important historical feature is relevant here. In most countries the reform of utilities proceeds industry by industry, and it is institutionally much simpler to establish a new regulator for each industry. Then, one must encourage cooperation between regulators and eventually some mergers as the ones we observe currently in gas and electricity, due to the greater interaction of these industries through the massive production of electricity with gas turbines.

Concerning functional regulations, the integration of regulation and competition policy appears of doubtful interest since the types of activities required are quite different in general. However, some cooperation is clearly needed to avoid conflicting decisions, in particular concerning interconnection policies, and when transition from regulation to anti-trust oversight is desirable. Even though it is better to integrate in one agency the different dimensions of regulation of one industry (prices, quality, environment...) to avoid inefficient equilibria of regulatory decisions taken by different regulators (as argued for water in England), some dimensions such as environment may require a global (national or at the level of the whole industry) vision, which argues in favor of a separate regulatory body.

Here too, the allocation of regulatory powers will be largely determined by the Governmental structures, each Ministry trying to maximize his scope of control, and it may often be more fruitful to encourage cooperation between existing agencies than to push for institutional reforms.

In an attempt to summarize the arguments we can say the following.

Bounded rationality	
Creation of incentives for regulators	favor multiregulation
Desirability of coordination	

Sharing of scarce expertise favor integrated regulation

Capture and accountability are ambiguous.

Unless one has a lot of political information favoring one solution or the other in terms of capture and accountability, the situation of the poorest LDCs militates in favor of integrated regulation. It is only when regulation must rely on a lot of local information and does not require much technical expertise that decentralization of regulation may appear desirable given the difficulties of processing information.

7.3 Regulatory structure and country-specific needs

Table 4 summarizes for several developed and developing countries the features that appear to have driven regulatory design, and the corresponding types of regulation chosen.

Table 4: General environment and choice of regulatory system

Country	US	UK	Jamaica	Argent.	N.Z.	Austr.	Chile
Environment							
Government alternance	*	*	Yes	Yes	*	*	No
Strong government	*	Yes	Yes	(No)	*	*	Yes
Strong law enforcement	Yes	Yes	Yes	No	Yes	Yes	(Yes)
Developed competition authority	Yes	Yes	No	No	Yes	Yes	No
Tradition of independence	Yes	Yes	No	No	Yes	Yes	No
Corruption	No	No	Yes	Yes	No	No	(Yes)
Need of FDI	No	No	Yes	Yes	(No)	(No)	Yes
Large industry size	Yes	Yes	No	Med	Yes	Yes	Med
Regulation chosen							
Large rents for firms	No	Yes	Yes	Yes	(Yes)	Med	*
Reg. based on licenses	No	Yes	Yes	No	No	No	No
Flexible regulation	No	Med	No	Yes	Yes	Yes	No
Regulatory discretion	Yes	Yes	No	Yes	No	Med	No
Overlapping mandates	Yes	No	No	No	No	Yes	No
Separated regulators	Yes	Yes	No	Yes	No	Mixed	Yes

Notations: * stands for 'not relevant here', Med for 'Medium' or 'Intermediate', and (Yes)

and (No) for 'Rather Yes' and 'Rather No'.

Table 5 summarizes the features of regulation that seem to fare better for given characteristics of the industry and the country. Centralization may attract investors by guaranteeing more

Table 5: General environment and choice of regulatory system

	Technicity	Externalities	Uncertainty	Need Capital	Corruption	Social aims
Multisectoral	No	Yes	*	(Yes)	*	(Yes)
Independence	*	*	*	Yes	Yes	No
Centralization	Yes	Yes	*	(Yes)	?	(No)
Commission	*	*	*	Yes	Yes	*
License	(Yes)	*	No	Yes	Yes	*

homogeneity in the rules applied within the country, reducing the costs linked to learning the relevant legislation or regulatory rules as well as judicial uncertainty. Yet this has to be mitigated if the higher level of government tends to be more captured than lower levels, or to be more prone to regulatory extortion.

Corruption may be greater either at local or at national levels. It is therefore not possible to give any general insight on whether centralization or decentralization should be preferred in countries where corruption is widespread: What matters is the relative degree of corruption at the local level. Recommendations in this area can only be country-specific.

If the government has social objectives, a multi-sectoral regulator may be better able to promote them by setting up extensive subsidization schemes, as in Chile, allowing targeted groups to benefit from lower prices. Such schemes are also feasible for industrial regulators but there are large economies of scope in the targeting of the population. In the limit, multi-sectoral regulation allows for cross-subsidization across industries. Cross-subsidization is a priori not be an efficient way of furthering social objectives, yet it is a second-best solution for countries in which the social cost of public funds is very high. Cross- subsidization then allows to avoid using very distortive taxes and very inefficient transfers.

As the country becomes more developed one can rely on broader technical expertise and start trading-off the creation of better incentives with less coordination. All along, the concern for capture and accountability must be present, but calls for solutions rooted in the history and political specificities of each country.

7.4 Tentative Guidelines

Except for water the decentralization of regulation is only relevant for federal states. As a starting point one will favor the following allocation of responsibilities.

Electricity:	distribution:	state regulation
	high voltage transmission:	federal regulation
	generation:	anti-trust.

Remarks: When some consumers are eligible for direct purchase from generation outside the state, a proper coordination between state regulation of captive consumers' final prices and regulation of transmission is needed. As long as final prices are regulated, federal regulation should be in charge of transmission and generation.

State regulation is desirable for accountability, cost of information transmission. If local politics is particularly corrupt, federal oversight may be needed. Federal regulation of transmission is needed for reasons of externalities.

Gas: Gas should be essentially regulated like electricity.

Telecoms:	Local calls, internet access:	state regulation
	long distance, international calls:	federal regulation or anti-trust.

Remarks: Typically final prices of mobile phones can be deregulated when competition is strong enough. Regulation of access prices (from fixed to mobile and from mobile to fixed) and of fixed link final prices must be regulated. All final prices can be deregulated when there is enough competition, but access prices must remain regulated.

The technicity of telecom regulation may call for federal regulation only despite accountability problems.

Water: Distribution can be regulated at the state and even the municipality level for prices and quality.

Federal regulation should concentrate a minimal quality regulation, environmental regulation and resources management issues.

Remark: Quality regulation may be regulated at the federal level when expertise is lacking.

Railways, Buses: Interurbain transportation should be regulated at the state level and interstate transportation at the federal level.

Post: Regulation should be federal.

In a medium size or small countries, all regulations should be national except water and urban buses's regulation which can be delegated to municipalities.

In those countries, gas, electricity, water and eventually telecoms, post should be regulated by a multi-sectoral regulator, and transportation (railways, roads, aviation) by another sectoral regulator. For federal states, one favors such an organization at the state level and also at the federal level to economize on scarce resources of expertise.

Antitrust should be separated from regulation. In LDCs antitrust is essentially a public advocate of competition and one cannot expect that it can replace regulation for a long time to come, because of the difficulty of attracting capital for effective competition and because of the unreliability and lack of expertise of Courts.

Remark: Concentrating power in multisectoral regulatory agencies may be dangerous, because it may frighten governments who will try to capture them. On the other hand, it may lead to an effective independence of regulation and in particular to less influence of interest groups.

APPENDIX 1

Bounded Rationality and Decentralization

There are two kinds of projects. Good projects with a value W in proportion ν and bad projects with value $-V$ in proportion $1-\nu$.

Decision making is imperfect. Let p_1 be the probability of accepting a bad project, while p_2 is the probability of rejecting a good project.

If $p_1 = p_2 = 0$, decision making is perfect. If not, it makes sense to assume that the probability of accepting a good project is not less than the probability of accepting a bad project, i.e., $p_1 \leq 1 - p_2$.

If projects are always accepted, the expected social value is $X = \nu W - (1-\nu)V$.

We will say that projects correspond to critical decision problems when $\nu W < (1-\nu)V$, i.e. accepting bad projects is very costly with respect to the gain of accepting good projects and non critical if the reverse holds.

Let $(1-\nu)V = \alpha\nu W \equiv$ Projects are critical if $\alpha > 1$.

The expected value of a hierarchy is then

$$V_H = \nu W[(1-p_2)^2 - \alpha p_1^2],$$

and for a polyarchy it is

$$V_P = \nu W[1 - p_2^2 - \alpha p_1(2-p_1)].$$

First, we consider the case where $p_1 = p_2 = p$ and from $1 - p_2 \geq p_1$, p in $[0, \frac{1}{2}]$. We have immediately:

Proposition 1 *If $p_1 = p_2 = p$, a hierarchy (polyarchy) is better for critical (non critical) decision problems.*

Proof:

$$\begin{aligned} V_H - V_P &= \nu W[1 - 2p + p^2(1-\alpha) - (1-p^2) + \alpha p(2-p)] \\ &= \nu W(\alpha - 1)2p(1-p) > 0 \quad \Leftrightarrow \quad \alpha > 1. \end{aligned}$$

The main intuition is therefore that hierarchies are better for situations where mistakes are very costly, and we find such situations both in developed and non developed countries.

Let us now consider a more general class of decision problems where $p_2 = kp_1$ with $k \leq 1$ to respect the condition $1 - p_2 \geq p_1$.

Then we find:

Proposition 2 *If $p_2 = kp_1$, a hierarchy is better than a polyarchy if*

$$\alpha > \frac{k(1-pk)}{1-p}.$$

Figure 1 illustrates this result.

Proof: Let $p_1 = p$; $p_2 = kp$.

Indeed

$$V_H - V_P = 2p\nu W[\alpha - k + p(k^2 - \alpha)].$$

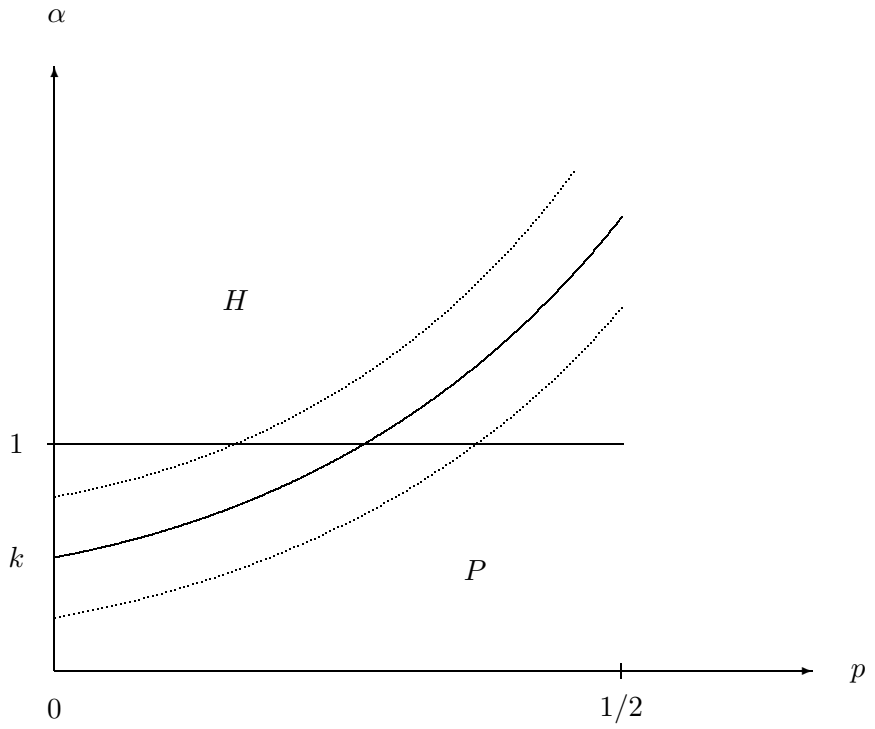


Figure 1

$$\phi_k(p) = \frac{k(1-p^k)}{1-p}$$

is an increasing convex function of p.

We can conjecture that the decision process is less efficient in LDCs in the sense that p is higher. This induces a bias in favor of polyarchies. Also if k increases (the decision process is less discriminating), the polyarchy is also favored ($\frac{d\phi_k}{dk} > 0$).

Intuitively, as the quality of decision making deteriorates, the quality of hierarchies worsens faster. For good projects we have:

$$\begin{aligned} G_H &= \nu W(1-p_2)(1-p_2) \text{ for a hierarchy} \\ G_p &= \nu W(1-p_2)(1+p_2) \text{ for a polyarchy.} \end{aligned}$$

As p_2 increases, then G_H decreases faster than G_p. For bad projects we have:

$$\begin{aligned} B_H &= -(1-\nu)Vp_1 \cdot p_1 \\ B_p &= -(1-\nu)Vp_1(2-p_1). \end{aligned}$$

Also as p_1 increases the cost of bad decisions increases faster for B_p than B_H, but this second effect is less than the first effect because $p_1 \leq 1 - p_2$, bad projects are accepted less often than good projects.

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