ABSTRACT

The calls urging colleges and universities to improve their productivity are coming thick and fast in Brazil. Many studies are suggesting evaluation systems and external criteria to control universities production in qualitative terms. Since universities and colleges are not profit-oriented organizations (considering only the fair and serious researching and teaching organizations, of course), the traditional microeconomics and administrative variables used to measure efficiency do not have any direct function. In this sense, it could be created an *as if* market control system to evaluate universities and colleges production. The budget and the resources allocation mechanism inside it can be used as an incentive instrument to improve quality and productivity. It will be the main issue of this paper.

KEY WORDS

Education quality; Universities evaluation; Budgeting; Public resources allocation; Non-profitable institutions control; Incentives; Microeconomics of public and collective action; Public choice.

RESUMO

As demandas exigindo a melhoria da produtividade em faculdades e universidades estão surgindo dramática e rapidamente no Brasil. Muitos estudos têm sugerido sistemas de avaliação e critérios externos para controlar a produção universitária em termos quantitativos e qualitativos. Considerando-se que as universidades e faculdades não são organizações com fins lucrativos (excetuando-se, é claro, as caça-níqueis), as variáveis microeconômicas e administrativas tradicionais usadas para medir a eficiência não possuem nenhuma função direta. Nesse sentido, dever-se-ia criar um sistema de controle *à la* mercado (imitando o mercado) para se avaliar

a produção em universidades e faculdades. O orçamento e o mecanismo de alocação de recursos contido no mesmo pode ser usado como um mecanismo de incentivo para melhorar a qualidade e a produtividade. Esse será o principal tema deste artigo.

PALAVRAS-CHAVES

Qualidade da educação; Avaliação de universidades; Elaboração de orçamentos; Alocação de recursos públicos; Controle de organizações sem fins lucrativos (terceiro setor); Incentivos; Microeconomia da ação pública e coletiva; Escolha pública.

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BUDGETING AND RESOURCE ALLOCATION IN UNIVERSITIES: A PUBLIC CHOICE APPROACH

Marcos Fernandes Gonçalves da Silva

"Non multa sed multure"

I. INTRODUCTION

The public sector crisis in many countries and the fashionable conceptions as *reengineering* and *downsizing* are creating a general revision of the financing structures and productivity problems of the high education institutions. In Brazil, for example, there are growing financial restrictions to public universities and private high education institutions. The public universities salaries are very low because the public sector crisis, and the productivity of these institutions is frequently questioned by government education agencies and by the society. On the other hand, public money for private institutions is scarce and the situation will be worst in the very near future.

Public institutions are facing today the need of productivity improvements to justify more government support and grants and probably teachers and researchers will compete more decisively in the next years for money to compensate the wages gap.

However, in private institutions, the strategy demands an aggressive policy towards the achieving of productivity and quality goals. Effective funding raising policies and competition for public money would be founded in efficiency and professionalism. So the real question is: How could we improve the academia's performance?

The main purpose of this paper is to discuss some fundamental ideas developed mainly by Massy (1996c) and others[1] about productivity and budgeting issues in higher education. Secondly, I am going to analyze some topics on the political economy of non-profit organizations as like as universities and colleges in order to argue that many problems that are arising in these institutions have to be studied with some public choice hypotheses and agency theory[2]. Finally, I am going to set up some relations between productivity incentives and budgeting in colleges and universities.

The traditional economic model of the firm is the so called "black box". In this view, the organization is an abstract unit that transforms inputs in outputs. The economist is not concerned about what happens *inside* the firm. However, economics has an applied field that really *opens* the black box. The studies developed by economists on organization matters and incentives schemes take in account agency and contract problems[3]. For example, an effective understanding of productivity issues in universities and colleges requires this openness.

In this paper, I am going to analyze some aspects related with productivity, incentives, and budgeting in universities and colleges taking in account the common sense about the crescent demands of the efficiency of these institutions. For this reason, the first analytical step is to understand why it is very common to justify the fall in productivity in colleges and universities using the traditional arguments of *cost decease* and the *growth force*.

[1]This study enlarges all the recent bibliography on the subject and there are no considerations on public choice assumptions and a more incisive and complete analysis applying agency theory to the study of productivity problems facing universities and colleges. The main references where there is this lack are: Atkinson, H. & Massy, W. F. (1996), Chevaillier, T. (1993), Cohn, E. & Geske, T. G. (1990), El-Khawas, E. & Massy, W. F. (1996), Lawler, E. & Mohrman, S. (1996), Massy, W. F. (1996a), Massy, W. F. (1996b), Massy, W. F. (1996c), Massy, W. F. (1996d), Massy, W. F. (1996e), Massy, W. F. (1993), Massy, W. F. & Hopkins, D. S. (1996), Strauss, J., Curry, J. & Whalen, E. (1996), Schutte, F. (1993), and Winston, G. (1996).

[2] The fundamental elements and conceptions used here are founded in Horn (1996), Kraan (1996), Silva (1996), and Silva (1996b).

[3] This is the case of Milgrom & Roberts (1992).

II. PRODUCTIVITY, COST DECEASE AND THE GROWTH FORCE

Productivity is an economic concept related to the profit maximization hypothesis. Despite the fact that colleges and universities are not, at least apparently, profit-seeking institutions, the profit-maximizing-seeking approach can be used as an *as if* friedmanian hypothesis[4].

Economists usually define productivity in organizations as the ratio of output in a firm. This definition has a good performance when we analyze a single output firm, and not a multiproduct one. The productivity can be understood, in a multiproduct firm, as the rate between the total benefits generated by the use of many inputs (that create costs). Productivity can be defined in a very simple, but important way, as follows:

Productivity = Benefits/Costs

Supposing a single product firm, the marginal approach to productivity implies that marginal benefits are equal to marginal costs. This is an objective measure of efficiency in organizations. However, in firms that produce many outputs the maximization calculus is more complicated, and we can assume that the simple ratio between benefits and costs is a possible measure of productivity.

In higher education, inputs and outputs are qualitative and multidimensional (Massy, p. 50). The inputs and outputs are much more intangible than in ordinary good producing firms because they are characteristically services. Additionally, in

[4] Massy (1996c, p. 50) argues that "unlike business firms, colleges and universities operate on a nonprofit basis and for altruistic goals". I disagree with this point of view. The productivity hypothesis in economics must be used as an instrumental conception and not as a realistic one. It is also naïve to presuppose that the agents in non-profit organizations are economically eunuchs. The public choice assumption that the *homo economicus* assumption has to be extended to politics and public organizations is valid, in the same measure, to non-profit organizations as colleges and universities.

these institutions, the quality is more crucial than quantitative efficiency. The quality dimension of the service supplied by universities and colleges must be considered when we are measuring productivity. But, in higher education is very difficult to assess the quality of the outputs. Even quality is an elusive concept.

Finding fine definitions of quality is very difficult and there is not a consensus about proxies that could be used[5]. Following Baumol, Blackman & Wolf (1989, p. 235), one can define *gross productivity* as the number of units of output produced per unit of input, despite changes in product quality. The increase in unit costs in universities and colleges can be seen, under the gross productivity approach, as a productivity gain because the rise on the costs can be caused by quality improvements in education and research.

The problem of productivity is not only related to the output, but also to costs. Colleges and universities in the USA and Europe (see Massy, 1996c, p. 52), and even in Brazil, argue that the decline in gross productivity has two main causes. The first one is the argument that educational institutions in general demand continuous cost rise to maintain quality (this is the *cost decease* argument). Secondly, there are *growth forces* that demand from universities and colleges more and more improvements in supplying knowledge and improving quality.

The cost decease is a very common problem in labor-intensive firms as colleges and universities when they try to achieve improvements in productivity. Baumol & Blackman (1983) have a classical example of this problem. String quartets are labor-intensive organizations. As a labor-intensive organizations, string quartets are resistant to productivity increases. There is another factor that obliterates productivity improvements. In the example above, consider the case where musicians try to study a piece using less time than habitual. The result could not be good. In some activities there are rigidities concerned with productivity

[5] This difficult explains why evaluations in colleges and universities are so criticized, mainly by teachers and researchers.

improvements because there is a trade-off between productivity (in a quantitative point of view) and quality. So, the training time of a string quartet is the same of two hundred years ago. This phenomenon is called *stagnant productivity*.

In many production structures, labor requirements have been reduced. The problem of cost decease, as defined by Massy (1996c, p. 53) is the persistent rising in the relative price of college and university services. In the case of the string quartet, there is the same problem. The real unit costs of many services and goods produced in the economy have been reduced because productivity gains but, in the meanwhile, the same costs in the string quartet have been unchanged. The result is the rise in the relative price of the ticket comparatively to other goods and services.

In the USA, Europe and Brazil the cost decease apparently provides an explanation to the rise in the education price and the productivity and costs rigidities. Colleges and universities in the USA, as like as in other countries, spend more than 70% of the budget with labor payments (Zemsky & Massy, 1995). On the other hand, quality demands would force colleges and universities to constant increases in costs. The characteristics of the production in universities and colleges seem to be the same of the string quartet example. So, universities and colleges would be suffering for cost decease and it would be natural and expectable.

Massy (1996c) disagrees with this vision, and I agree with his criticism. There are many incentives problems associated to the traditional budgetary process adopted in these institutions. There is a trend in traditional budgeting projects to the maintenance of the level of expense. The expenses of one period are the floor for the expenses to the next period. The cost decease is, in this case, a political economy problem inside the organization. The *a priori* acceptance that the quality goal implicit to universities and colleges production systems is intrinsically costly and that the budgetary process is rigid in order to reduce the expenses creates a very uncompromising situation to universities and colleges' agents. This policy

reinforces more sticky productivity than stimulates the searching for less costly production strategies.

In many public and private high education institutions in Brazil, one can notice that this kind of ideology perpetrates the traditional speech of teachers and researchers. This is a public choice problem, since the internal labor market of colleges and universities does not respond to market incentives. In this case, the uncritically acceptance of the cost decease reasoning (and its implicit wishful thinking) reveals some kind of *akrasia*, or simply a self-seeking behavior. People who work at universities and colleges are not altruistic; they are economic agents inside the organization as any economic agent in the market place or in a company or government.

Today, the revolution in the information systems impacts deeply the cost structure of higher education organization. Maybe the resistance to adopt these technologies could cause serious damages in the future, because the fail in competing with more efficient and less costly institutions that could supply education with a lower price. Using the example of the string quartet, Massy (1996c, p. 54) argues that the information technologies can reduce the costs of this little organization despite high wages offered to musicians. The sale of CDs and the supply of music by the *Internet*, for example, can bring music to millions, reducing the cost of the audience. The same benefits could happen to higher education.

Another argument used to justify the lack of efficiency in production systems in colleges and universities is the *growth force*. There is a common sense in higher education institutions that opportunities to education and research grow without limit because scientific knowledge is intrinsically progressive (see Massy, 1996c, p. 54). Universities must implement new programs and spend money with new knowledge research and diffusion, and new academic programs are required to allow universities to compete. The metaphor here is the library that never lift the old books and have to incorporate the expanding new production.

These growth forces are, in fact, real. However, there is a dangerous fallacy in the linking, without any reflection, this phenomenon with declining in gross productivity. One can ask why productivity has not increased to offset costs increases? The problem again is linked with the incentive structure included in traditional budgetary process adopted for these kinds of institutions.

A deep reflection on this theme requires an examination of some agency theory issues.

III. THE PRINCIPAL-AGENT THEORY APPLIED TO COLLEGES AND UNIVERSITIES

The economists have focused a unit of analysis more realist than the black-box firm: the contracts negotiated by two typical economic agents who act inside the firm. The study of bargain contracts between a principal and an agent is the core of principal-agent theory or agency theory, and recently this approach has been applied to business and public and private organization studies (see Silva 1996a and 1996b).

The definitions are: The term principal refers to a person who is in control position and has the authority to act, while the agent is someone who acts in the place of the principal.

The principal-agent relationship is important in economics and business organization because in real world there are many imperfections like risk and asymmetric information. The principal has no way to supervise the agent's action: The principal can only very imperfectly police the agent's behavior.

The agent may have more information than the principal does and may act just in his-her self-interest. The matter is that the information that the principal receives is

insufficient to police the agent: the agent can act strategically, using game theory jargon.

Agency problems pervade the economy and organizations. There are many examples of the importance of principal-agent relationships in real life. In the case of public regulation agency, a regulatory bureau can be viewed as the agent for the consumption of public goods, who is the principal. On the other hand, the regulation agency can be viewed as the agent by the regulatory bureau. This problem, as we are going to see, is very important when we try to improve productivity in colleges and universities using incentives implicit in the budget.

As like as any organization, higher education organizations contain many kinds of principal-agent problems. As Massy (1996c, p. 74) points out, there are at least two factors that reveal the presence of agency problems in universities and colleges: (i) economic and value externalities, and (ii) value incongruity.

The traditional view of externalities define them as positive and negative. An externality represents a connection between economic agents which lies out the price system. They are observable in consumption and production. A positive externality in production happens when a producer generates an indirect and unpaid benefit to another. A negative externality is the opposite. For example, pollution is a negative externality and capital network effects are positive externalities in production.

Polluting the atmosphere is a classical example because the pollution made by an agent affects not only his-her well-being, but also the well-being of the others. Massy (1996c, p. 74) argues that in universities and colleges positive or value externalities can inhibit a math department from redesigning calculus curricula to meet the needs of nontraditional engineering students. Economic motives might drive an engineering department to teach its own calculus course. This is a very usual problem in colleges and universities because nobody wants costs, but benefits.

This result leads to the conclusion that someone must police and monitor the actions of departments.

As we have seen, economic agency theory is designed to analyze these and other kinds of situations. In universities and colleges, it is naïve to suppose that the teachers, the researchers, the students and the administration have the same arguments in their utility functions. Faculty values often differ from those of the administration, and the administration has different motives from those of the government agency that monitor the institution performance.

Agency theory applied to the study of colleges and universities addresses the equation of how does a principal (the society or the governing board) prevent the agent (the teachers and researchers) from self-interest action that implies rent-seeking activities and opportunistic behavior inside the organization. An important example of this is proposed by Massy (1996c, p. 75): The allocation of resources, specially to research, is made because the academia seeks for prestige, recognition and, of course, more money for new research. Higher education institutions tend to value research over teaching and the pursuit of personal and collective prestige puts the education function as a secondary mission.

Massy (1996c, p. 75-6) suggests three methods that could mitigate principal-agent problems that are facing universities and colleges.

Firstly, he suggests the assigning of specific responsibilities (SpR system). In this schema, the principal tells the agent exactly where to spend the money and supervise the agent's action following the budget up. SpR, as Massy asserts, represents an *a priori* follow up and control over the agent's actions. The principal's approval is essential to the implementation of the actions. SpR has implicit that it is applied to small organizations where the supervision costs are low and information asymmetries are insignificant. However, in the case of large institutions as universities, we need another control system.

The second method proposed by Massy is *the price as regulator* (PriR). In PriR systems, the minimization of agency problems is made using marginal adjustments in revenues and costs, creating incentives that deviate the agent's action in order to maximize the principal's utility function. The example used by Massy is interesting. An institution can tax research revenues and subsidize teaching activities to avoid research bias. PriR problem is that the principal cannot anticipate the impact of an incentive like this on agent's behavior. The question here is again the lack of information.

The thirty solution is named *responsibility for the overall value of outcomes* (OVR). In OVR systems, principal and agent agree on the outcomes to be achieved, including the budget allocation and the performance index that will be used to evaluate the agent's performance. In practice, they establish an administration-responsibility contract. The agent assumes the responsibility to achieve the objectives, and the principal provides rewards.

The three methods focus, as Massy (1996c, p. 76-7) suggests, three different aspects of agent's maximization process. SpR acts over the variables that are under the control of the agent. The PriR regulates the prices that the agents are facing when they are making their decisions. OVR, the more intelligent schema in my opinion, seeks to establish incentive contracts.

However, there is a fundamental critique to Massy's proposition on agency problems facing universities and colleges. He simply ignores the main question that appears when we analyze principal-agent problems: the preference towards risk for the principal and the agent.

I sustain that there is a more effective way to control agency problems and enforce productivity gains using budgetary incentives.

We must suppose, when studying agency problems, the agents' preference towards risk matters. It is very reasonable to suppose that teachers are risk averse and researchers are neutral or, in some cases, risk lovers. So, the incentive contracts inside universities and colleges must include these suppositions.

Generically, we can classify the agents (teachers, professional staff and researchers) as risk-averse, risk-neutral and risk-loving. If the preferences associated with the money utility function are concave, the agent (teachers and professional staff) are risk-averse; if the function is convex, the agents (some researchers) are risk-lovers, and if the money utility function is a straight line the agents (some researchers) are risk-neutral.

The agents make their decisions facing future events, and the future is only probabilistic. Teachers without tenure face risk of unemployment, researchers face risks associated with the uncertainty of the results of the research. Generically, the research activity is more risky than teaching.

So the academia's agents face risk in many aspects of their activities. However, once every kind of agent has a particular actinide towards risk, the contracts established inside the faculty organization have to consider these different preferences.

For example, assume that the principal is the Dean management team and the agent is a researcher. The agent and the principal can face two possible situations at the end of the research period. Firstly, suppose that the research was well conducted and that the fund raising was actually effective. In this situation the faculty earns $ 2,000 net of all costs. Secondly, suppose that the research had not sufficient results and he gains only $ 1,000. I will assume in this example that the management is risk-averse, and the researcher is risk-neutral. Assume that there is initially a contract number 1 wherein the researcher gets a fixed wage of $ 500. Finally, consider the same probability to the two possible outcomes purposed.

If the last situation was the good one, the college will receive $ 1,500 (or $ 2,000 minus the researcher fixed wage of $ 500). If the results of the research were not good, the college earns only $ 500. In the contract number 1, the college administration has an expected value of $ 1,000. The researcher will receive $ 500 in any situation. In this case, the college is absorbing the risk, despite the fact that the researcher is more likely to do it.

Different preferences towards risk imply the existence of inefficient contracts as the former purposed here. A more efficient contract must consider the preferences towards risk. This consideration can generate Paretian-improving trade between the agent and the principal. In the case described above, consider a contract number 2 wherein the college receives $ 1,000 as a fixed rent, and the researcher receives the remainder $ 1,000 if the final situation is good, and nothing if the situation is bad. Because the college evaluates more $ 1,000 with certainty than $ 1,000 with risk, the college last position is better than in the first contract. The researcher is risk-neutral and the expected gain in this case is $ 500. Because he or she evaluates with the same utility the $ 500 expected and the $ 500 fixed, his or her situation is the same as the contract number 1. The second contract promoted a Paretian improvement.

This contract schema can be conceived inside the budget[6]. I denominate this conception of incentive contracts in higher education as Incentive Compatibility Budgeting (ICB). This framework is very important because there are many risks associated with moral hazard, mainly when we think about tenure contracts. Unfortunately, Massy (1996a, 1996b, 1996c, 1996d, 1996e) does not take into account this important phenomenon that is pervasive in colleges and universities. For example, in many Brazilian high education institutions, the tenure is received much earlier and moral hazard is a very costly fact.

[6] This literature is well developed and applied to public administration in Horn (1996) and Kraan (1996).

IV. MORAL HAZARD IN UNIVERSITIES AND COLLEGES

The performance of an institution will depend on the efforts of the agents involved with education and research. Such effort spent by the agents are costly and it represents desutilities. Suppose the situation wherein the college and the agent (teacher or researcher) assign the contract number 1. Consider the fact that the principal has no way to monitor the agents' performance because the supervision costs are extremely high and there is a collusion risk associated with monitoring (the principal's bureaucrat in the monitoring functions can be suborned by the agent).

The agents will have no incentive to work hard: there will be moral hazard implicit in the contract. If the college has no way to monitor the agents a contract could be negotiated with the agents that will give to them incentives to work hard. Technically, there will be in the contract incentive compatibility.[7]

Incentive-compatible contracts suppose a kind of wage efficient contract. The optimal design of these contracts depends on the risk preferences of the parts involved.

For example, consider the case where one is risk-averse and the other is risk-neutral or risk-lover. The best way to deal with this situation is a contract wherein the risk-averse part is bearing the risk premium while the risk-neutral or lover part is accepting the risk.

It is obvious that moral hazard is very common in universities and colleges because there are a lot of information asymmetries inside these organizations. So it will appear inside them strategic behavior, rent-seeking and opportunistic self-interested actions. I consider that this evident fact must not despair in an analysis of the

[7] About this conception and for a very simple illustration of contracts and moral hazard, see Silva (1996b).

productivity matters in universities and colleges (and this is my fundamental critique to the literature about the subject studied by me in this research).

Despite the importance of the internal structure of high education organizations to understand the difficulties to improve productivity and reduce costs, there is an important input in such firms that has to be considered when we analyze them: The financing loans and credits that enable students to study and to develop researches (mainly graduated students).

I am going to present some facts about the international experience on high education finance in order to show the enormous difficulties facing higher education financing not only in developing countries as Brazil, for example.

V. THE INTERNATIONAL EXPERIENCE ON COLLEGES AND UNIVERSITIES FINANCING

I studied a set of 34 developing countries involving high, mid and low income economies according to the World Bank classification[8], the USA case and some European countries.

In the USA, students pay tuition and fees, and a small fraction of students receive scholarships and subsistence aid. In the majority of countries in the developed and developing world, the students are subsidized receiving scholarships and subsistence aids, and in some cases they have access to loans, as in the case of undergraduate students in Brazil in the seventies[9].

[8] The classification referred to here is that annually published in the "World Economic Report". See, for example, World Bank (1996).

[9] In the Getulio Vargas Foundation in São Paulo, for example, the students can receive scholarships and loans, but the concession depends on performance). This is a well-designed incentive scheme to the students. However, in

As McMahon (1988) indicates, using data from developing countries (Brazil included), the students in Africa, Asia, and Latin America do not pay for education costs and in many countries they have scholarships, mainly in graduated studies. However, the efficiency of higher education institutions in these countries is worst than in the USA and the UK, for example (see McMahon, 1988, p. 138-9).

Cohn & Geske (1990) presents the results of a study about the costs of undergraduate education in the UK, the USA, Germany, France and Sweden. The results of the research show differences among the countries in financing frameworks for students. In the USA there are no scholarships, and tuition payments made for the students are substantial. But in France, because the students political power and the *étatisme* tradition, there is no payment for students.

However, the USA case is very interesting, because in that country there is a credit system developed for students that have to pay university tuitions. So the incentive scheme appears more effective in order to inhibit moral hazard and to incentive students to work hard.

In the case of Britain, as Cohn & Geske (1996, p. 379) points out, the Tory government tried to implement a loan system in the eighties but the students resistance was strong. This is an evidence of rent-seeking behavior that must be controlled by incentive contracts as proposed here. In Germany curiously the parents are obliged by the law to finance student's higher education.

If the American case is an exception in the world, the rule is not to impose any risk or cost to students and their families. I consider this framework inefficient because there is no way to reduce some important costs of the universities and colleges linked with indolence and student's moral hazard. Despite the financial aspect, there is a moral one. In many countries, mainly in the poor ones, the costs of the

public universities there is no payment schemes; they are free. In my opinion, this kind of contact with the students is perverse because there is moral hazard.

education are absorbed by the government and by the society in an unequal and unfair way. For example, the Latin American experience, and the Brazilian one, show how the universities and colleges have the function, at least in part, to maintain the majority of the population who will never go to universities as outsiders.

The World Bank (Cohn & Geske, 1996, p. 381) has sustained that the students must pay for the costs of higher education (the *cost recovery theory*). In such situation there must exist loans for students and their families. However, not only in Brazil or France, but also around the world, it is very hard to find a politician that wants to lose young people votes. This is why universities and colleges are institutions where rent-seeking and opportunistic behavior are the rule, not the exception. Public choice and rent-seeking problems appear not only inside the organizations, but also around them.

VI. CONCLUSIONS

It is evident that the public sector must support in part higher education. Higher education and graduate research are suppliers of knowledge and it is plenty of externalities. So, if the government does not support in any way higher education there is a risk of lack of education production in society.

However, the traditional systems of universities and colleges financing and budgeting are not adequate with some hypotheses about the opportunistic behavior inside and outside these institutions.

The modern organization theory has a bit of models and conceptions that must be incorporated to higher education productivity achievement literature. The main objective of this paper is to show that contract theory, agency theory, moral hazard,

and incentives are conceptions absolutely fitted to the study of many diseases, as the cost decease and productivity slowdown in universities and colleges.

The agency and contract theories demand, however, some assumptions about risk preferences and self-seeking behavior. An effective discussion about an incentive budgetary framework must consider an empirical fact: teachers, researchers and professional managers have different and self-interested utility functions. Despite the empirical observation, the economic theory of incentives implies that the assumption of economic rationality has to be accepted in models, at least as an *as if* hypothesis. In this sense, analyses made by Horn (1996) and Kraan (1996) are more persuasive and to say even more realist than many models developed by government and public administration theorists.

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