

# Curse or blessing? The mineral rent used by the larger mining cities in Brazil

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## Abstract

One of the rare consensus among the different resources-base economic analytical approaches concerns to the strategic role of the mineral rent, as a decisive tool to assure that the temporary wealth generated in the present can turn into permanent income in the future. For this reason, the evaluation, distribution and use of the mining rent plays a central part in the mining city's development process. The Brazilian legislation assures to the mining cities participation of the financial results of mineral extraction through the *financial compensation for the mineral exploration* (CFEM). CFEM is a kind of royalty *ad valorem*, which taxes varies to 0,2 % until 3% of the liquid revenue from mineral production. The legislation does not determine how those resources should be used therefore there are a wide variation in this among Brazilian mining cities. Undertaking a study from a sample of the 15 largest mining cities in eight Brazilian states allowed an identification of two main patterns in regards to the use of CFEM that were denominated "sustained use" and "the pitfall of the single treasury ." In that sense, the article discusses the pressuring factors that contribute to the patterns, as well the institutional arrangements that may be more favorable to inducing a sustained use of CFEM.

Key-words: municipal districts of mining base – Brazil – royalties – CFEM - mining rent

## 1. The strategic role of the mineral rent for the sustainable development of producing mining cities

One of the rare consensus among the opposites natural resource extraction approaches (Baran, 1964; Cardoso & Faletto, 1970; Furtado, 1974; Myrdal, 1974; Hirschman, 1978; Solow, 1992; Sachs, 1993; Daly, 2007), refers to the strategic role that economic rent, or scarcity rent, from the natural resources extraction plays in any economics development strategy. Exploring the dynamics of economic rent's appropriation and distribution is fundamental to understanding the underlying development dilemmas of territories that enjoy rich mineral resources but have low socioeconomic indicators that show a great poverty.

In agreement with the conventional economical theory (Harod/Domar *apud* Hunt, 1998; Solow, 1958; Rostow, 1960; Perroux, 1973) the main cause of underdevelopment is the shortage of savings. For areas with a great mineral stock, mineral extraction can represent the source of savings, or surplus. However, how the socioeconomic well-being could be maintained if the mineral stock becomes depleted?

The Hartwick's models (1977, 1978a, 1978b) shows that technical progress and, mainly, investments in capital goods are ideal substitutes to pay off mineral exhaustion in the form of mineral's rent to finance those investments. This principle is known as "Hartwick's rule" and it supposes a deliberate politics of investment's incentive.

The scarcity rent is defined as the difference between the market price and the extraction cost (include the normal profit), although it is subject to distortions, especially in the case of the oil incomes, because the property concentration generates the income's monopoly (Faucheux & Noël, 1995).

Solow (1986, 1992) makes possible to combine economical growth and use of non-renewable resources into the concept of sustainable development. Solow (1986, 1992) starts from the principle that the total capital is composed for: 1) manufactured or man-made capital; 2) human capital or stock of knowledge or capacities, and 3) natural capital or renewable resources, non-renewed and environmental services; and that these are perfectly replaceable, or substitutable. This means that the current incomes from the mineral resources (natural capital) from the existing generation should be reinvested in reproducible capital that will be transmitted to the future generations in proportions that allow maintaining the real consumption levels along time (Faucheux & Noël 1995).

In this vision, the basic problem from societies based on the extraction of natural resources (SBENR) is simply to substitute the mineral resource by other forms of capital. Issues like access and mineral income distribution are almost unconsidered by such perception. On the other hand Baran (1964) considers that the main obstacle to SBENR' development is not the savings or capital shortage, but the effective "economical surplus", since that "potential surplus" is large in these economies. The most critical problem is the distribution of the potential surplus, because a great proportion of these are transferred outside the producing area rather through multinational companies and through external debts.

This argument had a strong influence for explaining Latin-American countries' underdevelopment. The Economic Commission for Latin American and Caribbean (Eclac) and Dependence approaches are representatives of those ideas. For the Eclac's ideas the "primary-exporter economies" suffer a chronic process of degradation of the exchange terms and, consequently, of economical surplus drainage.

To capture the nature of underdevelopment, according to Furtado (1974), it is mandatory to focus simultaneously on the process of the production (resources relocation that originates the economic surplus as well its appropriation form) and circulation (to use the economic surplus) that together promote the socioeconomic and cultural dependence that is the basis of the reproduction of social structure processes of the outlying countries.

An important form of economic surplus appropriation that is revealed in the Cardoso & Faletto (1984) studies occurs through the “economies of enclave”<sup>2</sup>. In the mining enclave the level of labor occupation is reduced, the capital concentration is very high, the production level tends to increase, the specialized technicians' wages are high and there is a tendency of income distribution concentration. The enclave also provokes social and political effects, due to the alliances among the groups and classes that make it possible. In general, the system of alliances, typical of the enclave, strengthens the political, administrative and regulatory State's functions much more than the economical functions of the private sector, making it possible for the formation of heavy Government bureaucracy due to the taxes captured from the enclave sector.

For Hirschman (1977), enclave is the absence of links in the economy chain; it is a strange body, frequently of foreigners' property. However, Hirschman (1977) considers that it is easier to tax the enclave than other productive activities with a dense net of linkages. Hirschman (1977) stresses that the capacity to tax the enclave is enough to promote intense economical growth, yet this should be combined with the ability to invest productively. It is here that there is weak points in regards to fiscal effects precisely when compared to the most direct effects of production and consumption, suggests Hirschman (1977). In sum, there is the potential that a poor application or the waste of large amounts of resources can simply result in enlarging the bureaucratic apparatus.

In agreement with Daly (2007) to elevate the tax of the minerals has a deep importance, because it contributes to the environmental sustainability when motivating the parsimony in the use of those resources and consequently to reduce the throughput, as well as it makes possible a better distribution of income to the producing areas.

Without discussing whether large scale mining is or not an enclave activity, other approach focus exclusively in the relationship between mining and economical performance (Lewis, 1984; Gleb, 1988; Bomsel, 1992; Auty & Warhurst, 1993; Auty, 1993; Shafer, 1994; Snider, 1996; Karl, 1997; Freudenburg, 1998) wherein the use of the mineral rent appears as a “divisor of waters” among mining which alludes to the "curse", to the economical "brake", or to the "development machine " (Figure 1).

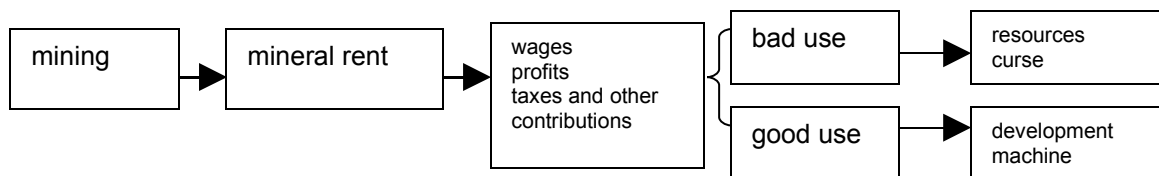


Figure 1: Mineral rent as strategic tool for development

According to the vice-president of International Financial Corporation (IFC), a financial organization linked to the World Bank, the revenue management of natural resources in general, and petroleum in particular, has emerged as a key development issue. It can be a dividing mark among a poverty picture in the middle of the abundance of resources (*paradox of plenty*) and a perspective of sustainable development. However, the good management of the mining revenue is conditioned to several

prerequisites, among the ones which the institutional capacity that depends on good governance (World Bank, 2004).

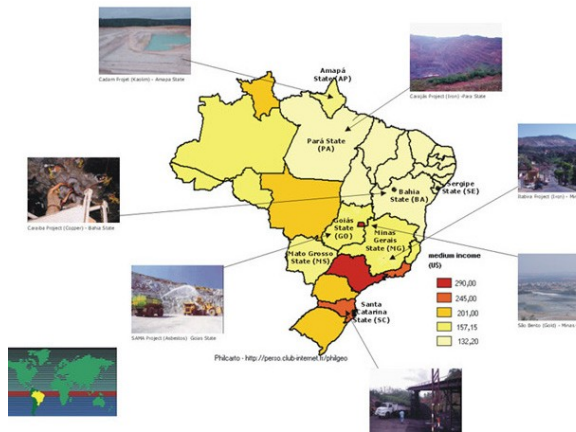
Although this analysis may shed light upon the debate over the development of dependent areas of natural resource extraction, the focus lies upon the producing countries rather than regions inside a country. At times, the national macroeconomic indicators (GDP, exports, share in the tax revenues, job level, etc.) do not reveal the reality of the mining base of a specific region inside a country, as in the case of some regions of Brazil. However, there are some regions in Brazil that do present a clear profile of a mining economy.

Hence, the next section will focus on the use of mining revenue in the largest mining municipal districts of Brazil.

## **2. Brazilian mining royalty - the financial compensation for mineral exploration, CFEM**

Among countries that impose mining royalties Brazil is one of the few that to transfer the plus part of its rent - the Financial Compensation for the Mineral Exploration (CFEM) - for the city that mineral extraction was made and its right is assured by the Brazilian Constitution of 1988. Its rates vary between 0,2% (precious stones), 1% (gold), 2% (iron, coal, fertilizers and other mineral substances) to 3% (bauxite, manganese and potassium) of the “net revenue” (gross sales revenue less expenses with transportation insurance and other taxes). Collected amounts are distributed among the three government levels: Federal (12%), State (23%) and Municipal (65%). (Law n.8.001/91).

In Brazil, about 1.700 municipal districts (31% of the total) receive rents from CFEM, but only 27 represents 81% of the all collection (Enríquez, 2007). Of these, 15 mining cities were chosen to compose the sample for the empirical research (Figure 2). They were selected based on three criteria: 1) yearly value of over US\$ 1 million CFEM that is destined to the mining city (values of 2003); 2) weight of CFEM in the municipal tax revenue to be a minimum of 5%; and 3) national representativeness (geographical area of the mining city).



**Figure 2: Selected mining projects visited by the author**

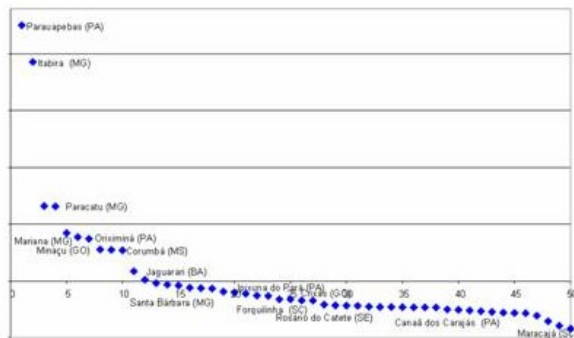
Source: Enríquez (2007)

BRAZILIAN REGION/ Mining city (State)	mineral exploited/ Economic Group
<b>NORTH</b>	
1. Vitória do Jari (Amapá)	kaolim (Vale)
2. Oriximiná (Pará)	bauxite (MRN)
3. Parauapebas (Pará)	iron and manganese (Vale)
4. Canaã dos Carajás (Pará)	coper (Vale)
5. Ipixuna do Pará (Pará)	kaolim (YMERIS e Vale)
<b>NORTHEAST</b>	
6. Jaguarari (Bahia)	copper (CARAIBA)
7. Rosário do Catete (Sergipe)	potassium (Vale)
<b>CENTRE-WEST</b>	
8. Crixás (Goiás)	gold (ANGLO GOLD)
9. Minaçu (Goiás)	asbestos <i>crisotila</i> (SAMA)
<b>SOUTHEAST</b>	
10. Itabira (Minas Gerais)	iron (Vale)
11. Mariana (Minas Gerais)	iron (Vale, SAMARCO)
12. Santa Bárbara (Minas Gerais)	Iron and gold
13. Paracatu (Minas Gerais)	gold (KINROSS)
14. Corumbá (Mato Grosso do Sul)	Iron and manganês (Vale)
<b>SOUTH</b>	
15. Forquilha (Santa Catarina)	Coal (CARBONÍFERA)

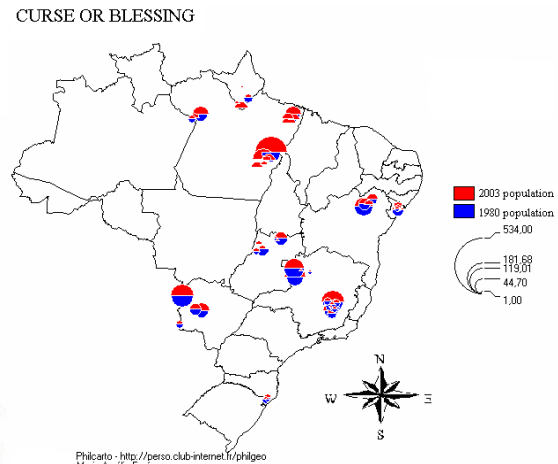
The geographical representativeness is important because of the great asymmetry among the socioeconomic indicators of the Brazilian areas. Just for comparison effect, the colors of the Figure 2 reveal that the *per capita* income of most of the States of the North and Northeast regions represent only 45% compared to the states of the Southeast.

### 3 Main findings discussion

In a comprehensive study, Enríquez (2007) compared certain key indicators of the 15 Brazilian larger mining cities that were chosen as a study sample with 35 other non-mining cities in the border. She found that in the economic point of view, the Brazilian mining activity is a factor that contributes to economic growth for the municipal districts that have a large scale mining activity (Figure 3). However, this potential of growth can be reduced, if the mining areas attract a great population contingent. The capacity of population attraction is regionally focused in Brazil: municipal districts of the North region attract much more people than the other regions. However, economical growth does not necessarily mean regional development (Figures 4).



**Figure 3: Index of economic growth – mining cities and their non-mining cities neighboring**



Source: Enríquez (2007)  
**Figure 4: Brazil: population dynamics in the mining cities visited (1980-2000)**  
 Source: Enríquez (2007)

In terms of the social point of view, issues relative to employment, poverty reduction and income concentration<sup>1</sup> on the mining cities do not follow a uniform pattern. Depending on the region and the institutional context, the economical growth of those cities can acquire quite a lot of characteristics, as classified in the Figure 5.

pattern of municipal economical growth	income concentration	poverty	job
<i>perverse growth</i> : mining municipal districts of the North	▲	▲	▲
<i>income concentration with joblessness</i> : non-mining cities in the borders on the North mining cities	▲	▲	▼
<i>poverty sharing</i> : frontiers cities on the mining cities in other regions	▼	▲	▼
<i>equity growth</i> : South and Southeast Region: Itabira (MG), Forquilha (SC), Minas (GO), Mariana (MG) and Santa Bárbara ((MG)	▼	▼	▲

Figure 5: Patterns of municipal economical growth, in agreement with the variation of Gini income index, poverty and population occupation (1990-2000)  
 Source: Enríquez (2007)

Mining cities in the North Region is evidence for a pattern of "perverse growth", that is, in the period 1990-2000 they increase its income concentration and poverty at the same time that the job also increased.

In the opposite, mining cities in the South and Southwest Region is evidence for a "equity growth" pattern, that is, in the period 1990-2000 they decrease its income concentration and poverty at the same time that increased the employment.

In the intermediation position, not-mining cities that border mining cities in the South and Southwest Region are evidence for an "income concentration with joblessness" and not-

<sup>1</sup> This approach follows Dudley Seers's definition of development as reduction of poverty, increase of job and equity in income distribution (Seers, 1969)

mining cities that border mining cities in the North Region are evidence for a pattern "poverty sharing".

Like this, the study of CFEM, to proceed, tried to verify the possible existent associations between those growth patterns and the use of CFEM.

### 3.1 The study of CFEM

The empirical studies of the 15 Brazilian mining cities were used to answer the following question: besides being a compensatory instrument, can the CFEM be an economic instrument to promote local development in mining areas on a sustainable basis, and go beyond the role of a simple financial compensation? The main findings were contained in three topics: 1) dependence and vulnerability; 2) patterns of use of CFEM; and 3) suggestions for the improvement of CFEM.

#### 3.1.1 Mining Dependence and vulnerability

The level of "dependence" is measured by the share of mining tax revenue in the total of the municipal district budget. In Brazil, besides the CFEM, municipal mining districts collect other kinds of taxes which comes directly and indirectly from mining such as: 1) Tax on Service of Any Nature (ISSQN), that is collected for the services companies that work with the mining company; 2) Urban Property Tax (IPTU), relative to the properties of the mining company in the headquarters of the mining city; and the 3) Circulation of Goods Tax (ICMS) that the state governments transfer to the mining city that have an increment of the Fiscal Value Added (VAF), resulting from the productive movement provoked by the mining activity. A high proportion of those incomes mean that other productive activities have restricted importance, which reaffirms the dependence situation that contributes to the lack of local job offers.

The level of "vulnerability" is measured by the imminence of the mining activity exhaustion or closing for other reasons (market prices, for example). Therefore, when exhaustion of the mine is imminent, there is a larger vulnerability of the mining city in relation to mining and vice-versa (Table 1).

**Table 1: 15 larger mining cities in Brazil and their dependence and vulnerability level (2005)**

Brazilian region	mining city (State)	% mining revenues* in the public budget	% CFEM in public budget	% do formal employment	number of years to the mining exhaustion	others productive activity
North and Northeast	Vitória do Jari (Amapá)	40%	21%	up to 100%	20	forest services. proximity to the Jari project (cellulose)
	Jaguarari (Bahia)	60%	10%	70%	3	goat creation
	Canaã dos Carajás (Pará)	74%	27%	30%	30	livestock milk pan
	Ipixuna do Pará (Pará)	40%	25%	60%	20	family agriculture
	Oriximiná (Pará)	50%	25%	33%	10	family agriculture and fishing
	Parauapebas (Pará)	75%	23%	81%	30	family agriculture and services, technical and academics teaching
	Rosário do Catete (Sergipe)	70%	16%	59%	15	oil, fertilizers factory, sugarcane plant, livestock and subsistence (corn, bean and cassava) agriculture
Center-West, South and Southeast	Crixás (Goiás)	14%	10%	65%	6	dairy product, cut livestock
	Minaçu (Goiás)	15%	7%	33%	30	hydroelectric power stations
	Itabira (Minas Gerais)	50%	20%	50%	25	technical and academically teaching, technological center of development, industrial par.
	Mariana (Minas Gerais)	50%	26%	35%	30	historical tourism and agribusiness
	Paracatu (Minas Gerais)	4%	2%	6%	15	corn agribusiness and sugarcane
	Santa Bárbara (Minas Gerais)	30%	20%	50%	10	reforestation and honey production
	Corumbá (Mato Grosso do Sul)	15%	4%	15%	30	ecological tourism activities, fishing and livestock
	Forquilha (Santa Catarina)	15%	5%	15%	15	agribusiness of the rice

(\*). Revenues from other taxes : CFEM, ISS, ICMS and IPTU.

Source: Mineral revenue and employment from mining data was communicated by the mining companies during the work field. Information over mining cities income is available in “Finanças do Brasil” (Finbra-STN) (<http://www.mte.gov.br/>) and in “Portal da Transparência” (<http://www.stn.fazenda.gov.br/>). The employment data is available in (<http://www.stn.fazenda.gov.br/>), based on information from RAIS/CAGED of the “Ministério do Trabalho e Emprego” (MTE).

The data of Table 1 reflect a regional bias that reveal to strong dependence of mining cities in the North and Northeast Brazilian Region. In those regions, the share of revenue from mining varies among 40% to 75% of the municipal budget; while in the other Regions that interval is smaller, varying from 4% to 50%. Considering only the CFEM, the dependence varies among 10% to 27% for the mining cities of the North and Northeast, while it is smaller - among 2% to 26% - for the other regions.

The employment indicator varies from 30% to plus 100% to mining cities of the North and Northeast Brazilian Region and 6% to 30% in the other regions. Showing once more, the great mining dependence in the mining cities from the North and Northwest. It is worth emphasizing that that does not mean that the jobs created by the mining activity are, necessarily, for local residents.

The inexistence or limitation of other activities as an alternative to mining makes worse the dependence of mining cities from North and Northeast. The non-mining activities of those regions are based on small livestock and family agriculture. The only exception is the city Rosário of Catete (Sergipe State) that, besides family agriculture, have attracted a fertilizers factory that benefits from the extracted potassium, besides other two industries associated to petroleum and the sugarcane.

Because of the strong dependence level, mining cities which mining stocks are being exhausted, and that did not prepare for that, face a great vulnerability. That is the case of Jaguarari city (Bahia State), whose stock of copper will remain for few years (2015), which is located in a poor area in the semi-arid region of Bahia State, which does not have economically viable alternatives of jobs and income generation, due to water shortage. The city of Crixás (Goiás State) is also in a vulnerable situation, once the stocks of gold become exhausted in 2012. Those municipal districts are trying to look for alternatives once the mining activity ceases.

### 3.1.2 Patterns of CFEM's uses

Brazil transfers most of mineral rent from CFEM to the producing mining city, but to know the rent's use is difficult because there is no routine mechanism of control or accountability.

Table 2 reveals a strong regional bias again. No municipal district of the North and Northeast Brazilian region presents specific plans for the CFEM's use, while two other mining cities from other region have formalized plan. In the mining cities of the North and Northeast the public employees' average for each 1.000 inhabitants is of 52, while in the other regions, it is of 34. High expenses in administrative costs of the public government mean fewer resources to be used in a strategy of productive diversification. The municipal districts Minaçu (Goiás State), Paracatu (Minas Gerais State) and Rosário of Catete (Sergipe State) affirmed to give a special destination to CFEM, however they did not present a system to regulate its use.

**Table 2: CFEM's use by the larger mining cities in Brazil – 2005**

Brazilian region	mining city (State)	plan to use the CFEM	unchained factor for the productive CFEM's uses	CFEM's uses	public employees' average for each 1.000 inhabitants
North and Northeast	Vitória do Jari (Amapá)	not	-	30% to complement the payroll, 70% to buy medicines and others expenses like, school transport, environment, agriculture etc	73
	Jaguarari (Bahia)	not	-	donation of foods, small aids for family agriculture	59
	Canaã dos Carajás (Pará)	not	-	diluted on the single city hall box	65
	Ipixuna do Pará (Pará)	not	-	diluted on the single city hall box	28
	Oriximiná (Pará)	not	-	diluted on the single city hall box	45
	Parauapebas (Pará)	not	-	diluted on the single city hall box	31
	Rosário do Catete (Sergipe)	formally not	there is confusion with the old law of the petroleum *, initiative of the city hall, face to the precariousness of the job in the municipal district	paving, electrification and infrastructure services; youths' training for the first job, food aid for 700 families	83
Center-West, South and Southeast	Crixás (Goiás)	not	-	diluted on the single city hall box	74
	Minaçu (Goiás)	formally not	news on the possible mine closing, in function of the controversy on the employees' health and users of asbestos	productive diversification: tourism, farming and generation of income.	42
	Itabira (Minas Gerais)	yes	imminent exhaustion of the stocks and closing of the CVRD activities	science, technology and productive diversification	20
	Mariana (Minas Gerais)	not	-	diluted on the single city hall box	48
	Paracatu (Minas Gerais)	formally not	mistaken interpretation of CFEM's legislation; confusion with the old petroleum law	infrastructure - highways, bridges etc	42
	Santa Bárbara (Minas Gerais)	not	-	diluted on the single city hall box	40
	Corumbá (Mato Grosso do Sul)	not	-	diluted on the single city hall box	26
	Forquilha (Santa Catarina)	yes	the coal companies questioned the legality of CFEM Law. The City councils linked the CFEM' revenue to the Environment Fund	Fund of Environment and Agriculture	17

\* Law number 2.004 (1953), linked the petroleum *royalties* to the sanitation, electrification and similar.  
Source: Oral information obtained during the work fields in the mining cities, April to September, 2005

By the end of the 1990's, Minaçu (Goiás State), an asbestos producer, started to use CFEM to improve the tourism industry, to incite agricultural activities and in programs of income generation, with the objective to reduce its mining dependence. The factor that provoked this response was the mining company's announcement that it would be closed, because of environmentalists' pressures, and due to accusations of contamination and hazards caused by asbestos. In the case of Paracatu (Minas Gerais State), the linked use of CFEM seems to be the result of the mistaken interpretation of CFEM's law, which was confused with the old petroleum legislation<sup>2</sup>. Similar situation happen in Rosário of Catete (Sergipe State) that also receives royalties from petroleum exploitation. By the sample studied only Itabira (Minas Gerais State) and Forquilha (Santa Catarina State) presented formal plans for the use of CFEM.

A common point in all those cases is that the linked use of CFEM did not elapse over the voluntary actions from municipal public administration. In general, it was provoked by external pressures that induced changes in the usual path in the use of the mining income (Figure 6).

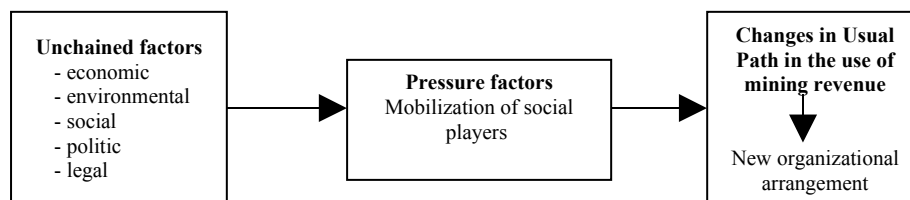


Figure 6: Outline of the change in the path of the use of the mining income

Source: the author's elaboration

Itabira (Minas Gerais State), iron ore producer, was pioneer to use the CFEM in a productive economic diversification strategy. The pressure factors that unchained this were the announcement by the mining company of the imminent exhaustion of iron ore stocks and the resulting closing of the mining activity in the city. This mobilized important social segments like the Association Commercial, Industrial and Farming of Itabira (ACITA) which led an initiative that resulted in a development plan for the municipal district and the creation of their own organizational arrangement for the use of the mining revenue (Figure 7).

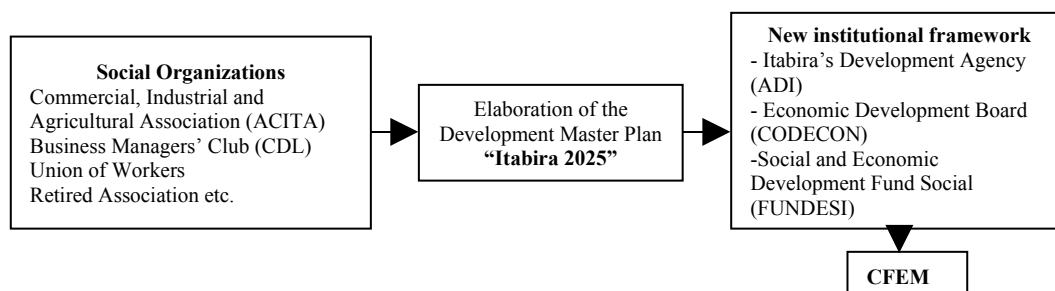


Figure 7: New institutional arrangement for the mining revenue use in Itabira (MG)

Source: the author's elaboration

In the Forquilha case (Santa Catarina State), coal producing mining city, the pressure was unchained by the conflict among the City councils and the mining companies, since they refused to collect CFEM. The CFEM is linked to the Environmental Fund, due to the ecological impact caused by coal mining. The experiences of those cities are of value because

<sup>2</sup> This law had determined that the royalties from oil must be used in some specific public services like electrification, sanitation, paving and others similar.

they demonstrate that it is possible to give priority to CFEM revenue, promotes improvements in the well being of the local community and in the economic productive diversification of mining cities. In other words, CFEM aids to give a “sustained use” to mineral income. Those experiences also reveal the difficulties that public managers face. Those difficulties are related to: 1) discontinuity of politics, not only due to the alternation of the power, but mainly due to the lack of strong social control; 2) absence of formal mechanisms of control; and 3) lack of systematic evaluation of the adopted politics.

The analysis of the CFEM’s use in the 15 studied mining cities allowed the identification of two patterns: 1) "the pitfall of the single treasury", which are two thirds of the researched universe, and 2) "consequent use", with a third of the municipal districts. In pattern 1 the CFEM’s resources enter a mining city budget and are "diluted" into the average expenses. In pattern 2 the CFEM's resources are addressed (total or partially) to previously defined ends.

The “pitfall of the single treasury” is an inertial pattern, the resources are quickly "swallowed" by the immediate and limitless needs that all of the municipal districts present. The public managers are not capable of noticing the CFEM potential, while extra-budget resources that can develop other opportunities of job generation and income are not accounted for.

Why don't the public managers notice the potentiality in CFEM? Possibly due to the absence of pressuring factors that favor change in a path. For some public managers the resources are small in light of the additional expenditures provoked by mining. Others at least have no knowledge of the mineral sector dynamics and ignore that mineral stocks are exhaustible, their prices are unstable, their markets are volatile, etc. The Mayors see the CFEM’s revenue as guaranteed values in their budgets and consider rumors on mineral stock exhaustion. Others simply take advantage of the extra financial resources to improve political-electoral base, even in light of mineral stock exhaustion; they brush off the problem passing it onto the next administration, to guarantee that a sudden reduction of income does not take place under their mandate.

The consequential usage pattern, for its time, does not happen automatically by the public manager's "good will" to promote local productive diversification. In the 15 cases, it was unanimously motivated by an unchained element mobilized by social pressure factors.

The distinction between the two patterns is equivalent to the CFEM’s expense with consumption (unproductive expenses) or investment (productive expenses). Resources used in new alternatives of job and income creation have the capacity to multiply, while expenses with costing simply exhaust. An added difficulty is to create new obligations that will commit the future income of the municipal budget.

An important issue is to know what provokes the pressure factors that favor the consequent use of mining rent. The imminence of mining stocks exhaustion, the environmental crisis, the political pressures and other reasons are justified unchained elements, because what is behind this is the social actors' mobilization. A hypothesis, cultured in Figure 8, suggests that the accumulation of human capital (education, health and income) in the mining city is one of the main incentive factors that play a role in the social capital, contributing favorably to the improvement of local governance and, consequently, for improvement of municipal socioeconomic development indicators. The human capital and indirectly, governance, are deeply influenced by the actions of the mining company.

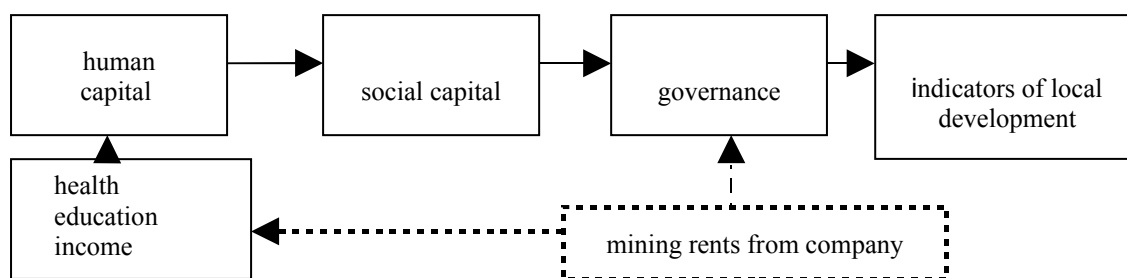


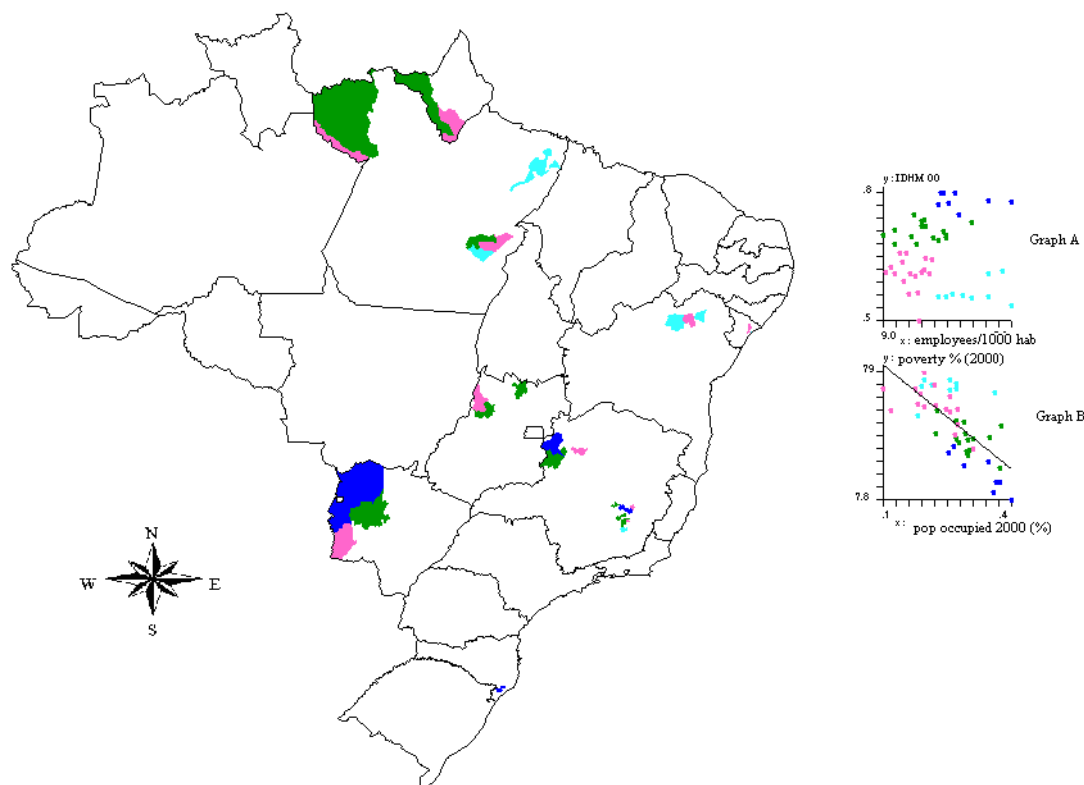
Figure 8: Hypothesis on the role of the mining company’s rent for the promotion of human capital  
Source: the author's elaboration

There are two important issues in this matter: 1) Is there in fact an association among human capital, social capital, governance and development in the Brazilian mining cities? And 2) Does the amount of mining rent, in fact, exercise some influence on that?

- Human capital, social capital, governance and development

The study in the 15 Brazilian mining cities, revealed that high Human Development Index – HDI’s scores (which are estimated for all 5.534 Brazilian municipal districts) are positively associated with higher index of job and lower index of poverty and that these are also positively associated to the public efficiency indicator, expressed for the number of employees by 1.000 inhabitants (Graphs A and B, Figure 9).

#### Curse or Blessing



Realizado com Philcarto - <http://perso.club-internet.fr/philgeo>  
Maria Amélia Enriquez

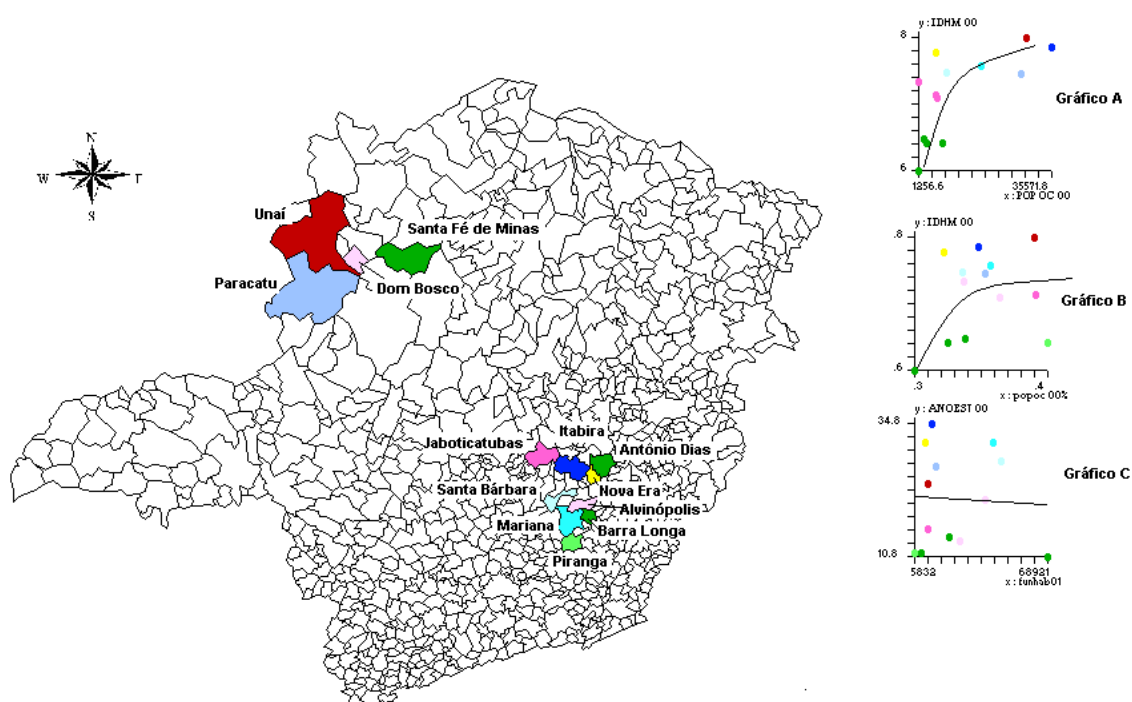
**Figure 9: Brazil –mining cities and their non-mining cities neighboring: association between HDI (2000), public employees' average for each 1.000 inhabitants (2005), poverty % (2000) and occupied population (2000)**

Source: Atlas de Desenvolvimento Humano do Brasil (2002); IBGE (Perfil dos Municípios Brasileiros – Gestão Pública), 2005; IBGE and **Instituto de Pesquisa Econômica Aplicada (IPEA)**

In Brazil the geographical position of productive bases account for the differences in the inequalities between cities. High scores mining cities in the analyzed indicators are located in South and Southeast region, while the worst scores are found in the North and Northeast region. But what other factors besides the regional bias can help explain the differences between cities? The focus on a municipal district may help to explain those differences.

The chosen mining city was Itabira (Minas Gerais State), for its prominence when compared with non-mining bordering cities and other mining cities of Minas Gerais (Figures 10 and 11). Figure 10 associates the following variables in regards to the selected municipal districts: HDI (2000), occupied population (2000), years of study (2000) and municipal employees for each 1.000 inhabitants (2001).

### Maldição ou Dádiva



Realizado com Philcarto - <http://perso.club-internet.fr/philgeo>  
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**Figure 10: Minas Gerais mining cities selected and their border non-mining cities: HDI (2000), occupied population (2000), number of years of study (2000) e municipal employees for each 1.000 inhabitants (2001)**

Source: Atlas de Desenvolvimento Humano do Brasil (2002); IBGE (Perfil dos Municípios Brasileiros – Gestão Pública), 2005; IBGE and Instituto de Pesquisa Econômica Aplicada (IPEA)

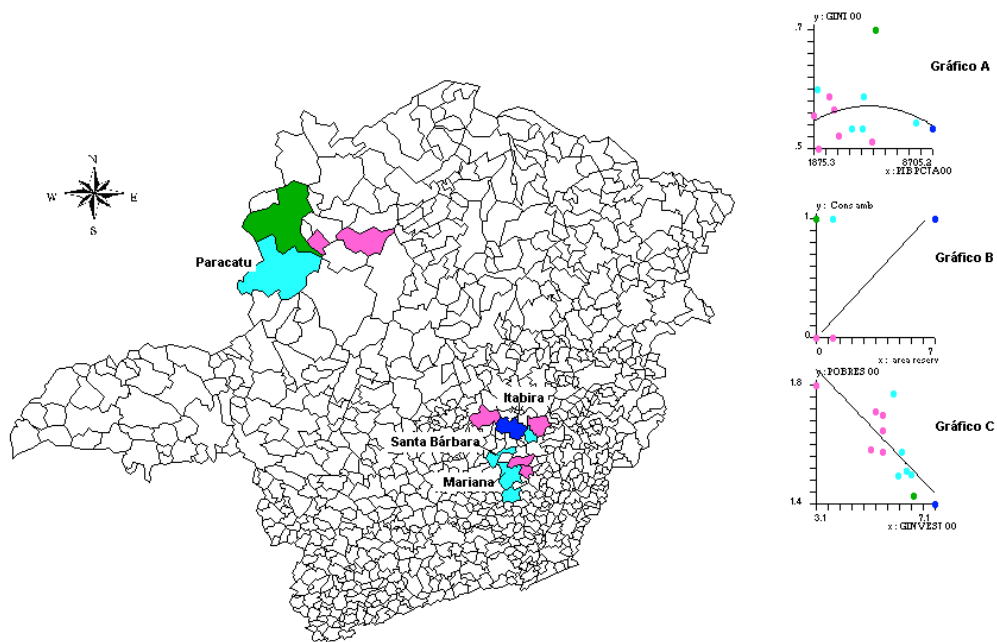
When considering the HDI, Minas Gerais State' mining cities have a higher HDI than other bordering non-mining cities. The exceptions are Unai (agribusiness base city) and, partly, the non-mining city of Nova Era. Among these cities, Itabira emerges as one of the higher HDI. Itabira also presents the best HDI and employment relationship (Graph A). When the employment level is considered as percentage of the total population (Graph B) this relationship is reduced a little. Nonetheless, Itabira only “loses” to Unai. Considering only the occupied population, Itabira is ahead of the other mining cities studied in Minas Gerais -

Santa Bárbara, Mariana and Paracatu. Other cities that present larger proportion of occupied population of inhabitants are cities with smaller population density and smaller HDI scores.

Itabira also stands out in the highest number of years of studied and smaller relationship of employees for inhabitant, which suggests efficiency in the municipal public administration (Graph C).

Figure 11 associates the income concentration (Gini index, 2000), GDP *per capita* (2000), active municipal environmental board (has gathered in the last 12 months before the research - 2002), municipal conservation areas (2002), percentile of poor people (2000) and expenses with investment (2000). Graph A does not confirm a direct association between GDP *per capita* growth and income concentration. The higher level of income concentration occurred in a non-mining city (Unai). Among the largest GDP per capita cities, Itabira presents the smallest income concentration, overcome only by three non-mining cities.

**Maldição ou Dádiva**



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**Figure 11: Minas Gerais mining cities selected and their non-mining cities neighboring: Gini index of income concentration (2000), GDP *per capita* (2000), active municipal environmental board (2002), municipal areas specially reserved (2002), poverty % (2000), investments expenses (2000)**

Source: Atlas de Desenvolvimento Humano do Brasil (2002); IBGE (Perfil dos Municípios Brasileiros – Meio Ambiente), 2002; and Finanças do Brasil (FINBRA/STN) (<http://www.mte.gov.br/>)

Furthermore, Itabira has more municipal conservation areas (seven) compared to other cities which presents an active environmental board (Graph B). Finally Graph C portrays that Itabira also stands out as the city that presented the smallest percentile of poor and the largest expense with investment.

The presented indicators are enough to show a distinction in regards to Itabira, therefore it is important to take note of the city’s historical background presented in Box 1.

## BOX 1: Pulling down and rebuilding the social and institutional capital of Itabira

Itabira does not flee the rule of great part of the Minas Gerais State mining cities, with its origins are linked to the gold rush from the beginning of the XVIII century. However, when that first mineral cycle ended, the city achieved to sustain its economical and socio-cultural structure, consolidating itself as a prosperous municipal district. Towards the end of the XIX century and at the beginning of the XX century, the city sheltered two textile industries that worked until the end of the 1960's, when they could not "tolerate" the effects of CVRD's competition anymore since they could not offer the same working conditions and salaries that CVRD was providing their workers, for example: a house to live, fifteen annual wages, subsidized feeding, medical and dental aid " (Silva, 2004, p. 45).

In the first half of the century XX the city had four newspapers which highlighted the presence of Unions and Theater groups, and Artists as well as having State fame for the quality of their schools.

The life in the city changed radically when the confirmation of great iron ore stocks took place in 1910. The Company, Companhia Vale do Rio Doce (CVRD) - now just VALE, was created in 1942, to execute the tasks of producing, transporting and commercializing the iron ore from Itabira. This process resulted in the demolition of great part of the economical, social and institutional capital accumulated by the city until then and in the rebuilding of a new set of dynamics, subordinate to the interests of a great mining company that dominated every aspect of the socioeconomic life of the city (Silva, 2004). Up to 1997, when the company underwent privatization, CVRD invested massively in the city, mainly in the field of education, health and housing. At one point, the financial resources were legally assured by norms that determined **a minimum of 8% from net profit (RDRI), which had to be invested in the socioeconomic development of CVRD's areas of influence.** Those norms were abolished with the privatization. In parallel to the destruction of Itabira's human capital, there was a gradual yet deepening process of destruction of Itabira's natural capital of the municipal district.

In the 1990's, with the imminence of exhaustion of the iron ore stocks and the company's privatization, Itabira began to manifest its grievance with years of subservience towards the great company. Two important events marked that phase and reveal the political awakening of the local society: 1) the movement led by the Commercial Association of Itabira, in 1992, that resulted in the Plan "Itabira 2025", seeking to begin an economical diversification process in the city, and 2) the popular mobilization of 1997, during the public meetings and open houses during CVRD's operational corrective licensing (LOC) process.

- The mining company's influence

In agreement with Douglass North, history is important, not only because one can learn from the past, but because the present and the future are inexorably connected to the past through the institutions of society (NORTH, 1990). The experience of Itabira is important for illustrating that in the city there was already an accumulation of intangible capitals before the presence of the great company. Although assuring the accumulation of human and social development is a necessary condition, on its own, it is not enough. Mariana (Minas Gerais State) for instance, is also a historical city, founded before Itabira, with a certainly long cultural tradition. However, several indicators showed that Mariana's performance was always lower than Itabira's. Therefore, **it is probable that the mining rent that was assured by RDRI from CVRD action was essential for the promotion of human capital in the city- education and health, fundamentally, besides its influence in defining the local "rules of the game"** that had motivating values associated to productivity. It's worth noting that business action does not take place on the vacuum, hence the level of social capital previously accumulated by the society made a great difference.

According to Boeira (2004), business social action can be of "high intensity" or "low intensity", in agreement with the type of stakeholder that interacts with the company. Given

the diversity of interest groups and social capital already acquired by these, it is less probable a business practice or an ethical treatment equal to those different groups. In agreement with the author, the groups which benefit more will be always be those that have a larger accumulation of social capital or are the groups that have an importance to the companies' interests. The Boeira (2004) findings seem to have taken place with CVRD's social practice in Itabira.

### 3.1.2 Suggestions for CFEM' improvement

Table 3 represents the main problems and suggestions to improve the CFEM' regulation. They were mentioned by the principal mining actors of the 15 cities studied, which are: mining companies, governments and the civil society representatives.

**Table 3: Problems and suggestions made by the main social actors of the 15 larger Brazilian mining cities to improve the regulation of CFEM**

aspects of CFEM's law	topics	problems / suggestions
formulation	tax rate	Composition of the Law 7.990 promotes dubious understanding for some mineral. There are complaining about the low tax rate.
	incidence base	The concept of "liquid income" is confused and provokes serious problems to estimate the real rent.
	sharing of the benefits	Does not consider the "mining area of influence" in order to sharing the benefits from mining activity.
implementation	use	It is the critical point revealed by companies, local community and even by local governments. The absence of a linked application has resulted in the "pitfall of the single treasure" for most of the visited mining cities.
control and accountability	regulation	The Law favors illegality, because one can only collect if the companies are formally established, in other words, if the company is informal it doesn't generate a passive CFEM.
evaluation	criteria	There is no regulation to do a periodic CFEM's evaluation and to suggest a correction route.

Source: personal interview with representatives' of the mining companies, local government, civil society during the work field in the mining cities selected (2005, May to 2006, September).

Law formulation has several problems such as in the tax rate, in the base of incidence and in the benefits' sharing. It has generated a lot of controversy and several projects in regards to this are going through procedure at the National Congress. These projects aim at increasing the CFEM' tax rate for some mineral categories (metallic and precious minerals) and to reduce it for others (use direct in the building). There are also others issues which have been poorly resolved like the concept of "liquid revenue" and the extension of CFEM' benefits to incorporate the "influence area of the mining" that frequently extrapolates the producing mining city.

In respect of CFEM' use, of agreement with the mining companies; the law is defective for not linking benefit to any productive utilization. For local governments the CFEM's revenue is insufficient to finance the additional service of the social demands that increase significantly with the coming mining activity. Although the law does not permit it, many public managers use the CFEM resources to finance the municipal servants' payroll. Also, civil society representatives ignore the origin and the forms of the CFEM utilization.

As for the control, accountability and evaluation there is also a generalized opinion that there gaps in those areas. DNPM only supervises the withdrawal from the mining companies, but there is no systematic accountability in the CFEM' use and, either, in its effectiveness as a tool capable to enhance the municipal development.

As a final comment, although there are no doubts over the CFEM' legitimacy, there is a widespread disappointment as for the effectiveness of CFEM's contribution to the promotion of local development and, consequently, for the reduction of dependence and vulnerability in relation to the mining activity.

### **Final considerations**

The empirical research in the 15 larger mining cities studied allowed to find that, after 14 years of effective CFEM' withdrawal, only two of them - Itabira (Minas Gerais State) and Forquilha (Santa Catarina State) - linked that instrument formally into a local development strategy. It is not simply by chance that those mining cities are at the top of the list. They are mining cities that presented the best indicators of administration efficiency and quality in the public's expense. That is a strong indication that high scores in the socioeconomic indicators make a great difference when a mining activity appears in the municipal district.

The mining cities that presented the best scores in their development indicators were those that the mining rent was expended inside of a sustained use pattern and converted into a public expense of high quality. Like this, municipal districts with the best indicators come out in advantage in relation to the ones that do not count with that.

The focus in Itabira (Minas Gerais State) allowed drawing a conclusion that the positive impacts from mining reacts better in contexts that have already previous human and social capital accumulation, and the reverse is also true. In consideration of weak governance and low human capital accumulation, the possibilities to take advantage of the benefits from mining are limited. In that sense, it is obvious that older municipal districts in the South and Southeastern Brazilian regions take great advantage in relation to the young mining municipal districts of the Brazilian North Region. However, it is not obvious when the difference happens inside a same regional context. In that case the difference in the human capital, governance and of business performance indicators makes all difference.

The CFEM's uses in most of the mining cities are as any budget resource, procedure that was denominated of "the pitfall of the single treasure". The mining city that adopted the "sustained use" pattern belongs to the group that presented the profile "equity growth." It can be concluded that improving the CFEM' governance for some pressure factor, may be possible to contribute to benefits that mining has potential of generating in a mining city. Better governance can contribute to the formation of an institutional context based on principles, such as good administration of the public asset, strategic vision of future, efficiency in the use of the tax revenues, attention with the quality of the public expense, transparency in the reception and use of the incomes, and finally, an institutional context that is capable of transforming the possible curse of mining into a blessing for present and future generations.

Also it is necessary to detach certain limitations from municipal action in order for them to drive their own development agenda, because there are certain strategic decisions that escape the field of a local administration.

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