# Income and Educational Inequalities in Vale do Jequitinhonha, Brazil

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## Abstract

This paper confirms the hypothesis that besides the huge educational inequalities among Minas Gerais State poor and rich regions, they also exist within poor regions such as Vale do Jequitinhonha. It also calculates an Educational Gini Index (EGI) for Jequitinhonha Region. Some regressions are estimated between the EGI and *per-capita* industrial, agricultural and service GDP. The Kuznets inverted U-hypothesis is also tested, disaggregating the economic sectors.

Although Minas Gerais is the third Brazilian state in terms of development, the educational indicators are very low in Vale do Jequitinhonha Region. Public policies should estimulate investments in the industry and services sector to decrease this region dependence on agriculture and to get positive side effects on its income distribution. Higher agricultural growth is related to higher educational and income inequalities in Vale do Jequitinhonha. On the other hand, higher industrial growth is related to lower educational and income inequalities.

## 1. Introduction

Minas Gerais is a rich and dynamic state with 300.000 km$^2$ divided into 12 different regions, 66 microregions and 853 towns. It is located in the Southeast developed part of Brazil and is responsible for 10% of the country´s GDP. Figure 1 shows Minas Gerais State and one of its poorest and most needy regions, Vale do Jequitinhonha.

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Figure 1. Brazilian Map with Minas Gerais State and Vale do Jequitinhonha Region.

The important role of education in regional inequality and growth in Minas Gerais State has been reported by Fontes et al (2007). This paper now:

(i) investigates the hypothesis that besides the huge educational inequalities among Minas Gerais poor and rich regions, they also exist within the poor regions;

(ii) calculates an Educational Gini Index for Vale do Jequitinhonha Region to see how concentrated is its education;

(iii) estimates some regressions between the Educational Gini Index and the *per- capita* industrial, services and agricultural GDP;

(iv) verifies the relationship between inequality and growth in Vale do Jequitinhonha Region through the Kuznets inverted U-curve, disagregating the economic sectors industry, services and agriculture.

The paper is divided in the following way: next section presents a descriptive analysis of Vale do Jequitinhonha with emphasis in its educational data. Part 3 shows the behavior of the Educational Gini index for all Jequitinhonha´s microregions and towns. Section 4 develops some regressions between this index and several economic variables. The Jequitinhonha´s Kuznets inverted U-hypothesis for the economic sectors is tested in topic 5. Part 6 concludes.

## 2. Income and Education in Vale do Jequitinhonha Region

In Vale do Jequitinhonha, neglect of the education issue seems to be aggravated in recent years. According to data from the Institute for Applied Economic Research (IPEA), in 1991, the average years of study for people over 25 years old in Vale do Jequitinhonha Region was 2.3 years of study, rising to 3.3 years in 2000. In comparison, the average years of study in the Metropolitan Region of Belo Horizonte was 5.8 and 6.7 in 1991 and 2000, respectively. The average for Minas Gerais was 4.6 in 1991 and 5.6 in 2000.

Figure 2 shows the illiteracy rates in 1991 and 2000 in all 12 Minas Gerais Regions. The highest illiteracy percentage in Minas Gerais is found in Vale do Jequitinhonha. In 1991, this percentage was 50.28% for people over 25 years of age. In 2000, the value fell to 30.10%, but even so the Vale do Jequitinhonha continues to be the region with the highest number of illiterates in Minas Gerais.

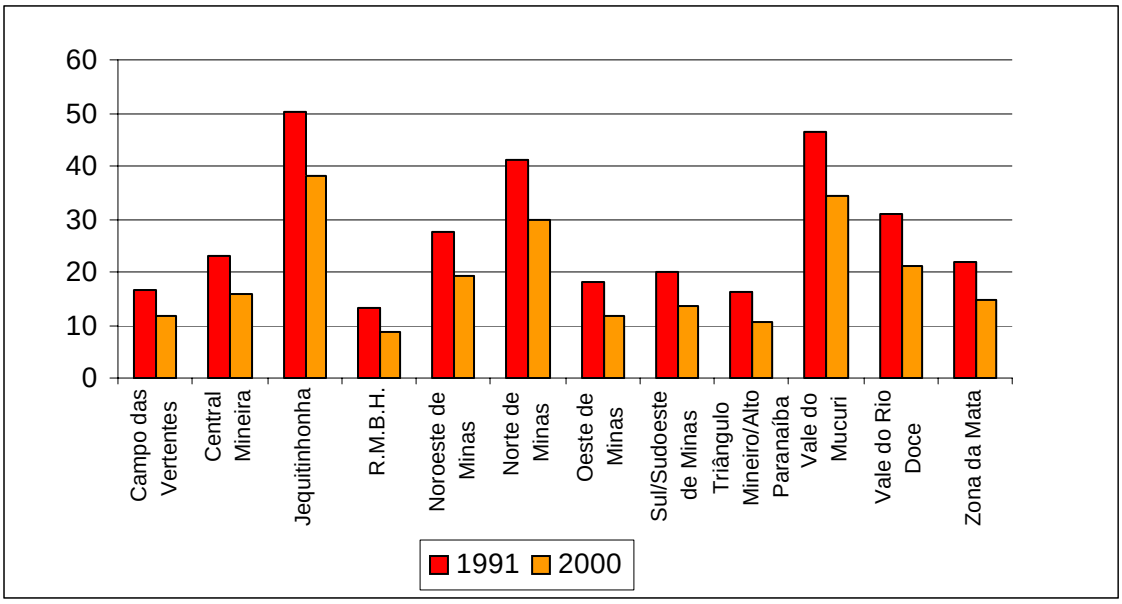


Figure 2. Percentage of illiterates in the population over 25 years old among Minas Gerais Regions, 2000.

Source: IPEA/IBGE (2006).

Figure 3 shows all Vale do Jequitinhonha towns according to the average years of study for people over 25 years of age in 2000. The educational inequality is high, since the town with the highest average of years of study was Diamantina, with 5.7 years and the town with the lowest average was Monte Formosa, with 2.1 years average study.

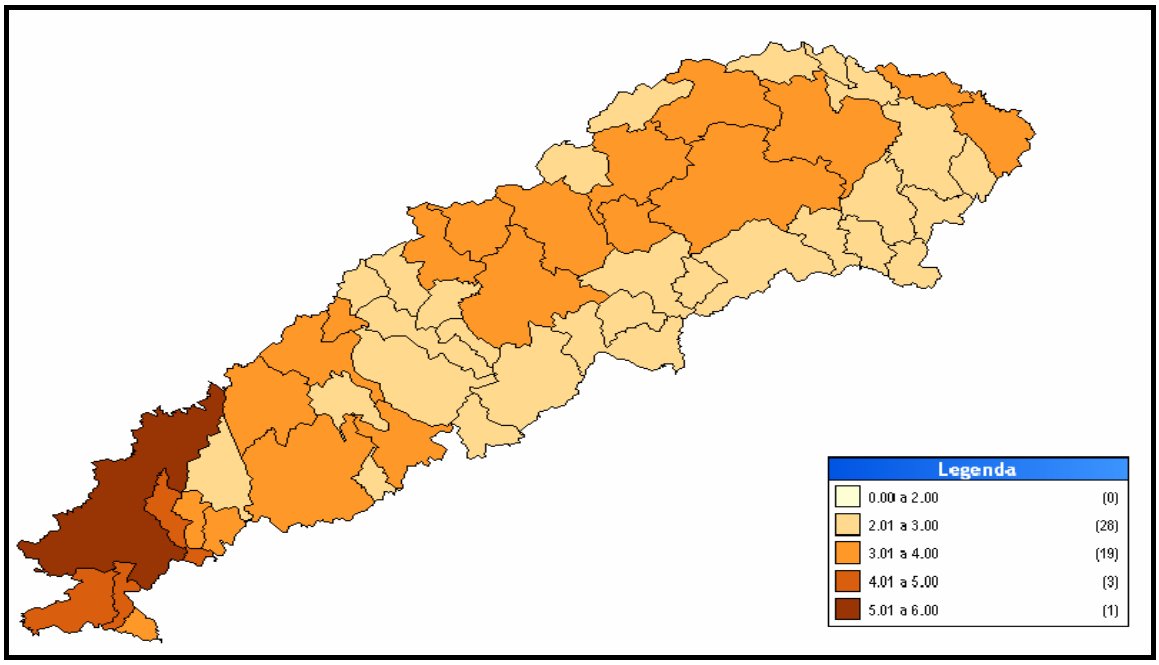


Figure 3. Average years of study for the population over 25 years of age in Vale do Jequitinhonha towns, 2000.

Source: PNUD/ IPEA/ FJP (2003).

The educational inequality is again seen in Figure 4, which presents the illiteracy rates in Vale do Jequitinhonha towns. In 2000, 23 towns had a rate over 40% and 3 towns had a value over 50%. More than half (52%) of the population of Novo Cruzeiro town was illiterate in 2000. Once again, the town that presented the best indicator was Diamantina, with an illiteracy rate of 16.6%. According to data from IPEA, in 2000, the number of people with less than four years of study that represents the functional illiterates reached 62% in Vale do Jequitinhonha.

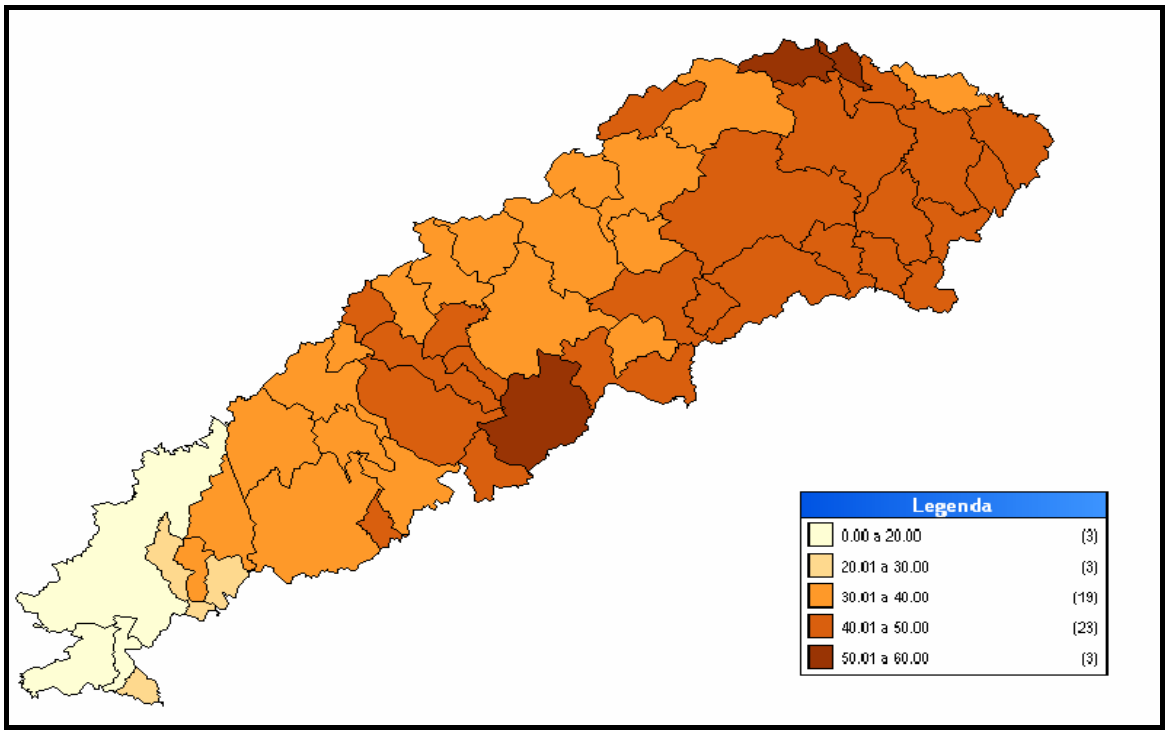


Figure 4. Percentage of illiterates in the population over 25 years old in Vale do Jequitinhonha towns, 2000.
Source: PNUD/ IPEA/ FJP (2003).

The Human Development Index (HDI) - Education is one of the most common indicators used to verify the educational system in the region. This indicator is relevant because it combines all the available education data for a region and condenses them into a single indicator. This index ranges from zero to 1 and the closer to one the better will be the educational quality of the region.

Figure 5 shows the HDI-Education for all Vale do Jequitinhonha towns in 2000. Only four out of 51 towns had a value of 0.80 in 2004. In the same year, the HDI-Education for Brazil and Minas Gerais was 0.849 and 0.850, respectively.

It is difficult to improve the HDI-Education in the short run. To exemplify only one reason for this difficulty, in some towns the percentage of teachers with a university degree working in Elementary schools is 1.7 %, according to PNUD/ IPEA/ FJP (2003).

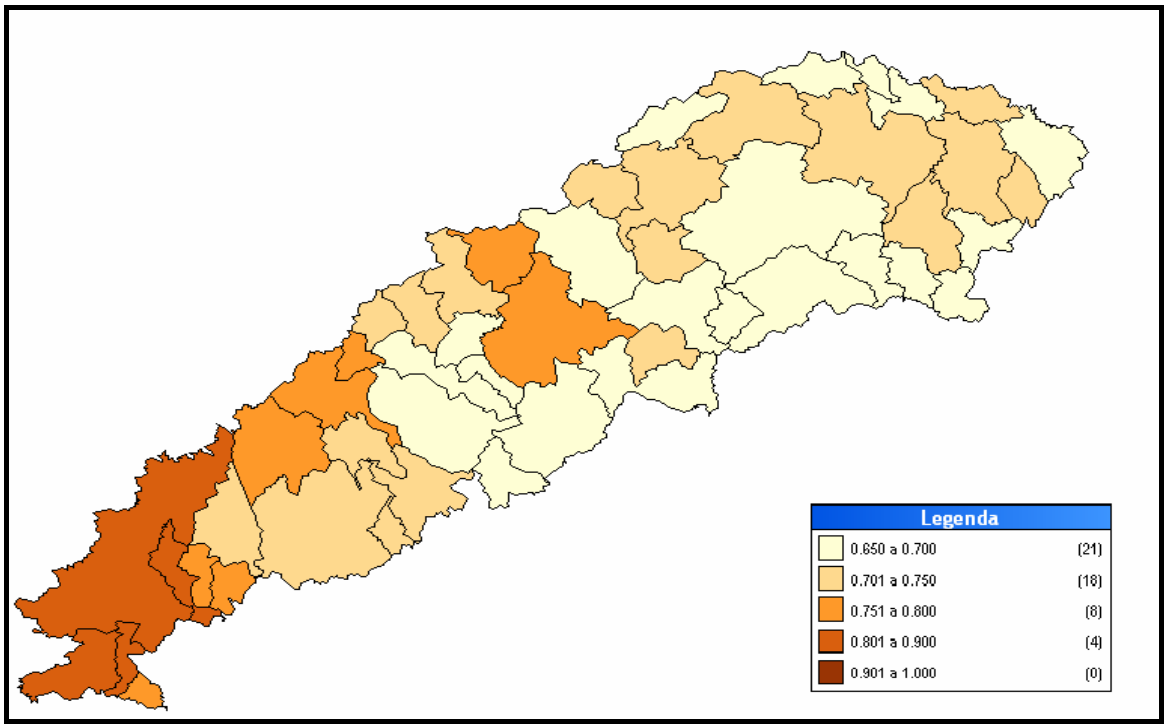


Figure 5. Municipal Human Development Index -Education for Vale do Jequitinhonha towns, 2000.
Source: PNUD/ IPEA/ FJP (2003).

Figure 6 shows the estimation of a simple linear regression between *per capita* income and average years of study for people over 25 years of age, in 2000, for Vale do Jequitinhonha. The relationship is positive and significant at 5% and the coefficient of determination ($R^2$) is equal to 0.525, suggesting that 52.5% of the income level variation in this region is explained by the average years of study variation. For each increase of one year in the schooling average, income increases proportionally by R$ 28.24.

However, as Barro (2001) and many other authors emphasized, more important than the quantity of education is its quality. Data from the Secondary School National Exam, ENEM, a Brazilian efficiency exam, is shown in Figure 7, comparing Vale do

Jequitinhonha ENEM results with the national and state results. Although the national and state averages are low, 40.25 and 42.55 respectively, the ENEM averages for Vale do Jequitinhonha towns are at a much lower level.

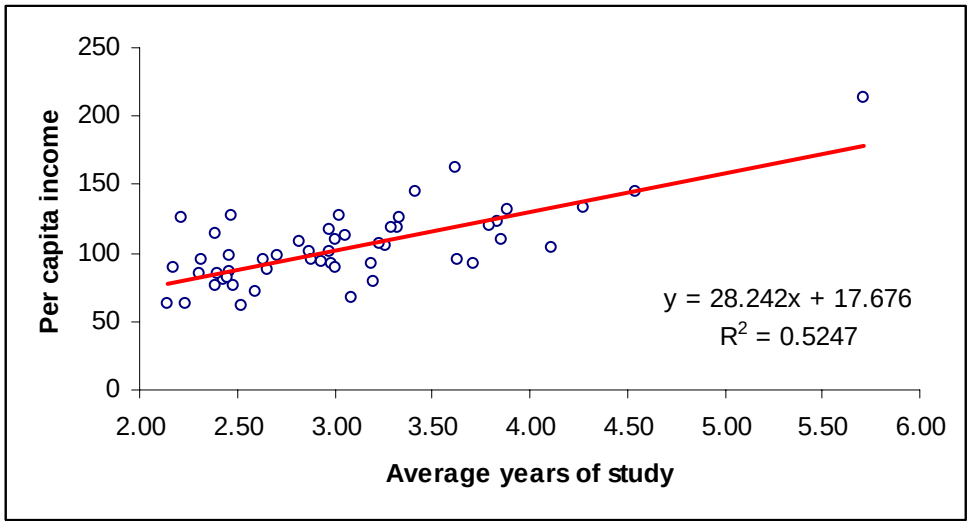


Figure 6. Regression between *per capita* income and average years of study for people over 25 of age in Vale do Jequitinhonha, 2000.

Source: IPEA ( 2007).

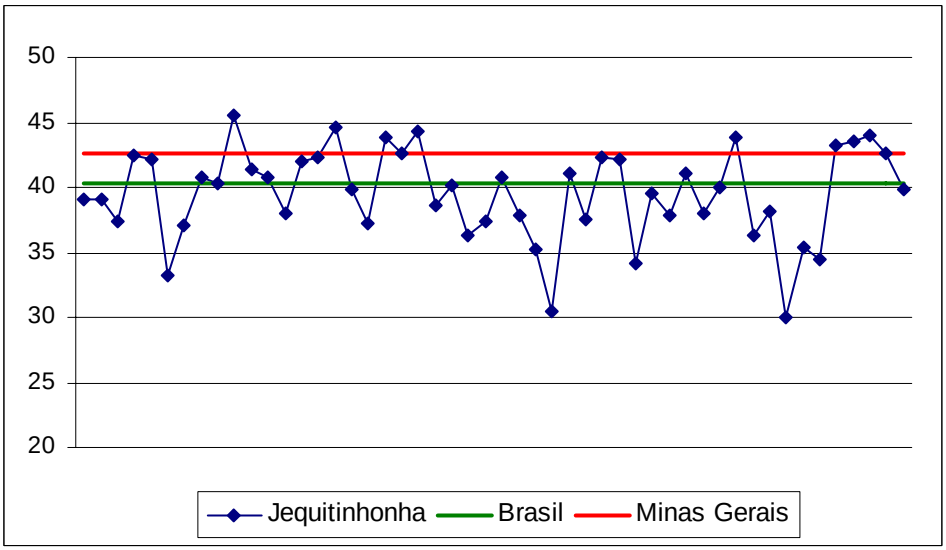


Figure 7. Averages of ENEM results for Vale do Jequitinhonha towns comparison to national and state averages, 2005.

Source: INEP (2005).

Figure 7 shows that the average ENEM results for most Vale do Jequitinhonha towns in 2005 have been below the Brazilian and Minas Gerais State average ENEM results. In 2005, 80% of Vale do Jequitinhonha towns were below the ENEM state average and 28 towns were below the ENEM national average.

The evolution of the average years of study for Minas Gerais State and Vale do Jequitinhonha Region, from 1970 to 2000, is shown in Figure 8. The disparity between this region and the whole state is clear. Throughout the period, the average years of study in Minas Gerais is almost twice the value presented by the Vale do Jequitinhonha Region and the disparity among them increased from 1970 to 2000.

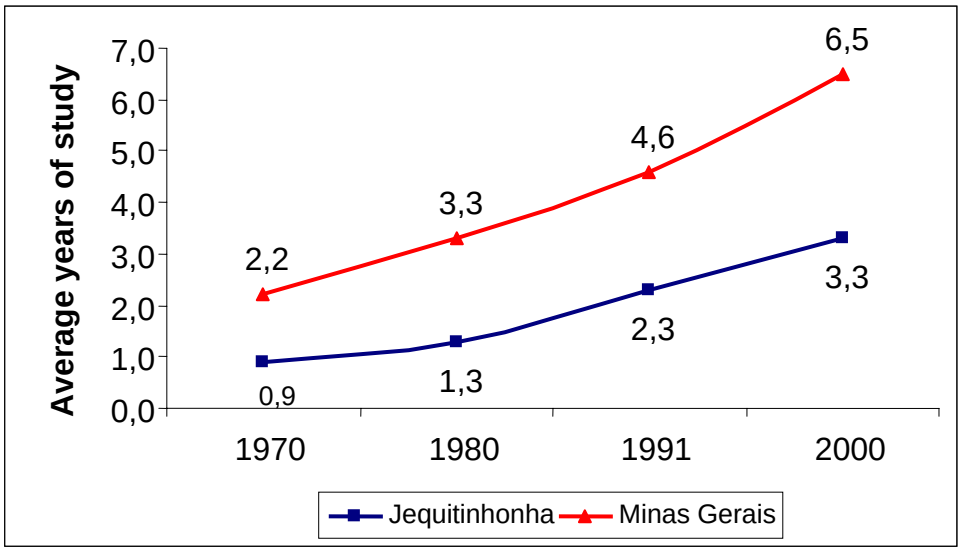


Figure 7. Average years of study for Minas Gerais and Vale do Jequitinhonha from 1970 to 2000.
Source: INEP(2005).

In essence, although the Vale do Jequitinhonha Region is in the Southeast developed part of the Brazilian economy, the development indicators are extremely low, specially the crucial variables for equity and growth, the educational variables.

## 3. The Educational Gini Index for Vale do Jequitinhonha Region

The Educational Gini Index (EGI) is here calculated for Vale do Jequitinhonha Region and its 51 towns to see how concentrated is its education. The formula used is based on Castelló and Doménech (2002):

$$G^e = \frac{1}{2\overline{H}} \sum_{i=0}^{3} \sum_{j=0}^{3} \left| \hat{x}_i - \hat{x}_j \right| n_i n_j \qquad (1)$$

where:

$G^e$ = Educacional Gini Index ( EGI);

$\overline{H}$ = average schooling years for people above 25 years of age;

$n_i$ and $n_j$ = population proportion with a given level of education;

$x_i$ and $x_j$ = years of education in different levels.

Defining $x_i$ as the educational average in each educational level and considering 4 levels of education, {(0) no education, (1) 4 years of education, (2) High School degree, (3) University degree }:

$$\hat{x}_0 \equiv x_0 = 0, \quad \hat{x}_1 \equiv x_1, \quad \hat{x}_2 \equiv x_1 + x_2, \quad \hat{x}_3 \equiv x_1 + x_2 + x_3 \qquad (2)$$

where: $\hat{x}_i =$ cumulated average years of educatio in each stage.

Expanding expression (1) with (2), the Educational Gini Index can be calculated by:

$$G^e = n_0 + \frac{n_1 x_2 (n_2 + n_3) + n_3 x_3 (n_1 + n_2)}{n_1 x_1 + n_2 (x_1 + x_2) + n_3 (x_1 + x_2 + x_3)} \qquad (3)$$

As Ge or EGI approaches 1, only a small percentage of society has access to higher educational levels and the majority is illiterate or have very low level of education.

The source of data for calculating EGI is PNUD (2003) and IBGE (2006).

Figure 9 shows the Educational Gini Index average values for the 5 Vale do Jequitinhonha microregions. Except for the microregion of Diamantina, the EGI values decreased in all microregions. Almenara and Araçuaí microregions presented a fall of 0.4 points in the index values from 1991 to 2000, showing that these microregions

slightly increased access to education. In the same period, the Diamantina microregion increased its index by 0.03 points, suggesting less access to education in this microrregion.

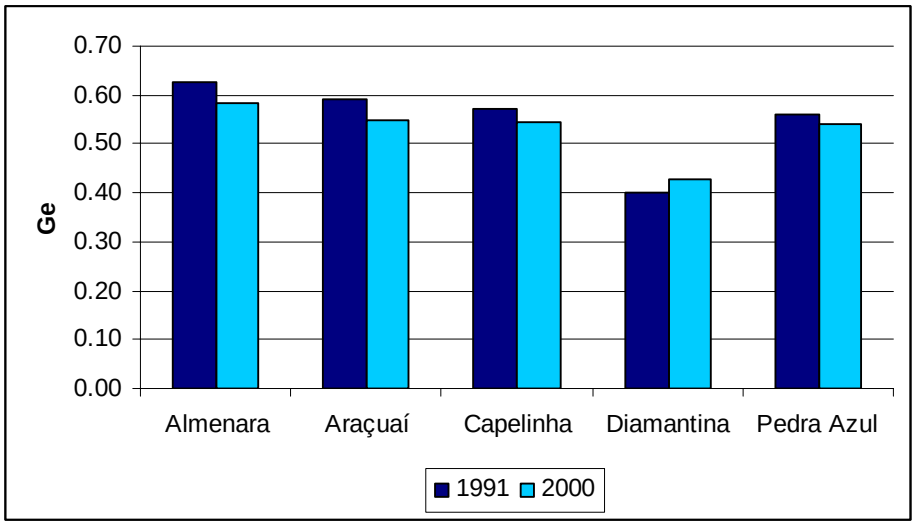


Figure 8. Educational Gini Index for Vale do Jequitinhonha microregions.

Source: PNUD/ IPEA/ FJP (2003) and IBGE( 2006).

The EGI values are now calculated for each town in Vale do Jequitinhonha in 1991 and 2000 and are shown in Figures 10 and 11, respectively. A visual comparison between the distributions in 1991 and in 2000 suggest that the educational disparity, although still high, had slightly diminished during this period.

In the specific case of Vale do Jequitinhonha EGI in 2000, only nine of 51 towns in the region presented an index below 0.50, implying a small group of towns with better distribution and access to higher educational levels. The town of Gouvêa presented the lowest EGI value, both in 1991 and 2000, even though the index value increased from 0.24 in 1991 to 0.35 in 2000. The low Gouvêa EGI is a reflex of the good educational indicators presented by this town. While the illiteracy rate average for people over 25 years of age was around 38% for the whole Vale do Jequitinhonha Region in 2000, in Gouvêa this value was around 17%, according to the PNUD (2003). In terms of comparison, for the same age group and year, the illiteracy average in Brazil was 16%. In the same period, the average years of study was 3.3 years for people over 25 year of age in Vale do Jequitinhonha Region, while for Gouvêa this value was 4.5 years.

In 2000, 39% of Vale do Jequitinhonha towns were in the EGI range between 0.50 and 0.59. In 1991, eight towns had a EGI equal to 0.65 or more. It should be pointed out that only one town in 2000 obtained a general index equal to 0.65, suggesting a slight decrease in educational concentration in Vale do Jequitinhonha from 1991 to 2000.

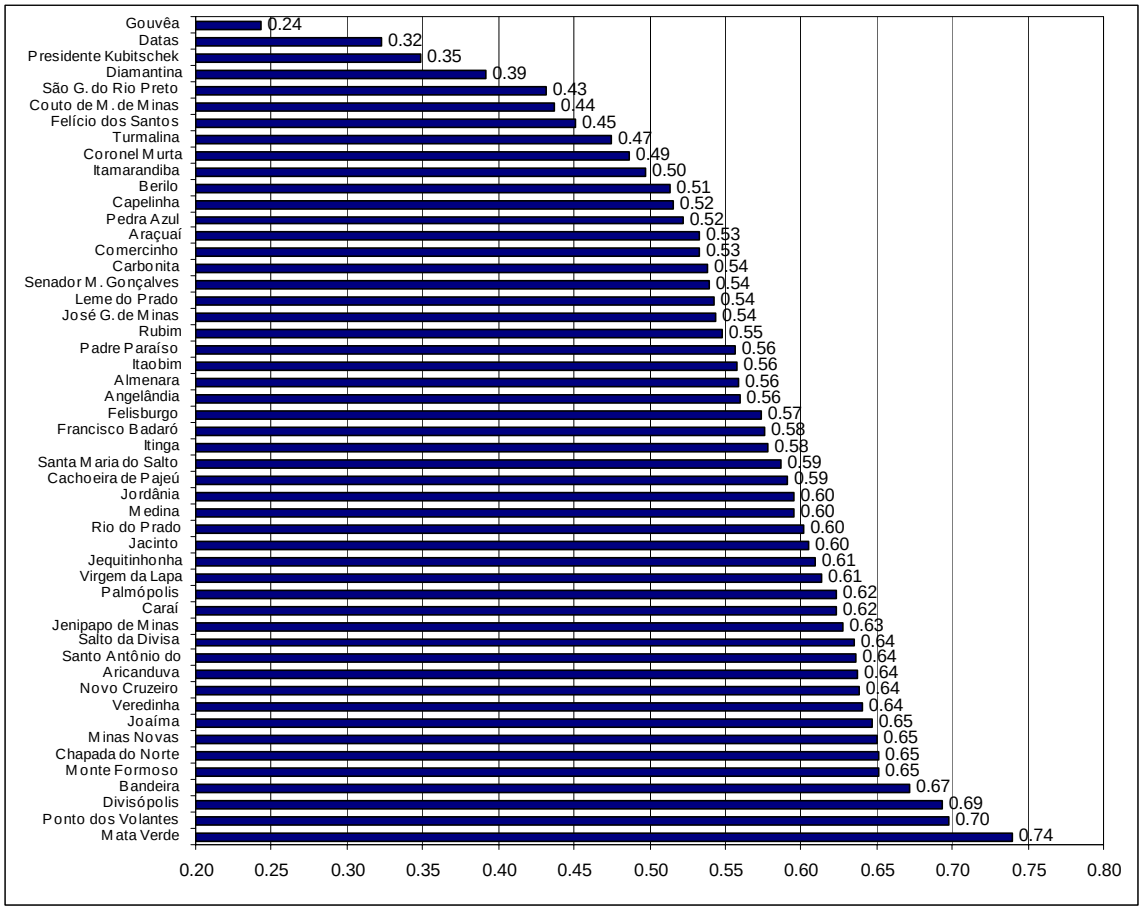


Figure 10. Educational Gini Index for Vale do Jequitinhonha towns, 1991.
Source: PNUD/ IPEA/ FJP (2003) and IBGE ( 2006).

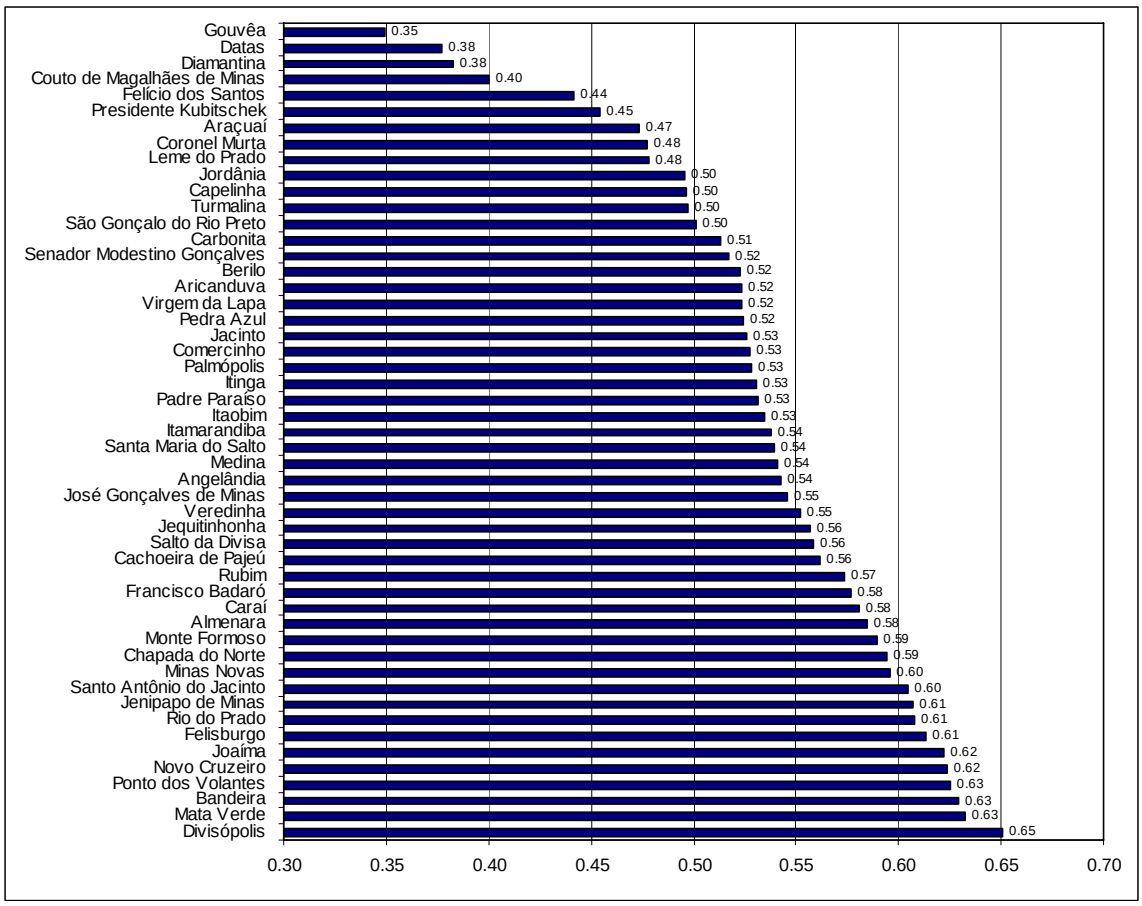


Figure 11. Educational Gini Index for Vale do Jequitinhonha towns, 2000.
Source: PNUD/ IPEA/ FJP (2003) and IBGE (2006).

## 4. Regressions between EGI and some economic variables

Figures 12 and 13 present regression estimations between the EGI and the average years of study and *per capita* income, respectively. The negative relationship between the EGI and average years of study and EGI and *per capita* income seems to confirm the hypothesis that the more underdeveloped regions in terms of *per capita* income and less years of schooling are those that present the highest educational inequality values.

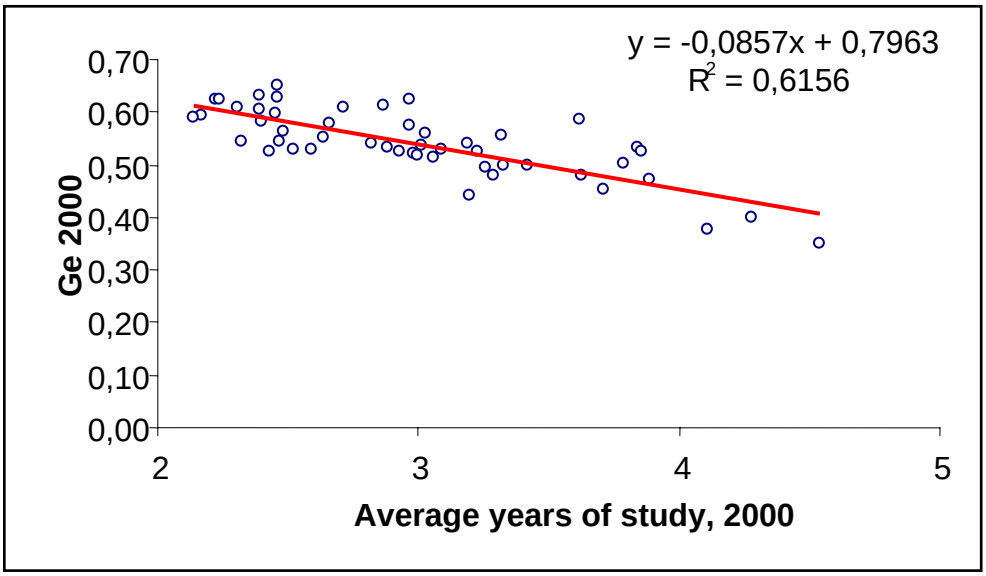


Figure 12. Regression between EGI and average of years of study for persons over 25 of age for Vale do Jequitinhonha towns, 2000.

Source: : PNUD/ IPEA/ FJP (2003).

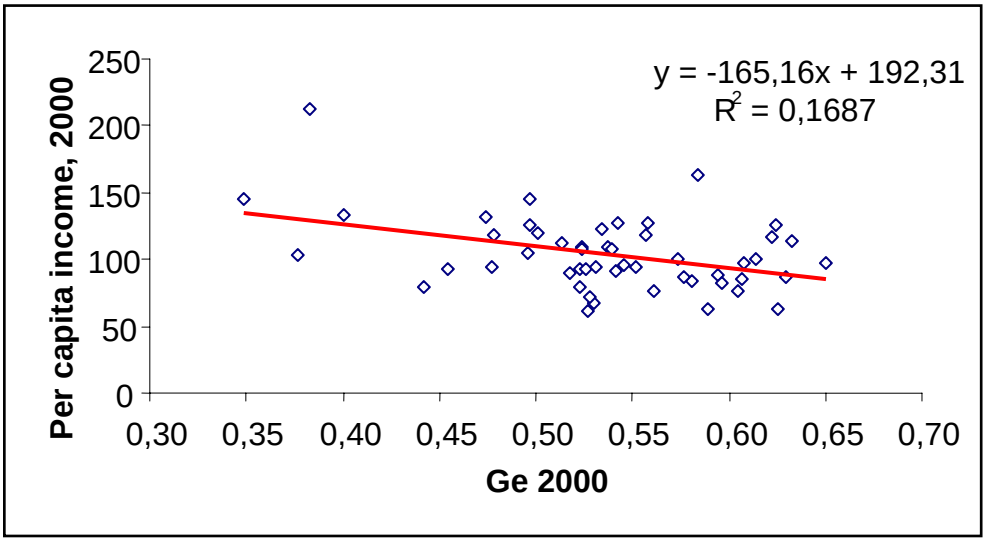


Figure 13. Regression between *per capita* income and EGI for Vale do Jequitinhonha towns, 2000

Source: : PNUD/ IPEA/ FJP (2003).

The estimated equation in Figure 12 shows that an increase of one year of study results in a decrease of 0.0857 in the Gini Educational value, with a coefficient of determination ($R^2$) of 0.6156%. This regression was estimated taking Diamantina off, since this town is an outlier.

According to the estimated equation in Figure 13, an increase of 0.1 point in the EGI leads to a decrease of R$ 165.16 in *per capita* income, suggesting that growth is negatively affected by an increase in income inequality in Vale do Jequitinhonha region.

There were also estimated some regressions in Table 1 between the Vale do Jequitinhonha´s EGI and desaggregated *per capita* GDP for the industrial, services and agricultural sectors, in 2000. According to the results, a 10% increase in the EGI leads to a 11.26% decrease in the *per capita* industrial GDP and to a 4.97% decrease in the *per capita* services GDP in Vale do Jequitinhonha Region. On the other hand, a 10% increase in the EGI leads to a 16.65% increase in the *per capita* agricultural GDP. Based on that, there is evidence that regions with higher educational concentration are associated with less growth in the industrial and services sectors and with more agricultural growth.

This result is compatible with the fact that industrial and services developed economies are associated with more educated labor and relatively less concentrated human capital in comparison to agricultural economies, that demand less educated labor and are relatively less demanding in terms of educational distribution. It could also be inferred that the agricultural sector in Vale do Jequitinhonha Region is based on very low technological inputs, so it does not demand a more qualified labor force.

Figures 14, 15 and 16 show the EGI and *per capita* GDP regressions for the industrial, services and agricultural sectors.

Table 1 – Estimated regressions between the EGI and economic sector´s GDP

| Independent Variable / $R^2$ | *Per capita* Industrial GDP | *Per capita* Service GDP | *Per capita* Agricultural GDP |
|---|---|---|---|
| Constant | 4.928 | 6.788 | 6.903 |
| | (17.360)* | (83.198)* | (17.969)* |
| Log ($G^e$) | -1.126 | -0.497 | 1.665 |
| | (-2.559)* | (-3.928)* | (2.797)* |
| $R^2$ | 0.118 | 0.239 | 0.137 |

- * :1% significance
- ( ): t test

Source: : IPEA ( 2007).

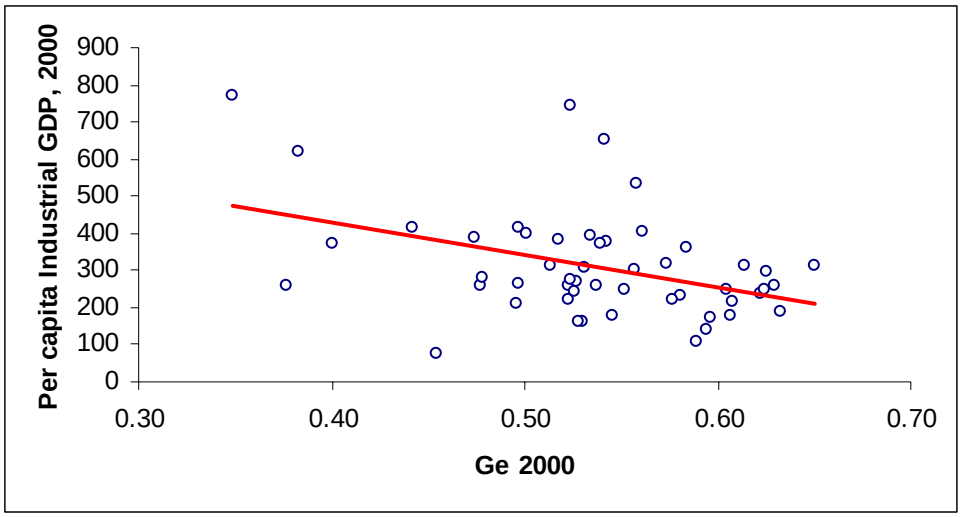


Figure 14. Regression between *per capita* industrial GDP and EGI, 2000.
Source: IPEA (2007).

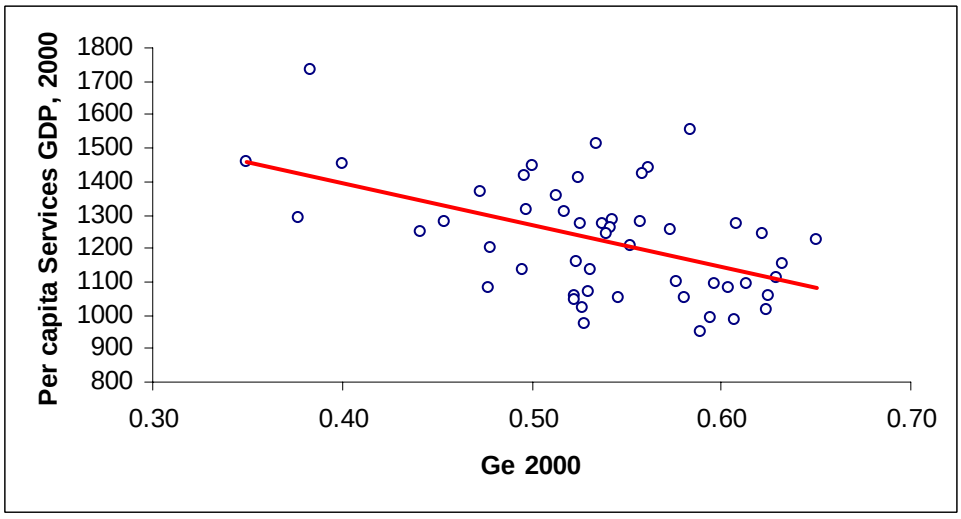


Figure 15. Regression between *per capita* services GDP and EGI, 2000.
Source: IPEA (2007).

Summing up, higher educational concentration leads to less growth in the industrial and service sectors and to more growth in the agricultural sector in Vale do Jequitinhonha.

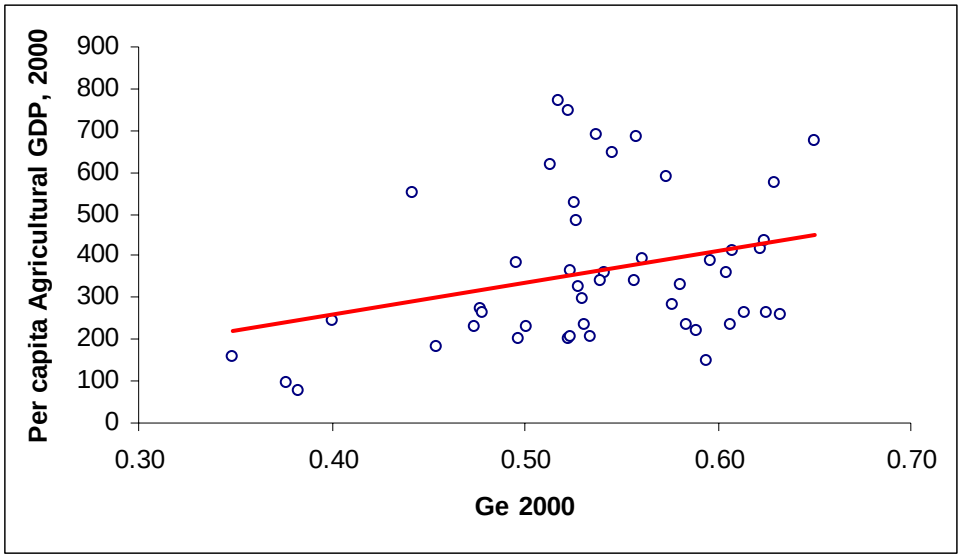


Figure 16. Regression between *per capita* agricultural GDP and EGI, 2000.
Source: IPEA (2007).

## 5. Kuznets Inverted U- Hypothesis

Simon Kuznets(1955) in his original paper analysed the relationship between inequality and *per capita* income, suggesting the existence of an inverted U-hypothesis. The inverted U-hypothesis basically states that inequality in a country or region first is low when *per-capita* income is low, increases as *per-capita* income increases and later it decreases with the increase in *per-capita* income and the structural changes generated by economic growth. An inverted second degree parabol is then the Kuznets model for inequality and growth. The reason for this relationship would be the migration of the rural population to the urban areas. The growth in the urban area would cause inequality rates to increase up to the point where the structural changes generated by growth would lead to the inequality reduction.

In a regional context, one could think that part of an underdeveloped region´s population would move to a more developed region to pursue better wages. However, the developed region may not be able to absorb this coming labor, which may be less efficient than the original local labor. As the educational and training level of the new labor increases, more people will be incorporated into the labor market and inequality will decrease, since more people will benefit from the income increase. That may justify the income differentiation across countries and regions and allow the inference that

income inequality reduction in developing countries may take a long period of time to be achieved.

The inverted U – hyphothesis was first confirmed by Ahluwalia (1976). Using a sample of 60 countries, with 40 undeveloped, 6 socialists and 14 developed countries, he used dummy variables to differentiate them and the following equation was estimated:

$$L = \alpha + \beta_1 \log Y + \beta_2 \log Y^2 + \beta_3 U + \beta_4 E + \beta_5 P + \beta_6 S + \varepsilon \qquad (4)$$

where L is the income share of the 40% poorest, Y is the *per-capita* income; U is the urban population share, E is the litteracy rate, P is the population growth rate and S is a dummy for the socialist countries. Results had shown that the developing countries had a similar behavior and the agriculture share on income was not significant for the low income countries. It was also observed that income concentration was favored by the reduction in the agriculture share and by the urbanization increase.

Ahluwalia (1976) also considered a sample with five *quintis* for the countries population estimating regressions of the 20% population with lower income share to the higher income share through the following equation:

$$L = \alpha + \beta_1 Y + \beta_2 Y^2 + D + \varepsilon \qquad (5)$$

where L is the income share of each *quintil*, in such a way that the inverted U - curve is achieved when the coefficients are $\beta_1 > 0$ e $\beta_2 < 0$. Results had shown that the share of all groups, with the exception of the highest 20%, decreases at first and then increases as the *per capita* income increases.

Anand e Kambur (1993) derived a relation between income inequality and economic growth and described the necessary conditions to obtain the Kuznets inverted U curve. Applying the Theil L index, they suggested the following model:

$$L = \alpha + \beta_1 Y + \beta_2 \log Y + \varepsilon \qquad (6)$$

where L is the Theil L index, Y is the *per-capita* income and the coefficients $\beta_1 < 0$ e $\beta_2 > 0$ are expected to achieve the inverted U curve.

Salvato *et al* (2006) had analysed the relation betwen income inequality and *per-capita* income for Minas Gerais State from 1991 to 2000. They found evidence of the inverted U-curve proposed by Kuznets and concluded also that Minas Gerais towns have distinct paths of economic development.

This section tests the inverted U-hypothesis for Vale do Jequitinhonha Region disaggregating the economic sectors ( agriculture, industry and services) using cross section data from its 51 towns in 2000. As Fields(2001) points out, studies with cross section data assume that towns have the same pattern of income and inequality.

The variables used are the Theil L Index for 2000 and *per capita* GDP for agriculture, industry and services for year 2000. The Theil L Index indicates the income distribution and it ranges from zero to infinity. The higher the Theil L Index, the greater the income inequality.

The non-parametric method denominated local regression was applied to estimate the curves[3]. This method has the caractheristic that any function can be approximated by a simpler function, as a polynomial for example. In any coordenate axe point it is possible to estimate a regression using a weighted polynomial function with decreasing weights as the distance increases. The inverted U - hypothesis was tested through the equation below:

$$L_i = \alpha + \beta_1 Y_i + \beta_2 Y_i^2 + \varepsilon \qquad (7)$$

where:

$L_i$ is the L Theil index for 51 Vale do Jequitinhonha´s towns;

$Y_i$ is the *per capita* GDP of agriculture, industry and service sectors;

$\beta_1$ e $\beta_2$ are the coefficients, with the hypothesis that $\beta_1 >$o e $\beta_2 < 0$ .

The results show that only *per-capita* industrial GDP had the expected coefficients sign, with $\beta_1$ significant at 10% and $\beta_2$ not significant.

Figures 17-20 shows the graphs obtained through local regression for Vale do Jequitinhonha Region, with GDP data for industrial, services and agricultural sectors. The advantage of this method is that besides allowing a perfect view of the relation between the variables, no previous parametric functional form is imposed to data, which speak for themselves.

[3] See Loader (1999, 2004) for details on estimation of local regression.

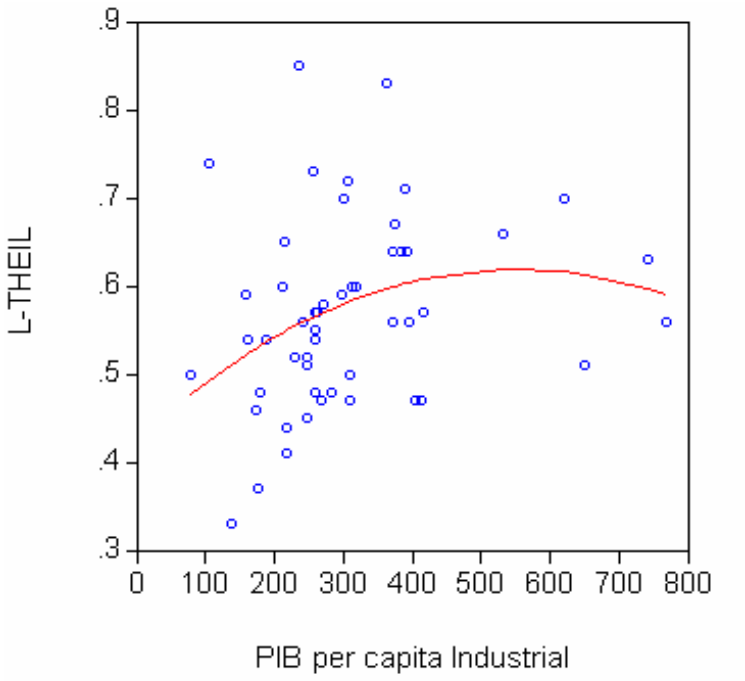


Figure 17. Kuznets Curve, *per capita* Industrial GDP and Theil L Index for Vale do Jequitinhonha towns, 2000.
Source: PNUD/ IPEA/ FJP (2003) e IPEA(2007).

According to Figure 17, the inverted U-hypothesis is accepted for the industrial sector, suggesting that the higher *per-capita* industrial production reduces the income inequality in Vale do Jequitinhonha Region. This conclusion is derived from the format of the red line in this figure, which suggests that industrialization in Vale do Jequitinhonha Region would be an important policy to minimize its income inequalities.

With respect to the service sector GDP data, results from Figure 18 suggest a positive relation between *per-capita* GDP in the service sector and income inequality in Vale do Jequitinhonha Region. Therefore, towns with higher *per-capita* GDP values in the service sector are the ones that have the highest income inequality levels.

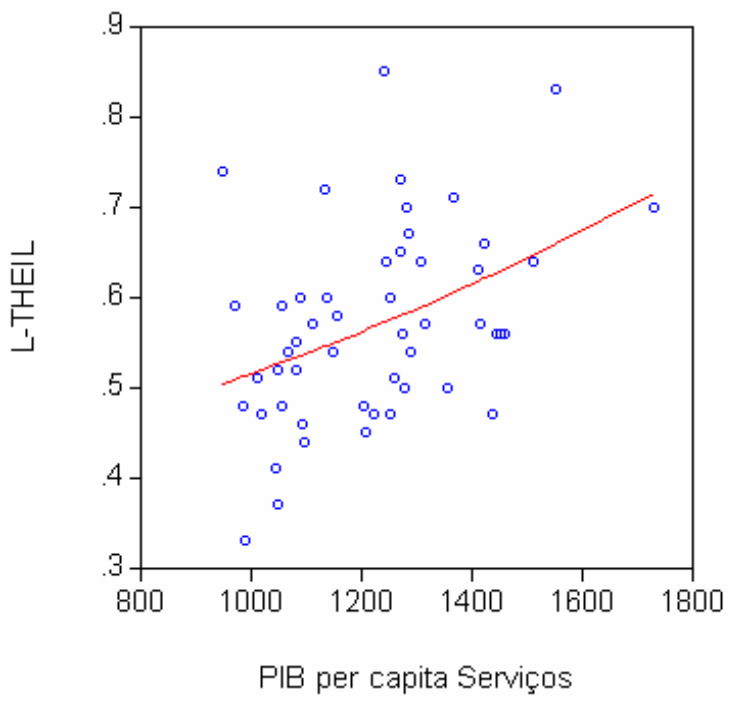


Figure 18. Kuznets Curve, *per capita* Service GDP ad Theil L Index for Vale do Jequitinhonha towns, 2000.
Source: PNUD/ IPEA/ FJP (2003) e IPEA (2007).

Figure 19 shows a U curve for inequality and *per- capita* agricultural GDP in Vale do Jequitinhonha Region. This result suggests that the growth in the agricultural sector is related to the increase in the income inequality in Vale do Jequitinhonha. That should worry the policymakers, since estimulating this most traditional sector in Jequitinhonha will tend to aggravate the income inequalities there.

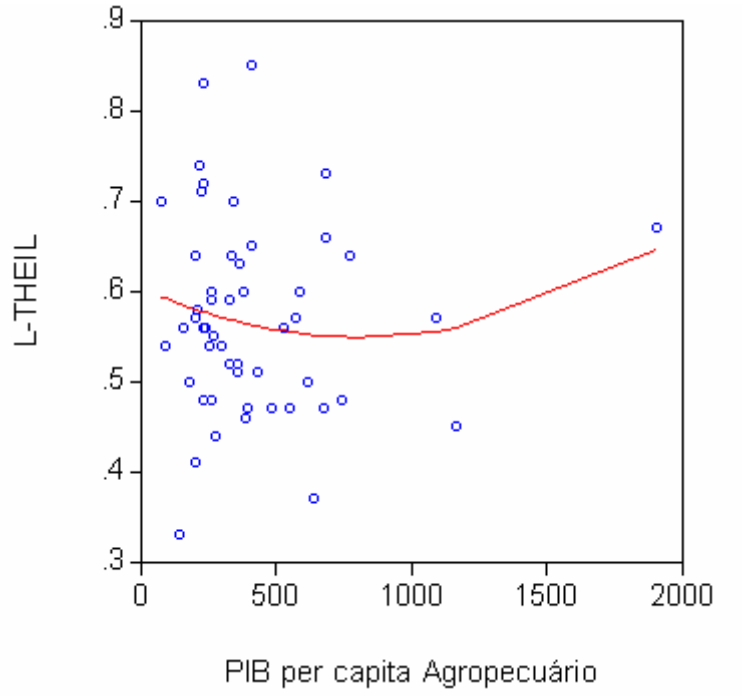


Figure 19. Kuznets Curve, *per capita* Agricultural GDP and Theil L Index for Vale do Jequitinhonha towns, 2000.

Source: PNUD/IPEA/ FJP (2003) e IPEA(2007).

**5. Conclusions**

Vale do Jequitinhonha is one of the poorest regions of Minas Gerais State. With respect to education, a key variable to income distribution and economic growth, the situation is particularly bad.

Fifty five percent of the towns in this region had an average range of only two to three years of study. The highest percentage of Minas Gerais illiterates is found in this region, corresponding to 30% of the people over 25 years of age in 2000. In 2000, the number of persons with less than four years of study, the functional illiterates, were 62%. While the Brazilian and Minas Gerais municipal Human Development Index-Education values are 0.849 and 0.85, respectively, 41% of the Vale do Jequitinhonha towns have municipal HDI-Education ranging from 0.650 to 0.700.

A simple regression between *per capita* income and average years of study for people over 25 of age in the Vale do Jequitinhonha in 2000 showed a positive and significant relationship at 5% probability level, with determination coefficient of 52%, suggesting that education is a key factor to improve *per-capita* income in Vale do Jequitinhonha Region.

Regarding educational efficiency and quality, the Vale do Jequitinhonha is not different. The means of the ENEM, the national efficiency examination, for Vale do Jequitinhonha in 2005 were well below the Brazilian and Minas Gerais means, that are already substantially low.

Analysis of the evolution of the average years of study for Minas Gerais and Vale do Jequitinhonha from 1970 to 2000 shows that, although the average had increased from 0.9 to 3.3 in this interval, the disparity among the state numbers and those of Vale do Jequitinhonha is huge, with Minas Gerais average years of study being practically twice that of Vale do Jequitinhonha.

An Educational Gini Index was calculated to compare the education distribution in the 51 Vale do Jequitinhonha towns in 1991 and 2000 . A small decrease was observed in this index for most towns and also a decrease in the difference between them, suggesting that access to education slightly increased in this region.

Simple regressions between the Educational Gini Index and average years of study and *per capita* income, using data from the 51 towns in Vale do Jequitinhonha Region, had showed a negative and significant relationship at 5%. An increase of one year in study had generated a decrease of 0.08 in the Educational Gini Index value. On the other hand, an increase of 0.1 point in the Educational Gini Index lead to a decrease of R$ 165.16 in the *per capita* income in this region. This result seems to confirm the hypothesis by several authors that access to education may be a key factor to increase income and reduce poverty and inequality in underdeveloped regions.

It was also analysed the influence of EGI on *per capita* industrial, services and agricultural GDP. An increase in EGI generates a negative impact on *per capita* industrial and services GDP and a positive impact on *per capita* agricultural GDP. An increase in the educational concentration generates an increase in the *per capita* agricultural production. Higher educational concentration leads to less growth in the industrial and service sectors and to more growth in the agricultural sector in Vale do Jequitinhonha.

In short, although Minas Gerais is the third Brazilian state in terms of wealth and development, the educational indicators are very low in one of Minas Gerais regions. The educational inequalities are observed not only among the rich and poor Minas Gerais regions but also within the poor microregions, such as Vale do Jequitinhonha.

With respect to the Kuznets curve analysis, the results suggest that public policies should estimulate investments in the industry and services sector to decrease this

region dependence on agriculture. If policymakers succeed in estimulating more industries and services in Vale do Jequitinhonha Region, there will be positive side effects on its income distribution.

Summing up the educational index and the Kuznets curve analyses, one may infer that higher agricultural growth is related to higher educational and income inequalities in Vale do Jequitinhonha. On the other hand, higher industrial growth is related to lower educational and income inequalities. Industrialization in Vale do Jequitinhonha Region would be an important policy to minimize its educational and income inequalities.

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