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MONEY FOR RESULTS

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Abstract

This paper presents an innovative Law in the state of Ceará in Brazil where results indicators are used to determine budget allocation. Formerly the transfers were based on expenditure on education now on results obtained. The incentives are no longer for outputs (money expended) but for results (Math and Portuguese scores) The main rationale of the Law was to create incentives to the pursuing of better results in education, health and the environment by the state's municipalities. After its first years there are signs of positive impact on the performance of the municipalities. In education there were improvements in the Math and Portuguese exams but at a cost of higher inequality measured by the scores standard deviation. The results also show that some municipality behaved strategically and took advantage of the new law to obtain huge gains in budget resources. More important, it seems that the main goal of the law is being achieved. As each municipality compete with each others to obtain better performances they all advance and get close in a higher level of performance.

INTRODUCTION

In a result based government monitoring and evaluation can have two complementary roles. Firstly they produce information for more effective budget cycles where results induce the allocation of resources. The information however can be used in rule-type policies where indicators define and not just induce the allocation of money.

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The rule-discretion debate, very present, in monetary economics should also be discussed in public budget policies.

In the state of Ceará in Brazil a new law was approved in 2007 changing the way the state transfers to the municipalities were defined¹. The law uses results indicators in education and health to determine the amount of transfer each municipality will receive. Formerly the transfers were based on expenditure on education now on results obtained. The incentives are no longer for outputs (money expended) but for results (Math and Portuguese scores).

In Ceará, as in the rest of Brazil, we have that a quarter of the state value-added tax (ICMS) collected should be transferred to municipalities. From this amount the Federal Law defines that 75% must be divided among municipalities according to their economic activity. The remaining 25% should be divided according to a State Law. Before the State's New Law of ICMS, the distribution of this 25% was done according to the following rule: 5% proportional to the number of inhabitants, 12.5% according to the proportion of budget spent on education and 7.5% equally distributed.

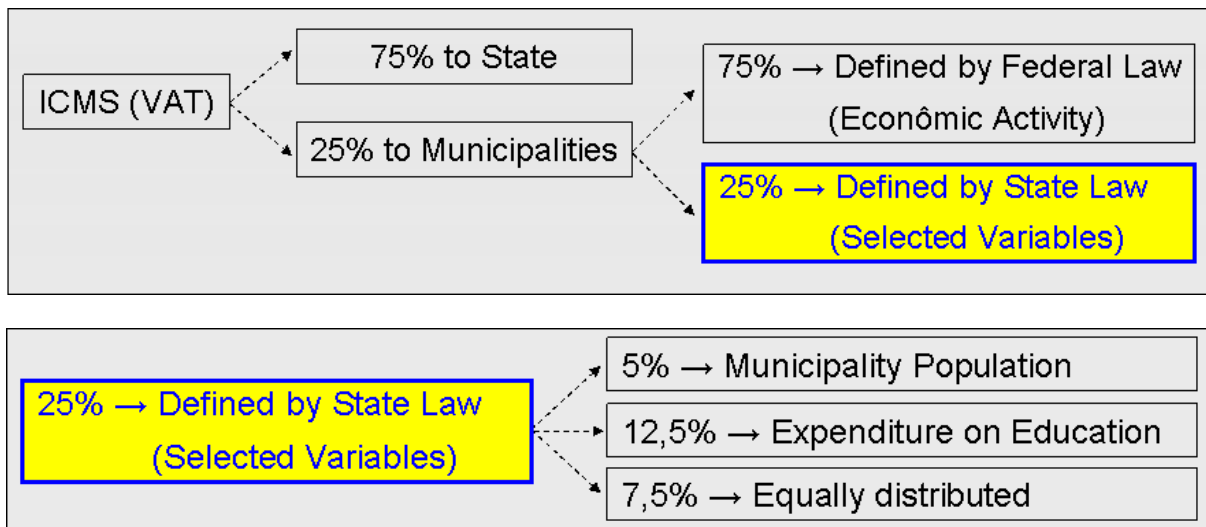
The New Law of ICMS changed these rules. The new criterion of distribution was defined as follows: 18% based on Educational results (performance of students on standardized exams), 5% based on Health results (reduction of Infant Mortality Rate) and 2% based on Environmental results (appropriate waste disposal systems). In the processing of the education and health index it is considered both the level (stock) and the advance (flow) of the selected indicators, in order not to penalize the poorest municipalities and not to discourage those with worst indicators in level.

The old law

Figure 1 describes the way resources were distributed among municipalities under the Old Law. If one considers that, by Law, municipalities are required to allocate 25% of net tax revenue on education the Old Law generates very similar distribution coefficients every year. In such a case there is no incentive for good governance. The money will come regardless of performance. Moreover there is a bias to the richest and more populous municipalities.

¹ State Law 14.023 December 17 2007.

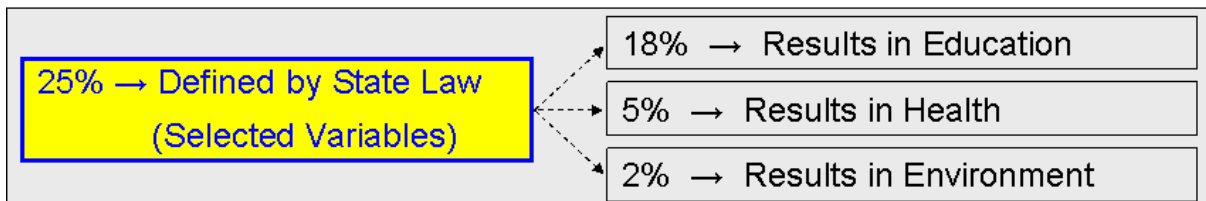
Figure 1: ICMS Distribution under the *Old Law*



The new law

The New Law of ICMS changed the rule for resource distribution. It moved from output to result indicators, from static to dynamic ones.

Figure 2: ICMS distribution under the *New Law*



This new rule links resources to results so that the government no longer depends solely on traditional output indicators, such as population. Now the government has a clear incentive to improve the effectiveness and efficiency of its budget expenditures in areas such education, health and environment.

We now have a direct link between results and resources and not between products and resources. This change of focus from products to results has profound implications in the way public resources are managed.

In educational the New Law complements the FUNDEB (a federal program that finances education at state and municipal level)), whose goal is to ensure the enrolment of students. FUNDEB created an incentive to put students at schools, the New Law of ICMS created an incentive to improve the performance of those students.

Finally the law has a differential in relation to most policies in education, to the extent that it gives incentives to the Mayor and not to students, principals or teachers. The incentives are given to the agent that has a greater number of instruments for action, and this can make a big difference.

Methodology

The coefficient of distribution of the resources of each municipality is defined by the sum of three specific Indexes: the IQE for education, the IQS for health and the IQM for environment.

The education (IQE) and health (IQS) coefficients were designed in a way that acknowledges both the level and advances in key indicators, as shown below.

Education

Indicators considered in the coefficient:

Student approval rate in first five grades of elementary school.

Reading exams scores for second grade students.

Math and Portuguese scores for fifth grade students.

$$IQECoefficient_i = 0.2 \frac{Approv_i}{\sum_i Approv_i} + 0.8 \left(0.4 \cdot \frac{Score_i}{\sum_i Score_i} + 0.6 \cdot \frac{\Delta Score_i}{\sum_i \Delta Score_i} \right)$$

Score is adjusted for Standard Deviation and the proportion of students that were tested.

Health

Indicator considered in the coefficient: *Infant Mortality Rate (IMR)*

$$IQSCoefficient_i = 0.5 \frac{DM_i}{\sum_i DM_i} + 0.5 \frac{\Delta DM_i}{\sum_i \Delta DM_i}$$

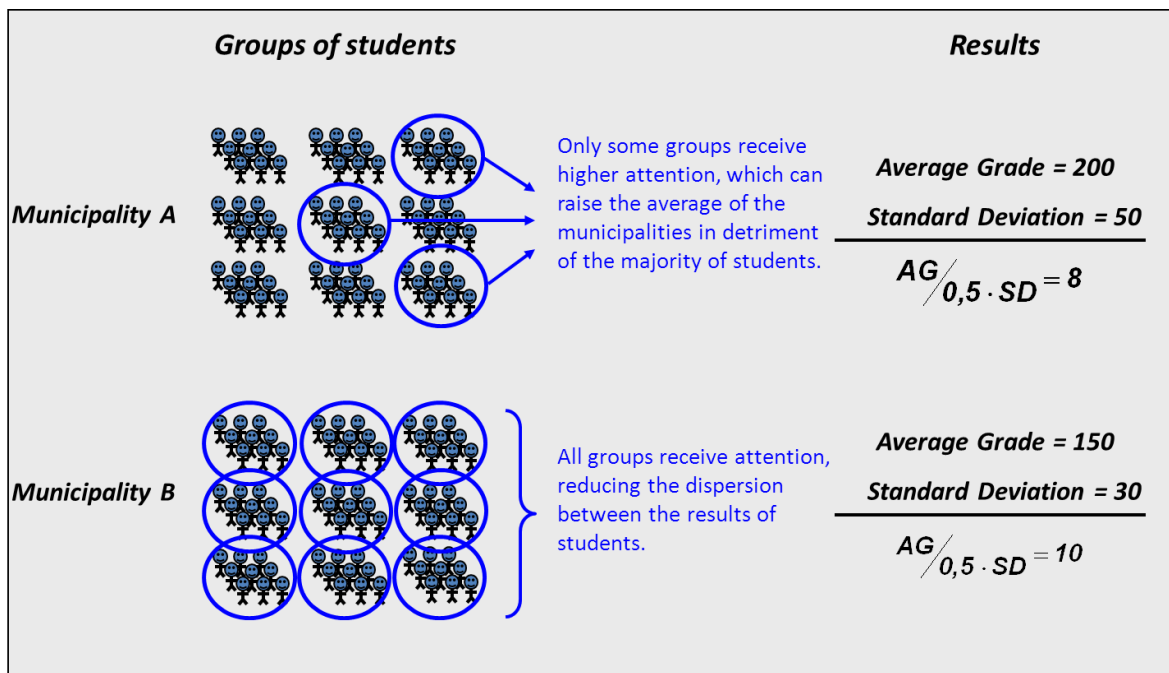
where $DM_i = 100 - IMR_i$

It should be noted that the assessment of student performances is carried out by outside institutions, so to avoid any interference by municipal managers. However, it is necessary to take into account the possibility of "Moral Hazard" behavior. At least two potential problems may occur.

Problem #1: High inequality between students due to concentration of resources and efforts in some schools or groups of students. Higher average grades can be obtained working just with the best schools or students.

Control (Dispersion penalty): Score calculation weighs average scores by their standard deviation in order to penalize those municipalities that have concentrated efforts only on a limited number of students.

Figure 3: Controls for “gaming” behavior – “Dispersion penalty”

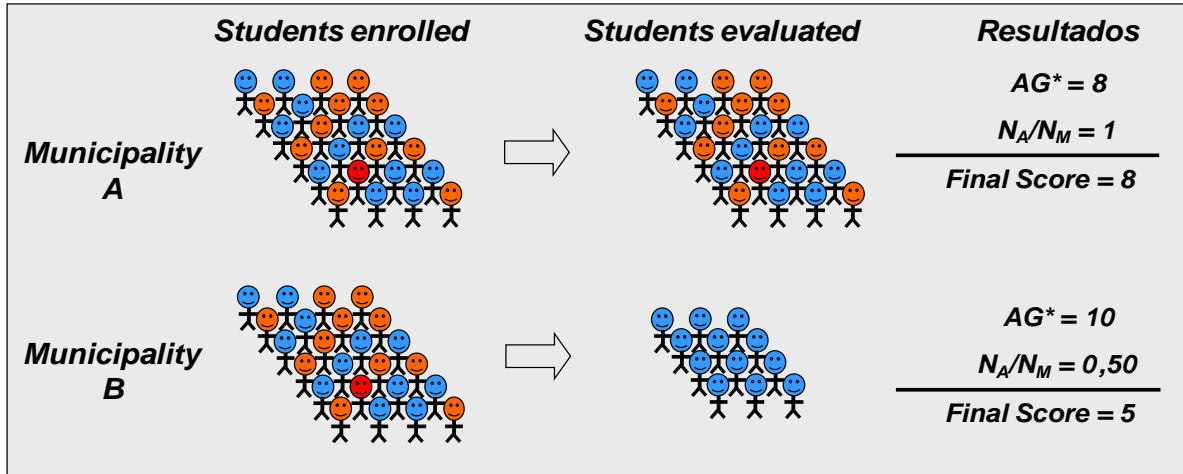


Problem #2: Managers encouraging or selecting only the best students to participate in the exam.

Control (Selection penalty): Score calculation weighs the average score of the municipality by the ratio “number of students evaluated divided by the total

enrollment” (NA/NM), in order to penalize those municipalities with less participation of students in the exams.

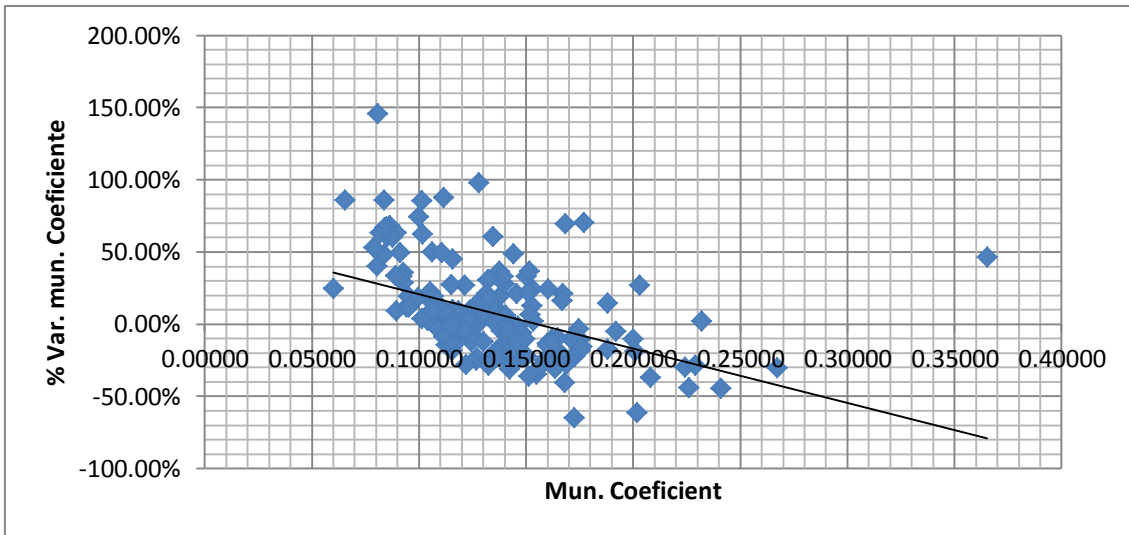
Figure 4: Controls for “gaming” behavior – “Selection penalty”



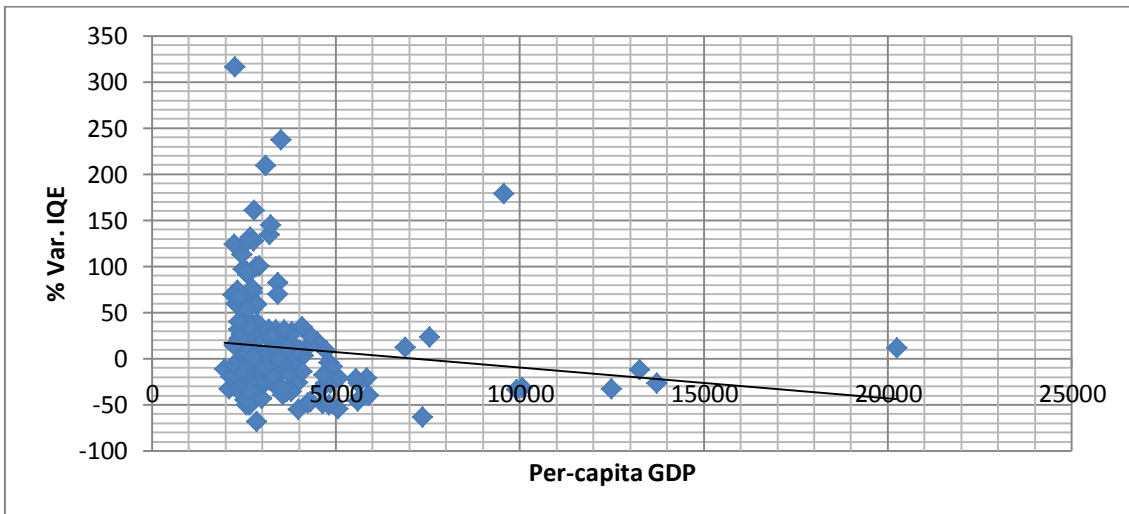
INITIALS RESULTS

After three years of implementation some initial results show benefits of the New Law. There was a significant change in the pattern of distribution of resources. Under the old law the municipalities that earned more were the most populous and were among the richest. After the New Law took effect the distribution became less concentrated and little or poor municipalities that could not compete before can now take part of the game. Graphs 1 and 2 show a kind of a Robin Hood effect where municipalities with the smallest share are the ones with the big gains. Similarly the poorest municipalities, measured by per-capita GDP, are the ones that gain more.

Graph 1

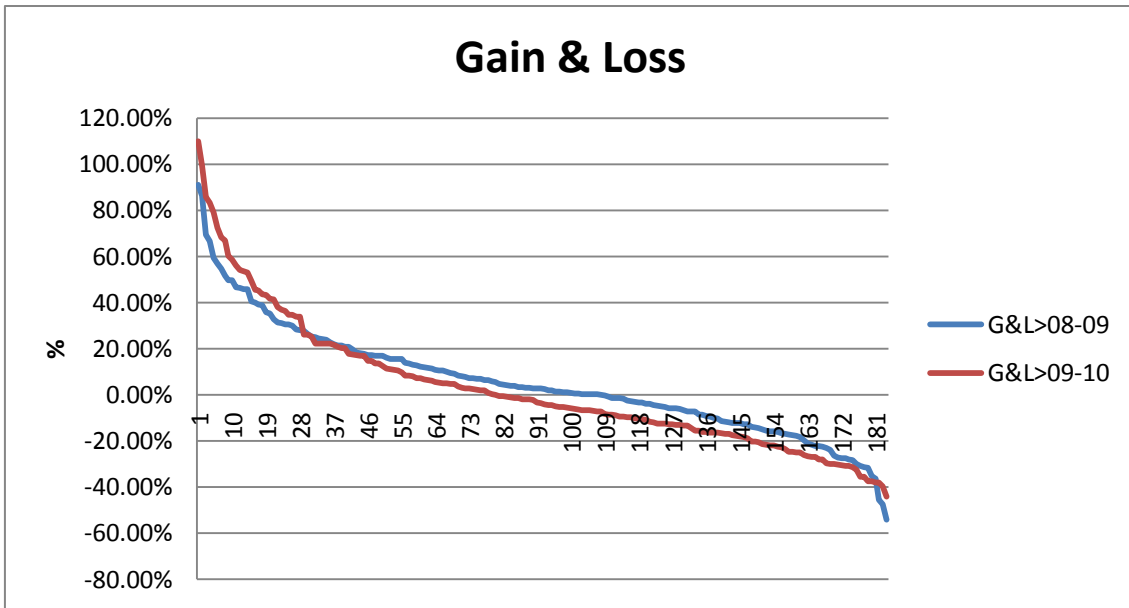


Graph 2



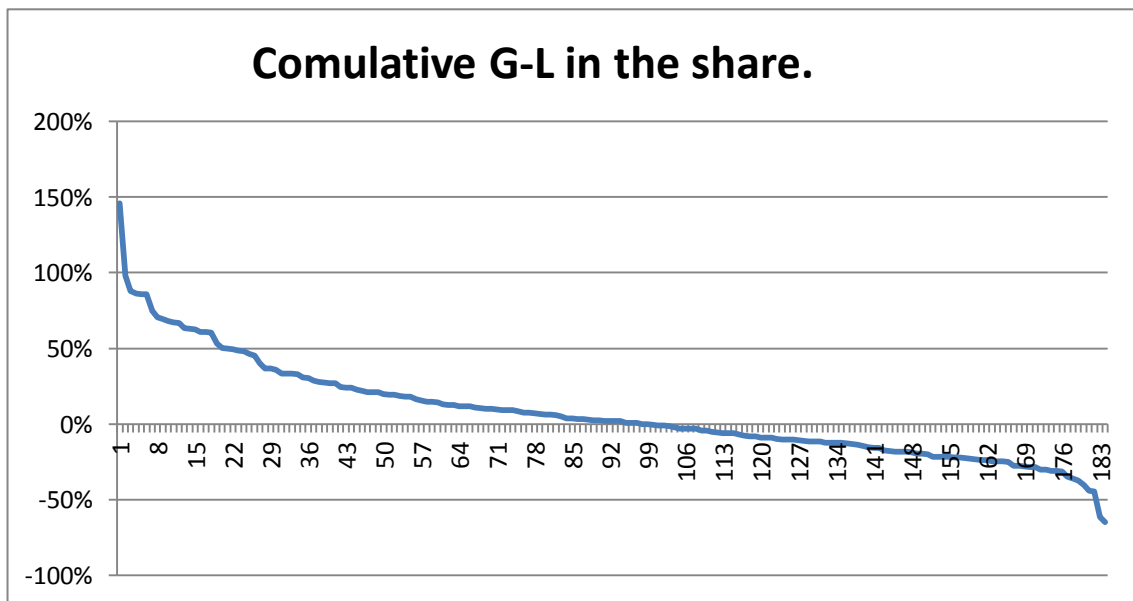
The New Law creates a dynamic game where each year there are gainers and losers. Compared to 2009 the number of gainers decreased in 2010 but the magnitudes of the gains were higher.

Graph 3



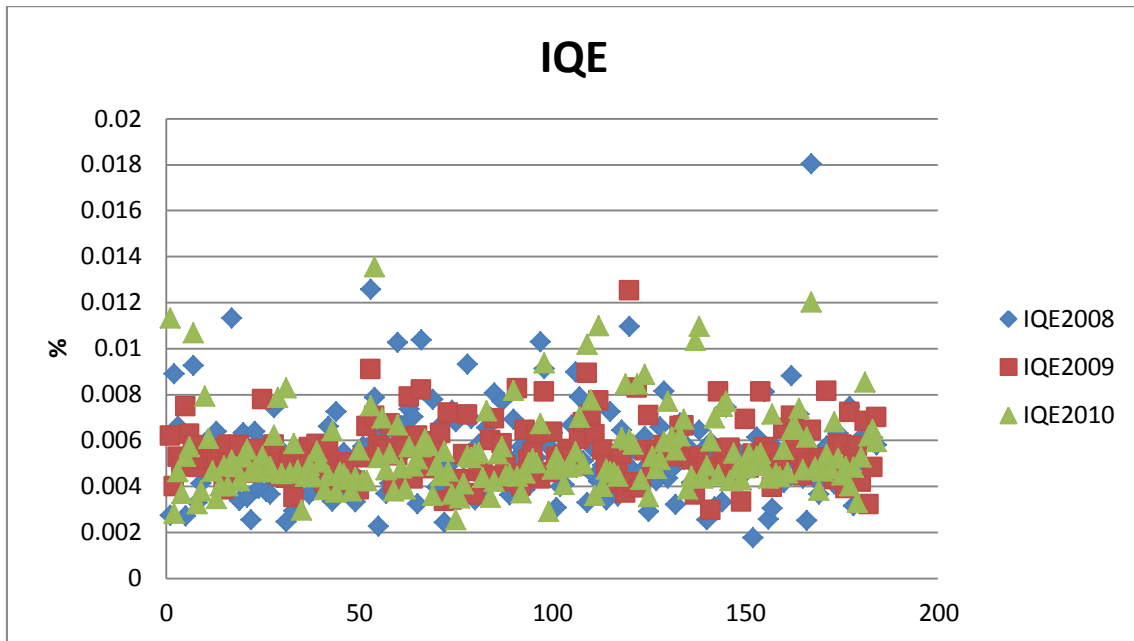
These results could indicate a learning process where some municipalities strategically take advantage of the New Law. In fact, the results show that some municipalities had big cumulative gains in their share. As we have a zero-sum game advances of municipalities who realize the earning potential of the new law imply losses for those who do not take initiatives.

Graph 4

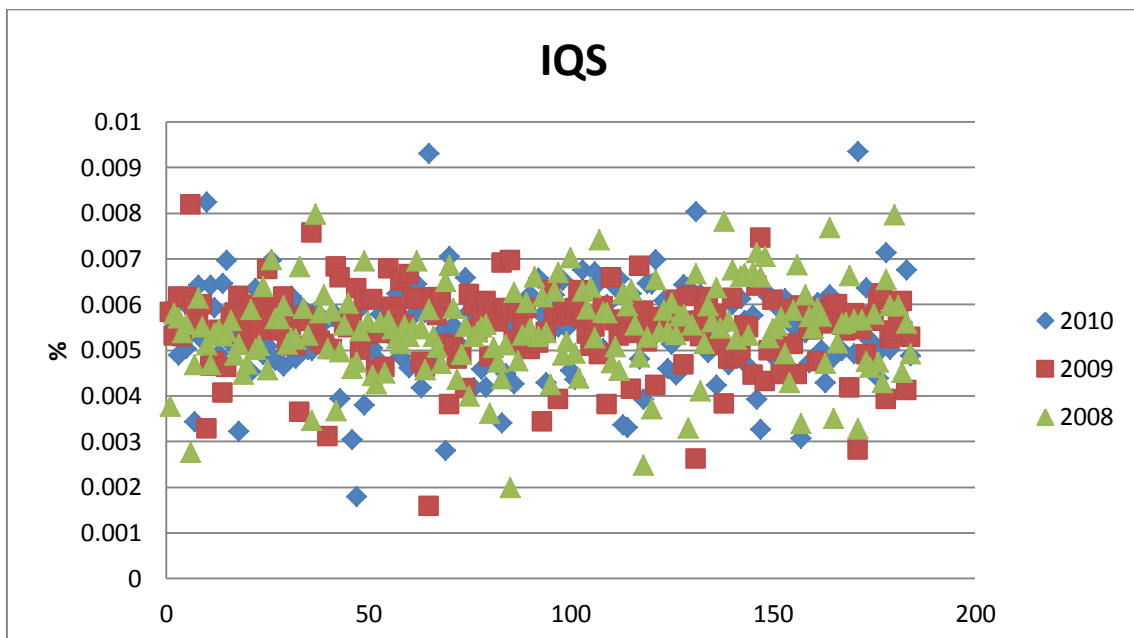


A major positive result of the New Law is a greater convergence in the education performances of the municipalities measured by the IQE index. The same doesn't seem to be occurring on health index (IQS).

Graph 5

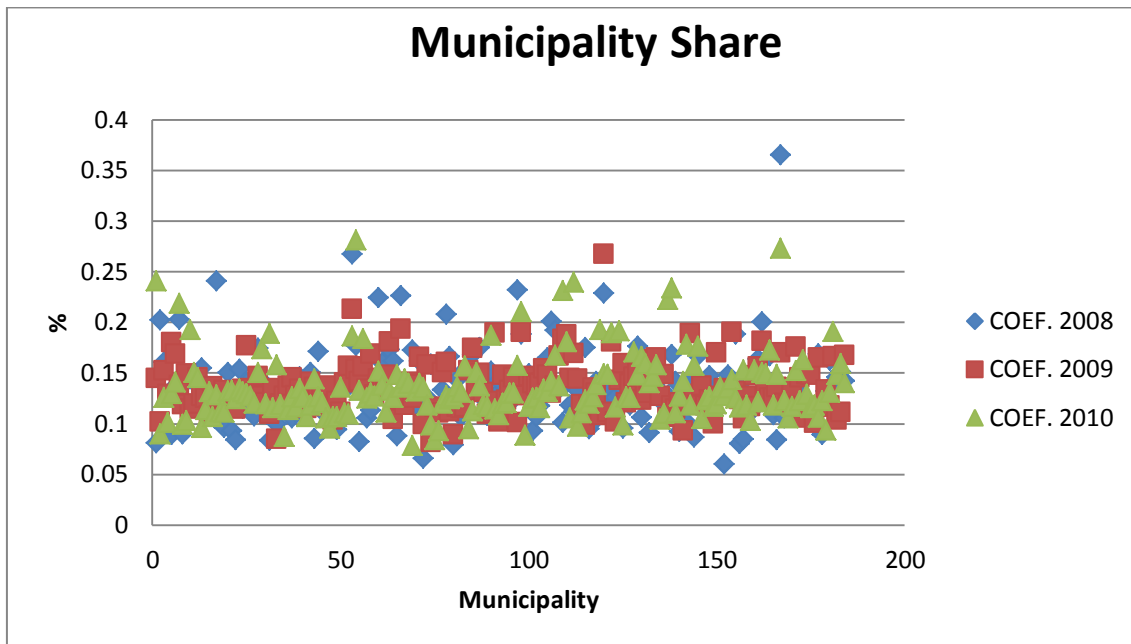


Graph 6



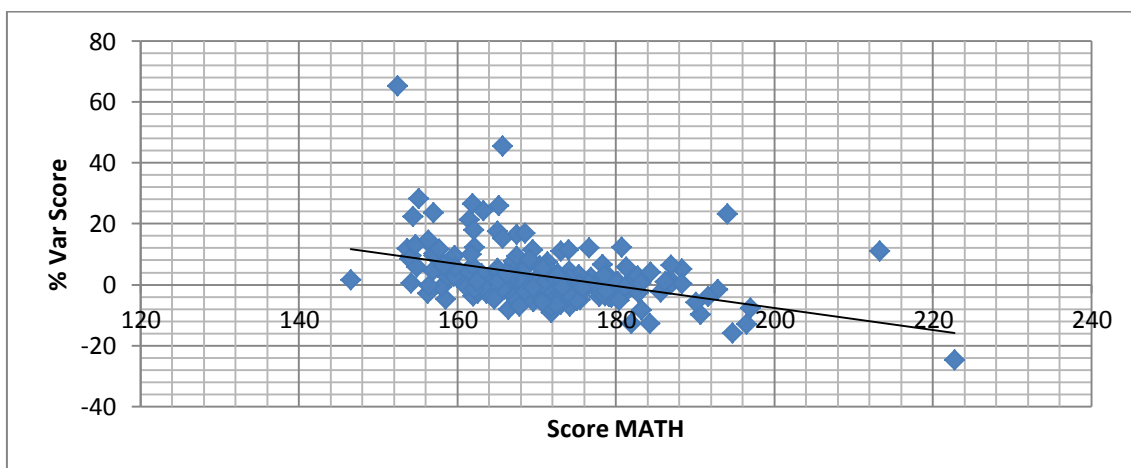
Since the education variable has a great weight on the coefficient share the result is a more homogeneous distribution of recourses among municipalities. The Graph below shows that the coefficients that define the share of each municipality are close to each other.

Graph 7

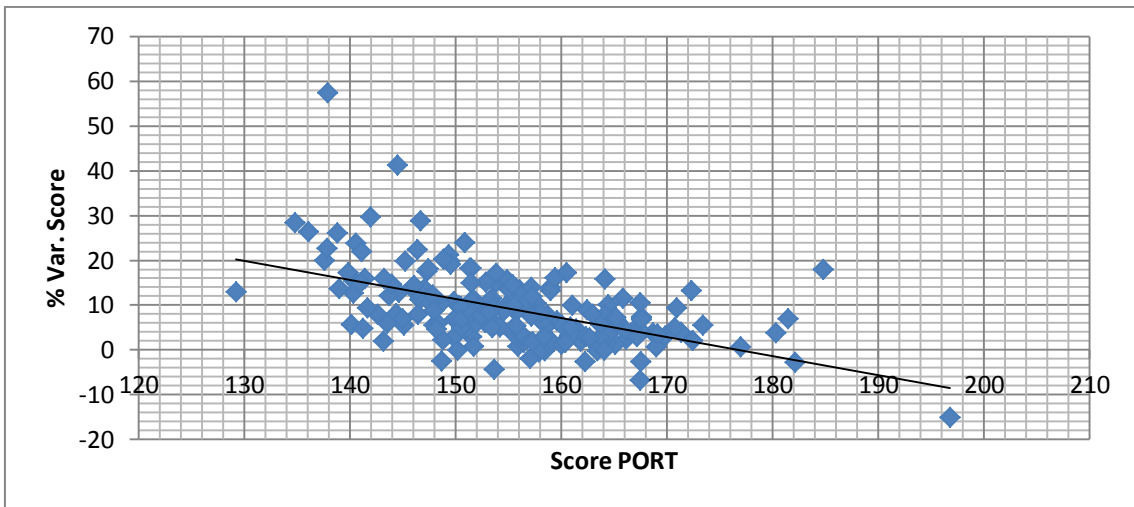


The scores in Math and Portuguese exams show a “good” convergence process in which the grades converge to high levels. The smaller are the grade the higher are the advances on it.

Graph 8

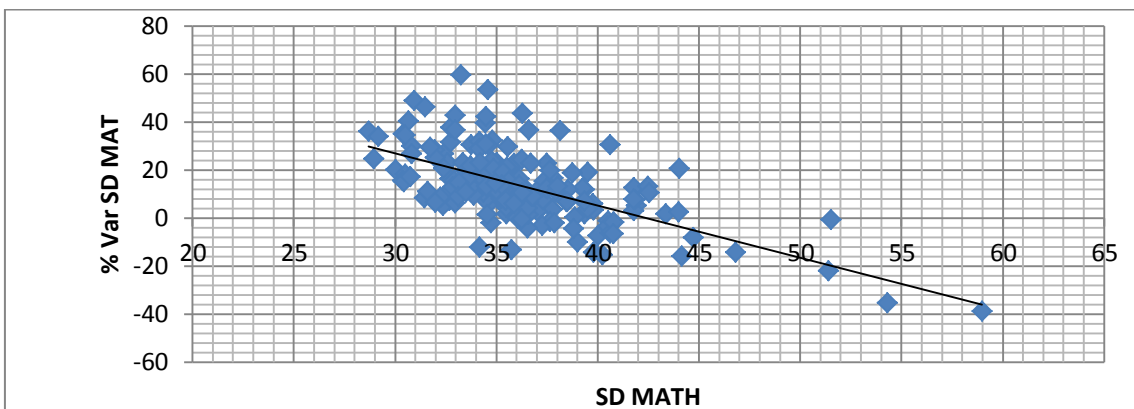


Graph 9

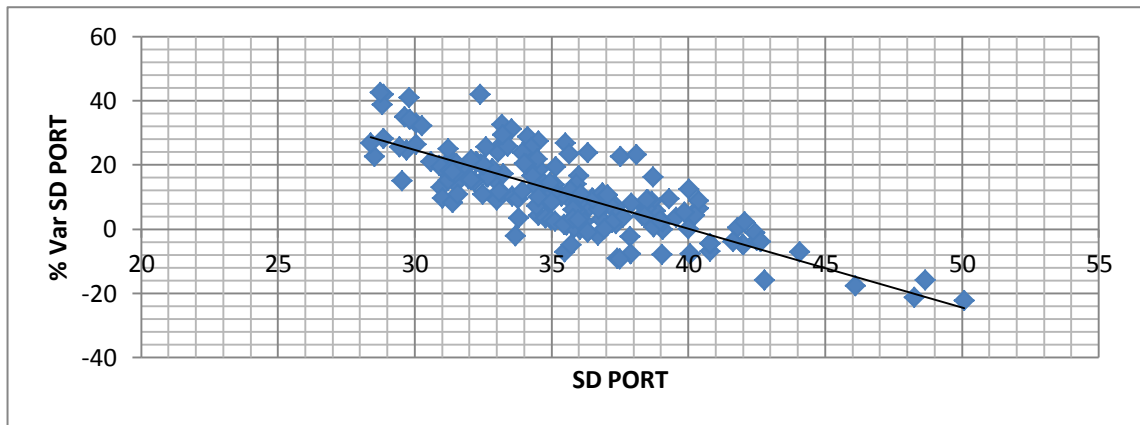


However, looking for the standard deviation of those scores we find a “bad” convergence since the deviations also converges to high levels. This increase in the dispersion of scores indicates that the possibility of moral risk mentioned earlier effectively happens and corroborate the importance of adjusting the average scores by their standard deviations as way to penalize such behavior.

Graph 10

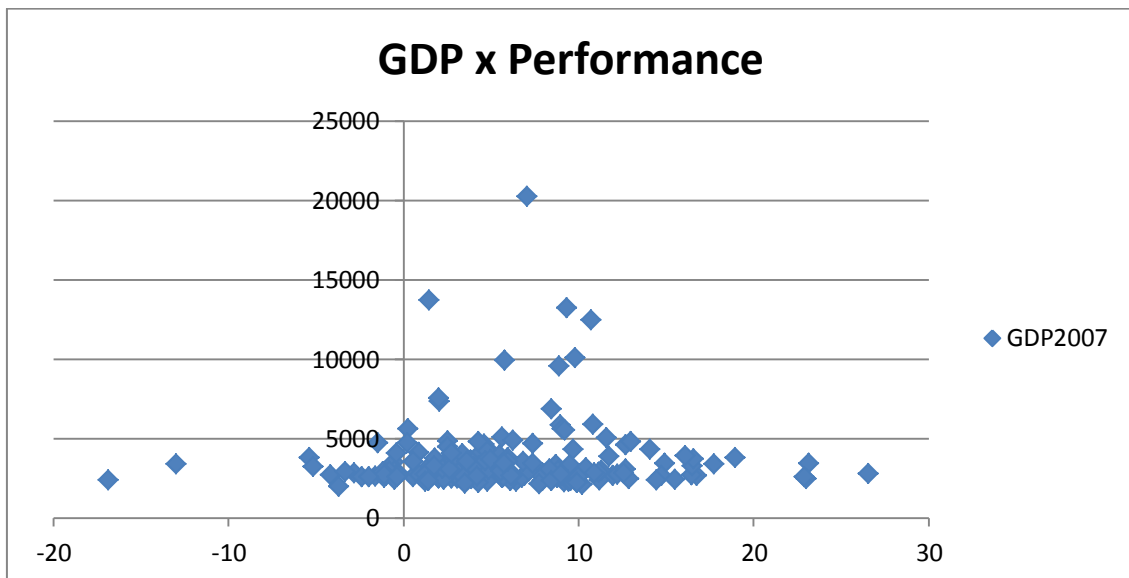


Graph 11

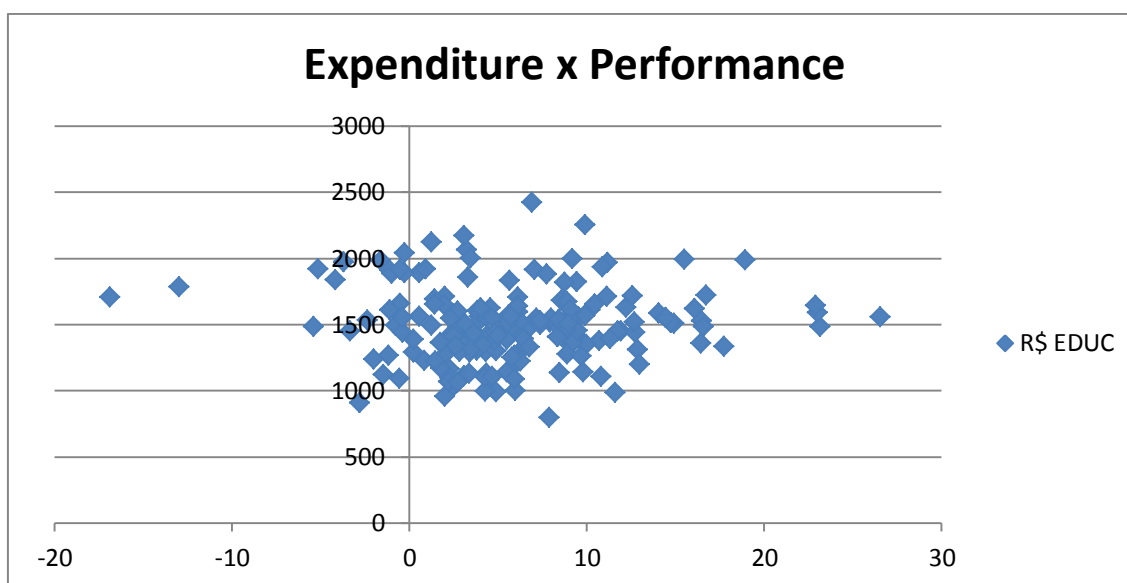


Finally we investigate if the performance of the municipalities were dependent of levels of per-capita GDP or the level of per-capita expenditure in education. For that we considered the performance on the Portuguese exam. The graphs below show no significant correlations. This indicates that the “game” of the New Law is not unfair with the poorer municipalities. To be richer or to expend more does not guarantee performance.

Graph 12



Graph 13



CONCLUSION

This paper presents an innovative Law in the state of Ceará in Brazil where results indicators are used to determine budget allocation. The main rationale of the Law was to create incentives to the pursuing of better results in education, health and the environment by the state's municipalities.

After the initial years, there are positive signs on the performance of municipalities. The distribution of resources was more homogeneous and the law has created space for smaller municipalities to increase their revenue. In education, there have been improvements in students' performances, but at a cost of greater inequality as measured by standard deviation. The results also show that some municipalities behaved strategically and took advantage of the new law for significant gains in their budgets.

More important, it seems that the main goal of the law is being achieved. As each municipality compete with each other's to obtain better performances they all advance and get close in a higher level of performance.

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