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Assessing the impact of higher education expansion on economic restructuring, occupational change and access to opportunities in Brazil and India

From work to school: higher education expansion and occupational change in Brazil

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Abstract: In the last two decades, in Brazil, Higher Education has experienced a noteworthy increase in the number of institutions and enrolments, almost tripling the provision of graduate professionals to the labour market. In the present decade, two new trends were added: the fast warming of the labour markets and the launching of policies to enhance the access of less advantaged people to Higher Education – the so called Affirmative Action policies. The expansion of higher education, however, awakened, among experts, the suspicion concerning a possible credential's inflation" effect. This paper attempts to develop methodological tools to the better understanding of that issue, using data from the National Household Sample Surveys (PNADs) for the last three decades, concluding that the hypothesis of credential inflation misplaces the peculiar relationship between professional and educational careers in Brazil, where most people must work in order to be able to study.

I - Introduction:

There is little disagreement among academic and policy makers on that economic development nowadays is increasingly dependent on producing and disseminating knowledge capacities, even if the nature of knowledge involved may vary considerably through countries and regions. Education and specially Higher Education and the associated R&D activities became distinctive economic assets to promote or to hamper economic development, and individuals' social mobility opportunities through successful long term professional careers.

In countries like Brazil, with a highly diverse economic structure and long lasting severe social inequalities, the challenges posed by the new economic context and the country's own aspirations of development are no less than monumental.

Although an optimistic atmosphere has marked the recent years, supported by the improving figures on education, economic growth, employment and income distribution, the connection between these trends and their sustainability in the long run are still unclear. The improvements in the level of schooling of the population as a whole and in particular in the number of people enrolled in higher education, for instance, have not been followed by an improvement in the quality of the education delivered to the students. Possibly, a net trend of lowering the quality of education is closer to the truth. Although the increase in the number of high skilled workers enhances the conditions to step up the productivity of firms, it, of course, depends on many other factors, like public and private investments, credit, labour regulations and so on. In other words, better workers do not produce better jobs by their mere existence.

Since the middle 1990s, a set of reforms to promote an expansion in the provision of higher education opportunities was put in practice. The basic strategy at that time was to make the

regulatory framework more flexible, opening space for private institutions. In Brazil, hitherto, state owned universities have attended middle and upper classes education needs; so forth, thus, the private sector targeted the lower middle classes" students, whose budgets were (and still are) quite tiny. Hence the private sector growth has improved the provision of higher education generally through "cheaper" courses, the "teacher-blackboard-and-chalk" kind of education, mostly concentrated in human sciences, law and management. The so called hard science, like engineering, medicine, physics, biotechnology, chemistry still remain under the state owned universities initiative. Still in place is the paradox that poorer people, who have acquired their basic education (primary and secondary) in state institutions, are obliged to pay for a higher education of lower quality; while better off people, coming from private schools, are bestowed with better off charges universities.

For almost twenty years, Brazil has gone through economic instability, stagnation, and an extensive dilapidation in its labour markets. Under such conditions, the social landscape could not be brilliant, as it was not. Social inequalities and poverty remained high, although some progresses have been reached after the New Constitution of 1988 in regard with social policies. After 1995, and more consistently after 2002, the country seems to have recovered its course to development. In the last eight years, no less than one and a half million new formal jobs annually, in average, have been created in the country. A good deal of these jobs may result from the reheating of the economy rather than from a deeper process of economic restructuring towards a real modernization of the productive structure; nevertheless, there are also evidences that in many sectors (from the agribusiness to the new financial and IT services) rapid changes have been taking place; one of the key evidences would be the lack of high skilled labour force, a concern often expressed by the entrepreneurs and their business associations.

Conversely, the improving of the labour market conditions, as well as in the income distribution figures, have fostered a quick growth in the opportunities for less advantage people to access higher education. Public policies to improve the access of the poorer to university (like the University for All Programme, which gives tuition for students to attend to private institutions; and Affirmative Action Programmes for Public Universities) is also playing its role.

Though the dynamics of the labour markets and education are in many ways intertwined, their courses obey different logics and timings. For instance, the demands that come from the labour market reflect the current status of the economic system, which is the result of the investments already made in the past times. Education brings results in a longer term, which means that it cannot be seen as a mere response to the existing demands. It is part of the future. The heavy handicaps in education constraining the country"s development today are the product of the lack of investments along many decades. Leaving behind the well know problems still faced by the basic and intermediate levels of education in Brazil, higher education is critical in shaping economic changes in the future, and thus to define whether the opportunities for social mobility will be greater or smaller; which social groups will hold the better chances to grab these opportunities; and which groups need to be supported by specific policies.

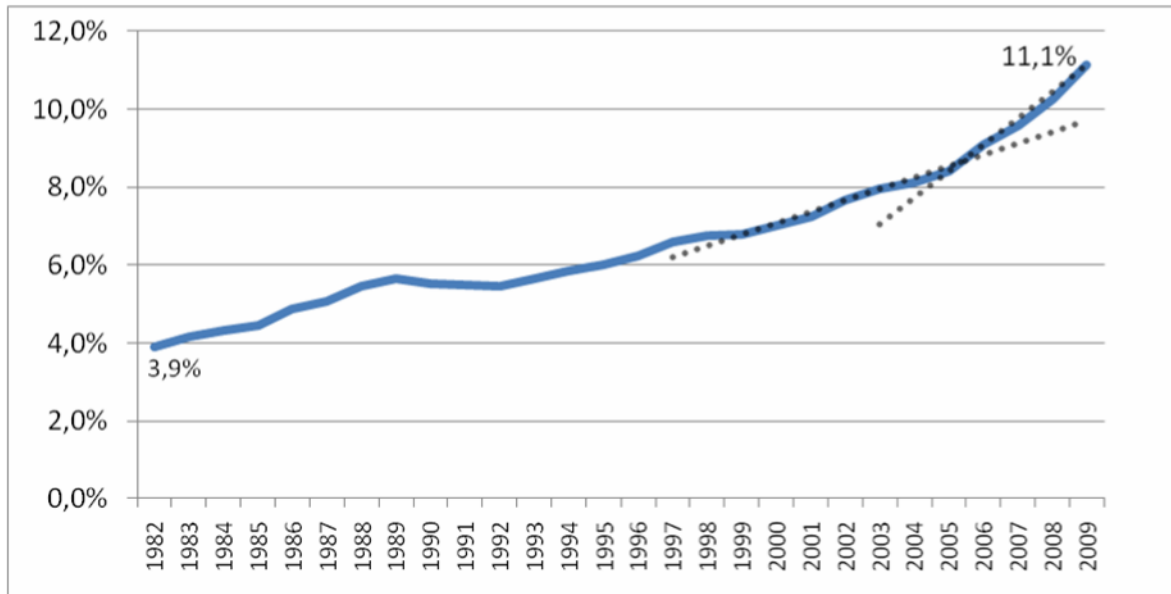
Given this scenario of rapid changes, the kind of methodology we are applying to this study has at least one advantage over the conventional approaches, because it is concerned with the dynamic of changes rather than with the changes themselves. The usual approach in social mobility studies consists in stratifying occupations and estimating, through individual life spans or between generations, the volume and direction of people's shift of status. This is a prominent part of the story, but it fails to capture the transformations in the nature of the occupations themselves, which enriches a lot the picture and gives better inputs to address education policies. In this article we are primarily concerned with the allocation of the increased supply of graduates in terms of the occupational groups, as defined by the ISCO classification system.

As the data in this article shows, the number of graduates enhances in almost every occupational group – not only in those considered traditional graduate occupations, like doctors, engineers, scientists, and managers. Furthermore, the rate of growth is much higher among the lowest status occupational groups, such as clerks, service workers and shop and market sales workers, technicians, plant and machine operators and assemblers and elementary occupations. Such a trend has raised arguments in favour of the credential inflation thesis. Nevertheless, the wage-premiums found for graduates in those occupations states a strong point against the credential inflation thesis. Besides that, in Brazil, unlikely other countries, a substantial part of the new graduates are made of older people, already engaged in professional careers; that is to say, the usual view of higher education as a transitional step between school and labour market is by no means accurate.

II. From work to school: the increase in the supply of graduates

As it can be seen through Figure 1 below, the number of graduates in the labour market in Brazil has increased, almost tripling in the last three decades, jumping from less than 4% in 1982 to more than 11% in 2009. There are two points of acceleration: in the late 1990's, as a result of major changes in the regulatory system for higher education, which consisted mainly in liberalizing the rules for private institutions that leded this process of growth in the supply of new graduates; and since 2005, fostered by the combination of growing employment opportunities, the increase in the lower wages, the creation of the University for All Program (tuitions for poorer students to attend private institutions), affirmative action and the expansion of state owned universities.

Figure 1.
Percentage of graduates among the occupied population - Brazil
1982-2009



In 2008, no less than 85% of new enrolments in higher education in Brazil were placed in private institutions. In the same year almost two thirds of undergraduates were attending evening courses while working in full-time jobs. The need to pay for higher education and the circumstance that most of those new undergraduates come from lower income families explain the unexpected fact that in Brazil to be employed is a pre-condition for studying. In addition, educational careers are longer, given retentions and dropouts from and comebacks to school. In short, that means that the path from school to labour market is by no means linear – except for middle high and upper classes -, and individuals educational gaps have to be full filled throughout adult life, when people are already integrated to the labour markets.

Figure 2A shows that only 10.9% of Brazilian adults (18 years old and over) were currently studying in the period 2005-2008, taking into account all levels of education (from primary to post graduation). 40% of them were aged over 25 years, an age at which people are supposed to have already completed their educational career. More than 10% of adult students in Brazil are over 40 years old. The figure doesn't show, but among all adults currently studying in Brazil only 44.4% are undergraduates and 2.4% postgraduates. It means that more than a half of students over 17 years old are still chasing basic or intermediate levels of formal education. Among the undergraduates, Figure 2B shows that less than one quarter of undergraduates belongs to the younger group of 18-20 years; and 40% of undergraduates are over the age of 25 years.

The picture is complete when we look at the relationship between to be working and studying. Figures 3A. and 3B show that for adults the odds of being a student is multiplied when the individual is also economically active; and the chances grow hand in hand with the age. In other words, for young adults (18 to 25 years old) the labour market competes against attending school

(odds-ratios lower than one); for more mature adults, with relatively higher incomes, to be working increases a lot the chances of being able to go back to school.

Figure 2.
From work to school

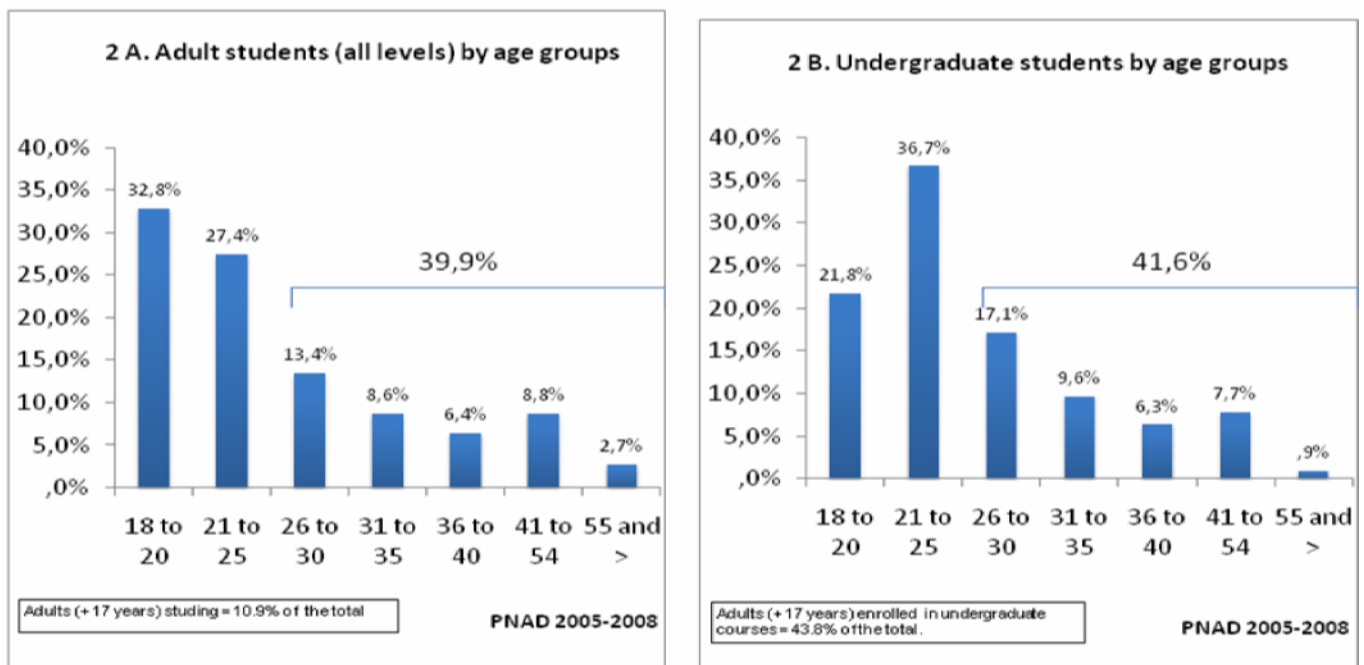


Fig. 3 A - Odds Ratio of being employed over the probability of attending school , by age groups - Brazil, 2009

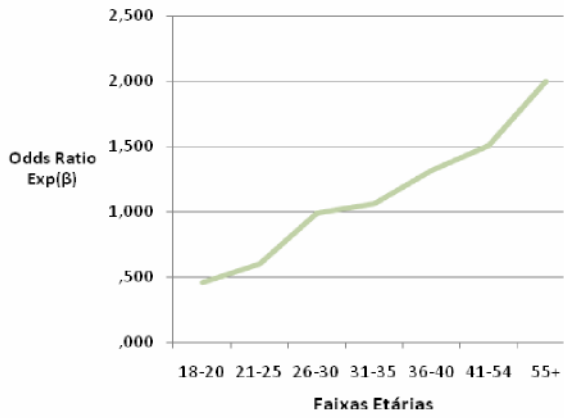
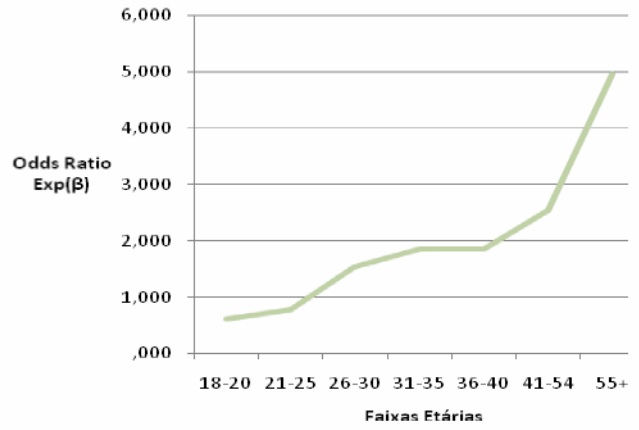


Fig. 3B - Odds Ratio of being employed over the probability of attending High Education, by age groups - Brazil, 2009



III. The inflow of graduates to the occupational groups

In this section we examine how the inflow of graduates in the labour market is distributed in terms of the Major Groups of ISCO 1988 categories¹. The most traditional graduate occupations, such as doctors, engineers, lawyers, and scientists are grouped in MG 2 Professionals. MG 1, which combines senior officials, directors and managers, is also "intensive" in graduates; so does MG 3 Technicians. Actually, Figure 4 Shows that these three categories have the highest proportions of graduates, two thirds for MG 2, and around one quarter for MG 1 and 3. However, when we look to the annual growth rate of graduates in each category it is remarkable that it is among the lowest status groups (4 to 9) that we find out the fastest growth trends. The percentage of graduates in those groups, tiny as they are, especially in regard to groups 5 to 9, represents a large amount of people, notwithstanding. Figure 5 shows that the MG 9 Elementary Occupations alone accounts for almost one third of the total employment in 2009, making the small proportion of 1.6% of graduates inside this group more the half a million people. More or less the same pattern apply to MGs 4 to 8, so that the six lowest status groups (4 to 9) get together more than 20% of the total employed graduates in 2009, almost twice as much as in 1982.

Figure 4.
Proportion of graduates by occupation
in 1982 and 2009

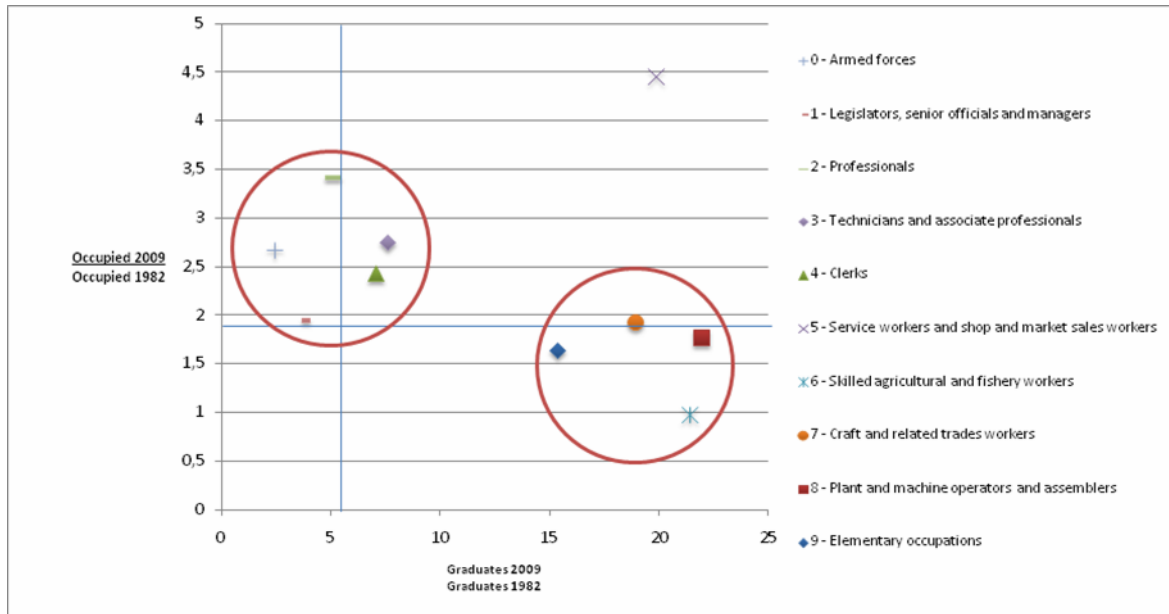
Major Groups - ISCO-88	Percentage of graduates in 1982 by occupation	Percentage of graduates in 2009 by occupation	Ratio	Average annual growth
0 - Armed forces	3,1%	2,8%	0,90	-0,41% p.a.
1 - Legislators, senior officials and managers	14,8%	27,7%	1,88	2,37% p.a.
2 - Professionals	45,3%	67,5%	1,49	1,48% p.a.
3 - Technicians and associate professionals	9,1%	25,2%	2,75	3,82% p.a.
4 - Clerks	5,0%	14,6%	2,90	4,03% p.a.
5 - Service workers and shop and market sales workers	0,6%	2,7%	4,46	5,69% p.a.
6 - Skilled agricultural and fishery workers	0,1%	1,3%	21,85	12,10% p.a.
7 - Craft and related trades workers	0,2%	1,6%	9,74	8,80% p.a.
8 - Plant and machine operators and assemblers	0,2%	2,8%	12,3	9,75% p.a.
9 - Elementary occupations	0,2%	1,6%	9,37	8,64% p.a.
Total	3,9%	11,1%	2,84	3,94% p.a.

Figure 5.
Graduates by Major Occupational Groups ISCO-88, absolute numbers and percentages

Major Groups	1982			2009		
	Grad.	Total	%	Grad.	Total	%
Armed forces	27.714	888.502	3,1%	66.590	2.383.779	2,8%
Legislators, senior officials and managers	488.182	3.307.943	14,8%	1.792.685	6.460.922	27,7%
Professionals	973.027	2.146.093	45,3%	4.933.063	7.309.465	67,5%
Technicians and associate professionals	159.611	1.745.185	9,1%	1.205.558	4.790.857	25,2%
Clerks	165.109	3.287.867	5,0%	1.167.522	8.010.792	14,6%
Service workers and shop and market sales workers	7.776	1.273.141	0,6%	154.520	5.677.812	2,7%
Skilled agricultural and fishery workers	2.428	4.041.414	0,1%	51.952	3.958.045	1,3%
Craft and related trades workers	13.043	7.827.651	0,2%	246.429	15.184.510	1,6%
Plant and machine operators and assemblers	8.391	3.691.139	0,2%	183.863	6.559.987	2,8%
Elementary occupations	33.195	19.716.916	0,2%	510.307	32.353.084	1,6%
Total	1.878.476	47.925.851	3,9%	10.312.489	92.689.253	11,1%

For all Major Groups of occupations, the ratio of growth of graduates outnumbered the growth of the total employment, but there are at least three clearly distinct patterns of variation. One cluster is represented by MGs 0 to 4: these groups have been growing above the average (2 to 3.5 times between 1982 and 2009), pushed ahead mainly by graduates (growth waving between 3 and 7 times in the period), increasing their participation in the labor market as whole. A second cluster get together MGs 6 to 9, groups for which the total employment has grown much slower (2 times or less), and the number of graduates has boomed (15 to more than 20 times) in the period. Finally, MG 5 Services and Sales Workers make a third pattern alone, growing more than twice the average growth for the total employment and four times the average growth for graduates.

Figure 6.
Ratio of variation: total employment and graduates



The trends observed for MG 1 and 2 are by all means expected: these groups has been growing both in absolute and relative terms, given a set of structural changes, namely the expansion of the service sector replacing occupations in manufacturing industry and even in primary sectors. MG 2 Professionals get together occupations that traditionally demand HE credentials. Among them two huge occupational groups, primary education teachers and nurses and associated professions, explains the bulk of the expansion on graduates participation in MG 2. Up to no more than 20 years ago primary teachers and nurses were not graduate professions: less than 20% of employees were graduates, against more than 80% in 2009. These are good examples of how occupations change their status along the time. No one would disagree that to be a nurse before and after the technological improvements of the last 30 years is not the same thing. The same reasoning could be applied to the teachers. For these cases the role of the state in promoting changes is paramount, as a regulatory agent (which establishes rules to the practice of professions), as a provider of education (directly through public universities, or indirectly through tuitions for private institutions), and furthermore as a prevalent employer. There are a good number of other professions that experienced the same process of upgrading in credentials, for other reasons. Professions like journalists, system analysts, physiotherapists, meteorologists, human resources managers, are all cases of professions that didn't exist or did not use to require HE certifications until some decades ago, which became in the present graduate professions.

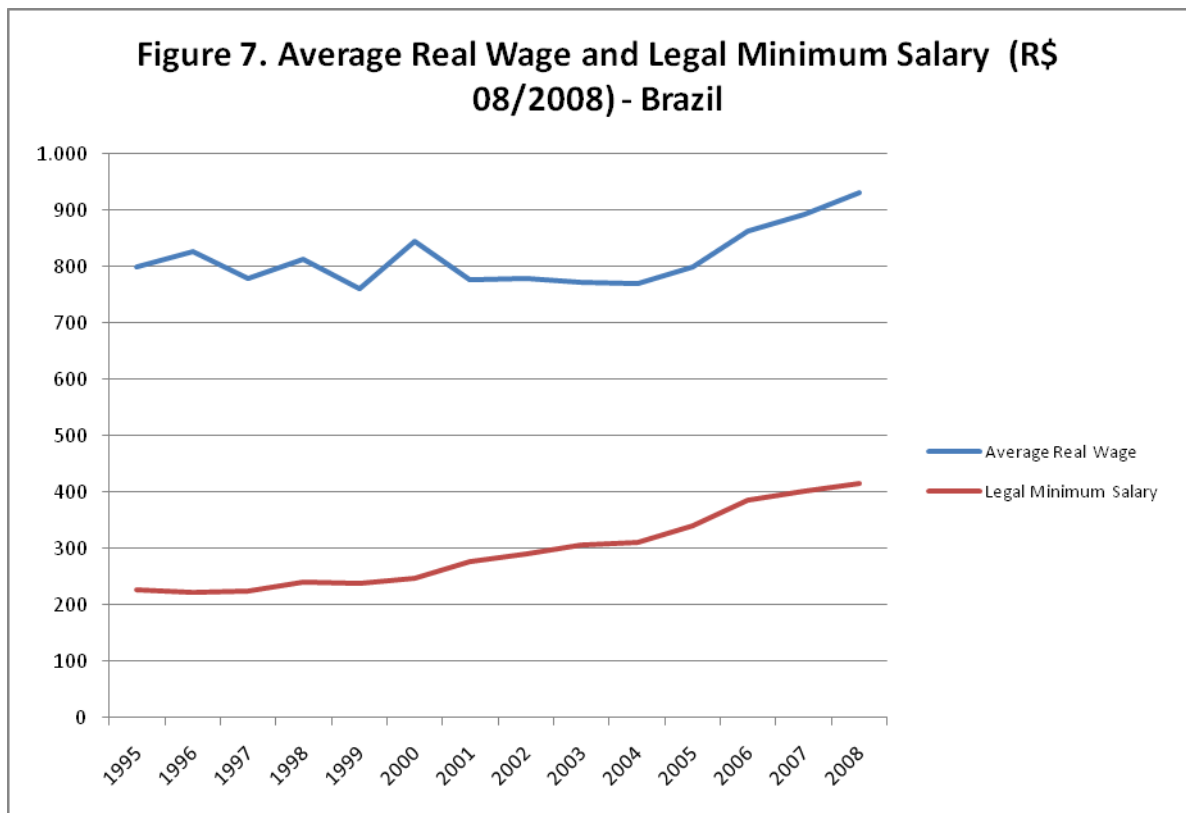
But the most intriguing trend, as we have seen, is the growth in the proportion of graduates in occupational groups for which the need of HE is not compulsory and actually not expected, given the nature of activities involved. This is clearly the case for MGs 7, 8 and 9, mostly skilled manual occupations; and, to some extent, to MGs 3 (technicians usually correspond to secondary vocational

educational), 4 and 5, which corresponds to non-manual routine activities. In order to examine this issue, in the next section we explore the variable income.

IV . Wage and wage premium

Until 1994, Brazil suffered from chronic high inflation, which turns quite unreliable the exercise of deflating currency values for previous periods. For that reason we opted to limit the analysis of wages for the period 1995-2009.

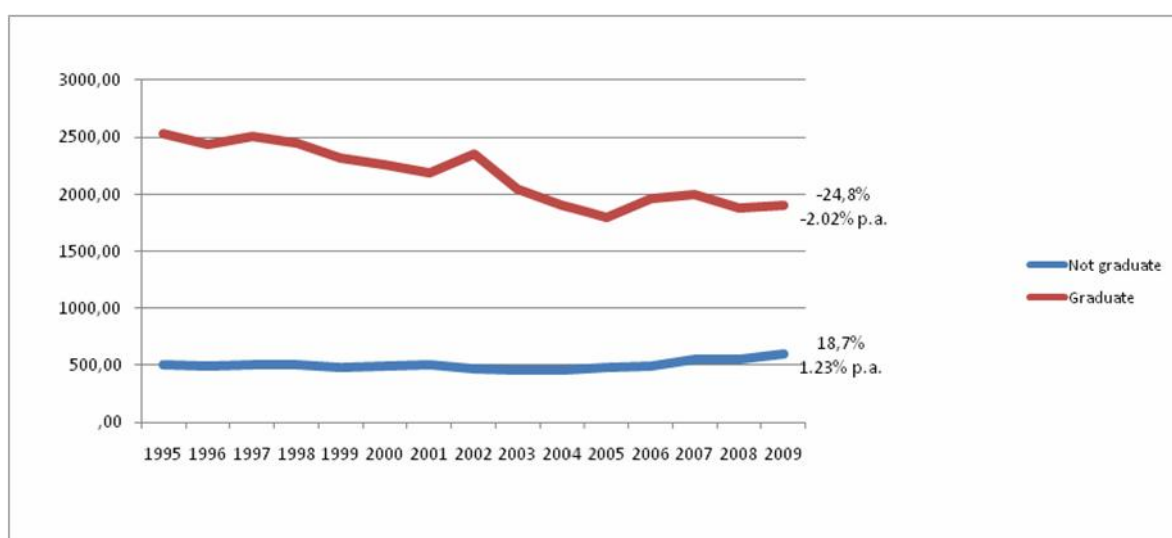
The overall picture for salaries in Brazil, along the whole period, was not favourable at all, although two contrasting trends can be found when the period is split in two. In the late 1990's and the beginning of the 2000's (Figure 7) wages have waved down due to the slow pace of economic growth, the high levels of unemployment, and the general freezing of salaries in the public sector. From 2004 forth, salaries started to recover, with a bottom-up bias, faster for lower than for higher wages. This happened mainly due to the reheating of the economy, a continuous lifting in the legal minimum salary, and a strong and persistent wave of job creation (especially formal jobs).



The general trend favouring the lower salaries in the recent period is also captured by contrasting the performance of wages between graduates and non graduates (Figure 8.). Non

graduates have experienced slight losses in the first sub-period, starting a recovery trend in 2003, ending the whole time span with gains of 18,7%, in real terms. Graduates went through much heavier losses until 2005, when an uneven recovery seems to have started; all the same, the accumulated loss for the whole period was close to 25%. For practical purposes, thus, the wage gap between graduates and non graduates has narrowed which makes a strong point to the argument on credential inflation. That is a paramount aspect of the debate and it is worth looking to the picture for each occupational major group.

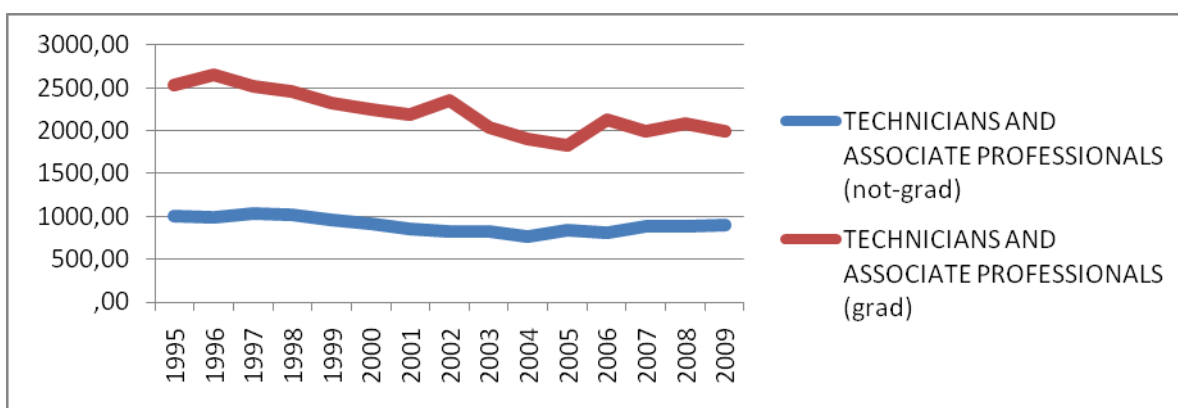
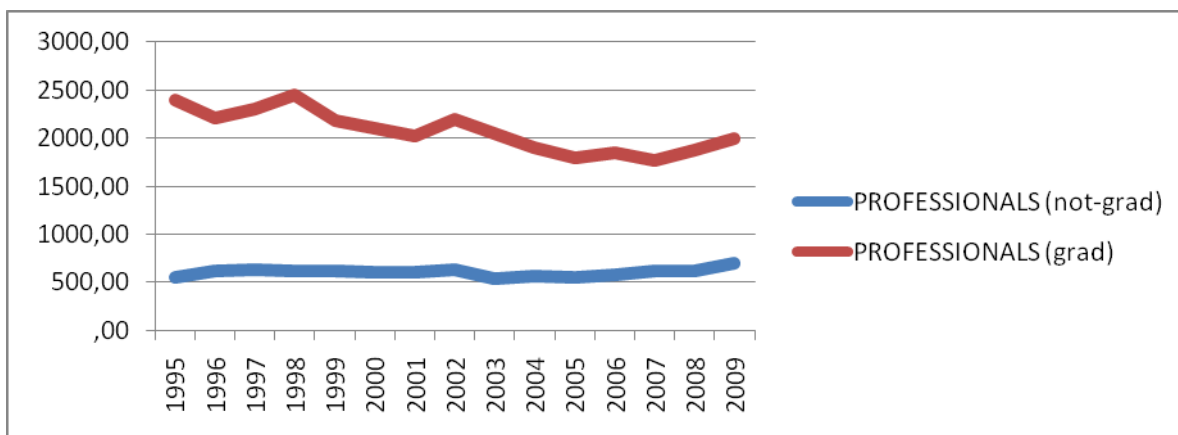
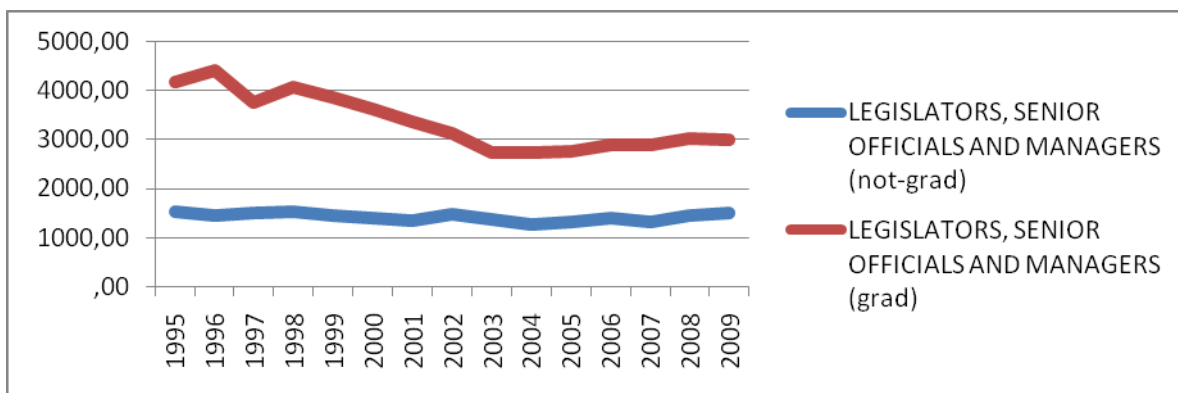
Figure 8.
Wage median for graduates and non-graduates (1995-2009)

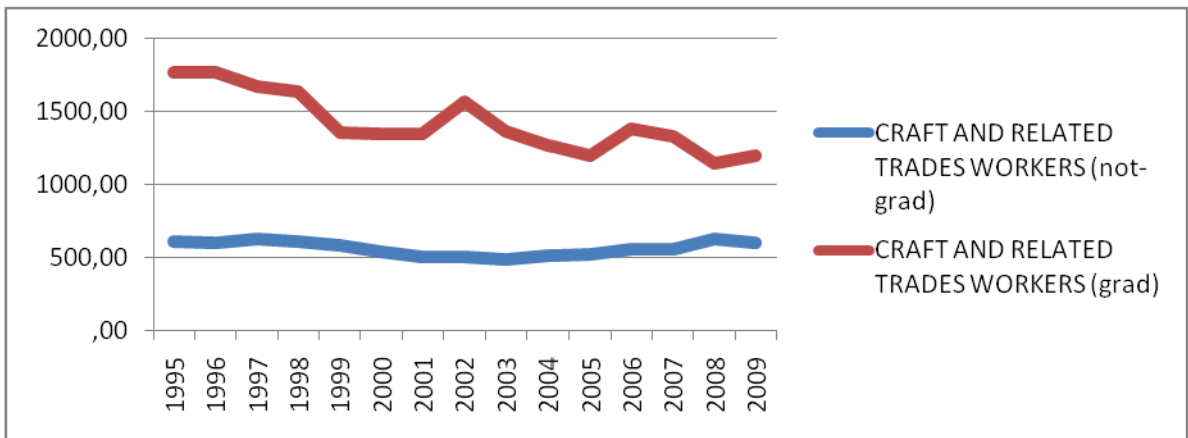
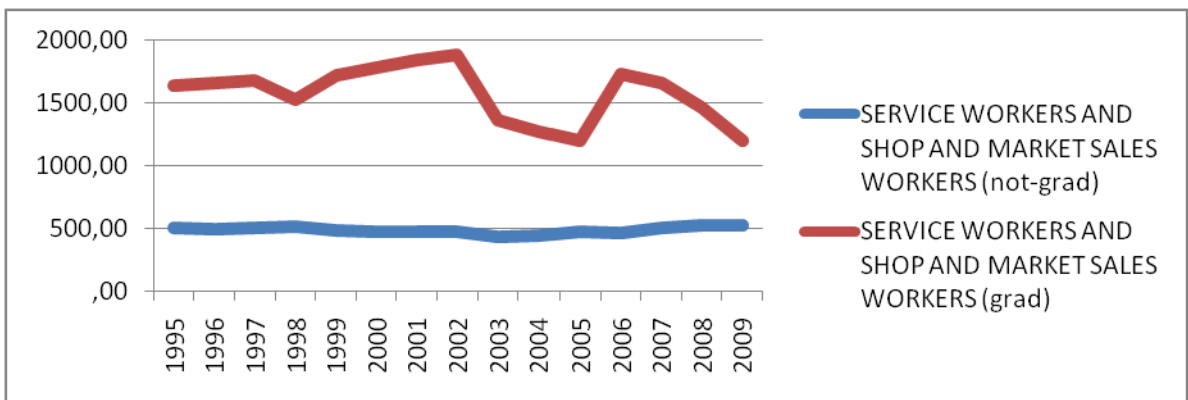
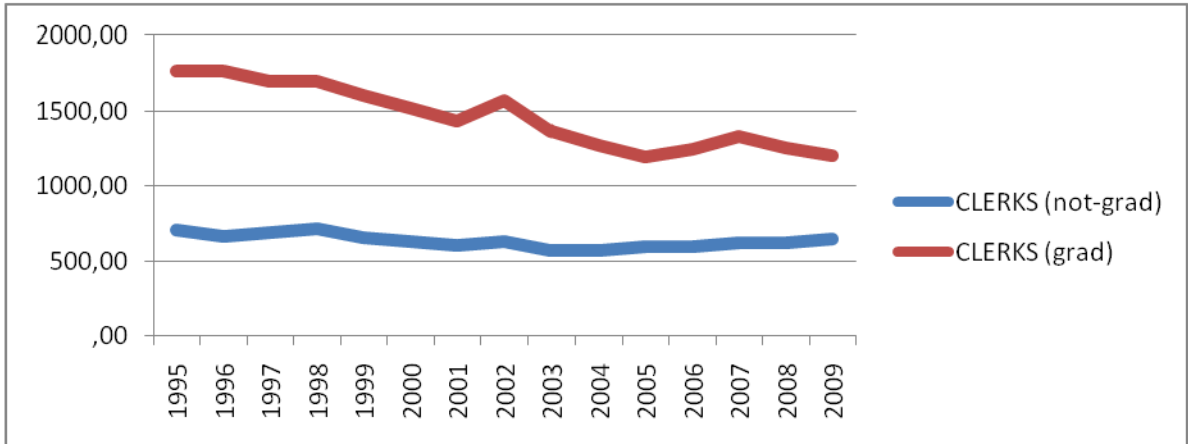


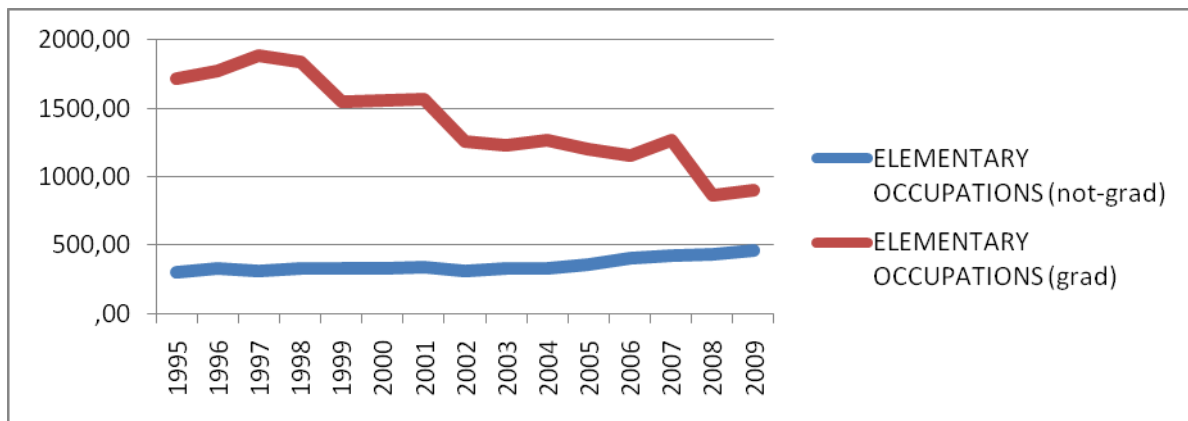
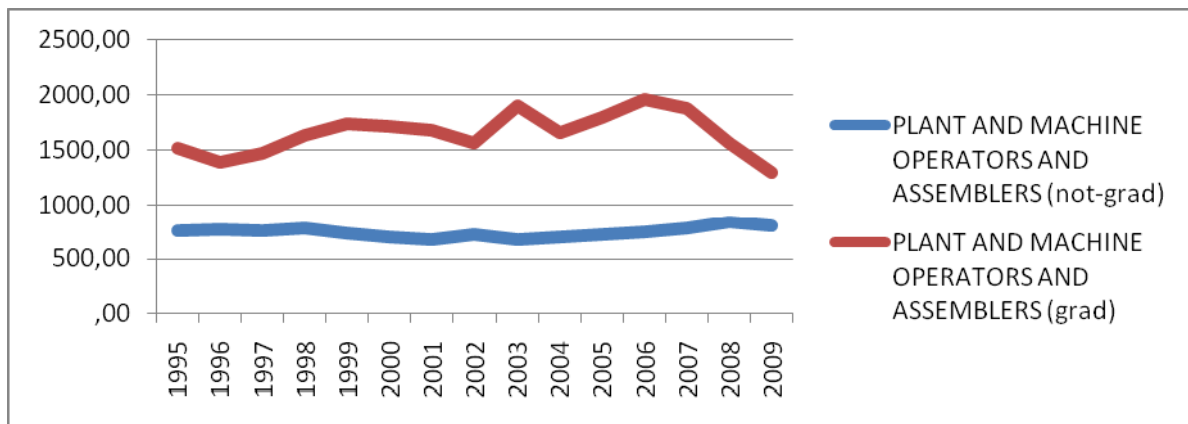
The following figures (Figures 9A to 9H) display the results for eight Major Groups: MG 0 Armed Forces, for being a particular case of an exclusively state career, and MG 6 Skilled Agricultural and Fishery Workers, given the small absolute number of graduates, were excluded from this exercise. The general pattern favoring non graduates can be observed in all Major Groups; with relevant differences, nevertheless. In Major Groups 1 Senior Officials and Managers, 2 Professionals, and 3 Technicians, the ones that combine the most traditional graduate occupations, and thus the highest concentrations of graduates, the trend of wage losses is reversed earlier (2003 and 2005), in parallel with the overall course of salary's recovery. For Major Groups 7 Craft and Related Trades Workers, and 9 Elementary Occupations the turn round in graduate's wages decline happened only in 2009, too recently to be taken as a new trend, though the recovery seems to be consistent. It is worthwhile to remember that the growth in the number of graduates have been constant year after year all along the period, which makes quite incongruent for these MGs the hypothesis of the credential inflation.

A distinct pattern can be observed for Major Groups 4 Clerks, 5 Service Workers and Shop

and Market Sales Workers, and 8 Plant and Machine Operators and Assemblers. In spite of some positive variations around 2003-2004, those groups display a more consistent trend towards the decline in the earnings of graduates, supporting the idea that the expansion of HE credentials in those occupations does not answer to a real demand for qualifications.







V. “Credential inflation”

A simple exercise can be made in order to check the credential inflation hypothesis. If the hypothesis is correct we should expect to find an inverse correlation between the number of graduates and the median wages, as shown in Figure 10.

However, as shown through Figure 11, the relation between income and number of graduates is not linear: the curve slope reduces at higher values. The best fitting line is a parabola, which explains around 86% of the combined trend. This happens because the graduate's wage decline slows down in the last years of the period, when the number of graduates increases the most.

Figure 10.
Wages and number of graduates: stylized correlation

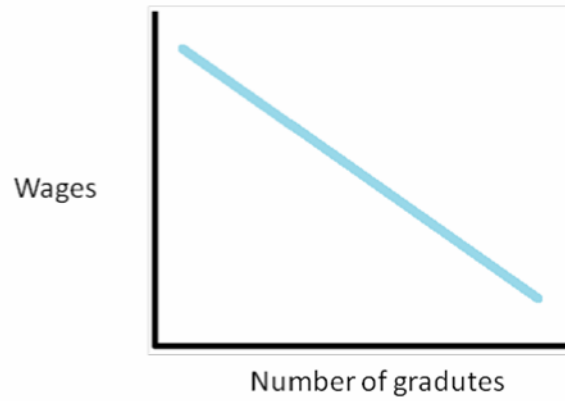
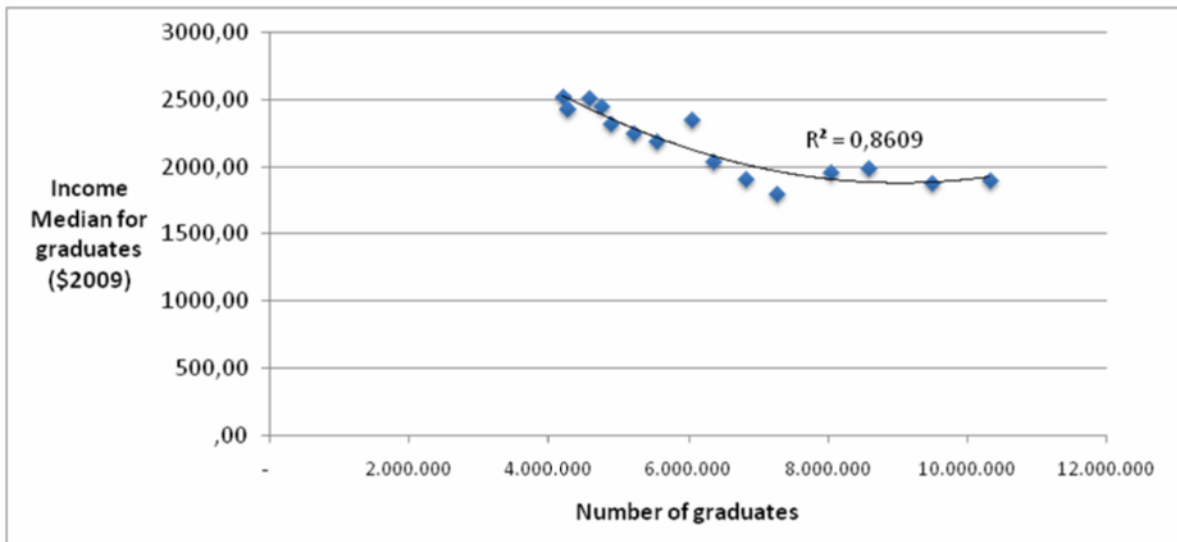
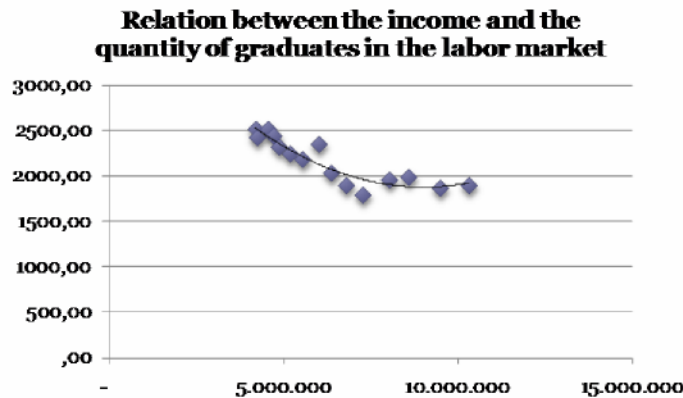
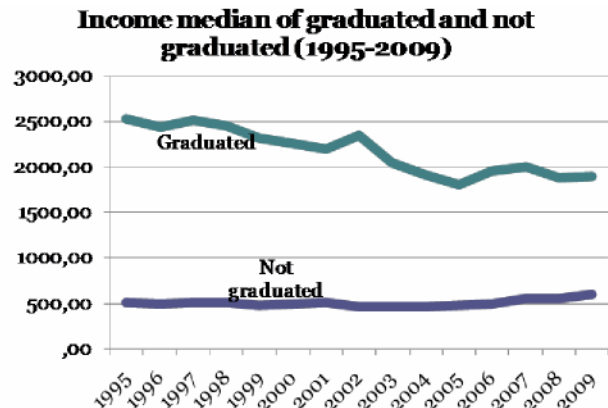
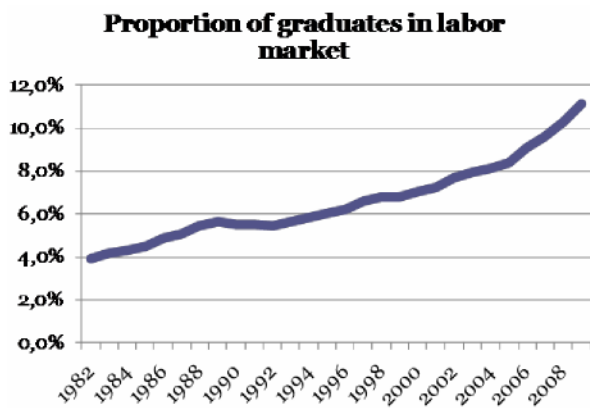


Figure 11.
Graduates median wage by the number of graduates





VI – Preliminary Conclusions

The swift expansion on Higher Education in Brazil is explained, primarily, by institutional changes; but it also owns a lot to the bettering of the poorer families' income, given the warming of the labour markets, the continuous raise in the legal minimum wage, and the income distribution programs. Presently, there are around 5 million students enrolled in higher education in the country, 85% of them attending private institutions. Public sponsored tuitions covers a parcel of no more than 20% of those students (and most tuitions are only partial), meaning that the rest of them have to financially bear their own attempts to get an education up-grade. For most of those students (especially males) the only way to keep up with the expensive fees is to have a job. Most of them started to work before even getting a secondary degree, having to go through that barrier in order to aspire for a superior degree. With severe education handicaps in the youth the path to professional life for those individuals must begin through lower skilled jobs, which can provide the necessary support to go after the completion of education. The search for more education, thus, does not answer, necessarily, the aims of their current jobs; probably it is due to the goal of moving to better occupations that could lead to a social upload. It is not surprising, so, that a wide number of graduates are still employed in the less qualified occupations.

To be a graduate in an elementary occupation, for instance, suggests that the new acquired credentials could be idle; but we cannot assume that those people would stay forever in their current jobs. Occupational mobility, however, depends on the improvement of opportunities, that's to say, that economic structure must be changing in order to provide better jobs. All the same, the low quality of most of private institution of higher education in Brazil could be a strong obstacle separating new graduates and better jobs. In other words, the efforts made by those individuals and families, as well as by the state, to some extent, to bear the costs of getting a higher degree of education could be spoiled.

The credential inflation hypothesis, notwithstanding, have to face the fact that graduates earn better salaries than non graduates even in the lower status occupational groups. Actually, wage premiums for graduates are much higher for lower groups. It strongly suggests that graduated workers perform more qualified tasks (command, supervision, conception, consultancies) even in the lower rank of professions; or that they are required mainly by more advanced firms, which means that they are more productive in some way. One third hypotheses should be addressed to job positions: employers and self-employers in many typical occupations of MGs 7, and 9, for instance, can reach higher earnings than employees, mainly those in the informal sector. Finally, there are also occupational groups in a move to upgrading its requirements (as it happened with primary teachers and nurses); or even occupations that are so new that few workers have a formal certificate. This last hypothesis addresses the investigation to the higher education itself (new courses are taking place, and old ones are in process of reshaping disciplines, syllabus, etc.). Those hypothesis need to be further tested.