



ESRC Pathfinder Programme on Collaborative Analysis of Microdata Resources: Brazil and India

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

Manufacturing Jobs: economic cycles, job creation and structural change

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Abstract:

The 2000s were marked in Brazil by a huge wave of job creation: roughly 15 million new jobs, about 90% of them formal jobs (an almost 20% increase). Besides, this was also a period along which wages have gone up much faster for the lower ends of the labour market than for the upper ones, contributing to a relative decline in the overall inequality in the country and a cycle of booming consumption, fostering economic growth. Most of the research done so far, understandably, has focused on the rising earnings of the poorer, supported by the policies to consistently increase the legal minimum wage. Much less attention has been paid to the nature of these jobs, by which we mean the types of occupations and the economic sectors behind this wave of job creation. In this article we proceed to an investigation about the quality of job creation in the 2000s, in comparison with the two previous decades, finding out that, beyond the improvement in wage levels, a consistent pattern of job upgrading has happened, meaning the replacement of low skilled and informal occupations in traditional sectors by more qualified occupations in more modern sectors. In sum, what is in place is not only an improvement in the poorer workers earnings, but also a pattern of structural change in the labour market as a whole.

1. Introduction

Brazil has always been seen with a certain mistrust in its role as an emerging economic power, after all, since 2000, when the acronym BRIC started to become fashionable, up to the current days, its rate of economic growth has hardly reached the annual average of 4%; less than a half of its Chinese and India partners at that club. Brazil has not even performed as well as its immediate neighbours in South America. Domestically, too, scepticism about the recent cycle of growth and the future perspectives for the Brazilian economy is widespread among newspapers and academic pundits. To the slow pace of economic growth (compared not only with other big emerging economies, but with the country's own experience in decades previous to the 1980s too) was added, in the last years, the fears of deindustrialisation, Dutch disease, and regression to the status of a primary export economy.

In sharp contrast with that somber picture, when it comes to income distribution the country seems to have been swimming against the tide. Despite the modest wax and waning levels of economic growth, its pro-poor bias has guaranteed worldwide attention. Quoting a Brazilian expert:

'(...) Brazil's poorest populations experienced a Chinese-like growth at the beginning of the present decade [the 2000s], but in the past few years, all social groups have had this kind of growth. The recent Brazilian boom is of even a better quality than the Chinese because it is combined with greater equity, while China has an increasing inequality – similar to Brazil's rates during the economic miracle of the 1960s.' (NERI, 2009)

Much of the international attention has been driven to the conditional cash transfer programs, CCTP, (named *Bolsa Familia*), as it had worked out to relieve poverty and extreme poverty among tens of millions of Brazilians, at a relatively bargain cost of less than one per cent of the countries GDP. Important and strategic as the CCTP has been, the lion's share of the boost in the earnings of the less well off people, nevertheless, came out of a long cycle of job creation (predominantly formal jobs), together with a firm policy to raise the legal minimum wage. This pro-poor bias seems to explain why the country holds a place in the spotlights of big emerging economies, regardless its drawback in terms of rates of economic growth.

The focus of the academic research in Brazil has been predominantly addressed to the performance of income variables. The income inequality index (GINI) waning, however modest¹, was consistent all along the last decade, and in any case, it was an unseen long term trend for more than half a century, as far as statistics allow reliable accounts. Even more auspicious, when it comes to long term prospects, was the uplifting to the condition of 'middle class' consumers of tens of thousands of families - the expansion of the 'C Class', as it became known in the country².

Much less research effort has been spent on examining the quality of these new jobs, approximately 15 millions, all along the 2000s, so that it is still not very clear whether the improvements observed in the labour market are basically due to the policies to increase the lower salaries or to a wider upgrading in the jobs generated, towards the more skilled occupations and the more productive sectors of activity. This article is an attempt to fill this gap. Using data from the National Household Sample Survey, from 1982 to 2009, we explore the variables for occupations, sectors of activity, job status, wages and formal education to draw a broader and longer term picture of the transformations in the allocation of the work force in Brazil. Two analytical strategies are employed.

Following the path of previous work of Wright and Dwyer (2003), in Section 2, we examine the net results of job creation and destruction within each of the last three decades to assess the impact of different economic cycles over the patterns of change in the demand for workforce. The whole employed work force is categorised in clusters of 'occupation by sector' jobs, which are then ranked in terms of average wages, and grouped in quintiles of earnings for the beginning of each period. The variations in the size of these 'occupation by sector' types of jobs computed in the end of each period will tell us if the overall pattern of job expansion (or retraction) was biased towards the better ranked categories (meaning an upgrade in the labour market), or to the worse ones (downgrading the labour market), or even if it has kept the original balance between categories (meaning no substantive changes in the labour market). The major findings in that section clearly point out to an upgrading pattern of job

¹ A drop from 0.58 to 0.52 along the 2000s.

² For a briefing in English of the study carried out by the Centre for Social Policies, Getulio Vargas Foundation, see report at The Financial Times (21 July 2011, page 2), titled 'Tale of two classes in Brazil as millions climb out of poverty'. The report informs that: 'In the past 10 years the income of the poorest 50% of the population grew 68% in real per capita terms, while the income of the richest 10 per cent grew 10 per cent'; adding that 'Today 105.5m Brazilians out of a population of 190m are members of this group', the 'new middle class', with earnings waving between US\$ 600 to US\$ 3,300, per household monthly.

creation in the 2000s, compared to the previous two decades (not so remarkable regarding the 1980s, but overwhelmingly superior in regard to the 1990s).

Afterwards, in Section 3, we move on to the analysis of the occupational structure, assuming that changes in the overall allocation of labour force along manual and non-manual, skilled and non-skilled, professional and non-professional occupations reflect long term transformations in the economic structure, beyond seasonal changes in the labour market conditions affecting levels of employment and earnings. Here again, the patterns of structural change reveal a consistent growth in the more skilled groups of occupations to the detriment of unskilled and manual ones (particularly in agriculture and domestic occupations). These trends have been in place since the 1980s, loosing pace in the 1990s, and relaunching in the 2000s. Since upward mobility along the occupational structure depends on the qualification of the labour force, on section 3 we add to the analysis of occupations some information about the recent trends on education, to find out that, in spite of the improvements experienced lately, education is still the fundamental Achilles heel to constrain the Brazilian economy prospects. The last section, as usual, brings the conclusions.

3. Patterns of job creation: 1980s, 1990s, and 2000s

In an article published in 2003, Erik Olin Wright and Rachel Dwyer called the attention to the fact that after a long and strong cycle of job creation in the US (coinciding with the two presidential terms of Bill Clinton, between 1992 and 2000) the bulk of the research has been focused on the performance of salaries and income inequality and yet very little research has been addressed to assess the quality of the jobs created. The very same gap can be found in Brazil nowadays. Roughly 15 million jobs were created in the country along the 2000s, bringing down the unemployment rate from about 12%, in the beginning of the decade, to around 6% in its end, fostering consumption and economic growth, and awakening fears among employers that the country's economy could be soon threatened by a shortage in the labour force supply. In this section we proceed to adapt the methodology employed by the authors to the Brazilian case.

3.1. Methodology

The original model. The exercise developed in this section is based on the article 'The patterns of job expansions in the USA: a comparison of the 1960s and 1990s' by Erik Olin WRIGHT and Rachel E. DWYER (2003). Using the CPS (Current Population Survey) the authors built a matrix of occupation by economic sectors. For 1990s and 2000s years, the crossing of 104 occupations by 23 economic sectors generated 2392 'potential types of jobs', the total number of cells in the matrix. The types of jobs are 'potential', because not all cells were filled in with cases. The authors considered all cells with at least 1 case. In spite of the large number of remaining cells, 479 of them accounted for over 90% of job types. For the 1960s and 1970s the job matrix was built upon 30 occupations and 23 sectors, resulting in 690 'potential types of jobs'³. In order to provide enough cases to each cell of the matrix, the authors proceeded the built of aggregated CPS data bases by merging sets of consecutive annual editions (1963-70, 1975-80, 1983-90 and 1992-2000).

Finally, the occupation-by-sector cells were ranked based on the median earnings per hour and then split into quintiles. The earnings are understood as a measure of job quality; hence the quintiles are ordered categories of job quality. For each occupation-by-sector must be fixed in just one quintile⁴, this method allows one to map how the net variation of jobs between two points in time alters the initial distribution of the quintiles. So it is possible to measure the effects of a job expansion (or contraction) over the occupational structure. For each period the net variation in the number of jobs within each quintile reveals patterns of job growth or contraction. The figure below, extracted from the article, shows four 'ideal-type' patterns of job creation, given a net expansion of 5 million jobs from the beginning to the end of a given number of years. If the new jobs are equally distributed by the quintiles it is possible to say that the overall structure of the labour market was preserved (first graph). If the new jobs are mostly concentrated in the lowest quintiles (as in the second graph) our hypothetical country has suffered from a job downgrading; the opposite result (as in the third graph) means a job upgrading, that is, new jobs mostly concentrated in the highest quintiles; and finally, if the growth in the number of jobs happens to be in the extremes (as in the fourth graph) the pattern of growth can be said to be a polarised one. Actually, the last ideal-type pattern is the one that closely described what happened in the US in the researched period, 1992 to 2000⁵

³ The number of occupations and economic sectors differs between 1960s-1970s and 1990s-2000s because the classification systems adopted by CPS were not the same.

⁴ As each occupation-by-sector must be univocally classified in just one quintile, the procedure generates categories that have approximately (not exactly) 20% of the cases (individuals).

⁵ See WRIGHT and DWYER (2003), page 302.

An hypothetical decade in which 5 million jobs were created

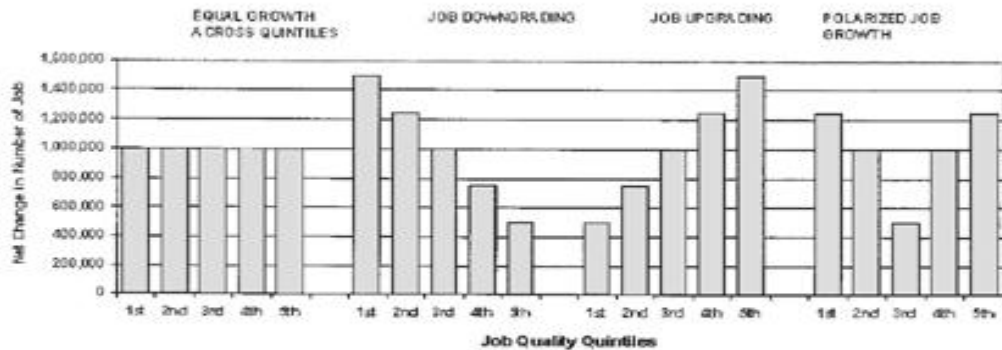


Figure 1 Hypothetical patterns of net job expansion.

Extracted from Wright and Dweyr (2003)

The databases. In our study we use the National Household Sample Survey (PNAD), a sample of approximately 150,000 households and roughly 400,000 individual cases. It runs yearly except in Census years, since 1976. For reasons of availability of appropriate micro-data, we worked with the period starting from 1982 through 2009⁶.

Using the strategy of Wright and Dwyer (2003), we merged sets of consecutive annual editions of PNAD in order to provide sufficient cases for each occupation-by-sector cells. Six datasets were built, as shown in Table 1, below. The 'beginning' and the 'end' of each period are, thus, represented by the rolling average of the first and last three years for which we have PNAD data.

Table 1. Time Series

Decades	Starting point	Ending Point
1980s	1982-1984	1987-1989
1990s	1992-1993	1997-1999
2000s	2002-2004	2007-2009

The matrix occupation by sector. The systems of classification of both occupations and economic sectors have changed along the three decades covered by our study; however they remained the same within each decade. For that reason one matrix occupation by sector was built for each decade and the patterns of job growth were examined for each decade separately.

⁶ There are no data for 1991 and 2000, Census' years, and for 1994, when the PNAD was exceptionally not made for administrative problems.

To avoid empty as well as overcrowded cells, we collapsed or split classes of occupation by sector, using the three and four digit level classification, following similarity criteria of belonging to the same broader occupational groups, as defined by ISCO. Table 2, below, displays the number of occupations (a), the number of sectors (b), the total number of cells resulting from the crossing (a x b), and the number of cells actually used in the exercise after the empty cells were excluded.

Table 2. Matrix Occupations X Sectors

	Nº occupations (a)	Nº of sectors (b)	Total number of cells (a * b)	Nº of cells used in the exercise
1980s	144	72	10.368	3.993
1990s	138	70	9.660	3.562
2000s	132	39	5.148	2.839

Job quality.

We used the median of monthly salary as a measure of job quality. In Brazil it is not common to calculate earnings on hourly-bases – most workers (or even their employers) would not know how much they earn per hour. Furthermore, payments are usually made at the end of a month. It is also important noting that the labor market in Brazil is very much characterized by informal jobs. In such contexts, informal workers don't choose between full- or part-time jobs: the amount of time spent at work is constrained by a poor insertion in the labor market. So if we restricted our analysis to full-time jobs, it would certainly lead a selection bias effect. Similarly, if we calculated hourly or weekly earnings, wage inequalities due to informality would be neglected.

Along these three decades the country has undergone long periods of high inflation, being forced to change its currency several times. To assure comparability, all monetary values were deflated to the current value of the Real in September 2009, using a widely accepted standard index. (cf. Corseuil & Foguel, 2002).

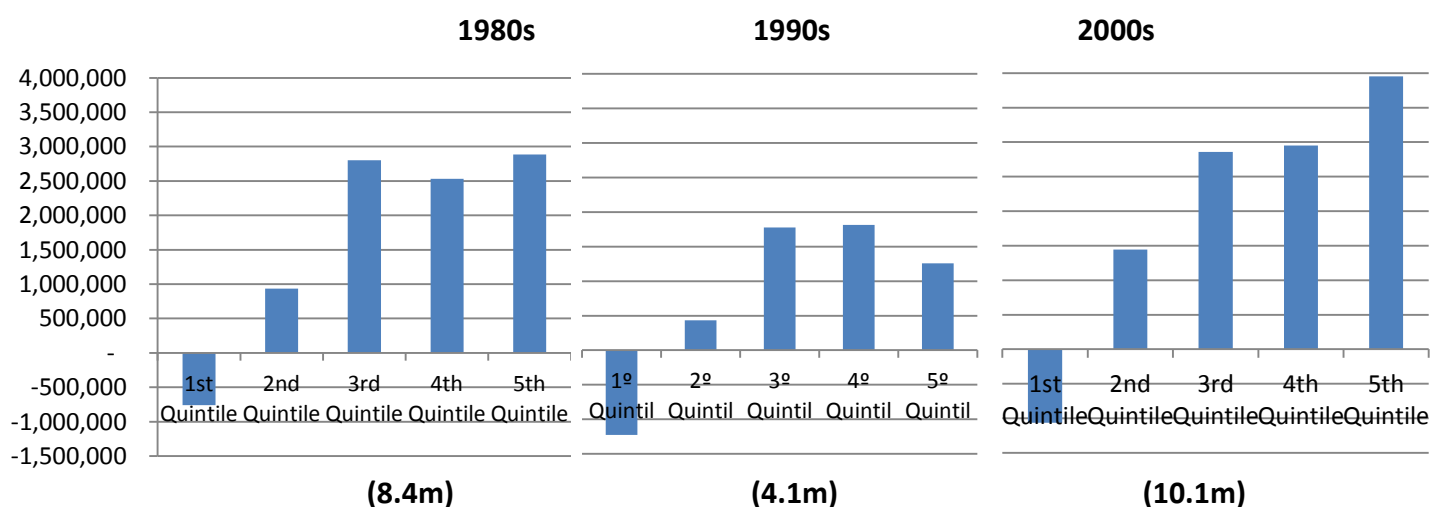
Studies about income inequality usually exclude cases of unpaid workers. Since we were not primarily concerned with the issue of income inequality, but with occupational change we opted out to consider such occupations in this study. In our samples, such cases correspond to three main sorts of workers: i) informal labourers who cannot estimate their earnings in monetary terms; ii) self-consumption labourers (most commonly in house construction or subsistence farming); and iii) relatives labouring in family small business (still very common in rural activities, as well as in urban small shops and craftwork). Some comparative tables with the results of computing the data with and without the unpaid labour force will be shown in the next section and in the Appendix, highlighting the effects of this choice; despite some differences, the structural trends are not significantly affected.

3.2. Results

Estimations made using PNAD show that the net result of job creation between 1983⁷ and 1988, amounted to 8,4 millions; for the period 1993 to 1998, to 4,1 millions; and between 2003 and 2008, to 10,1 millions.

Charts 3.2.1, below, display the distribution of the net results of job creations along the quintiles of earnings, computed for the beginning of each period.

Charts 3.2.1 - Patterns of job creation in Brazil: 1980s, 1990s and 2000s

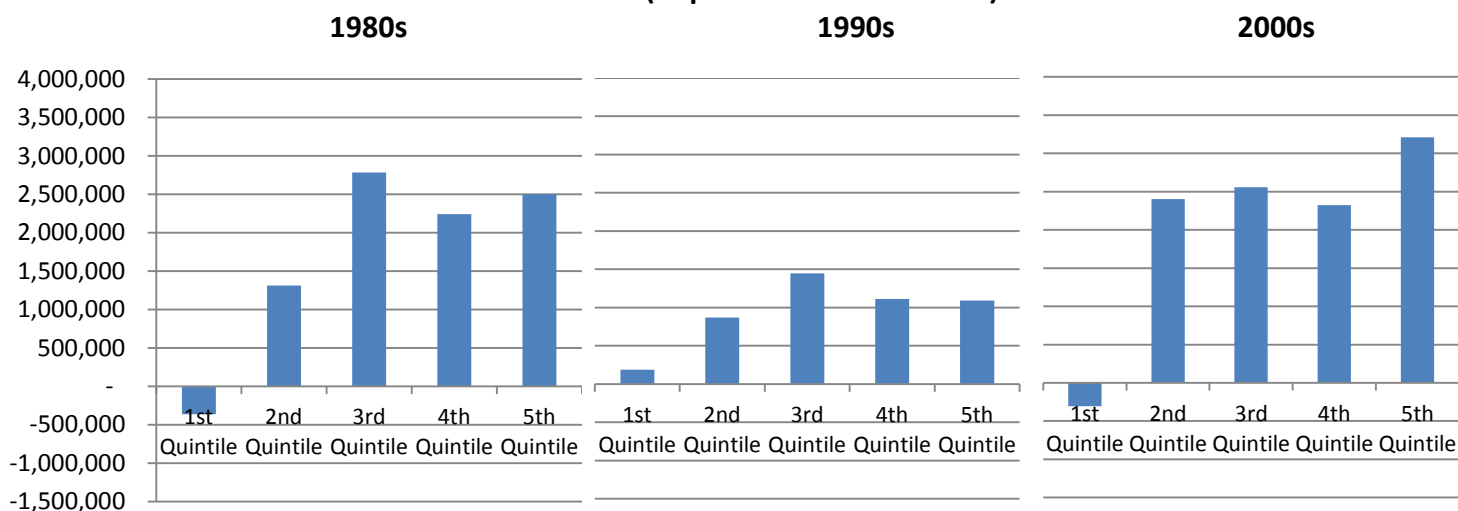


The chart shows that both the 1980s and the 2000s exhibit a pattern of job-upgrading, for the bulk of new jobs happened to be placed in the 3rd., 4th and 5th quintiles, with net decline in the 1st quintile; a pattern that is even stronger in the 2000s. In the 1990s, in addition to a much weaker wave of job creation, the pattern leans to the intermediate quintiles, also recording net decline in the 1st quintile - a trend that seems to be a structural one, as we are going to explore later – but displaying low dynamism in the top quintile. When unpaid workers are excluded from the sample (see Chart 3.2.2, right below), the most remarkable change regards the shrinking of the (negative) performance of the 1st quintile - as one could only

⁷ Everywhere in this section of the paper, the numbers for specific years account for the rolling average of the years immediately before and after; thus, numbers for 1983 are in fact the rolling average for 1982, 1983 and 1984.

expect - consequently plumping the 2nd and 3rd quintiles in the 1980s and 2000s, and the very same 1st quintile in the 1990s. But, as we said, the overall outfits are not significantly changed.

**Chart 3.2.2 - Patterns of job creation in Brazil: 1980s, 1990s and 2000s
(unpaid workers excluded)**



Economic growth is, of course, a primary factor linked to the volume of job creation. After a decade of high growth rates in the 1970s (annual average growth around 9%, between 1970 and 1979), the 1980s witnessed a dramatic slow down to an annual average of just 3%, from 1980 thru 1989, due to a combination of economic and political turmoils⁸. Between 1990 and 1999 economic growth has dropped even down to an annual average of tiny 1.6%, as result of huge programs of liberalisation, privatisation and cuts in public expending, together with the policies to tackle with high inflation (mainly skyrocketing interest rates). In the 2000s (2000 to 2009) economic growth has rekindled, reaching 3.3% in average.

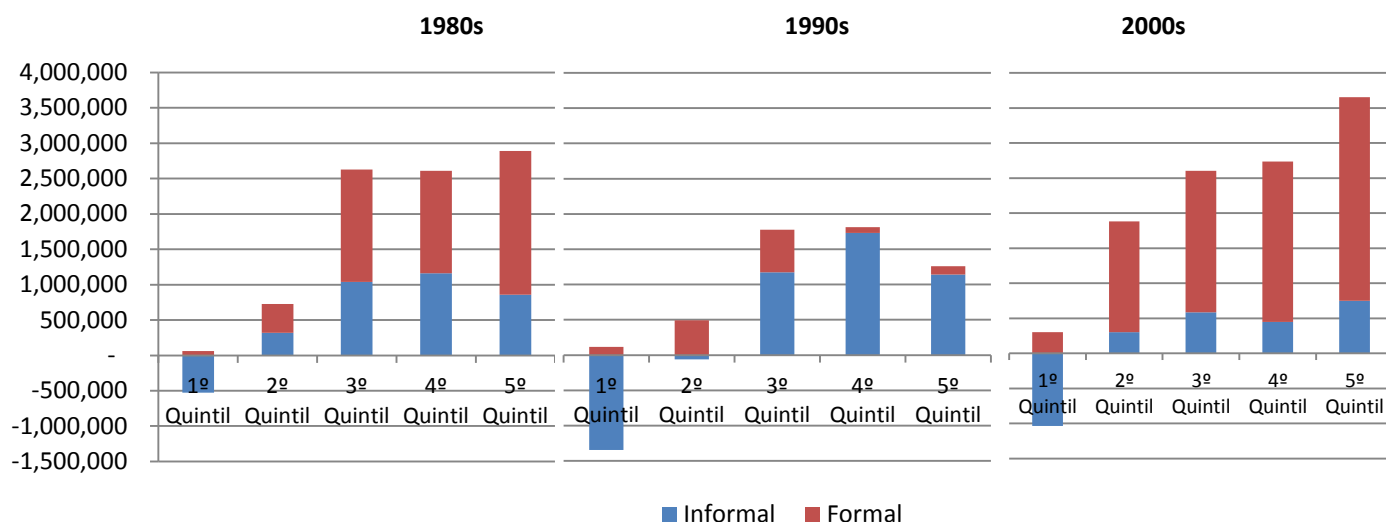
The differences between the three periods, however, are not limited to the volumes of jobs created. As we have seen, the very low level of growth experienced in the 1990s was also much less intensive in higher earning jobs. Chart 3.2.3, below, adds information about the formal status of jobs. Comparatively, the 2000s performed far better than the two previous decades, as 90% of the net result is made of formal jobs⁹. In the 1980s about two thirds of new jobs were formal, whilst in the 1990s the figure fall down to as little as one third. In common, the three periods share the negative net performance of informal jobs in the lowest quintile, reflecting what might be considered a more structural trend towards the drying up of the pool of predominantly rural self-subsistence occupations. The overall pictures suggest, likewise, that under a better economic environment (combining fair rates of growth, economic stability

⁸ On the economic front, the second oil crisis in 1979, and the debt crisis of 1982 were the main economic factors. On the political front, the transition from the authoritarian rule to democracy framed the decade, marked by weak governments, and strong social mobilisation.

⁹ Among employees, formality means having a proper labour contract, which guarantees all labour rights, such as one month paid holidays, social security, pension coverage, plus fringe benefits like food, transport and health services subsidies. Among self-employed and employers, formality means subscription and regular contribution to the national public pension and social security scheme.

and policies to reinforce basic wages and labour legislation) the prospects for social mobility are considerably augmented. We will be back to this point latter on.

Chart 3.2.3 - Net job creation, by formal and informal status, Brazil: 1980s, 1990s e 2000s



Finally, Table 3.2.1, right below, displays the means and medians of earnings by quintiles. The overall trend is of declining wages in the 1990s (except for the 3rd quintile, the leading one in terms of formal jobs creation); followed by partial recovery in the 2000s, when the 2nd and 3rd quintiles earnings overpassed the levels of the 1980s, as a direct output of the continuous increase in the real value of the legal minimum wage¹⁰. The wave of job creation in the 2000s, however, was biased to the two upper quintiles (4th and 5th), which together amassed 5.2 millions formal jobs, against 3.6 of the 2nd and 3rd summed up.

Table 3.2.1 - Mean and median earnings (main job), by quintiles in the end of each decade (BRL\$ 09/2009)

	1987-1989		1997-1999		2007-2009	
	Mean	Median	Mean	Median	Mean	Median
1º Quintile	210,81	155,67	120,38	0,00	189,10	16,62
2º Quintile	401,47	288,82	351,46	262,87	461,63	433,11
3º Quintile	586,18	401,79	586,80	424,93	663,99	521,82
4º Quintile	923,09	622,77	884,05	647,60	893,68	700,00
5º Quintile	2621,87	1506,71	2336,74	1453,54	2219,78	1400,00

¹⁰ The legal minimum wage in 2009 was BRL\$ 465.00, fitting in the boundaries of the 2nd and 3rd quintiles.

3.3 Economic sectors and the quality of jobs

Economic sectors vary along a series of aspects, from the kinds of outputs, to capital intensity, technology, size of firms, geographic location, till the skills and qualifications of the labour force required to perform such activities, and thus, the levels of wages. Although economic sectors maybe internally highly heterogeneous too, as they indeed are, particularly in large developing countries, they carry significant weight in shaping the overall quality of jobs they create. In this section we explore how sectoral differences in the composition of jobs created in each of the three decades, as well as the contribution of each sector to the pattern of job creation.

Charts 3.3.1 and 3.3.2 show the net performance of each sector at the end of each decade. Charts 3.3.1 displays absolute numbers, while Chart 3.3.2 gives the percent contribution of sectors respectively in creating and destroying jobs (negative figures are calculated over the net result of jobs closed; positive ones over the net result of jobs opened). So in the 1990s, for instance, the surplus of jobs of 4,057,640 was the result of a total of 5,866,381 jobs created minus 1,808,741 jobs closed down. Among the latter, the primary sector answers for about 87.5%, and the two manufacturing sectors for the rest. In the 2000s, 100% of the 767,217 jobs closed were in the primary sector. And in the 1980s no sector displayed negative net results, meaning that the lower ends of the labour market were hosting more entrants than leavers. The overall picture shows that the 2000s and the 1980s experienced a more balanced growth, with around one quarter of the jobs surplus belonging to modern and traditional manufacturing industries plus civil construction (2.1 millions jobs in the 1980s, and 3 millions in the 2000s), which are sectors well know for the intensive use of blue-collar workers and technicians (highly skilled workers in the modern manufacturing sector, less so in the two others), as well as for being more capital intensive than most service and primary activities. Besides, the manufacturing sector (but not the civil construction) holds high rates of formality, which adds a lot to the usual earnings, as mentioned previously (see footnote 10). The contrast with the 1990s couldn't be sharper: together, modern and manufacturing industries lost net 226 thousands jobs, while civil construction rose about 600 thousand. As we are going to see, modern industry creates jobs mostly in the two highest quintiles of earnings, while the traditional and the civil construction industries are denser in the intermediate quintiles. In any case, the performance of the manufacturing sector in terms of job creation, in the 2000s, was surprisingly good for a country running on the deindustrialisation pathway, as many analysts believe to be the case for Brazil.

Distributive, Productive, and Social Services amassed the bulk of new jobs all along the period covered by this study: 3,863,701 in the 1980s; 3,464,934 in the 1990s; and 5,503,748, in the 2000s. Given the weak performance of the manufacturing sectors in the 1990s, those services (particularly the Distributives sector, which holds poorer jobs than the other two) out performed in this specific decade, getting as much as 59.1% of the total jobs surplus, as opposed to 45.6%, in the 1980s, and to 50.5% in the 2000s.

At the bottom end of the urban labour markets, personal services, which include the vast group of domestic workers, grew close to the average of job growth in the 1980s (18.7%,

against a total variation of 18.2%), and in the 2000s (16.5%, against a total variation of 17.4%), but displayed a much more than proportionate growth in the 1990s (24.2%, against 9.6%). In the 1990s, the amount of presumably poor jobs destroyed in the primary sectors (1.6 millions jobs), was almost identical to that of jobs created in the poor urban sector of personal services (1.4 millions).

Finally, the public administration, a sector that holds better-than-average jobs, in terms of earnings, has answered for 7.7% of the jobs created, in the 1980s, 5.1% in the 2000s, and tiny 2.8% in the 1990s.

Chart 3.3.1

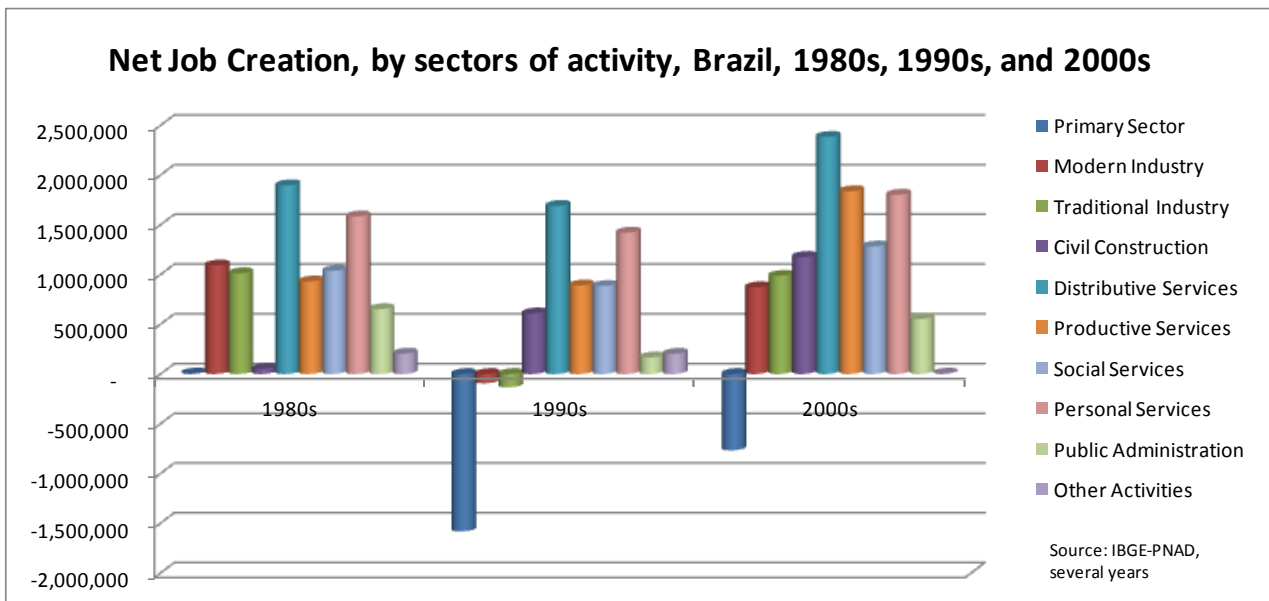
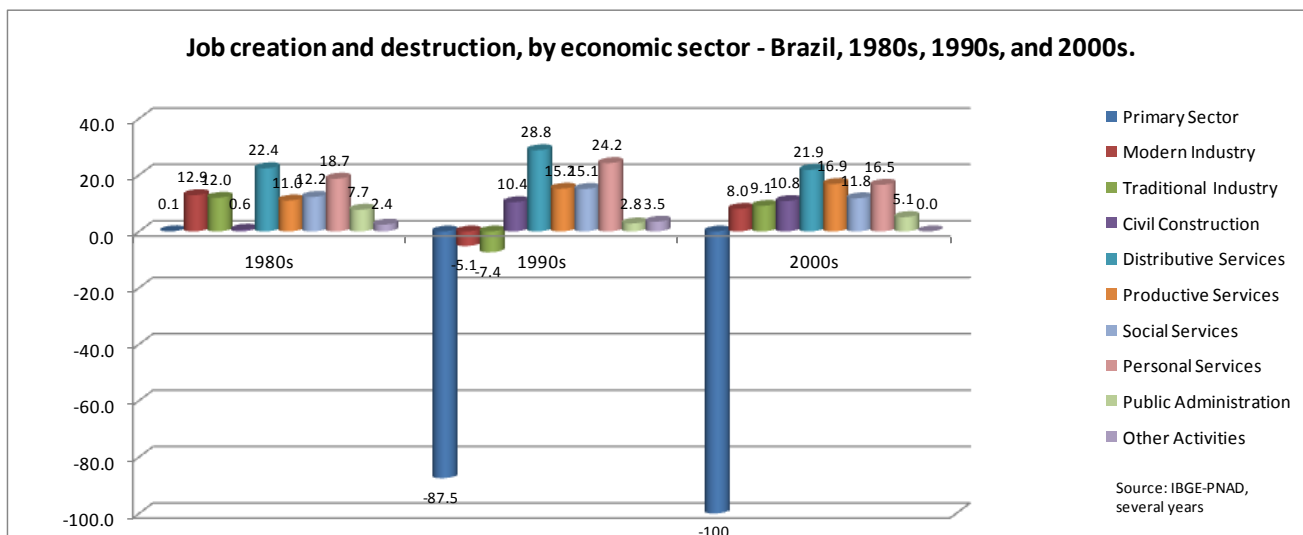


Chart 3.3.2



The following set of charts is meant to give an in depth view of the differences between economic sectors in terms of the quality of jobs created (or destroyed) and how they contributed to the general pattern of job creation in each decade.

Not surprisingly, the primary sector (Chart 3.3.3A) massively loose jobs belonging to the first quintile of earnings, but in the 2000s it helped to create almost half a million of jobs in the third quintile, signalling the process of modernisation undergoing in the primary sector.

The modern manufacturing industry (Chart 3.3.3B), as we anticipated, is a sector that highly concentrates jobs in the top quintiles of earnings, answering for 13% of all jobs created in the 1980s, and 8% in the 2000s, compared to a -5% contribution to job extinction in the 1990s, jobs that were mostly lost also in the top quintile.

The traditional manufacturing industry (Chart 3.3.3C), has a lower profile than the modern one, a trend that is even accentuated in the 2000s. In the 1980s almost all the net contribution of that sector to the wave of job creation came to the three top quintiles, while in the 2000s the surplus spreads down to the 2nd quintile. However, in the less favourable 1990s, most of the job destruction in this particular sector came from the 4th and 5th quintiles; better jobs, thus.

As we saw, in every decade, regardless the economic scenario, the service sectors were the most dynamic in terms of job creation. The sector of distributive services, in particular, championed job creation in the three periods. This sector gathers commerce and transportation activities in which both street vendors, self-employed workers and small informal business live together with huge companies and chain stores. Chart 3.3.3E shows that the surplus of jobs in the sector is distributed between the intermediate (3rd and 4th) and the upper (5th) quintiles.

The contribution of the productive services sector is clearly biased to the top positions, as we can see in Chart 3.3.3F; once again, regardless the economic cycle. Productive services are those providing infrastructure (telecommunication, for instance) and specialised services mostly to other companies (accountancy, informatics, advertising, advocacy, programming,

estate security, and human resources, among others) or to collective consumers (banking, broadcasting, and telecommunication, for example). Being more specialised and labour intensive these activities also demand a more skilled work force, as reflected by the concentration of the surpluses of jobs in the 4th and 5th quintiles, a trend that is reinforced in the 2000s. The public administration, Chart 3.3.3J, follows a similar bias to the top, recording negative results for the 1st and 2nd quintiles, in the latter period.

The social service sector concerns basically education, health and social assistance activities and its highly positive contribution to job creation along the three decades is a strong token of the expansion of the welfare institutions in Brazil, even in the worse economic cycles. These activities answered for the creation of 1,036,698 jobs in the 1980s (12% of the total); 884,784 (15% of the total), in the 1990s, and 1,282,759 (12% of the total) in the 2000s. The profile of the job surpluses, however, has changed quite sharply in the latter decade, when the additional jobs happened to be almost entirely concentrated in the 5th quintile, in opposition to the pattern of dispersion along the 3rd, 4th, and 5th quintiles that marked the two previous decades. As we are going to discuss further, the strong increase in professional and graduate occupations, accelerating in the late 1990s all thru the 2000s, owns a lot to teachers and health professionals with Higher Education degrees, most likely to earn higher-than-average salaries.

Chart 3.3.3A - Net job creation in primary sector

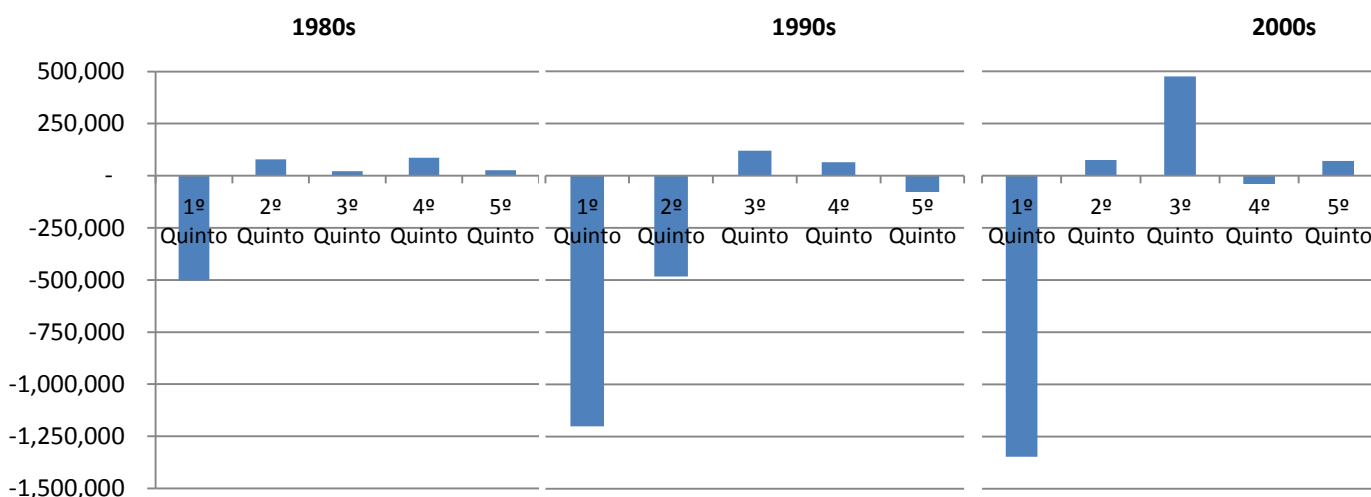


Chart 3.3.3B - Net job creation in Modern Industry

1980s 1990s 2000s

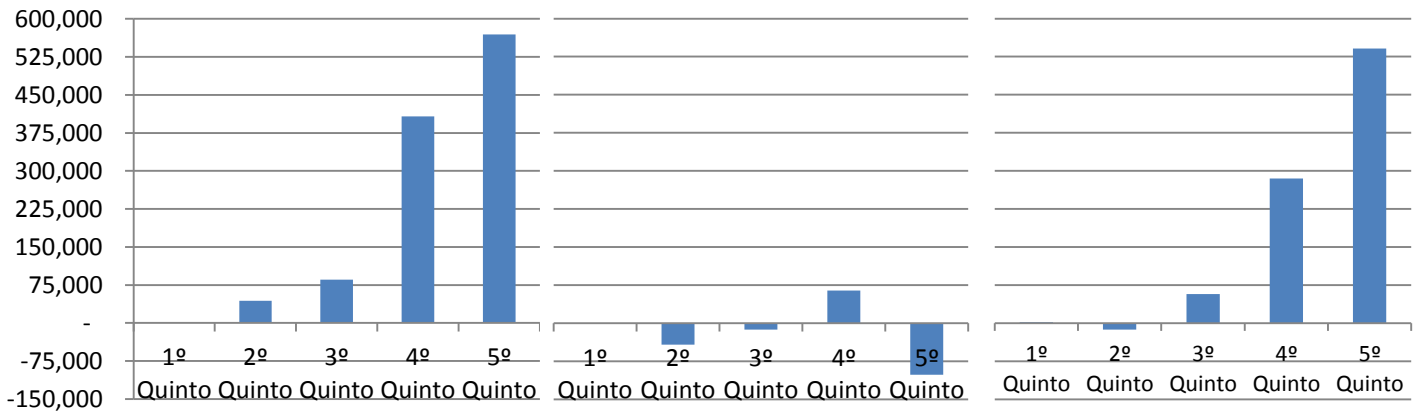


Chart 3.3.3C -Net job creation in Traditional Industry

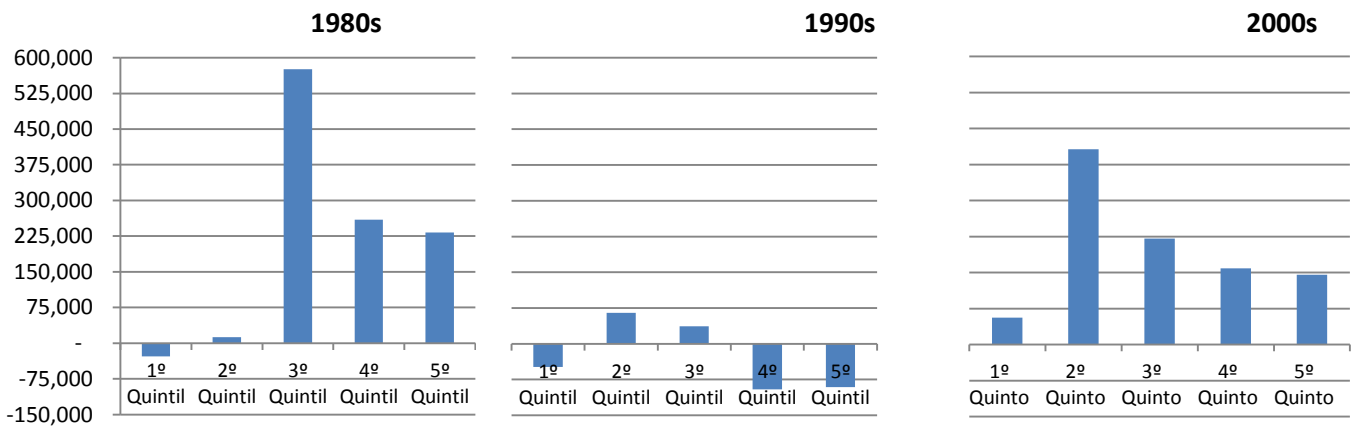


Chart 3.3.3D -Net job creation in Civil Construction

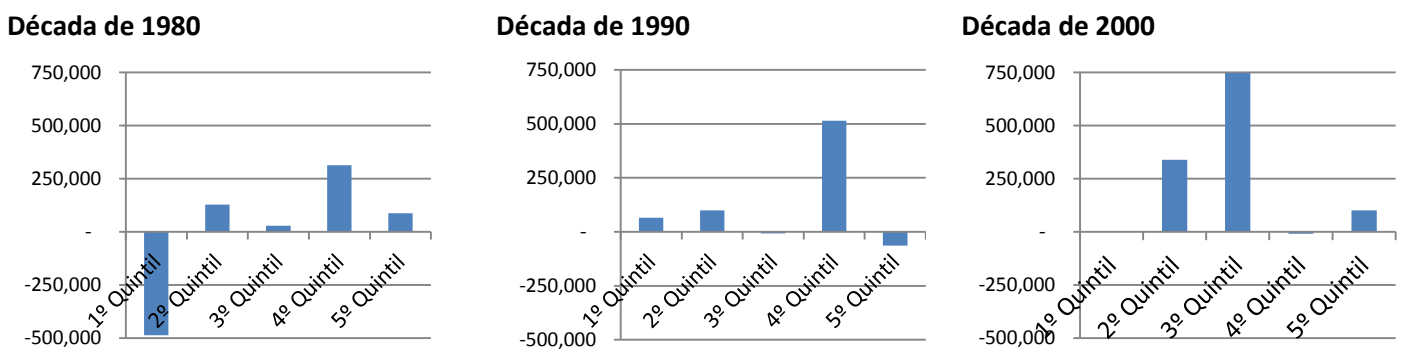


Chart 3.3.3E -Net job creation in Distributive Services

1980s 1990s 2000s

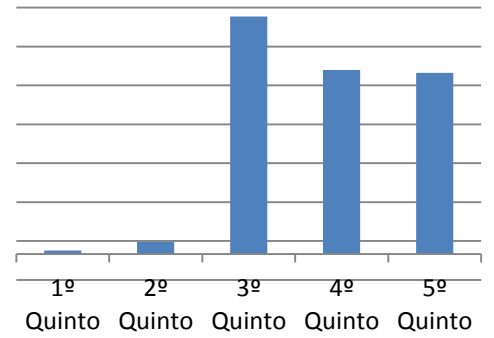
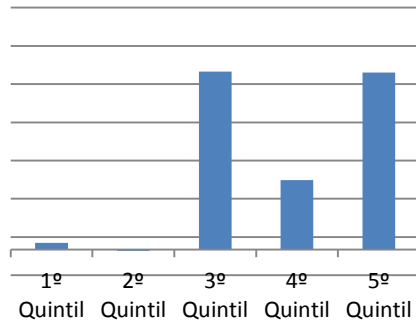
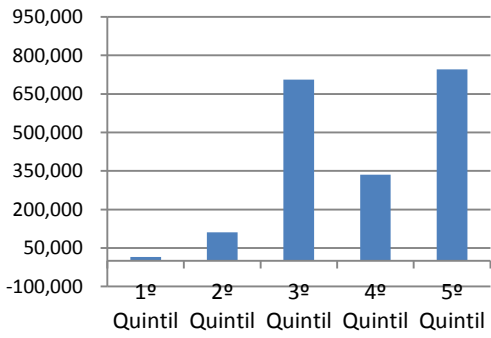


Chart 3.3.3F -Net job creation in Productive Services

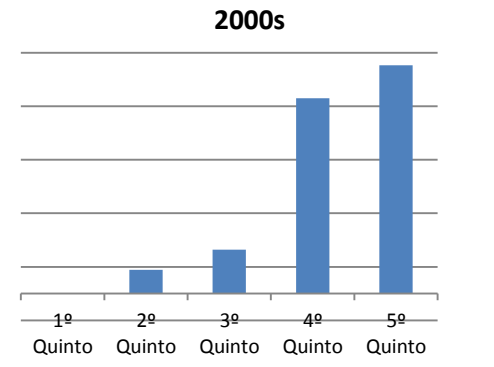
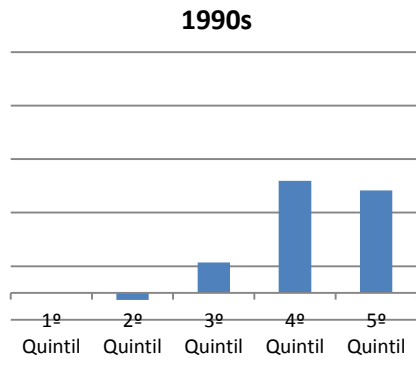
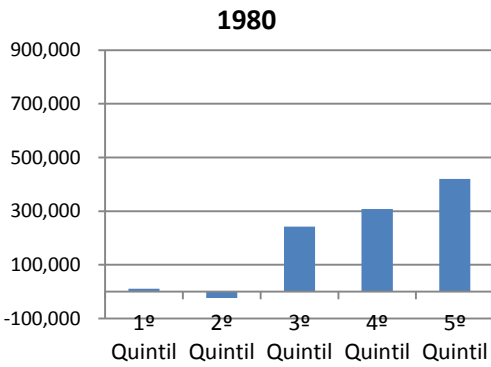
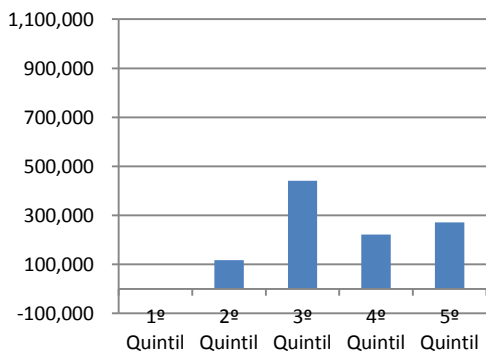
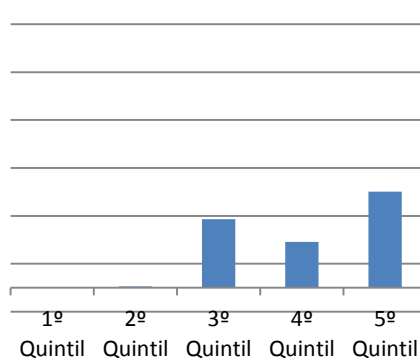


Chart 3.3.3G -Net job creation in Social Services

Década de 1980



Década de 1990



Década de 2000

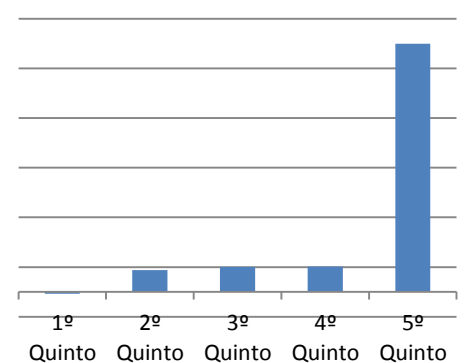


Chart 3.3.3H -Net job creation in Personal Services

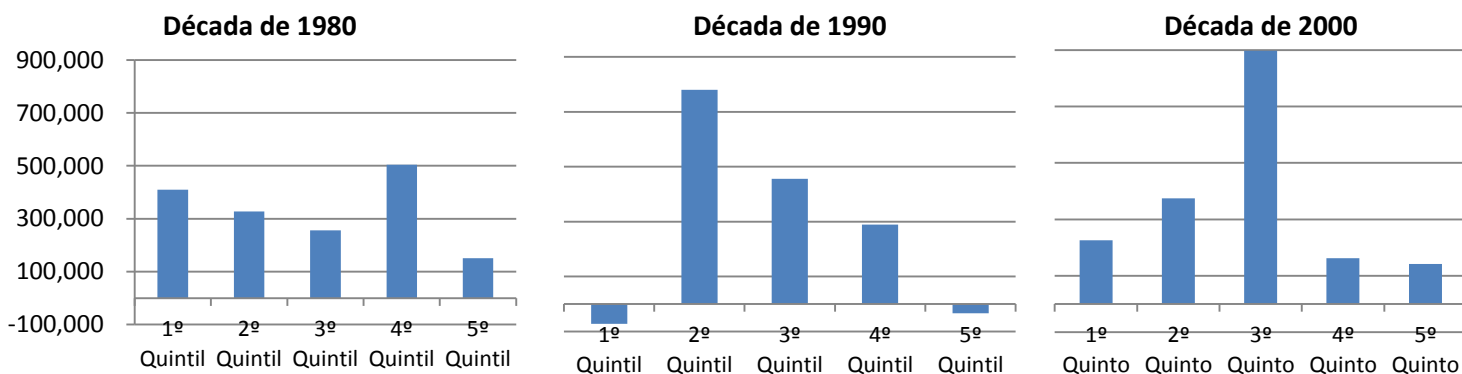
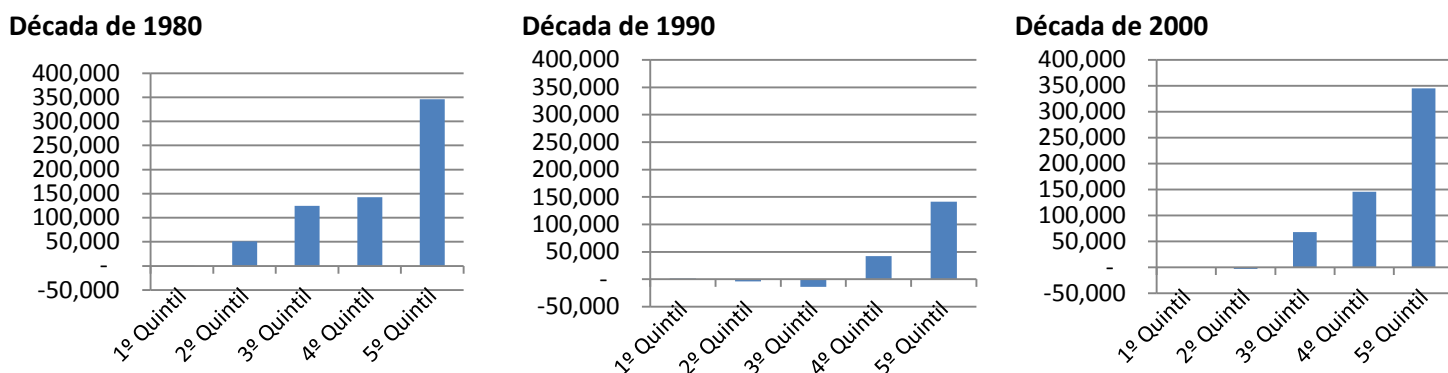


Chart 3.3.3J -Net job creation in Public Administration



4. Structural Changes and Occupations

The previous section showed that once measured by financial rewards, the recent cycles of economic growth (in the 1980s, and, in a more pronounced fashion, in the 2000s) tended to favour better niches of employment, in detriment of the lower skilled and usually informal occupations. Nevertheless, since we have to deal with thousands of categories of ‘occupation by sector’ in that exercise, eventually sorted out into only 5 earning strata, the resulting quintiles remain internally highly heterogeneous, which is particularly true for the top one. Apart from that, wages are affected by a number of not always congruent factors, from inflation (historically hard to tame in Brazil), till public policies (which can simultaneously lean to different directions in the private and public sectors, or even among federal, state and municipal levels of the public sector), or seasonal ups and downs in specific economic sectors or regions. So much so that particular occupations may change their position in the earnings ranking from one period to the other.

However, workers cannot just change from one occupation to another of a completely different nature, unless they manage to acquire the necessary skills. A nurse and a taxi driver share little in terms of the educational attainments and the practical skills attached to their

jobs, and yet both may find themselves in the same quintile of earnings. Up to some point, though, occupations belong to tracks or fields of professional activities linked to a certain scope of knowledge within which (track or field) individual workers can circulate or progress much easier than along different fields. Even if the relative earnings of nurses and taxi drivers become unbalanced, say in favour of nurses, it is not likely that taxi drivers will suddenly and massively reincarnate into nurses. In that sense, the occupational pallet reveals long term trends in the allocation of labour force; and exposes the role of education and professional qualification in fostering (or restraining) upward structural mobility in the labour markets.

Therefore, in this section, we examine the main trends in the work force allocation through the lens of occupations alone. Working with broad categories (the one digit level) means that particular occupations are folded into larger families of occupations that share common levels of formal education and sets of skills. In this case we are using the widely known and accepted International Standard Classification of Occupation (ISCO88-ILO). Since these broad categories amass large number of cases, we can work out the analysis for each one of them separately, year by year. Despite the many improvements introduced in the classification scheme along these three decades, which bring problems of compatibility in the lower levels of classification (3 and 4 digits levels), the correspondence between the one digit level groups along the time is far smoother. And there is no need for collapsing sets of panels of different years, as we were forced to do in the exercise of the previous section.

4.1. Bottom-up work force displacements

Table 4.1.1 (below) displays the distribution of the work force along the 10 major groups of occupations, in the beginning and in the end of each decade. Although the ISCO scheme is not conceived as a straight hierarchy, roughly speaking Groups 0 thru 4 (coloured in pale green) gather occupations defined as demanding secondary, technical secondary, or tertiary education (this is particularly the case of the occupations belonging to Group 2); while Groups 5 thru 9 (painted in pale blue) collect mainly skilled and semi-skilled manual occupations. The 'Subtotal' rows (in orange) display aggregate variations in these two larger blocks, and through them we can see that in the three decades under scrutiny, the block made up of Groups 0-4 grows faster than the block made up of Groups 5-9, even in the 1990s, when the labour market was hit by lower rates of economic growth, and consequently experienced rising unemployment rates, and declining salaries. In the 1980s, the block of top occupations grew almost 4 times more than the bottom block (39.1% as opposed to 11.6%, see cells painted in pink), meaning that 4.2 percentiles of the overall work force swapped from the bottom to the top occupations. In the 1990s the top block grew twice as much as the bottom (15% against 7.8%), the former grabbing 1.2 percentiles of the work force from the latter. And finally, in the 2000s, the acceleration of the economic growth reinforced the pattern, the top block growing 2.5 times faster than the bottom, up-lifting 2.9 percentiles of the work force.

Along the whole period, from 1982 to 2009 (see Chart 4.1.1, below, for the aggregated figure), the share of the occupations belonging Groups 0 thru 4 jumped from 23.7% to 31.2%, while groups 5 thru 9 dropped down from 76.3% to 68.8%. Yet more than two thirds of the Brazilian labour force is employed in manual occupations, and, as we are going to see shortly, half of them in the least skilled layers of all. Chart 4.1.2 shows a similar picture for the UK, a more

mature and service intensive economy, depicted by Peter Elias and Kate Purcell, from the Warwick Institute for Employment Research. In 1992, a slice of approximately one third of the labour force was employed in the top block (more or less the same as Brazil, by 2009), jumping to about 46% in 2010. It can be observed as well, that in the UK the group of manual and less skilled occupations, after 2000, experiences a slow decline even in absolute terms; while in Brazil this group grows steadily, although in a slower pace than the group of top occupations.

Chart 4.1.1

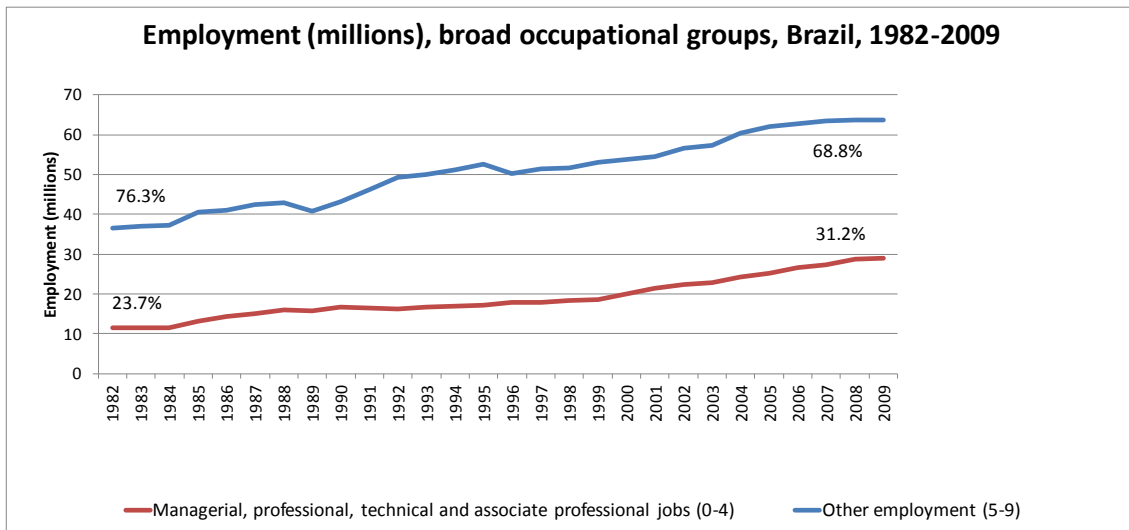
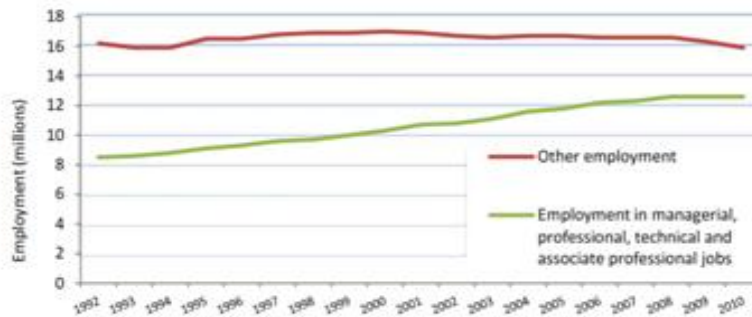


Chart 4.1.2

Extracted from: Peter Elias and Kate Purcell *Higher education, inter-generational mobility and earnings: the case of the UK*, University of Warwick (IER), paperwork, 2011.

Employment trends in the UK, 1992-2010 by broad occupational groups



Source: Labour Force Surveys, second quarter each year, 1992 - 2010

Descending in to the details of Figure 4.1.1, we can see that one Major Group alone, 9-Elementary Occupations, amasses a vast amount of workers, 41.1% in 1982, and 34.9% in 2009; a shrink of 7.8 percentiles in its relative share over the total labour force. Group 9 comprises a myriad of manual occupations, most of them informal and low paid, among whom the most prototypical ones are rural workers (and non-paid family members working in small farms), the domestic workers and the street vendors. Two thirds among them have not accomplished elementary education in 2009 (8 or 9 years of schooling, depending on the birth cohort). Consistently with what we already saw in section 3 of this paper, these categories have been shrinking systematically, but they still hold a vast pool of labour force (about one third of the total in 2009) and despite the relative shrinking of that pool, in absolute numbers it jumped from almost 20 millions workers, in 1982, to 32 millions, in 2009.

Groups 7 ('Craft and related trades workers') and 8 ('Plant and machine operators and assemblers') collect most of the skilled blue collar workers at manufacturing industries, civil construction and repairing businesses. These Groups keep their share in the overall labour force around 23% along the period, however nearly doubling the absolute number of workers they hold, from 11.5 millions, in 1982, to almost 22 millions in 2009. In the 2000s, each of these categories grew by 20%. More than half of the workers in these groups have not finished elementary education.

Group 6 ('Skilled agricultural and fishery workers') follows the relative fall in the primary sector as whole, declining from 8.4%, in 1982, to 4.3%, in 2009, holding about 4 million workers in both years. Their educational profile is the same of Group 9, two thirds above the elementary degree. Finally, Group 5 ('Service workers and shop and market sales workers'), gathers a range of occupations in services and trade filled in mainly by people with elementary formal education (half of them have not yet got the elementary degree); this Group more than

doubled its relative weight (from 2.7% to 6.1%), amassing 5.7 million workers in 2009, as opposed to 1.3, in 1982. Altogether, the decline in the bottom block of occupations is basically driven by the shrinking in the lowest layer, Group 9 (with a little help of Group 6), which we describe here as a pool of work force not yet well and fully integrated in to the modern labour markets¹¹. Given the similarities in the educational profile the best chances of upward mobility among mature workers in Group 9 is likely to be in Groups 5, 7 and 8. For the younger ones, of course, reaching higher levels of formal education may open up opportunities in the upper groups.

The lift to the upper block of occupations, however, is far more selective. The proportion of workers with less than elementary education drops down to 25% within Group 1 ('Managers'), 14% within Group 3 ('Technicians and associated professionals'), 13% within Group 4 (Clerks), and 4% within Group 2 ('Professionals'); Group 0 'Armed Forces' still holds 50% of workers without the elementary degree. The expansion of these groups, therefore, relay crucially in the expansion of formal education, particularly Higher Education. The upper block, as we saw, enlarged its participation in the overall labour market along the last three decades. Groups 0 and 1, despite growing in absolute numbers, kept roughly the same share. Almost the same applies to Group 4. Therefore the bulk of the growth here is due to Groups 2, in the first place, and 3; exactly those with higher requirements in terms of formal education. Subsection 4.2 unfolds that aspect.

Table 4.1.1

Occupied Labour Force, by Major Occupational Groups, Brazil: 1980s, 1990s, and 2000s												
Major Occupational Groups	1980s				1990s				2000s			
	1982	1989	Total Var. (%)	Var. In Perce ntiles	1992	1999	Total Var. (%)	Var. In Perce ntiles	2002	2009	Total Var. (%)	Var. In Perce ntiles
0. ARMED FORCES	1.9%	2.6%	65.2	0.7	2.3%	2.7%	25.4	0.4	2.4%	2.6%	28.0	0.2
1. LEGISLATORS, SENIOR OFFICIALS AND MANAGERS	6.9%	8.5%	44.7	1.6	7.5%	7.3%	6.9	-0.2	7.2%	7.0%	13.6	-0.2
2. PROFESSIONALS	4.5%	5.5%	45.8	1.0	5.0%	5.9%	29.6	0.9	7.1%	7.9%	30.8	0.8
3. TECHNICIANS AND ASSOCIATE PROFESSIONALS	3.6%	4.0%	30.2	0.4	3.7%	4.1%	18.8	0.4	4.6%	5.2%	30.8	0.6
4. CLERKS	6.9%	7.4%	26.7	0.5	6.1%	6.0%	6.9	-0.1	7.1%	8.6%	43.7	1.5
Sub-Total (0-4)	23.7%	27.9%	39.1	4.2	24.8%	26.0%	15.0	1.2	28.3%	31.2%	29.4	2.9
5. SERVICE WORKERS AND SHOP AND MARKET SALES WORKERS	2.7%	3.4%	53.1	0.7	3.2%	3.9%	32.2	0.7	5.4%	6.1%	33.1	0.7
6. SKILLED AGRICULTURAL AND FISHERY WORKERS	8.4%	6.7%	-6.6	-1.7	6.3%	5.8%	0.7	-0.5	5.1%	4.3%	-2.4	-0.8
7. CRAFT AND RELATED TRADES WORKERS	16.3%	16.0%	15.9	-0.3	14.7%	15.0%	12.0	0.2	15.9%	16.4%	20.8	0.5
8. PLANT AND MACHINE OPERATORS AND ASSEMBLERS	7.7%	8.0%	22.6	0.3	7.1%	7.0%	6.9	-0.1	6.8%	7.1%	22.7	0.3
9. ELEMENTARY OCCUPATIONS	41.1%	37.9%	9.0	-3.2	43.9%	42.3%	5.8	-1.1	38.4%	34.9%	6.6	-3.5
Sub-Total (5-9)	76.3%	72.1%	11.6	-4.2	75.2%	74.0%	7.8	-1.2	71.7%	68.8%	12.6	-2.9
Total	100.0%	100.0%	18.2		100.0%	100.0%	9.6		100.0%	100.0%	17.4	

Source: IBGE-PNAD, several years

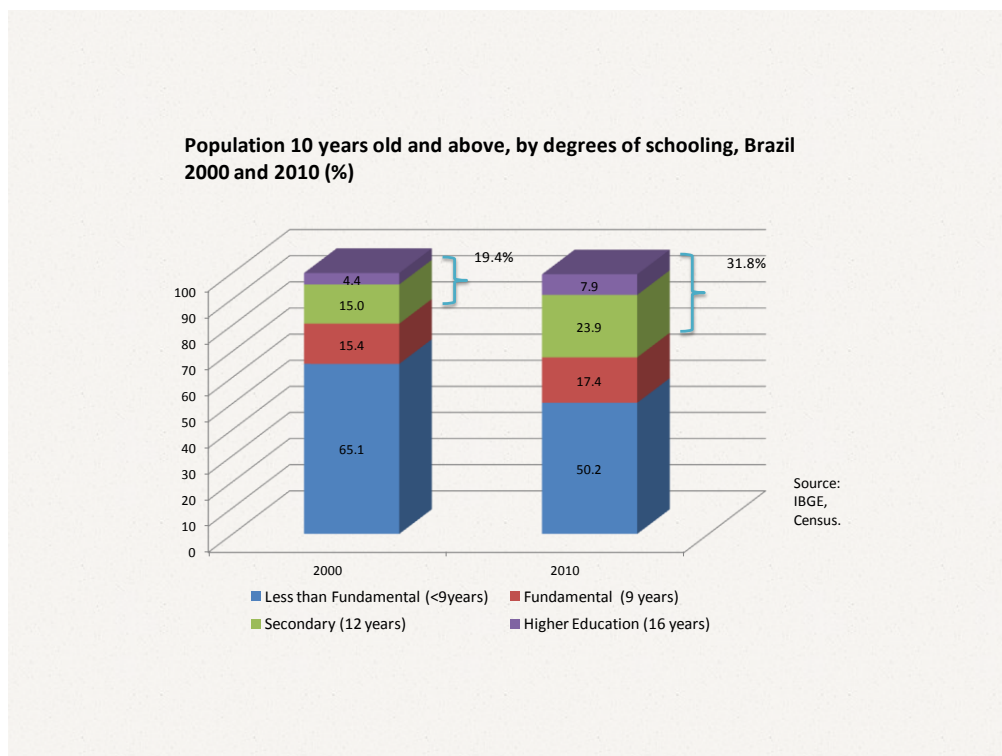
4.2. Education and structural change

Not surprisingly the educational profile of the Brazilian population at the economic active age (10 years and over, see Chart 4.2.1, below) displays a very similar shape to that of the occupational profile, with a large base made of people with less than the elementary degree (declining from two thirds, in 2000, to one half, in 2010), and a narrow but growing top: from less than 20% of people with secondary or tertiary degrees, in 2000, to almost 32%, in 2010 (exactly the same amount of people employed in Groups 0 thru 4, in 2009, cf. Chart 4.1.1). This

¹¹ Important to note that demographic trends are in operation here, helping to dry up this pool, since the low or not at all educated people are in average older and, thus, quitting the labour market faster than the rest.

'coincidence' of numbers gives a clear clue about the extent to which the expansion of education, beyond the thresholds of elementary schooling, is crucial to foster (or constrain) the process of uplifting the work force to better and more productive occupational niches.

Chart 4.2.1



While efforts to tackle with the backwardness in basic education have to deal with a huge population, dispersed in the territory, made up of very young and already mature individuals, supported almost exclusively by public initiatives and investments, the expansion of higher education has been heavily powered by private schemes, on the supply side, and, on the demand side, by a mix of engrossed family budgets and public studentships awarded to those willing to attend private HE institutions¹². In another piece of work (Comin and Barbosa, 2011) we discuss more in depth the expansion of HE in Brazil, showing that an amazing majority of undergrads (more than 60%) are full time employed people attending part time night courses, a large share of whom aged over 25 years¹³. It means that, at least in part, the structural

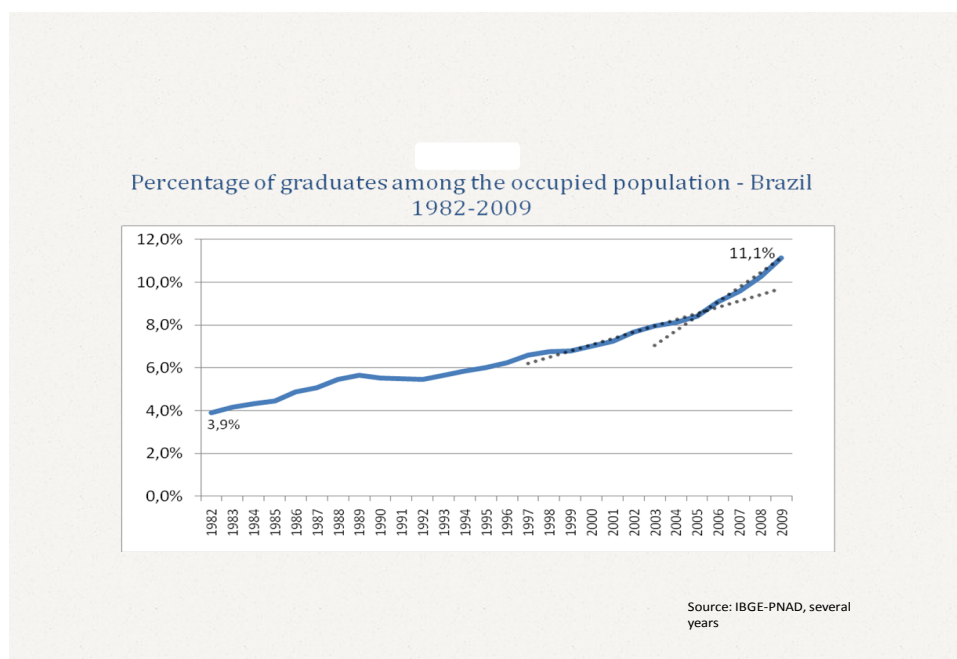
¹² The University for All Program (Prouni) has awarded close to 1million studentships from 2004, when it started, to 2011. To be entitled to this Program's studentships the candidates must have attended public (state owned) high-schools, a criteria to assure that they come from a social disadvantaged background. Between 2004 and 2010 (last year available) the number of students enrolled in HE institutions in Brazil climbed by 1,5 million, from 4 to 5,5 millions.

¹³ The total number of people enrolled in HE in Brazil jumped from 1.9 millions in 1997, to 5.4 millions in 2010; while the number of new graduates, in the same period, went from 274 thousands to 829 thousands.

changes in the work force allocation that we've been discussing here are due both to inter and intra generational mobility trends.

Chart 4.2.2, below, shows that the stock of occupied labour force with a high degree of education almost tripled from 1982 to 2009, and as the dotted lines suggest, the pace of growth of this particular population accelerate after 1997 (thanks to institutional reforms to allow the expansion of the private sector supply of HE), and again after 2004 (fostered by the increase in the income of the lower classes together with public policies to subsidise the access of lower income people to HE).

Chart 4.2.2



Back to the analysis of occupations, Table 4.2.1, below, shows the distribution of the graduate population among the occupational groups (grey columns) and the weight of graduates within each occupational group (blue columns). The top block (Sub-total 0-4), as one could only expect, vastly concentrates the graduates all over the period, despite the number of graduates in the bottom block has increased too. Group 2 ('Professionals') answers for half of the employed labour force with HE degrees (51.8%, in 1982, and 47.8%, in 2009), and the expansion of this group is largely supported by graduates as well. The total number of workers in this group jumped from 2.1 millions in 1982 to 7.3 millions in 2009; while the number of graduates rose from less than 1 million to 4.9 millions in the same time span, meaning that of the total jobs added in this group (5.2 millions) 75% were made up of graduates (3.9 millions). A considerable part of the increase in professional occupations owns its explanation to the expansion of welfare services, mainly education and health, particularly after the

redemocratisation of the country in the mid-1980s. Among the largest professions in this group we find teachers (early childhood and primary education) and nurses, both professions that, besides being enlarged, had their requirements upgraded from secondary to tertiary education. And many other professions in this group have been going through a similar process of educational upgrading towards higher education, such as physiotherapists, radiotherapists, journalists, accountants, sports coaches, and system analysts, for example. The changing nature of such occupations is, of course, part of a widespread tendency already well documented for the UK in the works of Elias and Purcell¹⁴.

The number of graduates in Groups 1 and 3 has also expanded steadfastly along this period. Group 1 holds the highly heterogeneous universe of the 'managers', ranging from people ahead of small business or shops to people in charge of entire departments in big companies. Not so surprising, thus, that within this major group, the proportion of graduates, in 2009, was almost the same as that of people without the elementary degree (roughly 28% against 25%, respectively). But it is also to be remarked that graduates in this group were about 15% in 1982, jumping to almost 28%, in 2009.

Finally, Group 3 collects occupations requiring (following ISCO's definitions) technical or vocational secondary education; however, the number of graduates in this group grew by 7.5 times, as opposed to a 2.7 times expansion in the group as a whole. The lack of a large enough and good enough network of technical schools in the country is probably one of the main reasons for this (private college-like HE institutions are full filling the gap); the other is that many technical workers want to progress to typical HE occupations as engineers.

As a matter of summarising to this section 4, it is fair to say that provided a minimum of economic growth - and Brazil has not excelled itself at this particular front in the three decades under scrutiny in this paper - there is a clear and positive trend of enlarging opportunities for upward social mobility through the labour market. As we saw, the occupations in the top block, even in the worse moments of economic recession, grew much faster than the ones in the bottom end. This trend, nevertheless, is inevitably framed by the developments reached in the educational field, another front in which Brazil has not excelled itself yet.

Table 4.2.1

¹⁴ See Elias and Purcell (2004, and 2006).

Graduates in Labour Force, by Major Occupational Groups, Brazil 1980s, 1990s, and 2000s												
Major Occupational Groups	1982		1989		1992		1999		2002		2009	
	In Total	Within Group	In Total	Within Group	In Total	Within Group	In Total	Within Group	In Total	Within Group	In Total	Within Group
0. ARMED FORCES	1.5%	3.1	1.6%	3.5	2.5%	5.7	1.8%	4.5	0.6%	2.0	0.6%	2.8
1. LEGISLATORS, SENIOR OFFICIALS AND	26.0%	14.8	26.0%	17.3	22.2%	16.1	22.6%	20.9	21.7%	23.1	17.4%	27.7
2. PROFESSIONALS	51.8%	45.3	48.4%	49.5	48.4%	52.4	48.2%	55.0	50.6%	54.7	47.8%	67.5
3. TECHNICIANS AND ASSOCIATE	8.5%	9.1	9.6%	13.5	10.4%	15.2	10.9%	18.2	10.3%	17.0	11.7%	25.2
4. CLERKS	8.8%	5.0	8.9%	6.8	9.5%	8.5	8.7%	9.9	8.6%	9.4	11.3%	14.6
Sub-Total (0-4)	96.5%	15.9	94.5%	19.1	93.0%	20.5	92.1%	24.0	91.8%	24.8	88.9%	31.7
5. SERVICE WORKERS AND SHOP AND	0.4%	0.6	0.6%	1.0	0.6%	1.0	0.9%	1.6	1.1%	1.6	1.5%	2.7
6. SKILLED AGRICULTURAL AND FISHERY	0.1%	0.1	0.2%	0.1	0.3%	0.3	0.2%	0.3	0.3%	0.4	0.5%	1.3
7. CRAFT AND RELATED TRADES WORKERS	0.7%	0.2	0.8%	0.3	1.0%	0.4	1.4%	0.6	1.7%	0.8	2.4%	1.6
8. PLANT AND MACHINE OPERATORS AND	0.4%	0.2	0.7%	0.5	0.9%	0.7	0.8%	0.8	1.0%	1.1	1.8%	2.8
9. ELEMENTARY OCCUPATIONS	1.8%	0.2	3.2%	0.5	4.2%	0.5	4.6%	0.7	4.1%	0.8	4.9%	1.6
Sub-Total (5-9)	3.5%	0.2	5.5%	0.4	7.0%	0.5	7.9%	0.7	8.2%	0.9	11.1%	1.8
Total	100.0%	3.9	100.0%	5.6	100.0%	5.5	100.0%	6.8	100.0%	7.7	100.0%	11.1

Source: IBGE-PNAD, several years

Conclusions

We believe that the empirical evidence gathered in this article support the conclusion that however modest and wax and waning, the average 4% of GDP growth, in the 2000s, made possible a consistent cycle of growth in the income of the majority of the Brazilian workers, most of that thanks to more and better jobs.

The data show, in the first place, that even under the much less favourable conditions of the 1980s (marked, from end to end, by political and economic turmoils), a modest rate of economic growth (average of about 3%) translated consistently into the creation of millions of better-than-average jobs. Under the even lower levels of GDP growth of the 1990s, a more or less proportional number of jobs were created too. However, from one end to the other, wages have experienced substantial losses, the unemployment rate climbed to up to then unknown levels, and the quality of jobs generated was far poorer than in the other periods.

In the 2000s, Brazil has been already benefiting from demographic changes, mainly the sharp fall in the women's fertility since the 1970s, as well as by the expansion of primary education (access was almost universalised by the end of the 1990s) and to a much lesser extent the secondary and tertiary education, meaning the extension of the average number of years spent by children at school; hence a substantial decline in economic activities among under-age people. All this meant less pressure over the lower ends of the labour markets, and a supply of more educated people to feed intermediate and higher niches of occupations. As a complimentary force in the same direction, the size of the population living in rural areas, in average much poorer and with more limited access to education services, has been reduced to 15% of the total, following the 2010 Census, and the old path from poor primary, informal and unskilled jobs to poor informal unskilled urban jobs became much narrower and disperse.

Eventually, an average economic growth mediocre – if compared to the standards of the other BRIC partners - as long as it was driven 'more than proportionally' to enhance the income of the poorer, performed quite well in generating jobs; as we saw, better jobs. Bringing in to the consumption market millions of people have been boosting the demand for goods and services, including services that are likely to enhance the opportunities for those same people to improve their life chances, like health and education services. The expansion of the occupations demanding higher formal education and specialised skills has been growing ahead of the average occupations; and, together with the expansion of higher education, wide opens

the windows for upward social and occupational mobility, both inter and intra generations. Summing up everything, the trends are positive, but there is still a long way to go, since the vast amount of labour force is still allocated in poor occupations and sectors of activities, as we saw. The pace of change is nowadays much more dependent on the advances of education than ever before; and that is the greatest challenge of all. For all we know, the quality of education in Brazil leaves a lot to be desired in all levels (with the exception of a few niches and institutions); if and when the country will get through to fix it is still a question mark.

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Appendix 1 – Types of jobs and some characteristics, by quintiles, 2000 (INCLUDING zero income workers)

Quintile	Median Wage (2002-2004)	Average Wage (2002-2004)	Three biggest categories within quintile		Average Number of individuals 2002-2004	Average Number of individuals 2007-2009	Number of Occupations by sector within quintile
			Occupation	Sector			
First Quintile	0	49,76	Rural Workers - others	Seasonal farming	3.244.940	3.443.724	137
	0	86,14	Livestock Growers - others	Other rural activities	2.749.391	2.530.225	
	203,32	359,05	Small Farmers – self-employed	Seasonal farming	2.447.066	1.844.855	
Second Quintile	245,16	263,17	Domestic workers (informal)	Domestic Services	4.132.558	4.232.437	344
	313,47	427,64	Street vendors	Commerce, goods in general	1.947.267	1.753.093	
	376,16	433,42	Domestic workers (formal)	Domestic Services	1.480.997	1.606.996	
Third Quintile	407,51	491,44	Salesperson (others)	Commerce, goods in general	2.643.422	3.088.142	497
	391,83	524,09	Cooks, waiters, barmen and associated professionals in hosting and tourism	Hosting and Feeding	1.720.073	1.993.876	
	508,29	897,24	Salesperson (self-employed)	Commerce, goods in general	1.626.568	1.709.151	
Fourth Quintile	544,81	614,03	Bricklayers	Construction	1.801.036	2.340.901	764
	626,93	773,24	Early Childhood and Primary Teachers (with secondary degree)	Public Education	720.399	975.421	
	626,93	786,42	Supervisors in Mining and Civil Construction	Construction	621.251	376.170	
Fifth Quintile	1016,60	1410,43	Wheel Vehicles Drivers (Goods)	Goods Transportation - Wheel Vehicles	703.372	790.909	1097
	957,64	1135,71	Early Childhood and Primary Teachers (with HE degree)	Public Education	654.804	975.421	
	1567,30	2175,59	Production and Operations Manager (employer)	Commerce in general	645.515	708.502	

Appendix 2 – Types of jobs and some characteristics, by quintiles, 2000 (EXCLUDING zero income workers)

Quintil	Median Wage (2002-2004)	Average Wage (2002-2004)	Three biggest categories within quintile		Average Number of individuals 2002-2004	Average Number of individuals 2007-2009	Number of Occupations by sector within quintile
			Occupation	Sector			
Primeiro Quintil	245,16	265,23	Domestic workers (informal)	Domestic Services	4.087.173	4.180.111	165
	204,30	369,53	Small Farmers – self-employed	Seasonal farming	2.302.008	1.775.202	
	313,47	457,67	Street vendors	Commerce, goods in general	1.795.326	1.633.781	
Segundo Quintil	423,18	578,79	Cooks, waiters, barmen and associated professionals in hosting and tourism	Hosting and Feeding	1.535.390	1.788.102	378
	376,16	433,42	Domestic workers (formal)	Domestic Services	1.475.924	1.597.250	
	330,39	364,58	Assistants/helpers in civil construction	Construction	1.225.792	1.533.054	
Terceiro Quintil	470,20	590,81	Salesperson (others)	Commerce, goods in general	2.180.774	2.657.342	467
	558,43	642,70	Bricklayers	Construction	1.703.609	2.233.722	
	510,76	898,94	Salesperson (self-employed)	Commerce, goods in general	1.590.339	1.656.552	
Quarto Quintil	626,93	775,18	Early Childhood and Primary Teachers (with secondary degree)	Public Education	714.413	560.771	850
	626,93	789,11	Supervisors in Mining and Civil Construction	Construction	612.827	369.479	
	681,01	1015,39	Wheel Vehicles Drivers (private transportation)	Passengers Transportation - Wheel Vehicles	478.165	549.984	
Quinto Quintil	1016,58	1416,24	Wheel Vehicles Drivers (Goods)	Goods Transportation - Wheel Vehicles	693.290	778.022	959
	957,64	1135,71	Early Childhood and Primary Teachers (with HE degree)	Public Education	648.392	963.568	
	1567,33	2186,30	Production and Operations Manager (employer)	Commerce, goods in general	618.953	676.359	