

The decline of pay inequality in Argentina and Brazil following the crises and retreat from the neo-liberal model

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RESUMO: Este artigo analisa a distribuição de pagamentos na Argentina e no Brasil, o que possibilita uma análise mais profunda da desigualdade econômica nos dois países. A ferramenta usada nesta análise é a estatística T de Theil entre grupos, que pode ser decomposta de diferentes formas, permitindo visualizar, por meio da variação da desigualdade, quem ganhou e quem perdeu, por região e por setor de atividade econômica. Em ambos os países, a desigualdade cresceu durante o período neoliberal, mas declinou após a forte crise da política neoliberal em 1998 no Brasil e em 2001 na Argentina. Economicamente, o período pós-neoliberal é caracterizado, em ambos os países, por uma diminuição do peso do setor financeiro no cálculo da desigualdade de pagamentos e uma recuperação do peso da administração pública. Geograficamente, nos dois países, o crescimento da desigualdade de pagamentos, devido à crise, refletiu em um peso maior nas regiões mais ricas, que retrocedeu levemente no período de recuperação pós-crise.

PALAVRAS-CHAVE: Desigualdade, índice de Theil, análise comparativa, neoliberalismo, Brasil, Argentina.

ABSTRACT: *We analyze the distribution of payment in Argentina and Brazil to develop a new insight into trends of economic inequality in the two countries. The use of the between-groups component of Theil's T statistic, which is decomposable in several different ways, permits us to illuminate the specific winners and losers, by region and by economic activity (sector), as inequality changes. In both countries we find that inequality rose in the neoliberal period, but that it declined following the severe crises of neoliberal policy, in 1998 in Brazil and in late 2001 in Argentina. Economically, this period of post-neoliberalism is characterized in both countries by a decline in the economic weight of the financial sector and a recovery of the position of the civil service. In both countries, the rise in inequality leading to the crisis produced an increase in the relative position of the major metropolitan centers; this positional advantage also declined modestly in the post-crisis recovery period.*

KEYWORDS: *Inequality, Theil index, comparative analysis, neoliberalism, Brazil, Argentine.*

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Introduction

This paper compares the evolution of pay inequality in Argentina and Brazil from the early 1990s through 2004, covering the period of high neoliberalism in both countries, the respective crises and their aftermath, which involved a retreat from neoliberal globalization. It shows specifically how different economic sectors, and by extension the workers within those sectors, were affected by the structural adjustments that occurred in Argentina and Brazil.

This analysis is accomplished by decomposing Theil's T statistic in several ways. First: we show how the different sectors, and also the different regions within each country, contributed to changes in inequality from year to year. Second: we decompose the change in the Theil statistic into parts attributable to changes in relative incomes, on one hand, and changes in population or employment structures, on the other. These income and population effects show the character of the changing contributions of each sector and region to inequality, by which the "winners" and "losers" can be identified. Behind these outcomes are the policies that favor one sector (and/or region) over another, protecting wage earners in certain sectors (and/or regions), while putting them in jeopardy, in others.

We based the analysis on entirely novel data sets for both countries, permitting us to measure changes in inequality year to year and even month to month and to capture in fine detail the contribution to inequality of the changing position of every major economic sector and every geographic region (provinces and states). This approach permits investigation into the relationship between public policies, the distribution of power and the distribution of income in these countries to proceed with a foundation, in fact not previously available. The data clearly reflects the changing position of the most influential economic sectors, including the state, the banks, financial institutes, the trade unions and the energy producers among the most strategically important.

Thus we showed how increasing inequality in Argentina and specifically the concentration of income in the financial sector in Buenos Aires city preceded the economic crisis of December 2001 and how inequality began to decrease as these factors were reversed post crisis. Brazil, which entered the period with one of the most unequal economies in the world, had already stabilized its distribution of payment with the Plan Real in the first part of the 1990s. This achievement was followed by decreases in pay inequality towards the

end of the decade. A marked feature of this trend was a decline in incomes earned in the financial sector and a gradual increase in the employment and the wages of civilian services. By these measures, inequality in Brazil now appears to have declined to levels not seen since before the deep crisis of the early 1980s.

The most common characteristic, in both countries, is that the financial sector is the biggest contributor to economic inequality; the period leading up to the crisis was characterized by an increase in the weight of this sector, and we observed a corresponding decline in that weight as the crisis passes and a more normal situation returns. What is different is the timing? In Brazil it began to happen in the mid-1990s, while in Argentina it occurred only after the crisis, in December 2001.

The next section briefly discusses the recent historical and economic context of both countries under the period of study. The third section presents the methodology and the fourth the data used. The fifth and sixth sections present an analysis of the evolution of payment inequality by economic sectors and regions using the between-group component of Theil's T in each country. The final section presents some conclusions and some questions for further research.

Historical and economic context

The starting points for the two countries as they entered the period of study were quite different. Brazil historically has had some of the highest levels of inequality in the world. Argentina used to be one of the most egalitarian countries in Latin America, but this status deteriorated significantly over the last decade, in which economic inequality increased at a higher rate in Argentina than in any other country in the region (GASPARINI, 1999, p. 60).

It is interesting to compare the trends of payment inequality in Argentina and Brazil at this time, because both countries were going through the process of implementing structural reforms derived from the Washington Consensus. Specifically, both countries abandoned import substitution and embraced free market principles, including privatization and deregulation. This policy shift resulted in the decline of state intervention and privatization of public utilities, trade and financial deregulation, equal treatment of local and foreign

capital, deregulation of domestic markets, tax reforms, labor reforms and the creation of the Southern Common Market (Mercosur).

In addition to those changes, the new economic strategies included aggressive measures to control inflation, necessary because both Argentina and Brazil had ended the 1980s with an hyperinflation. Under Carlos Menem government, Argentina adopted the “Convertibility Plan”, which implied two things; first: the Argentine peso was fixed to the dollar at a rate of one peso per dollar; and second: a new legal framework was created to regulate the process of money creation (DE LA TORRE, YEYATY and SCHMUKLER, 2002). Similarly, Brazil implemented the “Plan Real” starting in 1994, under Itamar Franco government, with Fernando Henrique Cardoso as Finance Minister. The Plan Real pegged the Real to the dollar, but with some room to float: the range was restricted to be from 0.98 to 1.02 Reals to the dollar.

Despite these similarities, the greater rigidity of the Argentine Convertibility Plan made Argentina more vulnerable to external shocks. In 1999, Brazil responded flexibly to the reduced availability of foreign capital provoked by the Russian crisis, devalued the Real and has survived the shock. Argentina chose not to devalue its currency, maintaining convertibility in the face of capital flight; this ultimately led the Argentine economy to descend into collapse and bankruptcy.

Method for measuring inequality

Several studies have examined trends in income inequality in Argentina and Brazil. Most rely on data derived from household surveys, with inequality measured using the familiar gini coefficient. Here we present a different measure of inequality; namely, the between-groups component of Theil’s T statistic, which is useful to calculating inequality measures when the underlying data are presented in grouped form. In particular, with data that are readily available for both countries, this approach permits us to measure the contribution of each sector and of each geographic region to increases or decreases in overall pay inequality in the economy.⁴

⁴ Application of Theil’s T to the measuring of economic inequality is explained in Conceição and Galbraith.

Theil's T for the population (T) is made up of two components, a between-groups component (T'_g) and a within-groups component (T^w_g).

Algebraically,

$$T = T'_g + T^w_g \quad (\text{Equation 1})$$

Since individual salaries are not recorded, the within-groups component of Theil's T cannot be calculated. The between-groups component therefore represents a lower bound of total payment inequality; however, it has been shown that under general conditions this measure closely tracks the evolution of larger, but unobserved, sum of between-groups and within-groups components.

The between group element of Theil's T can be written as follows,

$$T'_g = \sum_{i=1}^m \left\{ \left(\frac{p_i}{P} \right) * \left(\frac{y_i}{\mu} \right) * \ln \left(\frac{y_i}{\mu} \right) \right\}$$

where i indexes the groups; p_i is the population of group I; P is the total population; y_i is the average income in group I; and μ is the average income across the entire population.

The use of Theil's T computed from semi-aggregated data provides significant advantages over any other inequality measures in the resolution, breadth and reliability of the data. Other inequality statistics are typically based on the information derived from household surveys. These data presents many problems: including a dearth of rural data; non-response and invalid answers; misreporting; and periodic methodological changes in the surveys' design (GASPARINI, 2004, p. 3-9).⁵ The semi-aggregated data on which our calculations are based come from census rather than sample information and they represent the work product of consistent and routine reporting by employers to government agencies. The data might not be flawless, but they are likely to be consistent through time, and therefore changes in the measure of inequality from one period to the next are highly likely to be reflective of bona fide underlying events.

⁵ For instance, the 2003 PNAD with 133,255 households and 384,834 individual observations presents 27,579 missing household total income and 1,663 zero-income observations, around 22% of all dwelling observations. It also presents 72,767 missing individual total income and 113,184 zero-incomes, around 48% of the sample.

Theil's T therefore permits us to make low-cost, accurate measures of trends in inequality. But not only that, it is also possible to capture the contribution of each economic sector and region to payment inequality by disaggregating the inequality measure into its constituent elements. The contribution of each element, which might be a sector or a region, to the overall inequality of the economy can be viewed by graphing the individual Theil elements in stacked bar format. This information can be read easily to determine which sectors and regions gained and lost relative position from year to year.

Finally, it is possible to decompose the change of inequality between two time periods into two effects: the income effect, which is due to changes in relative income; and the population effect, which is due to changes in the relative number of people employed. This decomposition allows one to determine whether gains or losses from one year to the next or, within any given sector or region, are due to changes in average salaries or in the number of people employed.

To calculate the population and income effect it is necessary to work with two formulae. The first shows that the differences in inequality from period 1 to period 2 are divisible into an income effect, which is computed by subtracting from the inequality measure for the second year a measure of what inequality would have been that year, had there been no changes in the structure of employment. The remainder of any changes must therefore be due to changes in employment structure. The "fixed-weight Theil" is given by the formula below:

$$T^f = \sum_{i=1}^m \frac{\bar{P}_i}{\bar{P}_1} * \frac{\bar{Y}_i^2}{\bar{Y}^2} * \ln \left(\frac{\bar{Y}_i^2}{\bar{Y}^2} \right)$$

The difference between the current value and the fixed Theil measures variation of the wage structure alone, on the assumption that no changes in the population weights has occurred.

Data

The argentine data came from the monthly tax filings of private entities at the Administración Federal de Ingresos Públicos (AFIP). In these filings, each employer

declares his employees in order to commit the payment of contributions to social security within the Sistema Integrado de Jubilaciones y Pensiones (SIJP). The SIJP processes data on approximately 5 million salaried jobs from the entire country and covers almost every economic sector. These salary and employment data allow to calculate the monthly of Theil's T by twenty-two economic sectors and by twenty three provinces plus the Buenos Aires city.

The data are available since beginning 1994 because that was the year which the reform of the Argentine pension system went into effect. Affiliation with the SIJP is mandatory for all workers over age 18 who have the following employment status: a) self-employed; b) employed in the private sector; or c) employed in the public sector, including by the national government or the provinces that participate in the SIJP. Military personnel, security forces, police staff and workers under 18 are excluded from the system (Law 24.241: Creation of the Integrated System of Retirement and Pension Benefits, 1993).

The Brazilian data are published by the Instituto Brasileiro de Geografia e Estatística (IBGE). The data are obtained from the Cadastro Central de Empresas (Central Register of Enterprises) which is based on the economic surveys of IBGE. This database contains information about persons employed and wages earned by economic sectors, disaggregated according to the Brazilian Industry Classification (Classificação Nacional de Atividades Econômicas, or CNAE) by region, state and municipality.

Pay inequality in Argentina 1994-2005

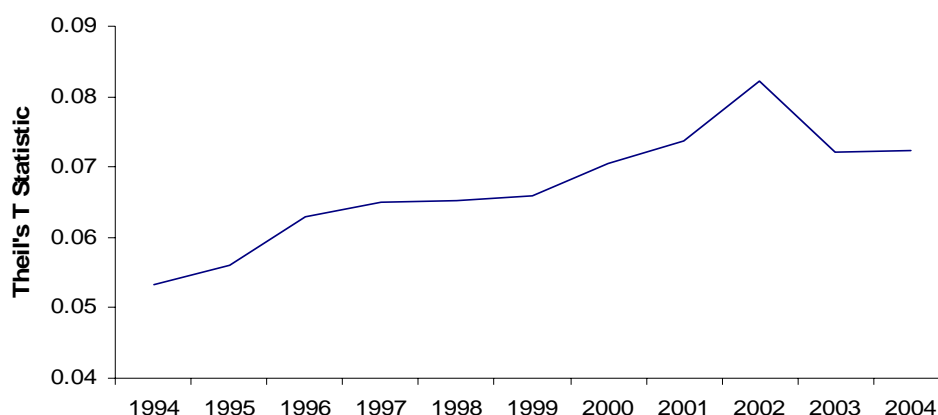
The turn of the millennium found Argentina with a radically transformed social and economic structure that, in contrast to the privileged position it enjoyed until the mid 1970s, became a paradigmatic case of economic failure. Failure was due, largely, to the ineffective, or misguided, implementation of market reforms in the 1990s. In order to analyze the social situation in Argentina between 1994 and 2005 accurately, it is essential to note that inequality problems are not the direct result of economic crisis, but rather intrinsic problems stemming from the economic strategy adopted in Argentina in the early 1990s. They are symptomatic of the causes of crisis rather than of the crisis itself.

The following calculations were made to evaluate the different components of inequality during the period of study: a) the general trend in inequality across sectors and across regions; b) the changing contribution of each economic sector to the overall pay inequality; and c) the changing contribution of each region to overall pay inequality.

In the period of study, the analysis shows that the manufacturing sector decreased its relative position in terms of employment and wages, whereas the opposite trend occurred in the services sector. An analysis by region shows that those provinces with an important share of the manufacturing sector in their economic structures were the most adversely affected, while those provinces with abundant natural resources (petroleum) or with a significant service sector (financial above all) gained in relative terms.

Figure 1 shows the values obtained for inequality by sector and region, using the between-groups component of Theil's T:

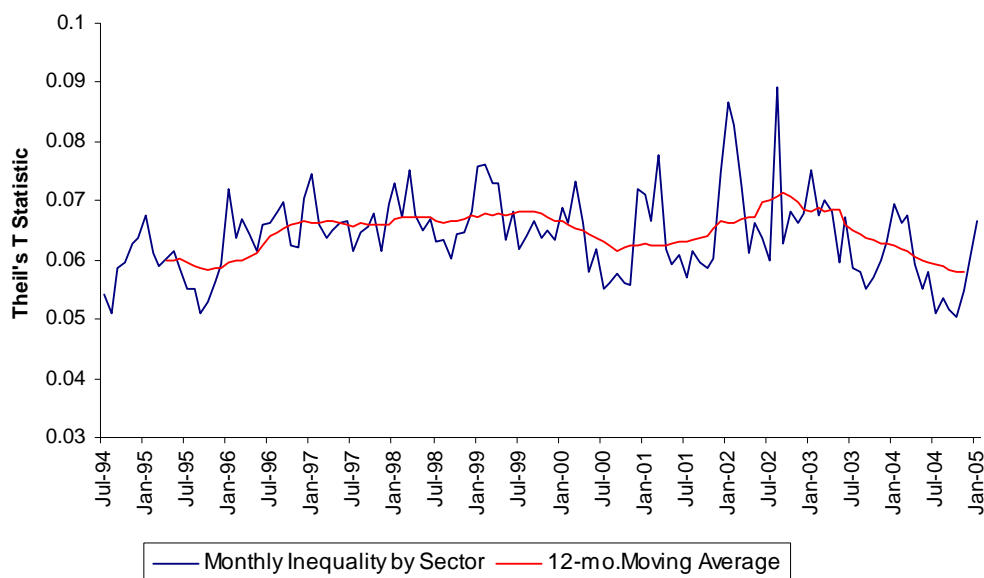
Figure 1 – **Inequality by Sector and Region (1994–2005)**



Source: Authors' calculations based on SIIP data.

This period corresponds to the highest degree of inequality in the country's recorded history. We can divide the reference period into five stages: during the first stage, from 1994 to mid-1997, the inequality indicators increased; in the second stage, from mid-1997 to mid-1998, inequality remained almost stable; the third stage, from mid 1998 to 2002, was dominated by a deep economic crisis and substantial increases in inequality; in the fourth stage, from mid 2002 to mid 2003, inequality indicators decreased; and during the last stage, from mid 2003 until Dec 2004, the inequality trend shows a stable pattern. Although inequality has been decreasing since 2002, pay inequality remains high.

Figure 2 – Pay Inequality by Economic Sector



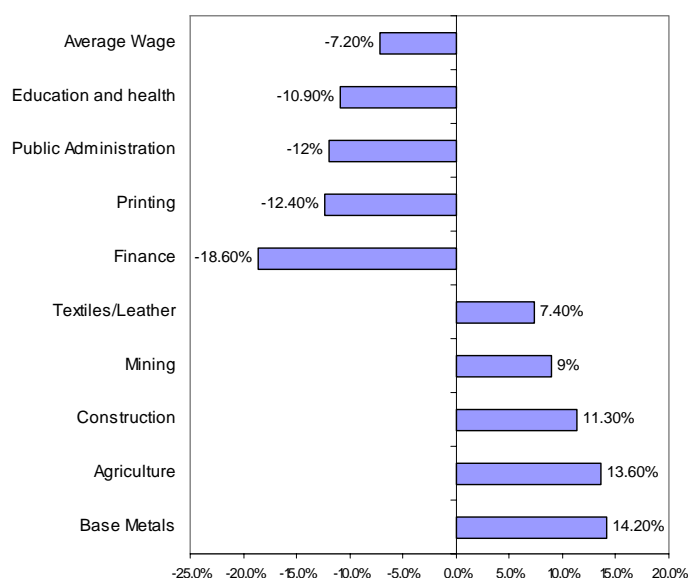
Source: Authors' calculations based on SIJP data.

Figure 2 shows pay inequality by economic sector. The pattern is not as pronounced as when inequality is measured across regions, nevertheless several facts emerge. During the period of the Convertibility Plan (1991-2002), there was little change in salary levels because adjustments in the labor market affected the level of employment rather than salary levels. After the devaluation in 2002, Theil values follow an irregular but declining pattern. This trend is explained by three factors: a) the improvement in the economic activity of the primary sector as a result of the change in relative prices after the devaluation and the increases in the prices of Argentina's main exported commodities; b) the decrease in the activity level of the financial sector after the economic crisis (December 2001); and c) government policies that implemented increases in the salary levels of different sectors. These increases in salaries did not reflect improvement in the real well-being of different sectors due to an inflation rate that was much higher than the salary increases could compensate for; nevertheless they had an effect on relative incomes.

As shown in Figure 3, after the devaluation, the percentage increase in wages of certain sectors – basic metals, agriculture, construction, mining, and textiles/leather – was higher than the inflation rate. In contrast, the percentage increase in wages for the finance,

printing, public administration, health and education sectors were below the inflation rate. Since some sectors with exceptionally low wages, including agriculture, construction, and textiles, gained relatively to the others as well as in real terms, inequality in the overall wage structure declined after the crisis. (*Clarín*, June 19, 2005, p. 14).

Figure 3 – **Real Wage Variation since Devaluation (November 2001/April 2005)**

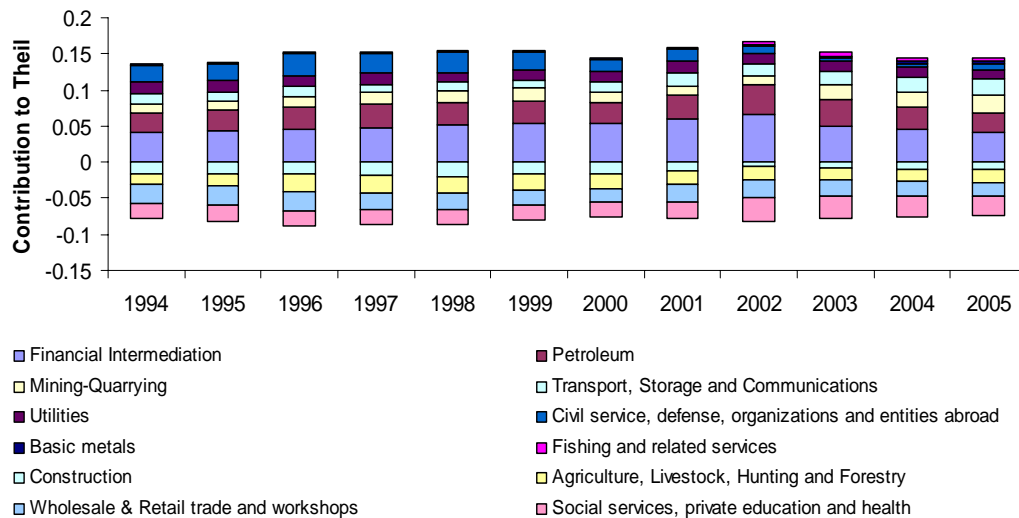


Source: Ministry of Economy published by *Clarín*, June 19, 2005.

Contribution by Sector

In the case of Argentina, twenty-two economic sectors were considered in the analysis of sectoral contributions to inequality. Of these, those sectors that contributed the most to increasing inequality and those that were the hardest hit are included in the following stack-bar graph:

Figure 4 – Contribution to Overall Inequality by Economic Sector



Source: Authors' calculations based on SIJP data.

As shown in Figure 4, during the period under study (1994-2005), six economic sectors with incomes above the average have made the largest contributions to pay inequality in Argentina: finance; petroleum; utilities; mining; civil service; and basic metals. Of these, the financial and petroleum sectors contributed the most to the increase in inequality during these years. By another side, the sectors with income below the average (and a position in the diagram below the zero line) with the largest weight were agriculture, livestock, hunting and forestry; wholesale and retail trade; social services, private education and health; and construction.

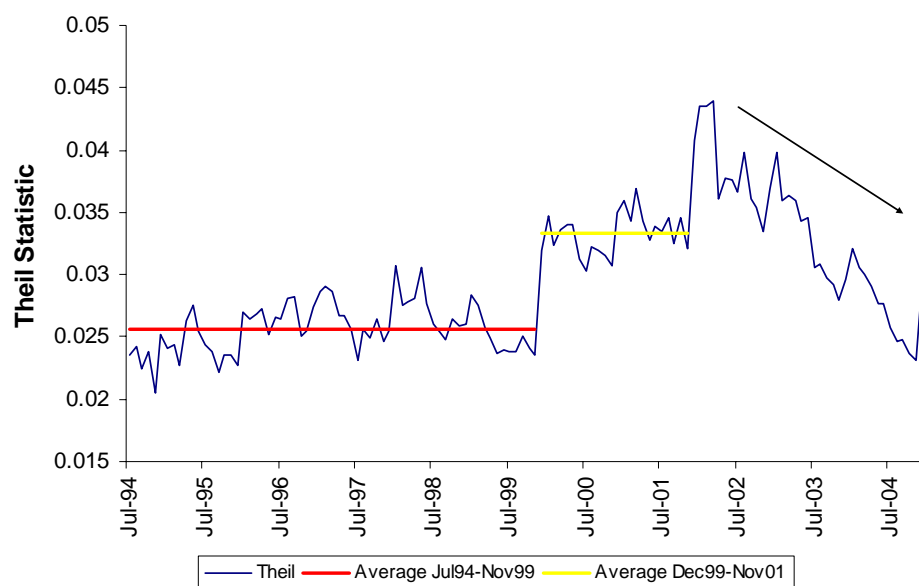
The December 2001 financial crisis and the January 2002 devaluation brought about changes in the relative position of some sectors. Two sectors with above average incomes – finance and the civil service – lost relative position. Four sectors with above average incomes improved their relative position, either by increasing their relative income position or by recovery of employment. These are mining; food, beverage and tobacco; fishing; and basic metals.

Increasing Inequality among Regions

Figure 5 shows the movement of pay inequality by province between 1994 and 2005. Three different trends in pay inequality emerge. The first trend occurred between July 1994 and

November 1999, and was characterized by relatively constant Theil levels. However, this pattern changed from November 1999 through November 2002. The second trend is explained by the increase in the contribution to pay inequality by Buenos Aires city. During this period, Argentina's economy was already in recession, and the relatively stronger performance of the services sector, particularly finance, in relation to the goods-producing sector explains why incomes in Buenos Aires city held up better than those in other Argentine provinces (GDP Report from Buenos Aires city, 2003). The third trend, beginning in the middle of 2002, has a downward trajectory.

Figure 5 – **Inequality by Region**



Source: Authors' calculations based on SIJP data.

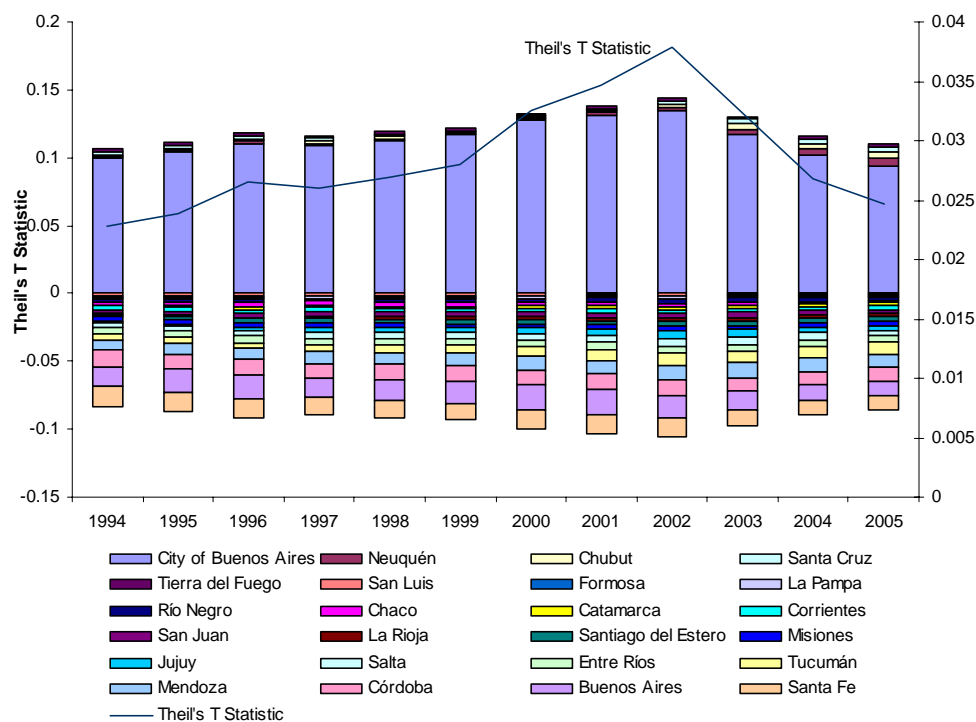
This trend has two primary explanations. On the one hand, since 2002, the contribution of Buenos Aires city to overall inequality decreased – because the total income in the city decreased. Specifically, the fact that the economic structure of Buenos Aires City includes a large component of services, especially in the finance sector, explains why, after the financial collapse in December 2001, the reduction in Buenos Aires' GDP was bigger than the one experienced in other provinces. Approximately 78% of the aggregate value of the finance sector, the sector most affected by the economic crisis in Dec. 2001, is generated in Buenos Aires city. During 2002, the activity level in the finance sector decreased by 18.2% in Buenos Aires city (GDP Report from Buenos Aires city, 2003). The other explaining

factor, for the decrease in inequality by region after November 2002, is that during this time the relative position of some provinces began to increase. The economic situation of the provinces of Chubut, Tierra del Fuego, Santa Cruz and Neuquen improved. The economies of these provinces rely primarily on the export of petroleum. After the devaluation, the value of their production increased in peso terms, due mainly to the rise in domestic prices for petroleum.

Contribution by Region

Twenty-four regions (twenty-three provinces plus the city of Buenos Aires) were considered in the analysis. Those provinces that contributed the most to inequality and those that were the hardest hit are included in Figure 6.

Figure 6 – Contribution to Inequality by Region



Source: Authors' calculations based on SIJP data.

During the period of study (1994-2005), the following provinces have enjoyed average incomes above the national average: Buenos Aires city (BAC), Neuquen, Chubut, Santa Cruz and Tierra del Fuego. With the exception of BAC, these provinces are in the south of

Argentina and part of the Patagonian region. The five provinces mentioned, Buenos Aires city contributed the most to the increase in inequality during these years. The provinces most negatively affected by falling relative income shares have been Mendoza, Cordoba, Buenos Aires province and Santa Fe.

Pay Inequality by Region: What Explains These Trends?

Buenos Aires city, the region that contributed mostly to inequality from 1994 to 2005, has the highest GDP per capita among Argentine provinces. It enjoys relatively low levels of poverty and unemployment. In addition, Buenos Aires city is the main urban area in the country and it is unique in terms of the share of the service sector in its GDP. By the year 2001, the service sector accounted for 74 percent of its total GDP, within which the share of the financial sector was 48%. The Patagonian provinces, in the south of Argentina (Neuquen, Chubut, Santa Cruz and Tierra del Fuego), also enjoyed above-average incomes during this period; their high GDP per capita are related in part to significant petroleum sectors and to a high participation of their exports in the GDP. Furthermore, salaries in this region are as much as 30% higher because it is considered an “Unfavorable Zone” and thus firms have to provide employees additional incentives to relocate to these regions.

Paradoxically, though reflecting the same trend observed in the analysis of inequality by economic sector, the provinces that lost most in relative terms in the time of rising inequality (Buenos Aires, Santa Fe, Cordoba and Mendoza) can be distinguished by the size and diversity of their economies. These provinces are the main exporting provinces in the country and their economic structures are characterized by important manufacturing sectors.

The January 2002 devaluation also accounts for a number of changes regarding the relative position of some provinces. On one hand, Buenos Aires city has lost its relative position. The other provinces with above average incomes (Neuquen, Chubut, Santa Cruz and Tierra del Fuego) have improved their relative position since the devaluation because their economic expansion translated into increases in salaries. Changes in relative prices allowed these provinces to increase their exports and spurred increased activity in the tourism sector. Specifically, these petroleum-producing provinces are in good economic conditions due to the rise in the price of petroleum in the international market in the last years.

For example, in 2003 the province of Chubut generated \$472 million in petroleum sales comparing with \$368 million in revenue from sales of petroleum in the previous year. Income from petroleum-related activities represented approximately 44% of the province's GDP. Similar to Chubut, Santa Cruz received \$507 million in 2003 versus \$299 million in 2002. This income represented 40% of Santa Cruz's GDP. Finally, the province of Neuquen generated the greatest amount of revenues from its petroleum exports. In 2003, it generated \$1.7 billion, representing 58% of its GDP. (*La Nacion*, Provincias Petroleras ya dieron aumentos salariales, August 16, 2004).

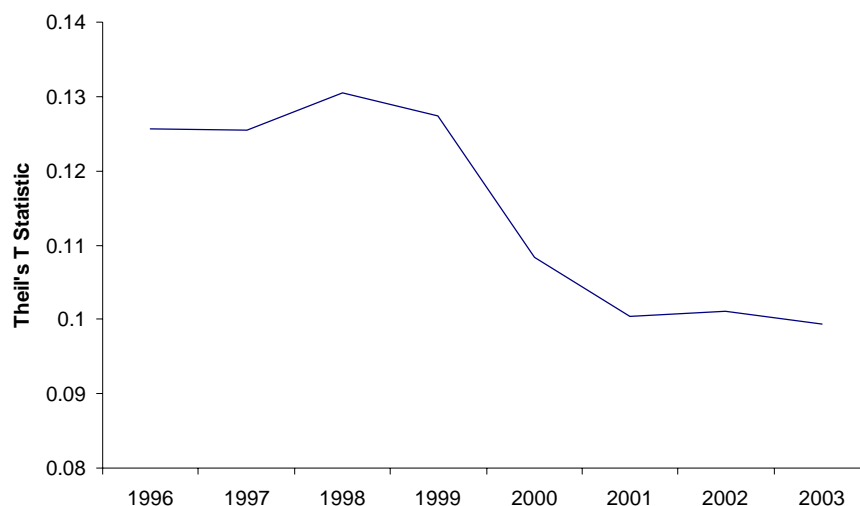
In conclusion, Figure 6 shows how the provinces of low-to-average income (Buenos Aires province, Cordoba, Santa Fe, Mendoza) are those with diverse economies of which the manufacturing sectors plays a key role. Conversely, those provinces that were most favorably situated are those in which the extractives industries are the principal economic activity (Neuquen, Chubut, Santa Cruz and Tierra del Fuego) or where economic activity is based mainly in the service sector (within which the finance sector factors significantly), as in the case of Buenos Aires city. Our method thus illustrates how the neoliberal transition has favored specialized extractive industries and the banks, at the expense of labor-based production

Pay inequality in Brazil: 1996-2003

The following section examines the main trends in inequality in Brazil from 1996 to 2003. The following calculations were made: a) the general trend in inequality considering sectoral and regional components; b) the contribution of each economic sector to overall pay inequality; and c) the contribution of each region to overall pay inequality.

Two main conclusions can be drawn from the sectoral analysis. The financial sector and the civil service sector are the biggest contributors to inequality in Brazil during the period of study. Conversely, the wholesale and retail sector is the hardest hit. At the regional level, we observe that Sao Paulo state and to a lesser extent Brazilia (federal district) were the biggest contributors to overall inequality in Brazil during this period.

Figure 7 – **Inequality by Sector and Region (1996–2003)**



Source: Authors' calculations based on IBGE data

The calculations made to measure the general trend in pay inequality considering both the sectoral and regional components shows four clearly differentiated stages. During the first stage (1996–97), pay inequality was stable in Brazil. Pay inequality increased in the second stage, which lasted just one year from 1997 to 1998. In the third stage, occurring from 1998 to 2001, a downward trajectory is observed. Finally, from 2001 to 2003 a stable trend can be observed. The economic program underlying the general decrease in inequality in Brazil across this time period is the Plan Real. The plan was successful at reducing inflation, which created stability, which in turn created a basis for economic growth.

What it is most remarkable in Figure 7 is the downward trend in inequality following the devaluation of the Brazilian currency, which occurred in January 1999. After the devaluation, Theil values follow a downward sloping pattern, as was also the case in Argentina. This downward trend is explained by three primary factors:

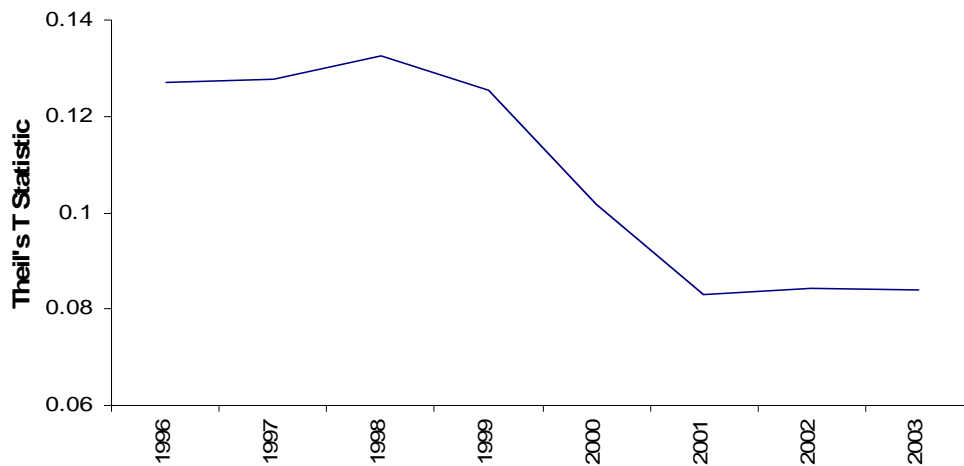
- a) improvement in the economic activity of the primary sector as a result of changes in relative prices after the devaluation and increases in the prices for some Brazilian export commodities;
- b) reduction in the participation of the financial sector, by far the biggest contributor to inequality until 1999;

c) improvement in the participation of the civil sector, which had already contributed positively to increase inequality, improved its relative position to the extent that it became the largest contributor, surpassing the financial sector.

Contributions to inequality by sector

The trend in pay inequality by sector, as shown in Figure 8, closely follows the trend in overall inequality in Brazil displayed in Figure 7.

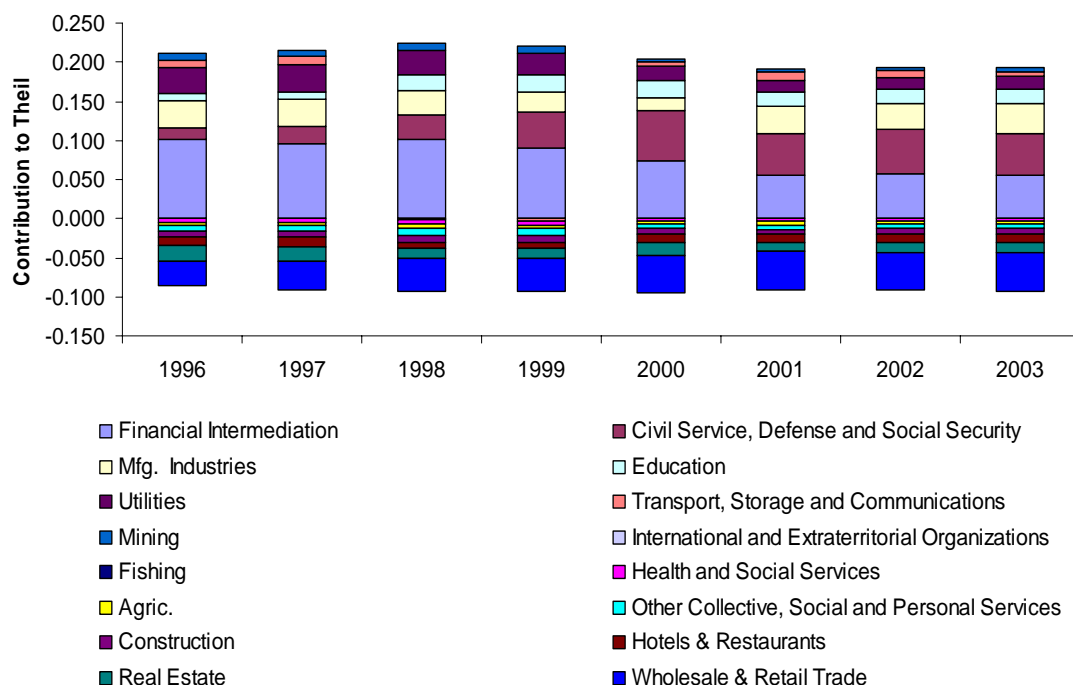
Figure 8 – Pay Inequality by Economic Sector



Source: Authors' calculations based on IBGE data.

As described above, the primary contributions to changes in the calculated Theil values are associated with changes in the relative positions of various sectors in the Brazilian economy. The contributions of each sector to the annual Theil values are displayed in Figure 9.

Figure 9 – Contribution to Overall Inequality by Economic Sector



Source: Authors' calculations based on IBGE data.

As can be observed in Figure 9, the following sectors made positive contributions to inequality (e.g., enjoyed above-average incomes) during the period of study: finance; civil service; manufacturing; education; supply of electricity; gas and water (utilities); transport, storage and communication; and mining. Although seven sectors have been included, the financial and the civil sector made the largest positive contributions. Conversely, the sectors most below average in incomes inequality have been wholesale and retail trade; real estate, hotel and restaurants; construction; other collective, social and personal services; and agriculture.

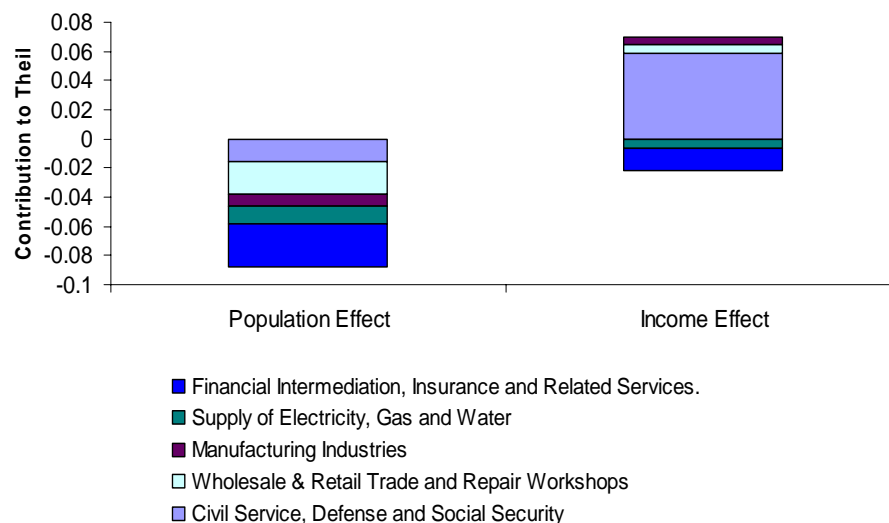
Changes in the relative position of some sectors signal important structural changes in the Brazilian economy during the period of study. For example, among those sectors which were already contributing positively to inequality, the relative positions of two sectors – the finance and civil sectors – moved in different directions. While the relative position of the civil sector improved during all the period, that of the financial sector worsened, especially

after the devaluation in January, 1999. The shrinking of the financial sector explains the downward pattern of pay inequality after 1999.

The relative position of some of the poorest sectors also changed. For example, the negative contribution of the wholesale and retail trade sector increases (becomes more negative) between 1996 and 2003. In the case of real estate, the size of its negative contribution to inequality decreases with time.

Decomposing changes in inequality into the effects of changes in relative incomes and the effects of changes in the relative size (employment) of certain sectors allows for deeper understanding of the causes of the changes in the relative positions of the most important sectors. Figure 10 shows the contributions to the population and income effects of selected sectors.

Figure 10 – **Population and Income Effect, 1996–2003**



Source: Authors' calculations based on IBGE data.

The decrease in the contribution of the financial sector is seen in the population and in the income effects; in both cases, its effect is negative. The sector's large negative population outweighs the income effect and can be explained in large part by automation of many banks. During this period the workforce decreased from 638,652 (3.35% of the total workforce) to 601,614 employees (2.11%). The financial sector's mean wage dropped in

relation to the country's average wage. In 1996, the financial sector's mean wage is 2.87 times higher than the country's average wage; in 2003, it is just 2.65 times higher.

The reduction of the financial sector's contribution to inequality is accompanied by an increase in the contribution of the civil service sector. Figure 10 shows that the civil service sector's negative population effect is outweighed by its large positive income effect. As such, the sector's positive contributions to changes in inequality over the time period are related to a relative boost in sector salaries. While the absolute number of jobs in the civil service sector increases from 5.3 million to 6.7 million, between 1996 and 2003, employment in the sector decreases from 28% of the workforce to below 24%. In 1996, the sector's mean wage was exactly the same as the country's average wage. However, by 2003 the mean wage was 15.5% higher than the country's average wage. Gains in relative wages in the civil service sector were in part due to the strength of its labor union.

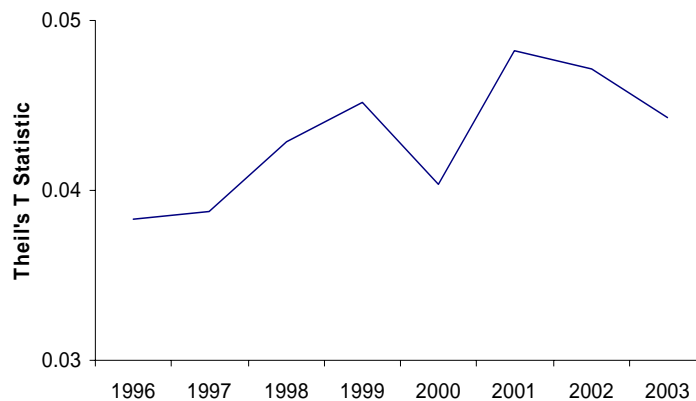
The wholesale and retail trade sector makes the largest negative contribution to inequality in Brazil because it employs a large percentage of the population and pays poorly. An increasingly larger percentage of the workforce is employed in this sector (from 9.2% in 1996 to 17.4% in 2003). The average job in this sector paid 44% of the country's average wage in 1996 and 61% in 2003. While relative incomes grew, they remain well below average.

Reduction of both total employment and salaries earned in the utilities sector demonstrates the impact of the privatization of this sector that accompanied implementation of the Washington Consensus. The total number of jobs in this sector dropped by 20% and wages earned also dropped, by more than 9%.

Finally, wage and job participation were stable in the manufacturing sector during this period. The sector employed just fewer than 20% of the Brazilian workforce and paid 1.1 times the country's average wage in both 1996 and 2003.

Inequality among Regions

Figure 11 – Inequality by Region



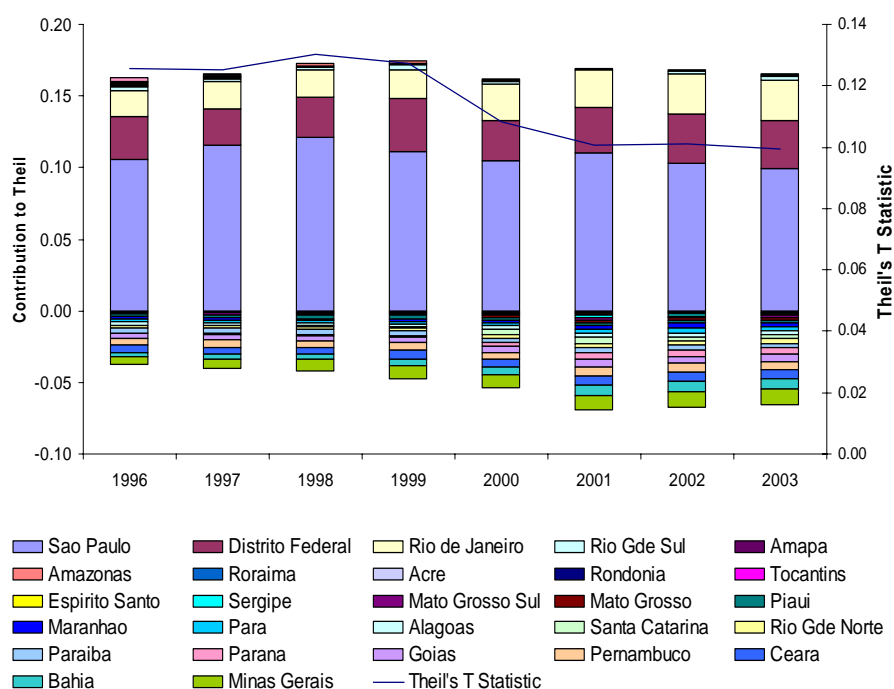
Source: Authors' calculations based on IBGE data.

Inequality by region was generally increasing from 1996 until 2001, after which regional inequality returned to 1999 levels, as shown in Figure 11. Changes in regional inequality in Brazil are closely tied to changes in the relative position of Sao Paulo; when its relative contribution increases, overall inequality increases, and vice versa.

During the period under study (1996-2003) the following states enjoyed above-average incomes and made large positive contributions to increasing inequality: Sao Paulo, Brazilia (federal district) and Rio de Janeiro. Of these three the largest contributor was Sao Paulo, the richest and most populous state in Brazil. In 2003, about 30% of workers employed in Brazil held jobs in São Paulo. Sao Paulo accounts for 40% of the jobs in the financial sector, 37% of jobs in the real estate sector, 36% of manufacturing jobs, and 33% of jobs in health and social services. Brazilia makes a large positive contribution to regional inequality because it is the country's political center, and as such employs a large percentage of the civil service. Finally, Rio de Janeiro also contributes positively due to its oil production and civil service. A vast majority of states contribute negatively to regional inequality in Brazil. Because their shares of both populations employed and of salaries earned were relatively small, no state stands out as a significant negative contributor.

Contribution by Region

Figure 12 – Contribution to Inequality by Region



Source: Authors' calculations based on IBGE data.

Conclusions and future research questions

Argentina and Brazil made similar transitions, under similar conditions, from import substitution economic models to open market economies in the last 10 years. However, the two countries experienced these changes differently. In Argentina, inequality rose sharply with the failure of the Alfonsín efforts at stabilization in the 1980s, and again as the neoliberal model took hold in the late 1990s, improving especially the relative position of the banks and of Buenos Aires city compared to the rest of the country. In Brazil, large increases in inequality had already occurred, beginning in 1982 with the debt crisis; there had been a long experience of efforts to stabilize the economy by heterodox means, each of which worked for only a short time. However, after 1993 Brazil was able substantially to stabilize its macroeconomic environment, with the result that inequality fell in the following years. Much of the decline, as we have seen, was due to a fall in the size of the financial sector.

Through future research, we can perhaps learn the extent to which government policies in Brazil allowed for a smooth transition while creating conditions for improvement in the distribution of income in that country. We can also learn the extent to which the policies and political decisions in Argentina that worsened that country's inequality contributed to the eventual collapse of its economy. Understanding the ways in which the two countries implemented economic reforms and the consequences of these strategies might provide insights into the effectiveness of given policies that can be used to illuminate future policy objectives and their implementation.

Our principal point however, is a simple and definitive one. By disaggregating changes in inequality into regional and sectoral effects, one can gain deep and reliable insight into changing patterns of economic activity and these can be of great value in forging hypotheses about the underlying mechanisms of economic change.

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