The Comparative Advantages of Trade of the Regions Northeast, Southeast and South of Brazil in the MERCOSUL

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ABSTRACT

This article analyzes the characteristics of the Brazilian trade flow from the Northeast, Southeast and South Regions in MERCOSUL in terms of factorial intensity within the principles of traditional trade theory. The analysis is performed for the period between 1990 and 2004 and the input-output technique is used. The classification of products according to factors' intensity is performed using the Endowment Triangles method developed by Leamer [9] and adapted by Londero and Teitel [11]. Considering that there are regional disparities in Brazil, it is natural to investigate the patterns of the international trade of Brazilian Regions, particularly the Northeast, Southeast and South, which together account for more than 90.0% of the Brazilian international trade and 95.0% for MERCOSUL. Regarding the use of the factors for MERCOSUL, the results show that in exports from the Northeast, there is a paradoxical behavior in the use of comparative advantages once there is greater share of goods intensive in capital and less in natural resources and labor. Concerning South and Southeast Regions, exports are more intensive in capital than the imports, therefore consistent with the precepts of comparative advantages if recognized that these two regions are relatively well endowed with more capital than the partners of MERCOSUL.

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1. Introduction

After the Second World War, several rounds of negotiations under GATT supervision (General Agreement on Tariffs and Trade) made the world trade flows increase significantly the effect of gradual decline of the tariff barriers. As tariffs decrease, the world tended towards the free trade, or at least to a situation where the exchange amongst nations may occur without excessive intervention of the state.

More recently, in the 90s, the international trade system presented important changes. The process of trade liberalization and the formation of regional trade blocs were deepened. However, the elimination of tariff barriers brought to countries the fear that globalization could destroy their productive sectors, which then decided to adopt other forms of non-tariff protection. It was the "new protectionism", which combined with the complexity of

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negotiating the trade liberalization in a multilateral way, served as an incentive for the formation of regional trade blocs among reduced country groups.

Globalization presents a threatening for several countries, so that the formation of the current regional trade blocs such as MERCOSUL, NAFTA and others, has sought to improve international competitiveness and integration through regional strategies to protect the products from member countries affraiding that their productive sectors may lose competitiveness when facing the foreign market. This happens, mainly because the globalization process has become much faster and more aggressive in the world economy.

There is consensus in the international economic literature that the regional economies, both in developed countries as in developing countries, suffer the effects of economic integration. However, the severity of national issues are greater in less developed economies then, solving the regional inequalities and at the same time integrate their economies into the international trade system is a challenge that requires effort and knowledge of its potential which enable better use of the comparative advantages, scale economies and complementarity of economies.

In Brazil, given the territorial dimensions and productive heterogeneity of the several regions, it is expected that the effects of international trade do not spread so homogeneously. It is important to emphasize, in this context, that Brazilian imports and exports presented no uniform performance over time from the spatial point of view, both in trade for the rest of the world, as in trade performed with the MERCOSUL.

The implementation and consolidation of the MERCOSUL in the 90s brought to Brazil an expressive exports increase to the countries of bloc[1], standing out the heterogeneity of the Brazilian regions. In 1990, the Southeast Region accounted for 70.0% of Brazilian exports performed to this block, the South Region exported 21.0% this year and the Northeast only 7.0%. This situation has changed somewhat in 2004 as the Southeast Region started to export 58.0% of the total for MERCOSUL, while the South has increased its share to 27.0% and the Northeast presented a small increase in exports to 10.0%. Thus, for MERCOSUL, the Regions Northeast, Southeast and South were responsible for 98.0% of Brazilian exports in 1990 with small decrease to 95.0% in 2004[22].

Assuming that the trade flows and comparative advantages are related, recognizing the growth of trade exchange between Brazil and the other members of MERCOSUL and even considering the existence of regional disparities in the Brazilian economy, the main objective of this work is to investigate the effects of Brazil's entrance into the MERCOSUL, considering its impact on the Brazilian regions from the viewpoint of the use or not of the regional comparative advantages. Based on the above, and due to the productive diversity and the relative importance of the Regions Northeast, Southeast and South in the trade relations, this work seeks to get a better sense of the nature and pattern of trade that each of these regions have in MERCOSUL.

The study of this question is relevant because it is expected that the economic integration of MERCOSUL will brings economic gains to all regions through an efficient expansion of trade under based on the use of regional economic vocations. The study of

[1]The effects on trade in MERCOSUL were immediate, the exchange trade between member countries has increased considerably during the first years of integration. In 1995, approximately 20.0% of total trade was intra-bloc and increasing to 28.0% in 2004. In the case of Brazil, exports to the MERCOSUL accounted for only 4.0% of the total exported in 1990. This percentage reached approximately 14.0% in 1999, decreasing to 9.2% in 2004. Regarding Brazilian imports from other countries in the bloc, they have remained virtually constant, since more than 11.0% were from the MERCOSUL in 1990, while in 1999 this percentage reached more than 13.0%, decreasing to 10.0 % in 2004.

[2] The Regions Northeast, Southeast and South were responsible for more than 90.0% of the total exported by Brazil for the rest of the world between 1990 and 2004.

comparative advantages in a regional context allows for a better understanding of this question. On the other hand, the results from the analysis are important for economic policy, they can subsidize the decision–making on strategies to accelerate the growth of commercial exchange at a time when there is a slowdown in trade flows within the bloc.

This paper tries to contribute to the economic literature with specific analysis on the trade in Brazilian regions, and aggregate information to the studies performed so far helping in making decisions on foreign trade policies. This work comprises three sections, in addition to the introduction and conclusion. Section two aims to describe the methodological procedures that will be used to examine the nature of trade between the regions South, Southeast and Northeast of Brazil and the MERCOSUL. In section three the structure of exports and imports of each region considering its production structure is presented. Finally, the fourth section presents the results obtained.

2. Methodological Aspects

The standard model of international trade based on the factors proportions admits that there are only two production factors. For the purpose of this work, the existence of three types of products will be admitted: intensive products in natural resources, intensive products in labor and intensive products in capital[33]. The first group of products, intensive in natural resources is justified because it represents industries that were created to process natural resources and which are relatively abundant in Brazil. The second group comprises industries whose products are intensive in labor, a factor that is abundant in the Brazilian economy. Finally, the third group of products reflects the process of industrialization in Brazil, based on the capital factor, and that may be considered scarce in some regions of the country and more abundant in others[44].

There are two ways of measuring the factorial intensities. First, it can be measured the physical volume of capital inputs, labor and natural resources needed to produce a given group of goods. A second form of measurement is the estimation of the contribution of production factors in the formation of products in each sector of the economy. Conceptually, the first of those measures is the more advisable to measure factorial intensities. Only in conditions of perfect competition and perfect mobility of factors both measures would get the same content of factors and therefore would be equally valid. Using the first measure would require building series of factors stocks. However, the available data on investment are not at the level of detail required in such a way that allow a base to make the measurement of capital stock. Thus, without this information, it was decided to measure the contribution of the factors in the revenue generated in each sector.

It is possible to estimate the return received by labor and capital, taking as basis the information contained in the input-output matrices available at regional level. The income generated in each sector of the matrix is discriminated among wages, social securate charges, operational surplus, and other forms of payments. Based on the information on labor factor

[3] The analysis of the factor proportions theory can be extended for the case where three production factors exist, since it admits the existence of three or more goods in the economy, according to Kemp [8]. Samuelson [13] discusses the aspects of the factor proportions theory, when “m” factors and “n” goods exist in a model of general equilibrium.

[4] Even though relevant, the inclusion in the analysis of a third production factor, natural resources, involves some problems, both theoretical and empirical. There is the possibility that natural resources and capital, for example, might be complements and act together as gross substitutes with respect to labor. On the other hand, the information available on land income are very partial. Vanek [15] examines the difficulties when it takes into account the existence of a third factor, natural resources, in the theory of international trade.

remuneration and added value in each sector, one can obtain as residual, the remuneration of capital factor. Using this approach requires, however, solve another problem. The share of the remunerations of factors generated in each sector of the economy can be used to draw conclusions about factorial intensities and establish comparisons between sectors, since assuming the hypothesis that the remuneration rate for capital services and the wage rate are the same in all sectors of the economy. This hypothesis is not valid in the case of Brazil, especially with regard to labor[5]. The evidence also shows that in less developed regions, the diferential of rural-urban wage is even greater. Thus, the estimates presented in this work were adjusted to take into account the existence of distortions in the price of the factors and the differential of rural-urban wage in the Brazilian economy.

The measurement of the factorial intensity was obtained from by input-output matrix, whose methodology developed by Leontief [10] contains information on the income generated being discriminated between wages, social security charges, operational surplus and other remunerations. It makes possible to measure the factorial composition of products based on the contribution of productive resources in the income generation in each sector. Thus, based on the data on labor factor remuneration and value added in each sector, the residual obtained is the capital factor remuneration. Some adjustments are needed to reach the final composition of labor and capital in each product[6].

For the composition of the products' natural resources, the "direct coefficient of natural resources" was considered as indicator. The coefficient of direct requirements of natural resources is obtained based on the data from the input-output matrix calculating for each activity sector the participation of groups of products: agriculture, extractive of metallic minerals and mineral fuels. This variable is used as *proxy* of the direct use of natural resources. The calculation of direct and indirect requirements is determined by usual procedures. Defining "$B = [b_{ij}]$" the matrix of productive input use "i" (natural resources, labor and capital), per unit of product value "j" and "$A = [a_{ij}]$" the matrix of input-output coefficients, it is possible to calculate: "$L = B (I - A)^{-1}$. The matrix "L" represents the direct and indirect total use of the factor "i" for each unit of output "j". Based on this matrix it is possible to calculate and obtain the factorial intensities of the products and compare them with the factorial intensities as a whole.

Despite the existence of three factors is theoretically possible, there is the problem of how to classify products according to their factorial intensity. The solution was found by Leamer [9] developing the "Endowments Triangle" method which is described below. To develop this method a general equilibrium model of "n" goods and three factors of production: land and natural resources (r), labor (l) and capital (k) was used.

The model of Leamer was originally used to plot the relative endowments of the three factors for different countries. However, the same analysis can be used to represent the factorial intensities by product. Londero and Teitel [11] adapted the "Endowments Triangle" method of Leamer to analyze the composition of primary inputs of some manufactured products exported by Argentina and Colombia. In the model, the problem of the graphic analysis in three dimensions is overcome through the positive ortant interception in the factors' space in three dimensions with a bottom plan, forming an "Endowments Triangle." In this space, the rays which start in the origin have the same factorial intensity and may be represented by points on a graph of two dimensions, originating the relative endowments triangle.

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[5] Bacha [2] was among the first to identify the existence of a differential between urban and rural salaries in the Brazilian economy.

[6] The methodology used to calculate the use of factors in the foreign trade is based on Hidalgo [7] and Feistel [3].

The three axis coordinated in the factors' space are represented by the vertices of the endowments triangle. Each vertice represents a production factor. The endowments triangle has the property that all ray that the starts in the three vertices has the same proportion of the other two production factors. This allows for representing the factorial intensities in the triangles' sides.

The triangle is constructed in such a way that the manufacturing sector of each country is represented at the center of the triangle (k/l = r/l = k/r = 1). Defining six regions according to the factorial intensities of the products as in Figure 1.

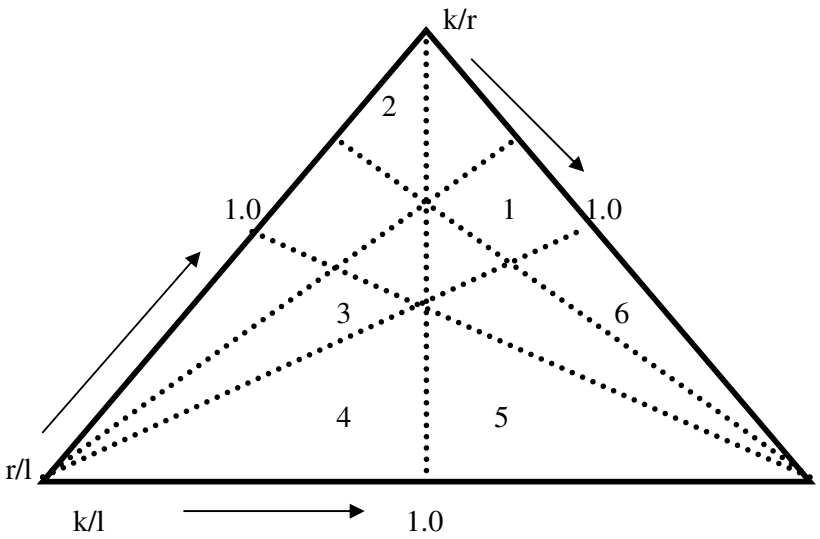

Figure 1 – Classification of the Factorial Intensities

The classification and graphic location of the products' factorial intensity can be described as follows: products in regions 1 and 2 (r/l > l and k/r < 1) are intensive in natural resources, products located in regions 3 and 4 (r/l < 1 and k/l < 1) are labor-intensive and finally in the regions 5 and 6 (k/l > 1 and k/r > 1) are capital-intensive.

3. Structure and Direction of the Regions' Trade

From the 90s the Brazilian foreign trade began to present significant changes not only in its direction but also in its structure and it has been reflected in the Northeast, Southeast and South. Regarding the exports destination from the Northeast Region, it is noted that the United States are currently the main market with a share of about 24.7% in 2004, but there was a decline since that share represented 28.9% of the total exported in 1990. Secondly, there is the European Union as the destination of the northeastern exports, which in that year presented a stake in the order of 23.5%.

The MERCOSUL bloc occupies the third place as exports destinaton, with a share of about 10.6% in 2004. The MERCOSUL has been the destination of the northeastern exports which most has grown in recent years and this growth reflects the process of trade's creation and deviation as result of the agreements among the countries which are members of the bloc, since exports from the Northeast for MERCOSUR accounted only for 4.9% in 1990. The bloc formed by Asian countries occupies the fourth place as exports destination; which presented share of about 17.4% in 1991, decreasing to 9.4% in 2004 [7].

[7] Source: Exports from the Northeast, Southeast and South, obtained by the Alice Web System/MDIT, Brazil.

The main exports destination from the Southeast Region in 1991 was the European Union (EU), with 29.6% of total exports followed by the United States with 25.8%. This situation is reversed in 2004 when the Region's exports accounted for 22.2% for the U.S. and 21.2% for the EU. The third greatest exports destination in 2004 was Asia which accounted for 12.9% of exports, being the MERCOSUL the fourth market. Despite the growth in exports share during the 90s, the MERCOSUL lost representation at the beginning of this decade participating with only 9.6% of the products exported by the Southeast.

The exports destination from the Southern Region presents a similar behavior to that of the Southeast. Thus, the most important market for the South Region was the EU in 2004, followed by the U.S. and Asia. The MERCOSUL spite of appearing in fourth place showed a significant growth as export destination for the South Region. In 1991, 3.4% of exports from the South presented the MERCOSUL as destination, changing this stake to 9.4% in 2004.

In short, it seems to be occurring not only a change in the commercial axis, but also a greater diversification in the exports destination. The share decrease of the European Union and the United States seems to reflect, mainly, a change in the direction of MERCOSUL and other blocs of lesser commercial importance.

Before continuing the analysis of factorial intensities, the exports structure from the Northeast, Southeast and South for the rest of the world from 1990–2004 is exposed[8]. Thus, the Table 1 presents the evolution of the exports profile from the Northeast to the rest of the world. The group of products with high content of natural resources, Food & Beverages, presents a decreasing share. In 1990, it accounted for 38.25% of total exports changing this value to 27.06% in 2004. Recently, the export of minerals and manufactured products with higher added value, such as: chemicals, footwear and leather and transport material gained importance.

Table 1 – Exports from the Northeast Region to the rest of the World according to Group of Products - 1990/2004

GROUP OF PRODUCTS	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Foods / Beverages	38.25	35.75	33.28	32.45	32.08	32.98	30.93	32.42	33.36	22.91	26.84	31.38	27.11	27.44	27.06
Minerals	9.73	6.84	5.29	2.95	4.15	2.67	5.12	3.88	4.92	4.59	6.58	13.74	11.01	14.17	14.61
Chemical Products	12.81	14.94	15.52	15.46	14.56	14.21	15.66	15.68	16.02	12.86	16.87	12.87	15.52	13.18	12.74
Plastics/Rubber	5.52	5.15	6.11	6.26	7.13	6.53	5.46	4.73	3.96	3.56	4.59	3.54	3.18	3.17	3.27
Footwear / Leather	2.85	2.35	2.18	2.88	2.05	2.46	2.78	3.13	3.93	3.81	5.23	6.98	6.52	6.78	6.53
Wood / Furniture	0.03	0.05	0.84	0.74	0.68	1.13	0.45	0.58	0.89	0.44	0.67	0.69	1.16	0.95	1.03
Paper and Cellulose	0.09	0.07	1.84	3.31	4.27	6.02	4.74	5.86	6.05	5.77	7.28	5.14	5.18	4.46	3.58
Textile	6.65	8.59	7.89	7.37	6.85	5.52	5.48	5.89	5.82	4.55	6.49	6.42	5.07	5.6	5.02
N-Metal. Minerals	4.99	6.14	6.08	6.95	8.34	8.65	2.99	2.82	2.56	9.9	1.54	1.53	2.04	1.36	1.24
Common Metals	16.84	18.75	19.95	18.53	17.94	17.69	23.07	21.62	19.03	28.59	19.93	14.02	16.74	13.68	14.65
Machin. / Equipm,	1.89	1.29	0.86	0.99	1.36	1.49	2.16	2.25	2.33	1.63	1.91	1.48	1.63	1.31	1.01
Transport Material	0.00	0.02	0.06	0.02	0.08	0.03	0.04	0.02	0.09	0.08	0.11	0.2	2.8	6.89	8.25
Optics/Instruments	0.08	0.06	0.07	0.11	0.19	0.21	0.19	0.17	0.16	0.24	0.14	0.12	0.07	0.04	0.04
Others	0.27	0.00	0.03	1.98	0.32	0.41	0.93	0.95	0.88	1.07	1.82	1.89	1.97	0.97	0.97
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

SOURCE: Table elaborated by the author based on the data from the Alice System of MDIT

The group of Common Metals, with high content of natural resources, represented by the ALUMAR's aluminum complex in Maranhão State with relative share of 14.65% in 2004, occupies the second position in Table 1, followed by the Minerals group that shows alternation in exports in the 90s up to reach the target of 14.61% of the total exported in 2004. It is appropriate to emphasize the products of petrochemical origin, which have high value

[8] Data available according to the Classification of Common Nomenclature of the MERCOSUL (CNM) were aggregated into fourteen major groups according to the classification criterion in Appendix A of this work.

added, where the Petrochemical Pole of Bahia plays a very important role in the high growth of exports representing around 13.0% of the northeastern exports in 2004. Another group that deserves highlight is that one of Transport Material, which had no involvement in the year 1990 and grew gradually until reaching 8.25% of total exports of the Northeast in 2004, particularly after the installation of a vehicle factory in Bahia. The group of Chemicals, Plastics and Rubbers, Paper and Cellulose and Non-metallic Minerals, which has high added value and high content of natural resources, presented alternated behavior with low decreases and increases in the relative share of exports over the period analyzed.

It is observed in Table 1 that groups of products with high technological content such as the groups of Machinery and Equipment and Optics and Instruments with an average of 0.13% in the analyzed period, present no significant changes in exports performed by the Northeast Region. Finally, in groups that are traditionally intensive in labor, there is tightness in exports, as is the case of the Textile and Leather and Footwear.

The exports structure from the Southeast Region to the international market from 1990 to 2004 is presented in Table 2. For this Region, it is observed that the most significant evolution occurred in the group of products intensive in capital by revealing an increase in the relative share in exports of products of Transport Materials, goods of high added value. Exports of this products group accounted for around 20.0% of total exports from the Region in 2004. However, even concerning the capital-intensive products, a decrease in stake in the group Machinery and Equipment, from 15.96% in 1990 to 12.90% in 2004 and tightness in the share of the Group of Optics and Instruments over the period are also observed. In the group with high content of natural resources, a gradual reduction in the share of the group of Common Metals that decreased from 21.7% in 1990 to 15.19% in 2004 can be observed in Table 2.

Table 2 - Exports from the Southeast Region to the rest of the World according to Group of Products - 1990/2004

GROUP OF PRODUCTS	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Foods / Beverages	19.65	18.53	17.69	17.02	22.22	21.48	21.68	21.90	21.53	22.33	15.78	17.76	18.26	17.95	18.08
Minerals	11.66	11.69	9.52	9.77	9.30	8.08	8.34	7.70	9.00	8.39	9.82	11.89	14.20	14.71	13.50
Chemical Products	4.89	4.75	4.94	5.31	5.30	6.02	6.61	6.44	6.09	6.10	5.61	5.33	8.14	5.14	4.72
Plastics/Rubber	2.76	2.92	3.29	3.57	3.53	3.66	3.59	3.57	3.34	3.32	3.44	3.26	3.18	3.45	3.13
Footwear / Leather	1.41	1.29	1.54	1.89	1.68	1.60	1.65	1.46	1.25	1.12	1.42	1.61	1.51	1.54	1.55
Wood / Furniture	0.72	0.67	0.70	0.82	0.78	0.68	0.62	0.62	0.54	0.54	0.52	0.48	0.46	0.52	0.52
Paper and Cellulose	4.71	4.54	4.92	4.71	4.85	6.91	4.84	4.70	4.61	5.25	5.51	4.83	4.11	5.22	3.83
Textile	3.10	3.06	3.42	2.89	2.65	2.51	2.28	1.91	1.65	1.61	1.62	1.63	1.41	1.65	1.40
N-Metal. Minerals	1.79	1.62	1.67	2.01	2.45	2.91	3.02	2.72	2.58	2.94	2.96	2.72	2.95	3.17	3.09
Common Metals	21.75	23.92	22.47	21.76	19.09	19.01	17.98	14.89	13.65	13.31	14.05	12.03	13.18	14.94	15.19
Machin. / Equipm,	15.96	15.59	14.96	15.95	14.97	15.52	15.61	15.25	14.15	14.61	16.38	15.58	13.16	13.21	12.90
Transport Material	10.66	10.26	13.77	12.90	12.06	10.61	11.36	16.01	18.91	17.04	19.01	18.60	15.89	15.39	19.36
Optics/Instruments	0.68	0.88	0.81	0.83	0.71	0.67	0.59	0.71	0.95	1.34	1.31	1.35	0.85	0.66	0.59
Others	0.26	0.28	0.30	0.58	0.41	0.34	1.83	2.11	1.75	2.10	2.57	2.93	2.68	2.45	2.14
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

SOURCE: Table elaborated by the author based on the data from the Alice System of MDIT

On the other hand, the group of Minerals is marked by alternations in its share but retains significant representation around 14.0% in 2004. Another group of products important in the productive structure of the Southeast Region is that of Food and Beverages, which considered manteined average of 20.0% in relative share in exports during the period considered. In Table 2, the groups of Chemicals, Plastics and Rubbers, Paper and Cellulose and Non-metallic Minerals, which have high value added and with high content of natural resources, and presented short increase in share of exports from the Southeast to the world during the period analyzed. Finally, there is a standstill or even decrease in exports from that Region in the group of Textile and Leather and Footwear products, which are traditionally intensive in the labor.

Table 3 – Exports from the South Region to the rest of the World according to Group of Products - 1990/2004

GROUP OF PRODUCTS	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Foods / Beverages	49.64	41.95	45.26	44.18	48.14	50.92	50.24	49.78	52.47	43.90	36.82	43.71	42.48	43.89	43.94
Minerals	1.45	1.05	0.44	0.75	0.61	0.42	0.40	0.33	0.08	0.17	0.17	0.23	0.39	0.14	0.26
Chemical Products	2.93	3.31	1.88	2.02	1.94	2.10	2.45	2.50	2.40	3.01	3.73	2.59	3.39	2.70	2.72
Plastics/Rubber	2.02	2.52	2.05	4.74	2.33	2.32	2.22	2.96	2.37	2.96	3.76	2.65	2.46	5.00	2.86
Footwear / Leather	17.41	19.64	18.53	17.73	14.45	12.78	14.88	12.97	11.65	13.11	13.62	12.30	11.15	8.96	7.95
Wood / Furniture	2.46	3.06	3.93	5.36	6.11	6.22	6.78	6.64	6.64	10.23	10.00	8.93	10.60	9.69	11.17
Paper and Cellulose	3.64	4.35	3.56	2.71	2.58	3.87	3.15	2.48	2.34	3.13	3.22	2.47	2.40	2.30	2.21
Textile	6.80	7.99	6.26	5.07	4.47	4.33	3.78	3.17	2.85	3.05	3.20	2.67	2.28	2.32	2.24
N-Metal. Minerals	1.72	2.03	1.94	2.07	1.96	1.86	1.91	1.80	1.82	2.03	2.03	1.70	1.74	1.62	1.67
Common Metals	2.87	3.23	2.97	2.63	2.26	2.23	2.22	2.08	2.07	2.31	2.27	1.94	1.76	1.86	2.21
Machin. / Equipm,	6.60	7.82	8.51	8.44	9.05	9.36	7.87	10.50	10.51	10.79	10.56	10.10	10.99	12.17	13.25
Transport Material	1.79	2.20	3.70	3.39	5.06	2.67	2.85	3.63	3.54	3.57	8.58	9.11	8.57	7.87	8.10
Optics/Instruments	0.22	0.24	0.23	0.23	0.27	0.26	0.27	0.28	0.34	0.47	0.39	0.33	0.25	0.20	0.22
Others	0.45	0.61	0.74	0.68	0.77	0.66	0.98	0.88	0.92	1.24	1.65	1.27	1.54	1.28	1.20
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

SOURCE: Table elaborated by the author based on the data from the Alice System of MDIT

Regarding the Southern Region, as observed in Table 3, the group of Foods and Beverages have the highest share in exports, once represented on average 43.0% of the region's exports to the rest of the world in the period analyzed. However, the largest increase in exports occurred in the group of products intensive in capital and technology, especially in the groups of Transport Material and Machinery and Equipment. The products of Transport Material presented a significant increase in the relative share of exports from the South, urged by the installation of vehicle factories in the States of Rio Grande do Sul and Paraná, which accounted on average for 8.5% of total exported in the past four years of the series.

Another sector that has shown significant growth in exports share was the group Machinery and Equipment which reached 13.25% in 2004. The group Tobacco, not shown in the table and that has strong participation from natural resources showed alternation in exports stake when represented almost 8.0% of exports in the mid-90s, with its height in 1994 reaching 17.0% of the total exported, showing further continued decline up to reach 5.76% in 2004. Also in Table 3, the groups of Chemicals, Plastics and Rubbers, Paper and Cellulose and Non-metallic Minerals, which have high added value and high content of natural resources, presented small changes in their relative share in exports for the period analyzed. Finally, in products that are traditionally labor-intensive, there is reduction in the exports stake from the South Region. Thus, the group of Textile products with stake of 6.8% in 1990 decreases to 2.21% in 2004 and the group of Footwear and Leather with a share of 17.41% in 1990 declined to only 7.95% in 2004. Regarding the group of Common Metals and Optics and Instruments show a standstill in the exports share in the period analyzed.

4. Results Obtained

The dataset used to calculate the use of production factors in the different sectors of the economies of the Northeast, Southeast and South Regions were obtained from the input-output matrix for each of the Regions. For the Northeast data were obtained from the input-output matrix of the BNB Northeast for 1997, which can be found at Azzoni, C. R. et al [1]. For the Southeast data from the input-output matrix of São Paulo State for 1999, which can be found at Guilhoto, J. J. M. et al [4] was uses as *proxy.* Concerning the South Region, dataset from the input-output matrix of the Rio Grande do Sul State in 1998 from the Foundation of Economics and Statistics (FEE) and elaborated by Neto, A. A. [12] was uses as *proxy*[9].

[9] Data available according to the Classification of Common Nomenclature of the MERCOSUL (CNM) were aggregated into fourteen major groups according to the classification criterion in Appendix A of this work.

Trade flows from the Northeast, Southeast and South Regions, according to the products and countries of destination and origin were obtained from the Ministry of Development, Industry and Trade (MDIT) and are available through the Alice System. Information on trade is available according to the classification of the Common Nomenclaure of MERCOSUL (CNM). Thus, it was necessary to obtain data compatibility on foreign trade of each Region for the period proposed in this study to make them compatible with the respective classification of input-output matrix of each Region. The data of this study make reference to the period between 1990-2004. Thus, initially, in sub-section 4.1 products are classified according to their factorial intensity and in sub-section 4.2 an analyses of each Region is performed.

4.1 Classification of Sectors according to the Factorial Intensity

Based on the data available on the input-output matrix of each of the three Regions and using the methodology developed by Leamer [9] and adapted by Londero and Teitel [11], described in the previous section, it was possible to elaborate the Figure 2 and obtain the classification of the exports' factorial structure to the Northeast in 1997, the Southeast in 1999 and the South in 1998.

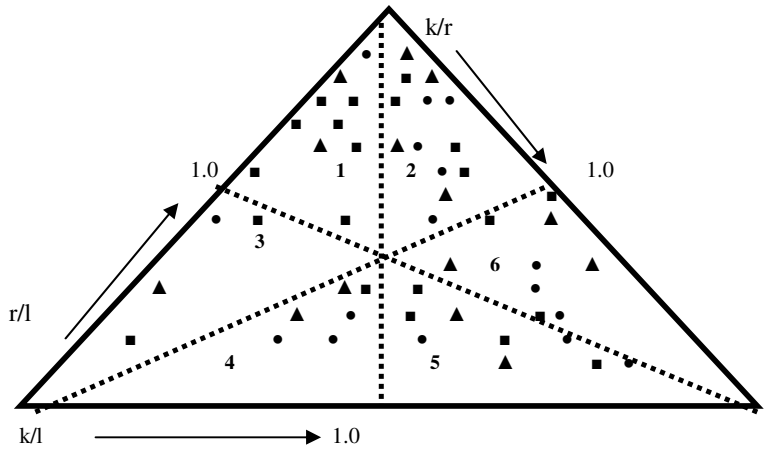

Figure 2 - Classification of the Factorial Intensities from Northeast, Southeast and South Regions

Source: Figure constructed from the data of the input-output matrix of the Regions: Northeast, 1997; Southeast, 1999 and South, 1998

Caption: ● Southeast Region; ▲ South Region; ■ Northeast Region

In the classification of the factorial structure, the sectors that are located in the region 1 and 2 - Figure 2, have coefficients $k/r < 1$ and $r/l > 1$ and are classified as products intensive in natural resources. The Northeast Region presented the sectors of Industrial Crops, Grains, Fruit and Olireculture, Cattle, Poultry and Pigs, Alcohol, Sugar, Slaughter and Preparation of Animals and Milk and Dairy classified as products intensive in natural resources for 1997. In the case of Southeast Region, 1999, the sectors classified in the regions 1 and 2 also in the Figure 2 are those of Farming and Cattle Raising, Mining, Non-Metallic Minerals, Food and Wood and Furniture. Finally, the classification of products in the South Region, 1997, as intensive in natural resource include the sectors of Farming and Cattle Raising, Wood and Furniture, Benefiting from Vegetal Products, Slaughter of Animals, Tobacco Industry and the Dairy Industry.

In Figure 2, the sectors that present coefficients r/l < 1 and k/l < 1, located in regions 3 and 4 are classified as labor-intensive. For the Northeast Region the products classified as labor-intensive were: Other Agricultural Products, Textile, Clothing and Footwear and Accessories, Leather and Furs. The Southeast has the products of the sectors Cellulose, Paper and Printing, Textile Industry (Apparel and Footwear). In the case of the South Region, the products classified are: Footwear, Furs and Leather and Other Industries.

On the other hand, capital-intensive products, which have higher value added, present the highest number of sectors in the three analyzed Regions. In Figure 2, are classified those sectors that present coefficients k/l > 1 and k/r > 1, belonging to the regions 5 and 6 in the classification of the Leamer's Triangle. For the Southeast, products belonging to this category are the sectors of Plastics, Steel, Machinery and Equipment, Electrical Equipment, Autos, Trucks, Bus, Other Vehicles and Parts, Oil & Gas, Chemical Elements, Oil Refining, other Chemicals, Pharmacy and Veterinary and Other Industries. For the Northeast, the productive sectors classified in this category are: Extraction of Oil and Gas, Other Mineral Extractions, Steel, Metallurgical and Mechanical, Electrical and Electronics, Transport Equipment, Non-Metallic Minerals, Paper and Cardboard, Oil Refineries, Petrochemical, Other Food Industries and Other Industries. Finally, in the South Region, the products classified include: Metallurgical Industry, Tractors and Machinery, Electrical and Electronic Equipment, Transport Equipment, Paper and Printing, Chemical Industry, Petrochemical Industry and Other Food Industries.

4.2 – Factorial intensities of the Regions in trade with the rest of the world and the MERCOSUL

The main results for the Regions Northeast, Southeast and Southern of Brazil in trade relations with the rest of the world are presented in Tables 4 and 5 for the period of 1990 to 2004. Table 4 shows the exports share of each of the Regions analyzed with the rest of the world, according to their factorial intensity. The results show that in the Northeast and Southeast there was predominance of capital-intensive products in the recent years of the analyzed period, there being on the other hand a decrease in exports share of products intensive in natural resources and labor.

In the Northeast the participation of products intensive in natural resources declined significantly over the period analyzed. In 1990 they accounted for 71.3% of total exports decreasing to 34.3% in 2004. There was a significant increase in the participation of capital-intensive products in the total exported by the Region. Only 11.4% of exports were intensive in capital in 1990, increasing to 52.1% in 2004. Moreover, the participation of labor-intensive products shows some variations, but the general trend is to decrease its participation in such products. In summary, the Northeast presents with the rest of the world, a sharp growth in exports of capital-intensive products and low participation of labor-intensive products. This is contrary to expectations, given the Region's natural advantage in labor-intensive products.

Concerning the Southeast Region, results show that the period between 1990 and 2004 there was no significant changes in the relative share of groups of products according to the factorial intensities in exports of this Region. The analysis of the evolution of the use of production factors shows that exports of products intensive in natural resources accounted for an average 32.6% of total exports from the Region. It is also emphasized the predominance of exports of capital-intensive products with an average share of more than 56.8%. For labor-intensive products, there is stability of the Region' share in exports to the rest of the world around 10.6% over the period considered.

Table 4 – Factorial intensities in the International Trade

Northeast, Southeast and South Regions - 1990/2004

EXPORTS TO THE REST OF THE WORLD																								
Period	1990			1992			1994			1996			1998			2000			2002			2004		
Regions	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South
Nat. Res. Intes. Prod.	71.3	33.1	44.9	65.4	28.9	41.5	54.3	33.9	44.0	41.5	33.0	44.9	44.3	33.1	39.1	44.3	28.5	41.1	37.3	35.4	41.3	34.3	34.7	41.6
Labor Intens.Prod.	17.3	10.2	28.8	15.9	10.9	30.2	18.2	10.3	26.1	9.6	11.2	26.3	11.2	9.7	22.4	11.2	11.6	29.0	13.6	9.7	24.6	13.6	9.4	22.1
Capital Intens. Prod.	11.4	56.7	26.3	18.7	60.2	28.3	27.5	55.8	29.9	48.9	55.8	28.8	44.5	57.2	38.5	44.5	59.9	29.9	49.17	54.9	34.1	52.1	55.9	36.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Table based on the data from the matrices input-output of the Northeast, 1997; input-output of the State of Rio Grande do Sul, 1998; input-output of São Paulo, 1999 and trade flow from the Alice Web System of MDIT .

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Table 5 - Factorial intensities in the International Trade
Northeast, Southeast and South Regions - 1990/2004

IMPORTS TO THE REST OF THE WORLD																								
Period	1990			1992			1994			1996			1998			2000			2002			2004		
Regions	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South
Nat. Res. Intes. Prod.	39.2	42.1	20.7	37.4	35.2	16.6	43.9	23.9	16.6	37.3	21.2	17.6	30.4	15.1	14.1	28.4	18.3	13.8	20.9	19.3	10.2	18.7	22.3	11.3
Labor Intens.Prod.	31.2	4.4	22.1	26.2	4.9	19.6	23.1	6.6	16.0	14.6	8.7	18.8	16.4	7.5	14.1	10.8	6.2	12.2	9.2	5.0	15.9	8.5	4.7	14.3
Capital Intens. Prod.	29.6	53.5	57.2	36.4	59.9	63.8	33.0	69.3	67.4	48.1	69.9	63.6	53.2	77.4	71.8	60.8	75.5	74.0	69.9	75.7	73.9	72.8	73.0	74.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Table based on the data from the matrices input-output of the Northeast, 1997; input-output of the State of Rio Grande do Sul, 1998; input-output of São Paulo, 1999 and trade flow from the Alice Web System of MDIT .

Regarding the South Region, the main results obtained on the factorial intensity in exports to the rest of the world are displayed in Table 4, the results show that there was significant change in the relative share of capital-intensive goods in exports of the Region. A continuing growth in participation of those goods is observed, ranging from 26.3% in 1990 to 36.3% in 2004. However, exports of products intensive in natural resources mantained average representative of more than 40.0% of total exports from the Region in the period. For labor-intensive products, the results show decrease in exports share ranging from 28.8% in 1990 to 22.1% in 2004 of total exports to international markets.

Table 5 shows the evolution of the imports structure from the Northeast, Southeast and South Regions according to their relative factorial intensity for the period 1990/2004. The results of this table show a significant increase in the imports share of products intensive in capital of the Northeast. During the period, the participation of these products more than doubled, ranging from 29.6% in 1990 to 72.8% in 2004. The increase in the participation of capital-intensive products was accompanied by a reduction in the imports share of goods intensive in labor and natural resources. In 1990, 31.2% of total imports were labor-intensive, decreasing to just 8.5% in 2004. Furthermore, the imports share of products intensive in natural resources declined by half changing from 39.2% in 1990 to 18.7% in 2004.

Table 5 also shows the evolution of the imports structure from the Southeast Region with the rest of the world, according to the factorial intensity for the period 1990 to 2004. It is observed a significant increase in the participation of capital-intensive goods, which in 1990 was around 53.5%, increasing to 73.0% in 2004. This movement is offset by a reduction in the imports stake of products intensive in natural resources which decreased of 42.1% in 1990 to 22.3% in 2004. The growth in capital-intensive imports occurred due to increase in products imports of the sector Transport Material that is intensive in capital. On the other hand, the reduction in the participation of goods intensive in natural resources happened in terms of reducing imports of non-metallic minerals sector. However, the labor-intensive goods showed less significant variations, showing relative share from the minimum of 4.4% in 1990 to the maximum of 8.7% in 1996.

Regarding the imports from the South, the Table 5 shows growth in imports share of capital-intensive goods which in 1990 was 57.2% increasing to 74.4% in 2004. This growth is offset by a significant decrease in imports of products intensive in natural resources from 20.7% in 1990 to 11.3% in 2004. The labor-intensive goods also presented significant decrease in its relative stake, declining from 22.1% in 1990 to 14.3% in 2004.

In short, the exports behavior from the Northeast seems not consistent with the use of the comparative advantages of the Region. The Northeast showed a significant increase in the exports stake of products intensive in the scarce factor of the Region, the capital, and decrease in share of products intensive in the abundant factor, which is the labor. On the side of imports, however, results seem to show a bit more consistent behavior with the comparative advantages. The Region presents growth in imports of products from capital-intensive, scarce factor in the Region.

Finally, to achieve the goals outlined in this study, the calculation of factorial intensities in foreign trade from the Northeast, Southeast and South Regions regarding to MERCOSUL for the period 1990-2004 was performed. Results are presented in Tables 6 and 7.

The intention here is to get a better understand if the changes verified towards the trade flow as a result of the creation of MERCOSUL, and described in section three of this work, are representing or not an exploitation of regional comparative advantages. Thus, in Table 6 are presented the share of the products exported to the bloc of MERCOSUL, according to the relative factorial intensity. The results for this bloc deserve special attention

Table 5 - Factorial intensities in the International Trade
Northeast, Southeast and South Regions - 1990/2004

IMPORTS TO THE REST OF THE WORLD																								
Period	1990			1992			1994			1996			1998			2000			2002			2004		
Regions	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South
Nat. Res. Intes. Prod.	39.2	42.1	20.7	37.4	35.2	16.6	43.9	23.9	16.6	37.3	21.2	17.6	30.4	15.1	14.1	28.4	18.3	13.8	20.9	19.3	10.2	18.7	22.3	11.3
Labor Intens.Prod.	31.2	4.4	22.1	26.2	4.9	19.6	23.1	6.6	16.0	14.6	8.7	18.8	16.4	7.5	14.1	10.8	6.2	12.2	9.2	5.0	15.9	8.5	4.7	14.3
Capital Intens. Prod.	29.6	53.5	57.2	36.4	59.9	63.8	33.0	69.3	67.4	48.1	69.9	63.6	53.2	77.4	71.8	60.8	75.5	74.0	69.9	75.7	73.9	72.8	73.0	74.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Table based on the data from the matrices input-output of the Northeast, 1997; input-output of the State of Rio Grande do Sul, 1998; input-output of São Paulo, 1999 and trade flow from the Alice Web System of MDIT .

Table 6 - Factorial intensities in the International Trade
Northeast, Southeast and South Regions - 1990/2004

EXPORTS TO THE MERCOSUL																								
Period	1990			1992			1994			1996			1998			2000			2002			2004		
Regions	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South	Nort	Sest	South
Nat. Res. Intes. Prod.	42.9	20.4	17.6	33.3	9.3	23.5	39.5	14.9	21.7	36.9	13.0	21.9	34.4	13.6	23.8	27.8	11.2	27.1	33.8	16.5	18.2	26.8	9.5	11.4
Labor Intens.Prod.	7.2	9.7	22.5	10.7	7.2	22.8	6.6	9.7	21.2	5.4	9.7	21.5	10.3	8.9	20.9	12.4	12.1	23.3	5.3	10.4	24.9	10.6	8.4	21.3
Capital Intens. Prod.	49.9	69.9	59.9	56.0	83.4	53.7	53.9	75.4	57.1	57.7	77.3	56.6	55.3	77.5	55.3	59.8	76.7	49.6	60.9	73.1	56.9	62.6	82.1	67.3
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Table based on the data from the matrices input-output of the Northeast, 1997; input-output of the State of Rio Grande do Sul, 1998; input-output of São Paulo, 1999 and trade flow from the Alice Web System of MDIT .

in view of its recent creation and growth verified on the agenda of Brazilian exports to MERCOSUL in the recent years.

It is observed in the case of Northeast Region, Table 6, predominance of exports of capital-intensive products to the MERCOSUL. The participation of capital-intensive goods is 10% higher for MERCOSUL than to the rest of world[10]. In last year of the series, 62.6% of exports to MERCOSUL consisted of capital-intensive products. Moreover, the results show decrease in the relative share of natural resources-intensive products exported to MERCOSUL. Thus, in 1990, 42.9% of exports from the Northeast to this bloc of countries were intensified in natural resources, decreasing to just 26.8% in 2004. Regarding the participation of labor-intensive goods, it is observed that these represent only about 10% of the total exported to MERCOSUL in the recent years of the series studied. It is important to emphasize that the share in labor-intensive exports is much higher for the rest of the world than for MERCOSUL, as shown in the comparison between Table 4 and Table 6.

For Southeast, Table 6 shows the predominance of capital-intensive products exports, which started with 69.9% of total exports in 1990, increasing to 82.1% in the last year of the series. This increase is explained partly by the increase in exports of transport material sector for MERCOSUL. Moreover, this period presented reduction in the relative stake of products exported intensive in natural resources from 20.4% in 1990 to less than half, only 9.5% in 2004. Concerning exports of labor-intensive products to the MERCOSUL, there was almost no variation, with an average of around 10.0% of the total exported in the period considered.

Results for the South Region, Table 6, also show increasing prevailing of capital-intensive exports. In 1990 they accounted for 59.9% of the total while in the last year of the series this number increased to 67.3%. Just as for Southeast Region, this growth was due to, mainly, the increase in exports of products from the sector of Transport Material. Regarding the exportable goods and intensive in natural resources, it was found that despite an initial growth in the relative share of 17.6% in 1990 to 27.1% in 2000, a reduction started in 2001 reaching the value of 11.4% in 2004. In labor-intensive products, there was stabilization in exports, maintaining the relative share on average of 22.00% of exports to MERCOSUL in the period considered.

Regarding to the imports of the Northeast in the MERCOSUL for the period between 1990 and 2004, the results are shown in Table 7. Increase in imports of capital-intensive products was observed, relative share that was 49.4% of total imports of MERCOSUL in 1990, start to represent more than half of imports in the recent years of the series. Moreover, as table shows, imports of the Northeast Region of products intensive in natural resources of MERCOSUL which represented 33.5% of imports in 1990, decreased to just 16.3% of total import in 2004 . However, labor-intensive products imported, increased of 17.1% in 1990 to 42.1% in 1994. In 2004 the participation was around 28.2%. Comparing the tables 5 and 7 is observed that imports of the Northeast from MERCOSUL are more labor-intensive than in the Northeast imports from the rest of the world.

In summary, the results for the Northeast Region, in addition of being similar, confirm the evidence found by Hidalgo [6]. In exports to the rest of the world, including the MERCOSUL, there is significant increase in capital-intensive goods, behavior that is not compliant with the use of the comparative advantage of the Region, which by definition is recognized as labor-abundant.

In this work we are assuming that the Southeast and South Regions of Brazil are relatively abundant in capital factor over the other members of MERCOSUL. This hipothesis is based on the evidence that Brazil has a greater degree of industrialization in relation to the

[10] This difference will be greater if we take into account that in exports to the rest of the world are included exports to the MERCOSUL.

other partners in the bloc, and also the high concentration of industrial activity in those two regions. On the other hand, it is assumed the Northeast as relatively abundant in labor. This Region is characterized by being of lesser relative development in Brazil, with significant rural poverty and surplus of labor. This surplus of labor nurtures migration flows to other regions of the country. These evidence suggests, therefore, that the Northeast is relatively abundant in labor in relation to the partners of MERCOSUL.

There are also significant reduction in exports of products intensive in natural resources, scarce factor, and less significant reduction in the share of exports of labor-intensive goods, abundant factor in the Region. On the side of imports, the results show a significant decrease in imports of goods intensive in scarce natural resources in the Region and a significant growth of products intensive in capital; behavior that could be considered consistent with the use of comparative advantages. Meanwhile, the import of labor-intensive goods from the Northeast into MERCOSUL is significant.

Concerning the imports of MERCOSUL by the Southeast, Table 7 shows that imports of capital-intensive products accounted for 30% of total imports by the Southeast at the beginning of the 90s, increasing to 54.6% in 2004, mainly due to increase in imports of the Transport Material sector. On the other hand, imports of products intensive in natural resources, which in 1990 accounted for half of the imports, presented abrupt oscilations, recovering gradually their share, when it reaches 40.3% in 2004. Regarding to the labor-intensive products imported, they had significant reduction in their relative share in the period analyzed, decreasing from 18.7% in 1990 to only 5.1% of the total imported in 2004.

Also in Table 7, with regard to the South Region, it is observed an increase in imports of capital-intensive products, which accounted for only 20.4% of total imports at the beginning of the 90s increasing to more than half of the imports in the recent years of the series. This movement, following the example of the exports, was due to the increase of imports from the groups of Machinery and Equipment and Transport Material. On the other hand, imports of products intensive in natural resources, which accounted for almost half of imports from the Southern Region of MERCOSUL in 1990, had its share reduced to just 16.9% in 2004. With regard to labor-intensive products imported, the stake was reduced from 33.1% in 1990 to 27.7% in 2004.

Results of the factorial intensities presented to the Regions Northeast, Southeast and South showed significant and growing share in the total trade flow in exports and in imports of capital-intensive products, rather than the trade of goods intensive in labor and natural resources.

The trade trend performed by the Northeast, Southeast and South with the rest of the world was also verified in MERCOSUL, however with greater intensity and reflected in a significant increase in exports and imports of capital-intensive goods.

The increase in exports and imports intensive in capital from the three Regions in trade with MERCOSUL seems to show that as a result of integration, the intra-industry trade has become more important for these Regions than the inter-industry trade based on comparative advantages[11].

However, in the trade of these Regions with the Mercosul is important to emphasize the case of the Northeast, where labor-intensive goods were about three times higher in imports than exports since the implementation of this economic bloc. Furthermore, the share of capital-intensive goods in exports was higher than in the Northeast imports of countries which are members of the bloc.

[11] Vasconcelos [16] found indexes of intra-industry trade of Grubel and Lloyd of 0,54 in the Brazil-MERCOSUL trade, 1998.

The expressive share of imports of labor-intensive goods in the Northeast of MERCOSUL, is not consistent with the use of the comparative advantages of the Region, which is recognized in the economic literature as labor-abundant.

Finally, it is possible to infer that the trade from the Northeast, Southeast and South in exports is more intensive in capital goods to the MERCOSUL, than the trade of these Regions with the rest of the world. In this context, there is the South Region, once the exports of capital-intensive goods were 67.3% for the MERCOSUL and 36.3% for the rest of the world in 2004.

5. Conclusions

This study aimed to analyze the characteristics of the international trade flow from the Brazilian Northeast, Southeast and South regions in terms of factorial intensity. On the other hand, it was also tried to investigate the contribution of the MERCOSUL intra-bloc trade flow and the characteristics of this type of trade in each of the Regions considered.

The analysis of the characteristics of the trade flow of the three Regions showed that there were important changes, not only in the direction of trade flows but also in the structure of trade during the period 1990/2004.

The results showed that in relation to the MERCOSUL, the three Regions analyzed export and import relatively more capital-intensive goods. The composition of factorial intensities of imports and exports, both to the rest of the world and to the MERCOSUL, showed that there was an increase in exports and imports of capital-intensive goods, rather than goods intensive in labor and natural resources.

Regarding the use of factors in the exports of the Northeast to the MERCOSUL, the results showed a paradoxical behavior in the use of the comparative advantages, as there is a significant increase in the exports share of capital-intensive goods rather than the goods intensive in natural resources and labor, once this Region is known for being abundant in the labor factor.

Overall, trade in the Northeast, Southeast and South Regions has proven to be more intensive in capital goods for MERCOSUL than for the rest of the world. In this context, it is emphasized the participation of capital-intensive goods in the exports of these regions, which were around 10.0% higher for MERCOSUL than to the rest of the world. On the side of the imports, the participation of capital-intensive goods was approximately 20.0% higher in the countries of the bloc than in the rest of the world. The relative exports share of capital goods in the South Region is also emphasized; reaching approximately 67.3% of the total for the MERCOSUL, while that for the rest of the world, including the MERCOSUL, that figure was only 36.3% in 2004. However, this difference could be greater if the Region's trade with MERCOSUL were excluded from the exports of South Region to the rest of the world. In the case of the trade in the Northeast with MERCOSUL is important to emphasize that this Region presented an average share of labor-intensive goods 20.0% higher in imports than exports to the bloc.

These results seem to support the concerns of Yeats [17] on diversion of trade in the MERCOSUL. Overall, in the Southeast, South and Northeast Regions, the greater share on the trade flow with the MERCOSUL, both in exports and in imports, seems to be the capital-intensive products. Therefore, it is noticed that there was a significant increase of trade in capital-intensive goods in the three Regions analyzed in this study with the implementation of the MERCOSUL.

Appendix A

Classification criterion of the CNM chapters, according to the groups of products

Groups of Products	CNM Chapters	Description
Food, Tobacco and Beverages	01 to 24	Animal products: live animals, meat, fish, dairy, eggs. Vegetal Products: plants, vegetables, fruit, coffee, tea, cereals, starches, wheat, grains, seeds, gums, fats and oils of animal and vegetal origin. Food, beverages and tobacco: prepared meat, sugar, cocoa, flours, preparations of cereals, pastries, prepared fruit or vegetable, non-alcoholic or alcoholic beverages and tobacco.
Minerals	25 to 27	Salt, sulfur, gypsum, lime, cement, minerals, fuels and mineral waxes.
Chemical Products	28 to 38	Inorganic, organic, pharmaceuticals, fertilizers, paints, oils, essential, soaps, waxes, glues, gunpowder and products to photography.
Plastic and Rubbers	39 to 40	Plastic products and Rubber
Footwear and Leather	41 to 43 and 64 to 67	Footwear, hats, umbrellas, fur and leather items
Wood and charcoal	44 to 46	Wood, cork and wooden products.
Paper and Cellulose	47 to 49	Paper and printing
Textile	50 to 63	Yarn, weaving and confections.
Non-metallic Minerals	68 to 72	Stone, pottery and glass items, pearls, precious stones and precious metals.
Common Metals	73 to 83	Iron and steel, copper, nickel, aluminum, lead, zinc, tin and tools.
Machinery and Equipment	84 to 85	Machinery and electrical equipment
Transport Material	86 to 89	Transport vehicles, cars, tractors, Airplanes and boats.
Optics and Instruments	90 to 92	Optical, photographic and instruments of measurement and control.
Others	93 to 99 and 00	Arms and ammunition, different goods, furniture, lighting, toys, sports products and art objects.

Obs: This classification criterion is the same used in Thorstensen, V. et. al [14] pp. 50-51.

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