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The effect of positioning in the world economic system on economic and social development: A relational approach to services

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In this study, we aimed to evaluate how the positioning of the country in the world economic system influences economic development (per capita income) and social development (HDI). Taking exchange of services as a reference point, through social network analysis and panel data, we found that the positioning of the country in more central positions, i.e., the core and semiperiphery, and capacity for betweenness positively interfere with economic development, but not with social development. However, we did observe that those countries with greater outsourcing of services to other countries tend to enjoy greater social development.

Key words: Core-periphery, global services, social network analysis, world trade, world society, world systems.

INTRODUCTION

The conditioners of the social and economic development of countries are currently being discussed in the literature on politics and international economics. The explanations, sometimes endogenous, other times exogenous, point to different analysis perspectives of the phenomenon. In the former, neoclassical economic formulations (Rostow, 1960) reinforce the importance of internal mechanisms of countries as levers of development, such as increased savings, entry of investments and formation of capital (Snyder and Kick, 1979). These explanations allude to the idea that underdeveloped countries should recompose the development trajectory of developed countries, assuming that economic development is independent of exogenous factors. Meanwhile, the latter, theories of dependence and world systems (Wallerstein, 1974) attempt to explain that the development of countries fundamentally depends on their positioning in the geopolitical system, as seen in their exchange relationships. This perspective prioritizes economic relations as

determiners of development (Chase-Dunn, 1975; Clarck, 2006), in which greater dependence on foreign capital (Kentor, 1998), fewer partners (Smyth and White 1992) and uneven exchange (Emmanuel, 1972) lead to cumulative disadvantages for peripheral countries, while they are seen as cumulative advantages for central countries (DiPrete and Eirich, 2006; Snyder and Kick, 1979).

These two sets of explanations were consolidated in two research traditions concerning the development of countries: the neoclassical, of an endogenous nature; and the systemic or of the world system, of an exogenous nature, in which, in this study, we will compare by overlapping the former and the latter. The world system vision has to do with the idea that the modern world is composed of three structural positions: the core, the semiperiphery and periphery, which indicate the international division of labor in which the core is connected to the periphery and the semiperiphery, through historical relationships of exploration (Wallerstein, 1974).

This notion of positioning, despite being accepted in current literature (Chase-Dunn, 2002; Clark, 2006), has been severely criticized, even by those who are adept to this perspective. The first criticism concerns the determinist

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nature of the approach, which basically relies on structural-functionalist mechanisms to explain the development of countries, leaving the role of agency aside (Chase-Dunn, 2002). The second criticism, made mainly by fans of the world society approach, has to do with the emphasis laid on the economic dimension, mainly trade exchanges, taking any cultural aspect of the relationship between countries as an epiphenomenon (Clark, 2006; Meyer et al., 1997). The third criticism is that there are no operational criteria to classify countries in different positions in the early works dealing with this approach (Snyder and Kick, 1979).

Considering these criticisms, first of all, we sought in this study to position the analysis of world systems within an institutional-structurationist approach, highlighting the role of agency in the process of development of countries and its duality with world systems. This duality emphasizes that the result of action on the part of countries to develop is determined neither by their internal nature nor their external nature, but rather is conditioned by both, whose development trajectory at the same time restricts possibilities for action and also enables new alternatives. This idea has to do with Giddens (1984) notion of ontology of potentials, present in the thought of some theoreticians of systems and world societies (Chase-Dunn and Grimes, 1995; Chase-Dunn, 2002; Clark, 2006; Meyer et al., 1997), serving as a guide to interpreting this work. Secondly, we hope to contribute to studies on world systems by incorporating an element neglected when evaluating the position of countries: exchange of services. Due to the increasing importance of the tertiary sector to national economies (Bollen and Appold, 1993), understanding the relationship of service exchanges enables us to understand how the increased participation of countries in this category of economic relationships conditions economic and social development. Thirdly, following the pattern of previous studies (Nemeth and Smith, 1985; Smith and White, 1992; Snyder and Kick, 1979) we will conduct an empirical analysis of the positioning of a country in the service exchange system through social network analysis. However, we will use the procedure adopted by Clark (2006), who used a genetic algorithm that makes it possible to conduct a continuous and robust analysis of countries in the network (Borgatti and Everett, 1999). Finally, in addition to analyzing the effect of positioning in the world system on economic development (evaluated according to per capita income), we will use a broader social development indicator than that used in previous studies, the human development index (HDI).

We set out to evaluate empirically, through the convergence of social network analysis and panel data, how the position of a country in the world economic system influences social and economic development. To this end, we have structured the article in four parts. In the section dealing with the theoretical reference framework, we will review the fundamental concepts for

understanding the work, pointing out some research hypotheses. We will then specify the data and analytical procedures that will lead to the following section, results. Finally, we will discuss the results, concluding with the theoretical and practical implications of the study and make suggestions for future studies.

LITERATURE REVIEW

According to Chase-Dunn (2002), the roots of world systems lie in classical sociology, Marxist theory, geopolitics and in the theories of social evolution. Nevertheless, it was only in the 1970s that the perspective emerged, when Amin, Frank and Wallerstein began to formulate its concepts and construct analytical narratives about the history of the modern world system. To Wallerstein (2004), a world system is an extensive geographical zone in which there is a division of labor and consequently significant internal interchange of basic and essential goods and flows of capital and labor. According to this author, the division implies inequality and an attempt to exploit in order to obtain greater value. In this same interpretation of world systems, Arienti and Filomeno (2007) interconnect the concepts of the core-periphery relationship of Wallerstein (1974), Braudel (1979) and Arrighi (1990), explaining that it is based on an axial division of work among several regions of the capitalist world economy, in which the stages of the mercantile chain are developed. According to these authors, this division of labor among regions is manipulated by the strongest nations in order to guarantee that their local capitalists will have control over the stages of the productive and trade process that will provide them with a larger surplus generated in a mercantile chain. This asymmetry in the control of productive and trade activities in favor of national bourgeoisies is continually reproduced, to the point that a centripetal force is created that concentrates surplus in the hands of the bourgeoisie at the core through unequal exchange mechanisms (Emmanuel, 1972). This tends to maintain the differentiation between regions. From this point of view, the distribution of surplus from a mercantile chain is determined not only by unequal distribution and economic advantages, i.e., unequal appropriation of factors, technological and organizational differences, but mainly by the relationship of forces in which national bourgeoisies and their respective states confront one another.

The core-periphery concept, or core, semiperiphery and periphery, as approached by Wallerstein (1974), explains the transfer of surplus generated by the production of determined activities to others that are part of the mercantile chain and are concentrated in a given region. As a world capitalist economic process, the world division of labor and the unequal distribution of surplus generate central and peripheral activities according to the capacity for absorption of each state. Historically, capitalists and

states organize the world production process in several places, so that there will be, on the one hand, a concentration of monopolies in determined regions, making them central, and, on the other hand, activities that cannot escape the unequal exchange of monopolies and competition, making them peripheral regions. According to Arienti and Filomeno (2007), this relationship is not dichotomous, but continuous, in that regions can simultaneously and in parallel have central and peripheral activities, or those that absorb value of peripheral activities, on the one hand, and transfer value to central activities, on the other. In this way, the classification that can be made of geographical world production zones is broadened, zones such as the territories of national states that can be classified in this continuum as central, semiperipheral and peripheral zones.

The points outlined above, although predominant for a long time in the literature on world systems, have been reviewed due to the lack of empirical evidence of some of their inferences (Chase-Dunn and Grimes, 1995; Clark, 2006; Van Rossem, 1996), because they place the role of the state as an agent in the background (Chase-Dunn, 2002), and do not consider the cultural and institutional aspects that emerge in countries (Meyer et al., 1997). This review has occurred more when it comes to the ontological and epistemological aspects, as worked on by Wallerstein, rather than the social mechanisms involved in world systems themselves. Concerning this review, Chase-Dunn (2002) affirms that the world system, like any system, is composed of human interaction networks, ranging from family groups to global commerce. For this reason, the analysis focus of world systems ceases to be only the economic sphere and its positions and begins to include other systems that interact at the global level (Chase-Dunn and Grimes, 1995).

Thus, world systems can be understood structurally as systems composed of economically and politically dominating societies and dependent peripheral and semiperipheral regions.

From this concept of world systems comes the understanding that the primordial antecedent of the social well-being of a nation is the position it occupies. However, this view has also been reassessed by the researchers themselves (Chase-Dunn, 2002) and principally by enthusiasts of the world society, emphasizing cultural, institutional and relational immersion of the country as the antecedents for development (Clark, 2006; Meyer et al., 1997). Thus, the logic of understanding social systems ceases to be dependence relations and becomes the degree of embeddedness and integration of countries in globally shared norms and scripts. And so development ceases to be understood exclusively through the configuration of the international environment, and moves to social, economic, political and cultural factors of the nation, with these seen as vital to modify the trajectory of dependence of a country (Feenstra and Hamilton, 2006; Van Rossem, 1996).

From this perspective, we understand that the development process of countries, as part of a movement within a world system, should be understood from an institutional-structurationist viewpoint (Meyer et al., 1997). This has to do with the understanding that nations are capable of breaking away from dependence trajectories because they have agency, i.e., there is a recursive relationship between the position that a country occupies in the system and its structure, in which the structure is constituted by the action of agents at the same time that it constitutes its parameters for action (Giddens, 1984). In these terms, the structure has a dual character: it both enables and deters the actions of agents. Thus, the analysis of world systems relies on understanding the positioning of a country in the system.

Giddens (1984) prefers to work with the notion of positioning rather than position because he understands that social systems, instead of being rigidly structured in objective dimensions, are organized as regularized social practices. To this author, even social systems existing only in the continuity of social practices, their structural properties are far more characterized as position-practice relationships (Giddens, 1984). Thus, "a social position involves the specification of a definite 'identity' within a network of social relations, that identity, however, being a 'category' to which a certain range of normative sanctions is relevant" (Giddens 1984: 83). From his explanations, we understand the social position that the country occupies in the world system as a social identity, a carrier of prerogatives and obligations that it can execute as an agent, constituting the prescriptions of role associated with this position (Giddens, 1984). In other words, countries position themselves in the social system from a set of their actions, which leads to the understanding that the positions are not set, but transitory in practice. This statement does not mean that the positions are fluid, but that they are not determined by the structure.

As a system of stratification, resources are not evenly distributed in social systems (Chase-Dunn, 2002) in which countries with greater capacity of agency and that are more integrated succeed in benefiting from a better positioning within the world system. This positioning is historically and structurally conditioned, in that the advantage of better positioned groups tends to grow over time, while groups that are not well positioned tend to show disadvantages or stagnation. This does not mean that the trajectory determines the positioning of a country, but rather that a privileged position leads to a cumulative advantage (DiPrete and Eirich, 2006).

Thus, it is argued that the per capita GNI of a country should resume its relative appropriation of world income and that, from a long-term perspective, this relative positioning should indicate the country's capacity to extract or command more or fewer resources of the world economy according to accumulation mechanisms. In this way, it would be possible to evaluate indirectly the positioning of a country by analyzing chains of goods, as

is currently being done in the literature. Nevertheless, we understand that another part of the flow of resources in the world economic system also reflects countries' generation of wealth, and for this reason we propose to evaluate the positioning of a country through exchange of services, which leads us to outline the following hypothesis:

H_{1a}: the more central the country is in the world economic system, the greater its economic development (per capita income).

A central position does not only mean more resources but also a higher degree of embeddedness in broader cultural and social systems (Clark, 2006). This increases the pressure on agents and social mechanisms to accept the current norms and values in the broader social system (Meyer et al., 1997). This greater embeddedness of countries in the social system has led to increased integration through exchange of products and services, flow of capital, migration, diplomatic ties and the presence of governmental organizations (Clark, 2006). This means that organizational mechanisms tend to pressure local governments to take measures for the well-being of their local population (Clark, 2006; Meyer et al., 1997). This leads us to expect that:

H_{1b}: the more central a country is in the world economic system, the greater its social development (HDI).

In addition to the general positioning, we expect that other elements related to exchange of services will be associated with higher rates of economic and social development. One of these is the phenomenon of out-sourcing or subcontracting of services at the international level. As pointed out by Amato Neto (1995), since the acceptance of the Japanese lean production paradigm, the deverticalization of activities in organizations has increased both in size and importance in recent years. Companies increasingly outsource part of their productive process to other (subcontracted) companies in any part of the world. In the case of services, outsourcing between countries has grown intensely due to the possibilities that information technology has brought to global manage-ment chains (Castells, 1996; Giddens, 1990). According to Grossman and Helpman (2005), the decision to outsource to a different country depends on the density of the domestic and foreign market, costs of standardizing activities and the economic and legal conditions of the country. Thus, higher aggregate value activities tend to be concentrated in the country of origin, and lower aggregate value activities are delegated to countries with outsourced companies. This means that countries posi-tioned in central regions tend to constantly increase their productivity and wealth, while peripheral countries are left with low productivity activities[1]. This trend on a global scale can be evaluated from the identification of the number of countries that have outsourced companies for

each country of origin, in which the higher degree of outsourcing reflects not only greater income but the complexity of jobs and services in that country. Complex productive processes are, in turn, related to greater needs for the education and well-being of society (Castells, 1996) directly analyzed by their degree of human development. Thus, from the statements above, we understand that:

H_{2a}: the higher the degree of outsourcing of services from the country, the greater its economic development (per capita income).
H_{2b}: the higher the degree of outsourcing of services form the country, the greater its social development (HDI).

If countries are repositories of organizations that exchange products and services among themselves, they tend to benefit as they promote these exchanges. With the positioning of one country defined by its exchange relations with the others, a privileged position can lead to cumulative advantages (DiPrete and Eirich, 2006) not only in terms of the number of ties and by the importance of partners, but also by the capacity of the country to control these relations. This is what we call betweenness, which in this study is the capacity of a country to connect others that are not directly related. Basically, between-ness explains the freedom of action and opportunity that a country obtains by connecting those who are not directly connected, taking advantage of the absence of ties between them to obtain additional advantages, which are converted into extra income. The fundamental idea in this notion is the extension that the relationship structure of one competitive arena creates opportunities for certain agents through their relations (Burt, 1992, 2000, 2002, 2004). It also addresses the idea of brokerage (Burt, 2005) or of strength of weak ties (Granovetter, 1973), initially based on Simmel´s works (1950): for these authors, individuals positioned as intermediaries or "bridges" between different actors and groups take benefit of the social capital present in the groups. Thus, besides positioning in the core or semiperiphery, countries can benefit from more circumscribed relations in their direct field, controlling the flow of relations among them. Therefore, we expect that the mechanisms involved in the accumulation of advantages for well positioned countries will also be found in their capacity for betweenness, being reflected in their social and economic development, which leads us to propose that:

H_{3a}: the greater a country's capacity for betweenness, the greater its economic development (per capita income).
H_{3b}: the greater a country's capacity for betweenness, the greater is social development (HDI).

METHODS

Bearing in mind the need to evaluate the relationship between a

country's position and its economic and social development, two types of data were collected, relational and compositional. Relational data were collected from the Service Trade Statistics database, made available by the United Nations Organization (UN). This base has information on the flow of imports and exports of services (transport, financial services, licensing, operational leasing, etc.) between all member countries. Nevertheless, in accordance with previous studies (Smith and White, 1992; Snyder and Kick, 1979), we selected only those countries with more than a million inhabitants in 2002. With this information, it was possible to construct a square matrix, crossing the flow of transaction among all countries. These data were dichotomized for the effect of social network analysis (Kim and Shin, 2002; Snyder and Kick, 1979), in which countries with relations among themselves in a given year were codified as 1 and countries with no relations were codified as 0. To this end, we evaluated relations considering the total exchange (Base Code 200), because since the base is recent, data about specific services have not been totally accurate. We considered only the value of exports so that there would be no overlap with imports as in previous studies and also because there is a greater amount of information available about exports. As we sought to evaluate this relation longitudinally, we collected this information for the period of 2002 to 2006, constructing five different relation matrixes, one for each year, in which 149 countries were identified and analyzed.

Meanwhile, the compositional data, pertaining to the economic and social indicators of each of the countries individually, were collected from the World Bank database, also for the period of 2002 to 2006. The only exception was the Human Development Index (HDI), which was collected from the annual reports of the United Nations Human Development Program (UNDP). Then, taking the countries as analysis units, we constructed a database in the format of a balanced panel with the economic and social indicators, adding to these indicators the relational variables that originated from the service network analysis. Two countries were discarded (Puerto Rico and Botswana) because they had no information about service exchanges for all the years, and thus the analysis consisted of 147 countries observed in five different years, a total of 735 observations.

Dependent variables

We selected two variables as dependent. To analyze the degree of economic development, we selected the (1) *Gross National Income per capita (GNI per capita, PPP)*, evaluated in current dollars, considering purchasing power parity. As pointed out by Clark (2006), considering the purchasing parity is necessary because the comparison of national incomes in a common currency does not accurately describe the differences in terms of material possibilities in each country, since there are differences in income and in the cost of living from one country to another. With this consideration of income, the results tend to be more representative according to the reality of each country. We should point out that other measures of evaluating income of the population are more frequently used than GNI per capita. For instance, Clark (2006) and Van Rossem (1996) used Gross Domestic Product per capita (GDP per capita), Snyder and Kick (1979) used Gross National Product per capita, Snyder and Kick (1979) and Van Rossem (1996) also used the rate of income change as a dependent variable. However, we opted to use GNI per capita due to the fact that this indicator comprehends, in addition to the elements of the GDP (consumption, investments, government expenditure and balance of trade), net income minus income sent overseas (Gross National Product), deducting from these values the profit obtained by foreign companies in the country. With these additional elements in the indicator, we considered that this measure captures economic development better.

We evaluated social development using the (2) *Human Development Index (HDI)*, an indicator that enables us to compare the well-being of the population from one region to another. Developed in 1990 by Pakistani economist Mahbub ul Haq, the HDI has been used since 1993 by the United Nations Development Program (UNDP) as an instrument to measure the quality of life in countries. According to the UNDP (2007), the HDI has three dimensions: education, life expectancy and income. Two indicators are used to evaluate the education dimension. The first is the literacy rate of people aged fifteen or above. The second is the sum of people, no matter what age, who are enrolled in a course, be it primary, secondary or higher education, divided by the total number of people aged 7 to 22. We also considered students doing rapid secondary school diploma courses and post-graduate courses. Meanwhile, the life expectancy dimension has to do with the number of years that a person born in a certain place should live. Finally, the income dimension is calculated using the country's per capita GDP as a reference. As there are differences in the cost of living from one country to another, the income measured by the HDI is in Purchasing Power Parity dollars, which eliminates these differences, as we did with the per capita GNI. The index varies from zero (no human development) to 1 (total human development), with the countries classified thus: HDI from 0 to 0.499 is considered low; HDI from 0.500 to 0.799 is medium; HDI between 0.800 and 1 is considered high. The descriptive statistics of the variables are shown in Table 1.

Independent variables

In accordance with previous studies (Clark, 2006; Kim and Shin, 2002; Nemeth and Smith, 1985; Smith and White, 1992; Snyder and Kick, 1979; Van Rossem, 1996), we used the positioning of a country in the world system as an independent variable. Similarly to these studies, we make use of techniques, which are related to the social network analysis (De Nooy et al., 2005; Scott, 2000; Wasserman and Faust, 1994) so as to define the country positions in the relational structure. As Snyder and Kich (1979) point out, only from social network analysis it is possible to precisely define the country position in the world system. However, unlike these studies, we sought an additional understanding of relations in these systems through service exchanges among countries. Even knowing that there is a theoretical dominance of the use of trade relations in studies about world systems (Van Rossem, 1996), we understand that the service sector has been increasing its contribution to the income of countries, being an alternative road to development for some of them. Therefore, in addition to traditional forms of analysis concerning world system positioning, we evaluated other types of network variables that have not been dealt with in the literature, in order to examine the particularities of service exchanges among countries. The first, (1) *InDegree* or centrality of entry degree is defined simply by the number of ties received by an actor in a network (Wasserman and Faust, 1994). With this indicator, we are able to evaluate the number of countries that provided some type of service to a certain country, in that the more ties, the higher the number of outsourced countries. We expect a positive relationship between the number of countries that are service providers to a certain country, which indicates the degree of outsourcing, and the development indicators. We also selected the relational variable (2) *Betweenness*, or betweenness centrality, which evaluates the dependence of non-adjacent actors to others that act as a bridge to effect integration between them (Wasserman and Faust, 1994). In this case, the higher the degree of betweenness, the greater the potential control of one actor over others since they already depend on him to interact. Thus, in the theoretical reference framework, it is expected that countries with greater betweenness will have a higher degree of economic and social development. To evaluate the positioning of a country hierarchically, we used two relationship

Table 1. Descriptive statistics.

Variable	Mean	S. D.	N	1	2	3	4	5	6	7	8	9	10
1. HDI	0.703	0.185	714	1	0.736**	0.480**	0.712**	0.681**	0.345**	0.526**	0.272**	0.460**	0.316**
2. GNI per capita. PPP (current international $)	10,054.350	1,145.536	696		1	0.534**	0.682**	0.673**	0.431**	0.568**	0.381**	0.481**	0.399**
3. OutDegree	14.890	33.637	735			1	0.519**	0.882**	0.777**	0.903**	0.189**	0.850**	0.149**
4. InDegree	14.880	8.809	735				1	0.806**	0.411**	0.545**	0.305**	0.484**	0.401**
5. Eigenvec	0.066	0.049	735					1	0.667**	0.872**	0.283**	0.791**	0.294**
6. Betweenness	20.150	68.651	735						1	0.568**	0.249**	0.485**	0.156**
7. Coreness	0.040	0.074	735							1	0.191**	0.951**	0.162**
8. Semiperiphery (Dummy)	0.040	0.201	735								1	-0.092*	0.125**
9. Core (Dummy)	0.160	0.367	735									1	0.134**
10. High-technology exports (% of manufactured exports)	10.782	12.967	570										1
11. Foreign Direct Investment (ln)	20.250	2.524	668										
12. Exports of goods and services (% of GDP)	41.645	28.126	691										
13. GDP growth (annual %)	4.880	4.311	712										
14. GDPcurrent (ln)	24.090	2.127	712										
15. Inflation. GDP deflator (annual %)	9.146	22.421	712										
16. Population growth (annual %)	1.396	1.166	735										
17. PopulationTotal (ln)	16.350	1.352	735										
18. Surface (ln)	12.280	1.787	735										
19. Ratio of girls to boys in primary and secondary education (%)	96.346	9.322	571										
20. Industry. value added (% of GDP)	30.593	11.035	659										
21. Year	2.004	0.415	735										

	11	12	13	14	15	16	17	18	19	20	21
1. HDI	0.666**	0.297**	-0.073	.673**	-0.156**	-0.621**	-0.014	-0.147**	0.675**	0.157**	0.035
2. GNI per capita. PPP (current international $)	0.605**	0.350**	-0.138**	.693**	-0.260**	-0.353**	-0.013	-0.145**	0.356**	0.083*	0.058
3. OutDegree	0.425**	0.176**	-0.094*	.441**	-0.089*	-0.396**	0.058	-0.095*	0.192**	-0.058	0.065
4. InDegree	0.738**	0.212**	-0.012	.797**	-0.139**	-0.436**	0.332**	0.095**	0.332**	0.081*	0.248**
5. Eigenvec	0.639**	0.225**	-0.075*	.686**	-0.121**	-0.508**	0.211**	-0.010	0.306**	0.011	0.032
6. Betweenness	0.384**	0.032	-0.149**	.431**	-0.073*	-0.240**	0.194**	0.023	0.123**	-0.083*	-0.025
7. Coreness	0.418**	0.213**	-0.083*	.422**	-0.101**	-0.457**	-0.029	-0.131**	0.228**	-0.048	0.018
8. Semiperiphery (Dummy)	0.282**	0.095*	-0.086*	.355**	-0.074*	-0.121**	0.165**	0.045	0.079	-0.100**	-0.010
9. Core (Dummy)	0.347**	0.176**	-0.056	.334**	-0.083*	-0.423**	-0.076*	-0.136**	0.208**	-0.023	0.052
10. High-technology exports (% of manufactured exports)	0.351**	0.372**	-0.053	.397**	-0.124**	-0.090*	0.177**	-0.061	0.237**	0.091*	0.038
11. Foreign Direct Investment (ln)	1	0.248**	0.058	.830**	-0.163**	-0.474**	0.416**	0.213**	0.358**	0.255**	0.145**
12. Exports of goods and services (% of GDP)		1	0.142**	.081*	-0.031	-0.189**	-0.290**	-0.398**	0.272**	0.303**	0.075*
13. GDP growth (annual %)			1	-0.043	-0.100**	-0.001	0.042	0.044	-0.063	0.294**	0.219**

Table 1. Contd.

Variable	11	12	13	14	15	16	17	18	19	20	21
14. GDPcurrent (ln)				1	-0.106**	-0.399**	0.625**	0.334**	0.311**	0.199**	0.095*
15. Inflation. GDP deflator (annual %)					1	0.024	0.024	0.103**	-0.011	0.056	-0.037
16. Population growth (annual %)						1	0.004	0.122**	-0.516**	-0.085*	-0.007
17. Population Total (ln)							1	0.648**	-0.148**	0.014	0.014
18. Surface (ln)								1	-0.175**	0.162**	-0.002
19. Ratio of girls to boys in primary and secondary education (%)									1	0.230**	0.030
20. Industry. value added (% of GDP)										1	0.073
21. Year											1

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

measures. The first was the (3) *Eigenvector*, a continuous measurement that assesses the degree of centralization of a node while it also considers the centrality of neighboring ties. In other words, it takes into account the hierarchization of relations in order to compose the indicator. We used this continuous measurement following the example of Van Rossem (1996), because, according to Chase-Dunn (1998), world systems have no discreet categories and, furthermore, continuous variables are advantageous because they do not lose information as happens with categorical, core-periphery type measures, which consider countries only as groups. Nevertheless, to counter and compare continuous measurements to define the degree of hierarchy measurements with categorical measurements, we used the variable (4) *Coreness*. Unlike most previous studies that used blockmodels through structural equivalence (Nemeth and Smith, 1985; Snyder and Kick, 1979) and regular equivalence (Smith and White, 1992; Van Rossem, 1996), we opted for the measurement proposed by Borgatti and Everett (1999), because it evaluates the degree of hierarchy of relations in the network as a whole, being a more global measurement than the Eigenvector. Coreness varies from 0 to 1, in that better positioned countries in the network have values closer to 1. As it is continuous, it permits both direct evaluation and creation of groupings with an indeterminate number of positions. Therefore, besides directly evaluating it, it we created a discreet variable defining the number of positions from the proposition of Wallerstein (1974) that the

world system is divided into the periphery, semiperiphery and core, creating a cluster variable with three groups by k-means method[2]. We then created two dichotomized variables, the semiperiphery and the core, taking a category periphery as reference (code 0 in both variables). As outlined in the hypotheses, we expected a positive relationship between the position and social and economic development.

It is notworthy to highlight that all relational variables used in this study were generated from the social network analysis software UCINET 6 (Borgatti et al., 2002), while the network was viewed through PAJEK software (Batagelj and Mrvar, 2008).

Control variables

Avoid spurious effects, we controlled the relationship between variables in accordance with the literature. First of all, we took into consideration that economic and social development are measured positively by variables that indicate the degree of integration of a country with the world commerce system and the flow of direct investment. The first of these, (1) (*High-technology exports (percentage of manufactured exports)*), assesses a country's capacity to produce and export high technology products, comparing the total exports of these product with total manufactured products. Controlling this effect is important because, according to Mani (2000), the representation of

high technology products on the world market has been increasing yearly. Furthermore, the concentration of exports on high technology products indicates higher aggregate value and productivity of the workforce (Mandel, 1975), resulting in unequal exchange between countries that depend on these products for their development (Emmanuel, 1972). The second, foreign direct investment (2) (*Foreign Direct Investment (ln)*), which was converted to logarithms to adjust the symmetry and kurtosis, evaluates the amount of foreign direct investment in the country. We measured this effect by expecting that foreign direct investment could lead to increased wealth and well being through increased production by companies, generating financing for activities through the transfer of these resources to infrastructure and stimulate the diffusion of new technologies, organizational forms and more rationalized managerial practices (Bollen and Appold, 1993; Chase-Dunn, 1975). Finally, we evaluated the percentage of exported goods and services in relation to gross domestic product (3) (*Exports of goods and services (percentage of GDP)*) as a measure of the interdependence of a country with international commerce. According to Bollen and Appold (1993), Rubinson (1976), evaluating total exports as a percentage of GDP is a more accurate method than total exports in dollars because it illustrates how much an economy depends on international commerce to generate wealth.

Secondly, we measured the endogenous effects that characterize each of the countries. We evaluated two

measures concerning the health of the economy: growth in income over the previous year (4) (*GDP growth (annual percentage)*), because we understand that countries with higher growth rates have more space for social investments and have favorable circumstances for accumulating wealth; logarithmic GDP (5) (*GDPcurrent (ln)*), which measures the country's total wealth because richer countries tend to have more chances to convert wealth into income and social well being (Rubinson, 1976; Van Rossem, 1996). In accordance with previous studies (Clark, 2006; Snyder and Kick, 1979) we evaluated as a measure of social capital the rate of schooling among youngsters (6) (*Ratio of girls to boys in primary and secondary education (percent)*), as the evidence shows that populations with a higher degree of education tend to enjoy greater economic and social development. We also measured the effect of the degree of industrialization of a country through aggregate value (7) (*Industry, value added (% of GDP)*), which is nothing more than the contribution of industry to GDP (Bollen and Appold, 1993; Clark, 2006), as there is evidence of its effect on development (Chase-Dunn 2002). The effect of the surface area of the country in logarithmic km² (8) (*Surface (ln)*) was measured because there is a relation between countries with a large surface area and low economic development (Bollen and Appold, 1993). As there is evidence that countries with larger populations and high population growth rates have fewer possibilities to stimulate economic and social development (Chase-Dunn and Grimes 1995), we included the total logarithmic population (9) (*PopulationTotal (ln)*), and the annual growth rate (10) (*Population growth (annual percentage)*). We also included the effect of inflation as a deflator of GDP (11) (*Inflation, GDP deflator (annual percentage)*), since high inflation rates are harmful to the formation of income and directly affect the purchasing power of the population (Dornbusch and Reynoso, 1989). Finally, we measured the effect of time (12) (*Year*) with dummy variables, which were suppressed in the visualization of the models, avoiding seasonal effects.

Model

To analyze the relation between the variables and economic and social development, we used unbalanced panel data regression models (*OLS Pooled Regression with Robust Error*), due to the absence of some data. We created five models for each dependent variable: Model 1 took into account only the control variables; we added the Coreness variable to Model 2 for the purpose of evaluating the influence of the country's position in the world system through continuous measurements; in Model 3 we analyzed the same variable but categorically through dummy variables; in Model 4 we used a continuous local hierarchization measurement, the Eigenvector, and finally in Model 5 we considered the categorical variables of Model 3 (semiperiphery and core), the indegree and degree of betweenness. Furthermore, the model that evaluated the influence of the HDI variables, the variable that measures the rate of school attendance by youngsters, was removed because it composed this index.

RESULTS

Figure 1 shows the network of relationships formed from service exchanges among countries, taking the year 2006 as an example. The nodes indicate the countries (network actors) and the ties, the relations. The green nodes represent the countries of the core (24 of them), the yellow nodes are the semiperiphery (six countries) and the lilac nodes are the 116 peripheries countries (the

country list and their positions in 2006 in the Appendix). Starting from the proposition that central countries have a greater flow of relations among themselves than with the semiperiphery and periphery, we can see that they are positioned at the core of the network. A little farther out are the countries in the semiperipheral position, followed by those of the periphery, which lie on the outer edge of the network. With the stratification of relations in the three strata, the core, semiperiphery and periphery, it is clear that there is a high degree of hierarchization of relations among these countries. Deriving from this hierarchization of relations the proposition that peripheral countries have less development than countries of the core, we evaluated the size of the nodes, which indicate per capita income to demonstrate that there is also a relation between position and economic development.

As we evaluated the positions from the number of partner countries, it is worth pointing out that these positions do not necessarily determine the economic and social development of a country but, according to the theoretical framework, they do have implications for the development of each of them. Position in the world system, dependence and development are not interchangeable concepts (Van Rossem, 1996), although they are related. For instance, there are some counties on the periphery with high per capita income, such as Canada, Singapore, Switzerland and Korea, while there are countries in the core with lower income, such as Bulgaria, Lithuania and Rumania. Meanwhile, the semiperipheral countries (Australia, Germany, Hong Kong, Japan, Spain and the United States) are countries with large economic development and are in this position only because of their service exchange patterns. Even so, we expect that these positionings will be related to development.

Therefore, to discover how much positioning in the world system of service exchanges influences social and economic development, we conducted panel data analyses measuring the diverse effects to see whether these relations are not spurious.

Table 3 shows the effect of the variables on economic development (GNI per capita). In Model 1, we showed the relation of control variables with dependent variables. Among those that show the country's degree of integration with the world system, we found that foreign direct investment, export of high technology products ($p < 0.10$) and export of goods and services positively and significantly affect economic development. The wealth of the nation (current GDP) also has an effect on development, which does not occur with the growth rate. Inflation, population growth and total population also affect development, but unlike that of the regression analysis, this relation is negative. Finally, we found that the degree of industrialization and rate of school attendance also have a significant relation with economic develop-ment. All of these variables in sets explain 89.3% of the variance of economic development, and all in accordance with the literature.

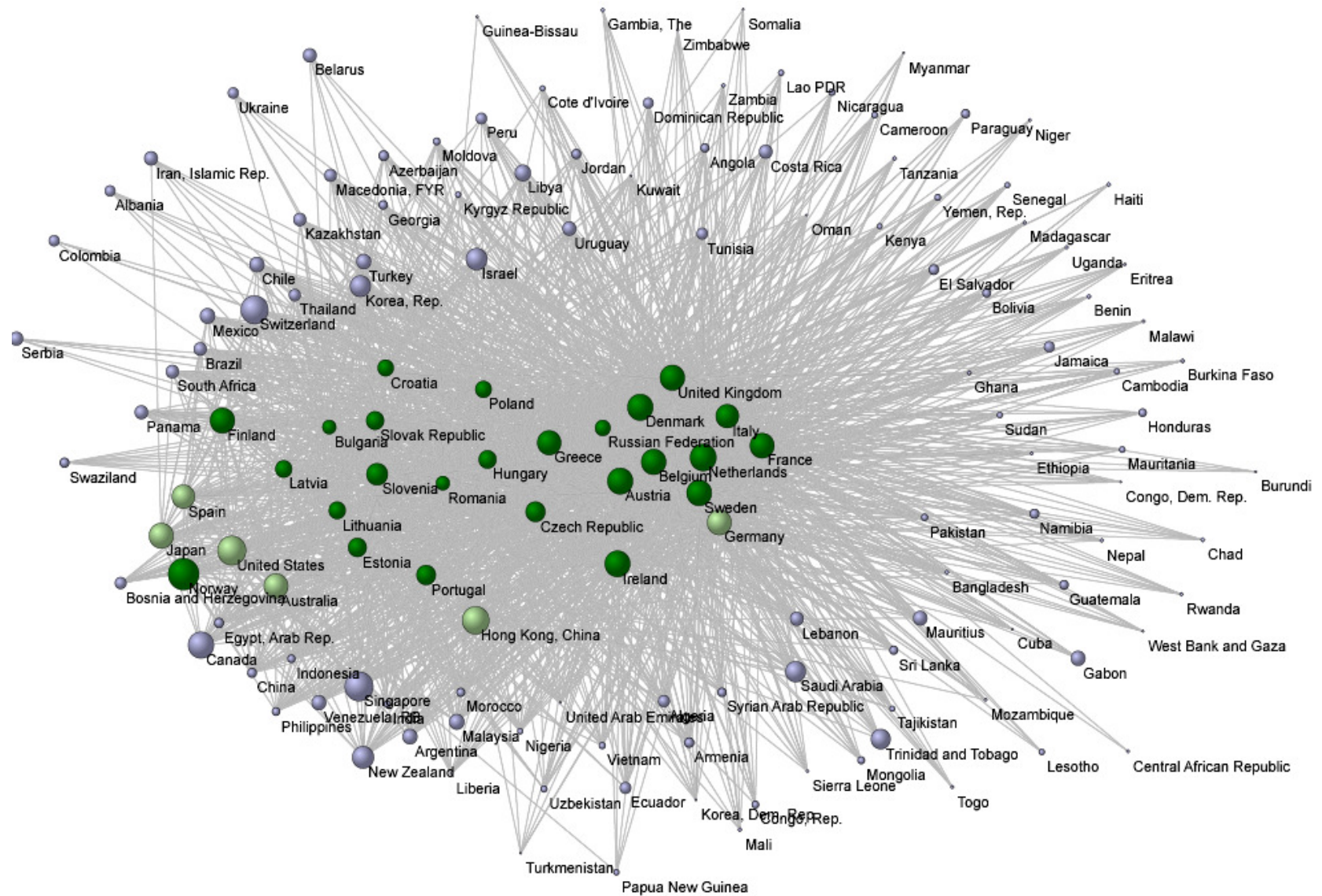In Model 2, we added the continuous variable Coreness,

Figure 1. Countries Service Network (2006 Data). Illustration of the position of countries in the exchange network services in 2006. The green nodes represent the countries of the core (24 of them), the yellow nodes are the semiperiphery (six countries) and the lilac nodes are the 116 peripheries countries. It may be noted that the green nodes (core) tend to have a more central position in the network, followed by countries in semiperiphery (yellow) and periphery (lilac).

Table 3. OLS Pooled Panel Model coefficients for GNI per capita (2002 to 2006).

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent variable					
Coreness		14,180.2***			
		(-3,080)			
Semiperiphery (Dummy)			5,943.07***		5,486.76***
			(-1,006)		(-961.6)
Core (Dummy)			3,490.87***		2,782.54***
			(-696.1)		(-699.7)
Eigenvec				21,018.3***	
				(-5,364)	
InDegree					18.683
					(-41.92)
Betweenness					8.08528***
					(-2,359)
Control variable					
High-technology exports (% of manufactured exports)	30.58*	31.803**	37.608**	30.245*	37.3286**
	(-16.07)	(-15.95)	(-15.14)	(-16.23)	(-15.37)
Foreign Direct Investment (In)	-696.697***	-670.621***	-638.362***	-694.965***	-692.409***
	(-193.9)	(-177.6)	(-166.1)	(-180)	(-160.8)
Exports of goods and services (% of GDP)	26.1548**	20.6861*	12.5243	19.6251*	14.1532
	(-10.18)	(-11.4)	(-9871)	(-11.54)	(-10.19)
GDP growth (annual %)	31.2851	30.0126	8.98843	26.3936	25.8249
	(-63.29)	(-60.26)	(-57.38)	(-61.22)	(-55.18)
GDPcurrent (In)	8,032.24***	7,552.39***	7,122.97***	7,559.42***	7,039.42***
	(-298.5)	(-317.2)	(-344.1)	(-354.4)	(-384.2)

Table 3. Contd.

Inflation. GDP deflator (annual %)	50.238**	35.194	34.237	35.6027	33.1497
	(-22.38)	(-22.25)	(-21.05)	(-23.41)	(-20.98)
Population growth (annual %)	485.433**	824.942***	777.118***	786.294***	787.740***
	(-232.4)	(-237.3)	(-230.4)	(-235.4)	(-230.5)
PopulationTotal (ln)	-7,321.54***	-6.858.14***	-6,599.58***	-7,110.88***	-6,693.13***
	(-363.9)	(-360.8)	(-370.7)	(-383.4)	(-371.1)
Surface (ln)	133.785	122.348	91.556	157.801	150.733
	(-175.1)	(-168.5)	(-162.4)	(-169.5)	(-157.4)
Industry. value added (% of GDP)	-178.82***	-151.363***	-118.899***	-154.471***	-109.155***
	(-26.76)	(-29.77)	(-29.76)	(-29.47)	(-31.24)
Ratio in primary and secondary education (%)	-162.399***	-134.004***	-127.827***	-144.751***	-129.181***
	(-33.48)	(-30.94)	(-29.87)	(-32.51)	(-29.78)
Constant	-32,943.8***	-33,578.4***	-29,139.1***	-29,252.8***	-25,831.7***
	(-4,113)	(-3,962)	(-3,889)	(-4,372)	(-5,013)
R^2	0.8928	0.8986	0.9048	0.8963	0.907
Wald: Chi²	3,045***	3,572***	3,882***	4,336***	4,532
N	426	426	426	426	426

Robust standard errors in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

which measures the centrality of the country in the network as a whole, seeking to counter it categorically in Model 3 (core and semiperiphery) and with a measurement restricted to the local relations in Model 4 (Eigenvector).

All the variables were significant, although the model with the best coefficient of explanation was Model 3 (R^2 = 90.5%). This shows that in this study, discarding the loss of information, categorical categorical measures were more robust when it came to explaining economic development than continuous measures, which reinforces the argument of Wallerstein (1974), categorizing countries as core, semiperipheral and peripheral. Finally, in Model 5, we tested the hypotheses concerning the relation of the position of a country to economic development. We found that countries in the core and the semiperipheral position enjoy greater economic development than those of the periphery, thereby corroborating H_{1a}. Semiperipheral countries have, on average, a per capita income of $5,486 more than peripheral countries.

Meanwhile, central countries have, on average, a percapita income that is $2,782 higher. The number of countries from which a country consumes services, which indicates in degree, had no significant relationship with economic development, thereby discarding H_{2a}. The last variable, betweenness, was significant, thus corroborating H_{3a}. This shows that those countries that success in positioning themselves so as to control service relations among different countries tend to enjoy gains in terms of economic development. For

each possible intermediation by one country, there is an average increase of eight dollars per capita income.

Meanwhile, in Table 4, we evaluated the same variables as in Model 1, but with social development (HDI) as a dependent variable. Of the control variables, only foreign direct investment and the wealth of the country affected this relation positively, with population growth and total population affecting it negatively. Taken together, the variables account for 80.7% of variance in social development, 8.6% lower than the explanation for economic development for the same set of variables, discounting the schooling rate. Variables concerning positioning of the country were not significant in Models 2, 3 and 4, indicating that positioning is not related to social development. We tested the hypotheses related to social development in Model 5, refuting H_{1b} and H_{3b}, since no significant variation was found between the position of the country and its degree of betweenness with social development. However, H_{2b} was corroborated, showing that those countries that outsource some types of services to others tend to enjoy, on average, an increase of 0.003 in their HDI.

To make these relations clearer in order to interpret the results, we have shown in Table 5 the average of some indicators in relation to the positioning of the country. There were significant differences between countries, mainly in terms of HDI, per capita GNI, indegree and betweenness. The value of the Eta^2, which shows the percentage of variation explained by the difference between groups, was over 30% for these variables. For instance, while peripheral countries have a medium degree of development (HDI = 0.65), countries at the core and semiperiphery have a high degree of human development (HDI of 0.89 and 0.94, respectively). The difference in average income between countries is still high: peripheral countries have an average per capital income per year of 6,316 dollars, compared with 30,224 in the semiperiphery. Central and semiperipheral countries also have a much higher degree of outsourcing of services and betweenness than their peripheral counterparts. They also have a higher proportion of high technology exports, tend to export more and receive more foreign direct investments.

DISCUSSION AND CONCLUSION

In this study, our aim was to evaluate how the positioning of a country in the world economic system, assessed by the flow of services provided, would influences economic development (per capita income) and social development (HDI). First of all, converging with previous studies with previous studies (Bollen and Appold, 1993; Clark, 2006; Nemeth and Smith, 1985; Snyder and Kick, 1979; Van Rossem, 1996), we saw that the factors related to the betweenness of the country positively affected economic development, as did internal factors related to the degree

of industrialization and education. Dealing with a concern voiced in the current literature, about how to measure social position, we found that discreet and global measures explain economic development better than continuous measures, supporting the question of positioning in the world system as an explicative category. Interpreting the hypotheses, we found that positioning in the world system in relation to services and the degree of betweenness has a significant influence on economic development. However, comparing with measures concerning commerce, we found an inversion of the core by the semiperiphery, since some countries seen as having greater economic development are in a semiperipheral position in service provision. Interpreting the average service indegrees, we see that countries with higher income are the countries that outsource their services, those of a medium income are service providers and those of the periphery are isolated from this process. In other words, it does not fall to this study to evaluate the degree of convergence between service provision and trade exchanges, but it is clear that higher income countries tend to focus more on trade rather than service exports, unlike medium income countries, who focus more on services. It is likely that this configuration is a reflection of the new division of labor made possible by factors such as information technology and increased internationalization in organizations (Castells, 1996).

Meanwhile, concerning the conditioners of social development, contrary to our expectations, only direct foreign investment and total wealth positively affected social development. This means that the social development of countries has a lot less to do with economic matters than was imagined. When it comes to positioning, only the degree of service outsourcing proved significant, in that, as we pointed out in the theoretical reference framework, it is mainly connected to the behavior of organizations when subcontracting services in lo-cations with a cheaper workforce. It is worth pointing out that, as emphasized by Clark (2006) and Meyer et al. (1997), the betweenness of a country increases the visibility and control of nations, implying demands by international organs, which must reflect on social development, but this only actually occurs if the state promotes such policies. With these results, we understand that social well being cannot be considered as a *sine qua non* consequence of economic development, but that they are moderated by internal matters, most likely related to local government and the actions of civilian society.

THEORETICAL IMPLICATIONS

It is our opinion that, with an institutional-structurationist vision, we cannot accept that the position that a country occupies in the economic system, be it through trade relations or service provision, determines its development. With our reflexive posture, based on authors

Table 1. OLS Pooled Panel Model coefficients for HDI (2002 to 2006).

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent variable					
Coreness		-0.022			
		(0.058)			
Semiperiphery (Dummy)			0.008		0.004
			(0.016)		(0.014)
Core (Dummy)			-0.004		-0.012
			(0.012)		(0.012)
Eigenvec				0.226	
				(0.1429)	
InDegree					0.003***
					(0.0012)
Betweenness					-2.997
					(0.0267)
Control variable					
High-technology exports (% of manufactured exports)	0.0003	0.0003	0.0003	0.0003	0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Foreign Direct Investment (ln)	0.007***	0.007***	0.007***	0.007***	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Exports of goods and services (% of GDP)	-0.0001	-0.0001	-0.0001	-0.0001	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
GDP growth (annual %)	0.002	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GDPcurrent (ln)	0.072***	0.073***	0.072***	0.067***	0.062***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)
Inflation. GDP deflator (annual %)	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)

Population growth (annual %)	-0.035***	-0.036***	-0.036***	-0.033***	-0.033***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Population Total (ln)	-0.071***	-0.072***	-0.071***	-0.069***	-0.069***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
Surface (ln)	-0.005	-0.005	-0.005	-0.005	-0.005*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Industry. value added (% of GDP)	0.0003	0.0003	0.0003	0.0006	0.0007
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Constant	0.079	0.076	0.086	0.133**	0.257***
	(0.0528)	(0.054)	(0.058)	(0.066)	(0.092)
R^2	0.8074	0.8074	0.8076	0.8091	0.815
Wald: Chi²	2,737***	3,285***	3,313***	3,119***	3,560***
N	504	504	504	504	504

Robust standard errors in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 5. Averages of indicators for the country's position in the World System.

Position	HDI	GNI per capita. PPP (Current international $)	InDegree	Betweenness	High-technology exports (% of manufactured exports)	Exports of goods and services (% of GDP)	Foreign direct investment. net inflows (× US$ 1.000)
Periphery	0.65	6,316.14	12.2	0.5	9.3	38.6	2,792.028
Semiperiphery	0.94	30,224.84	27.7	101.5	17.5	54.5	34,984.232
Core	0.89	22,356.03	24.6	96.2	14.2	52.7	11,611.547
Valor do F	161.42	229.60	203.18	173.45	11.28	15.75	69.19
Eta²	0.312	0.415	0.357	0.322	0.038	0.044	0.165
Sig.	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Groups compared using the Tamhane post hoc test (variances not homogeneous). n = 735.

authors such as Chase-Dunn (2002), Giddens (1984 and 1990) and Meyer et al. (1997), we hope that studies on the theme will seek to evaluate relations in world systems as the fruit of a country's trajectory, considering social and institutional aspects as conditioners of development.

Moreover, the role of agency should be reviewed, considering ht emergence of nations as a multifaceted phenomenon. For example, the develop-ment of countries such as Taiwan and Korea, despite sharing the role of strategic groups, introduced factors that could only be understood outside of economic and determinist explanations (Feenstra and Hamilton, 2006). From this perspective, the elements that we have added to studies on world systems, the flow of service provision and economic and social development, have clearly shown that positioning does not mean greater or less development, but only that position can facilitate access to resources, with different implications for each country.

PRACTICAL IMPLICATIONS

We understand that with the relation between position and development, the degree of monitoring of inter-national relations may be an element that increases the reflexivity of countries (Giddens, 1990). This means that, taking globalization as ubiquitous (Kim and Shin, 2002) the existence of more advantageous bilateral agreements can facilitate access to resources and markets. Further-more, we understand that multinational companies play a fundamental role in the integration process. They tend to seek countries that will provide them with advantages in terms of competitiveness, but they also make these choices based on cultural ties (Meyer et al., 1997). That being the case, policies to increase the internationali-zation of local companies, increased diplomatic and cultural relations between countries and improved institutional conditions and internal infrastructure may bring advantages to both. In the case of social develop-ment, the results show that economic health does not necessarily mean social well being, and for this reason we understand that governments play a fundamental role in defining and putting social and health policies into practice; we also understand the pressures from human rights organizations.

LIMITATIONS AND FUTURE STUDIES

One of the limitations of our study was not considering the value of transactions of services in order to be able to configure a different positioning of countries. For this reason, we understand that future studies could evaluate networks, considering the absolute and relative value of these relations.

They could also contrast networks formed from trade relations with those of services, specifying the role of each of their subcategories of products, investigating the interdependence that exists between them. With these data, it would be possible to verify whether unequal ex-changes and the degree of diversification/concentration of trade relations (Van Rossem 1996) are intertwined with development, also considering dyadic relations as an

analysis level. Longitudinal studies could also be con-ducted, evaluating to what point the idea of cumulative advantages and disadvantages is empirically valid. Other social, diplomatic and demographic measures could be taken into consideration to evaluate world systems, instigating a wide ranging evaluation of globalization and regionalization. Considering that countries suffer to different degrees in times of crisis, we could evaluate how betweenness in the world system affects, for example, a fall in GDP. Finally, it is also necessary to evaluate the causality of position in development indica-tors and also the contrary, to know whether this relation is one-way or two-way, which has important conceptual implications. Furthermore, dynamic panel models should be sought or even multi-level models that enable greater discrimination between countries and positions.

NOTES

1. The fact that countries position themselves as a source of outsourcing of services does not mean that they are developing less. There are cases in which outsourcing has been a springboard to development since out-sourcing leads to a more foreign direct investment (see Feenstra and Hamilton 2006). We only wish to state that countries that outsource tend to have higher aggregate value, which provides them with cumulative advantages.
2. There is an extensive discussion on which would be the best way to group countries in the world system, whether as two groups, a core and periphery, or three, a core, semiperiphery and periphery (see Clark 2006 and Smith and White 1992). In the present study, the division of the variable Coreness into three groups showed greater discrimination than dividing into three groups (BIC de -3,775.39 against BIC de -3,753.13).
3. In some cases, when there is a certain degree of collinearity among dependent variables, or when im-portant variables are absent from the model, the relations between variables can be inverted. In these cases, the analysis of the correlation matrix helps to interpret the direction of the relation.

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APPENDIX

Listing of countries in each position (2006 Data)

Countries in the Periphery (n = 116)

Albania; Algeria; Angola; Argentina; Armenia; Azerbaijan; Bangladesh; Belarus; Benin; Bolivia; Bosnia and Herzegovina; Brazil; Burkina Faso; Burundi; Cambodia; Cameroon; Canada; Central African Republic; Chad; Chile; China; Colombia; Congo, Dem. Rep.; Congo, Rep.; Costa Rica; Cote d'Ivoire; Cuba; Dominican Republic; Ecuador; Egypt, Arab Rep.; El Salvador; Eritrea; Ethiopia; Gabon; Gambia, The; Georgia; Ghana; Guatemala; Guinea-Bissau; Haiti; Honduras; India; Indonesia; Iran, Islamic Rep.; Israel; Jamaica; Jordan; Kazakhstan; Kenya; Korea, Dem. Rep.; Korea, Rep.; Kuwait; Kyrgyz Republic; Lao PDR; Lebanon; Lesotho; Liberia; Libya; Macedonia, FYR; Madagascar; Malawi; Malaysia; Mali; Mauritania; Mauritius; Mexico; Moldova; Mongolia; Morocco; Mozambique; Myanmar; Namibia; Nepal; New Zealand; Nicaragua; Niger; Nigeria; Oman; Pakistan; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Rwanda; Saudi Arabia; Senegal; Serbia; Sierra Leone; Singapore; Somalia; South Africa; Sri Lanka; Sudan; Swaziland; Switzerland; Syrian Arab Republic; Tajikistan; Tanzania; Thailand; Togo; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Uganda; Ukraine; United Arab Emirates; Uruguay; Uzbekistan; Venezuela, RB; Vietnam; West Bank and Gaza; Yemen, Rep.; Zambia; Zimbabwe.

Countries in the Semiperiphery (n = 6)

Australia; Germany; Hong Kong, China; Japan; Spain; United States.

Countries in the Core (n = 25)

Austria; Belgium; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; Finland; France; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Netherlands; Norway; Poland; Portugal; Romania; Russian Federation; Slovak Republic; Slovenia; Sweden; United Kingdom.