ESTUDIOS ECONÓMICOS
ISSN: 0425-368X
ISSN: 2525-1295
estudioseconomicos@uns.edu.ar
Universidad Nacional del Sur
Argentina

Sapir, Elena V.; Vasilchenko, Alexander D.
INFORMAL NETWORK INTEGRATION AND MNES TERRITORIAL EMBEDDEDNESS: MAPPING DIFFERENCES°
ESTUDIOS ECONÓMICOS, vol. XXXIX, núm. 79, 2022, Julio-Diciembre, pp. 219-248
Universidad Nacional del Sur
Bahía Blanca, Argentina

NOTAS Y COMENTARIOS

INFORMAL NETWORK INTEGRATION AND MNES TERRITORIAL EMBEDDEDNESS: MAPPING DIFFERENCES°

INTEGRACIÓN INFORMAL DE REDES E INTEGRACIÓN TERRITORIAL DE LAS EMN: MAPEO DE DIFERENCIAS

*Elena V. Sapir**
*Alexander D. Vasilchenko***

recibido: 23 septiembre 2021 – *aprobado:* 13 octubre 2021

Abstract

This article deals with a theoretical opposition of two similar, but conceptually different spatial models of transborder network cooperation (namely MNEs' territorial embeddedness and informal network integration) from the aspect of corporate power asymmetry of firms participating in such network structures. Two external phenomena of power asymmetry (symmetry) are presented giving as example cases of territorial embeddedness and informal network integration in North America and East Asia regions. The study is resulted in several features allowing the attribution of specific transborder production systems to be proposed to different types of network structures. The latter is done by a consideration of network characteristics, network effects and specifics of network core and periphery interaction.

° Sapir, E. & Vasilchenko, A (2022). Informal network integration and MNES Territorial embeddedness: Mapping differences. *Estudios económmicos*, 39 (79), pp. 249-269. DOI. https://doi.org/10.52292/j.estudecon.2022.2881

* P.G. Demidov Yaroslavl State University, Russia. ORCID: 0000-0002-2754-0985
E-mail: evsapir@yahoo.com

** MGIMO University, Russia, and Institute of Europe of the Russian Academy of Sciences, Russia. ORCID: 0000-0002-4904-1562
E-mail: vasilchenko.ad7@gmail.com

Keywords: informal network integration, territorial embeddedness, MNE, GPN, network, effects, corporate power asymmetry.
JEL Codes: F15, F23.

Resumen

El artículo aborda la oposición teórica de dos modelos espaciales similares, pero conceptualmente diferentes, de cooperación transfronteriza en red (a saber, la integración territorial de las EMN y la integración informal de la red) desde el aspecto de la asimetría de poder corporativo de las empresas que participan en tales estructuras de red. Se presentan dos fenómenos externos de asimetría (simetría) de poder dando como ejemplo los casos de incrustación territorial e integración informal de redes en las regiones de América del Norte y Asia Oriental. El estudio presenta varias características que permiten proponer la atribución de sistemas de producción transfronterizos específicos a diferentes tipos de estructuras de red. Esto último se hace mediante una consideración de las características de la red, los efectos de la red y los detalles de la interacción del núcleo y la periferia de la red.

Palabras clave: integración informal de redes, inserción territorial, EMN, RPG, red, efectos, asimetría de poder corporativo.
Códigos JEL: F15, F23.

INTRODUCTION

Alongside with all-encompassing trends of globalization and internationalization of international economic relations enveloping the world in the second half of the 20th century, profound structural shifts took place in the industrial and geographical landscape of the world. These shifts eventually gave rise to a new structure —network — of production links, the global expansion of larger lead firms, and the fragmentation of production processes into separate stages. This, in turn, caused a change in the *total factor productivity* (Caliendo et al., 2013) and gave rise to new studies of regional development effects.

Generally, a network as a specific pattern of interfirm cooperation provides a basis for the formation of modern production systems (Newman, 2018). By definition, its constituents are specific nodes (i.e., enterprises, warehouses, logistic centers, and R&D departments) and linking edges (such as flows of intermediates, foreign direct investments, etc.) At the same time, these networks can either enter a region externally (*territorial embeddedness*) or emerge in the region naturally through corporate intraregional integration (*regional integration*). In our opinion, both models stated above are distinguishable by several major features relating, primarily, to the intrinsic organization of the interfirm network cooperation. The features as such offer a region industrial upgrading effects of a new kind.

I. THEORETICAL ELABORATION AND RESEARCH APPARATUS

I.1. Studies in Regional Economic Integration

The evolution of theoretical perspectives on regional integration, as well as the development of the network integration theory, has been, in general, two-directional.

The first direction refers to the study of basic integration forms and drivers (Baldwin & Venables, 1995) and effects (Viner, 2021; Bagwell & Stagier, 1997; Venables, 1985). It is worth mentioning that, for a long time, the analysis had been narrowed to the formal (interstate) side of the integration process. Several papers present regional integration as a tool for international trading policy (Bagwell & Staiger, 1997; Diebold, 1986).

Gradually, research on regional economic integration tended to informal economic integration, intersectoral cooperation of cross-border countries, and the analysis of factor flows (Schiff & Winters, 2003; Libman & Vinokurov, 2011). The

evolution of key concepts related to informal (alternatively corporative) regional economic integration had been closely linked to the study of firms' corporate strategies and interfirm cooperation at the regional level. By calling it "bottom-up integration," Heifetz and Liebman (2008) emphasized that the interconnection of production operations of companies in the region can lead to the increase in the overall level of efficiency and create a solid foundation for a formal integration superstructure.

Based on Ricardo and Heckscher-Ohlin international trade theories, several scholars (Melitz, 2002; Bernard et al., 2000), formulated key principles of the theory of heterogeneous firms participating in international (regional) cooperation under imperfect market competition and horizontal differentiation of goods in the world economy. Nowadays, it is also considered one of the most promising international trade and cross-border cooperation theories.

The technological transformation of the economy and the society, which had been experienced in the turn of the centuries and, specifically, the emergence of global information networks determined a further development of cross-border international production. Under changing circumstances, the nature of integration connections is inconstant. Therefore, the methodological transition from regional integration theories of international development to regional production networks becomes imminent. The network integration theory largely relies on advances in the fragmentation theory, where international production is considered as a sequential interconnection of production blocks and service links (Arndt & Kierzkowski, 2001; Deardorff, 1998; Ando & Kimura, 2003, 2014). In addition, it is based on the general network theory (Newman, 2018), which unfolds generic features and patterns attributable to network structures in different spheres of public production at large.

I.2. Symmetry of power relationships in informal regional integration

Network as a structure unveils the best opportunities for local heterogeneous firms to participate in the international production, encompassing separate production blocks and service links, thus providing a foundation for further formation of formal *welfare-enhancing* integration agreements. The central attribute of such integrational production networks is economic equivalence (market power symmetry) of separate enterprises. In our opinion, this symmetry is noteworthy, since it reliably represents the freedom of every participating company in deciding how to optimize the number of production processes and their spatial configurations and the way to construct production blocks. Seeking the most profitable exploitation of

its local advantages and corporate assets, a firm is to plan and coordinate production networks with a certain degree of freedom.

Of course, it would be rash to talk about complete freedom of choice of a partner for local companies without taking into account the strategies of leading multinational enterprises (MNEs). That said, according to several studies (Bair & Gereffi, 2001; Brazinskas & Beinoravičius, 2014), once a sufficient density of vertical ties is created between MNEs in some industrial agglomerations, local enterprises will have the chance to enter production networks on a full-fledged basis. At the same time, local companies often have a competitive advantage over international ones.

In conclusion, informal network integration as the most relevant methodology for regional production networks and corporate integration analysis imply the interconnectedness of independent firms in manufacturing heterogeneous products, which is based on their relative independence in management and strategic decision-making.

I.3. Studies on MNEs production networks and territorial embeddedness

The second direction of cross-border cooperation studies develops further research on versatile organization forms of production cooperation in their cohesion with market power asymmetry. The focal points in this field are, first, the theoretical opposition of two qualitatively different forms of global commodity chains (hereinafter, GCC): producer-driven and buyer-driven (Gereffi & Korzeniewicz, 1994). The second one is the development of the concept of global production networks (hereinafter, GPN), which, in a very short time, has already been reiterated in GPN 2.0.

To date, the commonly held definition of GPN is "the nexus of interconnected functions, operations and transactions through which a specific product or service is produced, distributed and consumed" (Coe et al., 2008*;* see also Henderson et al., 2002; Coe & Yeung, 2015; Iliopoulos et al., 2020). Contrary to concepts of GCC and global value chains (hereinafter, GVC), GPN methodology has a number of distinctive features.

First, GCC and GVC intrinsically imply only linear structures, whereas GPN exceeds linearly limitations taking into account all possible network configurations. Second, the GCC and GVC approaches focus narrowly on tightly specified interfirm transaction coordination, while the GPN one makes it possible to assess

multifarious relations between network actors. Third, GPN are generally a new economic and multi-cultural phenomenon (Yang & Coe, 2009). Having inherited the methodological disposition of two ascending concepts referring to five modes of chain coordination, GPN researchers broadly accept that the aspects of corporate, institutional, and collective *power* and culture are at the center (Gereffi & Korzeniewicz, 1994*;* Gereffi, 2005; Henderson et al., 2002; Coe & Yeung, 2015).

In addition to this problematic, the aspects of territorial and network embeddedness (Iliopoulos et al., 2020) and the topological characteristics of a production network nature as a fragmented yet coordinated structure (Coe & Yeung, 2019) are also important. GPN are fragmented due to a discreet network formation mode, while they are coordinated owing to the lead firms (original equipment manufacturers, OEMs) dominance based on their intentional network coordination.

The questions arise: how broad is the scope of production networks analysis, and what is paramount in such an analysis? Scholars who study GPN better interpret the research agenda through the individual configurations of *lead firms* (Coe & Yeung, 2019). Apparently, such companies mean MNEs and their headquarters in their home countries. GPN 2.0 as the newest version of a given methodology distinguishes network development and dependence effects. In particular, *development linkages* are based on long-term relations between domestic companies and foreign counterparts, which is typical of international cooperation under *functional coupling* (Coe & Yeung, 2015). *Dependent linkages* are founded on non-lasting, price-determined relations between domestic firms and international partners, which is common of companies and regions dependent on foreign actors (*structural coupling*). The crux of the GPN scholars' attention is to determine how the organizational configurations of GPN shape the development trajectories of countries and regions entering and leaving networks. In that sense, regional development could be considered as a dynamic effect of multi-dimensional relations between regional actors and GPN in shifting regional governance structures. Accordingly, if the regional advantages and the strategic needs of GPN entities coincide, there will be strategic coupling (Yang & Coe., 2009).

The evolution of the theoretical perspectives on regional integration and the continuity of research, which ultimately formed the concept of territorial embeddedness and informal network integration, are presented in Figure 1, where their opposition from the point of corporate power asymmetry[1] is outlined. The struc-

[1] As stated above, by *corporate power asymmetry* in a network structure, it is assumed the degree of freedom with which a single firm in the production network, relying on its priorities in economic

tural territorial embeddedness represents the way of incorporation of local entities (periphery manufacturers) into holistic production systems coordinated by MNE headquarters, implying dependence of the integrated periphery on the core of a given production network. This type of territorial embeddedness as a form of GPN and region interconnection is, in our opinion, substantially exceeding any other form of cooperation between local producers and lead firms in terms of the degree of corporate power asymmetry, provided that local manufactorers are, practically, entirely dependent on the core of the network.

II. INFORMAL ECONOMIC INTEGRATION AND ITS FEATURES. THE CASE OF THE NORTH AMERICAN AUTOMOBILE INDUSTRY

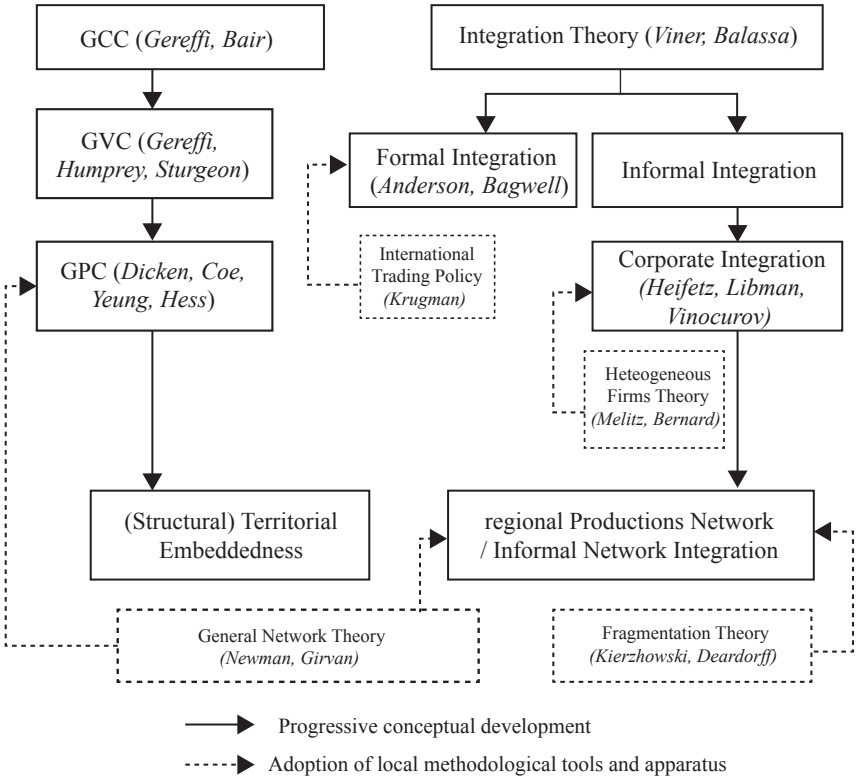
A key role of informal corporate integration both as a base for and a result of formal interstate integratory cooperation is illustrated by the case of the North American Free Trade Agreement (hereinafter, NAFTA)[2]. Without a shadow of a doubt, it is possible to state that the North American manufacturing had begun to gain its power and express its intention of signing different preferential agreements long before NAFTA was officially established. As early as 1965, the agreement on automobile production between the United States and Canada (Auto Pact) had entered into force, which has thereafter facilitated reciprocal trade of light and heavy trucks, as well as in intermediates. Agreed in 1989, the free-trade area between the United States and Canada and the significant interest in trade liberalization from Mexico were essential to the creation of a unified industrial complex in North America. These achievements brought the industries of the countries of the continent closer together, whilst a real potential had only been seen in NAFTA as a new agreement with a special set of preferences.

Eventually, the integratory cooperation network of the North American manufacturing (specifically, the automotive sector) has undergone a profound transformation. Firstly, on the US-Canada border, a completely new cross-border agglomeration emerged (Great Lakes Region), becoming a working mechanism for the transmission of impulses of formal integration to the informal level and *vice versa* (Rutherford & Holmes, 2014).

efficiency, security, and resiliency to external shocks, makes its managerial decisions on the whole range of economic issues.

2 In 2018, NAFTA had been rearranged to the United States-Mexico-Canada Agreement (USMCA). URL: https://usmca.com/preamble-usmca/

Figure 1. Epistemological origins of the categories of 'structural territorial embeddedness' and 'informal network integration'



Source: authors' elaboration.

Secondly, some of the previously underdeveloped industrial areas (i.e.,maquiladoras) have managed to attain the world class level in sustainable development and energy efficiency (Munguia et al., 2018). Thirdly, there was a fundamental strengthening of cooperation ties in the automotive sector (Table 1). Already between 1990 and 1995, the growth of auto component exports from Mexico to the United States amounted to more than 560%, and its imports from the United States, to more than 700%.

Table 1. Reciprocal trade in auto components between US and Mexico indicators (HS4 – 8708, 1990-2020, US$ millions).

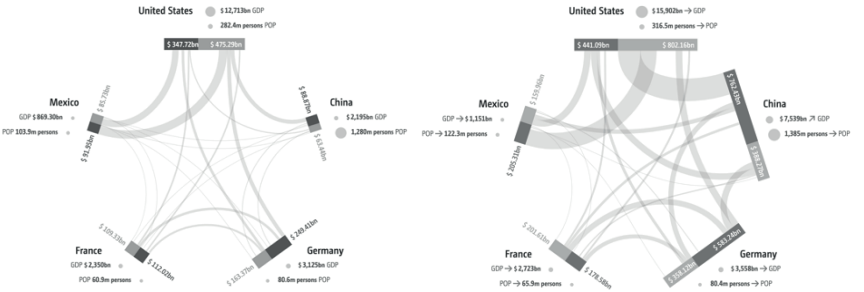
Year	Exports of Mexico to US	Imports of Mexico from US
1990	321.6	310.9
1995	2135.7	2488.1
Extra growth in 1990-1995 (%)	564.1	700.3
2005	9157.7	7314.1
Extra growth in 1995-2005 (%)	328.8	194.0
2020	23044.5	12117.8
Extra growth in 2005-2020 (%)	151.6	65.7

Source : authors' elaboration based on UN Comtrade | International Trade Statistics Database, n.d..

Fourthly, another distinctive shift occurred in the manufacturing internationalization, which was particularly noticeable in the intensification of external cooperation ties of Mexican companies. More certainly, the growth rate of mutual trade between the United States and Mexico in their key sector has considerably slowed down (Table 1), while Mexico's share of added value in total US automobile imports grew unilaterally from 1995 to 2011 (from 7.4 to 13.1%). Simultaneously, the share of US automobile imports occupied by non-member countries has increased from 53.6 to 65.2% (Flatness & Rasmussen, 2017). On the one hand, this dynamic indicates a stronger position of Mexico in the unification, which makes this country the new center of the automotive industry in the world during its membership in NAFTA. On the other hand, the greater importance of non-regional actors for the NAFTA automotive industry is demonstrated. The internationalization of the NAFTA production network could be illustrated through the *mapping* of the bilateral automotive trade network of the United States, Mexico, and external actors. As described in Simonazzi et al. (2020), it clearly shows the extension of Mexico's ties in the shipment of parts and components, while representing a declining relative importance of Canadian and Japanese suppliers in the United States. The similar picture has also been obtained in gross automobile exports and imports between the United States, Mexico, and other parties (Figure 2).

Understanding the essence of the nature of informal network integration at the company level (in particular, using the example of the two above-mentioned macro-regions), it is worth noting the heterogeneous character of the network formation and the spread of an initially intraregional cooperation platform in a geographical context. Obviously, the territorial proximity, the cross-border cooperation of regional companies, and the opportunity to capture the effects generated by the integrating forces, as well as the development of the leader of the region, create a solid basis for deepening the interaction in key sectors and, most importantly, fundamental preservation of those sectors within the region (apparently, a fully formatted production and distribution network cannot completely leave the region).

Figure 2. Exports (dark-colored) and imports (grey-colored) of automotive manufacturing products (2000 and 2013[3], US$ billions).



Source: authors' elaboration based on UN Comtrade, OECD/European Commission, n.d.

Informal network integration thus demonstrates the symmetry of the corporate power of companies in the region, which is manifested, first of all, in the fact that the network itself as a production structure is formed implicitly under the influence of natural and economic forces of value creation and allocation.

3 The limitation of the interval is due to the specifics of the primary international trade database.

III. STRUCTURAL TERRITORIAL EMBEDDEDNESS AS A FORM OF "LANDING" OF MNES IN THE REGIONS

III.1. Prerequisites of the empirical analysis of structural territorial embeddedness

The case of Mexico's incorporation into the NAFTA-USMCA automobile production network is especially remarkable. On the one hand, all of the USMCA member countries are natural trading partners. On the other, Mexico has not been able to qualitatively increase the degree of technological complexity of the components produced in the sector (Ruiz Durán, 2017), while strengthening dependence on the United States by boosting its exports of final and intermediate products to this country with a lower export to the other important regions. With this in mind, it is possible to assert that Mexico has been incorporated in the North American automobile manufacturing exactly through *territorial embeddedness*, rather than through informal regional integration.

Most commonly, Coe et al. (2008) defined territorial embeddedness based on the strategy of lead firms in GPN of "anchoring" in various locations at the national and regional level, which, thereby, influences the development prospects of these territories. In modern studies, it is broadly interpreted as the *trans-scalar embeddedness* that characterizes labor force governance regimes, which operate throughout wide social scales (Alford, 2016). There is also a number of cases illustrating the territorial embeddedness mechanism of innovative networks (Nunes & Lopes, 2015). It is important to highlight that territorial embeddedness is studied both in producer and buyer-driven networks (Filippi, Frey, & Torre 2011). It is emphasized that the particular location of lead firms can create a new local or regional network of economic and social relations, involving existing companies, as well as attracting new ones. The example of Mexico is a vivid demonstration of this statement, because, while maintaining both dependence on the United States and the relative scarcity of manufacturing operations, the country's automotive sector was able to attract additional foreign direct investment (FDI) flows and generally consolidate the presence of the largest European companies in it (Klier & Rubenstein, 2017). Apart from that, territorial embeddedness can be analyzed from a non-manufacturing perspective (i.e., soybean production) (Craviotti, 2016).

Territorial embeddedness is considered part of the strategy of lead firms in the selection of suppliers (Curran et al., 2018). In the case of limiting the mobility of tacit knowledge, which prevents local companies from moving up the regional value chains, the structural territorial embeddedness, in fact, replaces inter-firm relations, thereby "preserving" the production structure of the region where MNEs are consolidated.

III.2. Slovakia as an integrated periphery of global automobile production

A highly illustrative case of structural territorial embeddedness in GPN is Slovakia's automobile sector. In particular, the role of this country's manufacturing as an integrated periphery to the core of the transport manufacturing network has been studied. In this way, the integrated periphery is defined as a form of spatio-temporal fix that allows lead firms in the production network to either maintain or increase their profit margin by establishing production in low-cost regions that are geographically adjacent to the main localities of production and consumption. Apart from that, it could be a territory whose production system is undergoing a gradual transition towards new, more technologically advanced industries. This happens through a strong dependence on countries in which the cores of these industries are located that can be deemed as an integrated periphery (for instance, Czech integration to the European manufacturing through dependence linkages with Germany [Krpec & Hodulák, 2018]). In the integrated periphery, production, administration, and strategic functions are externally controlled by foreign ownership.

Overall, the spatio-temporal fix is based on a co-existence of four types of regional assets in an integrated periphery: low labor cost, geographical proximity to larger markets, membership in regional trade agreements, and investment stimulus. It is worth noting that the integration of new peripheries and the related spatial fixes in the European and the North American automobile manufacturing are the result of the sequential convergence of wages in the old peripheries (Mexico, Spain, and Portugal) with those in the cores of production networks. Two distinctive features of the integrated peripheries, in addition to those mentioned above, are primarily export-oriented production and more agile labor legislation. Regarding Slovakia proper, its automotive industry at the present stage is clearly dominated by branches and subsidiaries of foreign auto concerns (Volkswagen, PSA Peugeot Citroën, Kia), which are mostly located in the north, along the Czech and Austrian border.

At the same time, according to a survey conducted among the staff of domestic and foreign automobile firms in Slovakia, almost all the connections between these two types of companies in this country are of a dependent nature, while developmental connections are completely absent. Additionally, detrimental linkages are apparent mainly in the labor market due to severe competition for a distinctly qualified labor force after foreign investments. More than a half of the interviewed domestic firms (namely 52%) lost their employees, since they moved to foreign companies in the country, whereas 59% claimed that it became more problematic to hire new staff after foreign investments in Slovakia. Thus, it is possible to assert that Slovakia is integrated into automobile GPN generally

through groups of non-interconnected foreign subsidiaries operating as assemblies; vertically, into external organizational GPN, and barely integrated into the Slovak economy (Pavlínek, 2017).

Returning to the general essence of territorial embeddedness of GPN, it is worth repeating that this form of territorial expansion is pursued by larger companies driven by cost optimization and revenue stability. The reasons of the scale of the network or the exchange of best practices are usually not taken into consideration. Mexico's example has shown that, despite the harmonization of several macroeconomic indicators with its closest partners and the expansion of its own cooperation with foreign counterparts, this country did not undertake an overall industrial upgrading and did not have the chance to self-create local networks, thus entering into a contradiction with the territorial embeddedness definition itself. It is obvious that it would be incorrect to draw direct parallels between Mexico and Slovakia, but the Slovak case is even more typical in a sense that there are virtually no opportunities for this country to enter into network integration relationships with firms such as KIA. Respectively, the influence of such a cooperation on Slovak territorial development is also perceived as potentially neutral or even negative.

Overall, the structural territorial embeddedness illustrated by the Mexican and the Slovak integrated peripheries leads to a particular 'freezing' of the manufacturing model of the periphery itself. In practical terms, the choice of the location for the 'landing' of a network and the decisions of its shift are constantly influenced by both *push factors*, related, as a rule, to changes in labor productivity and labor cost ratio, and *pull factors*, which make it more profitable to locate MNEs' production units either exactly in the home country or closer to the target market (Bailey & de Propris, 2014).

IV. COMPARATIVE CHARACTERISTICS OF MNE TERRITORIAL EMBEDDEDNESS AND INFORMAL NETWORK INTEGRATION

Based on the analysis of the key forms of network integration, as well as the features and driving mechanisms of territorial embeddedness of GPN, driven by lead firms (usually MNEs), it is possible to compare them on several grounds revealing the essence of how the asymmetry of corporate power of companies participating in these production systems manifests itself in practice (Table 2).

Table 2. Structural territorial embeddedness of firms and informal network integration: key features in relation to the degree of power asymmetry

Criteria	MNE structural territorial embeddedness	Informal network integration
Network parameters		
Production network units (nodes and edges)	Nodes – separate firms, edges –flows of tangible assets (components, intermediates, and foreign direct investments)	Nodes – separate firms, edges –flows of both tangible and intangible assets (tacit knowledge, skills)
Mode of strategic coupling between region and network core	Structural[4]	Functional[5]
Degree of solidity of the cohesion of the network with a region	Low or medium, possibility of decoupling[6]	High or medium, possibility of transformation
Mode of network rent distribution	The largest part is captured by lead firms from the core	Equal network rent distribution between all actors and regions, respectively, for the performance of employed production factors

[4] *Structural coupling* stands for the 'outside-inside' mode of cooperation relations (specifically, external agents incorporate local firms in a global production network). This mode of strategic coupling is characterized by a high degree of dependence.

[5] *Functional coupling* refers to the regional actors actively satisfying the intrinsic needs of GPN by application of cooperation regimes such as 'inside-outside' and 'outside-inside' of the region, thus attaining a particular corporative autonomy level.

[6] *Decoupling* can be defined as a fracture of the production and commercial network of MNE and local supplier firms. Particularly, reshoring can be regarded as one of the forms of the decoupling process.

Range of operations available for and (or) executable by network peripheries and regions	A limited number of operations is available for the nodes of the integrated periphery (namely, pure production and assembly)	A wide range of differential operations is available for the nodes of the network(apart from production and assembly, there are primarily high-end functions and services with higher value added)
Network development effects		
Industrial development effects	For the most part, there are effects increasing dependence on external sources of growth (network core) / ''Freezing" of an actual industrial profile of the integrated periphery	Primarily occurrence of enhancing and developing internal sources of industrial growth
Regional development effects	Synchronization of territorial development dynamics between the core and a periphery of a network	Primarily occurrence of enhancing and developing internal sources of regional growth and equalizing of territorial development levels
Networking and commercial relations structure		
Influence of the trade diversion effect on structural changes in a network	As a rule, the trade diversion effect can either contribute to or hinder the anchoring of a network in a region	Enhancing of a network development effect in a region (given that a formal integration agreement is in force)
Regulatory environment of an economic network space	Entering, practically, a new regulatory environment	The integration network can develop under formal integration, thus eliminating differential regulatory regime costs

Prior cost optimization segments for the firms representing the network core	Labor cost	Logistics and transactional costs
Output of a production network cycle	Mostly, homogeneous brand-name goods	Apparent production of several homogeneous goods

Source: authors' elaboration.

The following aspects have been chosen as the basis for comparing structural territorial embeddedness of MNEs and informal network integration, which reflect the practical features of corporate power symmetry / asymmetry of firms:

Network parameters are the qualities inherent to production networks, which are related to the nature of the network as a cross-border cooperation form of economic entities (nodes and edges, mode of strategic coupling between the region and the network core**,** degree of solidity of the cohesion of the network with a region**,** mode of network rent distribution**,** range of operations available for and (or) executable by the network peripheries and regions). Here, *network rent* is a specific revenue form for participants in a production network structure, withdrawn in the context of network interaction. It is determined concertedly by a high concordance of all the production process elements, minimization of transaction costs, and saving of the time resource of all the participants.

Network development effects are the structural shifts in both the direction and the dynamics of industrial and territorial development of the region determined by a network model of cross-border economic ties. They become visible through changes in the dependence of firms in the region on the strategies of international actors and the subordination of the growth dynamics in a region to the growth trajectories of the core of a specific industry (namely, industrial and regional development effects).

Networking and commercial relations structure is a combination of the key characteristics of the production network process, the output of final products, the operational decisions of individual firms on their intermediate trade, and the regulatory profile shaping the network configurations.

The three described aspects allow, in a first approximation, to distinguish between territorial embeddedness of a network in a region and regional informal network integration. That is why these parameters are not quantitative indices, nor coefficients at the operational level, nor even foreign ownership indicators. On the contrary, they are aggregated characteristics that can only be established by a preliminary analysis of a network, its cohesion with a region, or the effects it generates on the territorial development. Then, based on the results obtained (see Table 2), it might be possible to draw an initial conclusion on the production network structure and the degree of corporate power asymmetry in it. For instance, provided it has been proved that the connections between the nodes were established via knowledge and competencies transmission, then it would be reasonable to assert the existence of informal network integration and the symmetry of corporate power between the firms forming this network.

CONCLUSION

In this article, we have developed a set of criteria for classifying two close but conceptually different forms of cross-border cooperation according to the criteria of symmetry of the corporate power of firms participating in production networks.

The first section of this article dealt with the evolution of scientific thought in the areas of regional economic integration and MNEs' production networks. Conceptual distinctions between territorial embeddedness and informal network integration were established, and it was proved that these integration models are fundamentally different from each other in terms of the presence or the absence of corporate power symmetry. The second section established how territorial embeddedness and informal network integration manifest themselves in the modern practice of international production.

In the course of the study, it was demonstrated that, in the case of territorial embeddedness, the structural coupling between the core of the network and its periphery prevails, while the connections within the network integration, in general, acquire a functional character. Apart from that, regional companies lose their access to the main portion of the network rent under embeddedness, whereas network integration implements a mechanism for the even distribution of this asset. It also important to note that informal network integration contributes to strengthening the developing internal sources of industrial growth. That cannot be said of territorial embeddedness, which prescribes a preservation of the production structure and the business marginality of local companies and the region as a whole.

REFERENCES

Alford, M. (2016). Trans-scalar embeddedness and governance deficits in global production networks: Crisis in South African fruit. *Geoforum*, *75*, 52–63. https://doi.org/10.1016/j.geoforum.2016.07.005

Ando, M., & Kimura, F. (2003). *The Formation of International Production and Distribution Networks in East Asia*. (National Bureau of Economic Research, Working Paper Nº 10167).

Ando, M., & Kimura, F. (2014). Evolution of machinery production networks: Linkage of North America with East Asia. *Asian Economic Papers*, *13*(3), 121–160. https://doi.org/10.1162/asep_a_00299

Arndt, S. W., & Kierzkowski, H. (2001). *Fragmentation: New Production Patterns in the World Economy* (1st ed.). Oxford: Oxford University Press.

Bagwell, K., & Staiger, R. W. (1997). Multilateral tariff cooperation during the formation of customs unions. *Journal of International Economics*, *42*(1–2), 91–123. https://doi.org/10.1016/s0022-1996(96)01443-2

Bailey, D., & de Propris, L. (2014). Manufacturing reshoring and its limits: The UK automotive case. *Cambridge Journal of Regions, Economy and Society*, *7*(3), 379–395. https://doi.org/10.1093/cjres/rsu019

Bair, J., & Gereffi, G. (2001). Local clusters in global chains: The causes and consequences of export dynamism in Torreon's blue jeans industry. *World Development*, *29*(11), 1885–1903. https://doi.org/10.1016/s0305-750x(01)00075-4

Baldwin, R., & Venables, A. (1995). Regional integration agreements. In G. Grossman & K. Rogoff (Eds.), *Handbook of International Economics*. Vol. III. Amsterdam: Elsevier.

Bernard, A. B., Eaton, J., Jensen, J. B. B., & Kortum, S. S. (2000). Plants and productivity in international trade. *SSRN Electronic Journal*. Published. https://doi.org/10.2139/ssrn.223770

Brazinskas, S., & Beinoravičius, J. (2014). SMEs and integration driving factors to regional and global value chains. *Procedia - Social and Behavioral Sciences*, *110*, 1033–1041. https://doi.org/10.1016/j.sbspro.2013.12.950

Caliendo, L., Rossi-Hansberg, E., Parro, F., & Sarte, P.-D. G. (2013). The impact of regional and sectoral productivity changes on the US economy. (FRB Richmond Working Paper No. 13-14) Retrieved September 16, 2013, from *SSRN Electronic Journal*. Published. https://doi.org/10.2139/ssrn.2333756

Coe, N. M., Dicken, P., & Hess, M. (2008). Global production networks: Realizing the potential. *Journal of Economic Geography*, *8*(3), 271–295. https://doi.org/10.1093/jeg/lbn002

Coe, N. M., & Yeung, H. W.-C. (2015). *Global Production Networks: Theorizing Economic Development in an Interconnected World* (1st ed.). Oxford: Oxford University Press.

Coe, N. M., & Yeung, H. W.-C. (2019). Global production networks: Mapping recent conceptual developments. *Journal of Economic Geography*, *19*(4), 775–801. https://doi.org/10.1093/jeg/lbz018

Craviotti, C. (2016). Which territorial embeddedness? Territorial relationships of recently internationalized firms of the soybean chain. *The Journal of Peasant Studies*, *43*(2), 331–347. https://doi.org/10.1080/03066150.2015.1119121

Curran, L., Nadvi, K., & Campling, L. (2018). The influence of tariff regimes on global production networks (GPNs). *Journal of Economic Geography*, *19*(4), 873–895. https://doi.org/10.1093/jeg/lby059

Deardorff, A. V. (1998). Fragmentation in simple trade models. *SSRN Electronic Journal*. Published. https://doi.org/10.2139/ssrn.113028

Diebold, W. (1986). [Review of Strategic Trade Policy and the New International Economics, by P. R. Krugman]. *Foreign Affairs, 65*(1), 186–186. https://doi.org/10.2307/20042895

Filippi, M., Frey, O., & Torre, A. (2011). The modalities of territorial embeddedness of French cooperative groups. In A. Torre & J.B. Traversac (Eds.), *Territorial Governance. Local Development, Rural Areas and Agrofood Systems* (pp. 43–63). Physica-Verlag HD. https://doi.org/10.1007/978-3-7908-2422-3_3

Flatness, A., & Rasmussen, C. (2017, September). *U.S.-Produced Value in U.S. Imports from NAFTA*. Retrieved from https://www.commerce.gov/sites/default/files/us-produced-value-in-us-imports-from-nafta.pdf

Gereffi, G. (2005). The global economy: Organization, governance, and development. In N. J. Smelser & R. Swedberg (Eds.), *The Handbook of Economic Sociology* (2nd ed., pp. 160–182). Princeton, New Jersey: Princeton University Press.

Gereffi, G., & Korzeniewicz, M. (Eds.). (1994). *Commodity Chains and Global Capitalism*. Westport, Connecticut: Praeger.

Heifetz B. A., Liebman A. M. (2008). Corporate integration: An alternative for the post-Soviet space. Moscow: LKI.

Henderson, J., Dicken, P., Hess, M., Coe, N., & Yeung, H. W.-C. (2002). Global production networks and the analysis of economic development. *Review of International Political Economy*, *9*(3), 436–464. https://doi.org/10.1080/09692290210150842

Iliopoulos, P., Galanis, G., Kumar, A., & Popoyan, L. (2020). *Network Configuration as a Measure of Power in Global Production Networks*. Scuola Superiore Sant'Anna, (Laboratory of Economics and Management (LEM), Working Paper N° 2020/12).

Klier, T. H., & Rubenstein, J. M. (2017). Mexico's growing role in the auto industry under NAFTA: Who makes what and what goes where. *Economic Perspectives*, *41*(6), 1–29. Retrieved from https://www.chicagofed.org/publications/economic-perspectives/2017/6

Krpec, O., & Hodulák, V. (2018). The Czech economy as an integrated periphery: The case of dependency on Germany. *Journal of Post Keynesian Economics*, *42*(1), 59–89. https://doi.org/10.1080/01603477.2018.1431792

Libman, A., & Vinokurov, E. (2011). Regional integration and economic convergence in the post-Soviet space: Experience of the Decade of Growth. *JCMS: Journal of Common Market Studies*, *50*(1), 112–128. https://doi.org/10.1111/j.1468-5965.2011.02209.x

Melitz, M. J. (2002). *The impact of trade on intra-industry reallocations and aggregate industry productivity.* (National Bureau of Economic Research, Working Paper Nº 8881). https://doi.org/10.3386/w8881

Munguia, N., Vargas-Betancourt, N., Esquer, J., Giannetti, B. F., Liu, G., & Velazquez, L. E. (2018). Driving competitive advantage through energy efficiency in Mexican maquiladoras. *Journal of Cleaner Production*, *172*, 3379–3386. https://doi.org/10.1016/j.jclepro.2017.11.253

Newman, M. (2018). Networks (2nd ed.). Oxford: Oxford University Press.

Nunes, S., & Lopes, R. (2015). Firm performance, innovation modes and territorial embeddedness. *European Planning Studies*, *23*(9), 17961826. https://doi.org/10.1080/09654313.2015.1021666

Pavlínek, P. (2017). Global production networks, foreign direct investment, and supplier linkages in the integrated peripheries of the automotive industry. *Economic Geography*, *94*(2), 141–165. https://doi.org/10.1080/00130095.2017.1393313

Ruiz Durán, C. (2017). Development and structure of the automotive industry in Mexico. In R. Traub-Merz (Ed.), *The Automotive Sector in Emerging Economies: Industrial Policies, Market Dynamics and Trade Unions*. *Trends & Perspectives in Brazil, China, India, Mexico and Russia* (pp. 65–85). Berlin: Friedrich-Ebert-Stiftung.

doi: 10.20396 / rbi.v16i2.8650118

Rutherford, T. D., & Holmes, J. (2014). Manufacturing resiliency: Economic restructuring and automotive manufacturing in the Great Lakes region.

Cambridge Journal of Regions, Economy and Society, *7*(3), 359–378. https://doi.org/10.1093/cjres/rsu014

Schiff, M., & Winters, A. L. (2003). *Regional Integration and Development* (1st ed.). Washington, DC: World Bank and Oxford University Press.

Simonazzi, A., Carreto Sanginés, J., & Russo, M. (2020). *The Future of the Automotive Industry: Dangerous Challenges or New Life For a Saturated Market?* (Institute for New Economic Thinking, Working Paper N° 141). https://doi.org/10.36687/inetwp141

UN Comtrade | International Trade Statistics Database. (n.d.). UN Comtrade Database. Retrieved August 16, 2021, from https://comtrade.un.org/

UN Comtrade, OECD/European Commission. (n.d.). Trade (Machinery). GED VIZ - Visualizing Global Economic Relations. Retrieved June 5, 2021, from https://viz.ged-project.de/

Venables, A. J. (1985). Trade and trade policy with imperfect competition: The case of identical products and free entry. *Journal of International Economics*, *19*(1–2), 1–19. https://doi.org/10.1016/0022-1996(85)90016-9

Viner, J. (2021). *The Customs Union Issue*. New York: Oxford University Press.

Yang, D. Y.-R., & Coe, N. M. (2009). The governance of global production networks and regional development: A case study of Taiwanese PC production networks. *Growth and Change*, *40*(1), 30–53. https://doi.org/10.1111/j.1468-2257.2008.00460.x