

UNIVERSITY OF DEBRECEN
DOCTORAL SCHOOL OF ECONOMICS

**MODERN FLOWS OF THE WORLD ECONOMY –
MEXICO'S FOREIGN ECONOMIC STRATEGY'S IMPACT ON THE
DEVELOPMENT OF THE ECONOMY**

English Summary of Doctoral (PhD) Dissertation

László Erdey

Supervisor: Dr. László Muraközy, Associate Professor

Debrecen
2006

1. Motivation

I have been teaching courses on International Economics and Business, Foreign Trade Strategy and International Economic Relations at the Faculty of Economics and Business Administration of University of Debrecen since 1996. The main topics covered by these subjects deal with the trade and investment flows of the world economy.

My publications – conference papers and journal articles – also aimed to analyze the most important questions of this dissertation.

My interest towards Mexico as a main focus of my empirical investigations goes back even further into the past. The main area of my master's thesis written at Budapest University of Economics dealt with the Mexican maquiladora industry, based on global production sharing. Márta Zádor – one of the opponents of that work – drew my attention to the relevance of intra-industry trade as a possible extension and direction for my future research.

The lack of unified and unambiguous theoretical and empirical analyses, and this includes the most recent work in the area, emerged as a big challenge in the course of my research. The limited number of publications in Hungarian academic journals aiming at a comprehensive analysis of the topics I chose made my research process even more exciting.

2. Research Goals

The process of *transnationalisation* in the 20th century had a very important influence on the dynamics and structure of world trade. The *intra-industry*, *intra-firm*, and *intra-product trade* became significant types of the structure of trade. These flows had already existed in the earlier pre-global eras of the world economy, however they gained decisive importance only after the 1950s. In my dissertation I refer to these 'new' types as *modern flows of the world economy*.

The main goal of my dissertation was to analyze these modern flows and their interdependence. My aspiration was to reveal the most important trade theoretical explanations of these flows and to test them against the results of empirical research in the area. On the basis of this *joint analysis* I intended to create a qualitative model in order to be able to set up testable hypotheses for international trade relations.

In the process of answering the research question, according to the above goals, I intended to set up an unambiguous taxonomy for each of the flow-types on the basis of existing theoretical and empirical research in the field of international trade theory in order to gain testable hypotheses for North–North, North–South, and South–South trade relations.

I also aimed to create a unified qualitative model of these modern flows which would allow us to set up prognoses for these relations. Finally, I considered as my third task to empirically test this model, and I chose Mexico as a research object.

Mexico was one of the first countries which - after several decades of following an inward-looking development path (the import substitution industrialization) - implemented a radical paradigm change in its economic policy, opened its economy and became a member of a North-South regional integration (NAFTA, with two of the world's most developed countries: the U.S. and Canada), the goal of which was to comprehensively liberalize trade and investment flows between its members. The history of more than ten years of the North American Free Trade Agreement seems to be long enough to draw relevant conclusions in this research field.

The most important goal of my joint empirical analysis of Mexico's intra-industry, intra-firm and intra-product trade was to use non-traditional methods to characterize the changes in the country's position in the world economy and its possible directions in the future; that is the impact of Mexico's foreign economic strategy on the development of the economy.

The conclusions of my dissertation concerning the main factors which influence intra-industry trade, the localizational and internalizational aspects of foreign direct investment, and international production sharing can be generalized. The conclusions resulting from the empirical analysis of Mexico can be broadened to the countries that implemented paradigm change in their foreign economic policies and can be extended to North-South economic integrations, too.

The areas of the investigation are relevant, and their significance will be even higher with the continuous growth of world trade and of the modern flows as its important elements.

The joint analysis of intra-industry, intra-firm, and intra-product trade allows us to avoid the intellectually attractive but false conclusion, which suggests that economic integration should profoundly change the trade structures and patterns of the member countries.

The Mexican experience reveals that the successful integration to the world economy in terms of growth of exports and FDI-import is enough to preserve the North-South development gap, but is not enough to narrow it. In order to reduce the gap the countries of the South cannot stop their restructuring process after the first generation of reforms. A wide package of second generation reforms must be implemented too, in order to further develop the institutional environment. This issue bears unquestionable relevance for Hungary and our region, as well.

3. *The Structure of the Dissertation*

The first chapter of the dissertation is the introduction. Chapter 1.3 summarizes the stylized facts of transnationalization and introduces the label of modern flows of the world economy. Chapter 1.4 presents the main goals of the research.

The second chapter deals with intra-industry trade. In chapters 2.1–2.3. (*Erdey, 2004b*) I present, and - with a significant extension of Fontagné and Freudenberg's taxonomy - classify the major theoretical models of the phenomenon. Based on the most important empirical analyses I summarize the main country- and industry-specific factors explaining intra-industry trade. Chapter 2.4 (*Erdey, 2005b*) highlights the question of the measurement of intra-industry trade in detail, presenting and systematizing the most recent research in the area. This part also serves as a methodological foundation for my empirical research. Chapter 2.5 (*Erdey, 2004d*) analyses the relationships between intra-industry trade (IIT) and adjustment cost and between IIT and the synchronization of the business cycles. Chapter 2.6 draws the most important conclusions of the thesis on intra-industry trade.

The third chapter of the dissertation is the synthesis of the main conclusions which can be drawn by the analysis of trade theoretical models and the related empirical research on foreign direct investment (FDI). Chapter 3.1–3.2.3 (*Erdey, 2004a*) deals with the tendencies and the locational aspects and research of FDI; chapter 3.2.4 (*Erdey, 2005c*) focuses on the question of internalization.

The fourth chapter (*Erdey, 2004c*) is the taxonomy of theories and empirical research of global production sharing.

The fifth chapter sets up the qualitative model and the hypotheses of the empirical research presented in chapters 6 and 7.

In the sixth chapter I review Mexico's unilateral, multilateral and regional trade liberalization. I analyze the consequences of the liberalization, the trends, dynamics and structure of FDI-imports, production sharing (the maquiladora industry) and confront them with the hypotheses drawn from my qualitative model.

The seventh chapter presents the results of my broad and comprehensive empirical research on Mexico's intra-industry trade: 7.1 deals with the 1980-1991 and 7.2 with the 1992-2003 period. Chapter 7.3 analyses the country's intra-industry trade with its major partner, the U.S. on the basis of Grubel–Lloyd and marginal IIT indices and disentangling horizontal and vertical intra-industry trade. Conclusions are drawn in chapter 7.4.

In the last, eighth, chapter I present the most important conclusions and analyze the possibilities of their extension to other developing countries and North–South integrations.

According to the requirements I summarize new and novel academic results of my research in this part of the dissertation.

4. Methods

Chapters 2-4 of the dissertation are based on existing theoretical and empirical research in the field. It was a remarkable task to identify the most relevant trade theoretical models and to create and/or further develop their taxonomy, integrating even the most recent models. These new or novel taxonomies were compared with the results of the most important empirical research. The joint analysis of theories and empirical research made it possible to draw comprehensive conclusions and to set up a qualitative model and hypotheses for my own empirical investigations. In each area I endeavored to apply a broader view; this led me, for example, to highlight the connection between IIT and business cycle synchronization.

In chapter 6 I used a dual methodological approach: on the one hand I lent on secondary sources and document analysis, on the other, while assessing the most important trends of Mexico's foreign trade, the maquiladora sector and the country's FDI-imports, I aimed to analyze the most important macro-indicators and other indices autonomously. In the latter case it was in itself a significant challenge to reveal and identify reliable and comparable data sources.

Mexico's intra-industry trade was analyzed by my own calculations for the 1980-2003 period. The methodological foundations of this intellectually attractive and so far – to the best of my knowledge – the deepest and most comprehensive research on the area were laid down in chapter 2.4. I used Microsoft Office Excel 2003, SPSS for Windows 13.0 and 14.0, and R 2.2.0 softwares for my calculations.

5. Results and Conclusion

1. In my dissertation - adapting and significantly extending Fontagné–Freudenberg's (2002) typology - I created an unambiguous taxonomy of trade theoretical explanations of intra-industry trade based on product differentiation and market structures, integrating even the most recent results in the area. The synthesis of the results of the most important empirical investigations show that horizontal IIT (HIIT) can be best explained by predictions of models based on economies of scale and monopolistic competition, while in the explanation of two-way trade of vertically differentiated products (VIIT) the best results can be expected using

theories based on neo-Ricardian and neo-Heckscher-Ohlin-type models of comparative advantage. Empirical research in the latter case however, gives some support to models based on non-competitive markets, too.

2. Assessing the tendencies of horizontal foreign direct investment (HFDI) helps us in analyzing the partner countries' interdependencies on the demand side, while an analysis of the trends in vertical FDI (VFDI) is a good tool for acquiring insights on the supply side. Horizontal flows are more likely if the host country has a big, high-income market, a skilled workforce and if trade costs are high. The motivations for VFDI are stronger if there is a significant difference in the relative factor endowments of the countries, if the host country has abundant labor with medium or basic education, and when trade costs are low.

The fast spread and increasingly important complex strategies are driven either by intermediate ranges of these incentives or in mixed situations, when neither the factors supporting HFDI, nor the ones leading to VFDI exist to a sufficient extent, or when they exist or emerge at the same time.

Each form requires an appropriate quality of the institutions – with an augmented role of education and the legal system –, infrastructure, and the liberalized, investment promoting economic policy of the host country. The research corroborates the importance of integrated forms as opposed to market-based solutions in industries producing R&D- and human capital intensive differentiated products and characterized by a significant role of intangible assets such as knowledge and goodwill.

3. Global production sharing – besides being the most important form of integration of developing countries to modern multinational production systems – as my empirical research on Mexico reinforces, may also contribute to the creation or deepening of a dual economic structure. The result in this case is a modern export sector whose connections with the rest of the economy are very limited (they buy local supplies and intermediate products in very low amounts), and they are not able or willing to give a growth impetus to the other sectors. The other side of the coin at the same time is a traditional, less competitive set of industries producing for local markets. The synthesis of theoretical – one-sector, multi-sector and non-mainstream models – and empirical research in this area corroborates the hypothesis that global production sharing contributes to the widening relative wage-gap of the skilled and unskilled workforce although most likely to a smaller extent than technological change.

4. My research shows that significant changes happened in the structure of Mexico's FDI-imports. The relative weight of HFDI diminished as the liberalization of the 1980s and the creation of NAFTA phased out the tariff-hopping motive for supplying local markets and promoted the extension of production sharing relations.

Besides this, the dynamic growth of the share of the FDI-imports to the manufacturing industries (mainly to the maquiladora sector) in the total foreign direct investment to Mexico unambiguously prove the significant rise in the importance of VFDI. The persistent high levels of intra-firm trade in Mexico's trade with the U.S. also give strong support to this argument.

The further development of the export-platform role of Mexico can only be expected if the country were able to create an effective network of local suppliers, which should facilitate its conformity to the strict rules of origin of the regional trade agreements. My results give indirect support to the knowledge-capital model of foreign direct investment and to complex integration theories.

5. Mexico–U.S. intra-industry trade is high, similar to the levels of IIT which can be measured between the most developed countries, although it is based on a different internal structure. The high level of IIT between the two countries was created by Mexico's structural reforms of the 1980s and its unilateral and multilateral (within the framework of GATT) trade liberalization. This level – contradicting the former hypothesis, and the empirical research work which used lower levels of industrial disaggregation – has not changed in the ten years since NAFTA came into being. This is true for Mexico's total trade, as well as for its bilateral flows with the U.S. This result means – just the opposite to the prediction made in the majority of the literature – that North-South economic integration does not necessarily cause a growth in the level of IIT.

6. The high levels of Mexico's intra-industry trade, which are similar in their magnitude to the IIT between the most developed countries, cannot be explained by the usual motives of North–North intraindustrial flows. Aggregation bias caused by international production sharing and the related vertical foreign direct investment plays a major role in forming the high indices.

7. Mexico–U.S. trade patterns, as far as their motives are concerned, were not changed after the creation of NAFTA, they were shaped by the structural reforms and liberalization of the 1980s. The high growth of the trade volumes, production sharing, the weight of the maquiladora and manufacturing industries in the trade and the output of Mexico meant, as a matter of fact, simply the deepening of earlier relations and interdependence. In my dissertation I confirmed in a new way the results of earlier research based on estimation of gravity equations and export and import demand functions, which state that the high growth of exports and imports since 1994 were not only caused by the liberalization effects of NAFTA and other regional trade agreements. Other factors, chiefly the growth of competitiveness caused by the peso crisis, the effect of which lasted until about 1998, played a major role in these processes.

My research suggests that successful integration of the South to the world economy measured by the levels of the modern flows means that these countries could effectively join the global production networks run by the multinational companies; that is, to the productive core of the world economy. This is, however not enough to catch up with the developed countries, and to meet the challenges of competitiveness. The structure of the economy, economic policy and institutions must be further reformed to reach these latter goals, too.

The conclusions of my dissertation draw attention to my possible further research directions. I plan to make a broad analysis of Mexico's institutional structure and compare the results with the research I have done in this doctoral thesis based on trade theory. The joint analysis would ensure we could get more exact answers to the question why the country could not fully exploit its geographical closeness to the U.S. and the very much expected advantages given by NAFTA in order to diminish its development gap with the developed regions of the world economy.

Another direction would be the extension of the framework of the analyses used in this dissertation. Applying the tools developed here would enable us to obtain a clearer picture – in a non-traditional way, described in the dissertation – of Latin America – which remains the main focus of my interest – as well as other regions in the process of development and transition.

References and the author's publications on the research area

- Erdey, László (2004a): *Foreign Direct Investment in the Light of Location Choice (A működőtőke-áramlás a telephelyválasztás elméletének tükrében)*. Közgazdasági Szemle (Economic Review), Vol. 51(5), May, p. 472-494.
- Erdey, László (2004b): *Intra-Industry Trade in the Light of Theoretical Explanations and Empirical Investigations (Az ágazaton belüli kereskedelem az elméleti magyarázatok és az empirikus vizsgálatok tükrében)*. *Competitio*, Vol. 3(2), May, p. 78-104.
- Erdey, László (2004c): *A Survey of Trade Theoretical Explanations of Global Production Sharing and Related Empirical Research (A nemzetközi termelésmegosztás kereskedelemelméleti magyarázatai és néhány empirikus kutatási eredmény)*. *Külgazdaság (Foreign Economy)*, Vol. 48(7-8), July-August, p. 38-59.
- Erdey, László (2004d): *The Influence of Intra-Industry Trade on Adjustment Costs and on the Synchronization of Business Cycles (Az ágazaton belüli kereskedelem hatása az alkalmazkodási költségekre és a konjunktúraciklusok szinkronizációjára)*. *Competitio*, Vol. 3(3), December, p. 61-82.
- Erdey, László (2004e): *The Impact of Customs Unions on International Economic Transactions (A vámuniók hatása a nemzetközi gazdasági tranzakciókra)*. Paper presented on the conference „Az európai egység eszméjének térhódítása” (The Spread of the Notion of Single Europe), 16, November, Faculty of Economics and Business Administration, University of Debrecen.
- Erdey, László (2004f): *Foreign Direct Investment in the Light of Internalization-based Foreign Trade Theory (A működőtőke-áramlás az internalizáció-alapú kereskedelemelméleti magyarázatok tükrében)*. Paper presented on Paradigm Shift – Information, Knowledge and Innovation in the New Economy, International Conference Organized by the Hungarian Association of New Institutional Economists and Scientific School „Information Economy and Identity” (INFIDENT) (OTKA Ts 040768), 3-4, December, Debrecen.

- Erdey, László (2005a): *Foreign Direct Investment in the Light of Internalization-based Foreign Trade Theory (A külföldi működőtőke-áramlás az internalizáció-alapú kereskedelemelméleti magyarázatok) tükrében*. Published in: Hámori, Balázs–Czeglédi, Pál–Jankovics, László–Sági, Balázs (eds.): *Paradigm Shift – Information, Knowledge and Innovation in the New Economy (Conference Proceedings)*, *Competitio Books 4.*, University of Debrecen Faculty of Economics and Business Administration, February, p. 255-265.
- Erdey, László (2005b): *Measuring Intra-Industry Trade: Traditional Methods and New Challenges (Hagyományos módszerek és új kihívások az ágazaton belüli kereskedelem mérésében)*. *Statiztikai Szemle (Statistical Review)*, Vol. 83(3), March, p. 258-283.
- Erdey, László (2005c): *Foreign Direct Investment in the Light of Theory of Internalization (A működőtőke-áramlás az internalizáció elméletének tükrében)*. *Külgazdaság (Foreign Economy)*, Vol. 49(5-6), May–June, 50-75.
- Erdey, László (2005d): *Intra-Industry Trade between Mexico and the U.S. in the Light of the Experience of European Integration (Ágazaton belüli kereskedelem Mexikó és az Egyesült Államok között az európai integrációs tapasztalatok fényében)*. Paper Presented on the Conference „Munkaerőpiaci és gazdaságpolitikai kihívások az Európai Unióban” (Challenges of Labor Markets and Economic Policy in the European Union), 11, November, Faculty of Economics and Business Administration, University of Debrecen.
- Erdey, László (2006a): *Is Integration Costly? The NAFTA Experience*. Poster presented at the International Conference on Regional Development in the Romanian-Hungarian Cross-Border Space – From National to European Perspective, 9, July, Faculty of Economics and Business Administration, University of Debrecen.
- Erdey, László (2006b): *From Import Substitution to the First Ten Years of NAFTA – Mexico’s Foreign Economic Strategy’s Impact on the Development (Importhelyettesítéstől a NAFTA-ig – Mexikó külgazdasági stratégiájának hatása a gazdaságfejlődésre)*. *Competitio*, Vol. 5(2), in press..
- Erdey, László (2006c): *The NAFTA and the Development Gap (A NAFTA és a fejlődési szakadék)*. Paper Presented on the Conference „A társadalmi és politikai berendezkedés változásainak gazdasági hatásai” (Economic Effects of the Changes of Social and Political Structure), organized by Faculty of Economics and Business Administration, University of Debrecen and the Debrecen Academic Committee of Hungarian Academy of Sciences, 14, November, Debrecen.
- Fontagné, L.–Freudenberg, M. (2002): *Long-Term Trends in Intra-Industry Trade*. Published in: Lloyd, P. J.–Lee, H-H. (eds.): *Frontiers of Research in Intra-Industry Trade*. Palgrave, London, p. 131-158.