# THE "NEW" TRADE THEORIES AND NEW TRADING OPPORTUNITIES FOR TURKEY

Raed Safadi

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Please address correspondence to: Raed Safadi, OECD, 2, Rue Andre Pascal, 75775 PARIS CEDEX 16, France, Fax: 33 1 45 24 15 39.

# The 'New" Trade Theories and New Trading Opportunities For Turkey\*

Raed Safadi

OECD

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### ABSTRACT

The paper presents a selective review of the "new" theories of international trade and examines their relevance to the new opportunities facing Turkey following the dramatic changes in the former Soviet Union (FSU). A gravity flow model is developed to assess the results of these changes. The main findings are that the FSU republics appear to be more "natural" trade partners for Turkey, and hence there is a great potential for Turkey as well as the FSU republics to increase their trading arrangements. The policy implications of this redirection of trade are also discussed.

# ملخص

تقدم الورقة عرضا مختارا لنظريات التجارة الدولية الجديدة ، وتختبر ملائمتها للفرص الجديدة امام تركيا بعد التغيرات الجذرية في الاتحاد السوفيتي السابق. وتم بناء نموذج اتجاه الجاذبية (Gravity Flow Model) لتقدير نتائج هذة التغيرات. واهم ما توصلت اليه الورقة هو ان جمهوريات الاتحاد السوفيتي التجارة تركيا، ومن هنا فان هناك امكانية كبيرة امام تركيا وجمهوريات الاتحاد السوفيتي السابق لزيادة اتفاقياتهما التجاريه. وناقشت الورقة ايضا آثار سياسة تغيير اتجاه التجارة هذة.

### Introduction

This note has two parts. The first is a brief discussion of the recent theoretical developments in international trade theory with a view to seeing if they hold any policy implications for Turkey in exploring opportunities to expand its external trade.

The second part reports on the results of an empirical analysis of the export market opportunities which the market transition in the former Soviet Union may open to Turkey.

The concluding policy discussion brings together conclusions from the two sections to provide some input for the debate on the future path for Turkey's external sector.

# I. The 'New Theory" of International Trade

Until a few years ago, standard models of international trade were driven by the assumption that perfect competition prevailed in all markets. Moreover, except for models that analyzed optimum tariffs and retaliation, these standard models allowed only one government to be active in policy making. The general conclusion was that interference with free trade can only be justified for the case of a large country seeking to improve its terms of trade. Though the large country's welfare may be enhanced through these interventionist policies, world welfare as a whole was thought to decline. This approach was criticized by those who observed that the traditional trade theories had neglected or severely played down such real-world phenomena as oligopoly, learning by doing, externalities, scale economies, domestic institutional constraints, and foreign ownership.

Some trade economists reacted to these criticisms by turning their attention to issues of strategic policies and imperfect competition. They have borrowed extensively from recent developments in the literature on game theory and industrial organization, and have produced a much richer body of research, known collectively as the "new" theories of international trade. This new body of international trade theory not only modified conventional wisdom on free trade, but also supplemented the traditional analysis by emphasizing that increasing returns to scale, as much as comparative advantage, might be the engine that drives international trade.

The apparent prevalence of intra-industry trade makes a compelling case against assuming perfect competition, and hence constant or decreasing returns to scale. [intra-industry trade is defined as the 2-way exchange of goods in which neither country seems to have comparative advantage]. Trade economists have advanced two different explanations of why intra-industry trade is taking place.

The first emphasized increasing returns to scale coupled with product differentiation, while the second relied on market segmentation and price discrimination. Although the literature on trade policy under imperfect competition offers a profusion of models and approaches, one common policy implication of these models is that free trade is rarely an optimal policy under oligopoly, but no clear alternative emerges.

One of the most controversial aspect of the new theories of international trade is the possibility that interventionist trade policies may have beneficial "strategic" effects. The pioneering work in this area is that of Brander and Spencer (1983, 1984a, 1984b) who showed that government policies, in particular export subsidies can serve the strategic purpose of shifting profits of imperfectly competitive industries.

That is, export subsidies improve the relative position of domestic firms that are engaged in a non-cooperative rivalries with other (domestic or foreign) firms, and thus allow the former to expand their market shares.

The Brander and Spencer analysis has been criticized on several accounts. For example, Dixit and Grossman (1984) pointed out that in a general equilibrium context, an export industry can only expand its output by bidding resources away from other sectors which will consequently experience an increase in their marginal costs. Therefore, the assessment of the net impact of an export subsidy not only requires knowledge of the industry in question but also of all the industries with which it competes for resources. Another critique was offered by Eaton and Grossman (1986) who pointed out that the Brander and Spencer analysis is of limited practical use because the particular policy recommendation depends critically on the assumptions of the model. In particular, Eaton and Grossman showed that replacing the assumption of Cournot competition (which Brander and Spencer used) with a Bertrand-type competition reverses the policy recommendation from an export subsidy to an export tax. Horstmann and Markusen (1986) introduced to the Brander and Spencer analysis the possibility of entry by firms. With this twist, Horstmann and Markusen found that all the benefits accruing from export subsidy were absorbed either by worsened terms of trade or reduced scale, and thus constituted a loss to the subsidizing country.

Empirical investigations of the potential gain from mild protection in the presence of imperfect competition indicate that national welfare may actually rise, but only when assuming no retaliation. When retaliation is introduced, the costs of mutual protection are magnified by industrial organization effects. In fact the impact of these new models on policy discussions has been to reinforce arguments in favor of free trade; for example, using a general equilibrium application of industrial organization concepts to the "new" theories of trade, Cox and Harris (1985) study the gains from a U.S.-Canada trade liberalization agreement. They find that a free trade area between Canada and the U.S. would produce welfare gains of almost 9 percent of GNP, more than twice the most conservative estimate using conventional models. Moreover, Venables and Smith (1986) found the industrial organization effects of the removal of remaining obstacles to trade within Europe to be welfare enhancing. Baldwin (1992) developed an empirical model of strategic trade policy and applied it to the case of EMB-120, a Brazilian-made commuter aircraft which is exported to the U.S. and Europe, and which is subsidized by the Brazilian government. Baldwin found that this subsidy program resulted in a net loss to the Brazilian economy of \$30 million. Finally, all of these empirical models find that the gains that are supposed to ensue when no retaliation is envisaged, are very small. In any case, the results of the empirical investigations of the "new" theories of trade are very sensitive to the underlying assumptions, and as such are unreliable guides to policy.

To the above one must add that while interventionist trade policy in the presence of imperfect competition may produce some small gains (again only in the absence of retaliation), it is assumed that they are made by benevolent governments who are not subject to pressures from special interest groups. In the presence of discretionary authorities who intervene on purportedly strategic grounds, there is a risk that the decision-making process will be captured by protectionist interests.

As Turkey assesses the opportunities emerging from the dissolution of the Soviet Union, particularly in new national markets within the region, a question that arises is what role, if any, the government might play in forging closer links with these new entities? The "new" trade theories do not offer clear guidance on this issue and, if anything, suggest that a cautious approach should be adopted. On the other hand, there is evidence (Keesing and Lall, 1992) that government assistance made generally available to enterprises seeking to develop new external markets may be useful in the early stages. Such assistance should be designed with clear objectives in mind, and provided in such a way as to ensure that the subsidies are

temporary and result in better export performance. Moreover, the assistance provided may best be given in forms such as international marketing skills and R&D which are inputs not readily available to firms moving into new export activities.

# II. Market Transition in the FSU and Export Opportunities for Turkey

In an attempt to assess the magnitude of new market opportunities in the Former Soviet Union (FSU) area, I have adapted a gravity model of trade flows. The model provides a counter-factual indication of what Turkey's trade with the FSU would have been under "normal" market conditions.

The Gravity Flow Model

In order to quantify the effects on Turkey's trade of the dissolution of the FSU and the emergence of new national markets, I rely on a gravity-type equation. Gravity models have been applied successfully to different types of flows, such as migration, commuting, recreational traffic, and interregional and international trade. In the present context, as was pointed out by Helpman and Krugman (1985), gravity equations tend to fit trade patterns better, the more important are increasing returns to scale.

Typically, the log-linear equation used specifies that a flow from origin i to destination j can be explained by supply conditions at the origin, by demand conditions at the destination, and by economic forces either assisting or resisting the flow's movement.<sup>1</sup>

In its basic form, the equation is written as:

$$T_{ij} = \beta_0 (Y_i)^{\beta_1} (Y_j)^{\beta_2} (D_{ij})^{\beta_3} (A_{ij})^{\beta_4} \epsilon_{ij}$$
 (1)

where  $T_{ij}$  is the US\$ value of the flow from country i to country j,  $Y_i$  and  $Y_j$  are, respectively, nominal GDP in country i and country j expressed in US\$,  $D_{ij}$  is the distance from the economic canter of i to that of j,  $A_{ij}$  is any other factor either assisting or resisting trade between i and j, and  $\epsilon_{ij}$  is a log-normally distributed error term with  $E(\ln \epsilon_i)=0$ .

The most relevant applications of the gravity equation in the present context are those that have

<sup>&</sup>lt;sup>1</sup> Tinbergen (1962) and Poyhonen (1963a,1963b) were the first to apply the gravity equation to models of bilateral trade flows (see Deardoff (1984) for a survey). Their model was later extended and applied to different contexts in bilateral trade by Linnemann (1966), Aitken (1973), Hewett (1976), Pelzman (1977), Sapir (1981), and Brada and Mendez (1983,1985). The equation has been justified theoretically by Leamer and Stern (1970), Anderson (1979), and Bergstrand (1985, 1989). In fact, Linnemann (1966) asserts that the gravity equation can be derived from a four-equation partial equilibrium model of export supply and import demand, where prices are excluded since they merely adjust to equate supply and demand. This approach, however, has been criticized by Anderson (1979) and Leamer and Stern (1970).

used it to quantify the trade effects of integration.<sup>2</sup> My approach is closely related to that of Pelzman (1977), and to an earlier study I conducted with Erzan (Erzan and Safadi, 1992). Pelzman investigated the trade-creation and trade-diversion effects of the creation of the CMEA. He chose a preintegration period on the basis of which equation (1) was estimated. Its estimated parameters were then used to predict intra-CMEA trade during the post-integration period. The excess of actual intra-CMEA trade over the predicted volume of trade is attributed to the effect of integration.

While Pelzman's approach is acceptable when analyzing integration schemes among countries of similar characteristics, it breaks down when one is confronted with a heterogeneous sample of countries. On the other hand, in Erzan and Safadi we studied the effects of changes in the former CMEA area on international trade in manufactures. Using a gravity flow model, we estimated the trade-diverting and tradecreating effects of the dissolution of the former CMEA arrangement. We reformulated equation (1) by further decomposing the trade effects of the dissolution of the former CMEA area into environmental and policy effects. Environmental effects refer to the physical and economic characteristics of the "newly" emerging countries and their relations with the rest of the world, while policy effects refer to the degree of trade liberalization these countries will follow.

In order to capture these effects, equation (1) has been respecified as:

$$\log T_{ij} = A + \alpha_1 \log GDP_i + \alpha_2 \log GDP_j + \alpha_3 \log GDPPC_i + \alpha_4 \log GDPPC_j + \beta_1 \log D_{ij} + \beta_2 \log Area_i + \beta_3 \log Area_j + \gamma_1 Border_{ij} + \gamma_2 \log \{ |GDPPC_i - GDPPC_j| \} + \gamma_3 Shrlng_{ij} + \gamma_4 Shreg_{ij} + \log \epsilon_{ij}$$
(2)

where:  $\begin{matrix} T_{ij} \\ GDP_{ij} \end{matrix}$ bilateral non-fuel trade between countries i and i total output in current US\$ in the reporter and partner countries straightline distance between the economic centers of gravity of countries i and i Area, size of the reporter and partner countries measured by land area in square kilometers Border, dummy variable equal to 1 in countries i and j share a common border, 0 otherwise Shrlng<sub>ii</sub> dummy variable equal to 1 if countries i and i share a common language, 0 otherwise Shreg dummy variable equal to 1 if countries i and j are part of a common regional arrangement, 0 otherwise log-normally distributed error term with  $E(\ln \varepsilon_i)=0$ .  $\mathbf{E}_{ij}$ 

The US\$ per capita GDPs at purchasing power parity for the reporter and the partner countries are included in order to capture the effects of each country's level of development. The two variable -distance between countries and the corresponding absolute difference in per capita GDPs (at purchasing power parity)-capture the Linder hypothesis (1961) that the intensity of bilateral trade is determined by similarities in demand structures, and geographical distance between importing and exporting countries. The former refers to the distance between the economic centers of the two countries, and the latter is a proxy for

<sup>&</sup>lt;sup>2</sup> These applications include Tinbergen (1962), Aitken (1973), Hewett (1976), Havrylyshyn and Pritchett (1991), Pelzman (1977) and Erzan and Safadi (1992).

economic similarity. The trading arrangements included are the EC, EFTA, LAFTA, and CACM.<sup>3</sup> Finally, a language dummy variable is included as a proxy for cultural similarities. It assumes the value of one if countries share a common language, otherwise its value is set to zero; the languages included are English, Spanish, French and Arabic.

### III. Estimation

The model described in equation 2 was estimated in natural logarithms since the range of some of the variables is so large that results in levels are easily driven by extreme observations. The double logarithmic form also gives elasticity results that are easier to interpret. The data used are total non-fuel trade (SITC 0 through 9 - 3) of 95 non-socialist countries from each other during the year 1989 (the latest year for which comprehensive trade data were available).

Moreover, since the values of bilateral trade are only observed for nonnegative values, ordinary least squares estimates will be inconsistent because of censoring bias.<sup>4</sup> Therefore, I use the Tobit maximum likelihood estimation technique.<sup>5</sup> Furthermore, in predicting the trade effect of the emergence of the new FSU markets, I follow McDonald and Moffit's (1980) methodology in interpreting and using the estimated Tobit coefficients. They show that:

$$E(y_i) = \Phi_i \beta' x_i + \sigma \phi_i$$
 (2)

where  $\phi$  and  $\Phi$  are the density and distribution functions respectively of the standard normal evaluated at  $\beta x/\sigma$ , and  $\sigma$  is the standard error of estimation.

The appeal of this empirical exercise depends on the intuitive appeal of the counterfactual: if bilateral trade of the FSU republics<sup>6</sup> were determined in the same way as that of the 95 non-socialist countries in our sample, then it would differ from its current pattern in a predictable way. However, in the present exercise, we are only interested in the impact on Turkey, and as such I will restrict my investigation to predicting the redirection of Turkey's trade as a result of the emergence of the "new" FSU's markets.

### IV. Results

The estimated coefficients of equation (2) are presented in Tables (1) and (2) below. The empirical

<sup>&</sup>lt;sup>3</sup> For example, Aitken (1973) found European trade to be significantly influenced by membership in the EC or EFTA, and by being neighbors. Srivastava and Green (1986) found cultural similarity, political circumstances, economic union and former colonial status to be significant determinants of trade between nations.

<sup>&</sup>lt;sup>4</sup> See for example Maddala (1983) for a discussion of the bias in OLS estimates in models with limited dependent variables.

<sup>&</sup>lt;sup>5</sup> See Tobin (1958) and Heckman (1976,1979) for a discussion and application of this technique.

<sup>&</sup>lt;sup>6</sup> The republics included are: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrghyztan, Latvia, Lithuania, Moldova, Tadjikistan, Turkmenistan, Ukraine, Uzbekistan.

performance of the model is quite good. Nearly all the variables (except for the per capita GDP of the reporter on the import side  $\alpha_3$ ) have the expected sign and are strongly significant. Imports and exports increase with the level of GDP of the reporter and partner ( $\alpha_1$ , and  $\alpha_2$ ), and decrease with the size of either ( $\beta_2$  and  $\beta_3$ ). Imports and exports also decrease with distance ( $\beta_1$ ) and increase with a common border ( $\gamma_1$ ). Sharing a common free trading area ( $\gamma_4$ ) enhances trade significantly, and so does sharing a common language ( $\gamma_3$ ).

There is nevertheless one puzzling result. The effect on trade of the GDP per capita of the reporter (though insignificant on the import side) is negative. Previous research has shown the presence of a quadratic relationship between GDP per capita and the share of trade in GDP (Chenery and Syrquin, 1975 and Khani, et. al., 1984). The large semi-industrialized countries appear to be on the downward sloping portion of the GDP per capita-trade intensity relationship.

# V. Simulating Turkey's Trade Pattern

The dissolution of the FSU, and for that matter the CMEA and socialism itself in Europe, will likely have important effects on the pattern of Turkey's trade. To get a feel of the magnitude of this reorientation of trade the estimated coefficients of equation (2) were used to project the level as well as the direction of Turkey's trade. In this exercise, data from the 14 FSU republics were collected and added to the matrix of the trading partners of Turkey. Tables (3) and (4) present the results.

Several interesting points emerge from the projections in Tables (3) and (4). First, Turkey seems to be biasing its trade toward the European Community and against more "natural" partners like those in the Middle East region. This is consistent with other studies that find intra-regional trade in the Middle East to be very low (Fischer, 1992). Thus, the predicted exports of Turkey to the Middle East are 6% higher than they actually are. Predicted imports are 9% higher than actual imports. With respect to the European Community, Turkey's exports and imports are projected to be 6 % and 4 % lower, respectively, than they actually are.

Perhaps more importantly, the emergence of the FSU republics, especially those with which Turkey shares a common language (like Turkmenistan) or a common border (like Armenia and Georgia), seem to create a large export potential for Turkey. This is evident from the 90% projected increase in its exports to these and other republics and the 75% projected increase in imports. It is important to note that these projections take into consideration only the actual economic performances of the FSU republics. In other words, the projections do not take into account future growth of these republics, and hence are lower-bound limits on the potential exports of Turkey to these markets. Once the FSU countries return to their potential growth path, the growth "dividends" for Turkey may become even larger.

# VI. Policy Implications

The results depicted in Tables (3) and (4) argue for a more diversified approach by Turkey in light of the consequences of the dramatic changes that have occurred in the region. Turkey should seize the opportunities presented by the emerging markets to develop a coherent and diversified export strategy.

More than two-thirds of Turkey's exports are currently concentrated in manufactures; trade which has become increasingly globalized. Reductions in the cost of moving goods and, especially, information have encouraged the shipment of semi-manufactures between production sites. The production of labor-intensive goods is increasingly foot-loose, with low fixed costs and easily separable production steps. As

is evident from the previous section, geographical and cultural distances between nations also influence patterns of trade strongly, particularly in the case of manufactures, because they impose transaction costs on production and trade. Studies suggest that if distance doubles, then trade between countries of equal size declines by two-thirds. A common land border between countries increases trade by a factor close to two. A common language also leads to more trade, as do past political and commercial ties. These figures are consistent with the elasticities estimated in Tables (1) and (2).

The economic distance between nations—influenced by geographical location, culture, and history—is an important factor in assessing the export prospects not only for Turkey but also for all developing countries. This distance from major markets can be reduced by better infrastructure links to international transport and telecommunications and by more open policies for trade in goods and services, foreign direct investment, and movement of people. Such links permit close interaction with buyers and suppliers in the quest for international competitiveness, and help translate low labor costs into low production costs.

Recent trends in technology have made these international linkages even more important for international competitiveness. New technologies permit more differentiation of products and sale of a wider range of products requires more detailed market intelligence. "Just-in-time" inventory management techniques and the trend toward design from manufacture, require close coordination between producers and suppliers, designers, and component manufacturers. The growing interaction between markets, consumers, producers, and suppliers requires more efficient communications.<sup>7</sup>

Increasingly, the "new" trade theories are explicitly recognizing the important roles that marketing and informational flows play in international trade. Their role arises from imperfect competition, since in a neoclassical framework, sales and information flows are costless and instantaneous. Moreover, the "new" trade theories are beginning to recognize other leading problems of exporting manufactures from developing countries, such as obtaining access to competitively priced inputs, services, and infrastructure.

Recognizing the importance of these issues, the World Bank initiated research to formulate cost-effective public support in developing countries to export marketing, particularly for manufactured goods. Preliminary findings (see in particular Keesing and Lall, 1992) suggest that one particular policy instrument appears to be promising in this respect. A fund providing grants sharing up to one half of the costs of well-designed programs of export marketing involving new products or new markets or quantum changes in the way exports are marketed in demanding markets. Such a fund is provided, for example, by Singapore's Trade Development Board, and others have been included in World Bank operations in India and Indonesia. This facility allows firms to choose what area they want advice on and also to choose service suppliers, not least from the private sector.

<sup>&</sup>lt;sup>7</sup> For a thorough treatment of these and other issues related to trade in manufactures, see World Bank, 1992.

Table 1: Gravity Model Estimates, Imports

Parameter	Estimate	Standard Error	T for H0 Parameter=0	Prob > 0
A	-19.17	0.35	-53.46	0.00
$\alpha_{i}$	1.35	0.03	38.68	0.00
$\alpha_2$	1.54	0.03	47.96	0.00
O <sub>3</sub>	-0.04	0.05	-0.91	0.36
$\alpha_{4}$	0.10	0.04	2.50	0.02
$\beta_{l}$	-0.25	0.01	-19.85	0.00
$\beta_2$	-0.29	0.02	-13.93	0.00
$\beta_{s}$	-0.28	0.02	-12.69	0.00
$\gamma_1$	1.78	0.23	7.64	0.00
$\gamma_2$	0.25	0.03	7.73	0.00
$\gamma_3$	1.81	0.12	15.07	0.00
γ <sub>4</sub> The coefficient for α	1.59	0.12	12.87	0.00

The coefficient for  $O_3$  is not significant.

Table 2: Gravity Model Estimates, Exports

Parameter	Estimate	Standard Error	T for H0 Parameter=0	Prob > 0
$\mathbf{A}_{i_0}$	-18.13	0.36	-48.26	0.00
$\alpha_{l}$	1.79	0.04	48.72	0.00
$\alpha_2$	1.14	0.03	33.96	0.00
C4 <sub>3</sub>	-0.22	0.05	-4.63	0.00
$\alpha_{4}$	0.13	0.04	2.99	0.00
$\beta_{l}$	-0.28	0.01	-20.73	0.00
$\beta_2$	-0.40	0.02	-18.65	0.00
$\beta_3$	-0.20	0.02	-8.86	0.00
$\gamma_1$	1.49	0.24	6.14	0.00
$\gamma_2$	0.22	0.03	6.52	0.00
$\gamma_3$	1.77	0.13	14.14	0.00
γ <sub>4</sub>	1.74	0.32	12.87	0.00

Table 3: Impact of FSU on Turkey's Imports

Region	Actual Imports (US\$ 000)	Change Due to New FSU Republics	Predicted Imports (US\$ 000)
South Asia	119,346	-5.4	112,854
East Asia & Pacific	352,686	-8.7	321,843
EFTA	892,088	-3.1	864,387
EEC	5,942,687	-3.6	5,726,296
FSU Republics	667,405	75.5	1,171,192
Japan	529,677	-1.3	523,003
North Africa & Middle East	301,323	8.7	327,500
North America	2,131,572	-0.5	2,119,991
Other Developed	157,613	-1.4	155,485
South & Central America	435,753	-3.6	420,284
Sub-Saharan Africa	49,569	-1.0	49,073
Total	11,579,719	1.8	11,791,909

Notes: Actual trade from the FSU 14 republics was obtained from "Foreign Trade of Independent Republics and the Baltic Economies," Moscow, Statistical Information Center, 1991. (in Russian). All of the other actual trade figures were obtained from the U.N. COMTRADE Database, the United Nations, Geneva. The exchange rates used to transfer devisa roubles into US\$ were: 1 rouble = US\$ 1.74655 for exports and 1 rouble = US\$ 1.70855 from imports. Other Developed Countries include Australia, Israel, and New Zealand.

Table 4: Impact of FSU on Turkey's Exports

Region	Actual Imports (US\$ 000)	Change Due to New FSU Republics	Predicted Imports (US\$ 000)
South Asia	264,144	-3.6	254,740
East Asia & Pacific	147,001	-6.1	138,099
EFTA	450,265	-4.5	429,908
EEC	5,228,056	-5.5	4,943,001
FSU Republics	1,089,000	89.8	2,066,427
Japan	233,133	5.4	242,827
North Africa & Middle East	2,533,024	5.9	2,682,396
North America	1,022,941	0.0	1,023,206
Other Developed	79,317	-5.4	75,070
South & Central America	41,718	-7.2	38,694
Sub-Saharan Africa	23,932	-16.1	20,075
Total	11,112,531	7.2	11,914,444

Notes: Actual trade from the FSU 14 republics was obtained from "Foreign Trade of Independent Republics and the Baltic Economies," Moscow, Statistical Information Center, 1991. (in Russian). All of the other actual trade figures were obtained from the U.N. COMTRADE Database, the United Nations, Geneva. The exchange rates used to transfer devisa roubles into US\$ were: I rouble = US\$ 1.74655 for exports and 1 rouble = US\$ 1.70855 from imports. Other Developed Countries include Australia, Israel, and New Zealand.

### References

Anderson, James E. (1979), "A Theoretical Foundation for the Gravity Equation," <u>American Economic Review</u>, Vol. 69, pp. 106-116.

Aitken, Norman D. (1973), "The Effects of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis," <u>American Economic Review</u>, Vol. 63, pp. 881-892.

Baldwin, Richards (1992), "High-Technology Exports and Strategic Trade Policy in Developing Countries: The Case of Brazilian Aircraft," in Helleiner, Gerald (ed.), *Trade Policy, Industrialization and Development*, (Clarendon Press, Oxford).

Bergstrand, Jeffrey H. (1985), "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence," <u>Review of Economics and Statistics</u>, Vol. 67, pp. 474481.

Bergstrand Jeffrey H. (1989), "The Generalized Gravity Equation, Monopolistic Competition, and the Factor Proportions Theory in International Trade," <u>Review of Economic and Statistics</u>, Vol. 56, pp. 143-153.

Brada, Josef and Jose Mendez (1983), "Regional Economic Integration and the Volume of Intra Regional Trade: A Comparison of Developed and Developing Country Experience," *Kyklos*, Vol. 36, pp. 589-603.

Brada, Josef and Jose Mendez (1985), "Economic Integration Among Developed, Developing and Centrally Planned Economies: A Comparative Analysis," Review of Economic and Statistics, Vol. 67, pp. 549-556.

Brander, James A. and Barbara Spencer (1983), "International R&D Rivalry and Industrial Strategy," Review of Economic Studies, Vol. 50, pp. 707-722.

Brander, James A. and Barbara Spencer (1984a), "Tariff Protection and Imperfect Competition," in Kierzkowski, H. (ed.), *Monopolistic Competition and International Trade*, Oxford, Oxford University Press.

Brander, James A. and Barbara Spencer (1984b), "Export Subsidies and International Market Share Rivalry," NBER Working Paper Series, No. 1464, Cambridge, MA.

Chenery, H. and M. Syrquin, (1975), Patterns of Development, (Oxford University Press).

Cox, David, and Harris, Richard (1985), "Trade Liberalization and Industrial Organization: Estimates for Canada," <u>Journal of Political Economy</u>, 93: 115-145.

Deardoff, Alan (1984), "Testing Trade Theories and Predicting Trade Flows," in R. W. Jones and P. R. Kenen (eds), *Handbook of International Economics, Vol.* 1, (Amsterdam, North-Holland).

Dixit, Avinash and Grossman, Gene (1984), "Targeted Export Promotion with Several Oligopolistic Industries," <u>Discussion Paper in Economics</u>, No. 71, Woodrow Wilson School, Princeton University.

Eaton, Jonathan and Grossman, Gene (1986), "Optimal trade and Industrial Policy under Oligopoly," Ouarterly Journal of Economics, Vol. 2, pp. 383-406.

Erzan, Refik and Raed Safadi (1992), "How Changes in the Former CMEA Area May Affect International

Trade in Manufactures," PRE Working Papers Series, No. 973, The World Bank, Washington, D.C.

Fischer, Stanley (1992), "Prospects for Integration in the Middle East," World Bank and CPER Conference on New Dimensions in Regional Trade, Washington, D.C.

Havrylyshyn, Oleh and Lant Pritchett (1991), "European Trade Patterns After the Transition," <u>PRE Working Papers Series</u>, No. 748, The World Bank, Washington, D.C.

Heckman, J. (1976), "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator of Such Models," <u>Annals of Economic and Social Measurement</u>, Vol. 5, pp. 475-492.

Heckman, J. (1979), "Sample Bias as Specification Error," Econometrica, Vol. 47, pp. 153-162.

Helpman, Elhanan, and Paul Krugman (1 9 85), *Market Structure and Foreign Trade*, (the Harvester Press Group, Brighton, Sussex).

Hewett, Edward A. (1976), "A Gravity Model of CMEA Trade," in Brada, J.C. (ed.), *Quantitative and Analytical Studies in East-West Economic Relations*, (Bloomington, International Development Center).

Horstmann, I and J.R. Markusen (1986), "Up Your Average Cost Curve: Inefficient Entry and the New Protectionism," <u>Journal of International Economics</u>, Vol. 20, pp. 225-248.

Keesing, Donald B., and Sanjaya Lall, (1992) "Marketing Manufactures Exports from Developing Countries: Learning Sequences and Public Support," in Helleiner, Gerald (ed.), *Trade Policy Industrialization and Development*, (Clarendon Press, Oxford).

Khani, A., McCarthy, D., Taylor, L. and Talati, C., (1984), "Trade Patterns in Developing Countries, 1964-82," Journal of Development Economics, Vol. 27, pp. 5-39.

Leamer, Edward and Robert Stern (1970), Quantitative International Economics (Chicago: Aldine Publishing Company).

Linder, Stefan B. (1961), An Essay on Trade and Transformation, (New-York: John Wiley and Sons).

Linnemann, Hans (1966), An Econometric Study of International Trade Flow, (Amsterdam, North Holland).

Maddala, G. S. (1983), Limited-Dependent and Qualitative Variables in Econometrics, (Econometric Society Monographs No. 3, Cambridge University Press).

McDonald, John and Robert A. Moffit (1980), "The Uses of Tobit Analysis," <u>Review of Economics and Statistics</u>, Vol. 62, pp. 318-321.

Pelzman, Joseph (1977), "Trade Creation and Trade Diversion in the CMEA, 1954-70," American Economic Review, Vol. 67, pp. 713-722.

Poyhonen, Pentti (1963a), "A Tentative Model for the Volume of Trade Between Countries," Welwirtschaftliches Archiv, Band 90, Heft 1, pp. 93-100.

Poyhonen, Pentti (1963b), "Toward a General Theory of International trade," *Economiska Samfundets Tidskrift*, Vol. 16, pp. 69-77.

Sapir, Andre (1981), "Trade Benefits Under the EEC Generalized System of Preferences," <u>European Economic Review</u>, Vol. 15, pp. 339-355.

Srivastava, Rajendra and Robert T. Green (1986), "Determinants of Bilateral Trade Flows," *Journal of Business*, Vol 59, pp. 623-640.

Tinbergen, Jan (1962), Shaping the World Economy: Suggestions for an International Economic Policy, (New-York: 20th Century Fund).

Tobin, James (1958), "Estimation of Relationships for Limited Dependent Variables," <u>Econometrica</u>, Vol. 26, pp. 24-36.

Venables, Anthony, and Smith, Alasdair M., (1986) ",Trade and Industrial Policy under Imperfect Competition," *Economic Policy*, Vol. 1, pp. 622-672.

World Bank, Global Economic Prospects and the Developing Countries, 1992. Washington, D.C.

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