

The Effect of (the Absence of) Multinationals' Foreign Direct Investment on the Level of Eastern European Trade

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Abstract

Identifying the most important systemic characteristics that have determined the behavior of CPEs is crucial for the choice of a transition path within the ongoing economic reforms in these countries. The empirical literature on the comparative behavior of CPEs and MEs often gives little help in explaining exactly why the economic performance of CPEs differs from that of MEs. This is certainly the case for studies that have previously examined the comparative levels of CPE trade. Employing the data and methodology of an existing study (Browning, 1985), and adding a variable representing the level of MNC activity in each country, it is shown that the low levels of CPE trade can be completely explained by the MNC activity, without recourse to other effects of the economic system.

Key words. centrally planned economies, foreign trade, market economies, multinational corporations.

Abbreviations:

CPE : Centrally Planned Economy

ME : Market Economy

MNC : Multinational Corporation

CMEA: Council for Mutual Economic Assistance

1. Introduction

In April 1987, it became possible for Western companies to establish joint ventures in the Soviet Union. There ensued a steady stream of commitments by Western companies to undertake capital investments inside the Soviet Union. Over the next two years a total of approximately \$500 million in investments was pledged by foreign companies in over 300 joint ventures.¹

The details for the new European Disneyland were also announced in 1987. The minority American stake in this single investment project in France will amount to approximately \$500 million.²

As the foregoing information so dramatically illustrates, the role of MNCs in CMEA countries is minuscule compared to that in Western

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Europe. Because of the restrictiveness of ownership laws, the unfavorable bureaucratic environment, and the problems of currency convertibility, the amount of foreign direct investment in Eastern Europe has been virtually negligible. In contrast, the increasing importance of the MNCs might well be one of the most significant post-war economic developments in Western Europe. In this paper I argue that the absence of MNC activity must be a vital element in any explanation of the distinctive features of the behavior of CPEs of Eastern Europe. Indeed, for the empirical phenomenon at hand – the level of trade – the absence of MNCs is shown to be a sufficient explanation for the differences between the two types of economies.

A host of empirical studies has shown that the behavior of CPEs is significantly different from that of MEs. Such studies often proceed by assuming that differences between the structures of the two types of economies can be captured using a single independent variable, often a dichotomous dummy variable. However, there are many differences between CPEs and MEs – differences that cannot be boiled down to a single dimension. The existing empirical studies thus frequently give little help in explaining *why* the economic performance of CPEs differs from that of MEs.³

Of the studies proceeding in the fashion described, an important set examines the level of foreign trade. These studies have convincingly shown that CPEs trade less than comparable MEs.⁴ A variety of explanations have been offered for these empirical results. For example, Holzman (1968) focuses on planners' preferences for self-sufficiency, while van Brabant (1968) adds the inability of central planning to take advantage of the expanded set of options offered by world markets. However, the empirical studies do not distinguish between the many possible causes of the trade outcomes.

In this paper I show that the low level of CPE trade can be completely explained by the absence of MNC activity, without recourse to other effects of economic system. This fact casts doubt upon the interpretation of existing empirical results, which, steered by the use of a dummy variable signifying the use of planning focused on the process of planning and the absence of markets.

The objective of this paper is limited – to present a simple empirical fact that should spur the reconsideration of existing results. The analysis therefore proceeds in a circumscribed fashion. I focus on a single existing study, employing both its data and methodology, and simply add a variable representing the level of MNC involvement in a country. This approach has two obvious advantages. First, reworking a previous study is the clearest way of establishing that the addition of the MNC variable does alter existing conclusions. If new data or methodology were used, there would always be some residual doubt that these were responsible for the new results. Second, brevity is aided. For a full discussion of the

methods used here, I refer the reader to Browning (1985), which is the study upon which I focus. I have chosen that study because it is a recent, careful empirical investigation of the differences in the levels of trade of CPEs and MEs.

The following section considers the status of MNCs in international trade theory and their relative importance in the affairs of both Eastern and Western Europe. Section III sets up the economic model and the econometric analysis by reviewing the relevant parts of Browning (1985). Section IV presents the paper's main results, which are obtained by adding to Browning's model a variable measuring the magnitude of MNC activities in a country. The paper concludes by considering the significance of the result.

II. Multinational corporations in international trade

Multinational corporations entered economic theory later than they entered the real world of economic affairs. However, there is now a burgeoning theoretical literature on MNCs. Here, the interest is in one theme running through this literature – the possibility that the expansion of MNC activity leads to a greater amount of international trade.

The traditional view in economics is that trade and foreign direct investment are substitutes. However, Markusen (1983) forcefully argued that this view is quite specific to the Heckscher–Ohlin model. He showed that increased factor mobility can spur larger amounts of trade in a world in which trade is caused by technology differences, or market imperfections, or economies of scale, or tax policies. The flow of direct investment within MNCs can provide a large source of such factor mobility.

There is, perhaps, an even more important element in the argument that MNCs increase the level of trade. This element derives from the basic causal mechanism most often invoked to explain the existence of MNCs. Following Coase (1937) and Williamson (1975), scholars have focused on internalization as a solution to transactional difficulties. Dunning (1981), Helpman and Krugman (1985), Markusen (1984), and Ethier (1986) all use internalization of trade as the central characteristic that MNCs bring to the world. Hence, transactions that would otherwise be too costly can occur when there are MNCs. In all likelihood, then, the amount of trade will increase. Countries shunning multinationals will have lower levels of trade.

The focus on transactions costs leads to a crucial observation: there might be no substitute for foreign majority ownership. In areas of activity where internalization is needed, joint ventures or cooperative agreements might involve many of the same transactional risks as the arm's length contracts that internal organization serves to avoid. No other institutional arrangements can fully compensate for the non-existence of MNCs. This

is an especially important observation in the present context since, until very recently, Eastern European countries have been unwilling to allow majority foreign ownership.

Given the above, it will come as no surprise to find that MNC activity in Eastern Europe is well-nigh insignificant. Yugoslavia was the earliest (1967) country to permit foreign equity investment. In the 1970s it was joined by Hungary, Poland, and Romania. However, by the end of 1976, 94% of the Eastern European projects involving foreign equity investment were in Yugoslavia.⁵ But even there the amount of foreign direct investment was minuscule compared to that of its potential competitors in trade. In 1975, the Yugoslav foreign capital stock per capita was one-quarter of the level in Portugal, one-tenth that of Spain and Greece, one thirtieth that of Austria, and one-hundredth that of Ireland.⁶ These figures must be viewed against the backdrop of information that shows how immensely significant MNCs were in the economic affairs of capitalist economies. By the early 1980s, MNCs accounted for 13% of manufacturing employment in Portugal, 21% in Greece, 46% in Spain, 26% in Austria, and 35% in Ireland.⁷

Three conclusions have been developed. First, theory predicts an increase in the level of trade when a country embraces the activities of MNCs. Second, there is an insignificant amount of foreign capital in the CPEs relative to the amount in the West. Third, the effect of the absence of MNCs is likely to be very significant judging by data on the importance of the MNC presence in Western economies.

III. The model, the econometric methods and the data

As stated earlier, this paper employs the model, follows the methods, and uses the data of a recent paper examining the comparative level of trade of CMEA countries (Browning 1985). Hence, description of the empirical methods can be brief. A fuller exposition is found in Browning's study.

Browning uses a gravity model of trade, employing dummy variables to allow for the possibility that the level of CPE trade is different from that of MEs. Given that data for two time periods are used, the model allows for the possibility that the coefficients of the equation change between time periods. Browning tests for a number of restrictions on his model. For present purposes, those test results dictate which of Browning's equations to use as a base when adding the MNC variable to the analysis. Those tests suggest that the following three equations are equally preferred alternatives to describe the levels of trade of European countries in 1969-1971 and 1977-1979:

$$m_{it} = \beta_{0t} + \beta_{1t}n_{it} + \beta_{2t}y_{it} + \beta_{3t}d_i + \varepsilon_{it} \quad (1)$$

$$m_{it} = \beta_{0t} + \beta_{1t}n_{it} + \beta_{2t}y_{it} + \beta_4(d_i \cdot n_{it}) + \varepsilon_{it} \quad (2)$$

$$m_{it} = \beta_{0t} + \beta_{1t}n_{it} + \beta_{2t}y_{it} + \beta_5(d_i \cdot y_{it}) + \varepsilon_{it} \quad (3)$$

where m_{it} is the log of the level of imports of country i in time period t measured in 1970 U.S. dollars; n_{it} is the log of the population of country i in period t ; y_{it} is the log of GNP in country i in period t ; $d_i = 1$ if country i is a CPE and $= 0$ otherwise; and ε_{it} is an error term assumed to have the following properties: $E(\varepsilon_{it}) = 0$; $E(\varepsilon_{it}^2) = \sigma_{it}^2$; $E(\varepsilon_{it} \varepsilon_{jt}) = \sigma_{12}$ if $j = i$ and equals 0 otherwise. (When $t = 1$, the 1969-1971 time period is signified and $t = 2$ denotes 1977-1979.) The only difference between the alternative equations lies in which variable captures the effects of economic system on the levels of trade.

Given the assumptions on the error terms, one must estimate the gravity equation (i.e. either (1), (2), or (3)) using a procedure that takes into account the interrelation of errors across time periods.⁸ As Browning (p. 365) points out, the seemingly unrelated regression procedure is a

Table 1. The gravity model of trade with system and MNC variables^a

Equation	Year	β_{0t}	β_{1t}	β_{2t}	β_3	β_4	β_5	β_6	R^2
(1)	1969-1971	5.78 (10.22)	0.055 (0.35)	0.60 (4.61)	-0.84 (-4.49)				0.80
(1)	1977-1979	5.93 (10.31)	0.14 (0.98)	0.56 (4.81)	-0.84 (-4.49)				0.82
(2)	1969-1971	5.44 (10.12)	0.11 (0.71)	0.62 (5.01)	-0.28 (-4.83)				0.82
(2)	1977-1979	5.66 (10.17)	0.22 (1.51)	0.56 (4.98)	-0.28 (-4.83)				0.83
(3)	1969-1971	5.38 (10.46)	0.021 (0.15)	0.67 (5.72)			-0.12 (-5.03)		0.83
(3)	1977-1979	5.78 (10.68)	0.18 (1.31)	0.57 (5.20)			-0.12 (-5.03)		0.83
(4)	1969-1971	4.73 (8.86)	-0.089 (-0.62)	0.67 (5.27)				0.11 (6.13)	0.87
(4)	1977-1979	4.86 (9.11)	0.000 (0.00)	0.63 (5.60)				0.11 (6.13)	0.89
(4) ^b	1969-1971	2.92 (3.85)	-0.336 (-1.77)	0.69 (3.90)				0.40 (4.71)	0.92
(4) ^b	1977-1979	3.46 (5.33)	-0.16 (-1.10)	0.56 (4.20)				0.40 (4.71)	0.93

^a The figures in parentheses are t -statistics with 21 degrees of freedom, except the last two lines, where there are 13 degrees of freedom.

^b These equations are estimated using only market economy data (i.e. with 16 observations in each time period).

maximum likelihood estimator in such a case. All the estimates in this paper are obtained using that procedure.

The sources of data for the above equations and the precise nature of each variable are described in detail in Browning's Appendix. That information will not be repeated here.⁹ It should be noted, however, that no data on Iceland are available for the MNC variable, which is used later in the analysis. Therefore, this country is excluded from the present exercises, leaving 24 countries.

The re-estimations (without Iceland) of Browning's preferred results are presented in the first six lines of Table 1. These re-estimations are essentially identical to the original estimates of Browning.¹⁰ Hence, they provide a suitable basis for comparison when introducing the variable that captures the significance of MNC activity in a country.

IV. Adding the MNC variable

Given the discussion in Section II, one can argue that the amount of trade undertaken by a country increases with the degree of MNC activity in that country. Hence, one should add a variable to the gravity equation representing the level of MNC activity. Given the information presently available and the need for a variable measured across a number of countries, data requirements dictate the variable to be used. Dunning and Cantwell (1987) have produced a comprehensive compendium of statistics on multinationals. In that compendium the value of foreign-owned assets within a country is the variable that provides coverage for most countries in Browning's data set. For the 1970s, Dunning and Cantwell (1987) give figures only for 1975. Therefore, the 1975 data are used as the MNC variable for both the time periods included in the regression analysis.

One certainly cannot argue that the assets variable is ideal. For example, the output of foreign-owned affiliates might better capture the total significance of MNC activity in an economy, because an assets measure does not include the intangible factors that the parent company contributes to an affiliate. Unfortunately, output figures are available for only a narrow range of countries and could not be used in the present study.

Yugoslavia is the only Eastern European country for which Dunning and Cantwell present data on assets of foreign corporations. This figure is used as the MNC measure for Yugoslavia. In the absence of data for the other Eastern European countries, it was assumed that the amount of MNC capital in these countries was negligible. In the light of the information on joint ventures presented in Section II, this assumption is perfectly reasonable. Hence, the MNC capital variable was set to zero for the Eastern European countries.¹¹

The seventh and eighth lines of Table 1 examine whether the MNC variable, on its own, can match the ability of the dummy variables to explain the levels of trade. Those lines contain the results for the following regression, which were obtained using exactly the same techniques and assumptions as for regressions (1)-(3):¹²

$$m_{it} = \beta_{0t} + \beta_1 n_{it} + \beta_2 y_{it} + \beta_6 x_{it} + \varepsilon_{it} \quad (4)$$

where x_{it} is the logarithm of multinational assets present in country i in 1975. As can be seen from the results for this regression, there is every reason to believe that the MNC variable might be a more powerful explainer of trade levels than economic system (compare in particular the R^2 's across equations).

At this stage, readers will quite naturally suspect that the MNC variable is itself just a proxy for a system dummy. While one cannot completely rule out this possibility, there are two pieces of evidence that are inconsistent with this view. The first piece of evidence appears in the last two lines of Table 1, which give the results for Equation (4) when the CPEs are excluded from the data set. The MNC variable is still highly significant - indicating that this variable must be more than a simple proxy for the system dummy.

Second, one can examine whether the MNC variable dominates the system dummies when they are placed in the same equations. The pertinent results, for the following equations, appear in Table 2:¹³

$$m_{it} = \beta_{0t} + \beta_1 n_{it} + \beta_2 y_{it} + \beta_3 d_{it} + \beta_6 x_{it} + \varepsilon_{it} \quad (5)$$

$$m_{it} = \beta_{0t} + \beta_1 n_{it} + \beta_2 y_{it} + \beta_4 (d_{it} \cdot n_{it}) + \beta_6 x_{it} + \varepsilon_{it} \quad (6)$$

$$m_{it} = \beta_{0t} + \beta_1 n_{it} + \beta_2 y_{it} + \beta_3 (d_{it} \cdot y_{it}) + \beta_6 x_{it} + \varepsilon_{it} \quad (7)$$

Table 2 shows that the MNC variable completely dominates the system dummies. In all equations, the MNC variable is significant at standard levels, while the system dummy is not significant in any equations. Indeed, in the pair of equations with the highest R^2 's (which also constitute the model with the highest likelihood), the system dummy coefficients have a positive sign, indicating that a planned system, *ceteris paribus*, raises the level of trade. Of course, since this sign is not repeated in other equations, nor is the coefficient significant, no strong implications should be deduced from this sign itself. However, the results, taken as a whole, must surely lead one to reconsider the oft-repeated claim that

Table 2. The effect of economic system versus the effect of MNCs^a

Equation	Year	β_0	β_1	β_2	β_3	β_4	β_5	β_6	R^2
(5)	1969-1971	3.96 (6.24)	-0.24 (-1.62)	0.79 (5.98)	0.50 (1.30)			0.16 (3.50)	0.90
(5)	1977-1979	4.14 (6.43)	-0.13 (-0.93)	0.72 (6.04)	0.50 (1.30)			0.16 (3.50)	0.90
(6)	1969-1971	4.74 (8.29)	-0.087 (-0.54)	0.67 (5.21)		-0.0032 (-0.026)		0.11 (2.36)	0.87
(6)	1969-1979	4.74 (8.49)	-0.087 (0.014)	0.67 (5.53)		-0.0032 (-0.026)		0.11 (2.36)	0.89
(7)	1969-1971	4.81 (8.59)	-0.074 (-0.51)	0.67 (5.14)			-0.016 (-0.29)	0.099 (1.92)	0.87
(7)	1977-1979	4.97 (8.45)	0.023 (0.17)	0.62 (5.48)			-0.017 (-0.29)	0.099 (1.92)	0.88

^aThe figures in parentheses are *t*-statistics with 20 degrees of freedom.

planning lowers the level of trade. As the results show, the cause of lower levels of trade might not be planning *per se*, but rather a system of ownership that has restricted the types of economic activity that can take place across a country's borders.

V. Discussion

There are doubtless many imperfections in the statistical analysis presented in this paper. Chief amongst these imperfections are several familiar problems of data measurement, such as the dubious comparability of measures constructed for CMEA countries and for nations outside that bloc.¹⁴ But, in a very special sense, the present exercise is partially immune to those problems. This immunity arises because the sole purpose of this paper is to show that the interpretation of existing results can change dramatically once one realizes that there are many components to economic systems and once one analyzes those components separately. That purpose can be accomplished simply by comparing two sets of results that use exactly the same data and methods. Hence, while I do not claim that the above estimates are unaffected by the familiar data problems, it does seem plausible to argue that these problems cannot be responsible for the conclusion that adding the MNC variable dramatically changes the tenor of results.

Even with the obvious doubts about methods, one can claim some significance for the results. They show that the effect of economic system on the level of trade might be due to one component of that effect — the lack of MNC activity. This observation forces us to ask which are the most important behavior-determining elements of the economic systems

of Eastern Europe. Is it the presence of central planning and the absence of the market that are of paramount importance? Or could it be that the degree of planning is of secondary importance compared to the type of ownership allowed in the economy?

These are not just semantic questions. Determining which elements of a system are most responsible for economic behavior becomes crucial when one considers the theory and practice of economic reform. Obviously, not all of a country's economic institutions can be changed at once. Reforms will necessarily focus on a limited set of activities. Therefore, information on which differences between CPEs and MEs are most consequential would be most helpful both for those on the inside designing reforms and those on the outside predicting the success of reforms.

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Notes

1. See *Planecon Report* Volume 5 Numbers 34-35, September 1989.
2. See the *New York Times*, March 22 1987.
3. Hewett (1980, pp. 41-42) makes this point forcefully when discussing the empirical studies that are most relevant to the present work — examinations of the relative level of CPE trade.
4. Hewett (1980) summarizes the results of many of these studies. Browning (1985) is a more recent reference that is of particular pertinence here.
5. The information on Eastern European joint ventures is taken from MacMillan (1977).
6. To put these figures in context, one should remember also that in 1975 Greece, Spain, and Portugal were in, or just coming out of, periods of dictatorship, which had hindered the furtherance of their economic relations and which, in its last years, had led to political instability. These are conditions that would have discouraged the inflow of capital. The figures on foreign capital stocks come from Dunning and Cantwell (1987). These data are from Dunning and Cantwell (1987). The figure for Spain is for all industry rather than for manufacturing. It would be larger if for manufacturing alone.
8. It should be emphasized that equations (1), (2), and (3) are alternatives. They are, of course, estimated separately.
9. I should emphasize at this juncture that use of Browning's data does not imply endorsement of all of the choices of data sources and variables that Browning uses. (Indeed Browning himself (pp. 367-368) pinpoints some problems with the data that he uses.) The point of using his data and variables is to present results that are as closely comparable as possible to existing results in order to see most clearly the effect of adding the MNC variable.

10. For his preferred regressions, Browning (1985, Table 3) provides only the coefficients and the standard errors on the dummy variables. These coefficients and standard errors are almost identical to those in the first six lines of Table 1 of this paper. Therefore, the omission of Iceland makes no difference to the results.
11. Since the MNC variable was actually a natural logarithm of a variable with units of a million dollars, the value of zero for the Eastern European countries implied an assumed value of multinational capital of 1 million dollars. Since every other country had a value over 100 million dollars, no problem occurs in this approximation.
12. Following the methods of Browning, I present results for the case where the coefficients on variable of interest (in this case, the MNC variable) were restricted to be the same in both time periods. In regressions not reported here, I examined whether these coefficients changed between the two time periods. Likelihood ratio tests indicated that such change was statistically insignificant. The results obtained when the coefficients were allowed to vary were perfectly consistent with those presented in the paper.
13. All the comments in the previous note apply here too. No significant differences between time periods were found in either the dummy variable or the MNC variable coefficients.
14. Browning acknowledges some of these problems and shows that his results are not affected by attempts to correct them.

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Producers' Response in Rice Production – A Comparison Between Ten Indian States Under Planning

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Abstract

This investigation attempts to compare rice producers' response to price and yield expectations in terms of changes in the planted area in different Indian states under two decades of planning. It provides an explanation of why the response function may differ between the states and offers supporting evidence.

Key words. Producers' response; rice production; Indian states; planning.

1. Introduction

The Government of India's rice procurement policy under planning sets a norm for rice prices throughout India. Production conditions vary widely and, if due allowance for these variations is not made, output may be adversely affected both by failing to provide sufficient incentive for development in areas where production conditions are less favorable and, possibly, by substitution by other crops. Devolution of pricing and agricultural development policy to state governments could lead to more rapid yield improvement in some states and a better crop balance.

The present investigation has two objectives:

1. to discover whether acreage response is sufficiently similar in all states to justify a single all-India procurement price;
2. to indicate which explanatory variables, among those on which quantitative data are available, play a major part in determining changes in rice plantings in each state, and the likely direction of response to them.

It is not our intention to attempt to predict future rice plantings or to indicate what prices would be appropriate for the Government to offer;