

Inward FDI, concentration, and profitability in the CEECs: Were the domestic firms crowded out or strengthened?

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This article examines the impact of foreign direct investment (FDI) on domestic market concentration and profitability in 13 Central and East European countries. The hypotheses are tested with linear and non-linear regressions using firm-level data from the BEEPS II database compiled by the EBRD and the World Bank. The endogeneity between the ratio of FDI stock to GDP and domestic profitability and concentration is eliminated by using instrumental variables capturing the business environment. It appears that FDI has strengthened domestic enterprises, increasing their profitability and reducing concentration in those countries.

Key words: foreign direct investment (FDI), transition economies, Central and Eastern European Countries (CEECs), profitability, concentration, spillovers, crowding-out, Business Environment and Enterprise Performance Survey (BEEPS)

1. Introduction

This article examines the impact of foreign direct investment (FDI) on domestic market concentration and profitability in 13 Central and East European countries (CEECs). One can expect a strong interaction between foreign direct investments (FDI) and the intensity of competition in the CEECs. In economies that have been opened up abruptly after a long period in which technological and managerial standards fell behind and the availability of domestic capital was limited, FDI

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is expected to have a significant impact on the domestic market structure, but the direction of the influence is not certain. It may intensify competition by depriving former state-owned monopolies of their dominating position, but transnational corporations (TNCs) can also dominate the market, crowding out small newly established domestic enterprises. To complicate the issue, the causality works in the other direction also; competition intensity among incumbents may also influence foreign investors' entry decisions. TNCs may rather invest in markets that are not too competitive (UNCTAD, 1997, p. 20). For empirical analysis, such two-way causality clearly creates a potential endogeneity problem.

In this study, the impact of FDI is tested with linear and non-linear regression models using firm-level data from the second edition of the "Business Environment and Enterprise Performance Survey" (BEEPS II) compiled by the EBRD and the World Bank. The endogeneity between the ratio of FDI stock to GDP and domestic profitability and concentration is eliminated by using instrumental variables (IVs) capturing the business environment. This study undertakes a cross-country analysis rather than an apparently more popular single-country approach in the analysis of the impact of FDI on competition (Ghemawat and Kennedy, 1999; Chung, 2001; Driffield, 2001; Zemplerova and Jarolim, 2001; Siotis, 2003; De Backer and Sleuwaegen, 2003; Amess and Roberts, 2004; Barrios *et al.*, 2005; Sembenelli and Siotis, 2005; Jordaan, 2005; Maioli *et al.*, 2006). A cross-country analysis is more suitable with regard to the use of the business environment IVs. Mencinger (2003) provided a cross-country analysis of the effects of FDI in a few CEECs but used highly aggregated data. The large firm-level dataset used in this study is expected to deliver a more refined picture.

The results of the regression analyses indicate that FDI has strengthened domestic enterprises rather than crowded them out, as the domestic firms' profitability was increased. But this is not due to increased market power as FDI has also reduced market concentration in the CEECs.

The rest of this article is organized as follows. Section 2 reviews recent literature and shows that the theories do not give an unambiguous prediction of the effect of TNCs' entry on the degree of competition. Section 3 briefly overviews the general trends concerning FDI in the CEECs, and section 4 extends the discussion on the mechanisms of the competition between foreign and domestic firms in transition economies. Section 5 sets out the hypotheses on the net long-run impacts of the entries of TNCs on the domestic enterprises in the CEECs and describes the research methodology. The data and the model are presented in section 6. The results of empirical tests of these hypotheses are reported in section 7. Section 8 concludes.

2. How inward FDI affect domestic firms: recent theoretical contributions

On the one hand, FDI may intensify competition because of the entry of foreign firms; on the other hand, these new entrants – powerful TNCs – may crowd out the domestic firms. FDI may bring a number of equally powerful TNCs that will be competing against each other; it may bring only a few large TNCs with bigger chances of monopolizing the market. Recent theoretical literature considers not only the impact of FDI on market concentration, but also many other effects, including positive productivity spillovers from TNCs to the domestic firms.

Barrios *et al.* (2005) illustrates two opposing effects of FDI in manufacturing: intensified competition and positive spillovers for domestic firms (through lower interest rates and the increased variety of new local services needed in manufacturing). This produces a U-shaped relationship between the amount of FDI and the number of domestic companies. When the level of efficiency of the incumbents is sufficiently low *vis-à-vis* TNCs, FDI may crowd out all domestic enterprises.

Haller (2004) presents a game theoretic model of foreign entry involving one TNC and two domestic companies that differ in their efficiency: the TNC has the lowest marginal cost while

the domestic firms' costs are higher but one is more efficient. If the TNC enters the market, it may decide to set up a plant or to acquire one of the domestic firms. It is shown that monopolization is independent of the entry barrier (the fixed cost of a greenfield investment) and is most likely to take place in countries where domestic firms are both far less competitive than the TNC and very heterogeneous in terms of their competitiveness (table 1).

Table 1. Results of an entry of a TNC predicted by Haller (2004)

		Efficiency gap between the domestic enterprises		
		low	middle	high
Fixed cost of setting up a plant	low	TNC goes greenfield, incumbents merge	incumbent and TNC merge	incumbent and TNC merge, the other incumbent exits, monopolization
	middle and high	incumbent and TNC merge	incumbent and TNC merge	incumbent and TNC merge, the other incumbent exits, monopolization

Source: Own interpretation of Haller (2004).

Assumptions: The marginal cost of domestic enterprises is higher than that of a TNC. The R&D cost is high. The size of a market, the TNC's efficiency, and the efficiency of a more efficient domestic enterprise are held unchanged.

De Santis and Stähler (2004) show how the substitutability of FDI and international trade affects the market structure. It appears that domestic firms can survive only if TNCs face a higher fixed cost of establishing their headquarters abroad compared to at home, and the fixed cost of launching a plant is not too low (table 2).

Head *et al.* (2002) depart from the reasoning of Vernon (1966) and Knickerbocker (1973)¹ and assume that the

¹ Vernon (1966) suggested that the first-mover's investment would make home market competitors notice that their global market share would shrink. Uncertainty as regards the first-mover's new cost structure would increase together with a growing risk of imports to a home country. This "bandwagon" motive for subsequent FDI was further analysed by Knickerbocker (1973).

follower's FDI is motivated by risk aversion. The follower wants to gain a similar cost advantage and keep its market share. Hence, even if the entry of efficient TNCs crowds out domestic companies, competition intensity may be preserved because equally efficient TNCs enter the host country market. In a similar vein, Leahy and Pavelin (2003) analyse the "bandwagon" FDI as a strategy aimed at maintaining a tacit collusion. Since collusion is easier to sustain when firms have comparable costs, colluding enterprises go abroad together.

Table 2. Results of an entry of a TNC predicted by De Santis and Stähler (2004)

		Fixed cost of setting up a plant		
		low	middle	high
Fixed cost of setting up a headquarter	different	only TNCs survive*	TNCs and domestic companies coexist, concentration grows	only domestic companies survive (only trade)
	equal	only TNCs survive*	only TNCs survive*	only TNCs survive*

Source: Own interpretation of De Santis and Stähler (2004).

* Resulting concentration depends on the levels of the TNCs' fixed costs relative to the domestic firms' fixed costs.

Thus, these theoretical studies identify a number of country- and sector-specific factors that co-determine the outcome of competition between TNCs and domestic firms. The specificity of transition also plays a role. The control variables in the empirical models used in this study allow us to isolate the impact of FDI from other factors considered in these theoretical studies. Industry and country specificities reflected in the fixed cost of setting up a plant, the fixed cost of setting up the headquarters, trade cost, and the efficiency gap between the domestic enterprises are controlled through IVs (quality of business environment and international tradability of products), sectoral sales shares, country effects (country clustering), as well as size, age, and the technological level of enterprises.

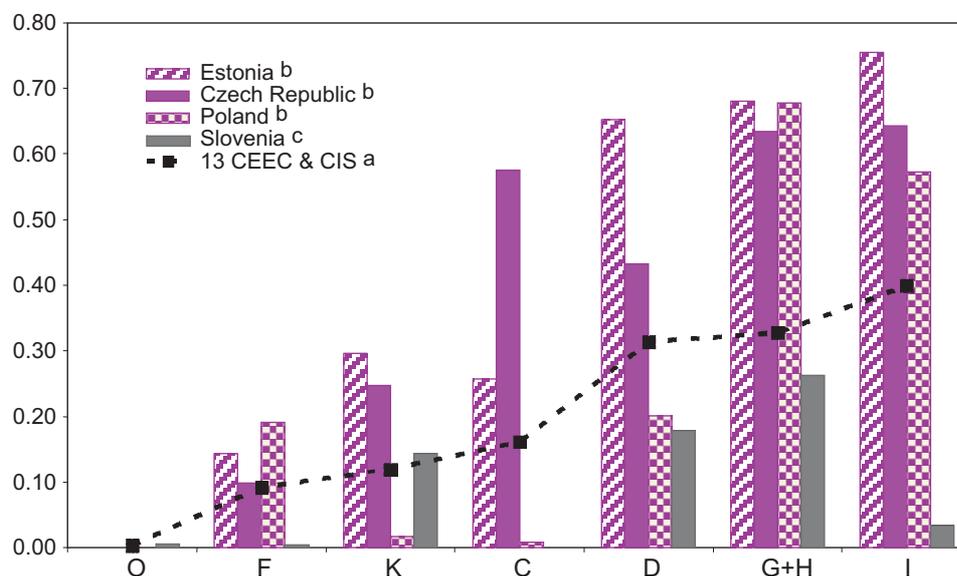
3. The importance of FDI in the CEECs

Immediately after the transition started in the CEECs at the end of the 1980s, trade became the first channel of their reintegration with other European and global economies (Kalotay, 2001, 2004). With the subsequent liberalization of capital flows, FDI became increasingly important in the process of economic transformation in the CEECs, because private capital accumulation had been very weak or nonexistent before (Gütta and Gebhardt, 2005). Competition for FDI among the CEECs was intense, and it was one of the drivers of their structural reforms (Galego *et al.*, 2004), because political and macroeconomic stability and regulatory transparency were significant factors affecting foreign investors' entry decisions (Resmini, 2000). Consequently, the preparation for the recent and the upcoming enlargement of the EU and FDI inflows have been parallel and mutually reinforcing processes (Kalotay, 2004).

The growth of inward FDI stock in the CEECs has been accelerating and surpassed the growth rate of gross domestic product (GDP), which was quite high. In particular, the advanced transition economies are characterized by large FDI relative to their GDP and very high ratios of FDI inflows to gross fixed-capital formation. The latter ratio has, for most of the recent years, been higher in the CEECs than in the rest of the world. The pace of growth of FDI inward stock was also higher than the corresponding world ratio. The "top 4" CEECs in terms of the ratio of FDI stock to GDP are doing much better than the "old" EU. The figures for Estonia and for the Czech Republic have exceeded the EU-15's ratio by over 100%, while the "bottom 4" have fared only slightly worse with the lowest ratios (in Slovenia and in Poland) being about 25% lower than the EU-15's.

Therefore, FDI is expected to be a very important factor shaping the economies of the CEECs and the intensity of competition in particular. The variations in FDI penetration in these countries should facilitate the analysis (see the chart).

Sectoral FDI stock / GDP in “top 2” and “bottom 2” CEECs and the weighted mean for all the examined countries in 2000



Source: Own calculations based on GMID and UNCTAD WID.

- a GDP-weighted average for: Armenia, Bulgaria (1999), Croatia, Czech Republic, Estonia, Hungary, Kazakhstan (2001), Latvia, Lithuania, Poland, Russia, Slovakia, and Slovenia.
- b No data for O.
- c No data for C. See table 5 for the explanation of ISIC sectoral codes.

4. Possible specific impact of inward FDI on the domestic firms in the CEECs

The abrupt opening of the economies to foreign capital was an essential element of what has been described as a “competitive shock” by Ghemawat and Kennedy (1999), with a rapid change of the economic environment taking place while other elements of the business environment (e.g. sociological) changed only slowly. The impact of FDI on domestic enterprises is expected to be considerable in the CEECs because TNCs bring their unique skills and resources (Bellak, 2004, pp. 31-32) to still under-developed economic sectors and are likely to have a clear technological and organizational edge over smaller and less market-experienced domestic competitors. These firm-specific skills and resources may easily be exploited to build strategic advantages (Bellak, 2004, pp. 32-33). It is also possible that foreign-owned enterprises are more competitive because

foreign investors can use much larger financial resources to take over more efficient local firms, leaving less efficient firms under local ownership. Furthermore, by taking away market shares from local firms, foreign-owned enterprises might force the domestically owned firms into less efficient scales of production (Aitken and Harrison, 1999, pp. 606-607; Lipsey, 2002, p. 34). Specifically in the transition economies, the more advanced a country is, the stronger and more competitive its domestic firms seem to be. At the same time, however, their unique knowledge of local conditions also becomes less important in competing with foreign entrants as these transition countries integrate with developed economies and harmonize their business environments with the old EU members. It means that the “liability of foreignness” (Zaheer, 1995) becomes smaller. Hence, the impact of these two “intervening variables” may, at least partly, cancel out across the CEECs. The net effect is uncertain.

Transition economies enjoy high income growth rates, which also implies that markets are growing. This should have a strong impact on the TNCs’ market-seeking (or market-serving) FDI. “Market serving FDI in manufacturing industries has both a short-term and long-term component. Some TNCs may see acquisitions through FDI in CEE TEs [transition economies] as part of a short-term profit strategy of benefiting from a relative lack of competition in the local market thereby reaping significant profits. Over time, as local competitors and foreign rivals enter the market, profits may be squeezed and thus exit may be a sensible strategy as profits fall below a target level decided by company strategy. However, if an MNE [multinational enterprise] recognizes that growing consumer incomes are likely to lead to increased demand for its products, then a long-term presence is likely to be central to its strategy” (Akbar and McBride, 2004, p. 92).

As the overview of the models shows, the impact of FDI for domestic enterprises is difficult to predict, especially in the transition economies, due to the numerous factors that often counteract each other to some extent. In particular, the net effect

of competitive pressure and spillovers is theoretically ambiguous and needs to be isolated and analysed empirically.

5. Research design and contribution

While examining the competitive impact of FDI in the CEECs, a traditional approach is to study the relationship between foreign presence and the levels of concentration across industries (Ghemawat and Kennedy, 1999; Amess and Roberts, 2004). Recent studies of the competitive effects of economic integration look more and more at the profitability of enterprises (e.g. industry mark-ups, see Siotis, 2003). Taking that into consideration, one can think of a comprehensive approach in examining the impact of inward FDI on the domestic enterprises in the CEECs to tests two competing hypotheses:

Hypothesis 1: FDI crowds out domestic enterprises, thus contributing to lower profitability of domestic enterprises *and* higher concentration.

Hypothesis 2: Spillovers from FDI outweigh the competitive impact, and thus FDI contributes to higher profitability of domestic firms *and* lower concentration.

Clearly, there is a possibility of circular causality (endogeneity of FDI) as FDI may be attracted to a particular industry where the concentration, and hence profitability, is high. To isolate the one-way influence in a regression analysis, one has to employ some IVs. In this study, IVs should be correlated with FDI inflows as strongly as possible and, at the same time, they must not explain, by themselves, concentration or profitability;² IVs must not also be influenced by concentration or profitability (i.e. must not be endogenous). In this analysis, the IVs are chosen from the indicators of the business environment. The location decisions of TNCs are based on the evaluation of the quality of business environments. The environment is shaped by the country's natural endowments and policies, but the importance of different elements of the

² IVs can explain concentration and profitability only inasmuch as they can explain FDI.

environment can be specific to each industry (Resmini, 2000). Particular elements of the environment may impact the transaction costs non-uniformly across sectors. There may be also differences between the quality of the business environment between regions within a country, if there is some degree of autonomy of local policies or if there are business clusters (McCann and Mudambi, 2004). In the context of transition economies, different levels of the quality of the business environment are particularly important, because they differentiate more advanced transition countries from the ones lagging behind. Bevan *et al.* (2003) and Pournarakis and Varsakelis (2004) showed that the uneven allocation of inward FDI in these economies could be explained by institutional factors.

This research makes some novel contributions. Firstly, it combines both “hard” measures of FDI and “soft” data on managers’ perceptions. The perception of competition intensity and competitors may not necessarily be an accurate picture of real competition intensity, given that managers can be imperfectly informed and too short-sighted (i.e. too concerned with current events). Morgan and Strong (2003) addressed a similar question in their study and noted some studies (Dess and Robinson, 1984; Venkatraman and Ramanujam, 1986) that indicated a high correlation between objective performance assessments and perceptual indicators of performance judgements. Sutcliffe and Huber (1998) found that American managers shared a homogenous perception of industrial environment when they belonged to the same company or to the same industry but non-homogenous if the industries were different. This seems to suggest that managers’ perceptions are a fairly objective indicator of the industrial structure. Furthermore, a survey of managers’ perceptions may bring more forward-looking results, which are at least supplementary to the ones derived from fully objective historical data (Singer and Brodie, 1990). Secondly, unlike studies carried out previously, this research looks at the whole group of the CEECs. It is expected to deliver a general picture of the impact of FDI in transition economies, unbiased by country specificities.

Nonetheless, the study has certain limitations. Neither the effects of different strategic motives (market-seeking or efficiency-seeking) nor of different entry modes are distinguished. Greenfield investments and acquisitions are likely to have different impacts on competition between foreign-owned and domestic enterprises. The available data do not allow us to separate these different types of FDI.

6. Data and model

The second edition of the BEEPS II, compiled jointly by the EBRD and the World Bank, and the single country profiles of the UNCTAD's World Investment Directory (UNCTAD WID) are the main data sources used in this study (for the description of the datasets see Rutkowski, 2006). BEEPS II was conducted in 2001 and contains answers from a representative sample of more than six thousand firms. The number of observations utilized in my study is determined, firstly, by the number of domestic enterprises from these surveyed countries for which the UNCTAD's industry-level FDI data were accessible, and secondly, by the response rate for particular questions. Therefore, the final number of observations differs across model specifications, depending on the variables used. In the end, thirteen countries were considered in the study (table 3).

Table 3. Number of domestic enterprises in the countries covered by the study

Armenia	83	Estonia	114	Lithuania	162	Slovenia	163
Bulgaria	220	Hungary	141	Poland	375		
Croatia	140	Kazakhstan	162	Russia	197		
Czech	222	Latvia	146	Slovakia	113	Total	2238

Sources: BEEPS II Dataset, GMID, and UNCTAD WID.

Two dependent variables – *CONCEN* and *CONCEN2* – have been constructed to measure the variation in the level of concentration. *CONCEN* is a binary variable based on the responses to BEEPS II question 18a: “Thinking of your firm’s major product line or main line of services in the domestic

market, how many competitors do you face?”. The respondents could choose one of three grades: “none”, “between one and three”, or “four or more” competitors. *CONCEN* takes value 1 if the answers imply monopoly or a very concentrated oligopoly with four or less players (the first and the second response in BEEPS II) and 0 if respondents claimed there were five or more players in the market including themselves (i.e. the third response was chosen). Thus, *CONCEN* can be used to fit the probability function of higher or lower concentration. *CONCEN2* follows the original three grades in the BEEPS II questionnaire and takes values 2 for monopoly, 1 for 1 to 4 competitors in a market (including a respondent), and 0 for five or more players. Profitability is represented by *PROFIT*, which is directly derived from BEEPS II question 84a1a. It approximates the profit/sales ratio for the year 2001. The responses were classified in seven grades, with the bottom grade indicating negative ratios and the top grade pointing to the ratios above 40%.³

The explanatory variable that I use should measure the importance of FDI for a given sector (foreign penetration), i.e. FDI directed to a sector in a particular country in relation to the size of the sector. To make the absolute figures relative, I employ sectoral GDPs from the Euromonitor’s Global Market Information Database (GMID)⁴ as denominators. GMID provides the maximum of seven sectors corresponding to the sectoral classification of the BEEPS II.

I use one general measure of FDI: the ratio of the inward stock of FDI in a sector (*S*) of a country (*C*) to sectoral GDP for the year 2004 (see the formula below). It is computed individually for each enterprise (*E*) based on its shares of sales in each of the seven sectors (table 4). Data on cross-sectoral FDI were compiled from the single ‘country profiles’ of the

³ The width of grades is 10 percentage points, except for the three border grades: negative (grade 1) and zero profits (grade 2) and profit/sales ratio higher than 40% (grade 7).

⁴ Except for Armenia, whose sectoral GDPs were missing in GMID and were obtained from UN Statistics.

UNCTAD WID⁵ because there are not any publicly available datasets on cross-sectoral FDI. Resmini (2000, p. 666, p. 667, p. 682) reported that although “FDI is industry and not country specific” (she referred to Buigues and Jacquemin, 1994), few appropriate econometric works had been done because of the lack of consistent, detailed and reliable data. It seems that the data accessibility has not improved since then (Bellak, 2004, p. 34). In addition to the diverging levels of disaggregation, UNCTAD’s country profiles for the CEECs were deficient in terms of very short and dissimilar time-series across countries and some missing measures (either inflows or inward stocks). Therefore, I decided to use one general measure of foreign presence: inward FDI stock of the year 2000 (with two exceptions: 1999 for Bulgaria and 2001 for Kazakhstan because data for 2000 are not reported). Data on FDI stock are available for more countries and less susceptible to potential endogeneity (Nunnenkamp and Spatz, 2003).

Table 4. Classification of sectors in BEEPS II and corresponding ISIC codes

BEEPS sector #	ISIC code	Description
1	C	Mining and quarrying
2	F	Construction
3	D	Manufacturing
4	I	Transport storage and communication
5 ^a	G	Trade (wholesale and retail), and repairs
7 ^a	H	Hotels and restaurants
6	K	Real estate, renting and business activities
8	O ^b	Other

Sources: MEMRB 2002: 4 and ISIC.

^a Two sectors aggregated to comply with GMID classification.

^b Included groups 92.1–92.4 and 93; excluded groups 92.5–92.7.

Excluded: Sewage and refuse disposal, sanitation and similar activities, activities of membership organizations (not classified elsewhere); included recreational, cultural and sporting activities and other service activities.

⁵ Each ‘country profile’ contains extensive data on FDI flows and stocks, activities of multinationals, and the legal framework within each country related to its investment policy. The UNCTAD sources data mainly from the national central banks (10 countries) but also from the central statistical offices (two countries). In the case of Poland, two institutions submit alternative data on FDI: its central bank and the state agency for foreign investment.

Each enterprise can be active in more than one sector but this overlap is not a problem as it has been taken care of in BEEPS II. For every enterprise, the survey dataset provides the percentage of sales in each of the sectors. Each enterprise's distribution of sales among sectors is used to calculate the individual FDI/GDP impact ratios (see the formula below).⁶ I eliminate all these enterprises for which data are missing on at least one of the sectors to which their sales belong.

$$FDI_{E,S,C} = \sum_{S=1}^7 \left(SALES_SHARE_{E,S,C} \frac{INWARD_FDI_STOCK_{S,C}}{GDP_{S,C}} \right)$$

In the model, a natural log of *FDI* is taken to ensure a closer to normal distribution of residuals in first-stage regressions.

The IVs are chosen from a large number of potential indicators of the quality of the business environment in BEEPS II. They encompass the answers concerning electricity, water, and telephone infrastructure, telecommunication services, court system and law, security, public regulation, bureaucratic burden, corruption, taxes, degree of anti-competitive behaviours (proxy for the quality of competition policy) plus macroeconomic stability.⁷ In the second step, only the IVs correlated with significance below 0.01 with *FDI* are kept. In the next stage, the inter-correlated IVs are eliminated to avoid collinearity of instruments (those which are correlated with more than one variable are left out and those with higher correlation coefficient with *FDI* are kept). In the second last step, the IVs that are not significant (at 0.1) in the regression explaining *FDI* are eliminated. Finally, the IVs that are significant in regressions

⁶ In further research, due to the mentioned limitations on the side of the GDP data, the enterprises active either in BEEPS II sector 5 or 7 are assumed to face the same FDI/GDP ratio, which is however weighted by individual sums of shares of sales in these two sectors.

⁷ Q33, Q40–Q42, Q44–Q46, Q49, Q50, Q54, Q55, Q57, Q80, where numbers after each Q denote question numbers in the BEEPS II questionnaire and each Q usually contains a few indicators. Altogether, almost 50 variables were initially taken into consideration.

explaining *CONCEN*, *CONCEN2*, and *PROFIT* are removed from the respective IV regressions. Therefore, the concentration regressions and the profitability regression share just one IV: “time tax” (*TIMET*) i.e. approximation of bureaucratic burden with the share of management’s time.⁸ Besides, in the concentration regressions, *FDI* is explained with the fairness and effectiveness of courts (*COURT1* and *COURT2*) and the burdensomeness of labour regulations (*LABOUR*). On the other hand, the oppressiveness of anti-competitive practices (*ANTICOM*, which can also be interpreted as the level of ineffectiveness of competition authorities), problems with telecom services (*PHONE*, the number of days for which phone services are unavailable), and the existence of criminal organizations (*SECUR*, need for “protection payments”) are chosen as IVs in the profitability regressions. In addition to the business environment variables, variable *TRADE* (mean of export activity and perceived import penetration) is included. It captures the extent to which goods in a given sector are tradable. In the context of the transition economies, tradability is particularly important as much inward FDI is likely to be efficiency-seeking.

One should also control for possible impacts of some other exogenous factors. *SIZE*, determined by the graded number of employees,⁹ captures the impact of the economies of scale, which would be relevant in sectors where the nature of technology influences the degree of concentration. It can also be expected that exporting points to even more concentrated industries because regional or global sales are likely to offer even larger economies of scale than just domestic ones. *SIZE* would not capture this effect as the employment in possible affiliates abroad and partner firms in the distribution chain is

⁸ BEEPS II question 50: “What per cent of senior management’s time in 2001 was spent in dealing with public officials about the application and interpretation of laws and regulations and to get or to maintain access to public services?”

⁹ BEEPS II screener question S4a: “How many full-time employees work for this company?” *SIZE* = 1 if there were 2–49 employees; 2 if 50–249; or 3 if 250–9999.

not reported. Therefore, the variable *EXPORT* (a share of firm's non-domestic sales) is included. *YEAR* denotes the year of establishment of a given enterprise and it is supposed to approximate the effect of efficiency improvement through learning. It can also cover the consequences of the investment lead. A sector with many young firms is an industry with low entry and exit barriers or an industry where high expected returns make the owners accept even temporary losses due to competition in a crowded industry (such as the high-technology industry). These two factors are likely to result in lower concentration. The impact on profitability can be ambiguous: young firms' position on the learning curve makes them less profitable, but young firms are likely to be more profitable when innovation counts. Furthermore, *PROFIT* is also likely to be dependent on the capacity utilization (*CAPUTI*, in per cent). On the other hand, higher absolute price elasticity of demand (proxied by *PELAST*) reduces the market power, i.e. the ability to set price above marginal cost, as indicated by the Lerner index. The four-grade level of *PELAST* is determined by the expected customers' response to a hypothetical 10% price rise.¹⁰ One can capture the ambiguous impact of the state with a state ownership dummy (*STATE*).¹¹ State ownership may increase profitability directly as state-owned firms face "soft budget constraints". On the other hand, state ownership may entail weak ownership control and thus, lower efficiency and competitiveness. *TECH* is included to take into account the influence of the technological

¹⁰ BEEPS II question 21: "Now I would like to ask you a hypothetical question. If you were to raise your prices of your main product line or main line of services 10% above their current level in the domestic market (after allowing for any inflation) which of the following would best describe the result, assuming that your competitors maintained their current prices?" *PELAST* = 1 if the response was "Our customers would continue to buy from us in the same quantities as now;" 2 if "Our customers would continue to buy from us, but at slightly lower quantities;" 3 if "Customers would continue to buy from us, but at much lower quantities;" 4 if "Many of our customers would buy from our competitors instead."

¹¹ BEEPS II screener question S2: "What is the legal organization of this company?" *STATE* = 1 if the response was "State/municipal/district-owned enterprise", "Corporatized state-owned enterprise" or "Other state owned", else 0.

edge over competitors of a respondent on its profitability.¹² As a final exogenous variable, *IMPORT* is used to control for the impact of international trade barriers and tradability on profitability (Pugel, 1980).

The summary of all the three groups of variables is given in table 5.

7. Results of regression analyses

Before the regressions were conducted, I made sure that there was not too much multicollinearity among exogenous variables or IVs (tables 6 and 7). The two highest observed correlation coefficients were about 0.4 (between *SIZE* and *YEAR*, *STATE* and *YEAR*, and between the two IVs representing the quality of the court system), with other correlations being much smaller.

All regressions, at both stages, were conducted with an adjustment eliminating a possible bias caused by heteroskedasticity; the adjustment affecting standard errors only.¹³ To check the validity of the models under different assumptions, six specifications of IV regressions were used for each dependent variable (*PROFIT*, *CONCEN*, and *CONCEN2*): linear regressions and non-linear regressions (second-stage probit or tobit) appropriate for the type of data, both with and without country clustering (adjustment of standard errors for the correlation between residuals within a country to eliminate the pure cross-country effects and to see if the cross-sector effects are still significant)¹⁴ with sectoral distribution of sales

¹² BEEPS II question 86: “Thinking of your main product line or main line of services and comparing your production process with that of your closest competitor, which of the following best summarises your position?” *TECH* = 1 if “My firm’s technology is less advanced than that of its main competitor;” 2 if “My firm’s technology is about the same as that of its main competitor;” and 3 if “My firm’s technology is more advanced than that of its main competitor.”

¹³ The Eicker-Huber-White “sandwich” estimator of variance (Gutierrez and Drukker, 2005).

¹⁴ The observations are assumed to be independent across countries, but not within them (Gutierrez and Drukker, 2005).

Table 5. The list of variables

Variable	Description	Corresponding BEEPS II question (Q) and method of calculation
Explained variables		
CONCEN	Perceived concentration (binary)	CONCEN = 1 if Q18a = 1 or Q18a = 2 CONCEN = 0 if Q18a = 3
CONCEN2	Perceived concentration (3 grades)	CONCEN2 = 3 - Q18a
PROFIT	Profit/sales in 2001 (7 grades)	Q84a1a
Instrumental variables		
ANTICOM	Anti-competitive practices of competitors as problems for operation and growth (4 grades)	Q80s
COURT1	Fair and impartial courts (6 grades)	Q41a
COURT2	Courts able to enforce their decisions (6 grades)	Q41e
LABOUR	Labour regulations as problems for operation and growth (4 grades)	Q80k
PHONE	Days in 2001 with unavailable mainline telephone service	Q33c
SECUR	Dummy for "protection payments"	SECUR = 1 if Q44a2 = 1 SECUR = 0 if Q44a2 = 2
TIMET	"Time tax:" senior management's time spent in dealing with public officials (in %)	Q50
TRADE	Trade intensity: average of the share of firm's non-domestic sales and perceived importance of competition from imports	TRADE = 0.5 x [(100 - q14a1)/100] + 0.5 x [ABS(Q19 - 6)/5]
Exogenous variables		
CAPUTI	Capacity utilization	Q90a
EXPORT	Share of firm's non-domestic sales	EXPORT = (100 - q14a1)/100
IMPORT	Perceived importance of competition from imports for the main product line or main line of services in the domestic market (6 grades)	IMPORT = ABS(Q19 - 6)
PELAST	Perceived price elasticity of demand (in absolute terms, 4 grades)	Q21
SIZE	Size (number of employees, 3 grades)	S4a2
STATE	State ownership dummy	STATE = 1 if 6 < S2a < 10, STATE = 0
TECH	Perceived level of advancement of own technology relative to competitors (3 grades)	Q86
YEAR	Year in which a firm began operations in a specific country	S1a

Note: S denotes 'screener' question.

of each firm (sectoral shares) included as exogenous variables to take account of pure sectoral effects.

The estimations started with first-stage regressions to isolate the impact on *FDI* from exogenous factors and to eliminate the endogenous influence of concentration or profitability. As a non-linear model, an IV tobit regression model

with both lower and upper censoring limits was used to explain *PROFIT*. This specification was employed because the bottom and the top grades may represent profitability ratios that are very low or very high compared to the level and the interval of the ratios of the non-extreme grades. For *CONCEN*, an IV probit regression was used as it is suitable for a binary dependent variable, especially if one is interested in the precise estimation of an impact of very high and very low levels of explanatory variables. To make the tobit and the probit coefficients comparable with other estimations, marginal effects are reported.¹⁵ To examine the non-linear model for *CONCEN2*, an IV tobit model with lower censoring was applied to take account of the fact that the bottom value may comprise a very wide range of concentration ratios. See tables 8-13 in the appendix for the results of all the regressions.

Table 6. Correlation matrixes of the exogenous variables

	Explaining PROFIT				Explaining CONCEN and CONCEN2		
	CAPUTI	PELAST	STATE	TECH	YEAR	SIZE	YEAR
PELAST	-0.05						
STATE	-0.07	-0.10					
TECH	0.06	-0.12	-0.02				
YEAR	0.09	-0.02	-0.38	0.01	YEAR	-0.42	
IMPORT	0.01	0.14	-0.12	-0.04	EXPORT	0.25	-0.16

Source: Own calculations.

Table 7. Correlation matrixes of the instrumental variables

	IVs used in explaining PROFIT				IVs used in explaining CONCEN and CONCEN2			
	ANTICOM	PHONE	SECUR	TIMET	COURT1	COURT2	LABOUR	TIMET
PHONE	-0.03				COURT2	0.39		
SECUR	0.13	-0.02			LABOUR	0.00	-0.10	
TIMET	0.04	0.05	0.03		TIMET	-0.02	-0.06	0.11
TRADE	0.08	-0.03	0.08	-0.06	TRADE	0.07	-0.02	0.10

Source: Own calculations.

¹⁵ Marginal effect quantifies a change in the probability for an infinitesimal change in each explanatory variable at the mean of the explanatory variables.

The estimations for the impact of *FDI* remain fairly consistent across different specifications. All the regressions show that hypothesis 1 can be rejected whereas hypothesis 2 cannot, i.e. *FDI* were rather favourable for the domestic firms increasing their profitability (tables 8 and 11). However, it did not happen thanks to TNCs building up entry barriers; *FDI* have not contributed to oligopolization or monopolization of the sectors. On the contrary, *CONCEN* and *CONCEN2* were influenced negatively by *FDI* (tables 9, 10, 12, and 13). If one takes into account purely sectoral specificities in the regressions (tables 11–13), *FDI* not only remains significant but also its impact is shown to be twice as strong as in the basic regressions (tables 8–10). This seems to imply that the industry or even firm-specific spillover effects are quite strong.

The results can be interpreted as follows. A 1% rise in inward *FDI* stock / *GDP* ratio (which corresponds to an extra accumulation of *FDI* equal to approximately 0.2% of *GDP*)¹⁶ results in 2.2-4.9% increase in the domestic profit/sales ratio.¹⁷ On the other hand, a 1% rise in inward *FDI* stock / *GDP* ratio reduced the probability of concentration by 15-29%.

The performance of some IVs may be surprising at first glance, but it is supported by the empirical and theoretical arguments. Firstly, the positive coefficient of *ANTICOM* signifying a positive response of foreign investors to anti-competitive practices may result from endogeneity: TNCs may restrict competition on entry especially in the emerging economies. The positive coefficient of *ANTICOM* seems to be in line with the Hymer's concept of *FDI* as a way of gaining monopolistic rents. Indeed, it was noticed long ago that United States *FDI* could be motivated by weak competition policies in host countries (Hirschey, 1982). Oliveira *et al.* (2001) found

¹⁶ At the mean of $\ln(FDI)$.

¹⁷ The lack of bias of this estimation relies on the assumption that the actual profitability ratios of the enterprises of the respondents were distributed symmetrically in each grade (interval) of the *PROFIT* variable, i.e. there were similar numbers of over- and underestimated ratios relative to the mean ratio in each grade.

that only four out of the 192 analyzed cases of M&As in Brazil in 1999 that involved FDI did not have possible anticompetitive effects. The researchers claimed that most M&As involving FDI had a potentially stifling effect on competition. TNCs also have widespread possibilities to impose vertical restraints in small host economies (Zweifel and Zäch, 2003). However, this endogeneity is not a problem in this study since IVs are supposed to be uncorrelated with error terms in the second-stage regressions and strongly correlated with *FDI*, while the direction of the relationship is not relevant. Secondly, the “protection payment” dummy (*SECUR*) is positively related with *FDI*. Security is a country problem and its impact disappears if country effects are eliminated. The observed positive correlation seems to indicate that the “liability of foreignness” appears to be still important in the CEECs. TNCs pay for security, but they also make domestic firms pay on the common “security market”. Domestic firms pay less or with a smaller probability¹⁸ but still the relation between *FDI* and *SECUR* is positive as a result. Thirdly, labour regulations (*LABOUR*) to protect employees seem to be positively associated with *FDI*. Kucera (2002) showed in his extensive study that strong labour rights were associated with higher FDI inflows. He argued that the higher effects of labour standards stretched beyond higher costs of labour, positively influencing political and social stability and levels of human capital, all of which were appreciated by foreign investors.

All exogenous variables perform as expected except for *IMPORT*, which does not appear to be significant in explaining *PROFIT*. State-owned enterprises turn out to be less profitable. As the coefficients for *YEAR* in the regressions explaining *PROFIT* make it evident, the interpretation involving innovativeness wins over the “learning curve” explanation.

¹⁸ Probit regression based on the BEEPS II dataset shows that the probability of foreign-owned firms paying “protection payments” is by 13 percentage points higher compared to domestic ones for the countries included in this research (excluding Estonia, where *SECUR* = 0 for all responses, both from domestic and foreign firms) at the significance below 0.01 (country dummies included).

Table 10. Results of the heteroskedasticity-robust regressions for CONCEN2

	(1)		(2)	
	In(FDI) Coefficient	CONCEN2 (p-value)	In(FDI) Coefficient	CONCEN2 (p-value)
In(FDI)			-0.1740 (0.000)	
SIZE	0.0332 (0.431)		0.0340 (0.417)	-0.2217 (0.000)
YEAR	0.0014 (0.460)		0.0013 (0.465)	0.0499 (0.012)
EXPORT	-0.4890 (0.027)		-0.5437 (0.000)	-0.0014 (0.050)
COURT1	0.0411 (0.080)		0.0327 (0.114)	0.3925 (0.000)
COURT2	0.0254 (0.263)		0.0183 (0.349)	
LABOUR	0.1085 (0.000)		0.1075 (0.000)	
TIMET	-0.0074 (0.003)		-0.0066 (0.005)	
TRADE	1.2831 (0.000)		1.3388 (0.000)	
Constant	-5.2405 (0.156)		-5.1850 (0.161)	
Observations	1759		1759	1759
Uncentred R-sq.	0.6890		-0.0745	
Partial R-sq. of excluded variables	0.0412			
Anderson IV relevance test				
Hansen J statistic		73.95 (0.000)		
Hansen J statistic*		2.51 (0.642)		
Wald test of exogeneity				18.11 (0.000)
Wald test of exogeneity*				7.57 (0.006)

Source: Own calculations.

* Adjustment of standard errors for intra-country correlation.

** Marginal effect.

(1) First-stage ordinary-least-squares regression explaining ln(FDI) and two-stage least squares regression explaining CONCEN2.

(2) First stage maximum-likelihood (ML) linear regression explaining ln(FDI) and conditional ML tobit regression with lower censoring explaining CONCEN2.

Table 11. Results of the heteroskedasticity-robust regressions for *PROFIT*

	(1)				(2)			
	ln(FDI)		PROFIT		ln(FDI)		PROFIT	
	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient*	(p-value)
ln(FDI)			0.4895	(0.031)			0.4938	(0.040)
CAPUTI	0.0008	(0.462)	0.0029	(0.069)	0.0008	(0.459)	0.0041	(0.021)
PELAST	0.0443	(0.014)	-0.1447	(0.000)	0.0445	(0.012)	-0.1098	(0.001)
STATE	0.0828	(0.216)	-0.5287	(0.000)	0.0829	(0.186)	-0.6311	(0.000)
TECH	0.0421	(0.172)	0.0844	(0.074)	0.0421	(0.186)	0.1006	(0.053)
YEAR	0.0003	(0.805)	0.0054	(0.001)	0.0003	(0.818)	0.0066	(0.002)
IMPORT	0.0305	(0.065)	-0.0268	(0.290)	0.0321	(0.065)	-0.0295	(0.287)
ANTICOM	0.0694	(0.000)			0.0695	(0.000)		
PHONE	-0.0046	(0.028)			-0.0046	(0.003)		
SECUR	0.0792	(0.107)			0.0779	(0.089)		
TIMET	-0.0050	(0.012)			-0.0051	(0.002)		
TRADE	0.2165	(0.015)			0.2021	(0.030)		
Observations	1732		1732		1732		1732	
Uncentred								
R-sq.	0.8847		0.8604					
Partial R-sq. of excluded variables	0.0227							
Anderson IV relevance test			39.70	(0.000)				
Hansen J statistic			1.07	(0.900)				
Wald test of exogeneity							4.63	(0.031)

Source: Own calculations.

* Marginal effect.

Sectoral shares included in all regressions but not reported.

- (1) First-stage ordinary-least-squares regression explaining ln(FDI) and two-stage least squares regression explaining PROFIT.
- (2) First stage maximum-likelihood (ML) linear regression explaining ln(FDI) and conditional ML probit regression explaining PROFIT.

Table 12. Results of the heteroskedasticity-robust regressions for *CONCEN*

	(1)				(2)			
	ln(FDI)		CONCEN		ln(FDI)		CONCEN	
	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient*	(p-value)
ln(FDI)			-0.2763	(0.001)			-0.2852	(0.000)
SIZE	-0.0068	(0.824)	0.0251	(0.138)	-0.0052	(0.864)	0.0200	(0.178)
YEAR	-0.0012	(0.284)	-0.0017	(0.011)	-0.0012	(0.268)	-0.0013	(0.013)
EXPORT	-0.2982	(0.069)	0.2057	(0.000)	-0.4020	(0.005)	0.1647	(0.000)
COURT1	0.0230	(0.138)			0.0168	(0.194)		
COURT2	0.0233	(0.120)			0.0133	(0.287)		
LABOUR	0.0784	(0.000)			0.0710	(0.000)		
TIMET	-0.0037	(0.055)			-0.0030	(0.065)		
TRADE	0.4765	(0.000)			0.5799	(0.000)		
Observations	1759		1759		1759		1759	
Uncentred								
R-sq.	0.8554		-0.1518					
Partial R-sq. of excluded variables	0.0219							
Anderson IV relevance test			39.02	(0.000)				
Hansen J statistic			4.32	(0.365)				
Wald test of exogeneity							18.12	(0.000)

Source: Own calculations.

* Marginal effect.

Sectoral shares included in all regressions but not reported.

- (1) First-stage ordinary-least-squares regression explaining ln(FDI) and two-stage least squares regression explaining CONCEN.
- (2) First stage maximum-likelihood (ML) linear regression explaining ln(FDI) and conditional ML probit regression explaining CONCEN.

Table 13. Results of the heteroskedasticity-robust regressions for *CONCEN2*

	(1)				(2)			
	ln(FDI)		CONCEN2		ln(FDI)		CONCEN2	
	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient	(p-value)	Coefficient*	(p-value)
ln(FDI)			-0.3060	(0.001)			-0.4867	(0.001)
SIZE	-0.0068	(0.824)	0.0266	(0.147)	-0.0048	(0.874)	0.0324	(0.183)
YEAR	-0.0012	(0.284)	-0.0019	(0.008)	-0.0012	(0.265)	-0.0021	(0.013)
EXPORT	-0.2982	(0.069)	0.2226	(0.001)	-0.4098	(0.004)	0.2655	(0.000)
COURT1	0.0230	(0.138)			0.0158	(0.223)		
COURT2	0.0233	(0.120)			0.0124	(0.321)		
LABOUR	0.0784	(0.000)			0.0696	(0.000)		
TIMET	-0.0037	(0.055)			-0.0030	(0.061)		
TRADE	0.4765	(0.000)			0.5879	(0.000)		
Observations	1759		1759		1759		1759	
Uncentred								
R-sq.	0.8554		-0.1694					
Partial R-sq. of excluded variables	0.0219							
Anderson IV relevance test			39.02	(0.000)				
Hansen J statistic				5.86	(0.210)			
Wald test of exogeneity							10.81	(0.001)

Source: Own calculations.

* Marginal effect

Sectoral shares included in all regressions but not reported.

- (1) First-stage ordinary-least-squares regression explaining ln(FDI) and two-stage least squares regression explaining CONCEN2
- (2) First stage maximum-likelihood (ML) linear regression explaining ln(FDI) and conditional ML tobit regression explaining CONCEN

Coefficients are stable and significant across different specifications. In general, the estimated models appear to work well.

In summary, hypothesis 1 is rejected and hypothesis 2 is not; FDI contributed to the higher profitability of domestic firms and to deconcentration. Spillovers from FDI seem to have outweighed the competitive impact in the CEECs and consequently, FDI has made domestic enterprises stronger. Konings (2001) arrived at the opposite conclusions for two of three CEECs considered as regards the net spillover effect. He examined the immediate impact of the fraction of foreign affiliates' sales in the industry total on the level of domestic firms' sales. His model could be biased towards measuring mainly the crowding-out effect because foreign affiliates' sales compete with domestic sales immediately, whereas spillovers may appear with some time lag. Harrison and McMillan (2003) used precisely the same indicator to test just the size of the crowding-out effect. On the contrary, there appears to be no direct substitution between the share of foreign investment and domestic profitability. Foreign investment seems to be a more neutral indicator of foreign presence, unbiased towards any of the effects. Moreover, Konings (2001) looked at just three countries and conducted separate regressions whereas, as this study shows, comparing the same sectors across countries (with country effects controlled) gives a more precise picture of the impact of FDI on the profitability of domestic enterprises.

8. Conclusions

This study started with an overview of recent theoretical contributions that model the impact of FDI on the market structure in the host country. Special attention was given to competition between foreign-owned and domestic firms in transition economies. The theoretical discussion was concluded with two alternative hypotheses about the long-term impact of FDI, which can either crowd out the incumbents, thus making the profitability of domestic firms lower and contributing to higher concentration in an industry, or make domestic enterprises

stronger (more profitable) and decrease concentration. The hypotheses have been tested by regressions based on data from the BEEPS II. The impact of sectoral inward FDI stock / GDP ratio on domestic profitability and concentration in 13 CEECs was isolated from the reverse relation (problem of endogeneity) with IVs for different elements of the business environment. It appears that FDI had a beneficial influence on domestic enterprises, increasing their profitability and reducing concentration in the CEECs.

The study has some inevitable limitations. The positive results for profitability can probably be attributed to selection bias to some extent. In the long run, the least profitable domestic enterprises were eliminated from the markets. However, it also shows that TNCs were unable to create extra barriers to entry (or re-entry) even if some weaker domestic firms were crowded out initially. If the relevant data becomes available, further research may also refine my results through distinguishing different types of FDI in terms of different entry modes and strategic motives and examining their impact on domestic firms across different industries of all the transition countries. Based on the reviewed theoretical models, one can try to draw some further general conclusions considering the empirical results. The initial efficiency gap must have been sufficiently small in the CEECs. Fixed costs of FDI were not prohibitive but not negligible either, and the headquarters' costs significantly differed between the CEECs and investors' home countries. The "bandwagon" motive for FDI could play some role in preserving competition, rather than an alternative scenario of "importing" the cartels of TNCs. ■

List of abbreviations

CEECs	–	Central and Eastern European Countries*
EU	–	European Union
FDI	–	foreign direct investments*
GDP	–	gross domestic product
IVs	–	instrumental variables
TNC	–	transnational corporation
UNCTAD	–	United Nations Conference on Trade and Development

* For the definitions, see <http://stats.unctad.org/fdi>

Data sources

BEEPS II, European Bank for Reconstruction and Development and World Bank: Dataset, [http://wbIn0018.worldbank.org/eca/ecspeExt.nsf/ECADocByUnid/0E84C6BFA0F47F3685256E8A00707394/\\$FILE/BEEPS2002PUBLICdata.zip](http://wbIn0018.worldbank.org/eca/ecspeExt.nsf/ECADocByUnid/0E84C6BFA0F47F3685256E8A00707394/$FILE/BEEPS2002PUBLICdata.zip)

Gateway, European Bank for Reconstruction and Development and World Bank, <http://info.worldbank.org/governance/beeps2002/>

Questionnaire, European Bank for Reconstruction and Development and World Bank, [http://wbIn0018.worldbank.org/eca/ecspeExt.nsf/ECADocByUnid/0E84C6BFA0F47F3685256E8A00707394/\\$FILE/Q-BEEPS-main-18062002_questions%20PUBLIC.pdf](http://wbIn0018.worldbank.org/eca/ecspeExt.nsf/ECADocByUnid/0E84C6BFA0F47F3685256E8A00707394/$FILE/Q-BEEPS-main-18062002_questions%20PUBLIC.pdf)

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