Competition, performance and policy in transition economies: what are the connections?¹

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Abstract

This paper broadens the analysis of the role of competition in performance by looking beyond ‘within firm’ effects at the role of entry, exit and selection. Second, it examines the issues that this broader view of the role of competition raises for economic policy. In particular, we look at the importance of the competitive infrastructure as well as of competition policy, and at the relationship between other reform policies and competition. Third, we compare the results of three new country studies that have been undertaken in a joint research project that has sought to use a common methodology to identify the effects of product market competition and corporate governance on the performance of firms.

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Introduction

This paper complements our survey of the role of competition and corporate governance in firm performance (Carlin and Horvath, 1999) in three ways. We begin by broadening the analysis of competition beyond ‘within firm’ effects by looking at the role of entry, exit and selection. Second, we examine the issues that this broader view of the role of competition raises for economic policy. Third, we compare the results of three country studies that have been undertaken in a joint research project that has sought to use a common methodology to identify the effects of product market competition and corporate governance on the performance of firms.

The new country studies lie within a strand of empirical analysis that focuses on testing for the impact that the intensity of competition at the level of the firm has on productivity. The standard empirical technique used to identify this effect is estimation of a production function augmented by competition variables on a panel of firms. The key contribution of the joint research project is to provide a systematic investigation of this question using a common methodology using data from Bulgaria, Hungary and Poland. This modelling framework establishes the link from the intensity of competition to the level and or the growth of firm productivity. In interpreting these results, the following questions arise: how does competition affect performance, how does competition interact with other reform policies to affect performance and how does competition policy affect competition.

The first task of the paper is to find out how the within-firm competition-productivity nexus fits into the broader picture of the role of competition in productivity growth. To do this, we refer to a Schumpeterian model of the economy that consists of firms with varying levels of productivity and in which the growth of aggregate productivity comes about through four main processes. These are market selection as higher productivity firms acquire higher market shares, the entry of more productive new firms and plants, the exit of low productivity firms and plants and the improvement of productivity in the surviving firms. The lure of rents from a period of temporary monopoly through innovation, and the threat of extinction if one fails to keep pace with actual and potential competitors explain the persistence in equilibrium of productivity differentials between firms. In the context of transition, innovation typically refers to the introduction of new products, methods of production or organizational forms to the market. This is a form of catch-up growth rather than innovation at the technological frontier.

The empirical starting point for our discussion is data from advanced market economies and developing countries showing how aggregate productivity growth can be decomposed into the contributions from growth within surviving firms, from entry and exit and from the process of market selection. These results provide guidance as to the relative importance of within-firm productivity growth in a variety of market economies. We then turn to estimates of the impact of competition at the level of the firm for performance. The results from the country studies in this project are placed in the context of similar studies in transition and other economies.

As a second step, we examine the role of competition policy in productivity performance and welfare. The traditional concern of competition policy is with the problem of market dominance and the associated welfare losses caused by allocative inefficiency. In the traditional approach, the welfare loss associated with monopoly is that output is restricted and price raised – overall welfare is reduced and there is a transfer of surplus from the consumer to the producer. Our concern in this paper is with the relevance of competition policy for competition and performance in the
‘competitive sector’ of the economy. We do not investigate the problems of regulation in natural monopolies and network industries.

The transition from the planned economy involves both the introduction of competition and, via privatization, of the incentive to maximize profits. We can begin to pin down the potential role of ‘competition’ policy in transition by noting that inefficiencies can persist in an economy because of a lack of competition even if the problem is not caused by the traditional abuse of dominance by firms with monopoly power or by cartels. Planned economies were not inefficient because they were dominated by monopolies but because they lacked the ‘coercive’ pressure of competition. The coercive pressure of competition refers to the classical or Schumpeterian concept of competition in which firms are continuously under threat from new suppliers, products or processes. As we have noted, the prospect of temporary profits from innovation encourages dynamic efficiency and the threat of extinction imposes discipline if the firm does not match its rivals. One task during transition is to introduce the ‘profit-oriented’ incentives associated with the coercive pressure of competition, whilst preventing firms from securing unassailable monopoly positions through the privatization process.

To establish the coercive pressure of competition requires policies that enhance the effectiveness of competition in reallocating market shares between firms, inducing improved performance in existing firms, inducing entry by more rather than less efficient firms and expediting the exit of inefficient firms. Such policies can be referred to as ‘competitive infrastructure’ policies. An example of a policy to improve the competitive infrastructure is one that makes the enforcement of contracts more dependable. If contract enforcement is improved, firms will be able to move from a narrow set of upstream and downstream relationships based on trust to a wider set of suppliers and customers, which will enable the benefits from more competition to be reaped.

The remit of ‘anti-trust’ policy is a narrower one: it focuses on the features of the competitors rather than on the competitive infrastructure. It must deal specifically with the abuse of market power. Profit seeking firms will always seek to exploit their monopoly power. If there is no agency problem in the firm, then the monopolist will produce efficiently (at least in a static sense) but impose a welfare loss on society. The standard problem for anti-trust is how to trade off the benefits of the economies of scale and hence lower costs that come from dominance with the detrimental effects of monopoly pricing. In industries where the sunk costs in advertising and/or research and development are endogenous, it is harder to interpret a simple measure of dominance such as market concentration. The anti-trust authority has to find out whether the sunk costs enhance productivity or are simply a method of securing the incumbent’s position in the market.

Recent empirical work that establishes the significance of within firm impacts of competition on performance highlights the fact that there are welfare gains available from heightened competition due to the existence of agency problems. The market selection, entry and exit effects in an economy with heterogeneous firms extend the scope for gains from increased competition. Each of these sources of gain from better competitive infrastructure is available in industries such as those without significant production or non-production economies of scale in which the abuse of dominance is unlikely to be a problem. For small open economies, trade liberalization is frequently assumed to provide the required market structure for the competitive industries so as to prevent monopolistic behaviour. We report information from the European market on the industries in which competition problems are most likely to be found. Davies
and Lyons (1996) argue that in addition to the role of trade, the presence of production economies of scale, of endogenous sunk costs (R&D and or advertising intensity) and of multi-national ownership are relevant to the assessment of the likelihood of competition problems arising in concentrated industries.

Anti-trust policy is likely to be of particular relevance in the transition because as the incentive to maximize profit is established, attempts will be made to do so even if this involves strategies that are socially costly. The problem of monopoly power in so-called competitive industries has been documented for the Russian economy. Broadman (2000) finds that while many industrial firms underwent ownership change, relatively few restructured. He shows that this is due to the lack of effective competition: high concentration, a high degree of vertical integration and barriers to entry.

The structure of the paper is as follows. In section 1, we relate the ‘within-survivor’ analysis of the impact of competition on performance to the very different empirical tradition in which the aim is to decompose changes in productivity so as to describe the outcome of the competitive process. This broader perspective is of particular relevance to the transition, since the operation of competitive forces to select ‘better’ firms, as well as the entry and the exit processes were suppressed in the planned economy.² In section 2, we distinguish between ‘competitive infrastructure’ and ‘competition policy’. Competition policy deals with problems of anti-competitive conduct and market structure but not with the broader competitive infrastructure of the economy. Thus competition policy is broader than anti-trust policy but does not include all the dimensions of competitive infrastructure policy. In both sections we highlight the interaction between the intensity of competition and other reform policies in influencing productivity growth. The other policies include privatization, bankruptcy law, and policies to harden enterprise budget constraints. In section 3, we compare the results from the studies of the effects of competition and corporate governance on firm performance in Bulgaria, Hungary and Poland. Section 4 concludes.

1. Competition and productivity

1.1 Conceptual framework

Aghion and Schankerman (2000) develop a simple model to investigate the effects of competition on productivity and welfare in ‘competitive’ industries. They use a model of monopolistic competition in which the producers of differentiated products are located on a circle. The distance between producers is the measure of product differentiation. Both incumbent firms and potential entrants are characterized by asymmetric production costs, either high or low cost. The heterogeneity of costs across firms plays a central role in the model. The intensity of competition is measured by the unit transportation costs.

In order to isolate the effects of competition on selection, on the behaviour of incumbent firms and on entry, they look in turn at three cases. In the first case, there are no entrants and the level of productivity of incumbents is fixed – only selection can operate. In the second case, the productivity level of incumbents can vary as managers exert more or less effort. This is the ‘within-firm’ effect of competition. In the third case, entry is permitted. We use the Aghion-Schankerman (A-S) model as an organizing framework within which to fit the various channels through which competition can affect productivity and welfare in competitive industries. Attention is

² Frontier production function analysis forms an interesting bridge between these two empirical strands since it explicitly focuses on the range of cost or productivity levels characteristic of surviving firms.
focused on how the competition effects identified in the model are related to other reform policies.

In the first case in which there is no entry and the productivity levels of firms are fixed, the welfare effects of lowering transportation costs – i.e. of improving the competitive infrastructure in our terminology – arise from the direct effect of greater competition in lowering the profit margins of both high and low cost firms and from the selection effect as the market share of the low cost firms increase. The only offsetting negative effect arises from the impact of greater concentration of market share on the product variety available. They show that welfare increases as competitive infrastructure improves and that it increases more, the greater are the initial cost asymmetries between firms. This model therefore predicts that the scope for competitive infrastructure policies to improve the selection effect depends on the level of cost asymmetries. If underlying productivity differences between firms are masked by other distortions such as subsidies or other forms of budget softness, then selection will not occur. We can identify here the interaction between the impact of competition and the softness of the budget constraint. Progress in hardening the budget constraint of firms will allow the effects of improvements in competitive infrastructure to boost productivity and welfare. The reform measures of hardening budget constraints and improving competitive infrastructure are therefore complements.

The second effect introduces incentive effects for incumbents. In line with many earlier models (for a survey, see e.g. Carlin and Horvath 1999), Aghion and Schankerman concentrate on the role of competition in affecting managerial effort to undertake restructuring. If effort costs are convex and there are no costs (such as bankruptcy costs) associated with a low market share, then they show that when the competitive infrastructure improves, low cost firms have a greater incentive to restructure than do high cost ones. This results in an increase in the degree of cost asymmetry and enhances the effect of market selection in raising productivity.

As discussed in Carlin and Horvath (1999), there are a number of models that focus on the interaction between the impact of competition on managerial effort and the magnitude of the agency problem between owners and managers of the firm. The scope for improvements in competition to boost productivity within the firm is greater, the greater is the agency problem – i.e. the weaker is the corporate governance of the firm. Where the ability of owners to impose constraints on managers to ensure cost-minimizing behaviour is limited, as may be the case in state-owned and in some types of privatized enterprises in transition economies, then there is a more pronounced role for improvements in competitive infrastructure. The reform measures of improving corporate governance and of improving competition are substitutes at the level of the firm.

There will also be substitutability at the level of the firm between policies that increase the impact of financial pressure on managerial effort and competition. If the bankruptcy system is relatively ineffective, then more intense competition can act as a substitute in raising managerial effort.

The third effect in the A-S model derives from the role of entry. In a standard model with homogeneous cost firms, an increase in competition in the market will have the effect of deterring entry because the rents available to a new entrant are reduced (e.g. Tirole 1988). This is a static version of the standard Schumpeterian argument that higher rents are the necessary inducement for innovation. However, Aghion and Schankerman show that this result can be reversed if potential entrants and incumbents vary in their productivity levels. An increase in the intensity of
competition in the market (fall in transportation costs) may induce low cost entrants to come in, since although rents will be squeezed by the greater competition, low cost firms will be able to capture a greater share of the market. The net effect may be sufficient to induce productivity-enhancing entry. The entry effect of an enhanced competitive infrastructure will not work if the initial level of competition and the initial cost asymmetry is too low. The reason is that both low and high cost firms enter and the market selection effect is too weak to sort the firms.

This model is useful first because it provides a set of predictions linking a change in the competitive infrastructure with performance and welfare. Second, it identifies the gainers and losers from an improvement in competitive infrastructure and points to the determinants of the political support for improvements in competition. Third, it provides a unified way of considering how improvements in competition are likely to interact with other reform policies: policies to encourage restructuring by incumbents, to encourage entry and policies that affect the distribution of cost levels across firms.

1.2 The competitive process and aggregate productivity growth in manufacturing: evidence from outside transition

With this framework in mind, we can turn to empirical exercises that have been undertaken to allocate the increase in aggregate productivity to selection (i.e. the reallocation of market shares between less and more efficient firms), entry and exit and within-firm effects. The reallocation of market shares and the turbulence of entry and exit can be interpreted as a reflection of the competitive process and decomposition exercises are driven by the simple question: how does the process of competition operate in a market economy? In order to answer the question, it is necessary to have panel data for the population of firms over a reasonable period of time. If we are interested in how competition operates to select between firms and activities, then it is not the year-to-year fluctuations in productivity that are central but the accumulated contribution of each of the sources over a longer time period. For example, in order to measure the contribution of new entrants, we need first to look at their relative productivity level on entry, second to see whether they survive and third to examine their trajectory in terms of market share and relative efficiency.

The data requirements for such an exercise are daunting and relatively few analyses of this kind have been carried out. As far as we are aware, this decomposition using a longitudinal micro data set has not been done yet for any transition economy and we do not provide one here. We can report the findings for advanced market economies and for some developing countries so as to establish a benchmark for the analysis of the transition case. A decomposition analysis of this kind cannot provide evidence on causality but it does provide an empirical base-line which can help us to interpret the estimation results from the project that focus on the ‘within-firm’ effects of competition.

We begin by reporting the results of a detailed study of how the competitive process operated over the decade of the 1970s in Canadian manufacturing industry (Baldwin 1993). Baldwin uses longitudinal micro data from the Canadian manufacturing censuses to distinguish between the contributions to productivity growth of ‘greenfield entry’, which refers to the entry of a firm by the opening of a new plant, ‘closedown exit’, which is the exit of a firm by closure of a plant(s), merger (entry of a firm to an industry through acquisition of an existing plant and exit of a firm from an industry by divestiture of a plant) and the change in the relative position of incumbents. The latter can in turn be broken down into the effects of
market selection (as more efficient incumbents secure increases in market share) and the improvement in the efficiency of incumbents.

The main features of how the competitive process operates as observed in the Canadian data are the following. We begin with the significance of new firms and the exit of old ones.

- On a year-to-year basis, the effect of greenfield entry on manufacturing industry is small. It only accounts for about 1% of employment. New firms are initially small and about one-half of them die before they are 10 years old. However, the competitive impact of entry is cumulatively important. After 10 years, firms that did not exist at the beginning of the decade but were still there at the end accounted for 16% of output.
- Firms that were present at the beginning but not at the end of the decade accounted for 18% of beginning period output.

Hence over a decade, greenfield entry and closedown exit are substantial determinants of the evolution of the industry. It is not accurate to think of an industry as consisting of a stable core of firms that dominate the industry and a process of churning at the margins.

How significant is the change in ownership to the structure of an industry? Although entry by merger or exit by divestiture does not have an immediate impact on the capacity of the industry, it changes control and might be expected to affect productivity. In the Canadian case, only about 1% of employment is affected by this each year. But over a decade, about 12% of output is produced by plants that were acquired by firms from outside the industry in that period. Changes in control play a substantial role in industry structure over a decade.

The A-S model highlights the role of changes in market share amongst surviving firms. For survivors – i.e. firms that were present at the start and the finish of the decade – about one-third of firms declined in absolute size and these were about 50% larger at the beginning of the decade as compared with the firms that grew. This indicates a reversion to the mean phenomenon in firm size. In Canadian manufacturing, on average the three largest firms in an industry lost nearly 25% of their market share in the decade. This suggests that even within survivors, competitive pressure produces significant reallocations of market shares.

It is interesting to observe how the productivity levels of firms and plants that enter and exit differ from those of the survivors. Survivor firms open plants that have much higher productivity than the average in the industry; they close plants that do not have lower than average productivity. Exiting firms close plants that are much less productive than average (even allowing for size differences) and entering firms come in smaller and less productive than the average but for those that survive, their productivity rises to the average in about 10 years.

Over a decade, aggregate productivity growth in Canadian manufacturing is accounted for by the following components:

- one-fifth is due to the market selection effect as higher productivity survivors gain market share
- just over one-half is due to productivity gains within survivors and this is overwhelmingly in the firms that are gaining market share
- the remaining contribution of nearly 30% comes from the effects of plant entry and exit. New firm entrants typically replace other small firms that exit and this contributes about 20 percentage points, whilst amongst surviving firms, new plants supplant old plants that are closed, which contributes about 7 percentage points.
The picture that emerges from this empirical analysis fits quite well with the A-S model, although interesting aspects of the competitive process are revealed by the role of multi-plant firms, which are ignored in the model. Baldwin finds clear evidence of segmentation between the productivity contribution of new plants opened by incumbents as compared with new plants that signal the entry of a new firm. A parallel difference characterizes exits. Incumbent firms open plants that are much more productive than the average and the ones that they close are not plants from the tail of the industry distribution. By contrast, new entry of firms occurs via small and relatively low productivity plants and they displace even lower productivity plants as the weakest firms exit the market. Secondly, Baldwin highlights the fact that the new-firm entry as a source of productivity growth tends to be characteristic of rather unconcentrated industries. In more concentrated industries, the ‘new blood’ supplied by new owners is introduced through acquisition rather than greenfield entry.

Other studies supply additional relevant information. Two recent surveys provide evidence from advanced market economies (Bartelsman and Doms, 2000) and from developing economies (Tybout, 2000).

**Heterogeneity in productivity levels:** Many studies confirm that in advanced economies, there is a large dispersion in measured productivity between the most and least productive plants in an industry. For example, Caves et al. (1992) report that US firms are on average on 67% as efficient as the most efficient firms in the industry. Similar findings are reported for the UK, Australia, Korea and Japan. At the plant level, Haskel (2000) confirms for the UK that the ratio of productivity at the 90th to that at the 10th percentile of plants in a narrowly defined sub-industry within a region (e.g. men’s outerwear in north-west England) was 2.5; for the manufacturing sector as a whole it was 4.8. These findings confirm the extent of the heterogeneity of productivity across plants and firms in well-functioning market economies. Bartelsman and Doms (2000) conclude that observed productivity differences are unlikely to be due to measurement error because productivity differences are correlated with wages, use of technology and export success. Moreover, higher productivity plants are found to have higher output growth and to be less likely to exit.

The evidence from advanced economies does not suggest that the dispersion of productivity declines over time (e.g. Dhrymes 1991). Nor does it seem that the dispersion of productivity levels is greater in less developed economies than in developed ones (Tybout 2000). As suggested in the Aghion and Schankerman model, the effective operation of the competitive process is not one that necessarily compresses the distribution of productivity levels across firms.

**Contribution to aggregate productivity growth from ‘within-firm’ effect:** In line with the Canadian evidence, others find that less than one-half of productivity growth in manufacturing is accounted for by the growth of productivity within existing firms. The rest comes from entry and exit and the reallocation of market shares (e.g. Disney, Haskel and Heden 2000 for the UK and Foster, Haltiwanger and Krizan 1998 for the US). Disney et al. identify a clear difference in this pattern across the business cycle: in recessions, within-plant productivity growth contributes virtually nothing, whereas in booms, the contribution of net entry is much diminished. There is some evidence that entry during booms is inefficient, in the sense that entrants in a boom have a higher probability of subsequent exit, controlling for the other determinants of survival (Disney et al. 2000). In a longitudinal micro study of Israeli manufacturing, Griliches & Regev (1995) find most productivity growth to have come within firms.
This was during a period (1979-88) when TFP growth was negligible overall. This result may reflect the weakness of the competitive infrastructure, which inhibited the role of selection, entry and exit effects, as compared with its effectiveness in a more advanced market economy (where as we have seen only about one-half of productivity growth is accounted for by within-firm effects).

*Plant entry and exit:* Rates of entry and exit appear to be as high or higher in less developed as in advanced market economies, though there is evidence that fewer entrants attain large sizes; this may indicate that the degree of competitive pressure they exert on incumbents is more limited (Tybout, 2000). However, there are some signs that in middle income countries such as Taiwan and Korea where the entry costs into higher size categories are very low, market share turnover rates (i.e. the percentage of the market captured over say, five years, by new entrants) are even higher than in advanced (and more slowly growing) market economies (Tybout, 2000). Evidence from Chile, Colombia, Israel and Taiwan show that exiting plants have lower than average productivity and that their productivity declines prior to exit. Tybout (2000) also reports that the entering plants are less productive than incumbents on average in Chile and Colombia – this may indicate that the entry process in less developed countries is skewed toward the small single-plant firm component of entry, whereas in advanced market economies as discussed above, there is a parallel entry process of high productivity plants owned by multi-plant firms.

The most striking difference between the manufacturing sectors in developed and developing countries is the difference in the size distribution of plants and firms (Tybout 2000 Table 1). In the US, 70% of employment is in plants with more than 100 workers and less than 5% in plants with less than 10 workers. In middle income countries, the proportion in large plants (with more than 100 workers) is 50-60% and in micro plants (less than 10 workers) about 20%. But in poor countries, the mean share of employment in micro plants was 60%. The chasm between micro firms and large firms in many developing countries appears to be related to the weakness of the competitive infrastructure in fostering the growth of small firms and their transfer from the informal to the formal sector. Transition economies entered the reform period with a very different size distribution of firms than the low income LDCs – i.e. with a tiny role for small firms. Nevertheless, the issue of bridging the gap between small new entrants and large incumbents remains a central policy issue. Can entrants play the role of exerting competitive pressure on incumbents that appears to occur in a period of a decade in advanced economies?

1.3 The intensity of competition and ‘within-firm’ productivity performance: evidence from other studies

The above results suggest that the process of reallocating market shares amongst existing firms and between firm births and deaths is *empirically* an important part of the mechanism through which productivity advances. Halpern and Korosi (2000) confirm for the case of Hungary that the relative efficiency of firms is a significant factor in explaining shifts in market shares. In this sense, competition is central to productivity growth. In addition, there is some evidence that the extent of competition appears also to influence productivity levels and or growth within survivors. In Carlin and Horvath (1999) we surveyed the empirical studies that test for the impact of competition on performance for samples of survivor firms. Our conclusion was that for advanced economies, especially the UK where a number of subsequent studies have been done, Nickell’s tentative conclusion that there was a positive effect of
competition at the level of the firm on both the level and growth of productivity has received further support.

One new finding that influences the interpretation of the existing literature is provided by Disney et al. (2000). They investigate the extent to which estimating the effect of competition on ‘within-firm’ productivity levels and growth rates is biased by the use of a sample of survivors. They argue that the selection effect implicit in using survivor firms will bias the estimates of the coefficients on the competition variables upwards. The selection effect is due to the fact that small firms will be more prevalent in more competitive settings and when there is an adverse shock, small firms are less likely to survive. Hence there is a correlation between competition and productivity between survivors. In order to test for the presence and size of this effect, they replicate Nickell’s (1996) analysis using their full census sample of firms that includes entrants and exitors, for a sample of survivors and for a sample of large survivors similar to Nickell’s sample. For the latter sample, their results are similar to Nickell’s but as the sample is widened, the size of the competition effect falls.

In the transition literature, many studies have used data less well suited to analyzing this question than that available for the advanced countries. Djankov and Murrell (2000) pool 13 studies and report a positive impact of competition on performance. For the countries outside the CIS, they find that both domestic and foreign competition are effective, whilst for CIS countries, it is domestic competition that appears to matter. Brown and Earle (2000) test for the effect of competition on the level of TFP for a large panel of Russian firms (firms with more than 100 employees) and find evidence that better transportation infrastructure (in addition to more standard indicators of competition in the product market at industry level such as concentration indices and import competition, which were included in the Djankov and Murrell meta-analysis) has a large positive effect on performance. Brown and Earle (2000) also find evidence in the Russian data of the substitution effect between corporate governance and competition found in the UK by Nickell, Nicolatsis and Dryden (1997): the effect on TFP of competition is less in non-state firms.

Interestingly, Brown and Earle find that including a correction for selection bias in their TFP equations does not affect their estimates of the coefficients on the competition variables. Nevertheless it is worth noting that selection corrections of the kind that they undertake also make little difference to the Disney et al. estimates. Disney et al. uncover the survivorship bias when they estimate the TFP equation sequentially on all firms, survivors and large firms (with more than 600 employees). This suggests that studies that use a sample of large survivors may be especially prone to overestimating the competition effect.

One objective of the joint EBRD and World Bank enterprise survey conducted in 1999 across 25 transition countries was to examine the role of competition in enterprise performance. Early results were published in the EBRD’s Transition Report of 1999; more thorough analysis is found in Carlin, Fries, Schaffer and Seabright (CFSS, 2000). They find that competition – measured at the level of the firm – has an important effect on sales and productivity growth, though it appears that the effect is non-monotonic: some degree of perceived market power and the presence of one to three competitors is associated with higher sales and productivity growth.

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3 There are many potentially serious methodological problems with the implementation of meta-analysis for the studies available to Djankov and Murrell and their results should be treated with caution.
but competitive pressure is also important, especially pressure from foreign suppliers.\(^4\) It is striking that firms with a protected monopoly position in the sense that they believe that there would be no reaction at all of sales to a 10% real price increase, are the least likely to engage in restructuring aimed at cutting costs (closure of a plant, major cuts in employment) (CFSS, 2000).

1.5 Conclusions

In ‘well-functioning’ market economies, only about one half of aggregate productivity growth occurs within firms. Most of the rest is associated with entry and exit, with the reallocation of market shares between survivors accounting for the remainder. The evidence suggests that entry and exit effects are weaker in less developed market economies. This highlights the potential for improvements in the competitive infrastructure to boost aggregate productivity. More intense competition at firm level raises productivity growth but there is also some evidence that possession of some market power is consistent with good performance.

2. Competition and competition policy

2.1 Components of competition policy

Attention is often drawn to Schumpeter’s defence of monopolistic structures as consistent with the dynamic efficiency of the economy. Yet to suggest that Schumpeter believed that secure market power would promote innovation is to misrepresent him. Schumpeter recognized the importance of temporary monopoly as the incentive (the carrot) for innovation. But the stick, in the form of the threat to the position of the monopolist from competitors, must also be present for dynamic efficiency.\(^5\) Nevertheless the threat of ‘too much’ competition could, by increasing the extent of ex post competition, reduce the ex ante incentives to compete in the market at all. This effect will be important when there are substantial sunk costs involved in an innovation and is normally addressed by institutions such as patent protection. As we have seen already, once agency problems are introduced into the model, then competition plays an additional role. If there is more competition, the stick of competitive pressure squeezes out the managerial slack that allows managers to delay exerting the effort required to introduce the next innovation (Aghion, Dewatripont and Rey, 1997).

The models of industrial economics suggest that proper market structure and adequate corporate governance result in good performance. However, the market sometimes fails. This failure can be of two kinds: i) the market structure fails to promote productive efficiency; and ii) the market structure fails to promote allocative efficiency. Thus, public policies aiming to improve performance can intervene at two

\(^4\) As noted in Carlin and Seabright (2000), a very few studies consider the possibility that competitive pressure may have a non-linear or even non-monotonic relation to efficiency. Green & Mayes (1991) show on UK data what was earlier demonstrated by Caves & Barton (1990) for the US, namely a non-monotonic relation between the 5-firm concentration ratio and efficiency, in which the greatest efficiency is associated with intermediate levels of concentration. Bresnahan & Reiss (1991) find a (weakly) monotonic but decidedly non-linear effect of entry on prices, with most of the competitive impact coming from the first two entrants to challenge a monopolist, and a levelling out once market participants number around five.

\(^5\) Schumpeter gives an example from the car industry in the 1920s: ‘From a fierce life and death struggle three concerns emerged that by now account for over 80% of total sales. They are under competitive pressure inasmuch as, in spite of the advantages of an established position, an elaborate sales and service organisation and so on, any failure to keep up and improve the quality of their products or any attempt at monopolistic combination would call in new competitors.’ (1943, (1976) p. 90).
levels. Either they can encourage the establishment of competition/forbid actions that prevent the establishment of competition or they can directly restrict the behaviour of firms in a non-adequate market structure. In the framework of the classical structure-conduct-performance paradigm this means that authorities can intervene in order to influence either structure or conduct (Scherer and Ross, 1990).

The authorities can intervene in two different ways: either with constant supervision or with the creation of a legal framework. The first is regulation and is mainly used when the market structure cannot be improved (natural monopolies). The second is competition policy. Since the focus in this paper is on ‘competitive’ industries, we do not discuss the regulation of non-competitive industries or those with non-competitive segments further.

Although it has not always been the case, the tendency in the advanced economies over recent years has been in the direction of establishing the improvement of economic efficiency as the sole objective of competition policy. In the UK, for example, the legislation was traditionally formulated in terms of the public interest, with effects on exports and regional unemployment included in the scope of the law (Hay, 1996). In US and European competition law, there is more focus on efficiency. 6

Following the concepts in the introduction, we note that whereas competition policy has a broader remit than antitrust issues, it does not include all aspects of the competitive infrastructure. The anti-trust component of competition policy seeks to influence the conduct of firms (e.g. by preventing collusion and the abuse of dominance). The law forbids only the abuse of dominant position and not the dominance. This is quite consistent with the Schumpeterian view of competition – temporary dominance or dominance tempered by the presence of actual or potential competitors does not require policy intervention. Competition policy also aims to influence the market structure by preventing horizontal and vertical agreements and mergers that would limit competition and to improve the demand for competitive outcomes by the public through advocacy activities.

2.2 The role of competition and competitive infrastructure policies in transition

Transition countries that aim to join the EU have taken steps to amend their competition policy law so as to bring it into line with EU policy. One weakness of EU competition law is the absence of policies to deal with situations in which the market structure is such that there is inadequate competition and a loss of efficiency without the obvious abuse of a dominant position. These include cases of so-called complex monopolies, where firms in an industry act in a similar way to maintain prices, for example, but without the existence of any agreement between them. There is a second weakness that is of potentially even greater importance in transition countries that take over EU legislation. This is the absence from EU law of a provision to prevent potentially anti-competitive situations from emerging (e.g. through privatization or through the use of anti-competitive practices by firms that are not yet dominant) (Hay 1998).

The application of competition policy in the European Union is weighted toward ‘conduct’ regulation. But the presumption that lies behind this is that competition is

6 Nevertheless, the promotion of the single market has also appeared as a goal of the competition law. This additional goal is many times regarded as conflicting with the efficiency goals. For example, manufacturers might seek to limit their activities to certain territories. Price discrimination across different member state markets is another example. In some cases these practices can be proved to improve efficiency, but the European Commission might forbid this practice on the grounds that it violates the promotion of European market integration. (Bishop and Walker, 1999).
well established and will prevail provided that competition law prevents its deliberate suppression. The early application of competition law in transition economies in Central Europe as discussed in Fingleton et al. (1996) suggests the focus was on the alleged abuse of dominant market positions, the use of price controls, and vertical relations between enterprises. They concluded that the use of competition policy had a limited impact on market structure.

The presumption in the rules and implementation of EU competition law that there is a reasonably well-functioning competitive environment highlights potential problems with the use of this template in transition economies. Weaknesses in the general competitive infrastructure can interfere with the efficient operation of competition policy. General policies that promote competition are policies that improve the transportation and communications infrastructure, lift trade barriers at internal as well as external borders and strengthen legal enforcement. In the absence of these policies, the traditional competition law has only limited effectiveness.

The problem of operating competition policy in an environment that lacks an adequate competitive infrastructure is further illustrated by a study of Bulgaria. Hoekman and Djankov (2000) find that in post-central-planning Bulgaria little competition policy enforcement activity was directed towards hard-core anti-competitive behaviour. Instead, the majority of the cases focused on issues that in most market economies would have been dealt with within the judicial system, like private contracts or property rights.

To summarize:

- if the market structure is inadequate in the sense of providing insufficient competition, the replication of EU competition policy with its emphasis on conduct regulation will not be a complete remedy. Harmonization on the EU competition policy is desirable but the limitations of that policy to deal adequately with structural issues is especially relevant for the transition economies.

- if the market infrastructure is insufficiently competitive, then the activity of the competition authorities may be diverted from addressing anti-competitive behaviour and structure to deal with shoring up the legal system.

In turn, the impact of improvements in the competitive infrastructure will depend on progress with a number of other reform measures. The absence of a soft budget constraint ensures that the underlying cost distribution of the firms is not biased, with the consequence that more intense competition gives low cost firms more incentives to further reduce costs. This, in turn, will increase the market share of low cost firms, and reinforce the market selection effect. Competition and lack of soft budget constraint are complementary, since with greater cost differences the effect of competition on within-firm productivity improvement and market selection is greater.

By contrast, the introduction of adequate corporate governance and an effective bankruptcy procedure are likely to be substitutes for improvements in the competitive infrastructure. Competition enhances productivity growth more in firms where agency problems are greater and where bankruptcy is poorly enforced.

Furthermore, soft budget constraints let bad firms survive longer, thus the hardening of the budget constraint facilitates the exit of less efficient firms. Also, possible low cost entrants might be deterred if they see that due to soft budget constraints of the incumbents, the cost differences cannot be exploited. An adequate bankruptcy law also facilitates the exit of less efficient firms. As we have seen, in advanced countries in concentrated industries entry and exit occur mainly through
ownership change. Merger policies can enhance efficiency if the new ownership structure is compatible with this goal. This is why a flexible merger policy is preferred to legislation that makes merger difficult per se. Moreover, in transition countries it is important to encourage foreign direct investment, because foreign ownership appears to promote efficiency (see, for example, Halpern & Korosi (2000) for evidence for Hungarian firms). In non-concentrated industries the entry and exit of small firms can be enhanced by adequate SME policies.

2.3 Competition policy rules and implementation

Rules and discretion

Within competition law we distinguish per se rules and rules of reason. There are activities that are per se forbidden (price fixing) while others are judged by the party’s intent or the likely consequences of the action (price discrimination cases). The per se ruling method saves administrative costs since the intent or the consequences of the action need not to be assessed, the action itself is illegal. If the benefits of this cost saving are higher then the costs resulting from the inflexibility of the ruling, per se ruling is used (Shy, 1995). When law enforcement (implementation) is a serious problem (as it is likely to be in transition economies) per se rules may be preferred to the rule of reason. Competition authorities in transition countries that have modelled their law on EU legislation, can make available guidelines that incorporate European experience on prohibited behaviour and agreements.7 This helps to minimize the need for case-by-case judgements.

The source of the problem in establishing rules is that it is often quite difficult to judge whether a dominant position is being abused as defined by its impact on economic efficiency. The structural determinants of effective competition will vary across industries, with the result that across the board rules will be difficult to find. This highlights the beneficial role that can be played by using guidelines developed from the accumulated case-by-case judgements under European law. To illustrate the key factors that appear to influence the industry variation in the presentation of competition problems, we refer to the discussion in Davies and Lyons (1996).

Their study begins by identifying the highly concentrated industries in Europe because highly concentrated industries are the ones where competition problems are most likely to be found. They identify the most concentrated industries as those in which the 5-firm concentration ratio in the European market is more than 25% or for which the average national 4-firm concentration ratio is more than 45% (see Table 1 in the Appendix). They then seek to identify the characteristics of these highly concentrated industries that are most relevant to the existence of competition problems. The key industry characteristics on which they focus are: the importance of trade, whether the industry is characterized by exogenous or endogenous sunk costs, the presence of production economies of scale, the importance of multinational ownership and the role of public procurement.

The EU-benchmark provides an indication of the potential for trade integration by industry. The results show that there is considerable variation across industries in

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7 The recent revision of competition policy in the UK in the 1998 Competition Act to bring it much closer to EU competition law includes the requirement for the authority to produce guidelines setting out prohibitions. The prohibitions explicitly incorporate European experience in applying the law. For example, the UK guidelines have taken over the findings of the European competition authorities that market dominance occurs when the market share of a firm is over 40% whereas firms with market shares of less than 25% are unlikely to be identified as dominant (Hay 1998).
the extent to which trade can alleviate potential anti-competitive problems. Weak competition is likely to be found in highly concentrated industries with low trade (see Table 1, Appendix). The limited role of trade in advertising-intensive industries even in the European market is especially striking. Once brand loyalties are established, such industries constitute potential problems in respect of competition.

Davies and Lyons use Sutton’s (1991) distinction between exogenous and endogenous sunk cost industries. Exogenous sunk cost industries, which are referred to as Type 1 industries, account for just over half of manufacturing industries and are mainly associated with the processing of materials (iron and steel, cement, foundries, grain-milling, textiles, wood-processing). These industries are typically the least concentrated. However, as shown in the table, some of these are highly concentrated and potential competition problems may arise there. Many cases in European competition law have concerned these industries. Such industries may be characterized by large production economics of scale. A typical problem in EU economies has been that national producers lobby to be protected from market pressures for the rationalization of the industry at an international level.

Endogenous sunk cost industries (so-called Type 2 industries) are advertising-intensive, R&D-intensive or both advertising and R&D-intensive. The last group are much the most concentrated. Davies and Lyons argue that multinational ownership in an industry is a method through which leading international firms control the flow of international trade and it may therefore present anti-competitive problems. However, it is unlikely that national policy makers will be able effectively to deal with such problems. Similarly with the highly concentrated but highly traded R&D intensive industries, the investigation of possible anti-competitive R&D and advertising strategies will lie outside the scope of national authorities. Finally, it is important to identify industries affected by policies of public procurement. This has been a major method through which specific industries have been protected from competition in EU countries.

Rules and Implementation

Hoekman and Djankov (2000) argue that in countries with newly introduced competition laws it takes some time until enforcement follows the rules. Participants in the enforcement process have to become aware of and take into account the new rules of the game. The level of the penalties is of particular importance. Even in a reasonably well-functioning market economy, the raising of the level of fines to a maximum of 10% of company turnover in the national market (in line with EU precedent) in the new UK Competition Act is considered a most significant improvement in the framework for competition (Hay 1998).

Dutz and Vagliasindi (2000a) report sharp differences in both competition policy rules and implementation across transition countries. They construct two composite variables to assess the toughness of competition law and the effectiveness of its implementation. In transition, it seems appropriate to measure the effectiveness of implementation by the actions of the competition authority, although as Hay (1998) notes, ‘the most successful competition policy authority would be one that did very little, because the rules of the game are clear, the rate of detection of misdemeanours high and the fines punitive, so the firms are careful to behave themselves.’ (p. 7).

The composite variables are constructed along 3 dimensions: 1) legislative bans on anti-competitive acts and related enforcement activities, 2) legislative directives concerning advocacy and related advocacy activities, and 3) legal safeguards for institutional effectiveness and related institutional activities. Not
surprisingly, they find strong positive correlation between rules and implementation across countries. It is interesting to compare the raw scores for both rules and implementation in 1999 for the three transition countries that are subject of this project. On a 0-1 scale Poland scores almost 0.8 in terms of rules following the latest amendment to the law while the implementation score is just below at 0.7. The Hungarian competition rules get the full score following the latest amendment while the implementation lags behind that of Poland. In the Bulgarian case the situation is reversed: the rules get a raw score of just over 0.5 (following the latest amendment) while the implementation score is just below this.

2.4 Effectiveness of competition policy: empirical evidence
The empirical evidence concerning the impact of competition policy on effective competition is scarce. This is due to the fact the both competition and competition law are hard to quantify. There is one piece of “natural” evidence that competition law actually increases competition and thus efficiency: real retail prices are generally the lowest in the US, where antitrust legislation is the strictest and its implementation is the most efficient (Shy, 1995).

Gonenc et al. (2000) survey the effect of regulatory reform in OECD countries. They focus on previously regulated industries - both competitive and non-competitive ones. The competitive (or largely competitive) industries they study are road freight, air passenger transport and retail distribution. They find overwhelming cross-industry evidence that liberalisation of entry and prices in most cases resulted in improved static and dynamic efficiency, enhanced quality and lowered prices to consumers.

The work of Dutz and Vagliasindi (2000a and 2000b) is pioneering in the sense that they measure the effect of competition policy rules and implementation on competition in a transition context. Neither the systematic classification of rules and implementation nor the investigation of the impact of competition policy has been carried out for market economies – advanced or LDCs. In their two papers they use different measures of competition.

In the first study (Dutz and Vagliasindi 2000a), they measure competition by enterprise mobility: an economy-wide indicator that captures the frequency with which private enterprises expanded employment over the 1997-1999 period, weighted by the corresponding proportion of expanding firms that increase labour productivity. They explain this enterprise mobility measure by average market concentration, average pressure of foreign competition, competition policy rules (constructed as explained in the previous subsection), competition policy implementation (see above) and corporate governance, in 18 transition countries. They find that both rules and implementation improve enterprise mobility and that the effect of implementation is more important. They also find that more adequate corporate governance and stronger foreign competition increase economy-wide enterprise mobility, while the greater is the average market concentration the smaller is the measured enterprise mobility.

In the second study (Dutz and Vagliasindi 2000b) their dependent variable is the average frequency with which enterprises face a more competitive environment (the proportion of firms facing at least one competitor in the domestic market) in 1999. They construct this variable for 20 transition countries and explain it with twice-lagged competition policy implementation and the change of the implementation over the previous two years. They also use the overall state of privatisation and variables assessing the hardening of the budget constraint as explanatory variables. They find that more effective competition policy
implementation results in more intense competition. However, the limited number of observations available suggest that one should be very cautious in placing a causal interpretation on these findings.

3. **Comparison of three new studies on competition, governance and firm performance**

In this section we compare three studies (Dobrinsky et al. 2000; Halpern and Korosi 2000; and Grosfeld and Tressel 2000) that analyse the effects of competition and corporate governance on productivity and productivity growth. The studies are similar in the sense that the empirical analysis is the estimation of production functions with control variables that reflect the firms’ competitive environment and corporate governance. We will concentrate on five aspects: sample, control variables for competition and corporate governance, estimation method, specification and results. When comparing the results we attempt to explain the qualitative differences among them. Table 1 provides a summary.

3.1 **Sample**
Dobrinsky et al. use a sample of Bulgarian manufacturing firms. They have a short panel of around 2600-3300 firms during four years (1994-1997). Halpern and Korosi have a panel of around 1600-3400 firms during 7 years (1992-1998). Grosfeld and Tressel use data of 189 non-financial firms that are listed on the Warsaw Stock Exchange. The time span of their panel is 8 years (1991-1998). All studies contain accounting data of the firms in the panels. As it can be seen, the Bulgarian and Hungarian samples are quite similar. Both samples cover a large number of manufacturing firms. Naturally, both samples are quite heterogeneous in terms of size, etc. Thus, we can expect that the firms are also different in their responses for competition and different ownership. On the other hand, the Polish sample is quite homogeneous: it contains only a relatively small number of large listed firms.

3.2 **Variables**
When analysing the effect of competition on firm performance it is important to distinguish between firm level and industry level competition measures. We expect a firm’s performance to be connected to its competitive position. Obviously, the competitive environment of the industry affects this position (in extreme cases as monopoly or perfect competition there is a one-to-one relationship between industry and firm level measures). Nevertheless, it should be a firm specific competition variable that measures the competitive position most accurately.

All three studies use market share as the firm level competition variable. The Polish study interacts the market share with dummies that refer to years before and after the first quotation of firms and dummies that distinguish between newly founded and privatised firms. In addition to market share, both Dobrinsky et al. and Halpern and Korosi have a variable that reflects the exporting position of the firms. In the Bulgarian study it is an exporting dummy that takes value 1 if the firm exports some of its output. In the Hungarian study the variable is the share of output that is exported.

The industry level competition measure used in all three studies is the import penetration of the industry. Furthermore, the Bulgarian and Hungarian studies have various concentration measures in the different specifications as explanatory variables that reflect the competitive situation of the industry.
The corporate governance variable is different in terms of content in all these studies. Dobrinsky at al. simply distinguish between private firms and firms that are partly or fully state owned. Halpern and Korosi have three ownership categories: majority state owned, majority foreign owned and other. Grosfeld and Tressel distinguish amongst firms by the identity of the controlling shareholder: foreign, CEO, other individual, non-financial firm, bank, National Investment Fund, and State. They only use ownership dummies when there is a controlling shareholder. Obviously, they have a variable that reflects ownership concentration. In three different specifications this variable has the following contents: dummy that takes value 1 if there is a shareholder with more than 20% of the shares; dummy for the existence of a shareholder with more than 20% of the voting shares; and (in the 3rd specification) when the estimated proportion of shares of the majority shareholder is greater than 90%.

3.3 Method
The estimation method, in general, should reflect the problems the author thinks might be connected with the particular specification. At the same time, the estimation method is limited by the quality of data. In the context of competition, corporate governance and firm performance several problems may arise that need to be treated. For example, some firms may be more or less productive than others independently of competitive conditions and ownership. This difference could be explained by omitted variables in some cases. Either way, the proper treatment of this problem would require the use of firm specific effects. Unfortunately, these firm specific effects can only be used in panel estimation. The use of firm specific fixed effects corrects for the systematic differences in levels of productivity between firms. There might be differences between firms also in the way they respond to competition and ownership type. It is possible that firms that have higher market share, for example, increase their productivity more in case of increased competition than firms with less market power. This endogeneity problem can be corrected by using appropriate instruments for the endogenous variables. Many times there are no better instruments than the lagged values of the variables in question. Thus, a sufficiently long panel of data is needed.

Of the three country studies only Grosfeld and Tressel corrected for endogeneity of the competition and corporate governance variables and used fixed effects. Halpern and Korosi corrected for the endogeneity of the input variables only. Dobrinsky et al. estimated their specification also in a panel but did not correct for endogeneity and firm specific effects. Halpern and Korosi found that a panel specification is incorrect for their data since the tests showed structural breaks.

3.4 Specification
The authors of all three studies estimate Cobb-Douglas production function. In addition, Halpern and Korosi also estimate translog production functions. The Bulgarian and the Hungarian studies estimate the effect of competition and corporate governance on the level of total factor productivity. Grosfeld and Tressel estimate the effect of competition on the level of productivity and the effect of corporate governance on productivity growth.

3.5 Results
The findings of the recent empirical literature from outside transition tend to validate the theory: a stiffer competitive environment improves productivity performance and
The impact of competition is greater when corporate governance and financial pressure is weaker. In the transition literature, existing results over studies using very different measures of performance and competition are quite variable. In the case of the three studies we compare, the results are also far from homogeneous. The reason is mainly the difference in the nature of data the authors have analysed. While the Polish dataset contains rather similar firms, the other two country studies analyse the effect on much larger and heterogeneous sets of firms. At the same time, only the authors of the Polish study were able to correct for possible endogeneity and firm specific effects.

Thus, it is not surprising that while the Polish study finds that greater market share implies a lower productivity level, Halpern and Korosi find no significant relationship between firm level competition and TFP, and Dobrinsky et al. find evidence for the opposite. On the other hand, Dobrinsky et al. find that exporting increases productivity. In terms of industry level competition measures, Grosfeld and Tressel report that greater import penetration improves corporate performance. Dobrinsky et al., on the other hand, report that greater concentration implies better performance.

The qualitative results concerning the effects of corporate governance coincide in all three studies and they broadly conform to expectations. In Bulgaria there is evidence that state owned enterprises perform worse than private firms do. In Hungary, majority foreign owned firms have higher, and majority publicly owned enterprises have lower productivity level than other firms do. In Poland, firms with foreign majority ownership have the highest productivity growth. Grosfeld and Tressel also report that more dispersed ownership is associated with higher productivity growth. Finally, they find that the ownership structure associated with higher productivity growth (those with more dispersed ownership) and competition are (strategic) complements, i.e. if the ownership concentration is more dispersed, the positive effect of an equal decrease is market share is greater. Yet they also find some evidence of substitutability between competition and ‘governance’ in terms of the effect of competition before and after listing and in the contrast between privatized and new firms. Further investigation is needed to clarify these intriguing results.

To support our argument that the differences in assessing the impact of competition on productivity are partly due to the different sample sizes we report the findings of Disney et al. As noted above, they repeated the estimation of Nickell (1996) on three samples of UK manufacturing firms. The first sample was the set of large surviving firms, the second was a set of surviving firms and the third sample covered all firms (including entry and exit). They find that as sample size grows the effect of competition decreases. Their estimated elasticities between market share and TFP level are the following: -0.040 on the first sample, -0.026 on the second and –0.019 on the full sample. They find similar results for the elasticities between rents and productivity growth: -0.016, -0.009 and –0.007, respectively on the different samples. As we have noted, Grosfeld and Tressel test only for the impact of competition on the level of TFP. They find an effect of similar magnitude in terms of market share: their estimated elasticity is -0.05 on a sample of large firms. It is expected that with the widening of the sample this effect would decrease.
Table 1. Comparison of studies
(Entries in bold are significant and in line with expectations; entries in square brackets are significant and contrary to expectations)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Dobrinsky et al. – Bulgaria</th>
<th>Halpern &amp; Kôrösi - Hungary</th>
<th>Grosfeld &amp; Tressel – Poland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Manufacturing firms</td>
<td>Manufacturing exporting firms</td>
<td>Non-financial listed</td>
</tr>
<tr>
<td>Number of firms</td>
<td>~2400-9000 firms/year -2600-3300 firms/year (estimation, 1995-)</td>
<td>~1600-3400 firms/year</td>
<td>189</td>
</tr>
<tr>
<td>Type of data</td>
<td>Accounting data</td>
<td>Accounting data</td>
<td>Accounting data</td>
</tr>
<tr>
<td>Variables</td>
<td>Competition (firm level)</td>
<td>Competition (industry level)</td>
<td>Ownership</td>
</tr>
<tr>
<td>Competition</td>
<td>Market share (t-1) (NACE 2)</td>
<td>C3 (NACE 3) Import penetration (NACE 3)</td>
<td>SOE - private</td>
</tr>
<tr>
<td>Market share</td>
<td>Export dummy</td>
<td>Import penetration (NACE 4)</td>
<td>Majority state – majority foreign - other</td>
</tr>
<tr>
<td>Export dummy</td>
<td>Export share (t-1)</td>
<td>Concentration (on NACE 4); various measures</td>
<td>N/A</td>
</tr>
<tr>
<td>Ownership</td>
<td>SOE - private</td>
<td>Majority state – majority foreign - other</td>
<td>N/A</td>
</tr>
<tr>
<td>Ownership</td>
<td>N/A</td>
<td>Major shareholder &gt; 20%, major shareholder &gt; 20% voting shares, probability control &gt; 90%</td>
<td>N/A</td>
</tr>
<tr>
<td>Method</td>
<td>Single year - panel</td>
<td>Both</td>
<td>Single year Panel</td>
</tr>
<tr>
<td></td>
<td>OLS / IV</td>
<td>OLS</td>
<td>IV</td>
</tr>
<tr>
<td>Firm specific</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Endogeneity of</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>competition and</td>
<td>Endogeneity of competition and ownership</td>
<td>Endogeneity of competition and ownership</td>
<td>Endogeneity of competition and ownership</td>
</tr>
<tr>
<td>ownership</td>
<td>Competition (firm level)</td>
<td>Competition (industry level)</td>
<td>Ownership</td>
</tr>
<tr>
<td>Productivity</td>
<td>Level</td>
<td>Level</td>
<td>SOEs perform worse</td>
</tr>
<tr>
<td>level / growth</td>
<td>Level</td>
<td>Level</td>
<td>Majority foreign better, majority public worse</td>
</tr>
<tr>
<td>Cobb-Douglas /</td>
<td>C-D</td>
<td>C-D and TL</td>
<td>Foreign majority owner – higher productivity growth</td>
</tr>
<tr>
<td>Translog</td>
<td>C-D</td>
<td>C-D and TL</td>
<td>More dispersed ownership – higher productivity growth</td>
</tr>
<tr>
<td>Results</td>
<td>Exporting firms - higher productivity, higher market share – higher TFP</td>
<td>Greater C3 – higher productivity [greater import penetration – lower productivity]</td>
<td>SOEs perform worse</td>
</tr>
<tr>
<td>Competition</td>
<td>Greater market share - higher productivity, greater export share - higher productivity]</td>
<td>[Greater relative standard dev – lower productivity, greater import penetration – lower TFP]</td>
<td>Greater import penetration – higher productivity level</td>
</tr>
<tr>
<td>(firm level)</td>
<td>Greater market share – lower productivity level (stronger for before quotation and privatised)</td>
<td>Greater market share – lower productivity level</td>
<td>Foreign majority owner – higher productivity growth</td>
</tr>
<tr>
<td>(industry level)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td>SOEs perform worse</td>
<td>Majority foreign better, majority public worse</td>
<td>Foreign majority owner – higher productivity growth</td>
</tr>
<tr>
<td>Ownership</td>
<td>N/A</td>
<td>N/A</td>
<td>More dispersed ownership – higher productivity growth</td>
</tr>
<tr>
<td>concentration</td>
<td>N/A</td>
<td>N/A</td>
<td>Better ownership and competition are complements</td>
</tr>
<tr>
<td>Complements /</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>substitutes</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
4. Conclusions

In this paper, we have situated the studies of the impact of the competitive environment on the performance of firms in transition within a broader context. The results of the three new studies that are compared in this paper provide new substantive evidence on the role of competition and also highlight important methodological and data problems that make genuine comparative work difficult. We have shown how the ‘within firm’ effect of competition on productivity fits conceptually and empirically into the analysis of the contribution of entry, exit and selection effects to aggregate productivity growth. Differences between the contribution of the entry and exit processes to productivity growth in more and less developed market economies have been highlighted. The inference that this may be related to the strength of the competitive infrastructure has clear policy implications for transition economies. We have also examined how other reform policies interact with competition – either as substitutes or as complementary policies. Clarifying these relationships should sharpen the targeting of effort by policy makers. The evidence suggests that gaps in the competitive infrastructure weakens the effectiveness of competition policy. Moreover, we have reported evidence that how effectively competition policy is implemented affects both competition and performance in transition countries.
References


### Appendix. Industry characteristics, concentration and competition problems

Table 1. The most concentrated industries in Europe (out of the 100 NACE 3-digit industries)

<table>
<thead>
<tr>
<th>Industry Type</th>
<th>Industry (\text{Type})</th>
<th>Econ. of scale</th>
<th>Public procure.</th>
<th>Multinationality</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL</td>
<td>cement</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sugar</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>shipbuilding</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>starch</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beer</td>
<td>2A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>soft drinks</td>
<td>2A</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tobacco</td>
<td>2A</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>oil and fat</td>
<td>2A</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chocolate</td>
<td>2A</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rail stock</td>
<td>2R</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>insulated wire &amp; cable</td>
<td>2R</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>soap &amp; detergents</td>
<td>2AR</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paint &amp; ink</td>
<td>2AR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTERMEDIATE</td>
<td>glass</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>asbestos</td>
<td>1</td>
<td></td>
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<td>rubber</td>
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<td>cycle &amp; motor cycle</td>
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<td>ind. &amp; agric. chem.</td>
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<td>2AR</td>
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Source: Davies and Lyons (1996), pp. 242-243. Local: intra-EU imports relative to apparent EU consumption <15% and extra EU-trade intensity > 50%; Global: extra EU imports plus exports relative to apparent consumption > 80%. ‘Intermediate’ are all the other high concentration industries.

Economies of scale is defined as MES>500; public procurement industries are classified as such in *European Economy* 1990 (cited by Davies and Lyons, Table 14.1); multinationality refers to above average multinational production in the industry.