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How Competitive are the Emerging Markets? An Analysis of Corporate Rates of Return from Nine Emerging Markets

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ABSTRACT
This paper reports on a large empirical study of corporate rates of return in emerging markets during the 1980's and 1990's. It focuses on the nature and intensity of competition and how it should be measured. The data on corporate rates of return, profit margins and output:capital ratios are used to examine the question whether liberalization and globalization in the 1990's have led to greater competition than before. Persistency in corporate rates of return is analyzed to address issues of the dynamics of the competitive process in these economies. The sample frame consists normally of the 100 largest corporations quoted on the stock markets of the following countries: Argentina, India, Jordan, Korea, Malaysia, Mexico, Peru, Thailand, Zimbabwe. The results are compared with those for advanced countries. Although the paper does not directly address the question of the present crisis in East Asian countries, it *inter alia* provides evidence on some of the structural hypotheses about the deeper causes of the crisis.

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I. Introduction

This paper reports on a large empirical study of corporate rates of return in emerging markets during the 1980's and 1990's. Its main purpose is to analyze changes in corporate profitability and to examine their implications for the dynamics of the competitive process in these countries, and for economic efficiency. Apart from their intrinsic interest, these issues have acquired fresh significance in the context of the current crisis in the East Asian economies. It has been argued that these highly successful economies with an unparalleled sustained record of fast economic growth have come to grief because of fundamental flaws in their corporate, financial and governance systems. Specifically, it is suggested that the crisis was in part caused by over-investment which in turn resulted from a poor competitive environment and disregard for profits in corporate investment decisions.[1] Although this paper does not directly address the question of the East Asian economic crisis,[2] it provides important evidence on the nature and intensity of competition in these economies.

For a large majority of developing countries, the last decade has been marked by considerable deregulation, privatization, internal and external liberalization of product markets, as well as extensive financial liberalization. The paper analyzes data on corporate rates of return, profit margins and output:capital ratios, at the level of individual firms, to examine the question

[1]For differing perspectives on the causes of the financial crisis in East Asian countries, see among others Feldstein (1998), Krugman (1998), Roubini et al (1998), Wade and Veneroso (1998), Sachs and Radelet (1998) and IMF (1998).

[2]Singh (1998) explicitly discusses the question whether or not the East Asian crisis is due to the Asian model of capitalism followed by these countries.

whether the forces of liberalization and globalization in the emerging markets in the 1990's have led to greater competition than before. Further, persistency in corporate rates of return is analyzed to address issues of the dynamics of the competitive process in these economies. The sample frame consists normally of the 100 largest corporations quoted on the stock markets of the following countries: Argentina, India, Jordan, Korea, Malaysia, Mexico, Peru, Thailand, Zimbabwe.[3] The results are compared with those for advanced countries.

The paper is organized as follows. Section II addresses the prior conceptual question of how the intensity of competition is to be measured. It also sets out the precise empirical questions addressed in the study and the methodology used for their analysis. Section III provides information on the data and the variables used. A preliminary comparative analysis of the corporate rates of return, profit margins and output:capital ratios for the nine emerging markets in the 1980's and 1990's is presented in section IV. Section V reports on results of multivariate analysis. Pooled time-series cross-section regression equations are used in this section to examine the question whether economic liberalization in the 1990's has led to greater competition than before in the sample countries. Section VI supplements the analysis by analyzing the time-series of corporate rates of return for each individual firm. The results are

[3]Previous related studies based on the IFC data set include Singh and Hamid (1992), Singh (1995,1994), Whittington et al. (1997), Glen and Pinto(1994), Demirguc-Kunt and Maksimovic (1994).

compared with those for advanced countries. These statistical findings help to map various aspects of the dynamics of the competitive process in emerging markets. Section VII concludes.

II. Liberalization, the dynamics of competition and corporate rates of return

Has liberalization in developing countries led to greater competition than before? How should the intensity of competition be measured? What would be the effect of liberalization on corporate rates of return, as well as on the relationship between these returns and some of their chief determinants? One straightforward way of approaching the last question is in terms of 'equilibrium' economics. A central proposition of economic theory is that competition should equalize rates of return within and across industries. This is achieved through entry and exit of firms as well as new investment and disinvestment by existing firms. At the simplest level one might argue that to the extent that liberalization leads to more competition than before, other things being equal, it should result in lower rates of return. However, this inference would not necessarily be correct. This is because greater competition would not only reduce the monopolistic element in corporate rates of return, thus lowering them, but it should also produce a greater efficiency of resource utilization, which would tend to increase profitability. The net result of these two forces could be a zero, a negative, or a positive change in profitability. Clearly, this would make it difficult to draw conclusions from the evolution of rates of return, about the changes in the intensity of competition arising from liberalization.

However, the following decomposition of corporate profitability into two components - profit margins and output:capital ratios - may help us to get some idea of the relative strength of these two opposing forces. This decomposition follows from the identity:

$$P/K = P/S \times S/K$$

where P is profits,

K is capital,

and S is sales.

So, if liberalization has indeed led to greater competition, we should normally expect to observe falling profit margins over time. If greater competition has also led, as a consequence of more rivalrous behavior, to more efficient utilization of resources, we should observe an increase in the output:capital ratio - both these inferences being subject to the usual *ceteris paribus* caveat.

These effects of liberalization on profit margins and output:capital ratios may be observed at the level of both the individual firm and the economy as a whole. In addition, at the economy or industry level we may expect to observe a reduction in the cross-section variation in corporate rates of return, adjusted for risk.

However, this simple story is subject to many theoretical as well as empirical caveats, when we start looking at data in the real world.

(a) Profit margins may not necessarily fall, but may indeed rise as a result of liberalization. Greater competition and rivalry may lead to improved resource utilization. This in turn

may reduce inefficiency (for example, previous over-manning and excessive wages) with the net result being an increase in profit margins.

(b) The effects outlined above are of a long-term nature and may not manifest themselves in the relatively short periods we are examining.

(c) However, it is also possible that, even in the short term, there may be undershooting or overshooting of equilibrium rates of return. In the short term, there are plausible reasons to suggest that liberalization may increase rather than decrease the cross-section variation. For example, before liberalization firms may have a cozy relationship with more or less similar profits. Liberalization may change this pattern and, in the initial stages, we may observe an increased dispersion of rates of return. But in the longer term, this dispersion would fall as greater competition moved the economy towards an equalization of inter-firm and inter-industry profitability.

(d) As other things are seldom equal, the output:capital ratio for a firm may, for example, not be lowered, despite improved resource utilization due to structural changes in the firm's activities.

However, it is a complex world and, despite (a)-(d), the effects of increased intensity of competition may nevertheless show through. The best result from the perspective of equilibrium economics would be if we observed reduced profit margins and increased efficiency of resource utilization following the liberalization process.

There are also other ways of examining the proposition that economic liberalization has led to greater competition in emerging markets. For instance, we could analyze how the determinants of profitability have changed over time. As a result of greater competition following liberalization, the relationship between size and rates of return may change. If large firms were formerly more profitable than small firms, because they received government subsidies of various kinds, that relationship may change after liberalization or deregulation. Not only the intercept but the slope may also change. Similarly, the relationship between growth and profitability may change: greater competition may mean, for example, that at the same rate of profit firms may be compelled to have greater investment and growth than before. Thus, in empirical terms, this approach involves estimating profitability equations and analyzing how their coefficients have changed over time.

Another important way of measuring whether competition and efficiency have increased is to examine the dynamics of the competitive process by considering the question of persistency in rates of return. Despite their wide usage, industrial economists accept that structural characteristics of an industry (e.g. concentration ratio) are not particularly informative about the intensity of competition in the modern economy. There may be a high concentration ratio in an industry and yet competition may be intense between oligopolistic firms over market share, new products, design, sales, etc. One way of capturing such competitive dynamics is to examine the persistency of corporate rates of return. If competition is intense there is likely to be little persistency in the relative rates of return of different firms. Those with above average profits in one period, may not have such in the next period. With a lower intensity of competition,

profitability differences between firms may be expected to be more persistent. For example, Waring (1996) reports that in the US car industry, the three leading firms had persistent profitability differences throughout the 1970s. General Motors was persistently more profitable than Ford and the latter persistently more profitable than Chrysler. In general in US industry, there was a decline in the persistency of rates of return during this period.

To track the dynamics of the competitive process in this way, industrial economists use a simple first order auto-regressive model, which permits the estimation of a company's long-term equilibrium profits, as well as the speed of adjustment towards this long-term level. Following Mueller's (1986) seminal study for US corporate data, such an equation has been estimated to provide comparative information on competitive dynamics for several advanced economies4. The underlying motivation for this analysis is as follows:

A *firm 's* profitability in time period t (P_{t}) is assumed to consist of three components:

(a) A competitive return on capital C which is common to all companies.

(b) A permanent rent (R_i) peculiar to the firm itself and,

(c) A short run quasi rent (S_{it}) which is also peculiar to the firm, varies over time, and tends toward zero in the long run.

Thus: $P_{it} = C + R_i + S_{it}$ (1)

4 See, for example, Conolly and Schwartz (1985), Geroski and Cubbin (1987), Geroski (1988, 1990), Geroski and Jacquemin (1988), Mueller (1986, 1990), Mueller and Geroski (1990), Odagiri (1994), Schohl (1990), Waring (1996).

It is further assumed that: $S_{it} = \lambda S_{it-1} + U_{it}$ (2)

Where: $0 < \lambda < 1$ and,

U_{it} are distributed $N(0, \sigma^2)$

From equations (1) and (2), the following equation is derived:

$$P_{it} = (1 - \lambda)(C + R_i) + \lambda P_{it-1} + U_{it} \quad (3)$$

Let $\hat{\alpha}$ and $\hat{\lambda}_i$ be the estimates from the autoregressive equation:

$$P_{it} = \hat{a} + \hat{\lambda}_i P_{it-1} + U_{it} \quad (4)$$

The equilibrium or long-run profitability level of *firm* is given by:

$$P_{ip} = \hat{a}/(1 - \hat{\lambda}_i). \quad (4a)$$

As Geroski (1990) notes, equation (4) is best regarded as a reduced form of a more elaborate structural model involving entry and exit of firms both of which depend on profits - to be more precise, on expected positive or negative 'excess' returns (relative to the long-term norm).

However, the estimation of a full structural model is beset with difficulties, because of the classic latent variable problem: Changes in profits are a function of the threat of entry, rather than entry itself. Even if no entry takes place, the threat of entry may induce firms to lower prices and profits as a strategic option. Indeed, in the limiting case, as Baumol *et al.* (1982) showed, even a monopolist may be compelled to charge competitive prices if there is sufficient entry and other conditions are met to make the market 'contestable'.

Equation (4), despite its limitations due to being a reduced form, has the virtue of not requiring any unobservable variables to map competitive dynamics. Nevertheless, it is important to note that equation (4) does not allow us to distinguish between different sources of persistency, specifically that which may arise from persistent monopoly power or because good management allows a firm to be continuously more efficient than others. Entry and exit forces which erode excess profits apply to both sources of such profits.

To sum up: this paper uses data on corporate rates of return and their components to assess the nature and intensity of competition in developing countries in the following ways:

(a) by analyzing changes in the average, as well as the dispersion, of rates of return, profit margins and output:capital rates in the pre- and post-liberalization periods;

(b) by investigating whether or not the determinants of profitability equations have changed following liberalization;

(c) by studying the persistency of profitability for each corporation in the sample.

III. Data and Variables

The data used in this study are the corporate accounts of large manufacturing firms quoted on the stock market in the nine developing countries mentioned in Section I. It was intended to include, for each country, the 100 largest quoted manufacturing companies which existed throughout the period. However, for five out of nine countries, the total number of companies with a quotation on the stock market was considerably less than 100. Thus the sample for Peru consists of only 29, for Jordan 39, Zimbabwe 48, Thailand 60 and Argentina 62 companies. For India, Korea, Malaysia and Mexico the sample size is around 100. The total number of corporations analyzed in this study for all nine countries together is 658. Table 2 provides information on the number of corporations in the sample for each country and their percentage distribution by industry. However, the industrial classification is rather crude; it was carried out by the authors on the basis of the information provided in the corporate accounts.

The time period for which corporate accounting information exists in the IFC data bank also varies considerably between countries. The longest time series are available for Zimbabwe (1980-1995), Korea and Jordan (1980-1994), India (1980-1992), Malaysia (1983-1994) and Mexico (1984-1994). For Argentina and Peru, there are data only for the period 1991-1995; for Thailand, the data cover 1987-1994. A full description of the data base is provided in Singh (1995).

The three main variables used in this paper (these are subsequently the dependent variables in the regression analysis) are defined as follows. For the i^{th} firm:

PM_i: Profit Margin = Earnings before interest and taxes (EBIT) divided by Sales.

ROA_i: Return on Assets = Earning before interest and taxes (EBIT) divided by Total Assets.

$Outcap_i$: Output-Capital ratio = Sales divided by Total Assets.

In interpreting the results of the analysis, the following limitations of the data set may be noted. First, the data set consists of continuing companies. There is therefore likely to be a sample selection bias.[5] Secondly, the use of accounting data leads to difficulties in comparing the observed rates of return between countries. This is for two reasons. One, accounting conventions (e.g. treatment of depreciation) differ between countries. Two, since all variables are measured at current prices in local currencies, there are distortions caused by inflation. There are well known problems in the use of historic cost accounting data under inflationary conditions.[6] As the rates of inflation in the sample periods vary widely between countries, international comparisons of the corporate rates of return may in principle be hazardous. Therefore, in the following empirical analysis we concentrate on *changes* in the rates of return within each country and compare such

[5]This issue is discueed in Section VI below in relation to the analysis of persistency of profitability.

[6]For a discussion of these problems in relation to corporations in the IFC data bank, see Whittington *et al*. (1997).

changes (and other similar parameters) between countries. Such comparisons are, of course, not free from biases, but they are considerably more reliable than inter-country comparisons of profit rates *per se*.

IV. Summary description and preliminary analysis of the data

Tables 1a to 1c and 2 present information on the univariate distributions of corporate profitability, profit margins and output:capital ratios. These tables, as well as some of the following ones, are of interest in their own right quite apart from providing some simple statistics for comparing rates of return and their components during pre- and post-liberalization periods. Table 1 is in three parts; the top part reports average results for the whole period for which there are data available. The bottom two parts refer to pre- and post-liberalization periods respectively. It will be appreciated that liberalization is not a binary event, but rather an incremental and cumulative process. We have therefore used the data for the earliest three years available in the 1980's to indicate the pre-liberalization, and the latest three years in the 1990's to connote the post-liberalization period.

It will be recalled from Section II that the equilibrium model predicts that as a consequence of greater competition following liberalization, we should expect to find:

- a fall in profit margins
- an increase in efficiency, i.e. output:capital ratio
- a decline in cross-section dispersion in rates of return.

Table 1a shows that the median corporate rate of return averaged over the whole period ranges from 4% in Argentina to 14% in Zimbabwe. To put these figures in some perspective, the mean rate of return, similarly calculated, for the Fortune Top 100 US manufacturing corporations in 1994 was 6%. Further, the inter-country spread of the rates of return for these emerging markets, despite differences in accounting conventions or inflation rates, is not all that different from that observed in advanced countries. Odagiri (1990) (see Table 10.2) reports variations in the average *post-tax* rates of return in five industrial countries during the 1960s and 1970s ranging from 4.76% in West Germany from 1964-80 to 13.76% for Canada for 1964-82 (other countries in Odagiri's sample were Japan, USA and UK).

The bottom two parts of Table 1 do not reveal any consistent pattern in the comparison of rates of return in the pre- and post-liberalization periods. For four countries (Korea, Mexico, Thailand and India) the rate of return fell in the 1990's, while in the other three countries for which there are data, it rose. The statistics with respect to the standard deviation of the rates of return are more promising: in four countries the standard deviation fell following liberalization (in accordance with the greater competition hypothesis) and in the remaining three it remained the same.

Summary statistics on profit margins are reported in Table 1b. The data indicate a somewhat narrower inter-country range (from 7% to 14%) for the median profit margins than for rates of return. The corresponding figure for the US Fortune 100 with respect to profits to sales ratio in 1994 was 7%. However, the comparison of means and standard deviations of profit margins in

the pre- and post-liberalization periods does not accord with the predictions of the competitive equilibrium model. The mean profit margin fell in four countries following liberalization and rose in three. The standard deviation also rose in three and fell in four countries, but the countries involved were not all the same.

Table 1c indicates a range of median output:capital ratios from 0.62 in Argentina to 1.29 in India. The corresponding figure for the US Fortune 100 in 1994 is 1.22. The pre- and post-liberalization comparison of these ratios again does not reveal any consistent pattern. In three countries the ratio rose, while it fell in four.

Table 3 (a-c) provides an elementary bivariate analysis of the relationship between size and each of the three variables under discussion. Firms are classified into quartiles according to their size at the beginning of the period - measured here by the opening value of the firm's total assets. The figures again do not reveal any clear, consistent pattern of bivariate relationships. In Table 3a, for 6 out of 9 countries and for all countries together, the rate of return of the lowest quartile of firms was larger than the relevant country average. Across all countries, the profitability of the lowest quartile of companies is higher than that of the two middle quartiles and nearly as high as that of the fourth quartile. Only for Malaysia and Peru do we find that the average profitability of the largest companies (i.e. fourth quartile) exceeds the country average. Together, these results suggest a mildly negative, possibly non-linear, relationship between size and profitability.[7]

[7]Although for each country the sample consists of only large companies quoted on the stock market, nevertheless the sample firms display wide variations in firm size. Singh (1995) showed

The relationship between profit margin and size in Table 3b would appear to be somewhat different. For all countries together, the fourth quartile has the highest average profit margin, which exceeds the global average, but is only marginally higher than that for the first quartile of companies. However, in five individual countries - Argentina, India, Jordan, Mexico and Peru - the average profit margin for the first quartile exceeds the country average; in the remaining four countries - Malaysia, Mexico, Peru and Zimbabwe - the fourth quartile profit margin exceeds the country average.

Turning to the output:capital ratios in Table 3a, for all countries together the first quartile of companies had the highest output:capital ratio, and the ratio monotonically decreased in each quartile. In seven countries, the average output:capital ratio for the first quartile exceeded the average for the country, suggesting overall a negative relationship between the two variables.

The distribution of the three variables by industry is presented in Tables 4a-c. Table 4a shows that for all countries together, there is very little variation in individual industry rates of return, with the highest figure of 11% per annum recorded for agribusiness and chemicals and the lowest, being 8%, for minerals and textiles. Peru displayed the greatest intra-industry variation, with a standard deviation of 7%. Peruvian cement companies recorded an average return of 13%, while that of textile companies was -5%. The lowest intra-industry variation in rates of return

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that the largest Indian firm in a sample of the 100 largest quoted firms was almost 100 times as big as the smallest firm in the sample.

was displayed by Korea, with a standard deviation of only 1%. Profitability ranged from only 9% (in four industries) to 11% (in two).

Table 4b indicates that there is greater inter-industry variation in profit margins than for profitability. For all countries together, the standard deviation displayed by the mean industrial profit margins is twice as large as that for profitability. Across all countries the highest profit margins were recorded for Cement (15%) and the lowest by textiles (8%). Within individual countries, the highest profit margins were recorded in Thailand, for cement (24%), and in Mexico, for the same industry (21%). In general, as in the case of the rates of return, inter-industry variations in the mean profit margins were larger than the corresponding inter-country difference.

For all countries together, the highest output:capital ratio was recorded by agribusiness and the lowest by cement. As noted above, cement also had the highest average profit margin. For individual countries, the highest output:capital ratio was found in India (agribusiness 2.04), and the lowest in Mexico (cement 0.45). Both inter-country and inter-industry variations in output: capital ratios were far larger than variations in either profit margins or profitability. However, as in the case of the latter two variables, the inter-industry differences in output: capital ratios were larger than the inter-country differences.

Tables 1a-1c showed that the standard deviations for the three variables did not in general decline in the post-liberalization period. It is, however, possible that, even though this may be true for all

firms together, the standard deviations for smaller firms may have become lower following liberalization and greater competition. One could equally plausibly suggest that it is the larger firms which would face greater competition than before, because of external liberalization. The results in Table 5a, on the relationship between size and dispersion in rates of return, show that there is no greater tendency for the standard deviation to decline in small firms compared with large firms. Within the first period itself, the table indicates that, in general, there is a negative relationship between size and standard deviation. This tendency is less marked in the post-liberalization period. The corresponding results for standard deviations ordered by size quartiles in Tables 5b and c do not reveal any clear relationship between size and changes in the standard deviations of either profit margins or output:capital ratios.

The summary statistics examined in Tables 1-5, although useful as descriptions of the basic data and of interest in their own right, do not seem to provide much support for any of the three predictions of the traditional equilibrium model stated earlier. Despite the deficiencies of the data, and the probability of disequilibrium behavior during the relatively short post-liberalization period examined above, this is not surprising, in view of the crudeness of the methods used. In the following section we turn to multivariate analysis to seriously test the hypothesis that liberalization inevitably produces greater competition.

V. Multivariate Analysis

In order to investigate the changes between the pre and post liberalization periods, the following regression model was estimated with the rates of return and their two components as the

successive dependent variables.

$$Y_{it} = \beta_o + \beta_1 Gear_{it} + \beta_2 PE_{it} + \beta_3 Salln2_{it} + \beta_4 Salgr_{it} + \beta_5 Salsz_{it} + \beta_6 (\text{Sector dummies})_{it} + \beta_7 Period_{it} + \beta_8 GearD_{it} + \beta_9 PED_{it} + \beta_{10} Salln2D_{it} + \beta_{11} SalgrD_{it} + \beta_{12} SalszD + \varepsilon_{it} \quad (5)$$

where Y is successively the rate of return on assets (ROA), profit margin (PM), and output:capital ratio (OUTCAP), and ε_{it} is the error term, which is assumed to be normally distributed with zero mean and constant variance.

Comment [PAS1]:

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Apart from the sector and period dummies, the choice of independent variables was severely restricted by the availability of data for the nine emerging markets in the sample. Only the following variables, which were all firm-specific, could be used:

Gear: Gearing = Total liability divided by shareholders equity

PE: Earnings to price ratio = The reciprocal of the annual P/E ratio

Salln2: This is the natural log (ln) of sales squared; firm size is measured by sales

Salgr: Growth in net sales = (Net Sales$_{t+1}$ - Net Sales$_t$)/Net Sales$_t$)

Salsz: Relative Size = Net sales of firm (i) in the year (t) divided by the total sales of all firms (n) in the sample in year (t).

The dummies included in the model are indicated as follows. For the time dummy:

Period = 1 if year is 1990 or later (i.e. 1990 - 1995)

0 otherwise

The sector reference dummy is Agribusiness, Food and Timber. Other sectoral dummies are indicated by Cement, Energy, General, Industrial Equipment, Mineral, Petrol, and Textile. Variables with a D suffix in the regression model (5) are interactive dummies for the pre- and post-1990 periods.

The reasons for the inclusion of the variables may briefly be stated as follows. Relative size can be regarded as an indicator of a firm's market share or of barriers to entry which would suggest a positive relationship to profits. On the other hand, to the extent that there are management or other diseconomies of large size in emerging markets, the regression coefficient can be negative. Similarly, *a priori* considerations suggest that growth of sales can have either a positive or a negative effect on profits. Growth maximizing managers in large firms with separation of ownership from control may sacrifice profits to growth (Marris, 1964). However, sales growth may also be regarded as an indication of good management or technical progress, which would suggest a positive relationship with profits. Gearing can in principle affect profits both positively and negatively. If there was financial repression before liberalization and the large firms paid low subsidized interest rates, the more geared they were the greater would be their profitability. On the other hand, finance textbooks often suggest that in advanced countries such as the US public utilities are likely to be more highly geared than other companies, because of their low risk. Such companies therefore also have low returns.

Another independent variable used in the analysis is the firm's earnings:price ratio (the reciprocal of the conventional PE ratio). During the 1980's and for the early 1990's many emerging markets had a boom in share prices which reduced the cost of equity capital to companies. Despite the fact that developing country capital markets are thought to be underdeveloped and imperfect, developing country corporations resorted to equity finance to a surprisingly large degree [Singh 1994, 1995; Singh and Weisse, 1998]. This would suggest a positive relationship between PE and corporate profits. It could, however, also be argued that, to the extent that the rise in the PE ratios and hence the reduction in the cost of capital were regarded as permanent, this would lead to reduced profits in equilibrium.

To investigate the effects of liberalization, the model allows for the possibility that in the post-liberalization period not only may the intercepts of the regression equation be different, but so may the slopes. To illustrate, the relationship between size and profitability may change both in terms of intercept as well as slope. Once large firms find that they no longer enjoy government subsidies after liberalization, not only may there be a fall in their profits, but they may strive harder in the new competitive environment. The latter would suggest a change in the slope coefficient. Similarly, liberalization and greater competition may compel firms to grow faster at any given rate of profit (as envisaged for example by Karl Marx in Vol. I of Capital), again indicating a change in the coefficient of the growth variable.

Notable among the variables that were not included for lack of data are industry-specific

variables such as concentration ratio, advertising, and other indicators of barriers to entry. Nevertheless, the use of industry dummies should pick up some of the effects of industry-specific variables. Although data on country-specific variables, such as openness, are more easily available, these were not included because the analysis is being done for each country individually. As outlined earlier, the reason for the latter choice is that inter-country comparisons of rates of return are problematical, because of differences in accounting practices and widely varying rates of inflation.

The results of fitting equation (5) to the data for the nine emerging markets are presented in Table 6a (with ROA as the dependent variable), Table 6b (dependent variable PM) and Table 6c (where the dependent variable is OUTCAP). The regression model was estimated separately for each country by pooling together all time-series and cross-sectional observations. The total number of observations in the regressions was 4,824. For the distribution of the observations by country and other details of the data see Appendix.

Tables 6a-c contain a very large amount of information. However, the most important points which bear on the issues being investigated here may be summarized as follows.

(1) First we note that the overall level of explanation (measured by adjusted R^2) is not high. The firm-specific variables used in the analysis can explain only about 15-35% of the variation in profits in individual countries (except Zimbabwe in the case of Table 6a). This is not surprising, a number of relevant industry-specific variables could not be included, because of

lack of data.8 Nevertheless, by the standards of cross-section equations, these levels of adjusted R^2 may be regarded as moderate. In drawing inferences from the estimated equations in these tables, it is important to consider not only the significance of the regression coefficients for each country, but also their signs. For example, even if none of the regression coefficients for a particular variable are statistically significant, if all regression coefficients for the nine countries have the same, say, positive sign, the correct inference would be that the two variables are positively related.

(2) Turning to the estimated coefficients in Tables 6a-c, it is notable that the gearing variable has a significantly negative coefficient in a large number of cases. With profitability as the dependent variable, gearing is significant and negative in six out of nine countries. In two countries where it is positive (Zimbabwe) or zero (India), it is insignificant at the usual 5% level. With the profit margin as the dependent variable (Table 6b), the coefficient for gearing is negative in seven out of nine countries and significant in five of them. Again, as in the case of ROA, it is zero for India, and this time positive for Mexico; in both instances, however, it is insignificant. The results with respect to the output:capital ratio are more mixed, with positive and significant coefficients for two countries and negative and significant ones for four. Overall, what this suggests is that firms which performed relatively poorly also had more highly leveraged capital structures. As this result bears on the question of the structural causes of the East Asian crisis, it may be useful to look at the univariate distribution of the

8 A number of studies of advanced countries suggest that firm-specific variables are more important in explaining profitability than industry-specific ones. See, for example, Mueller (1986, 1990). For an opposite perspective, see

gearing variable in different countries. This information is provided in Table 6d. Considering the median values, as expected, Korean firms are the most highly leveraged among the nine countries considered. The next most highly leveraged are the Indian firms, followed by Thailand. The Latin American countries in the sample have considerably lower gearing ratios.

(3) Another independent variable which stands out in Tables 6a-c is sales growth. For profitability as the dependent variable, it has a positive sign in all nine countries and is significant in four. Broadly similar, but slightly weaker, results are indicated in Tables 6b and c.

(4) The size variable has a negative sign for the majority of countries, but is not always statistically significant. However, the SALLN2 variable which is the $(\log \text{size})^2$ is almost always positive and frequently significant. This suggests overall a non-linear relationship between size and profitability.

(5) A large number of the industry dummies have the same sign across different countries, and many of these are statistically significant. The slope dummies are, however, less well defined, with very few significant coefficients.

(6) For the issues investigated in this paper, an important, although relatively weak, result which

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Waring (1996).

emerges from this analysis pertains to the period dummy. For the rate of return on net assets, the period dummy variable to indicate the effects of liberalization is negative and statistically significant in four out of the seven countries for which data are available for both periods. Two of the coefficients are positive but insignificant. Table 6b shows that the period dummy has a negative coefficient in six out of the seven countries, two of which are statistically significant. Table 6c for output:capital ratios shows that the period coefficient is positive in six out of seven countries although none of the seven coefficients are significant. Overall, these results suggest that liberalization has resulted in lower profit margins and higher output:capital ratios in the sample countries, as suggested by the predictions of the equilibrium model. Thus, despite the deficiencies of the data and possibilities of disequilibrium behavior when the relevant variables (e.g., size, industry, growth) are controlled, the predicted effects of liberalization, in terms of both reduced profit margins and greater efficiency, do come through.9

It may be argued that our results showing reduced profitability in the 1990's are simply a business cycle effect of the recession of the early years of the decade. There are two points which are relevant to this argument and need to be considered. First, for many developing countries, as a result of increased capital flows, the 1990's marked an upturn in economic activity, rather than a downturn. Secondly, and more importantly, it will be noted that what we are observing is not just a fall in profit margins, but also an increase in output:capital ratios. If the reduced

9 Our period variable will be picking up not only the direct effects of liberalization, but also the effects of changes in the relationships between the independent variables and profitability following liberalization.

profitability were due simply to recession, output:capital ratios would have been expected to fall.

Although in statistical terms the results are not strong, they are nevertheless robust. In view of the fact that the error terms for different countries may be related, not least because of the common impact on developing economies of many world economic events, the equations were re-estimated as a system of 'seemingly unrelated regressions'. The results were similar to those reported in Tables 6a -6c.

VI. Persistency of profitability in emerging markets

As noted in Section II, the third way in which this study has considered the question of competitiveness is by analyzing the persistency of profitability. This has been done by estimating for each individual firm the first order autoregressive equation (4) in Section II:

$$P_{it} = \hat{a} + \hat{\lambda}_i P_{it-1} + U_{it} \qquad (4)$$

where $\hat{\lambda}_i$ indicates the speed of adjustment of profits to their long-run levels. The long-run profitability is obtained from the estimated regression coefficients as follows:

$$P_{ip} = \hat{a}/(1 - \hat{\lambda}_i).$$

In the empirical application of equation (4), several considerations are relevant. These are briefly outlined below.

First, following many empirical studies for advanced countries, this paper also measures P_{it} as a deviation of the profits of the firm (i) in period (t) from a measure of profitability of all firms in

the sample for the relevant country. Thus

$$X_{it} = P_{it} - \frac{1}{n}\sum_{i=1}^{n} P_{it}$$

where n is the total number of companies in the sample for each country, and P_{it} is the earnings after tax divided by total receipts for each firm i in year t.

Table 7 reports the results of the persistence of profits regression for the nine emerging markets. The notation used in the table is as follows:

LMD: the slope of the autoregression $X_{it} = \alpha_i + \lambda_i X_{it-1} + e_{it}$ (6)

PYLR: calculated as $[\alpha_i/1-\lambda_i]$ and interpreted as the long-run or permanent profit rate for each firm

PYIN: the initial profit rate (EAT/Total Assets) computed as the average of excess profits for the first two years for each company

PYAV: the average profit (EAT/Total Assets) for each firm over the period T.

Ideally, instead of taking deviations of each firm's profitability from the sample average, it would have been more appropriate to use the economy-wide average profitability as a benchmark to measure excess profits. Better still, the theoretically appropriate measure would have been the opportunity cost of capital in the economy. However, neither of these courses of action was open to us because the data were not available. Nevertheless, the procedure followed has two distinct advantages. It allows us to compare the results for emerging markets with those for advanced

countries, where similar methodology is used. Further, it is important to bear in mind that our samples consist of the largest firms, whose profitability profile may well be different from that of the economy as a whole.

The second empirical problem in the application of the autoregressive model in equations (4) or (6) is concerned with the smallness of the profits time series available for the firms in the various country samples. The longest time series are 16 years for Zimbabwe, 15 for Jordan and Korea and 13 for India. The shortest are for Argentina and Peru, with just six observations. Although the OLS estimates of the regression equation in (6) are consistent and asymptotically efficient, they are known to be biased in small samples. Johnston (1972) suggests that, in order to correct for this bias, the estimated coefficients should be multiplied by T/T-2, where T is the size of the time series is the sample.

Thirdly, as mentioned earlier, it is important to take note of the sample selection problem caused by considering only surviving large firms when examining the persistency of profits. If survival itself depends on persistence of profits, rather than on other criteria, such as size, confining the samples to surviving firms will bias the results. Although for advanced countries there is considerable evidence (Singh, 1971, 1975) that survival for large quoted companies is essentially determined by size rather than profits (and therefore the sample selection problem is likely to be small), such studies have not yet been done for emerging markets.

What conclusions can be drawn concerning the intensity of competition in the emerging markets

on the basis of the results reported in Table 7? If we first consider the persistence of long-term profitability above the norm, for four out of nine countries (Argentina, Jordan, Korea and Thailand), the estimated value for the average firm is negative. For India, Mexico and Peru it is close to zero. The highest value is recorded for Malaysia, which is 0.03, suggesting that the average firm is able to earn profits 3% above the norm in perpetuity. Even in countries for which the average value of PYLR is zero, there will be individual companies whose long-run profits deviate from the norm. The estimates of the proportions of such companies for the various countries (not reported in Table 7) suggest that these are broadly similar, ranging between 16.5% in Malaysia and 22.8% in Korea. More significantly, they are also relatively small compared with the corresponding figures for advanced economies to be discussed below. The reported correlation coefficients between permanent profits (PYLR) and initial profits (PYIN) for most countries are also very small. The largest ones are recorded for India, Korea, Mexico and Zimbabwe; these are only of the order of 0.3. Further, in Table 7, the estimates of PYLR, ordered by size quartiles, do not indicate any tendency for larger firms to have higher permanent profits than the average firm.

Turning to the other main parameter of competitiveness, the speed of adjustment λ shows considerable variation between emerging markets. Its values range from –0.04 in Argentina and 0.05 in Mexico to 0.47 in Jordan and 0.54 in Malaysia. To put these figures into perspective, it may be observed that even a value of λ of about 0.5 implies a fairly rapid speed of adjustment. Thus if a firm earned profits 10 percent above the long-term norm, and λ was equal to 0.5, in

three years the excess profits would fall to 1 percent. Again the data in Table 7 do not show any tendency for λ to vary with firm size. Taking into account all the various indicators of the degree of competition reported in Table 7, the data show that, in general, competition has been greater in the Latin American economies, Argentina and Mexico, than in the Asian countries, India, Korea, Malaysia and Thailand.

How do the results for developing countries compare with those of advanced countries? For this purpose we report below the corresponding estimates for the parameters of equation (6) for the UK and the US. First, for the UK, for the period 1948-77, the estimated value of λ was 0.48 and that of PYLR was 0.255. The proportion of firms with long-term profitability persistently above or below the norm was estimated to be 30.4% (Cubbins and Geroski, 1990). The corresponding figures for the US, 1964-1980, were: λ = 0.50, PYLR = 1.57, and the proportion of firms with permanently deficient or excessive profits was 49.2% (Mueller, 1990). Waring's (1996) mammoth study of nearly 12,000 US firms also produced an average value of λ of about 0.50. Even corrected for small sample bias, the value of λ for most developing countries in Table 7, including the Asian ones, tends to be notably lower than for the US and UK. Overall the estimated parameters in Table 7 suggest that, compared with leading advanced countries, developing countries in general, including the Asian economies, are, if anything, more rather than less competitive.

VII. Conclusion

Very briefly, this paper has analyzed corporate rates of return in emerging markets during the 1980's and 1990's, to study the nature and intensity of competition in these markets. The results of the first exercise suggest that the process of liberalization in the 1990's was associated with a reduction in corporate profit margins, as well as an improvement in the efficiency of capital utilization, as the competitive model would predict. The second exercise, with respect to persistency in corporate rates of return, suggests that the dynamics of the competitive process are no less intense in developing countries, including the East Asian ones, than in advanced countries such as the UK and the US.

Appendix

Deletions made in computing univariate statistics

(1) In computing the summary statistics and other univariate measures, deletions from the sample were made on the following criteria:

Return on Assets (ROA) for any company in any year greater or less than 100%.
Profit margin (PM) for any company in any year greater or less than 100 %.

Deletions made for the multivariate regressions

(2) For the 10 countries in the sample, there were **8190** observations at the start. All observations with missing industries or missing values for variables included in the model were deleted. After these deletions, **4987** observations remained. From this adjusted sample, observations were deleted from all countries on the following criteria:

(a) Return on Assets (ROA) > or < 100%, these amounted to 3.
(b) Profit margin (PM) > or < 100 %, these amounted to 86.
(c) Sales growth (Salgr) > 2000%, these amounted to 74.

After these deletions, the sample size for the regressions was reduced to **4824**, comprised as follows:

Country	No of observations	Period
Argentina	150	1992 - 95
Brazil	473	1986 - 95
India	619	1986 - 93
Jordan	294	1986 - 94
Korea	797	1986 - 94
Malaysia	810	1986 - 94
Mexico	704	1986 - 94
Peru	104	1992 - 95
Thailand	429	1986 - 94
Zimbabwe	444	1986 - 95
	4824	