

COMPETITION, COMPETITION
POLICY, COMPETITIVENESS,
GLOBALISATION AND
DEVELOPMENT

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**COMPETITION, COMPETITION POLICY, COMPETITIVENESS,
GLOBALISATION AND DEVELOPMENT**

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Abstract

This paper explores the relationship between globalization, competition, competition policy and competitiveness. It is important to note that although these notions are related, they are conceptually different. This paper contributes by providing a theoretical framework for the main issues which arise in the modern discussion of competition and competition policies in economic development. It also contributes by its extensive treatment of the international dimensions of the subject. Importantly, this paper puts economic development at the centre stage for competition and related policies. It provides a proposal for the establishment of a development-oriented international competition authority. This authority would attempt to limit growth by merger by large multinationals under its purview. They would be allowed to merge provided they divest themselves of a subsidiary of equal value. This would mean that multinationals would not be prohibited to grow by mergers, but they could expand through organic growth or greenfield investment. It would also not stop them from taking over other firms subject to divestiture as outlined. A large body of research on mergers indicates that mega-mergers have the potential of increasing market dominance and reducing contestability. Discouraging such mergers would therefore enhance global contestability, competition, and economic efficiency, while at the same time being distributionally more equitable.

Keywords: competition policy, competitiveness, development.

JEL Codes : L1, L12, L13, L16.

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In writing this paper, the author has relied on his previous articles in this area - Singh (2002); Singh (2003a, 2003b); Singh (2007). He has also borrowed material from Singh and Dhumale (1999); Howes and Singh (2000); Glen, Lee and Singh (2000, 2002, 2003); Singh, Singh and Weisse (2005). This essay also updates the analyses of these papers.

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1. Introduction

This paper explores the connections between globalization, competition, competition policy and competitiveness. These concepts and the relationships between them have emerged as important issues in the current development debate at both national and international levels. The significance at the national level arises from the privatization and liberalization policies which have been adopted by many developing countries in recent decades. The international significance is directly related to globalization and the continuing deep integration of the world economy through multinational companies and fast growth of global trade.

The external dimension is at present particularly important because of the worldwide economic downturn. In these circumstances multinational companies and governments try to evade their international commitments by relaxing free competition in relation to particular coveted industries and products. The return of protection in advanced industrial countries is increasingly well documented, (see e.g. Evernett 2011). However it is not yet a major fault for the international competition system. In spite of the many difficulties of enforcing fairly rules of WTO, most advanced and emerging countries by and large work within the system and, so far, there are relatively few infringements of the rules.

Another reason for the importance of the global dimension is the failure of the Doha Round of trade negotiations which has made it more difficult for the relevant international institutions, such as the World Trade Organisation, to further their agenda for free trade in the international marketplace as well as provide enough space for development for emerging countries. Appropriate and duly agreed and enforced competition policies comprise one way for the international organisations to achieve these objectives. However for such policies to work they have to overcome not only economic but also political issues which are complex and differ between countries.

Turning briefly to the concept of competition itself, it is central to neo-classical analysis and the theory of growth which follows from such a perspective. At the simplest level, competition theory asserts that those countries which have the highest rate of technical progress will also have the highest rate of growth. Further, the greater or more intense the competition, the greater the rate of technical progress. On the basis of these two relationships, the World Bank in its landmark 1991 World Development Report asserted: 'Competitive markets are the best way yet found for efficiently organising the production and distribution of goods and services. Domestic and external competition provides the incentives that unleash entrepreneurship and technological progress'. This

report, according to the World Bank President, represented 40 years of development thinking by the Bank's economists. It is an important document which provides the World Bank's views on core development issues.

This view is not universally accepted and will be challenged in this paper. Similarly, competitiveness is a somewhat different concept than competition per se. In some polemical writings in the 1990s Paul Krugman (1994-1996) made the notion of competitiveness famous by declaring it to be a dangerous obsession and termed it as 'pop internationalism'. Howes and Singh (1990) noted: 'with pop internationalism, he associates the idea that the recent ills of the US economy – eroding real wages, stagnating living standards, rising inequality and unemployment – are the consequences of a major erosion of the industrial base due to international competition'. Krugman went on to claim that the notion of competitiveness might be useful when applied to a corporation but was utterly meaningless when applied to a nation. Krugman's analysis will be challenged in this essay and will be shown why, contrary to him, competitiveness is a useful concept and is important for economic policy.

So far we have introduced the two of the five concepts in the title of the paper. The third concept is that of competition policy. This consists of policies to change corporate conduct, structure and behaviour so as to maintain competition, national and international. Fourthly we introduce the question of globalisation. This has many different meanings for different people but in order to keep the discussion unambiguous this paper regards globalisation as consisting of free trade, free capital flows but not free labour markets (see further, Rodrik, 2012). The latter however are assumed to be flexible at the national level. We have adopted this procedure, not because it is correct in economic theory, but it is simply to make our analyses comparable with that of the World Bank and those of other orthodox economists. From an economic perspective, the more attractive methodology would assume free labour markets analogous with free capital markets.

The main purpose of the paper is to explore the relationship between these four concepts and economic development. The latter for reasons of space and not to lose the focus of this discussion, is taken to be simply economic growth. Agencies like the World Bank regard competition policy as essential for economic development. Implicit in the orthodox analysis is also the notion that the more competition the better. Or in other words, the optimal competition is the maximum competition. Both of these propositions are subject to challenge.

This paper contributes by its conceptualisation of the main issues which arise in the modern discussion of competition and competition policies in economic development. It also contributes by its extensive treatment of the international

dimensions of the subject. Most importantly, it is among the few papers which put economic development at the centre stage for competition and related policies. It also contributes by its proposal for establishment of a development-oriented international competition authority.

As there are a number of concepts being used in this essay, from a pedagogical point of view, it may be useful at this stage to provide a summary of the main conclusions:

- Even if they did not do so in the past, developing countries need a competition policy today, because of two main reasons.
- One, the advanced capitalist economies are subject periodically to gigantic international cross border as well as huge domestic merger movements. To cope with such mergers and protect themselves from involuntary and harmful takeovers of domestic firms, developing countries need a competition policy.
- Two, there are significant structural changes within developing countries themselves arising from privatisation and deregulation which many of these countries had accepted during the Washington consensus period.
- Unless regulatory changes are made, with privatisation there is a danger of replacing public monopolies with private monopolies. It is worth noting in this context that public monopolies are in general to be preferred to private monopolies for the simple reason that public monopolies often carry a legal injunction to advance the welfare of citizens. By contrast, the main objective of the private firm is to maximise shareholder value.
- In the first and only comprehensive study of the intensity of competition in emerging markets, Glen, Lee and Singh (2003) had reported the astonishing results that as conventionally measured, the intensity of competition is lower in the developed countries than in developing countries. Despite all the new methodology which has been introduced in recent years in the persistence of profitability studies, Glen, Lee and Singh (2003) results still stand for emerging markets (there are two other studies for persistence of profits in developing countries, by Kambhampati (1995) and Yurtoglu (2004), both for a single country, India and Turkey respectively).
- The above is not just a statistical result but it has a solid economic foundation which is explained in the paper.
- Analysis and evidence indicates that maximum competition is not necessarily optimal, in terms of dynamic efficiency.
- There is little evidence that the international cross border merger waves of the period before the global crisis of 2008 to 2012 enhanced global economic efficiency any more than did the largely domestic merger waves before then. It has been suggested that mergers may decrease competition rather than increase it. In theory and in practice either outcome is possible depending on the

circumstances. Mergers between oligopolistic firms may lead to more rather than less competition: see Singh (2007), Tichy (2010) and Scherer (1994).

- The current competition policies in the UK and the EU are unsuitable for developing countries – countries at different levels of development and governance capacities require different types of competition policies. Nevertheless, developing countries have much to learn from the experience of Japan and Korea in blending competition policies with industrial policies.
- It is argued here that the present competition policy discourse, in which WTO plays a major role, is unfair to developing countries. The very concepts used in the WTO discussions in the international fora are prejudicial to the interests of developing countries. To make these concepts development friendly, a new language is required to replace the WTO concepts of most-favoured nation treatment, national treatment and market access.
- The paper presents a proposal for a development-oriented international competition authority to control anti-competitive conduct and growth by mergers of large multinational companies.

2. Competition Policy in Emerging Countries

We start our substantive discussion of emerging markets with the important question of how competitive are these markets. Do they need a new competition policy to encourage competition and to foster economic development. The record indicates until recently very few developing countries had introduced competition policy. UNCTAD (2000) suggests that until 1990 only sixteen developing countries had a formal competition policy. With encouragement and technical assistance from international financial institutions and from the WTO, fifty countries completed legislation for competition laws in the 1990s. This may seem like good progress but as Scherer (1994) pointed out that it takes about ten years for countries to acquire the necessary expertise and experience to implement such laws effectively after the primary legislation has been approved by the legislature. Scherer was being over-optimistic. Mendoza, Barcenas and Mahurkar (2012) conclude from their recent review of the empirical literature and the experience of South Korea, China, India and Indonesia with respect to competition policies that what emerges is a picture of a ‘delicate, balancing act’ between policies to attain the advantages of industrial concentration and those that foster market competition in different countries economic development trajectories. The imposition of competition laws is quite chaotic and their success depends on the coherence with the country’s overall development strategy. The three authors suggest that interest groups that benefit from initial industrial support policies will typically resist the introduction of competition laws and policies.

Table 1 provides a brief account of the competition laws in practice that have so far been enacted in the above countries, except India. The Indian situation is even more complicated as Bhattacharya (2013) in his excellent article on the new Indian legislation on competition policy suggests. In the last 10 years, while the competition legislation was being revised the old competition act called the ‘Monopoly and Restrictive Trade Practices Act (MRTP)’ was still in operation. Bhattacharya’s research shows that there were very few cases which were tried and which pertained to anti-trust. Most cases, under MRTP, were concerned with consumer welfare issues, including many concerning the clarifications of the law. It remains to be seen how the competition law will work in a developing country with its own strong legal traditions. It may take another 10 years before it could be said that the country has a coherent competition policy.

Nevertheless the main reason why developing countries did not have competition policies in the past would appear to be that these were not much needed. This was in part due to considerable state control over economic activity and if the government thought there was anti-competitive behaviour by some corporations or industries it intervened directly and fixed prices such as for medicine and other essential products. In addition state owned industries were not allowed to charge monopoly prices.

3. The State of Competition in Developing Countries

How much competition exists in developing countries? The popular impression is that developing country markets do not display much competition or rivalrous behaviour. There are numerous government created barriers to entry and exit, from an industry. Besides, there is underdeveloped infrastructure which makes the markets inefficient. Fortunately there is some hard new empirical evidence which sheds some light on this issue. These relatively new studies use the persistence of profitability approach to measure the degree of competition in a market or in an economy as a whole. The basic methodology used in these studies is outlined below.

How should the intensity of competition in a jurisdiction be measured? The current widely accepted approach to such measurement is to introduce the concept of persistence of profitability. The intuition behind this procedure is that if there were competition in the market, firms with high profitability in one period would not have high profitability in a subsequent period. If the competition was intense, there will be no, or very little, serial correlation between profits in one period, and profits in subsequent periods. There is now a standard methodology for implementing systematically this intuition. The methodology may be stated as follows:

PP studies, it will be recalled, are based on the following autoregressive equation applied to the time series of profitability of individual firms.

$$\pi_{i,t} = \alpha_i + \lambda_i \pi_{i,t-1} + \mu_{i,t} \quad (1)$$

$\pi_{i,t}$ is the profitability of firm i at time t , $i = 1, \dots, m$, $t = 1, \dots, T$. $\mu_{i,t}$ is the usual error term and α_i and λ_i are the model parameters. λ_i indicates the speed of adjustment; if $\lambda_i < 1$, the long-run (permanent) profitability level of firm i is given by:

$$\pi_{i,p} = \alpha_i / (1 - \lambda_i) \quad (2)$$

As is usual in PP studies, to control for business cycles and other macroeconomic shocks, the regression analysis is conducted in terms of the variable $Y_{i,t} = \pi_{i,t} - \pi_t$, where π_t is the average of the $\pi_{i,t}$ across firms. The measure $Y_{i,t}$ represents the deviation of firm i 's profitability at time t from the profitability of all other firms in the country at that time. The analysis is based on models of the form:

$$Y_{i,t} = \alpha_i + \lambda_{1i} Y_{i(t-1)} + \lambda_{2i} Y_{i(t-2)} + \varepsilon_{it} \quad (3)$$

where α_i , λ_{1i} and λ_{2i} are coefficients and the ε_{it} are random errors. The empirical analysis shows that this AR2 model is sufficient to capture the dynamics in *all* cases in the seven emerging countries examined in this study.

From (3), the statistic $Y_{iLR} = \alpha_i / (1 - \lambda_{1i} - \lambda_{2i})$ can be derived to indicate firm i 's long-term profitability relative to the country average. If $\lambda_{2i} = 0$, then the estimate of λ_{1i} provides a direct measure of the speed of adjustment of profitability following a shock. Assuming $\lambda_{1i} \in (0, 1)$, adjustment to equilibrium is monotonic. Where λ_{2i} is not zero or $\lambda_{1i} \in (-1, 0)$, adjustment is non-monotonic and there is no unique way of characterising its speed based on the estimated parameters (see further Goddard and Wilson (1999)).

Most of the work on the application of the above model has been done on developed countries. Glen, Lee and Singh (2003) is the only comprehensive study of competition intensity in developing countries. The three authors provide empirical results on the state of competition in seven major markets – Brazil, India, Malaysia, Mexico, Korea, Jordan and Zimbabwe. There are two other papers which also consider developing countries, one is by Kambhampati (1995) with respect to India and the other is by Yurtoglu (2004) with respect to

Turkey. The findings of Kambhampati's paper are open to some debate as these are based on data that cannot reject the unit root hypothesis in the vast majority of cases using standard methods. This creates difficulties for the statistical and economic interpretation of empirical results in PP studies. Glen et al (*op cit*) overcome these problems by using the more powerful Im-Pesaran test, that by exploiting the panel structure of the data allows us to reject non-stationarity of profitability. The astonishing substantive result from these studies is that, contrary to conventional wisdom, the intensity of competition in leading emerging markets is certainly no less than that observed in advanced countries.

This model is applied by Glen, Lee and Singh (2003) to data from seven emerging countries – Brazil India, Jordan, Korea, Malaysia, Mexico and Zimbabwe, and the results are reported in Table 2. Profitability is measured by the return on net assets of the firm. The sample frame is the hundred largest firms quoted on the stock market in each country.

The estimated values of λ_i and the proportion of firms for which Y_{iLR} are either significantly positive or significantly negative at the 5% level for emerging markets are reported in Table 2. The exactly corresponding values of these variables for advanced countries, estimated by other researchers, are reported in Tables 3 and 4.

The results indicate that the λ for developing countries is considerably smaller than that for advanced countries. It lies in the region of 0.013 and 0.421. The corresponding results for the value of λ of advanced countries indicate that the values of this parameter lies in the region of 0.50. This suggests, in the normal discourse of the persistence of profitability studies that there is greater competition in developing countries than in advanced countries. This empirical conclusion is contrary to most economists' expectations. There are similarly many barriers to entry into these markets, however Singh (2003 and 2007) points out that there are a number of structural factors in developing countries which are also pro -competition. These include the low quality and simplicity of products demanded, contest-based competition whereby subsidies are given only in exchange for the firms meeting performance standards.

There have been some recent advances in the methodology applied to persistency of profitability studies and there are new results. Adelina Gschwandtner (2012) has analysed and compared persistence of profits in three periods for the US economy – 1950-66, 1967-83 and 1984-90. One notable feature of this study is that, whereas the previous scholars have only considered the set of surviving firms, Gschwandtner considers both surviving and non-surviving firms. Her results are totally plausible. She finds that the intensity of competition in the US economy increased systematically over time during the

half century she examined. She found the main determinants of profit persistence to be the firms and industry size, industry growth, risk and advertising.

4. Economic Theory and Competition Policy in Emerging Countries

Recent advances in economic theory, particularly agency theory, transaction cost theory, and information theory, have greatly enriched our understanding of how competition and competition policy may work in various spheres of an economy and in different economies. Thus, a leading authority on the theory of industrial organization has recently observed:

‘Competition is an unambiguously good thing in the first-best world of economists. That world assumes large numbers of participants in all markets, no public goods, no externalities, no information asymmetries, no natural monopolies, complete markets, fully rational economic agents, a benevolent court system to enforce contracts, and a benevolent government providing lump sum transfers to achieve any desirable redistribution. *Because developing countries are so far from this ideal world, it is not always the case that competition should be encouraged in these countries*’ (italics added) (Laffont, 1998, p.237).

This author provides a number of examples to support his contention. All of these involve what economists call the theory of the ‘second best.’ The latter asserts that, if any one of the assumptions required for the validity of the fundamental theorems of welfare economics cannot be met, restricted rather than unrestricted competition may be a superior strategy. Laffont draws particular attention to the ‘demonization’ by many economists (including those at the World Bank) of cross subsidization of different groups by large public utilities. However, he points out that in developing countries, where, in practice, taxes cannot be collected from the wealthy for re-distribution, it may be a good strategy for the government to require public utilities in these countries to subsidize poor consumers in the countryside at the expense of richer residents in the city. It may be useful to note here that cross-subsidisation is widely used in advanced countries as well.

Laffont suggests that even if competition policy of the kind followed by advanced countries such as the US or the UK were appropriate for poor African countries, they are a long way from having the institutional capacity to implement such policies. The implementation of a comprehensive competition policy requires a strong state which many developing countries at low levels of industrialization do not have. Therefore, at the very least, for such countries there will need to be far fewer and simpler competition rules which are capable

of being enforced. Clearly it would be unfair, if not absurd, to subject a Sierra Leone to the same competition policy disciplines as the US.

We now turn to the consideration of the case of the semi-industrial countries, many of which are now fairly advanced in industrial development, e.g. Korea, India, Brazil, Mexico. These countries have reasonably strong states with competent government machinery. However, economic theory suggests that, even for these economies, the US and UK types of competition policies may be inappropriate. A very important reason for this conclusion is that the essential focus of competition policy in advanced countries such as the US is the promotion of allocative efficiency and reduced prices for consumers (WTO 1997). However, from the standpoint of economic development, this perspective is too narrow and static. In order to raise their people's standard of living, a central objective of developing countries must necessarily be the promotion of long term growth of productivity. The pursuit of this objective of dynamic rather than static efficiency requires, among other things, high rates of investment. In a private enterprise economy, this necessitates encouragement of entrepreneurs' propensity to invest. However, the private sector's animal spirits are likely to be dampened if, as a result of competition, profits became too low, even if only temporarily.

This suggests that unfettered competition may not be appropriate for a developing economy. Economic theory as well as experience indicate that, in the real world of incomplete and missing markets, unfettered competition may lead to price wars and ruinous rivalry and therefore may be inimical to future investment: from this perspective, too much competition can be as harmful as too little. What is required by developing economies is an optimal degree of competition which would entail sufficient rivalry to reduce inefficiency in the corporate use of resources at the microeconomic level, but not so much competition that it would deter the propensity to invest. This central analytical point is altogether ignored in competition policy discourse in countries such as the US where the concept of optimal degree of competition is simply assumed to be maximum competition, that is, the more competition the better (see our earlier discussion of philosophy of US competition policy which finds virtue in competition itself rather than to examine its effects).

5. Competition Policy in Japan and Korea

It is useful in this context to reflect on the operation of competition policy in Japan in the period 1950-1973. The Japanese economy achieved historically unprecedented growth during this time span: its manufacturing production rose at a phenomenal rate of about 13 per cent a year, GDP at 10 per cent a year, and its share in world exports of manufacture rose by a huge 10 percentage points

(Singh, 1998). A central role in this spectacular economic advance was played by the very high rates of savings and investment in the Japanese economy. As noted earlier, the competition policy was subordinated to industrial policy, an essential concern of which was to maintain the private sector's high propensity to invest. For this purpose, the Japanese government's Ministry of International Trade and Industry (MITI) frequently imposed restrictions on product market competition. Amsden and Singh (1994) note: 'It (MITI) encouraged a variety of cartel arrangements in a wide range of industries -- export and import cartels, cartels to combat depression or excessive competition, rationalization cartels, etc. Similarly, believing that large scale enterprises were required for promotion of technical change and for Japanese firms to compete effectively with their western counterparts, MITI encouraged mergers between leading firms in key industries' (Amsden and Singh, 1994, p. 944). This policy was arguably not always correct.

The Korean government broadly followed the Japanese strategy of economic development. It also had a strong industrial policy which, as in the case of Japan, dominated competition policy. The government helped create the mammoth corporations, the *chaebol*, which went on to capture world markets. Korea was unequivocally an industrially backward country in the 1950s. Its per capita manufacturing output in 1955 was US\$ 8 compared to US\$ 7 in India and US\$ 56 in Mexico. To put it another way, South Korea's per capita income in the mid 1960s was less than \$300. However the economy's future prospects were regarded as dismal. The US congress passed a resolution to say that South Korea should not be given developmental aid but only humanitarian aid. Yet over the last four decades, Korea has transformed itself into an industrial and technologically sophisticated economy with a per capita income of US \$20,000 (for the source of these statistics, see among others Singh (2012)).

As a result of lax enforcement of competition policy, Korea has one of the highest levels of industrial concentration in the world. However, the giant conglomerates compete with each other fiercely. A significant part of the competition has been of the non-market variety in which the *chaebol* have competed for government support. The latter has been given in return for meeting specified performance targets for exports, new product development, and technological change. In the market place, the *chaebol* competed for market share, as that determined their subsequent investment allocations in a particular industry. There was heavy emphasis in the Korean industrialisation programme on import controls which many South Korean companies practiced. Without such protection the particular path of industrialisation chosen by South Korea may not have worked. As in Japan between 1950-1973, the Korean government until recently has purposefully co-ordinated industrial investments

by competing *chaebol*, so as to prevent overcapacity and too much competition (Chang, 1994).

6. New Developments in the Theory of Industrial Organization

The policies adopted by these East Asian countries find endorsement in the new developments in economic theory. Essentially, modern economic theory suggests that dynamic efficiency is best promoted by a combination of co-operation and competition between firms rather than by maximum or unfettered competition (Graham and Richardson, 1997).

It has been suggested by some scholars and high US government officials that the 1997-2000 financial crisis in Asia demonstrates the failure of state-directed capitalism of the Asian countries. However, a careful analysis of these issues indicates that the crisis was caused not by too much state direction but rather by too little. Overinvestment by the *chaebol* in Korea or the property bubble in Thailand were caused essentially by the fact that these countries were pursuing capital account liberalization in the period immediately before the crisis. Korea had become a member of the OECD in the early 1990s and in fact had abolished its planning agency. Neither industrial overinvestment by the *chaebol* nor excessive investment in the property sector in Thailand would have occurred had the governments co-ordinated investment activity as before (for various interpretations of the Asian financial crisis see Singh (1998b, 1999a); Singh and Weisse (1999); Radelet and Sachs (1998); US Council of Economic Advisors (1999); IMF (1998); World Bank (1999)).

In addition to the discussion of the above issues in relation to Laffont and economic theory, another major analysis of this paper is that competition policy that is appropriate for developing countries and takes into account the ‘development dimension’ cannot and should not be the same as the policy that is implemented in advanced countries such as the US and the European Union economies (or indeed was implemented in the same countries in their period of industrialisation).

It is also strongly argued here that the kind of competition policy needed in developing countries is not only different from that for advanced countries but to do justice to the particularities of the development process, a different language is needed. The conduct of the normal current discourse in international fora in terms of the language and the framework of the WTO – market access, national treatment, reciprocity and the most favoured nation clause – does not do justice to the economic conditions prevailing in developing countries; indeed, such concepts are arguably prejudicial to developmental needs in this specific context.

It is also suggested here that the new concepts which should be introduced into the discourse for addressing the developmental dimension are thoroughly grounded in modern economic theory and there is considerable national and international empirical evidence to support them. However, it must be added, that these elements are new only in relation to the current international discourse on the subject. These are widely used in the theory and practice of industrial organization. Indeed some of these are implicit in the WTO agreements themselves – see for example the discussion of the agreement on intellectual property rights.

7. Competitiveness and Economic Development

We next take up the question of competitiveness which was introduced in the Introduction with negative comments from Paul Krugman. The concept of competitiveness which Krugman dismissed as entirely erroneous when applied to the case of a country, has some analytical virtues which cannot simply be ignored. Krugman is of course right in asserting that neither trade surplus of a country nor its deficit are indicators of economic efficiency or inefficiency without further information. He also suggests that competitiveness in this sense is of limited relevance to the US economy because international trade was a very small part of it. At the time he was writing it was no more than 2 per cent of GDP. The present figure is about 15 per cent. Krugman is basically using a neoclassical economic model in which there is complete wage price flexibility and changes in the terms of trade help to equilibriate the system. In contrast to Krugman, other leading US economists have shown much more sympathy for the competitiveness approach.

Laura Tyson, a former Chairman of the US Committee of Economic Advisors, offered the following definition of competitiveness: she defined it as the ‘ability to produce goods and services that meet the test of international competition, while our citizens enjoy a standard of living that is both rising and sustainable.’ This is a more robust definition of international competitiveness to which Krugman’s strictures scarcely apply, if at all. He admits that if trade is a large part of GNP, any currency devaluation to maintain trade barriers would in principle have a depressive effect on the rate of growth of real incomes. However, the essential point here is that Krugman is arguing that the standard of living of a country is almost entirely dependent on the rate of growth of domestic productivity and not productivity growth relative to competitors.

The UK, provides for an advanced economy, an apt illustration of its lack of competitiveness in the mid 1970s. Following the first oil price shock of 1973-74, the UK economy which was then not a major producer and exporter of oil, suffered an adverse movement in its terms of trade. Howes and Singh (2000)

estimate that the size of the shock was about 4 per cent of GDP. They observed, 'Instead of a smooth adjustment of the economy through movements in the exchange rates, there was a protracted process that involved redistributive struggles between various social groups over the diminished national pie. The net result was a doubling of the rate of unemployment, a quadrupling of the rate of inflation, a full-blown financial crisis, and ultimately, the humiliation for an advanced industrial country of being forced to accept an IMF rescue package, before internal and external equilibria could be restored.' Howes and Singh go on to suggest, 'Thus a relatively small terms-of-trade shock can have serious repercussions for even an advanced economy. The validity of Krugman's analysis of national competitiveness requires an abstraction from such labor market dynamics.' There are other similar considerations which suggest that Krugman has been following basically the wrong track.

Empirical evidence from industrial countries suggest that countries like Japan and Germany, whose share of the world markets increased between 1963-75, despite the fact that their prices and costs relative to other countries, were rising. This paradox was first examined by the late Professor Kaldor and subsequently confirmed over an extended period by Faberberg (1996, Table 1.) The paradox is best explained by the fact that a great deal of international competition takes place in non-price terms rather than in terms of prices. The reason for the positive association between productivity growth and market share is that countries with high rates of productivity growth also have high rates of investment and output growth. Howes and Singh note that such countries thereby achieve faster technical progress, greater learning-by-doing and quicker development of new products. If one considers the history of the last ten to twelve years, there cannot be much doubt of the competitive deficit of the US economy. The US has been running current account deficit which have been of the order of 5 per cent of GDP at the full employment level of income. These, in turn have led to global imbalances which certainly increased financial fragility in the world economy, even though these may not have been the main causal factor. Both competition policy and industrial policy have a role to play in this re-balancing of the US economy.

8. Competition and competition policy in the economic history of East Asia

Until relatively recently there were serious issues in relation to competition policy and economic history. These controversies arose in their most acute form in relation to the economic history of East Asian countries. The historic assessment of the role of competition and competition policies in these countries as well as their implications for the other countries are critical issues in these debates.

For a long time neoclassical economists (eg. Béla Balassa as late as 1990s) were claiming that governments have little involvement in the economy in East Asia. Thus Béla Balassa (1988) best summed up the analysis of the neoclassical school as well as that of the Bretton Woods institutions who were a major contributor to the debate, in the following terms. ‘The above remarks are not meant to deny the role of government in the economic life of East Asia. But, apart from the promotion of shipbuilding and steel in Korea and a few strategic industries in Taiwan, the principal contribution of government in the Far Eastern NICs has been to create a modern infrastructure, to provide a stable incentive system, and to ensure that government bureaucracy will help rather than hinder exports.’ Similarly, the World Bank’s landmark World Development Report (1991) (hereafter referred to as the Development Challenge), argued that experience shows that the government works best when it follows a market friendly approach to development. This report is a seminal document as it represents what the World Bank economists had learnt up to that time from forty years of development experience. In neoclassical writings the government is portrayed as being a night watchman state with very little serious involvement in the economy. However the facts in East Asia are quite different. Singh (1993b) therefore suggests that the relevant issue is to what extent, if any, the Japanese followed the Report’s prescriptions and a market-friendly approach to development. Did the Japanese government intervene in the markets ‘reluctantly’? Did it, for example, leave prices and production priorities to be determined by market forces and simply provide the necessary infrastructure for private enterprise to flourish? How ‘transparent’ was government intervention in Japanese industry? To achieve its colossal economic success, how closely did the Japanese economy integrate with the world economy?

The Developmental Challenge does not acknowledge the inescapable fact that there was considerable governmental intervention in the course of post-war Japanese development. The important issue, however, is whether the World Bank Report’s characterization of these intervention and lessons to be drawn from it are valid. Singh (op. cit) calls attention to the overwhelming evidence showing that the governments in Japan, the Republic of Korea and Taiwan Province of China did not intervene either reluctantly or transparently in any of these economies. Specifically, in their periods of fast economic growth, the governments in Japan (1950-1973) and the Republic of Korea used a wide array of interventionist instruments including: import controls; control over foreign exchange allocations; provision of subsidized credit— often at negative real interest rates— to favoured firms and industries; control over multinational investment and foreign equity ownership; heavy subsidization and ‘coercion’ of exports, particularly in the Republic of Korea; a highly active state technology policy; restrictions on domestic competition and government encouragement of

a variety of cartel arrangements in the product markets; promotion of conglomerate enterprises through mergers and other government measures (the Republic of Korea). The governments in these countries not only intervened at the sectoral level, but also far more intrusively at the level of the individual firm through so-called ‘administrative guidance’.

Another important issue is how closely did the economies of these countries integrate with the world economy. The virtues of openness, international competition and close integration with the world economy are stressed in several World Bank publications (see in particular the Development Challenge). Evidence suggests, however, that these virtues were not in fact practised by either Japan or the Republic of Korea, the two East Asian countries we are concentrating on here.

With respect to the nature and extent of ‘openness’ practised by the East Asian economies it may be useful to consider the comparative figures on imports of manufacturers into Japan and other industrial countries between 1961 and 1979. The 1979 date is significant because that was more than five years after Japan had signed the OECD agreement of no import controls or tariffs between industrial countries. The data on imports of leading industrial countries between 1961 to 1979 shows that as a proportion of GDP Japanese imports rose by 66 per cent. This compares with a threefold increase in corresponding US imports, more than tripling of UK imports and a nearly 250 per cent growth in the imports of other European Economic Community countries. In 1979, manufactured imports constituted only 2.4 per cent of Japanese GDP; the corresponding proportion in Britain and other countries of the EEC was five to six times larger. Even in the United States, which traditionally, because of its continental size, has a relatively closed economy, the volume of imported manufacturing goods in the late 1970s was proportionally almost twice as large as in Japan. Clearly, during the 1960s and 1970s (and even more so in the 1950s) the Japanese economy operated under a regime of draconian imports controls, whether practised formally or informally.

Thus, despite the acknowledged strong export orientation of the Japanese economy, it was far from being open or closely integrated with the world economy in terms of imports. The imports side of this story does not generally get as much attention as it deserves.

9. Optimal degree of openness and strategic integration with the world economy

To sum up, the experience of Japan and the Republic of Korea comprehensively contradicts the central thesis of many World Bank reports that the more open

the economy and the closer its integration with the global economy, the faster its rate of growth. During their periods of rapid growth, instead of a deep or unconditional integration with the world economy, these countries evidently sought what might be called 'strategic' integration, i.e. they integrated up to the point where it was as much in their interest to do so as to promote national economic growth. If (as stated in the Development Challenge) the purpose of the World Bank economists was to find out why countries like Japan have been so successful in economic development during the last 40 years, they have clearly been using the wrong paradigm for examining Japanese economic history. The basic problem is that the underlying assumptions of this paradigm are greatly at variance with the real world of static and dynamic economies of scale, learning by doing and imperfect competition. In such a world, even neoclassical analysis now accepts that the optimal degree of openness for a country is not 'close' integration with the global economy through free trade (Krugman, 1987; Rodrik, 1992). In that case, what is the optimal degree of openness for the economy? This extremely important policy question, however, is not seriously addressed by the orthodox theory.

Chakravarty and Singh (1988) provide an alternative theoretical perspective for considering this issue. To put it briefly, they argue that 'openness' is a multi-dimensional concept: apart from trade, a country can be 'open' or not so open with respect to financial and capital markets, in relation to technology, science, culture, education, inward and outward migration. Moreover, a country can choose to be open in some directions (say trade) but not so open in others, such as foreign direct investment or financial markets. Their analysis suggests that there is no unique optimum form or degree of openness which holds true for all countries at all times. A number of factors affect the desirable nature of openness: the world configuration, past history of the economy and its state of development, among others. The timing and sequence of opening are also critical. They point out that there may be serious irreversible losses if the wrong kind of openness is attempted or the timing and sequence are incorrect. The East Asian experience of 'strategic' rather than 'close' integration with the world economy is fully comprehensible within this kind of theoretical framework.

10. Multilateral Competition Policy: The main issues between the North and the South

The basic idea of multilateral competition policy is that all member countries of the WTO become subject to the same competition policy disciplines. The South does not approve of this idea for the simple reason that WTO disciplines contain Dispute Settlement Mechanism (DSM) which can lead to cross sanctions for the offending parties: the winning party can enforce sanctions against the offender in a totally different area than where the offence occurred. It is for similar but

opposite reasons that the North approves of a multinational competition policy. It would like a strongly enforced competition agreement which will be binding on all countries.

The North had originally put forward a Multilateral Agreement on Investment (MAI) during 1995-1998. The agreement was drafted and proposed by the OECD. Under the terms of this agreement, basically any country could invest anywhere, produce anything without let or hindrance from any government. The MAI was draconian with respect to developing countries. Instead of level playing fields this kind of arrangement would have resulted in developing countries being even more handicapped than before. Developed country firms are far more capable than those from developing countries and thus in free competition the latter would have been annihilated. In the event strong opposition to this idea came from not only developing countries but also from countries like France. The MAI was finally withdrawn and in its place a much milder multilateral agreement was subsequently proposed by advanced countries through the European Community.

This proposal was much more modest and intended to meet the criticism of developing countries in relation to MAI. The EC's proposed multilateral agreement on competition policies comprised the following main elements.

- a. All member countries should declare hard-core cartels to be illegal.
- b. Countries should cooperate in implementing such a ban. Other than this ban on hard-core cartels countries can have any provisions in their competition laws as they like.
- c. However, these domestic competition laws should be in conformity with the core WTO principles of MFN, non-discrimination, national treatment, transparency and procedural fairness.
- d. Since the proposal is for a multilateral agreement under the WTO, it is therefore subject to the organisation's dispute settlement mechanism. In response to objections from both rich and poor countries, the EC further agreed to limit the scope of the application of WTO's Dispute Settlement Understanding (DSU) in the manner specified below.
- e. Thus the proposals stress that 'WTO dispute settlement would be strictly limited- as is also currently the case under the DSU – to complaints brought forward by WTO members. Private individuals and firms would have no standing therefore' (EC 2003 pp2).

f. The proposals suggest: ‘we also agree with this view, and strongly believe that dispute settlement should be strictly limited to assessing the overall conformity of the actual law, regulations and guidelines of general applications against the core principles contained in a WTO agreement, including a ban on hard core cartels’

g. In addition the proposals indicate that the DSU would recognise the ‘specific circumstances of developing country members’ in considering a dispute.

h. The proposals also contain an informal peer review in relation to compliance and issues of confidentiality. Thus the proposals: ‘Unlike dispute settlement which would apply to the obligations contained in the WTO competition agreement (cf. above), peer review would aim at a wider range of competition law and policy matters. As a WTO competition agreement would merely set out a limited number of binding obligations, WTO members would remain at liberty to decide for themselves whether or not to include additional substantive areas in their domestic competition law, including e.g. abuse of dominance. Given the distinct nature of peer review, it would be natural and indeed appropriate for such a process to address the entirety of a domestic competition law framework’. This kind of peer review would complement the provisions of the dispute settlement understanding (DSU).

i. In addition the proposals envisage that ‘a consultation and a co-operation mechanism would be a key component of any WTO competition agreement. A range of issues could be raised under the consultation provisions of such an agreement, including one WTO member’s assessment – rightly or wrongly – that the domestic legislation of another WTO member does not meet the standards contained in the WTO agreement, in particular as regards the core principles of transparency, non-discrimination and procedural fairness’.

On the face of it these EC proposals would seem to be entirely reasonable to which nobody should be able to object. The claim is that the proposed multilateral competition policy for the whole world involves only a minimum set of rules on which all right-minded people everywhere would agree. It is recognised that many developing countries will, nevertheless, not have the capacity to implement competition laws and so assistance with capacity building is an important part of the EC proposals.

At this point it may be useful to introduce explicitly into this discussion the concept of special and differential treatment for developing countries whose guiding principle, it may be recalled, is non-reciprocity. Specifically, it is proposed that advanced country governments should legislate that anti-

competitive conduct that is illegal within their jurisdictions would also be illegal when carried out by these firms in any developing country. Further, that citizens and corporations in developing countries who are harmed by these illegal practices can sue for damages in the courts of advanced countries and that there should be a fund to facilitate such legal action. The principle behind this recommendation is the same as that established regarding corruption.

Returning finally to the multilateral aspect of the EC's competition policy under the aegis of the WTO, there are important arguments from the perspective of the organization itself against such an arrangement. Competition policy is a complex undertaking, which is certainly required today as a discipline on large multinational companies in a globalized world. This is an enormous challenge that cannot be undertaken by an institution that is already overloaded. Apart from anything else, there are good organizational reasons for the WTO to remain sharply focused and to use its accumulated capabilities to their best advantage. Moreover, it is not just a matter of cartel conduct that needs to be regulated but also other kinds of market conduct that reduce the ease of entry into international markets due to the anti-competitive conduct of dominant firms. For example, if private harmful cartels are banned, theory and evidence suggest that these will often be replaced by full-scale mergers between the previously cartelised, and often convicted firms. Levenstein *et al.*, 2003 provide recent evidence on this matter.

In considering these competition proposals it is also important to emphasize the fact that the links between competition policy and international trade are no more significant than, say, tax policy and international trade, infrastructure deficiencies and international trade, or education and international trade. As the Strategic Structural Initiative Talks between the US and Japan showed, there were more than one hundred ways in which trade between these countries was arguably being distorted. It would therefore be best for the WTO to confine itself to its core competences regarding strictly trade matters, rather than overextend through mission creep to an endless string of trade-related matters. This would be not just in the interests of developing countries but also be of benefit to the world at large.

Last but not the least, developing countries face more difficult problems from a whole gamut of bilateral treaties involving significantly the US and a wide range of poor, and not so poor developing countries. These treaties are usually one-sided giving United States much more leverage than it would get in a multilateral negotiated agreement. The speed at which the US is proceeding on these bilateral treaties provide little room for comfort for developing countries. They have no option but to oppose these anti-development treaties the best they

can under the present economic and political arrangements for the world economy.

11. Conclusion

The main argument of this paper is that the multilateral competition policy proposed by the EU is neither suitable from the perspective of developing countries nor from that of the world economy as a whole. As far as developing countries are concerned, the policy goes too far in instituting homogenization of competition policy and thus deprives them of important developmental instruments. On the other hand, from an international perspective, the proposed policy is too feeble to deal with the challenges posed by large multinational corporations intent on monopolizing world markets.

To deal with this, what is required is greater policy autonomy for developing countries and at the same time a more stringent framework for dealing with mammoth multinational companies and their endless appetite for overseas expansion often through mergers and takeovers. Both the EC's proposals on competition policy and on FDI seem more concerned to provide TNCs with additional tools to give them unfettered access to developing countries and undermine the latter's ability to control the economy and foster their own domestic companies and national economic development.

What are the policy implications of this wide ranging analysis of competition and competition policy issues? The main policy implication is that time has come for the establishment of a development oriented international competition authority to control anti-competitive conduct and particularly growth by mergers of large multinationals.

The characteristics and responsibilities of this Authority would include:

- It would be charged with maintaining fair competition in the world economy and keeping the markets contestable by ensuring that the barriers-to-entry to late industrialists are kept at low levels.
- Analogous to the social welfare objectives of the European Commission, the proposed International Authority would be asked to pay attention to the special needs of the developing countries, to competitive opportunities for small and medium sized firms, to facilitate the transfer of technology to developing countries, and to ensure fair distribution of wealth.

- It would have the authority to scrutinize mega-mergers and to deter the mega-firms from abusing their dominant position.
- Again on the European Commission model, the International Competition Authority would be concerned mainly with cross-border or international aspects of the workings of competition. Below the authority, at a national level, the member countries would have their own national competition policies.
- For good administrative and practical reasons, references to the Competition Authority would only be permissible in case of anti-competitive behaviour by corporations above a certain size. The size criterion would normally keep most large developing country corporations outside the direct purview of the Competition Authority. In view of the large size of many third world corporations, particularly in infrastructure, not every corporation from developing countries can be provided with special safeguards. The developing country negotiators would have to be nimble and be willing to take part in the give and take of international negotiations. Developing countries are better off if they maintain solidarity and take a long term view. This may persuade developed countries to also eventually adopt long term path of global solidarity. The global economy needs cooperation, not just between Southern countries, but also between the North and the South. These negotiations on the competition policy are a small part of the very large global project of goodwill and solidarity which would benefit all nations.
- In relation to the international merger movement, the authority would attempt to limit growth by merger by large multinationals under its purview. They would be allowed to merge provided they divest themselves of a subsidiary of equal value. This would mean that multinationals would not be able to grow by mergers, but they could expand through organic growth or greenfield investment. It would also not stop them from taking over other firms subject to divestiture as outlined.
- As argued in detail in Singh (2002), the main merits of this proposal may be summed up as follows. A large body of research on mergers indicates that mega-mergers have the potential of increasing market dominance and reducing contestability. Discouraging such mergers would therefore enhance global contestability, global competition, and global economic efficiency, while at the same time being distributionally more equitable.
- The governance of the ICA would have proper representation of developing countries and would not be dominated by developed countries. The following comment from one of the referees is perfectly fair when s/he asks how is this

‘proper representation’ for the ICA to be achieved. The only method available to developing countries is to rely on knowledge and seek support from progressive people in rich countries. If you look at this issue historically, developing countries, in relative terms, would seem to have done very well over time in a number of negotiations, for example, the difference between the Uruguay Round where the developing countries did very badly and the current Doha Round where these countries are doing much better. Having learnt from the previous experiences, persuading developed countries that their basic interest should be the same as that of developing countries would not be an easy gospel to preach. This however, seems to be the only way forward to meet the challenges of fast growing population, global warming and other extremely difficult problems which the world economy faces.

Although international co-operation on competition policy, would be of particular benefit to developing countries, it also has useful features to assist the large multinational corporations. The International Competition Authority would for example be able to provide multinationals under its purview with unambiguous decisions on mergers and other competition related matters. Instead of being subject to the often-conflicting decisions of many different jurisdictions (e.g. the United States, the European Community, Japan, and over time countries like India and China). International Competition Authority’s rulings would prevail over all national and regional jurisdictions.

There is no illusion that an international agreement of the above kind would immediately be acceptable to advanced countries. Nevertheless, it indicates the nature of economic arrangements in this area, which would best serve the developmental needs of poor countries. It may, however, be helpful to proceed to the establishment of the ICA in stages. At the first stage, the Authority may have no coercive powers but simply be able to monitor and to report on abuses of dominant market positions, on mergers, and the Authority’s other competition objectives (Scherer (1994) makes similar point in relation to his proposal for an international agreement on competition policy). Such monitoring would itself be beneficial to developing countries as it would provide them with information on cartels and on market power abuses of multinationals. Developing countries would find it difficult to acquire such information otherwise. With the experience gained from this kind of limited international co-operation, nations can, over time, work towards greater co-operation by giving ICA the necessary powers to enforce its rules. The above line of reasoning could be criticised on the ground that there are serious concerns from developing countries point of view about all such international authorities, namely that however good the intentions, they end up being unfair simply because of the reality of global power. How would this concern be addressed directly, and would it not be safer to avoid such a global authority

and instead suggest common approaches by a set of developing countries towards the MNCs?

This point is well taken, but unfortunately there are few levers of power available to developing countries. They have to do the best they can with the limited instruments at their disposal. Solidarity between developing countries is certainly one area which these countries will need to explore thoroughly. Instead of abandoning from the outset any prospects for a compromise, it would be better to consider such possibilities as a part of a global solution. There is no presumption in this context that developed countries will not do what is in their best interests. They will need to be persuaded that the kind of proposal suggested here will ultimately also be in their interests. For such proposals to work the world's developing countries would certainly have to embrace South-South cooperation. Indeed, they may also have to cultivate North-South cooperation to make it easier for developed countries to participate in such projects which would be of common benefit to humanity.

Table 1: Competition law in selected South-East Asian countries

ASEAN Member Country	Competition Law/ Name of Legislation	Competition Authority	Prohibition of Restrictive activities	Prohibition of abuse of Dominance	Prohibition of anticompetitive mergers	Prohibition of Unfair Practices	Leniency Program	Penalties
Indonesia	Yes/ Law of the Rep. of Indonesia no. 5, 1999 "Prohibition of Monopolistic Practices and Unfair Business Competition"	Yes, Commission for the Supervision of Business Competition	Yes, Chapters III & IV set out the prohibited agreements and activities.	Yes, Chapter IV & Chapter V set out the prohibitions on monopolies and abuse of dominance respectively	Yes, Article 28/ Mandatory notification for post merger (i) asset value above 2.5 trillion Rupiah and/or (ii) sales value above 5 trillion Rupiah. 20 trillion Rupiah combined asset threshold applies to banking sector	No, Separate regulation under the Law on Consumer Protection No.8 of 1999	No.	Administrative directions and fines from 1b to 25b rupiah and criminal sanctions including fines up to 100b Rupiah, or a maximum 6 month jail term.
Malaysia	Yes/ Competition Act 2010	Yes/Competition Commission of Malaysia	Yes, Section 4 prohibits anticompetitive agreements	Yes, Section 10 prohibits abuse of dominance	No	No, Separate regulation under the Consumer Protection Act 1999	Yes	Administrative directions/ fines up to 10%of the worldwide turnover of the enterprise for the period of infringement
Philippines	No	Yes/ Office for Competition under the Department of Justice	Competition issues are addressed through several different laws that are enforced by respective sector regulators				No	Administrative directions fines and/or jail terms under the respective sectoral legislation.
Thailand	Yes/ Trade Competition Act B.E. 2542(A.D. 1999)	Yes Trade Competition Commission	Yes, Section 27 prohibits specific types of anticompetitive agreement	Yes, Section 25 prohibits specific behaviors by dominant operator	Yes, See Section 26/Mandatory notification once thresholds met (Thresholds to be released)	Yes, Section 29 prohibits acts against fair and free competition	No	Jail term of up to 3 years and or fine of up to 6 m baht and double penalty for repeat offences

Adapted from: Table 8, p.265, Mendoza, Barcenas and Mahurkar (2013), *Journal of Reviews on Global Economics*, 2013, vol.2. This table summarises the main points of 'Balancing industrial concentration and competition for economic development in Asia.

Source Data: Drew and Napier LLC (2012) 'Your Country Guide to ASEAN Competition Law', 1 February 2012.

Table 2: Persistence of Profitability in Emerging Markets

Mean λ		Positive Y_{iLR}	Negative Y_{iLR}
Brazil	0.013	0.003	0.418
India	0.229	0.003	0.282
Jordan	0.348	0.05	0.299
Korea	0.323	0.005	0.3
Malaysia	0.349	0.009	0.302
Mexico	0.222	-0.002	0.316
Zimbabwe	0.421	0.157	0.249

Source: Glen, Lee and Singh (2002).

Table 3. Persistence of Profitability Studies for Industrial Countries

Author	Country	Sample Period	Observations per firm	Number of firms	Sample mean (λ_i)
<i>Geroski and Jacquemin (1988)</i>	UK	1947-77	29	51	0.488
	France	1965-82	18	55	0.412
	Germany	1961-81	21	28	0.410
<i>Schwalbach et.al (1989)</i>	Germany	1961-82	22	299	0.485
<i>Mueller (1990)</i>	US	1950-72	23	551	0.183
<i>Cubbin and Geroski (1990)</i>	UK	1948-77	30	243	0.482
<i>Khemani and Shapiro (1990)</i>	Canada	1964-82	19	129	0.425
<i>Odagiri and Yamawaki (1990)</i>	Japan	1964-82	19	376	0.465
<i>Schohl (1990)</i>	Germany	1961-81	21	283	0.509
<i>Waring (1996)^c</i>	US	1970-89	20	12,986	0.540

a - Based on pre-tax rates of return / net assets

b – Estimations are for industry groups. Estimates of lambda (λ_i) are from a range of specifications for the persistence model, which differ across industries.

c - Estimate based on pooled data for 128 industry groups. The mean lambda (λ_i) has been estimated by the present authors from the data in Table 3 of Waring (1996).

Source: *Goddard and Wilson (1999)*

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