4 Competition (Law Enforcement) and Economic Growth

From: Competition Law in Developing Countries
Thomas K. Cheng

Subject(s):
Economic or commercial activity — Economics — Enforcement and procedure — Economic activities or development
Competition (Law Enforcement) and Economic Growth

The overarching thesis of this book is that economy policy of any kind, including competition policy, in a developing country must be geared toward facilitating economic growth and development. In contemplating the design of competition policy in a developing country, the first question to be answered is whether a policy that aims to maximize competition with competition law enforcement will deliver economic growth and meet the development needs of a developing country. This requires us to determine whether competition promotes growth. The obvious answer to this is that of course it does, because competition promotes allocative efficiency, and results in the most efficient allocation of resources. Surely that must promote economic growth. However, upon closer reflection, it should be clear that there need not be an obvious causal relationship between allocative efficiency and economic growth, especially in light of what has been said earlier about growth being a process of structural transformation. Allocative efficiency is concerned with producing the most efficient allocation of existing resources. It does not result in the creation of more resources in the economy. Nor does it entail transformation of any kind. While it may result in marginal improvement in growth, the impact is likely to be limited. As Ha-Joon Chang notes, “there is no theoretical reason why an economy with greater allocative efficiencies should grow faster.” As indicated by all the growth models examined in the previous chapter, the key to economic growth is the ability to create more output for the economy with existing resources. It relies on productivity gains and innovation. This, however, does not mean that competition does not facilitate growth. Competition may still have a positive impact on growth, but perhaps not by promoting allocative efficiency. Whether competition promotes growth through other mechanisms depends on the mechanisms through which growth is generated, and whether competition will facilitate the functioning of those mechanisms. The growth models examined in the previous chapter emphasize productivity growth and innovation. The Solow–Swan model emphasizes productivity growth, while the Romer models and the Schumpeterian models by Aghion and Howitt focus on innovation. The importance of productivity growth for economic growth has been affirmed by other commentators as well as the Growth Report. Therefore, it is imperative to examine whether competition promotes productivity growth and innovation.

I. Relationship between Competition and Economic Growth

It has been established that economic growth is key to economic development and improving the livelihood of citizens of developing countries. The main focus in our odyssey through the various growth models is to determine what are the main causes for economic growth and whether competition has a role to play in them. We can first de-emphasize those models, such as Lucas’s model and, to some extent, the first Aghion–Howitt model, which put much weight on human capital development. While it is possible that increased competition may improve the availability and affordability of higher education, which in turn will augment a country’s innovation capacity, the causal link is rather tenuous. There are other government policies that will make more direct contribution to the popularization and advancement of higher education in developing countries. A brief look at the experiences of developing countries that have successfully achieved that, especially the newly industrialized East Asian countries, suggests that direct government intervention is effective in promoting higher education.
As for the remainder of the growth models, they seem to fall into two categories as far as their conclusion on the causes of growth is concerned. The first category consists of the Harrow–Domar model and the Lewis model, which both emphasize the role of investment in general in promoting growth. The AK model probably belongs to this category as well. Even though the growth mechanism underlying the model is the knowledge generated in the capital accumulation process, knowledge is only generated when the economy invests in its capital stock. Therefore, in the end, the model also relies on investment for growth. The second category consists of the Solow–Swan model, the Romer models, and the Schumpeterian models, which focus on the role of productivity gains and innovation in raising growth.

A. Competition Promotes Investment

The Harrod–Domar model and the Lewis model both indicate that the key to economic growth is to increase the capital stock by way of investment. The AK model also indirectly suggests so. Both the Harrod–Domar and the Lewis models assume that investment will be funded by domestic and foreign savings. In the case of the latter, it is generally assumed to be foreign aid. It was noted earlier that these two models have been criticized for their lack of realism and their unrealistic assumptions. The question remains, however, as to whether an investment-led growth model is valid. The opinion seems to be split on this. As noted earlier, Philippe Aghion and Peter Howitt note that these models fail to explain the sustained growth that has been observed in the real world. William Easterly also observes that none of these investment-focused growth models have worked in reality. There is no statistical correlation between investment in one four-year period and growth in the next four-year period. In the short run, “there is no evidence that investment is either a necessary or a sufficient condition for high growth.” This is so because growth is caused by multiple factors and that means the relationship between growth and investment is loose and unstable.

Meanwhile, Gene Grossman and Elhanan Helpman take a more positive view of the role of investment in promoting economic growth. Helpman notes that macroeconomists have attached great importance to the accumulation of physical and human capital as a contributor to economic growth. Grossman and Helpman also highlight the strong empirical evidence that shows a positive correlation between capital accumulation and economic growth. They, however, caution against reading too much into this correlation as correlations are not the same as causation and it is entirely possible that both are in fact caused by a third factor, such as technological change. As Solow’s embodiment hypothesis suggests, new technology needs to be implemented through new capital goods. Therefore, technological change may lead to higher capital accumulation. In fact, the very thesis of the Solow–Swan model is that an economy cannot achieve sustained long-term growth through investment in capital stock because it will eventually run into diminishing returns. However, it is important to recall the earlier observation that growth created by increased investment cannot be meaningfully distinguished from steady-state growth resulting from technological change given the long adjustment period to the equilibrium. Therefore, the effectiveness of investment in raising growth probably should not be dismissed.

This author believes that Aghion and Howitt hold the more nuanced view of the relationship between investment and economic growth. According to them, the relative importance of capital accumulation and innovation in propelling growth evolves as the economy becomes more developed. In the early stages of development, a developing country is likely to suffer from both low capital stock and poor productivity and technological capacity. Since it is probably easier to increase capital stock than to improve technological capacity, a developing country may want to focus on capital accumulation. As the country has a low level of capital stock, initial capital accumulation is unlikely to be suffer from diminishing returns. But as the capital stock grows and the country becomes more developed, diminishing returns beckon and the country will no longer be able to keep on growing.
simply by capital investment. By then investment is important, but only if it is accompanied by productivity gains or innovation, which have replaced investment as the main driver for economic growth. The economy is evolving into a knowledge-based economy in which capital accumulation only contributes to economic growth if it embodies new production method or technology. Therefore, at later stages of economic development, capital accumulation and technological change must go hand in hand. At the early stages of economic development, however, capital accumulation attained through investments will propel growth. This stage-specific relationship between investment and growth has been affirmed by empirical studies.\(^9\) It also comports with the experience of the Asian Newly Industrialized Economies (“NIEs”) such as Korea and Taiwan.\(^10\)

The next question is what drives investment decisions and whether competition and competition law enforcement play a role in them. None of the three models, the Harrod–Domar, the Lewis model, and the AK model, leaves an explicit role for competition to play. None of the models we have examined does. The Harrod–Domar model provides that the savings and the investment rates are a fixed fraction of net output at any given point in time. The savings rate is an exogenous variable. It is a behavioral parameter that is simply taken as given. The investment rate is what it is. In the model, it does not respond to economic incentives. There is also no explicit account of the relationship between the savings rate and the investment rate. These are unrealistic assumptions and have been so criticized by commentators. These models do not definitively address the relationship between competition and investment.

The relationship between competition and investment has received relatively less attention than the relationship between competition and innovation. One can clearly see, however, an analogy between investment on the one hand and research and development (“R&D”) on the other hand. After all, R&D is but a specific kind of investment. It is true that what is being discussed is not just any kind of investment but investment in capital stock. Yet even if confined to this specific type of investment, the parallel between investment and R&D remains. If one accepts that a parallel exists, then one can draw on the common arguments on the relationship (p. 74) between competition and innovation and apply them to the context of investment.\(^11\) As far as competition and innovation are concerned, it is said that two conflicting effects are at play. First, competition may reduce the profit stream from innovation and hence deter present investment in R&D. Second, competition is also said to induce an “escape competition” effect which gives firms extra incentives to innovate in order to escape competition.\(^12\) This effect is particularly strong when the ex post market power created by the innovation is significant as the post-innovation profit stream will be higher.\(^13\) Given that when a firm invests in capital stock, its objective is the same as when it invests in R&D—the objective is to maximize its return from its investment—one would imagine that the same two conflicting effects would apply to investments. When competition is very keen, firms may be deterred from making capital investments because it foresees low returns to their investments. Keen competition also leaves firms with less funds to invest. Meanwhile, firms may have extra incentive to make capital investments to escape competition. One may expect that the same inverted U-shape curve proposed by Aghion and his co-authors to describe the relationship between competition and innovation to apply to investment as well. This suggests that the optimal level of competition to induce the greatest amount of investment may be an intermediate level of competition.

Empirical evidence on the relationship between competition and investment in physical capital is mixed. On the one hand, Alberto Alesina and his co-authors find that increasing competition by lowering the regulatory barriers to entry raises investment level in seven non-manufacturing industries (electricity and gas supply, road freight, air passenger transport, rail transport, postal service, and fixed and mobile telecommunications).\(^14\) Stefan Voigt and Jerg Gutmann also find that the adoption of competition law results in a 3–4 percent increase in investments in low-income countries.\(^15\) To the extent adoption of
competition law boosts competition, their study suggests a positive correlation between competition and investment. On the other hand, Michal Grajek and Lars-Hendrik Roller find that introducing competition by compelling the incumbent telecom operators to share their facilities reduces industry-wide investments, especially investments by the incumbent itself. Investment on a per-firm basis by the new entrants is reduced (p. 75) as well, although overall investment by entrants is higher due to an increase in the number of entrants. Robert Crandall and his co-authors find that mandatory unbundling of copper telecommunications network had a depressing effect on network investment and did not spur investments in first-generation broadband networks. This is only a small sample of the literature, but the gist seems to be that the relationship between competition and investment is inconclusive. The authors of these studies did not attempt to measure the competitiveness of the market. Therefore, we do not know whether the markets at issue were at a low, intermediate, or high level of competitiveness when greater competition was introduced. We can surmise that in the latter two studies concerning the telecom sector, the level of extant competition was likely to be low as the markets were dominated by the incumbent, hence the need to compel sharing of facilities. To the extent that this is true, increased competition in an uncompetitive market actually reduced investment, which would refute the predictions of the inverted U-shape curve.

To sum up, the Harrod–Domar and the Lewis models indicate that investment is the main driver of economic growth. Some have questioned the primacy of investment as a driver for growth. Grossman, Helpman, Aghion, and Howitt disagree and point out that there is a positive correlation between capital accumulation and economic growth, particularly in countries at low levels of economic development. The Harrod–Domar and the Lewis models leave no role for competition in promoting investment. However, their models’ account of savings and investment has been characterized as unrealistic and it is unlikely that competition has no impact whatsoever on investment. In fact, there are reasons to believe that the relationship between competition and investment is similar to the inverted U-shape curve that, according to Aghion and his co-authors, describes the relationship between competition and innovation. The small body of empirical literature on the issue is inconclusive, although two of them seem to cast doubt on the predictions of the inverted U-shape curve.

The purpose of this line of inquiry is to determine whether fostering competition will help to promote economic growth in developing countries. If it does, there is a strong case for intensifying competition law enforcement. If it does not, and given the importance of growth to developing countries, we may need to reconsider whether developing countries should actively pursue competition law enforcement. At this stage, we are probably unable to arrive at a definitive conclusion one way or another. Theoretically, the most likely relationship would seem to be an inverted U-shape curve, which means increasing competition in uncompetitive markets spur investment. Empirically, the evidence is inconclusive. This author believes that the state of the debate gives us sufficient grounds to believe that (p. 76) fostering competition does not deter investment. Encouraging competition may not give a big boost to investment; there may be other government policies that are more effective in achieving that. But fostering competition through competition law enforcement should not undermine the focus on economic growth in developing countries. Promoting investment to boost growth may not be a primary objective of competition law enforcement in developing countries. But the two are not inconsistent. The pursuit of growth through investment does not undermine the case for competition and competition law enforcement.
B. Competition Spurs Productivity Gains

The Solow–Swan model emphasizes the importance of productivity gains as an engine for sustainable growth. Solow attributes productivity gains mostly to technological change, and stipulates it as something that is exogenously determined. Although Solow was unable to provide a self-sustaining mechanism for the generation of productivity gains that would prevent growth from grinding to a halt, and subsequent growth models have shifted the attention to innovation, that does not mean that productivity gains are unimportant for growth. Productivity gains may be caused by technological change, but they may also be the result of better management or operational practices. Productivity can improve without any technological progress, narrowly defined.

Easterly observes that over 90 percent of the cross-country differences in economic growth between 1960 and 1992 can be attributed to differences in productivity growth. Although given the size of the figure, one would imagine that the productivity Easterly speaks of encompasses innovation as well. The Growth Report argues that “[s]tructural change under competitive pressure is what propels productivity growth.” It focuses on productivity gains arising from one particular circumstance, that of the replacement of an obsolete industry with an emerging industry. While the wholesale replacement of an obsolete industry no doubt will result in substantial productivity gains, there is no reason to limit the focus to such a narrow class of productivity gains. Productivity gains of all kinds should contribute to economic growth.

William Lewis has undertaken the most comprehensive study of the relationship between productivity and economic performance across both industrialized economies and developing countries, including Brazil, Russia, and India. He takes a slightly different approach from most academic studies by economists. Instead of using the traditional growth accounting approach inspired by Solow to measure the contribution of total factor productivity (“TFP”) to growth, Lewis focuses on productivity at the firm level and the industry level. He defends this approach by asserting that the productivity of an economy is the weighted average of the productivity of all firms and industries in the economy. It is possible to gain a good understanding of the productivity of a country if we examine the productivity of a sufficient number of industries. And it is possible to gauge the productivity of an industry by looking at individual firms. He argues that “[t]he productivity of an economic sector is simply the average (weighted) of the productivities of all the firms in the sector. Differences in the services delivered and in the way those services are delivered in each firm have to explain the differences in productivity.”

The main conclusions from Lewis’ study of productivity across the various countries are in line with those from the growth models examined in the last chapter, which is that the key to growth is not capital accumulation but productivity growth. He further argues that there are two important factors for growth, macroeconomic stability and “intense, balanced, local competition.” Productivity rises through improved production of existing goods and the introduction of new goods, which consumers value more than existing goods and require new production processes. He argues that the generation of productivity gains requires intense and fair competition. This is because it allows productivity growth to spread from the firm originating the productivity growth across the industry by displacing unproductive firms. Competition is essentially a productivity transmission mechanism. In addition, competition also promotes productivity growth by providing incentives for firms to strive for productivity gains. The idea is the same as the escape production effect in the context of innovation.
Lewis believes that the key to productivity growth is the service sector, which accounts for the bulk of the economy in most industrialized economies. For example, he argues that Japan lags behind the United States in productivity largely because its service industries, such as retail, suffers from much lower productivity than those in the United States. The productivity of Japan’s retail sector is only 44 percent of that in the United States. However, the service sector is likely to be less important in developing countries, where the service sector accounts for a smaller part of the economy as compared to developed economies. As noted earlier, there seems to be a consensus that the key to growth in developing countries lies in the industrial sector. Commentators have argued that no country has ever gotten rich without industrialization and that industrial products generally enjoy increasing returns in imperfect markets whereas agricultural products and natural resources tend to exhibit diminishing returns in highly competitive markets. The quasi rent on industrial products is much higher. No less than the United Nations Industrial Development Organization ("UNIDO") has advocated for the primacy of industrialization in economic growth. In a 2009 report, UNIDO concludes that "diversity and product sophistication in manufacturing are closely linked to faster economic growth in both low- and middle-income countries."

Industries in most developing countries rely on foreign sources of productivity growth. In particular, developing country firms borrow foreign technologies and know-how to improve their productivity. According to Alice Amsden,

where productivity increases come from in late-industrializing countries is quite obvious. They do not depend upon “creative genius”; they are plucked from the world technology shelf. First, increases in productivity come from imports of foreign technology. Second, they come from operating foreign technology on a scale sufficient to minimize unit costs. Third, they come from learning how to use foreign technology imports efficiently.

The first avenue of productivity growth is concerned with explicit technological transfer or imitation, both of which result in the introduction of foreign technology into the domestic market. The third one refers to the acquisition of tacit knowledge, which will be discussed subsequently. Therefore, in Amsden’s view, the main sources of productivity growth in developing countries are quite intertwined with what will be called laggard innovation, which encompass both imitation and acquisition of tacit knowledge (and also process innovation). In the end, it is often difficult to demarcate a clear boundary between innovation and productivity gains, which often go hand in hand. As will be explained in section IC, competition promotes acquisition of tacit knowledge and to a lesser extent also encourages imitation.

Apart from encouraging technological progress through imitation and acquisition of tacit knowledge, competition also promotes productivity gains through what are known as "within-firm" effects and "across-firm" effects. Within-firm effects refer to the way in which competition helps to minimize agency problems and encourages managers to improve productivity through adopting better management and operational practices and efficiency-enhancing restructuring. Across-firm effects refer to how productivity gains spread across firms to improve the productivity of the industry as a whole.

Within-firm effects refer to how competition induces efficient firm behavior. The rationale is mostly centered around the agency problem arising from the separation of management and ownership within a firm, which gives rise to managerial incentives to shirk and apply inferior management to the firm’s operations. Competition forces managers to work harder and reduce inefficiencies within the firm. Competition thus helps to raise productivity “by acting as an incentive scheme to ensure that managers (and workers) do not buy themselves a ‘quiet life’,” an idea first propagated by Oliver Hart. Competition contributes to efficient managerial behavior in two ways. First, competition makes
comparisons possible by providing benchmarks.\textsuperscript{35} An uncompetitive market where all firms are inefficient and their managers are slacking will not allow the owner to accurately evaluate the performance of her own firm by comparing it with rivals'. A number of economists have analyzed the importance of benchmarking.\textsuperscript{36} Second, competition creates financial pressure on the firm, especially in the form of bankruptcy threats, which motivates managers to work harder for fear of losing their jobs.\textsuperscript{37} Through this threat of bankruptcy, increased competition has been shown to lead to an unequivocal increase in managerial quality.\textsuperscript{38} One should expect competition to drive improvements in management and operational practices.

Aghion and his co-authors have incorporated Hart’s agency model in the endogenous growth framework and shown that competition can have a positive impact on growth.\textsuperscript{39} The relationship between competition and management quality has also been confirmed in economic studies.\textsuperscript{40} Aghion and Rachel Griffith note that empirical evidence supports Hart’s model that managers have a tendency to seek the quiet life and that the threat of bankruptcy induced by competition pushes managers to pursue more efficiency-enhancing activities.\textsuperscript{41}

The disciplinary role of competition is all the more important in the absence of other disciplining devices, which is likely to be the case in many developing (p. 80) countries where the corporate takeover market is not well developed and the threat of takeover is likely to be small. This is compounded by the fact that many major enterprises are state-owned, which are by definition not subject to takeover threat, or owned by family-owned corporate groups, which are unlikely to launch takeover bids against each other. Information asymmetries, which are more prevalent in developing countries, will render takeover even more challenging by making it difficult for a potential acquirer to gather information about the target.\textsuperscript{42} Therefore, for a firm of a certain size, hostile takeover is not a realistic threat and the possibility of takeover will not discipline its managers. The managerial market is also unlikely to be sufficiently deep to allow an owner to replace an underperforming manager easily. This has led Mikyung Yun to assert that competition plays a more important role in developing countries to discipline managers.\textsuperscript{43} This view has been echoed by Patrick Rey, who argues that in developing countries, ‘‘[t]he main impact of competition may not correspond to what detailed analyses of the strategic interaction between profit-maximizing firms predict, but rather to the observation that it will induce firms to behave more closely to profit-maximization.’’\textsuperscript{44}

Of course, less shirking by managers and more efficient managerial behavior on its own will not lead to growth. This is where productivity growth comes in. One of the sources of productivity growth is better management and operational practices. Productivity improves when more diligent managers organize the firm and the production process more efficiently so that more output can be produced by the same amount of input, which is essentially the same as if productivity was improved through technological change. Moreover, better management and operational practices may extend to efficiency-enhancing restructuring. The idea is that competition will cause firms to restructure themselves to improve their efficiency so that they can compete better in the market. This proposition has been affirmed by empirical literature. Simeon Djankov and Peter Murrell find that in the former Communist countries in Eastern Europe and the former Soviet Union, product market competition made significant contribution to enterprise productivity.\textsuperscript{45} This conclusion is affirmed by a survey of over 3,300 firms in twenty-five transition economies which shows that product market competition is strongly positively correlated with firm efficiency.\textsuperscript{46} More importantly, Djankov and Murrell find that import competition is no substitute for domestic competition. Import competition has a less pronounced effect on increasing firm efficiency (p. 81) than domestic competition. This leads them to conclude that trade
liberalization is no substitute for a robust domestic competition policy to promote rivalry among domestic firms.47

The foregoing discussion is concerned with how competition spurs productivity growth within a single firm. What follows focuses on how competition helps to spread productivity gains across the industry and by extension the economy. If the productivity gains originate from technological change, these gains could spread from one firm to another through knowledge spillovers. But if the productivity gains derived from better management practices or efficiency-enhancing restructuring, knowledge spillovers may be less effective. The most likely way for these kinds of productivity gains to spread is by having the more productive firms take up market share. Aggregate productivity improves when more productive firms expand and take market share away from less productive firms.48 An open and competitive market allows a more productive entrant to enter the market, establish itself, and take market share away from more mature rivals. It also allows a more productive existing firm to do the same. Eventually, less efficient incumbents will either have to up their game or be forced out of the market. The market will be taken over by more efficient firms and the overall productivity of the industry will be raised.

Under the rubric of across-firm effects, productivity growth serves a similar function as innovation in the Schumpeterian models, leading to the creative destruction of inefficient incumbents. Productivity growth, however, will probably bring about more gradual destruction. The disruptive effects of superior productivity will probably manifest itself less prominently than a ground-breaking product innovation. The extent to which productivity growth will result in firm turnover also depends on the stage of the product life cycle at which the industry is situated. In the early stages of the product life cycle, there is probably still much room for improvement in the efficiency of the production process and therefore much room for productivity gains.49 Productivity growth is likely to be substantial enough to lead to firm entry and exit. In a mature industry in the later stages of the product life cycle, the room for productivity gains will be limited and the prospect of productivity differences leading to firm entry and exit will be correspondingly reduced.

A study by Richard Disney and his co-authors shows that firm turnover is a more important source of productivity growth than the “within-firm” effects. They conclude that external restructuring is a more important source of productivity growth than internal restructuring. They report that external restructuring (p. 82) accounts for around 50 percent of labor productivity growth and 80–90 percent of TFP.50 This study will be further discussed later in this chapter.

C. Competition Encourages Innovation

The Romer and the Schumpeterian models all focus on innovation as causes for economic growth. Even though the Solow–Swan model attributes growth mostly to TFP and TFP encompasses more than just technological change; innovation is a very important component of it. Therefore, innovation is a key driver for growth in a majority of the more modern growth models.

The Romer and the Schumpeterian models distinctly focus on innovation as an engine for growth. Both Romer’s models rely on knowledge spillover between firms and the resultant growing body of public knowledge to fuel growth. In both models, knowledge is the result of R&D activities deliberately pursued by firms. The difference between them is that in the Knowledge Spillover model, capital accumulation and knowledge creation are one and the same, whereas in the Product Variety model, there is a distinct R&D process that creates new knowledge. In the Schumpeterian models, innovation is directly responsible for growth. The economic growth rate is determined by the rate of innovation. This is where the Romer models differ slightly from the Schumpeterian models. In the former, sustainable long-term growth is not directly caused by innovation itself. Instead, it is the result of knowledge spillover between firms. In these models, there would be no sustainable growth without
knowledge spillover, regardless of the amount of innovation in the economy. Meanwhile, in the Schumpeterian models, no knowledge spillover or other mechanisms are required. Innovation itself is sufficient to produce growth.

The kind of innovation that is assumed in these arguments and posited in these models consists of cutting-edge innovation along the global technological frontier, which will be referred to as frontier innovation for the remainder of the book. Some developing countries are in fact capable of producing frontier innovation. As will be discussed in Chapter 12, however, the number is very small. The remainder of the developing countries can at most produce innovation that is only novel domestically, which will be referred to as laggard innovation for the remainder of the book. Commentators have observed that innovation may mean completely different things in developing countries vis-à-vis industrialized economies. First, they have noted that while developing countries are unlikely to produce cutting-edge technology, their R&D effort is likely to go into learning how to use and localize a foreign technology. Recall Aghion and Howitt’s distinction between leading-edge (p. 83) innovations and implementation innovations. It is widely observed that deploying a new technology can be a highly knowledge-intensive exercise. It often entails the acquisition of tacit knowledge, which could be crucial in the deployment of a new technology, from industrialized economies. In fact, acquisition of tacit knowledge is probably a prerequisite for the adoption of a foreign technology. As it turns out, much of laggard innovation comes about during the adaptation of foreign technology.

Second, innovation often means imitation in developing countries. Many of them do not possess the capacity to innovate along the global technological frontier. The best they can do is to imitate the frontier technology produced by industrialized economies. Imitation refers to the act of imitating or replicating another technology, often from a foreign source at least as far as developing countries are concerned, through reverse engineering or other means. However, imitation is not as easy as it is usually assumed. Studies have shown that imitation can also be a highly knowledge-intensive exercise. In fact, imitation can offer take as long and as many resources as the act of innovation itself. Therefore, imitation can require an enormous amount of R&D.

Third, even if developing countries were to come up with a genuine innovation, it would be more likely to be of the process kind rather than the product kind. Process innovation is an innovation in the process of production rather than in the form of a new product. The main comparative advantage of developing countries is in producing existing products invented by other countries at lower costs and higher efficiency. Because of their focus on manufacturing activities, they may be in a better position to come up with process innovations. Meanwhile, product innovation is less likely to take place without dedicated R&D effort. One is less likely to chance upon a new product design as opposed to a better production method during the production process of an existing product.

Of the three kinds of innovation in developing countries, acquisition of tacit knowledge probably requires some explanation. Acquisition of tacit knowledge refers to the fact that adapting and using a new technology requires R&D of its own to localize the technology. It is an essential step when a developed country receives technology transfer from an industrialized economy. Romer himself distinguishes between strategies of “using ideas” and of “producing ideas.” Industrialized economies are mostly producers while developing countries tend to be users of ideas. The implication is that “using ideas” is not a straightforward endeavor that takes place naturally. Grossman and Helpman argue that the process of industrialization in these countries [developing countries] does involve substantial technical change, in the sense that producers gain mastery (p. 84) over products and processes that are new to the local economy... In other words, the process of assimilating existing technologies in the less developed
countries is not unlike that of creating entirely new technologies in the developed world.53

There are many reasons why adaptation of a foreign technology—or using a foreign idea, in Romer’s parlance—requires R&D effort. One of the main reasons is the need to acquire tacit knowledge. This is the kind of knowledge that is needed in the deployment of a technology, for example, an advanced machine, that is not codified or sometimes incapable of codification. For example, in the context of a software company, tacit knowledge can be in the form of user requirements and system design and experiences accumulated in adapting software platform to specific user needs.54 According to Sanjaya Lall, “the disembodied elements of technology are not transferred like physical products... Unlike the sale of goods, in which transactions are complete when physical delivery has taken place, the successful transfer of technology is a prolonged process, involving local learning to complete the transaction.”55 When a developing country firm purchases a new machine, the machine may come with a user manual. The machine manufacturer may even send engineers and technicians to teach the developing country firm how to use the machine. But ultimately, employees at that firm must develop their local capability to learn how to use it. Moreover, tacit knowledge is often location-specific.56 What is needed to deploy a machine in China may be different from what is needed in Germany. Therefore, the local engineers must develop their own tacit knowledge in order to utilize the machine properly.

Whether knowledge is tacit or not depends on whether it is codified. Some tacit knowledge can be codified so that it is no longer tacit. The codifiability of knowledge depends on the type of knowledge at issue.57 It is noted that:

> codification can capture more fully causalities, procedures and descriptions than it can capture actual skills and competencies. It is easier to codify a description of the world than it is to codify ways to manage and change the world. It also illustrates that important aspects of human cognitive capabilities such as pattern recognition and pattern using are much more difficult to codify than simple logical statements of causality.58

(p. 85) It has been argued that the distinction between codified and tacit knowledge is sometimes unnecessarily stark. Most forms of relevant knowledge are a mixture of codified and tacit knowledge, and a body of knowledge can rarely be completely codified without losing some of its original characteristics.59 Whether to codify tacit knowledge is a commercial decision made by the firm taking into account a range of factors and economic incentives.60 One of these factors is technological competition.61 Codification increases the risk of knowledge spillover. When technological competition is keen, firms may choose to leave some crucial knowledge uncodified to maintain their competitive advantage.62

Acquisition of tacit knowledge has been said to take place through informal learning or implicit learning in an organizational context,63 where informal learning is characterized as the acquisition of knowledge and skill “from daily experience and the educative influences and resources in [an individual’s] environment,”64 and implicit learning as “the process by which people acquired complex knowledge about the world, independent of conscious attempts to do.”65 It has been argued that transfer of tacit knowledge depends on cultural and organizational factors such as the cultural distance between the firms and the individuals involved, the organizational context, and the technical knowledge gap between the firms and the individuals.66 Tacit knowledge need not be concerned with technological innovation. There is tacit knowledge involved in the organization and operations of a firm that are not related to technology. Acquisition of such knowledge will no doubt be useful to the firm as well. However, for our purpose, we classify that as productivity gains rather
than innovation. Only acquisition of tacit technical knowledge falls within the rubric of laggard innovation.

While acquisition of tacit knowledge may not seem like a substantial effort, one must bear in mind that the extent of R&D necessary depends on the gap between the technology embodied by the machine and the local technological capacity. If the local absorptive capacity is low, the R&D effort needed can be very substantial and time-consuming. For example, the transfer of a piece of sophisticated plastics machine from its German producer to a factory in a developing country, say China, can take six to nine months. Therefore, acquisition of tacit knowledge, which plays a critical role in the importation and adaptation of foreign technology, should be (p. 86) considered as innovation within a developing country. Nonetheless, it should be clear that this kind of innovation is less sophisticated than the kind of innovation required to replicate a cutting-edge technology, or perhaps to produce a process innovation. A developing country firm may develop the capacity to master and adopt a new technology, perhaps in the form of new machinery, without acquiring the ability to rebuild it. Therefore, there are different degrees of innovation even within developing countries, with acquisition of tacit knowledge probably at the lowest level of sophistication.

Having delineated different kinds of laggard innovation in a developing country, it will be interesting to see how they fit with the various growth models. To the extent that they do, the conclusion of these models that productivity gains and innovation create growth would equally apply to them. While process innovation could bring about productivity gains and hence constitute TFP growth under the Solow–Swan model, it clearly does not fit with Romer’s Product Variety model and the Aghion–Howitt models. All these models are premised on product innovation. Meanwhile, process innovation can be the kind of R&D that is pursued and that creates knowledge spillover in Romer’s Knowledge Spillover model.

The acquisition of tacit knowledge could be the kind of innovation featured in the Aghion–Howitt models, and possibly Romer’s Product Variety model. It is conceivable that the vertical product innovation and the increased product variety in these models could be the result of the acquisition of tacit knowledge that allows existing foreign technologies to be introduced to a developing country, thereby increasing the product variety in such a country. Tacit knowledge is susceptible to the kind of spillover that is the key mechanism for sustainable growth in Romer’s Knowledge Spillover model. One of the key mechanisms for the spillover of tacit knowledge is employee turnover. Alternatively, acquisition of tacit knowledge can be considered as the kind of technological change that is subsumed under general productivity gains in the Solow–Swan model.

Direct imitation of foreign technologies obviously can also generate the kind of vertical product innovation and increased product variety that are needed to generate growth in the various growth models by Romer and Aghion and Howitt. Instead of coming up with a genuine innovation, firms in developing countries make R&D investment to imitate a foreign technology. The impact of the new foreign technology on the developing country should be the same despite the fact that the imitation results in no genuine innovation in the global sense. And it would seem that imitation activities could generate the same amount of domestic knowledge spillover as innovation activity. There should be no qualitative difference between innovation and imitation in their ability to generate spillover. Meanwhile, imitation can generate the kind of productivity growth that is encapsulated in the concept of TFP under the Solow–Swan model. The contribution of imitation to economic growth has been affirmed by Aghion and Christopher Harris and their co-authors. They find in their economic model that the relationship between imitation (p. 87) and economic growth exhibits an inverted U-shape relationship. When the level of imitation is very low, raising it will almost always raise economic growth. However, when the ease of imitation approaches infinity, the growth rate always falls to zero. They conclude that "holding
constant the degree of competition, the marginal effect of raising the ease of imitation above zero is almost always to raise the growth rate. The only cases in which this does not hold are cases in which the degree of competition is close to maximal. 68

To sum up, laggard innovation can fit within the various growth models and help promote growth. What remains to be determined is whether competition promotes laggard innovation. If it does, then fostering competition will help to promote growth in developing countries. This bolsters the case for competition law enforcement in these countries. If it does not, then we need to reconsider whether competition law should be promoted in developing countries.

The role of competition in the various growth models is mixed. Both Romer and Aghion and Howitt argue that promotion of higher education will promote R&D. As noted earlier, this mechanism has little relevance for competition and competition law enforcement. Profit maximization by potential innovators ultimately drives the innovation decisions in all four models. But profits for the potential innovators play different roles in these models in delivering growth. In Aghion and Howitt’s models, a change in the profit stream will have direct consequences for growth via its impact on innovation. In these models, less profit means less innovation and hence less growth. Aghion and Howitt themselves note that increased product market competition may lead to lower growth in one of their models due to reduced innovation. In Romer’s models, especially the Product Variety model, a reduction in the profit stream as a result of increased competition in the intermediate good market may actually mean higher, and not lower, growth. Recall that in this model, the greater the number of firms in the intermediate good market, the greater the product variety, which in turn leads to higher growth in the model. Therefore, competition has a mixed relationship with growth in these models. In one of Aghion and Howitt’s models, greater competition suppresses growth, while in Romer’s Product Variety model, greater competition seems to lead to higher growth.

Beyond these growth models, there is a vast body of literature on the relationship between competition and innovation, from the early days of Joseph Schumpeter’s observation that monopoly is conducive to innovation, to Kenneth Arrow’s subsequent challenge to this assertion, to the modern-day, more sophisticated understanding of this relationship premised on the inverted U-shape curve. This literature will be examined more closely in Chapter 12. One problem with applying (p. 88) this body of literature to developing countries is that while the kind of innovation that is discussed in this literature is frontier innovation, developing countries mostly engage in laggard innovation. With the exception of process innovation, this literature will be of little assistance to us in understanding the relationship between competition and laggard innovation. We will need to examine the issue de novo.

Process innovation is but one kind of innovation as conventionally understood. More recent research has shown that competition and innovation share an inverted U-shape curve relationship and that intermediate levels of competition are found to be the most conducive to innovation. If the existing level of competition is low, boosting competition will bring forth greater innovation. If the existing market is highly competitive, encouraging further competition will deter innovation. Given that competition authorities generally focus their enforcement effort in uncompetitive markets, fostering competition through competition law enforcement should boost process innovation. Although research on the relationship between competition and innovation usually does not distinguish between product and process innovations, it can be assumed that what is most often contemplated is product innovation. After all, product innovation is what comes to most people’s minds as far as innovation is concerned.
There are reasons to believe that process innovation is more likely than product innovation to be positively correlated with competition. The main reason lies in how the two types of innovation affect cost and price. Product innovation may allow the innovator to raise prices, perhaps to a supra-competitive level, while process innovation usually permits the innovator to cut costs or otherwise achieve productivity gains. Process innovation usually does not give the innovator market power to raise prices. The pressure to cut costs or to otherwise produce a product more efficiently would be greater in a more competitive market. And the Schumpeterian effect on innovation whereby greater competition reduces profit and deters innovation should be less relevant for process innovation, which should be generally less costly to pursue. Therefore, overall, competition and process innovation should share a positive relationship. Fostering competition should create greater incentives to pursue process innovation.

The relationship between competition and acquisition of tacit knowledge has received scant attention in the economics literature. There is, however, widespread recognition of the importance of tacit knowledge. It has been described as “a crucial source of a firm’s core competences.” It plays an important role in knowledge creation and successful production development by the firm. Tacit knowledge affects a firm’s technological capacity; it allows a firm to implement a complex technology from the blueprints and use it effectively. Empirical research has confirmed that the amount of tacit knowledge within the firm is positively correlated with its innovation performance. However, acquisition of this knowledge is usually not seen as an independent endeavor in the sense that firms do not make a specific investment to acquire tacit knowledge. In this sense, it is different from the process of frontier innovation (although innovation can also be serendipitous in the sense that it was not the result of an active pursuit) or imitation.

In the context of developing countries, the source of tacit knowledge is often foreign. Therefore, the process of acquisition of tacit knowledge entails a transfer of tacit knowledge from a foreign source. There are two main contexts in which this can take place. The first is as part of the process of an explicit technological transfer, either through the sale of a product encapsulating the technology or through a technology licensing agreement. A developing country firm may have purchased a piece of complex machinery and as part of the sale the machinery manufacturer sends a team of technicians to teach engineers and workers at the acquiring firm how to operate the machine. Or a developing country firm may have signed a licensing agreement with a developed country firm for the domestic use of a technology. As part of the licensing agreement, the developed country firm sends personnel to help the developing country firm deploy the technology. In both scenarios, there is likely to be direct transfer of tacit knowledge.

The second context is through a joint venture. A developed country firm and a developing country firm may form a joint venture, often to produce a product using the former firm’s technology in a factory in the latter’s country. In the process of collaboration, tacit knowledge will be transferred from personnel from the developed country firm to personnel from the developing country firm. Joint venture is of course just another form of technological transfer. The only difference is the context. There are reasons to believe that tacit knowledge transfer is likely to be greater within a joint venture given its more involved and permanent nature as compared to the sale of a machine or technology licensing. In a joint venture, a parent can facilitate the acquisition of tacit knowledge from its joint venture partner by posting its own employees at the joint venture for an extended period of time. Nonetheless, it should be noted that commentators have noted the difficulties that joint venture partners have encountered in transferring tacit knowledge.
If transfer of tacit knowledge usually takes place as part of a formal technological transfer or collaboration such as a joint venture, to inquire about the relationship (p. 90) between competition and acquisition of tacit knowledge is tantamount to asking whether and how competition motivates firms to pursue a technological transfer or a joint venture. The pursuit of a technological transfer, either in the form of the purchase of a machine or a technology licensing agreement, and a joint venture essentially amounts to an investment by a firm to acquire new capabilities in the hope of earning greater profit in the future. As argued earlier, there is an analogy between investment on the one hand and R&D on the other hand. Two effects are at work in this context, which has already been explained earlier. Greater competition may deter innovation by reducing the amount of funds available to invest in R&D and by reducing the future returns from the innovation. Greater competition may also encourage innovation through the “escape competition” effect. The greater the ex ante competition or the ex post reward, the stronger the incentives to innovate. The size of the ex post reward is partially determined by the nature and commercial value of the innovation.

There are, however, some important differences between acquisition of tacit knowledge and innovation. At least in the case of a developing country, the acquisition of tacit knowledge is in the context of the transfer of an existing technology from its foreign owner. The technology is not new and is already practiced by the owner or its other licensees. Therefore, the acquisition of tacit knowledge and transferred technology will not, unlike a frontier innovation, create supra-competitive profits for the developing country firm. The developing country firm will be acquiring a foreign technology to join what would be already a competitive market. At the very least, it will have to compete with the technology owner and can at most earn duopoly profit from the technology transfer. Therefore, the escape competition effect will have less relevance because by merely catching up with the global technological leader, the developing country firm will not be escaping from competition. In other words, a developing country firm undertaking a technological transfer and acquiring tacit knowledge starts from a competitive market and will end up in a competitive market. The firm needs to acquire the technology and the tacit knowledge not to escape but to keep up with competition. Because acquisition of tacit knowledge does not confer upon the firm the competitive advantage that comes with a more valuable frontier innovation, it is most likely to create a weaker incentive effect. Meanwhile, acquisition of foreign technology and tacit knowledge should cost less than coming up with a frontier innovation from scratch. Therefore, it will matter less whether increased competition reduces the availability of funds for the investment.

It would seem that the decision to pursue a technological transfer should come down essentially to competitive pressure in the market. If rivals come up with improved products or improved technology to produce existing products at lower costs, a developing country firm would be subject to pressure to improve its technological capacity by way of a technology transfer from an overseas source. In (p. 91) other words, increased competition should generally promote the acquisition of tacit knowledge by encouraging technology transfers.

The relationship between competition and imitation has similarly received scant attention in the economics literature. In a way, this is not surprising because imitation is generally viewed negatively in the literature or at least as something not requiring substantial effort. One exception is Olga Slivko and Bernd Theilen, who through their model show that smaller firms are less likely to engage in innovation and more likely to imitate when the product is homogenous and there are substantial knowledge spillovers.76 With high spillovers the imitators obtain greater efficiency gains from using the innovator’s technology.77 Although Slivko and Theilen do not directly address the relationship between competition and the incentive to imitate, one can surmise that all else being equal, the market is likely to be
more competitive when the product is homogenous. The implication would be that competition promotes imitation.

Before we examine the relationship between competition and the pursuit of imitation, we need to acquire a better understanding of the nature of imitation as an economic activity. Simply put, imitation entails the copying of a competitor’s technology. However, copying is far from easy or costless. In fact, studies have shown that imitation is a costly and time-consuming endeavor. Through a number of empirical studies, Edwin Mansfield establishes the time-consuming and resource-intensive nature of imitation. In a survey published in 1981, Mansfield and his co-authors find that the ratio of imitation costs to innovation costs was about 0.65, and the ratio of imitation time to innovation time was about 0.70. In other words, it takes an imitator 70 percent of the time and 65 percent of the cost expended by the innovator to replicate the technology. If it took an innovator four years to invent a new technology, the imitator on average would need almost three years to replicate it. In fact, imitation costs were no smaller than innovation costs in one-seventh of the cases surveyed in their study.

Given that imitation is neither costless nor easy, one would expect it to be undertaken only after careful consideration. From a potential imitator’s perspective, the decision to imitate or not comes down to whether the profit from imitation outweighs its costs. The two key determinants are hence the profit potential of imitation and imitation costs. The profit from imitation depends on a variety of factors, such as the profit potential (quasi rent) of the invention and the number of potential imitators. The profit potential of an invention in turn depends on the demand for the product incorporating the technology. This is where the nature of the technology comes into play. An invention that is unique or a significant improvement of existing technology will be most likely to attract strong demand and generate significant profit potential. The profit potential for a minor improvement of an existing technology is likely to be smaller. The number of potential imitators also bears on the profit potential of imitation. The existence of a large number of potential imitators means that they will likely drive down the price of the imitated product, perhaps to even as low as marginal costs. Profit potential also depends on the inventor’s pricing strategy. An inventor that charges a high price will reap greater profit, but will also attract market entrants sooner and in greater numbers. In sum, other things being equal, the higher the profit potential for an invention, the more likely it is that it will be imitated.

Imitation costs mainly depend on two factors: the ease of imitation and the amount of investments required to undertake the imitation, which is driven by the first factor. Other things being equal, the more difficult it is to imitate a technology, the more costly is the imitation process. Ease of imitation in turns depends on a variety of factors, one of which is the codifiability of a technology. A technology that is easily codified is more easily imitated. A potential imitator merely needs to pick up a blueprint or a patent application to replicate the technology. Codifiability is related to tacit knowledge. An invention that requires substantial tacit knowledge to be implemented suffers from low codifiability and is difficult to imitate. Ease of imitation lowers imitation costs and appropriability. Ease of imitation also depends on the technological capacity of the imitator. The higher the imitator’s technological capacity, the less knowledge it will need to acquire in order to imitate successfully. More formally, what matters is the technological gap between the imitator’s technological capacity and the technology to be imitated. The bigger the gap, the more difficult and costly it will be to imitate it.

Imitation costs also depend on the complexity of the technology and the number of related investments—such as construction of production facilities and personnel training—that a firm must make to replicate the technology. A firm may be able to reproduce an imitated technology in its existing manufacturing facility. In that case, imitation costs are likely to be low. Some new technology requires a reconfiguration of the existing manufacturing facility or even the construction of a new plant. The semiconductor industry is a prime example of
It is not uncommon for a new generation of semiconductor chips to require brand new foundries. Imitation costs in such an industry are likely to be high. Even if a competitor manages to get a hold of the latest design blueprint for an Intel chip, it may still need to expend substantial resources to convert its manufacturing facility for the new product. Lastly, imitation costs are also dependent on the country’s intellectual property regime and patent-competition rules. A highly restrictive intellectual property regime will raise the costs of imitation or render it outright impossible. Such a regime, however, could be mitigated by permissive patent-competition rules that facilitate the sharing of technology with developing country firms.

Imitation costs are mostly determined by the nature and codifiability of the technology and the imitator’s technological capacity, which has little to do with competition. In contrast, competition is crucial in determining the profit potential of imitation, which depends on the profit potential (quasi rent) of the invention and the number of potential imitators. While the profit potential of an invention depends on the nature of the technology, the number of potential imitators is determined by the state of competition in the imitator’s market. The existence of a large number of potential imitators means that competition is likely to be keener post imitation, which would reduce its profit potential. The extent of this threat depends on the technological capacity of other potential imitators. If the imitating firm possesses a technological advantage over rival potential imitators, it may have less reason to worry about post-imitation competition. Pre-imitation competition also affects the incentive to innovate as a highly competitive market among the imitators may put pressure on a firm to imitate the cutting-edge technology to escape competition among the technology laggards. Since the technological frontier is already occupied by the technological leader, the imitating firm is unlikely to earn a substantial amount of quasi rent through imitation. But it should be able to share some of the supra-competitive profit from the innovation with the technological leader. In any case, it should be better off than pre-imitation when it was competing with a high number of laggards, whose products are likely to be commoditized and who are unlikely to earn anything more than normal profit. Therefore, all else being equal, one should expect greater ex ante competition to create stronger incentives for a firm to undertake imitation. This is similar to the escape competition effect in the context of innovation.

Where imitation differs from acquisition of tacit knowledge is that imitation is costly, and could be as costly as innovation itself. Therefore, unlike acquisition of tacit knowledge, whether greater competition will lead to fewer financial resources being available to support imitation activities will be a relevant consideration. Greater ex ante competition may encourage imitation by fostering the escape competition effect, but it may also undermine imitation by reducing available funds to support imitation. Greater ex post competition will reduce the return for imitation. But the imitator is still likely to be better off competing with the technological leader and other potential imitators than competing in a commoditized market with all the laggards. Competition is likely to be keener in the commoditized market regardless. Overall, competition seems to have a mixed effect on the incentive to imitate. To the extent that ex ante competition is a more important consideration, competition would tend to promote imitation.

D. Some Reservations about the Impact of Competition on Growth

Some commentators have raised certain reservations about whether maximization of competition is necessarily beneficial for growth. It has been argued that the relationship between competition and growth depends on the state of economic development of the country and the particular industry’s distance from the global technological frontier. Ajit Singh has asserted that the suitable level of competition varies with different stages of economic development and maximum competition is not always better. Philippe Aghion and Rachel Griffith flesh out the argument by linking the relationship between competition and growth to the drivers of growth in developing countries vis-à-vis industrialized
They argue that what developing countries need for growth is capital accumulation and imitation and adaptation of technology from industrialized economies. Competition and firm turnover is not crucial to capital accumulation or imitation. Meanwhile, in advanced knowledge-based economies, frontier innovations become the main engine of growth. Due to the lack of precedents for frontier innovators to follow, the best way to generate frontier innovation is through competition in an open market inhabited by potential innovators each pursuing different paths of innovation. Therefore, as countries transition from imitation and adaptation of foreign technologies to frontier innovations, they “should move from less competitive to more competitive institutions in order to sustain high growth rates throughout the various stages of their development process.”

Alessandro Diego Scopelliti likewise argues that “in the developing economies, a competition policy aimed at increasing the number of producers and at reducing the average size of the existing firms may delay the process of capital accumulation, while in the industrialized nations a competition policy expected to open the market to new competitors may encourage innovation among the incumbent firms.” Since developing countries in early stages of development rely on capital accumulation to promote growth, excessive competition may prevent firms from accumulating sufficient capital for investment and may hence retard growth. This leads him to conclude that “since the growth processes follow different transmission mechanisms, depending on the level of initial development, competition policy may be relevant or not for economic growth and may have different consequences.” This is a variation of the Schumpeterian argument that competition needs to be suppressed in order to allow firms to make sufficient investment in R&D to generate important innovations, except that in this instance, the investment is not in R&D, but in capital stock.

Scopelliti’s conclusion has been corroborated by research by Aghion and his co-authors who have demonstrated that increased competition by way of reduced rigidities in labor and product markets cuts TFP growth by 0.5 point per year for countries far from the global technological frontier but raises TFP growth by 0.2 point per year for countries close to the frontier. This result has been replicated at the firm level. Studies have found that introducing competition to industries that are close to the technological frontier will lead to productivity growth while doing so in technologically backward industries will lead to less growth. Aghion and his co-authors find in a 2008 study that the liberalization in India in 1991 had greater positive effects on an industry the closer it is to the national technological frontier. In a 2009 study, Aghion and his co-authors further find that increasing competition in an industry far from the technological frontier actually deters innovation while doing so in a technologically advanced industry will result in the escape competition effect and causes firms to invest more in innovation. Scopelliti echoes this conclusion, arguing that in technologically advanced industries, increasing competition leads to greater innovation because that is the only way to survive in the market, while in technologically backward industries, increasing competition deters innovation because greater threat of entry reduces the expect returns from R&D.

Meanwhile, Giuseppe Nicoletti and his co-authors have produced an empirical study presenting results that are opposite to those of the above studies. Nicoletti and Scarpetta find that product market regulation has a negative impact on growth, and that this negative effect is greater the further the country is from the global technological frontier. They conclude that the existence of entry barriers and state control retards technological catch-up and this effect is particularly strong for countries that are further behind the technological frontier. The contradictory results of these studies in fact lead to opposite policy recommendations.
These studies cast some doubt on whether greater competition will necessarily produce growth in developing countries and technologically backward industries. Section II will survey a larger body of empirical literature that has examined the relationship between competition and growth. As it turns out, a number of these studies contradict the suggestion that competition is less important for developing countries. In fact, a number of them produce results just to the contrary.

Taimoon Stewart and her co-authors have registered a slightly different reservation against competition. The argument is not that competition does not promote growth but that we need to be mindful of the distributional consequences of competition in the context of developing countries. The argument is essentially that competition produces winners and losers. If the promotion of competition ends up hurting the poor in society either by causing them to lose their job or to go out of business, ideally the government should step in to provide retraining and the welfare system should provide a cushion for them. However, this may not be possible in many cash-strapped developing countries. In that case, competition may inadvertently exacerbate poverty and create serious developmental consequences. Specifically, they refer to a Peruvian case study that shows that trade liberalization has resulted in the closure of inefficient domestic firms. Economic theory suggests that this is a positive development as it will free up resources from previously inefficient uses to more productive purposes. They observe that “the projected transfer of resources from less productive uses to more productive uses did not occur due to a lack of capital and entrepreneurship. Thus, rather than creating new jobs, trade liberalization resulted in the destruction of many of the few jobs that had existed.” Stewart and her co-authors’ concern is shared by the Growth Report, which argues that governments need to be mindful of the casualties of the growth process and provide adequate social protection. The report asserts that “if governments cannot provide much social protection, they may have to tread more carefully with their economic reforms. The speed of job destruction should not outstrip the pace of job creation.” This criticism reminds one of the importance of inclusive growth.

II. Statistical Studies on the Relationship between Competition (Law Enforcement) and Growth

Section I proposes a variety of mechanisms through which competition can promote productivity and economic growth. It will be interesting to see whether there is any empirical support for a positive correlation between competition and growth. Economists have attempted to measure the relationship between competition and growth either directly or indirectly. There are two ways in which they have done that: the direct approach and the macro-modeling approach. The direct approach focuses on customer savings. It measures the direct benefits of competition and competition policy for consumers. The macro-modeling approach analyzes the impact of competition and competition policy on macroeconomic variables such as gross domestic product (“GDP”) growth. Studies have attempted to determine the correlations between two different sets of variables. The first set, the independent variables, consists of competition itself or competition law enforcement. The two obviously need not be the same. Competition measures the inherent competitiveness of the market which may or may not be the result of competition law enforcement. Competition law enforcement is a parameter of direct interest to us. However, it may not be always easy to quantify that. Some studies focus on the law on the books. This has the advantage of being easier to quantify. But it may overstate the effectiveness of enforcement as a law that is not actively enforced does not count for much regardless of how well drafted it is. The second set, the dependent variables, consists of productivity growth or economic growth. Productivity growth may serve as a proxy for economic growth as it is one of the key drivers of economic growth. The dependent variables in these studies are usually TFP growth or per capita GDP growth. TFP
is relatively uncontroversial as a dependent variable although its measurement can be subject to wide variations depending on whether increase in the quality of factor inputs is taken into account.

Economic studies have used a range of indicators for the degree of competitiveness of the market, none of which is perfect. These include the Lerner Index, various market concentration indices such as market share and the Herfindahl-Hirschman Index (“HHI”), markups or price-cost margins, indicators of economic freedom, indicators of product market regulation, and indicators of firm entry. While most theoretical models use the Lerner Index as an indicator of market power and the inverse of the Lerner Index as a measure of competition, the Index cannot be used in empirical analysis because of the problem of endogeneity of the regressor with respect to the independent variable. The various market concentration indices are difficult to compile because they require product and geographic market definition. Indicators of economic freedom do not suffer from the problem of endogeneity as TFP or GDP growth is unlikely to affect economic freedom. The problem with these indicators is that they encompass more than product market competition and may include trade freedom, financial freedom, freedom from corruption, property rights protection, etc. This could be remedied by focusing on some of the component indicators of freedom, which could be more useful than the general index as they are more directly related to the variable of interest.

An alternative way to measure product market competition is to attempt to quantify the market rigidities that may hamper competition. These rigidities may include barriers to entry, the degree of vertical integration in the industry, the presence of public ownership, and the existence of anticompetitive or exclusionary conduct in the market. The Organisation for Economic Co-operation and Development (“OECD”) has in fact compiled an economy-wide indicator of product market regulation called PMR for 1998, 2003, 2008, and 2013. However, the recent pedigree of the indicator does not permit analysis of long-term effects on growth. Finally, consistent with theories on contestable markets, indicators of firm entry focus on how the possibility of market entry affects competition in the market. Again, the problem is its possible endogeneity with TFP growth, since the decision to enter the market may be affected by future expectations of productivity growth in the industry. A casual look at all the studies seems to suggest that price–cost margins are the most popular indicator of competition.

A. Studies Focusing on the Impact of Competition

Studies have measured the impact of increased competition on productivity growth and economic growth respectively, although the majority focuses on the former. By and large most studies find that competition has a positive impact on productivity and economic growth. Aghion and his co-authors argue that competition has a nuanced relationship with productivity and economic growth. Competition does not share a monotonic relationship with productivity and economic growth. Instead, their relationship is that of an inverted U-shape curve, just like the relationship between competition and innovation proposed by Aghion, Howitt, and their co-authors. The inverted U-shape relationship between competition and growth proposed by Aghion and his co-authors is expressly based on the impact of competition on innovation. The link between innovation and economic growth is through productivity growth. They argue that innovation drives productivity growth, which in turn propels economic growth.

They describe the Schumpeterian effect of competition, which reduces the rent on innovation and hence innovation incentives, and the escape competition effect, whereby increased competition leads to enhanced incentives to innovate to attempt to distinguish one’s products from rivals’ products. Under the escape competition effect, competition only reduces the pre-innovation rent but not the post-innovation rent. According to Aghion and his co-authors, the net effect of these two effects gives rise to the inverted U-shape
In other words, at low levels of competition, increased competition mainly induces the escape competition effect, which leads to greater innovation and hence higher productivity and economic growth. At high levels of competition, a further increase in competition will mostly result in the Schumpeterian effect, where increased competition causes a loss of innovation incentives. However, Aghion and his co-authors concede that if we were to try and find a linear relationship between competition and growth, the escape competition effect tends to dominate and hence competition has a positive relationship with growth. The inverted U-shape relationship posited by Aghion and his co-authors has been confirmed by Alberto Bucci, who has studied the relationship between competition and growth in the context of the Romer Product Variety model featuring horizontal innovation. Bucci explains his results also by way of the Schumpeterian effect and the escape competition effect. Munisamy Gopinath and his co-authors also find an inverted U-shape relationship between competition and productivity growth. They find that a 1 percent increase in industrial concentration (when a highly competitive industry becomes slightly less competitive) is associated with an initial 0.14 percent in TFP growth. The positive effect declines as industrial concentration increases and eventually turns negative when the industry becomes highly uncompetitive, just as Aghion and his co-authors predicted.

The lack of a monotonic relationship between competition and growth need not alarm us. Since the ultimate question for us is whether competition law enforcement promotes growth, we have fewer reasons to worry about the negative impact of increased competition on growth when competition is intense. So long as we limit enforcement to relatively uncompetitive markets, where increased competition leads to higher growth, competition law enforcement is unlikely to depress growth. This should not present difficulty as there are no reasons for competition authorities to intervene in highly competitive markets, especially given their limited resources.

Aside from the literature inspired by Aghion and his co-authors, the vast majority of the economic studies find a positive relationship between competition and productivity growth. The studies use a variety of indicators of the degree of competition, including the Lerner Index, industry markups, indicators of economic freedom, number of competitors, profit margins, or levels of rent, and the single event of liberalization, among others. Some of the studies use multi-country samples while others focus on specific countries. Sanghoon Ahn conducts a survey of existing literature on the empirical relationship between competition and productivity growth and finds that a large number of empirical studies confirm a robust positive correlation between product market competition and productivity growth and long-term economic growth. One notable exception is the study by Marwa Gomaa using panel data from 115 countries from 1995 to 2010. Her results show that regardless of the stage of development and the distance from the global technological frontier, increased domestic competition, as indicated by business freedom, retards economic growth.

Aghion and his co-authors find a strong positive relationship between product market competition and productivity growth. They use a 155-country data set from UNIDO and also data from South Africa. In the cross-country analysis, they use price-cost margins as the proxy for competition and find that a 10 percent increase from the mean margin of 0.24 in the 115-country sample results in a 2.4 percent reduction in productivity growth. Using data from South Africa, they find that a similar increase in margin results in a slightly smaller 1.6 percent reduction in productivity growth. Using the Lerner Index as the measure for competition, they find that for 1970–2004, competition is positively correlated with productivity (p. 101) growth. In particular, they find that a 0.1 unit increase in the Lerner Index proxy results in 1 percent decline in TFP growth. Finally, they find that
South African industries are generally less competitive than their counterparts worldwide and an increase in competition should raise productivity growth.\textsuperscript{130} Scopelliti uses a smaller data set focusing on twenty OECD countries from 1995 to 2005 to study the relationship between product market competition and multi-factor productivity.\textsuperscript{131} His study relies on indicators of economic freedom compiled by the Heritage Foundation, focusing in particular on business freedom and trade freedom. He uses business freedom as a proxy for domestic competition and trade freedom for competition from foreign markets.\textsuperscript{132} His results using business freedom corroborate the assertions by Singh, Aghion, and Griffith that competition is more important for generating growth for countries closer to the global technological frontier.\textsuperscript{133} He finds that the impact of competition as measured by business freedom on productivity growth changes over time and the impact is different according to the type of country at issue. For developing countries that are far from the global technological frontier, increased competition can have a substantial positive impact on TFP level in the short run, but the effect tapers off and can even turn negative in the long run.\textsuperscript{134} In contrast, for industrialized economies that are close to the global technological frontier, increased competition leads to the opposite effect—a possible reduction in TFP growth in the short run but a significant increase in TFP growth in the long run.\textsuperscript{135}

The rest are a slew of country-specific studies which all confirm the positive relationship between competition and productivity growth. Stephen Nickell conducts a study of 670 British firms and examines the relationship between competition as measured by the number of competitors or levels of rent and productivity growth.\textsuperscript{136} He finds that increased competition leads to significantly higher TFP growth. Specifically, he finds that all else equal, TFP growth is 3.7 percent higher if a firm has more than five competitors.\textsuperscript{137} He attributes the higher productivity growth mainly to the reduction of managerial shirking and the agency problem facing shareholders.\textsuperscript{138}

Richard Disney and his co-authors undertake another study of the sources of productivity growth. This study is particularly interesting because it is one of the very few studies that compare the relative importance of different mechanisms (p. 102) that translate competition into growth, such as firm turnover, innovation, and internal restructuring. Their study does not explicitly focus on the relationship between competition and productivity growth. Instead, they focus on the relative contribution made by internal restructuring, which they define as the introduction of a new technology or organizational change, and external restructuring, which refers to firm turnover, to productivity growth.\textsuperscript{139} Their study is comprehensive in that it uses data from 140,000 manufacturing establishments from 1980 to 1992. Their conclusion is that external restructuring is a more important source of productivity growth than internal restructuring. External restructuring accounts for around 50 percent of labor productivity growth and 80 percent to 90 percent of TFP.\textsuperscript{140} They argue that firm turnover is more important for productivity growth because entrants are generally more productive than those leaving.\textsuperscript{141} They speculate that entrants are likely to be using more capital-intensive production methods, which result in greater productivity.\textsuperscript{142} Importantly, they conclude that product market competition raises both the level and growth of productivity significantly.\textsuperscript{143}

Shifting to Germany, Silke Januszewski and his co-authors find the same relationship between competition and productivity growth through a study of almost 500 German manufacturing firms. An additional focus of their study was how competition interacts with corporate governance on productivity growth. The measurements they use for product market competition are firm concentration data at the four-digit industry level from the Federal Monopoly Commission and rent level.\textsuperscript{144} They ultimately find that monopoly rents have a significantly negative and extremely robust effect on productivity growth, but industry concentration does not.\textsuperscript{145} Their study also examines the impact of import competition on growth using import and domestic production data at the two-digit industry
They have three main findings. First, more intense competition raises productivity growth among the firms examined in the study. Second, productivity growth for firms under a strong ultimate owner is higher, but not when the owner is a financial institution. And third, competition and tight control are complements. A firm under a strong ultimate owner experiences a strong positive effect from competition on productivity growth.

Mikyung Yun uses firm-level data from South Korea to study the relationship between competition and productivity growth. He uses the number of firms in the market as an indicator of product market competition. He finds that the number of firms in the market, indicating ease of entry and exit, is a better indicator for product market competition than the individual or combined market shares of the top few firms. He further finds that what matters for competition is not the number of firms in the industry per se but the change in the number of firms, which has a strong positive correlation with productivity growth. The number of firms as such does not exhibit such a positive correlation. This emphasis on firm turnover is consistent with the Schumpeterian view of competition. Interestingly, using the level of rent as another indicator of competition, he concludes that “[r]ent is positively correlated with productivity but negatively correlated with productivity growth, and only the latter effect is significant.” This means that while monopoly rent may give a marginal boost to productivity growth in the short run, it will have a significant detrimental effect on growth in the long run. Thus, it is definitely not worthwhile to trade short-term growth for long-term decline. Finally, he diverges from Nickell’s conclusion that competition and financial pressure are substitutes, at least with respect to developing countries. He argues that due of the relatively undeveloped nature of the financial markets in developing countries, these markets may perform an inadequate monitoring role over managerial performance. This means that competition is particularly important in the context of developing countries in ensuring efficient managerial behavior.

A robust positive relationship between competition and productivity growth is not only found in the industrialized economies, the same is observed in developing countries as well. A number of studies have examined this issue in Turkey, Tunisia, Jordan, Morocco, and Egypt. The World Bank undertakes a study of this relationship in Turkey in its 2013 report and uses price-cost margins as a proxy for product market competition. The World Bank reports that a 10 percent reduction in the price-cost margins brings about a 4.5 percent increase in annual productivity growth. Interestingly, the report also confirms the presence of the Schumpeterian effect between competition and growth and reports an inverted U-shape, although not always statistically significant, relationship between the two. The World Bank has conducted a similar study in Tunisia. Again, using price-cost margins as a proxy for product market competition, the World Bank attempts to find the relationship between competition and growth. The World Bank finds an even stronger relationship between competition and growth in Tunisia than in Turkey. The relationship is twice as strong. While in Turkey a 10 percent reduction in price-cost margins is needed to generate a 4.5 percent of productivity growth, in Tunisia, a 5 percent decrease in price-cost margins will produce a 5 percent increase in labor productivity. The World Bank further projects a 4.5 percent growth in GDP as a result of increased competition. These figures are considerably higher than those found in the studies done in industrialized economies. This seems to suggest that, contrary to Singh, Aghion and Griffith, and Scopelliti’s views, competition in fact has a stronger positive relationship with growth in developing countries than in industrialized economies.

Khalid Sekkat has conducted a study on the relationship between competition and productivity growth in Egypt, Jordan, and Morocco. Using markup as an indicator of the degree of competition and TFP for productivity, he finds that there is a significant and negative relationship between markup and TFP growth in manufacturing firms in Jordan and Morocco. No significant relationship between markup and productivity growth is
found in Egypt. Instead, Sekkat finds a significant negative relationship between the market share of state-owned enterprises (“SOEs”) in industries and productivity growth. The market share of SOEs seems to be a better indicator of the degree of competition than markups in Egypt. This could be due to the fact that SOEs are much more prominent in Egypt, accounting for a much larger share of industrial output than in Morocco.

B. Studies Focusing on the Impact of Competition Law Enforcement

A whole host of other studies delve into the relationship between competition law enforcement (often referred to as competition policy in these studies) and growth. Instead of trying to come up with a reliable measure of the degree of product market competition, what these studies attempt to do is to find a meaningful way to quantify competition law enforcement. Some of them rely on the index compiled by Keith Hylton and Fei Deng that attempts to measure the coverage of competition law in various countries. The problem of course is that law on the books can diverge significantly from actual enforcement. The most comprehensive quantification of enforcement of competition law in developing countries of which this author is aware comes from Dina Waked. Unfortunately, perhaps due to the recent vintage of this work, the index compiled by Waked has not been widely utilized in empirical studies. Some of these studies focus on productivity growth, while some directly measure the relationship between competition law enforcement and economic growth.

One of the key assumptions of these analyses is that competition law enforcement has a meaningful impact on the degree of product market competition, perhaps as manifested in price–cost margins or some other ways. The empirical evidence here, however, is not encouraging. Hiau Looi Kee and Bernard Hoekman do not find the introduction of competition law to have a significant impact on industry markups in the forty-two developed and developing countries they surveyed. Countries with a competition law did not see a lower markup than those without. However, Kee and Hoekman find that industries subject to competition law enforcement tend to have a greater number of firms. This suggests that competition law may have an indirect effect on competition by encouraging firm entry. Jozef Konings and his co-authors similarly find that the introduction of competition law in Belgium did not lead to lower markups in Belgium. However, Paolo Bucicrossi and his co-authors cast doubt on the validity of these conclusions by pointing to the incomplete measure of competition law enforcement used by these authors.

These studies pose a grave problem for our project because if competition law enforcement does not have a significant and direct impact on the degree of competition, then the previous discussion about how competition promotes productivity and economic growth will be all for naught. Whatever the relationship is between competition and growth, competition law enforcement will have a small role to play in it. While the results from these studies are a reason for concern, there is no need for undue pessimism. One of the most obvious explanations for these results is that the studies did not attempt to measure actual enforcement and only focused on law on the books. It is not surprising that the adoption of competition law without or before enforcement will have negligible impact on prices.

The far from clear empirical connection between competition law enforcement and the actual degree of product market production notwithstanding, quite a few studies have attempted to ascertain the relationship between competition law enforcement and productivity and economic growth. A number of studies have found a positive relationship between competition law enforcement and growth, while a few others suggest that the relationship depends on the stage of economic and institutional development of the country.
A country with poor institutions is unlikely to obtain much benefit from the adoption of competition law.

Mark Dutz and Aydin Hayri produce a very comprehensive analysis using data from over 100 countries over a ten-year period of 1986 to 1995. Their study is in fact not exclusively concerned with competition law enforcement, it includes a host of variables that reflect the extent of market concentration. They find a “reliable, independent and robust statistical relationship” between economic growth and a variable that quantifies the perception by the business community of the effectiveness of domestic competition law enforcement. The data are compiled from the direct responses from over 3,000 top business executives in fifty-three countries to the question: “Does antitrust or antimonopoly policy in your country effectively promote competition?” Interestingly, Dutz and Hayri do not find the same correlation between competition law enforcement and economic growth in the East Asian countries, further substantiating the claim that the East Asian countries have achieved remarkable growth by subordinating competition law enforcement to industrial policy. The obvious drawback of this study is that instead of using robust quantitative measures of actual enforcement effort, it relies on a survey of business people’s perception of the effectiveness of enforcement. Their perception may not align with reality. Moreover, perception about the effectiveness of enforcement may be colored by other realms of policy such as trade, regulation, and privatization. This undermines the accuracy and the reliability of the survey results.

A second study that has found a positive relationship between competition law enforcement and economic growth is that by Bineswaree Bolaky. Instead of relying on results from perception surveys, Bolaky attempts to quantify effectiveness of competition law enforcement indirectly through a number of proxy indicators for which there are readily available indices such as general government effectiveness, rule of law, and extent of corruption. She also incorporates years of enforcement on the assumption that the longer the enforcement history, the more effective the regime will be. While this would seem to be a commonsensical proposition, experiences of countries such as Thailand and many Latin American countries suggest that the law is often left idle after adoption when there is no political will to implement the law. She also adjusts for the level of the economic development of the country at issue. Finally, she adds a variable for the existence of the competition law to capture the possible signaling effect of adopting the law. She finds that there is a positive and significant impact of competition law enforcement on economic growth, regardless of the degree of product market competition in the local markets. Specifically, she finds that a country that has enacted and enforced a competition law on average has a higher GDP per capita by USD1,585 than a country without competition law. She concludes that the enforcement of competition law contributes to growth not only by making markets more competitive but also by its signaling effects to investors and others in business.

Yet another study by Tilsa Ore Monago also finds a strong positive relationship between competition law enforcement and economic growth. In her analysis, similar to the approach by Bolaky, the effectiveness of competitive law enforcement is captured by general government effectiveness and years of enforcement. Her study shows that there is a strong and positive relationship between competition law enforcement and economic growth. Contrary to Kee and Hoekman’s findings, Monago’s analysis shows that the main mechanism by which competition law enforcement contributes to economic growth is by increasing competition in local markets. Her results show that competition law enforcement have “a positive, significant and important effect” on product market competition (which is called competition intensity in her model). This result is highly robust. Monago refines her analysis by splitting countries into the four income groups under the World Bank classification. Somewhat surprisingly, she finds that the positive impact of competition law enforcement on product market competition is only statistically significant for lower and
This leads her to conclude that “the competition law’s impact tend to be more important when markets are in a transition stage towards development.” This result again contradicts Singh, Aghion and Griffith, and Scopelliti’s view that competition plays a (p. 108) more important role in promoting growth in industrialized economies. It is also inconsistent with the notion that the benefits of competition law enforcement depend on the institutional capacity of a country. The higher a country’s institutional capacity, the greater the benefits competition law enforcement will bring about. And countries at earlier stages of development tend to have poorer institutional capacity. This is a theme that is explored in a few studies, which will be examined in the rest of this chapter.

Instead of focusing on economic growth, Stefan Voigt has conducted a study on competition law enforcement and productivity growth. This study is more specific than other studies in that it examines not just whether competition law enforcement in general enhances TFP but how different aspects of competition law enforcement relate to TFP growth. Voigt achieves this by constructing four indicators for competition law enforcement. The first one reflects the basis and contents of the law. The second one examines the extent to which the law relies on economic reasoning. The third and the fourth are concerned with the degree of independence, the former on formal, or de jure, independence, and the latter one on factual, or de facto, independence. The study finds that “controlling for standard economic variables as well as institutional and more truly exogenous ones, the four indicators did seem to have an effect on total factor productivity. This vanishes, however, as soon as indicators that represent the quality of institutions, very broadly conceived, are incorporated in the model.” However, the effect is not very strong and does not seem to be very robust. Voigt defends the result of his study by arguing it may be premature to pass a final verdict on the effectiveness of competition law given that more than half of the regimes included in the study were established after 1990.

Voigt and Jerg Gutmann subsequently conducted another study on the relationship between competition law enforcement and growth. This study is different from Voigt’s 2009 study in that it focuses on the introduction of competition law alone and only includes one independent variable on actual enforcement, a de facto independence indicator. However, in terms of dependent variables, this study is broader in scope in that it covers economic growth, TFP growth, investment, and FDI. For the adoption of competition law, he uses four indicators, simple data on whether a law has been adopted, a de facto independence indicator, the Antitrust Law Index compiled by Michael Nicholson, and the Scope Index compiled by Keith Hylton and Fei Deng. Perhaps somewhat surprisingly, Gutmann and Voigt (p. 109) find that the introduction of competition law has a very substantial positive effect on growth, resulting in an increase in growth by 2 percent to 3 percent. Contrary to the results from other studies, however, they find that the introduction of competition law does not lead to a significant increase in TFP growth. While TFP growth seems unaffected by competition law, they find that the adoption of competition law results in a 3–4 percent increase in investments. However, this result is mainly observed in low-income countries. This may bolster the case for adopting competition law in developing countries as it was argued earlier that capital accumulation is the main engine for economic growth in low-income countries. In addition, they find that the introduction of competition law has no impact on the inflow of FDI. Gutmann and Voigt attempt to go further with a more granular analysis of competition law, trying to assess whether different areas of competition law, restrictive agreements, abuse regulation, and merger control, have disparate impact on the dependent variables examined. Unfortunately,
they find that none of these sub-areas of competition law provide additional explanatory power beyond the fact of adoption of the law.\textsuperscript{197}

Danilo Samà uses the four indicators for competition law enforcement compiled by Voigt to measure the impact of competition law enforcement on competition in domestic markets and the economy overall.\textsuperscript{198} As indicators of domestic competition, Samà uses the results of a survey of business executives conducted in 2007 asking for their subjective assessment of the following dimensions of domestic competition: intensity of competition in the respective local markets, the extent to which the domestic economy is dominated by conglomerates or corporate groups, the extent to which competition law enforcement promotes competition, and the intensity of competition and goods market efficiency at the aggregate level.\textsuperscript{199} He finds that all four indicators of competition law enforcement except the one pertaining to the adoption of competition law has a positive impact on domestic competition.\textsuperscript{200} These results lend support to the unsurprising conclusion that mere adoption of a law without serious efforts at enforcement will not change the local economy. These results also contradict the findings by Kee and Hoekman, and Konings and his co-authors that competition law enforcement does not have significant impact on the degree of product market competition. This is good news to advocates of competition law enforcement. Finally, Samà finds that for developing countries, factual independence of the competition authority is the (p. 110) most important factor among the four indicators in creating a positive impact on domestic competition.\textsuperscript{201} The importance of institutional quality to the effectiveness of competition law enforcement is echoed by the studies by Tay-Cheng Ma and Buccirossi and his co-authors, which will be discussed below.

Joseph Clougherty estimates the relationship between competition law enforcement and economic growth by focusing not on the existence of the law itself or the institutional environment but on a key input into enforcement, budget for the competition authority. He finds a significantly positive relationship between budget for the competition authority and economic growth.\textsuperscript{202} In particular, he finds that an increase in the level of competition authority budget by one standard deviation, which equals USD58.8 million, would raise economic growth by 0.84 percent on average.\textsuperscript{203} This suggests that devoting more resources to competition law enforcement is a very good investment from a growth perspective. Comparing the budget for the competition authority in the United Kingdom and France, he concludes that the United Kingdom has a 0.14 percent advantage in growth over France by virtue of the larger amount of resources devoted to competition law enforcement.\textsuperscript{204}

Niels Petersen similarly finds a strongly positive relationship between competition law enforcement and economic growth, but with a twist. His study is interesting in that not only does it try to explore the relationship between competition law enforcement and economic growth, it also examines the relationship between competition law enforcement and the promotion of democracy. It is based on a quantitative analysis of panel data of 154 states from 1960 to 1995. Thus the sample size and the timeframe is more expansive than the other studies examined in this section. One may see an intuitive connection between competition law, which aims to protect consumers, and democracy, which gives each citizen a voice in the political system. However, disappointingly, Petersen finds that there is no significant positive impact of competition law on the level of democracy.\textsuperscript{205} He finds a strongly significant positive impact of the introduction of competition law on economic growth, as measured by the growth rate of GDP per capita.

The interesting fact is that this positive relationship is only observed ten years after the introduction of the law.\textsuperscript{206} There is no statistically significant relationship between competition law and growth five years after the establishment of the regime.\textsuperscript{207} The lesson is that it takes time for a new competition law regime to establish itself and to exert an impact on the economy. In fact, there are reasons to (p. 111) believe that Petersen’s results may have understated the impact of competition law enforcement on economic growth.
Petersen assumes that once a regime has been set up, enforcement will begin in earnest. However, experience from many developing countries, especially those in Latin America such as Argentina and Brazil, is that the competition statute is often left idle for years after it was adopted. Much of this initial inactivity falls within the time period of this study. With a sample size of 154, it is bound to have caught quite a number of these “idle” countries. Therefore, if Petersen had been able to isolate these “idle” countries from the analysis, he would have found an even stronger statistical relationship between competition law enforcement, in countries that actually enforced the law, and economic growth.

What follows is two studies that argue that the benefit of competition law enforcement to growth depends on the quality of institutions. The idea is that competition law enforcement requires a certain degree of institutional capacity, without which enforcement will redound few benefits to a developing country. Tay-Cheng Ma presents probably the most sophisticated study of the relationship between competition law enforcement and growth. His empirical study is based on the Solow–Swan model in which competition law has a clearly identifiable role in promoting growth. He draws different conclusions for different types of countries depending on their stages of economic development. For the poor less developed countries, whose institutional quality is poor and below a certain threshold level, competition law only has a very limited effect on economic activities and adoption of a competition law neither helps nor harms market competition and economic growth. For middle-income developing countries and developed countries, the effect of the adoption of competition law still depends on the enforcement capacity of the country at issue. Ma concludes that without adequate enforcement capacity, adoption of a stronger competition law not only may not promote productivity growth, it may end up retarding it. He notes that his regression analyses time and again show that there is a threshold level below which countries do not benefit significantly from the adoption of competition due to limited institutional capacity. This threshold is at the level which divides the countries in his sample between the poor group, which corresponds with the lower middle-income countries according to the World Bank classification, and the rich group, which corresponds with the upper middle-income countries and the high-income countries. His regression analysis finds competition law adoption to have a negligible impact on productivity growth in the “poor group” countries. Adoption of competition law has a significantly positive on productivity growth among the “rich group” countries. He suggests that countries with a higher degree of enforcement capacity will benefit disproportionatley from the adoption of a stricter regime.

Paolo Buccirossi and his co-authors undertake another study and come to a similar conclusion as Ma’s. Their main conclusion is that the benefit of competition law enforcement depends on the quality of institutions. The limitation of this study is that it only encompasses the OECD countries. While one may argue that this study therefore has limited applicability to developing countries, one can alternatively argue that the result of this study truly underscores the importance of institutions. The disparity in the quality of institutions among the OECD countries should be considerably smaller than between OECD countries and developing countries. If the subtle disparity in institutional quality among the OECD countries produces measurable differences in the impact of competition law enforcement, the considerably larger disparity between the OECD countries and developing countries will suggest an even lower level of effectiveness of competition law enforcement in developing countries. This may further cast doubt on the extent to which developing countries will benefit from the adoption of competition law.

Their study covers twenty-two industries in twelve OECD countries over the period 1995–2005. As opposed to the indices compiled by Hylton and Deng, which practically only focuses on law on the books, the authors compiled their own competition policy indicators
Their indicators include a wide range of dimensions concerning competition law enforcement, including:

- the degree of independence of the competition authority with respect to political or economic interests;
- the separation between the adjudicator and the prosecutor in a competition case;
- how close the rules that make the partition between legal and illegal conducts are to their effect on social welfare;
- the scope of the investigative powers the competition authority holds;
- the level of the overall loss that can be imposed on firms and their employees if these are convicted;
- the toughness of a competition authority, which is given by its level of activity and the size of the sanctions that are imposed on firms and their employees in the event of a conviction;
- and the amount and the quality of the financial and human resources a competition authority can rely on when performing its tasks.

Based on this information, they then compiled CPI for different areas of competition law enforcement, namely conduct enforcement, merger review, institutional features, and enforcement features, which are then combined into an aggregate CPI. Their main finding is that the aggregate CPI has a positive and statistically significant impact on TFP growth. When a regression is run on the four specific CPIs, they find that all of them have a positive and significant impact on TFP growth, but the impact is stronger for institutional features and conduct enforcement. This echoes Ma’s finding that institutional quality matters for the potential of competition law enforcement to promote growth. In particular, they find that the effect of competition law enforcement on TFP growth is stronger in countries where the costs of contract enforcement are lower and the quality of the judicial system is higher, suggesting that the institutions that matter the most for competition law enforcement, unsurprisingly, are the legal institutions.

The last study to be covered in this section, which is slightly different from the ones that have been discussed thus far, is the one by Godius Kahyarara. This study is different in that it is not a cross-country study, but a case study of Tanzania. Specifically, it examines the relationship between competition law enforcement on the one hand and productivity, investment, and export on the other hand of manufacturing firms in Tanzania. The author finds a robust and positive relationship between competition law enforcement on the one hand and productivity, investment, and export on the other hand following the introduction of the Fair Trade Practices Act in 1994. In particular, he finds that firm productivity after 1994 is about 50 percent higher than that in the pre-1994 period. This represents a very substantial increase in productivity. He further finds that firm investment level is onefold higher in the post-1994 period than that in the pre-1994 period. Again, this is very substantial impact. Aside from the effect of competition law enforcement, he also finds that there is a positive relationship between the degree of market competition facing a particular firm and firm productivity. He finds that firms operating in markets with at least five competitors experienced a 24 percent increase in productivity. The result of Kahyarara’s study can be said to somewhat contradict the conclusions from Ma’s and Buccirossi’s studies. Both these studies find that countries with low institutional capacity should derive little benefit from competition law enforcement. By any measure, Tanzania should be considered as a country with low institutional capacity. Its ranking score on the Government Effectiveness Index of the Worldwide Governance Indicators 2016 was 34.13 out of 100. Yet Godius Kahyarara finds very strong positive impact of competition law (p. 114) enforcement on productivity in Tanzanian firms. This shows that countries with poor institutional capacity can benefit from the introduction of competition law.
C. A Summary

Overall, there is overwhelming evidence that increased competition leads to higher productivity and economic growth. There is also very strong evidence that competition law enforcement promotes productivity and economic growth. However, it should be noted that at least one study by Robert Crandall and Clifford Winston concludes that competition law enforcement has negligible effect on economic growth. Meanwhile, there is some conflicting evidence, with Ma and Buccicrossi on the one hand and Godius Kahyarara on the other hand, as to whether a minimum degree of institutional capacity is needed to allow a country to benefit from the introduction of competition law. It is unclear whether there are any unique circumstances about Tanzania that cause it to deviate from the general pattern found by Ma and Buccicrossi. Their studies probably would carry more weight than Kahyarara’s because their studies cover a much bigger sample size, in Ma’s case more than 100 countries and in Buccicrossi’s case at least more than 10 OECD countries. One may plausibly argue that if we were operating from a clean slate, it would be sensible to advise the poorest developing countries with highly deficient institutional capacity to hold off on the adoption of competition law. The problem is that we no longer operate on a clean slate and more than 130 jurisdictions have adopted a competition law. Once the law is adopted, it should be enforced and we must try to make the best out of the situation.

The results from Ma and Buccicrossi’s studies need not cause undue pessimism. While the effectiveness of any regulatory regime would depend on institutional capacity, it is possible to get the most out of competition law enforcement with minimum institutional capacity. Competition law enforcement chiefly requires agency capacity and judicial capacity. It is probably impossible to get around a lack of agency capacity; agency capacity is indispensable for successful competition law enforcement. But if the lack of judicial capacity is the main issue—and Buccicrossi and his co-authors have singled out judicial institutions as the key institutional determinant in the effectiveness of competition law enforcement—it may be possible to design a competition law regime with the minimum level of judicial involvement. For example, one may want to adopt the administrative model as opposed to the judicial model of enforcement. Moreover, one may want to limit the scope of judicial review of agency decisions to manifest errors of law or violation of procedural rights. It may be wise to minimize the extent to which (p. 115) the courts can scrutinize the agency’s analysis of substantive competition law issues. And perhaps for countries with truly inadequate institutional capacity, it may be best to focus on areas of enforcement that require the least sophisticated economic analysis and subtle policy judgments, namely cartel enforcement. These themes will be picked up again when we discuss the various enforcement issues facing a developing country regime and what are the necessary adaptations in light of these issues.

III. Competition Law Enforcement and Foreign Direct Investment

One other factor that has been traditionally given a high degree of importance for economic growth in developing countries is FDI. Many developing countries have assiduously courted foreign investors in order to propel growth. FDI may facilitate economic growth and development in a number of ways. First, FDI may help to plug the domestic savings gap with foreign capital. However, the extent to which this is helpful depends on the stage of development of the country at issue. It has been noted that for a developing country that is on the cusp of transitioning into a knowledge-based economy, capital investment without innovation will not bring about sustainable growth. Foreign capital investment will only be important for countries at low levels of development in which there is a dearth of capital stock. Second, FDI may introduce foreign technology, know-how, or management and organizational skills into the country, hence raising productivity. Commentators have stressed the importance of technology transfer in the context of supply linkages and
knowledge spillovers from multinational firms to domestic competitors. By obtaining supply of intermediate inputs in the local country, FDI may promote development of the local industry by introducing local suppliers to international manufacturing standards.\textsuperscript{225} Andres Rodriguez-Clare argues that FDI is more beneficial to the host if the multinational firm has greater capacity than the domestic firms to generate input-output linkages.\textsuperscript{226} He calculates what he calls a linkage coefficient and concludes that when a multinational firm has a higher linkage coefficient than do domestic firms, there will be a higher equilibrium variety of specialized inputs.\textsuperscript{227}

In terms of knowledge spillovers, it has been noted that multinational firms may “expose local entrepreneurs to new technologies and work practices, or train employees who eventually launch their own enterprises or take positions in local (p. 116) companies.”\textsuperscript{228} Over time, knowledge spillovers to local competitors should help to raise their productivity.\textsuperscript{229} Studies have shown that turnover of key employees has a positive correlation with faster imitation by competitors.\textsuperscript{230} Third, FDI may increase the contestability of local markets, thereby forcing local rivals to improve their efficiency and bringing down prices for consumers.\textsuperscript{231} Fourth, FDI may help local firms gain access to international supply chains and marketing networks, thereby raising their competitiveness.\textsuperscript{232} It is argued that efficiency-seeking FDI brings more benefits to the host than market-seeking and natural resource-seeking FDI.\textsuperscript{233} Those who defend FDI as an important engine for growth in particular argue that the nationality of a corporation is in any case a fuzzy concept and domestic firms do not necessarily make a greater contribution to the local economy than do foreign firms.\textsuperscript{234}

However, the importance of FDI to economic growth has not been without controversy. Many commentators have questioned the importance of FDI to growth in developing countries.\textsuperscript{235} In fact, many have highlighted the fact that South Korea and Japan both consciously eschewed FDI as evidence that it is by no means indispensable to growth in developing countries. The heavy reliance of FDI on the part of Latin American countries and their relatively weak economic performance over the last half a century compared to the East Asian NIEs further underscores this point. In the next section we will examine the various arguments made in support and refutation of the importance of FDI to growth in developing countries. We will further examine how competition and competition law enforcement is related to attracting FDI if FDI is found to be important to growth.

A. Relying on FDI to Promote Growth in Developing Countries

The importance of FDI to growth in developing countries has been questioned and challenged on many fronts. While the contribution of FDI to meeting local capital needs is probably indisputable (however, even there, Rodrik argues that the benefit (p. 117) is overstated),\textsuperscript{236} most of the challenges have focused on the potential of FDI to improve local technological capacity, the positive knowledge spillovers of FDI, and the argument that multinational firms necessarily raise the competitiveness of the local markets. Some commentators have also disputed that the nationality of the corporation makes no difference in terms of contributions to the local economy.

While it may be true that multinational firms introduce new technologies to the local market in the process of making an FDI, some have questioned whether the technology introduced is always appropriate for the local market. It has been argued that there could be a mismatch between the technology chosen and the local factor endowment. In particular, it has been argued that multinational firms may have a tendency to choose technologies that are more capital intensive than is warranted by the local factor endowment.\textsuperscript{237} This is because while most developing countries have abundant labor and hence would favor labor-intensive technologies, a multinational firm will make its decision regarding technology based on factor availability on the global level rather than on the local level.\textsuperscript{238} On the global level, a multinational firm is likely to have a greater supply of capital than is
available in the local market, thereby encouraging a choice of a capital-intensive technology. Colin Kirkpatrick and his co-authors assert that developing countries should not rely on multinational firms to supply appropriate technologies. Even if an appropriate technology is transferred, it will usually be confined to a straightforward implementation in production and will not increase the local technological capacity. Multinational firms seldom locate research facilities in developing countries, and if they do, the research done there is unlikely to go beyond mere adaptation.

A slightly different argument that has been made is that the developing country may not have the capacity to absorb the technology. The argument is that the extent to which a developing country can benefit from the technological improvement potential of FDI crucially depends on its absorptive capacity. This echoes the argument made earlier that the adaptation of a foreign technology into the local environment requires technical knowledge and technological capacity. If the local technological capacity is poor, multinational firms can only rely on local firms to supply relatively simple components. The most that the multinational firm can transfer to its local counterparts are quality control techniques, minor adaptations, and perhaps some tacit knowledge. This view is endorsed by United Nations (p. 118) Conference on Trade and Development (“UNCTAD”) in a 2002 report. The report proceeds to suggest that specific government interventions may be necessary to develop local technological capacity in order to benefit from the technology transfer that comes with FDI. This is echoed by Kirkpatrick and his co-authors, who argue that “[t]he extent of linkages created in particular LDCs depends upon the stage of development of indigenous industry, the availability of local skills and technology, institutions and government policies.”

The challenge to the technology transfer potential of FDI has gone even further. Some commentators have questioned the extent to which technology transfer actually takes place. There seems to be three main mechanisms through which technology transfer from multinational firms to local firms takes place. The first is by the establishment of a joint venture with a local partner. In many of these joint ventures between a multinational firm and a local partner, the foreign firm usually supplies technology and management know-how while the local partner provides local expertise, often in navigating the local regulatory and political environment. The second mechanism is by setting up linkages with local firms. What is meant by linkages is usually supply relationships. Local firms act as suppliers of inputs or components for the multinational firm. The third mechanism is by knowledge spillovers. These have been discussed in the context of growth models. These are not deliberate transfers and often happen despite best efforts by multinational firms to prevent them. Some commentators have questioned the extent to which the latter two mechanisms in fact take place.

It has been observed that the global supply chain is so integrated that in many multinational firms, inputs and components are brought in from one country, assembled in a second country, and the final product exported to a third country. In other words, the country in which the assembly takes place need not be, and often is not, the source of inputs and components. It is not uncommon for the operations of the multinational firms to be quite isolated from the local economy and to have little interaction with local firms. Commentators have called these enclave operations, which have been widely criticized for redounding few benefits to the local economy. The literature on enclaves by multinational firms is voluminous and will not be examined here in detail. Suffice it to note that studies have shown that multinational firms create fewer linkages with local suppliers than do domestic firms in the same industry. Moreover, subsidiaries are often required to
purchase from the parent or some other subsidiary approved by the parent, hence erecting higher barriers for creating local linkages.\textsuperscript{247}

(p. 119) The extent to which FDI results in positive knowledge spillovers has also been questioned. Rodrik notes that the policy literature is replete with “extravagant claims about positive spillovers” from FDI.\textsuperscript{248} He asserts that

\begin{quote}
[t]he driving force behind the incentives in favor of exports and foreign investment has been the belief that these economic activities are particularly prone to positive externalities and spillovers... Economic research provides little support for this presumption... careful studies have found very little systematic evidence of technological and other externalities from foreign direct investment, some even finding negative spillovers.\textsuperscript{249}
\end{quote}

A number of statistical studies have found no positive spillovers in productivity and wages, which presumably would rise if labor productivity increases.\textsuperscript{250} Hiroki Kawai finds that an increase in FDI leads to a generally negative effect on productivity in his sample of Asian and Latin-American countries, with the exception of Indonesia, the Philippines, Peru, Singapore, China, and Taiwan.\textsuperscript{251} In fact, the local firms’ technological capacity is important not only to their ability to benefit from direct technological transfers, but also to their ability to absorb knowledge spillovers.\textsuperscript{252} The smaller is the technological gap between the multinational firms and the local firms, the more likely are positive knowledge spillovers to materialize.\textsuperscript{253} If FDI is made in a country which shares a substantial technological gap with the investor, the potential for knowledge spillovers will be limited.

There is no guarantee that the introduction of a foreign competitor in the domestic market will necessarily increase competition. There are two reasons for this. The first is that the foreign firm may crowd out its domestic competitors by attracting their best employees or locking in the best suppliers. There may in fact be greater competition between the foreign firm and its domestic competitors in the labor market, the input market, or the financial market, but such competition leaves the domestic firms so enervated that they become unable to mount an effective challenge against the foreign firm in the product market. The second is that the foreign firm may undermine the competitiveness of the domestic market by engaging in anticompetitive and exclusionary conduct. There is a considerable amount of evidence that entry by multinational firms increases local industrial concentration.

Crowding out occurs when the multinational firm exerts such strong competitive pressure on the domestic competitors in the local input, labor, and financial markets that the local firms are severely disadvantaged in the final product market where they compete with the multinational firm. The multinational firm may bid for the most talented or experienced employees by offering high wages and better benefits, which it is able to do due to its superior financial resources.\textsuperscript{254} This is particularly problematic because managerial talent and skilled labor are in short supply in many developing countries. Lost managerial talent and skilled labor may not be easily replenished. To the extent that the multinational firm obtains inputs from local suppliers, it may displace its local rivals in their access to important inputs. Again, due to its superior financial resources, the multinational firm will be able to outbid its local rivals for inputs. Moreover, local suppliers may prefer to supply the multinational firm because of the prestige attached with it and the opportunity to improve their technological capacity through supply linkages with the multinational firm. The multinational firm may also enjoy superior access to the local financial market because local lenders find the firm more creditworthy than its local rivals. While one can argue that crowding out is but another form of competition, if the market in which we want to increase
competitiveness is the final product market, heightened competition in the various factor markets may be counterproductive.

Studies have indicated that some multinational firms do engage in anticompetitive practices to strengthen their market position and may lead to higher industry concentration. A study of the Brazilian electrical industry enumerates seven forms of such conduct: interlocking directorates, mutual forbearance, control of sources of supply, cross-subsidization, collusion, political influence, and acquisition.\textsuperscript{255} Evidence from Latin America suggests that foreign firms tend to be particularly well represented in highly concentrated industries.\textsuperscript{256} However, it is unclear which way the causal relationship goes. It is possible that foreign presence does not accelerate industrial concentration. Instead, foreign firms are more likely to operate in capital-intensive oligopolistic markets.\textsuperscript{257} Sanjaya Lall suggests that foreign presence may contribute to increased concentration by raising entry barriers to local firms through their capital-intensive technologies, product differentiation, and superior management, and by acquisition.\textsuperscript{258} This underscores the importance of merger control in developing countries that actively court FDI. Overall, Kirkpatrick and his co-authors conclude that “TNC [trans-national corporation] (p. 121) investment raised concentration over and above the level accounted for by the other industrial variables but also worked through those variables by raising capital intensity and minimum capital requirements and, to a lesser extent, through local advertising.”\textsuperscript{259} In fact, James Markusen and Anthony Venables have put forward a theoretical model in which multinational firms and the local rivals do not co-exist.\textsuperscript{260}

Barrios Cobos and his co-authors attempt to reconcile all these conflicting effects by proposing a U-shape curve which suggests that FDI initially harms domestic firms through crowding out and other competitive pressure. After reaching a certain threshold, the positive effects of FDI from spillovers outweigh the negative effects and domestic firms obtain net benefits from the presence of foreign firms in the economy.\textsuperscript{261} They posit two countervailing forces resulting from the presence of FDI: a competition effect under which foreign firms exert pressure on domestic rivals to exit the market, and positive knowledge spillovers and other market externalities which strengthen domestic firms.\textsuperscript{262} Overall, they argue that FDI may initially cause a number of domestic firms to exit the market. The remaining firms will, over time, be able to capture the positive spillover effects of FDI and emerge stronger than before.\textsuperscript{263} Jennifer Spencer reaches the same conclusion, arguing that “MNE [multinational enterprise] investment can have a crowding out effect in the short run but positive horizontal spillovers over the longer term through the mechanisms of demonstration effects, local linkage effects, employment effects, and competition effects.”\textsuperscript{264} Demonstration effects refer to situations where local firms observe the innovations introduced by multinational firms in management, technology, marketing, and organization of production, and copy and adapt them for their own needs.\textsuperscript{265}

A more fundamental challenge to FDI is that at some stage in economic development, ownership of the firms in the domestic economy matters. The business practices of domestic firms and foreign subsidiaries differ and they make disparate contributions to the local economy. Amsden argues that when a country is at the bottom of the technological ladder, firm ownership does not matter because what drives growth at that stage is capital accumulation, which requires investment, foreign or domestic.\textsuperscript{266} But once an economy moves toward mid-technology (p. 122) industries, national ownership makes a difference.\textsuperscript{267} According to her, there are a number of advantages to national ownership. First, with national firms, entrepreneurial and technological rents stay in the developing country rather than being repatriated back to the headquarters, which subsidiaries of multinational firms tend to do. Because multinational firms have a much more global scope of operations, their investment opportunities are spread across the world. Excess profits need not be, and most often are not, invested in the host country. For example, it has been noted that foreign mining companies tend to reinvest their profits in the same industry elsewhere, as opposed
to another industry domestically. In contrast, developing countries are populated by conglomerates and corporate groups that operate in multiple, and often unrelated, industries. This is because developing country firms have a more limited geographical scope of operations, at least until they have become multinational themselves, and have limited access to investment opportunities abroad. They are thus much more inclined to reinvest their profits in different sectors in the domestic economy.

Second, the most advanced research of multinational firms tends to be done in the headquarters, and rarely in the developing countries in which they invest. Amsden and her co-authors have noted that the R&D facilities in China and India by foreign firms, despite their considerable number, seldom perform much beyond applied research and product adaptation to the local markets. The most important basic research is simply not done there. Virtually all of the R&D performed by foreign firms in India and Singapore consists of applied research. Mario Cimoli notes that General Electric’s (“GE”) research laboratory in Bangalore only provides support to GE’s production operations in India, and does not engage in product development and new product launch.

Third, the managerial and entrepreneurial talent developed by national firms stay in the country, whereas most senior managers of multinational firms tend to be expatriates. Multinational firms tend to be less interested in training top local managers. And these expatriates come and go. They are not committed to the host country. Cimoli and his co-authors argue that “[i]f all industry were foreign-owned, a developing country would never develop the top skills and highest-paying jobs (CEO, CFO, Regional Manager, Lead Scientist) that rocket the modern corporation. The developing country would never become advanced enough to earn the entrepreneurial rents that tacit technology and associated brand names earn.”

Fourth, it has been argued that local firms are more likely to develop a local network of suppliers instead of relying on imports. Multinational firms are more likely to have a global supply chain, with access to inputs and components from everywhere. Given the way their operations are structured, which consist of assembly operations in multiple countries, multinational firms have the incentive to centralize the purchase or manufacture of inputs or components to exploit economies of scale. Therefore, most intermediate inputs are likely to be imported and multinational firms are more prone to enclave operations. Developing country firms are much less likely to have assembly operations spread across the globe. It may be more cost-effective for them to source input and components domestically to minimize transportation costs, which in the case of multinational firms will have to be incurred anyway by virtue of the multiple assembly sites.

Some have disputed the argument that national ownership matters. Nicolas Véron produces a study that shows that in Europe, the 100 largest listed companies are becoming increasingly less reliant on their home market for revenue. However, these results only show that multinational firms are becoming less focused on their home markets as a source of revenue. They do not contradict the earlier arguments that multinational firms do not put their most cutting-edge research in developing countries, repatriate their profits back to the headquarters or reinvest them outside of the host country, invest less in training top managerial talent in the host country, and spend less effort to develop the local supply chain. An increasingly diverse source of revenue is entirely consistent of all of these four practices.

**B. Relationship between Competition (Law Enforcement) and FDI**

The foregoing discussion shows that the evidence and the balance of arguments on the benefits of FDI to developing countries can at best be described as mixed. FDI clearly has the potential to lead to higher economic growth in developing countries, but many conditions would need to fall in place in order for that to happen. The analysis seems to suggest that FDI would perform an important role in promoting growth in the low-income
countries, many of which suffer from a severe lack of capital and will not have domestic firms that can compete with multinational firms. They therefore need not worry about crowding out domestic firms. Moreover, the question of the extent of knowledge spillovers is also less relevant as many of these countries simply do not have firms that can benefit from the spillovers. For countries with a greater technological capacity, however, all the potential (p. 124) negative effects of FDI on domestic firms and the domestic economy will need to be considered. These countries may need to be more cautious with FDI.

Even if a developing country has decided that FDI is beneficial to it, the question remains whether developing countries need to adjust their approach to competition law in order to attract FDI. The answer to this question requires an understanding of the determinants of FDI, and the weight given by potential investors to the local regulatory environment. Chang refers to empirical studies [that] show that FDI decisions are much more strongly affected by the overall performance of the economy, especially the prospect for growth, than the regulatory regime. Moreover, surveys among top managers show that the larger TNCs are able and often willing to accommodate a lot of restrictive policy measures, as far as they are stable and the changes in them are predictable.274

This suggests that the existence of a competition law regime is unlikely to be one of the primary considerations for a potential investor. Nonetheless, competition law enforcement or the lack thereof can have some impact on the incentives of foreign investors. A number of economic studies have looked into the issue.

It turns out that competition law enforcement can have mixed impact on FDI. On the one hand, it has been noted that rigorous competition law enforcement may deter FDI because it reduces the ability of the foreign investors to extract monopoly rents from the local economy.275 This will render the country a less profitable destination for foreign investors. However, it has been argued that investment motivated by a desire to extract monopoly rents is unlikely to be efficient and redound substantial benefits to the developing country. In the meantime, competition law enforcement will help to attract FDI by lowering barriers to entry erected by domestic firms. Domestic firms can employ a range of vertical restraints to foreclose supply of important inputs or distribution channels, rendering it more difficult for a foreign firm to break into the market.276 Vertically integrated firms may refuse to carry a competitor's products.277 The most famous examples are the keiretsus in Japan, which have been accused of engaging in vertical boycotting, exclusive dealing, and using complex rebate systems to tie up domestic retailers.278 Domestic firms can also engage in exclusionary conduct to make it more difficult for a foreign firm to compete.

(p. 125) Beyond its direct impact on the degree of competition, a competition law regime is said to help attract FDI by signaling government commitment to provide a level playing field.279 Competition law may also replace restrictive investment laws and regulations with a set of non-discriminatory market regulation that targets restrictive business practices by firms regardless of their nationality.280 On the other hand, the lack of a competition law regime may help to attract FDI. The idea is that without a competition law regime, the domestic market is more likely to be cartelized. The inflated price level will help to attract foreign investors who are able to charge a lower price.281 Simon Evenett argues that if competition law enforcement does have disparate impact on the kind of FDI attracted, there should be an empirical relationship between the type of competition law regime in place and the composition of FDI inflows.282 He notes that this hypothesis is yet to be tested.283
It has been argued that the degree of competition in the host market affects the type of foreign investment attracted. The existence of high tariff barriers means that the country will have a tendency to attract tariff-jumping investment. During the import substitution period, Latin America was a prime destination for this kind of investment. Uncompetitive domestic markets tend to attract rent-seeking investments that are mainly motivated by a desire to extract monopoly rents from the host market. Studies have sometimes found a positive correlation between FDI and market concentration in developing countries, a correlation usually not found in developed countries. This suggests that rent-seeking investments seem to be a problem that plagues developing countries in particular.

Meanwhile, if the host market is both open in the sense of having low trade barriers and competitive, the dominant type of foreign investments would be resource-seeking and efficiency-seeking, which are more likely to benefit the domestic economy. Efficiency-seeking FDI will exert a disciplinary effect on the host market. The effect on domestic firms depends on their distance from the technological frontier. Firms that are close to the frontier will be able to respond to foreign entry by innovating and raising their productivity. Firms that are far from the frontier will be in a weaker position to respond to foreign entry, discouraged from innovation, and may simply be eliminated from the market.

The central message is that not all investment is beneficial or welfare-enhancing to the host country and therefore the ability to attract or maintain FDI should not be a yardstick for judging the effectiveness of the competitive law regime. Evenett argues that improving the investment climate is not the explicit objective of many nations’ competition laws—nor should it be... On this view, the fact that from time to time competition agencies in developing countries have taken steps that have the knock-on effect of reducing investment levels need not, in and of itself, be a cause for concern.

A number of empirical studies have been done to examine the relationship between competition law enforcement and FDI, and again the results are mixed. Some studies find that competition law enforcement does not deter FDI, while some find that it does. Some further find that competition law enforcement should have little impact on FDI. These mixed results do not allow us to draw a definitive conclusion on the precise relationship between competition law enforcement and FDI. Julian Clarke finds that competition law enforcement in general, including merger control, does not deter FDI. He uses a number of indicators for competition law enforcement, including the World Competitiveness Report measure on the effectiveness of competition policy, notification to the World Trade Organization (“WTO”) of the existence of competition law, and two other measures of enforcement, and finds a positive and significant relationship between FDI and the latter two indicators. However, he notes that the results do not allow one to conclude whether the boost to investment is one off, and whether the boost emanates from the inherent benefit of competition law enforcement or from discrepancies in different jurisdictions’ laws that may have encouraged regulatory arbitrage.

Evenett conducts a study on the impact of the existence of various kinds of merger review regime on inbound FDI by American firms. His results are rather stark. He finds that having in place a mandatory pre-merger notification regime on average reduces inbound American investment by 42 percent. He does not find the same effect for mandatory post-merger notification regimes and voluntary notification (p. 127) regimes. Within the European Union, both kinds of mandatory regime have a significant impact on FDI. They reduce inbound investment by American firms by 47 percent. Evenett concludes that it is highly likely that some competitively benign merger transactions have been deterred by the existence of a merger review regime. Noland focuses on the *keiretsus* in Japan and studies whether their alleged anticompetitive practices have had any impact on FDI. His
regression results turn out to be inconsistent, which lead him to conclude that there is little evidence to suggest that industrial organization in Japan had a significant impact on FDI. The foregoing discussion suggests that the arguments on the merits of FDI for developing countries are mixed. FDI clearly brings in foreign capital, which is especially valuable for low-income countries. However, there are some doubts as to whether FDI results in technology transfer, which would be of greater relevance to lower middle-income and upper middle-income countries. The technology being used by the foreign investor may not take the fullest advantage of the host country’s factor endowment. A developing country may not have the absorptive capacity to receive and localize the technology being transferred. The extent to which transfers actually occur has even been questioned. Many multinational firms do not establish extensive supply linkages with local firms and import most of their input and component needs from abroad. The case for knowledge spillovers from multinational firms to local firms is also said to be grossly overstated. Multinational firms may undermine the local firms by crowding them out and engaging in anticompetitive practices. And finally, it has been said that the importance of FDI should not be overestimated because ultimately, the nationality of ownership makes a difference. National firms are likely to create much greater benefits for the local economy than foreign firms. All these indicate that the current obsession with FDI by developing countries may not be justified. While they may serve useful purposes under some circumstances, their benefits are by no means universal.

Given the mixed record of FDI in creating benefits for developing countries, developing countries should not be singularly focused on pursuing them, which means that tailoring the competition law regime to attract FDI should not be a high priority. The case is further strengthened by the fact that the theoretical arguments on the relationship between competition law enforcement and FDI are inconclusive. It is impossible to say one way or another whether the introduction and enforcement of competition law will attract or deter FDI. The empirical evidence is likewise conflicting. Given the tenuous relationship between competition law enforcement and FDI, and the questionable benefits of FDI to the host country, there is no overriding case for a developing country to consider the impact on FDI when introducing, designing, and enforcing its competition law regime.

Footnotes:
1 Ha-Joon Chang, The Market, the State and Institutions in Economic Development, in RETHINKING DEVELOPMENT ECONOMICS 41, 47 (Ha-Joon Chang ed., 2003).
4 Id. at 40.
5 Id. at 41.
9 Joonkyung Ha & Peter Howitt, ACCOUNTING FOR TRENDS IN PRODUCTIVITY AND R&D: A SCHUMPETERIAN CRITIQUE OF SEMI-ENDOGENOUS GROWTH THEORY, 39 J. MONEY, CREDIT & BANKING 733, 745 (2006)


Philippe Aghion et al., Competition and Innovation: An Inverted-U Relationship, 120(2) Q.J. ECON. 701, 714–16 (2005) [hereinafter Aghion, Bloom et al.].

Mathis & Sand-Zantman, supra note 11, at 2.


Id.

Robert W. Crandall et al., The Long-Run Effects of Copper-loop Unbundling and the Implications for Fiber, 37 TELECOMM. POL’Y, 262, 279 (2013).

EASTERLY, supra note 3, at 176.


LEWIS, supra note 2.

LEWIS, supra note 2, at xvi.

Id. at 12.

Id. at 13.

Id. at 264.

Id. at 231.

Id. at xv.

Tilman Altenburg & Wilfried Lütkenhorst, INDUSTRIAL POLICY IN DEVELOPING COUNTRIES 1 (2015).


Id. at 11.

AMSDEN I, supra note 10, at 111.


Aghion & Griffith, * supra* note 33, at 41.


* Id. at 766.

* Id. at 767.

* Lewis, supra note 2, at 13–14.


* Id.*
57 Björn Johnson et al., Why All This Fuss about Codified and Tacit Knowledge?, 11(1) INDUS. & CORP. CHANGE 245, 253 (2002).
58 Id. at 254.
59 Id. at 245.
60 Grimaldi & Torrisi, supra note 54, at 1438; Johnson et al., supra note 57, at 253.
62 Id. at 44.
64 Id. at 139.
67 Philippe Aghion et al., Competition, Imitation and Growth with Step-by-Step Innovation, 68(3) REV. ECON. STUD. 467, 470 (2001) [hereinafter Aghion, Harris et al.].
68 Id.
69 Yin & Bao, supra note 66, at 328.
73 Yin & Bao, supra note 66, at 328.
74 Andrew Inkpen, Learning and Knowledge Acquisition through International Strategic Alliances, 12(4) ACAD. MGMT. EXECUTIVE 69, 75 (1998).
75 Id. at 74.
76 Olg Slivko & Bernd Theilen, Innovation or Imitation? The Effect of Spillovers and Competitive Pressure on Firms’ R&D Strategy Choice 112 J. ECON. 253, 270 (2014).
77 Id. at 262.
78 Mansfield et al., supra note 71, at 910-11.
79 Id. at 909.
80 Id. at 910.
81 Id. at 914-15.
82 Id. at 910-13.
84 Mansfield et al., supra note 71, at 910.
85 Id. at 907.
87 Id.
89 AGHION & GRIFFITH, supra note 33, at 1–2.
90 Id.
91 Id.
92 Id.
94 Id.
95 Philippe Aghion, Philippe Askenazy et al., Education, Market Rigidities and Growth, 102(1) ECON. LETTERS 62, 63 (2009) [hereinafter Aghion, Askenazy et al.].
96 Philippe Aghion, Robin Burgess et al., The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India, 98(4) AM. ECON. REV. 1397, 1407–08 (2008) [hereinafter Aghion, Burgess et al.].
97 Philippe Aghion, Richard Blundell et al., The Effects of Entry on Incumbent Innovation and Productivity, 91(1) REV. ECON. & STAT. 20, 21–22 (2009) [hereinafter Aghion, Blundell et al.].
98 Scopelliti, supra note 93, at 13.
100 Id. at 40.
101 Scopelliti, supra note 93, at 17.
102 Taimoon Stewart et al., COMPETITION LAW IN ACTION: EXPERIENCES FROM DEVELOPING COUNTRIES 19 (2007).
103 Id.
104 Id.
105 GROWTH REPORT, supra note 20, at 44.
106 Id.
108 Id.
109 Scopelliti, supra note 93, at 5.


138 Id. at 725.
139 Disney et al., supra note 50, at 666.
140 Id. at 667.
141 Id. at 691.
142 Id.
143 Id.
145 Id. at 325.
146 Id. at 306.
147 Id. at 302.
148 Id.
149 Id.
150 Yun, supra note 43, at 260.
151 Id.
152 Id.
153 Id. at 261.
154 Id.
157 Id.
158 Khalid Sekkat, Does Competition Improve Productivity in Developing Countries?, 12(2) J. ECON. POL’Y REFORM 154 (2009).
159 Id. at 154.
160 Id. at 154.
161 Id. at 158.
162 Id. at 157.
165 Id. at 833.
166 Id.


170 Id. at 2.

171 Id. at 10.

172 Id. at 10.


175 Id.

176 Id.

177 Id at 39.

178 Id.

179 Id. at 39-40.


181 Id.

182 Id. at 35.

183 Id.

184 Id. at 43.

185 Id.

186 Voigt, supra note 173, at 1226.

187 Id.

188 Id.

189 Id. at 1242-43.

190 Id. at 1244.


192 Hylton & Deng, supra note 163, at 272.

193 Gutmann & Voigt, supra note 15, at 19.

194 Id. at 12.

195 Id.

196 Id. at 12–13.

197 Id. at 13.

Id. at 8.

Id. at 12.


Id.

Id.


Id. at 611.

Id.


Id. at 301.

Id. at 312–13.

Id. at 318–19.

Id.

Buccirossi et al., supra note 168, at 1327.

Id. at 1324.

Id. at 1327–28.

Id. at 1329.

Id. at 1330.

Id. at 1324.


Id. at 285.

Id.

Id. at 266.

Id. at 289.


227  Id.
229  Id.
230  Id. at 352.
232  Id.
233  Id.
235  Chang, supra note 1, at 266.
238  Id.
239  Id. at 106.
240  Id. at 114.
243  Id. at 13–14.
244  Id.
246  Nixson, supra note 237, at 102.
247  Id.
248  RODRIK I, supra note 236, at 37.
249  Dani Rodrik, One Economics Many Recipes: Globalization, Institutions, and Economic Growth 120 (2007) [hereinafter RODRIK II].
Spencer, supra note 228, at 355.

Id.

Id. at 343.

Nixon, supra note 237, at 100.

Id. at 99.

Id. at 98.

Id. at 101.

Id.


Barrios Cobos et al., supra note 225, at 25.

Id.

Id. at 26.

Spencer, supra note 228, at 342.


Id.


Id.

Id. at 419.

Id. at 410.

Id. at 413.


Chang, supra note 1, at 266.

STEWART ET AL., supra note 102, at 37.


Id.

Id.

Lawan Thanadsillapakul, *The Harmonization of ASEAN: Competition Laws and Policy from an Economic Integration Perspective*, in *Competition Policy and Regional Integration in Developing Countries* 13, 20 (Josef Drexl et al., eds., 2012).

Noland, *supra* note 276, at, 2.


Id.


Id.

Id. at 19.

Id. at 13.

Id. at 19.

Id. at 19.

Aghion & Griffith, *supra* note 33, at 67.

Id.


Clarke, *supra* note 279, at 8-10.

Id. at 8-12.


Id. at 14-15.

Id. at 18.

Id. at 20.

Id. at 19.

Noland, *supra* note 276, at, 6-7.