



*NATIONAL DEVELOPMENT STRATEGIES*

*POLICY NOTES*

# **INVESTMENT AND TECHNOLOGY POLICIES**

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## Preface

The outcome document of the 2005 United Nations World Summit called on countries to prepare national development strategies, taking into account the international development goals agreed in the various United Nations Summits and Conferences of the past two decades. In order to assist countries in this task, the United Nations Department of Economic and Social Affairs (DESA) commissioned a series of notes for policy-makers and policy-shapers both in the government and civil society, in major and interconnected areas relevant to the formulation of national development strategies: macroeconomic and growth policies, trade policy, investment and technology policies, financial policies, social policy and state-owned enterprise reform. The preparation of the notes received generous funding in part from the United Nations Development Programme (UNDP). Colleagues from UNDP also provided helpful suggestions for and comments on the notes.

The policy notes, authored by experts in these fields, draw on the experience and dialogues of the United Nations in the economic and social areas, complemented by outside knowledge. The notes provide concrete suggestions on the means to achieve at the national level, the internationally-agreed development goals synthesized in the United Nations Development Agenda. The policy notes are intended to provide those at the country level who shape and set policies, with a range of possible alternatives to the standard policy solutions that have prevailed over the past two decades, rather than to prescribe any single course of action. The notes serve to help countries take advantage of and expand their policy space - their effective room for maneuver in formulating and integrating national economic, social, and environmental policies.

I encourage readers to see these notes as complementary inputs into the debate at the country level on development challenges faced and the policies needed to meet them. The issues chosen are vital pieces of the policy mosaic that underlies national development strategies, which are ultimately geared to achieving sustained economic growth with social inclusion and environmental protection.



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## I. INTRODUCTION

Governments in developing countries are responsible for important investments, e.g. in education and infrastructure. These investments require a view of the evolving structure of the economy—the design of an education system or a road network requires a vision of where the economy is likely to be a quarter century hence. But successful developing countries have had investment and technology policies that have gone far beyond this minimalist role. They have actively promoted particular sectors of the economy. Economic theory can justify such active intervention in terms of widespread “market failures.” Markets in developing countries do not work as efficiently as they do in textbooks, and many opportunities of improving productivity, incomes and employment are missed as a result. However, the concept of market failure covers many (often quite complex) issues and policy has to identify not only the most pressing market failures but also the ones that can be feasibly addressed given the institutional and fiscal capacities of the government. It is not practical to expect hard-pressed developing country policy-makers to carry out a comprehensive analysis to identify the market failures they can feasibly address in their countries. However, this note suggests that policy-makers can follow some simple steps to identify a few of the most critical components of investment and technology policies appropriate for their context. In particular, if they start by investigating how *existing* technologies and sectors in their countries can be upgraded to improve productivity, create higher wage jobs and/or create greater employment, they are likely to identify a number of feasible steps they can follow to achieve relatively quick results. For many countries this may be a sufficiently challenging goal for investment and technology policies. In other countries with more advanced analytical and implementation capacities, a more detailed analysis of market failures and feasible responses may be appropriate.

## II. OVERVIEW: DEVELOPING AN INVESTMENT AND TECHNOLOGY POLICY

This Policy Note will help policy-makers and civil society develop policies appropriate for their context in a series of steps summarized in Figure 1. The *first step* is to identify national priorities for investment and technology policy and the critical constraints and bottlenecks that may be preventing their achievement through a consultative exercise that interacts with other components of the National Development Strategy (NDS). This process will vary from country to country for a number of reasons. Data availability can vary widely, countries face different technological and investment bottlenecks, and have strengths and weaknesses in different areas. Key stakeholders may also disagree about the investment and technology policy priorities in different sectors like manufacturing, agriculture and services. Thus, at the outset, transparent procedures have to be used to identify priorities and bottlenecks at the country level, making the best use of available data and other resources, and taking into account local conditions.

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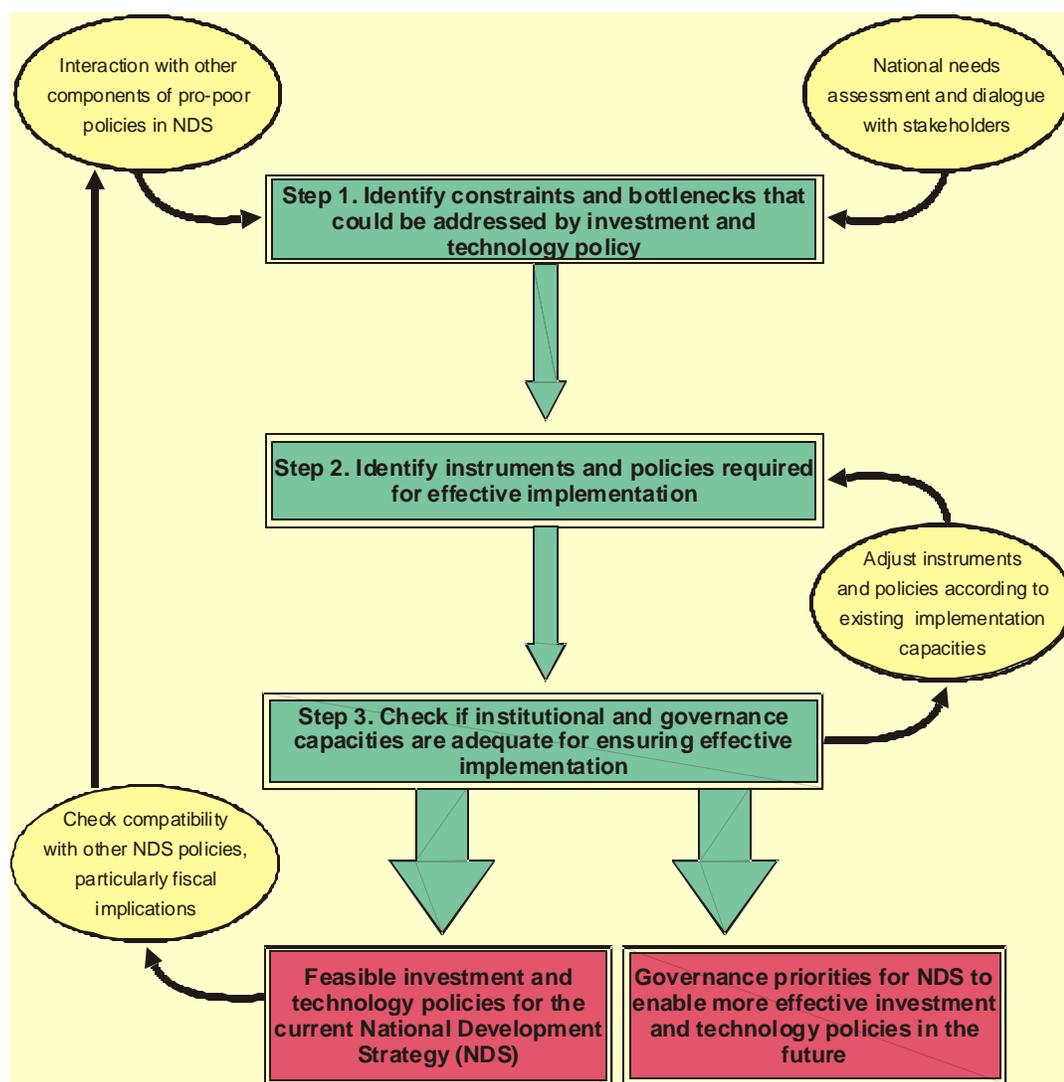
In countries with limited administrative and planning capacities, the first step can be significantly simplified by focusing on *existing* economic sectors and sub-sectors and investigating if there are obvious areas where big gains can be made in terms of national priorities (employment growth, employment growth for women and other vulnerable sections of the population, wage growth, export earnings, and so on) through achievable improvements in investment and technology upgrading. Backward and forward linkages with existing competitive sectors can also be investigated, as these are areas where new competitive advantage is most likely to be developed.

The *second step* in the policy-making process is to identify instruments and policy measures to address the most important constraints and bottlenecks that are preventing the achievement of the investment and technology upgrading goals identified in step 1. For instance, the aim may be to identify policies and instruments that can increase investments in critical sectors, or accelerate the adoption and adaptation of new technologies in these sectors. However, many reasonable policies may not be feasible in the context of particular countries given limitations in governance capacities to implement and enforce the policies adopted. These limitations have to be taken into account when designing policies and instruments. This takes us to the third step of this process.

The *third step* is to ensure that the policies and instruments discussed in step 2 can actually be implemented, given the governance and enforcement capacities available. Monitoring and implementation of policies and instruments have often been unsatisfactory in developing countries because of political constraints that prevent the correction of policy mistakes and failures of implementation. These constraints may be more serious for some types of policies compared to others. As Figure 1 shows, steps 2 and 3 involve iteration: policies identified in step 2 will often need to be re-designed or revised given the problems of implementation assessed in step 3. The role of a separate analysis of governance capacity in step 3 is to ensure that policies are only adopted after a proper understanding of their governance and implementation requirements, and the likelihood of success given the institutional and political capabilities of the country. This step is critical for designing and selecting instruments and policies that are both feasible and effective .

There are two projected policy outcomes of this process. The first expected outcome is a set of feasible investment and technology policy interventions to accelerate progress towards critical goals in the National Development Strategy (NDS). To be feasible, these investment and technology policies have to be compatible with the *existing* implementation capacities of the government. They should also be compatible and consistent with other parts of the National Development Strategy. The steps suggested in Figure 1 aim to ensure that policies and instruments for investment and technology upgrading are tailored to local capacities and objectives, that they are compatible with other parts of the NDS (in particular, fiscal constraints), and *are implementable given available governance and implementation capacities*. These requirements mean that a feasible investment and technology policy will address a relatively small number of critical constraints or bottlenecks affecting technology acquisition and investment in specific sectors. The second expected outcome of the process is the identification of critical governance weaknesses that need to be addressed if more effective investment and technology policies are to be attempted in later years. Both policy outcomes shown in Figure 1 are equally important.

**Figure 1**  
**Steps in Developing a National Investment and Technology Policy**



These Policy Note is organized in three sections:

1. The **first section** explains the case for investment and technology policy by drawing on economic theory and the experience of successful developing countries. While many of the most successful developing countries used ambitious industrial and technology policies, they also had extensive governance capabilities to ensure effective implementation. Contemporary developing countries often have more limited implementation capacities, but they can use pragmatic policies to overcome specific bottlenecks and constraints that limit investment and technology acquisition in critical sectors.
2. The **second section** goes through the three stages of the policy process shown in Figure 1 to establish what is involved in implementing this approach in different developing country contexts.

3. In the **final section**, this approach to investment and technology policy is compared and contrasted with the good governance and investment climate reforms that developing countries are being encouraged to adopt as a way of enhancing investment and its efficiency. There are areas of overlap and complementarity, but effective investment and technology policies require the development of governance capabilities that go beyond the ones identified in good governance reforms.

### **III. THE CASE FOR INVESTMENT AND TECHNOLOGY POLICIES**

Countries that have achieved greater success in economic growth and poverty reduction rarely enjoyed better resources and skills than others from the outset. Their success depended on their ability to *create* the capacity to produce. They used pragmatic policies to create incentives and compulsions for investors to invest and acquire new technologies. But success also required state capacities to enforce these policies. The capacity to enforce policies varies significantly across states, and within the same state it can vary significantly depending on economic sectors and the rules being enforced. Some states are better at enforcing some policy rules, others are better at enforcing others. It is important to remember this when devising investment and technology policies for a particular country. The strategies that worked in one country will not necessarily be easy to implement in another.

Economic theory identifies a series of market failures that explain why markets alone cannot ensure that developing countries will catch up with advanced countries. Developing countries with strong planning capacities could use an analysis of market failure to devise and prioritize their industrial and technology policy interventions. However, planning agencies in most developing countries are unlikely to have these capacities. But fortunately, it is possible to make progress by taking some pragmatic steps that could assist in moving up the technology ladder to better achieve some national development goals. The market failure analysis is important because it points out that even in sectors where there are potential gains from investment and technology upgrading this may not happen because the cost of organizing the necessary investment through the market may be too high because of market inefficiencies. Some of these market inefficiencies may be overcome through a focus on good governance and investment climate reforms. But other market inefficiencies may be difficult to overcome in the short run, and so corrective policy measures are required to achieve the investment and technology upgrading directly.

The most important market failures that can hold back investment and improvements in technology in developing countries include the following:

**i) Imperfections in Credit Markets:** The costs and risks faced by banks in identifying good borrowers may squeeze out lending to potentially profitable sectors. Lenders do not have full information about the ability and management skills of entrepreneurs who come to borrow from them. In particular, borrowers who have no intention or ability to repay the loan may be more willing to pay higher rates of interest or agree to other terms lenders may impose. Thus without spending a lot of resources investigating the quality of borrowers, and following this up with ongoing monitoring, banks who impose stringent conditions on borrowers may simply end up attracting the worst borrowers. Since banks soon find out that this is the case, in the

absence of corrective interventions, they may reduce or even stop lending to important sectors like industrial investors.

**ii) Imperfections in Equity Markets:** Similarly, the costs and risks faced by small investors in identifying potentially profitable equity investments may reduce or prevent equity finance playing an important role in providing finance for development. It is not easy to set up well-working equity markets. If small shareholders are not well protected, an important source of investment in the stock market may dry up. On the other hand, if it becomes too difficult for outsiders to buy out small shareholders at a relatively low price if a company underperforms, the threat of takeover becomes less likely and it becomes easier for managers to make bad decisions at the expense of all shareholders. Stock market regulation is difficult even in advanced countries and regulatory structures are always being adjusted. But even so, most of the finance for new investments in advanced countries typically comes from other sources like retained profits or bank loans. In developing countries regulatory capacities are much weaker, as are the capacities and compulsions on companies to reveal accurate data on their performance and prospects. It is not surprising that stock markets typically play a very limited role in developing countries in driving finance to new developmental sectors.

**iii) Imperfections in Insurance Markets:** The cost of identifying the degree of risk involved in insuring against different eventualities may reduce investment in many sectors. In developing countries, where there are few firms in productive sectors, it is difficult for insurers to estimate different types of risk. In addition, developing countries are more susceptible to political uncertainties which are typically uninsurable even in advanced countries. These imperfections in insurance markets increase the exposure of entrepreneurs in these sectors and they may therefore be less likely to invest. But even in advanced countries, many of the risks involved in investing in new sectors are uninsurable, and investors have to absorb these 'uncertainties'. The difference is that advanced countries have many richer and risk-tolerant investors who can absorb these uncertainties in the expectation of large potential gains if their investments work out. But in developing countries, where this type of investor is much more rarely found, and where foreign investors face large political and currency risks, many potentially profitable investments may not happen without public institutions absorbing some of the risks and uncertainties.

**iv) Coordination Failures:** Many investments are only profitable if complementary investments in other areas take place. For instance, investment in a high-end garments industry that has to respond rapidly to changing demands may only be viable if high quality accessories and fabrics are locally available and can be quickly sourced. The costs of coordinating these complementary investment decisions through the relatively inefficient markets of a developing country may prevent or reduce many potentially profitable investments. Government assistance in coordinating backward and forward linkages can yield significant gains by bringing together investors, sharing information and creating incentives for coordinated investments.

**v) Externalities:** Many investments have benefits for other sectors and for broader society that may be ignored by investors in those sectors. As a result, without specific policies to encourage investments in these sectors there may be insufficient or no investment in many critical sectors. A particularly important type of externality involves investment in training labour and management. Investment in this training is beneficial for the entrepreneur but it has much wider social benefits because skilled

labour and middle management can migrate from the firm to other firms or set up new businesses. The benefit to the investor is therefore less than the benefit to society and there is likely to be insufficient investment in these critically important activities.

There are also locational or 'clustering' externalities when many firms providing similar services or producing similar products cluster together in particular localities. Each firm benefits from the availability of a pool of skilled labour, the shared knowledge of markets and suppliers, and the rapid diffusion of technologies across firms. By the same token, firms in developing countries that often do not have these advantages face higher costs and lower productivity growth. These market failures can be addressed by government action to encourage investments in activities that have positive externalities and to encourage clustering of firms that are likely to enjoy locational externalities by developing industrial parks.

**Responses:** Successful developing countries have responded to market failures of the types discussed above with a number of types of interventions, including the provision of credit through government loan programmes, risk sharing by government through joint investments and insurance schemes, government assistance in coordination of investment in different sectors and in bargaining with external technology providers, and explicit or implicit subsidies or other interventions to encourage sectors or activities displaying positive externalities. However, apparently similar interventions have also failed to provide good results in some developing countries because appropriate governance capabilities to ensure the achievement of these desirable outcomes were missing. These governance capabilities are critically important in explaining success and failure.

Whenever governments intervene in markets, even if it is to respond to market failure, they inevitably also provide opportunities for resource capture. For instance, incentives to attract new investors can also enable inefficient investors to obtain loans, capture subsidies and free ride in other ways that can ultimately undermine the strategy unless compulsions or sanctions are available to ensure that non-performance is rapidly dealt with. Efforts at coordination, government training programmes, credit programmes or subsidies for investment in particular sectors can thus result in waste rather than more rapid development.

Governance capabilities to monitor the outcomes of interventions and to respond rapidly to correct mistakes in implementation are therefore critical for success. The ability and willingness of governments to respond can itself create strong compulsions for private sector beneficiaries of these interventions to deliver results. Equally, the absence of these governance capabilities can result in free riding as there are few or no compulsions on beneficiaries to deliver results. These failures of governance can explain why apparently well-thought out investment and technology interventions have often failed in many countries.

Developing investment and technology policies therefore requires identifying a series of interventions that can address the most critical market failures as well as selecting from this list the ones that can be effectively implemented given existing or achievable governance capabilities. Few developing countries can be expected to carry out a full analysis of market failures in different sectors to identify and prioritize the most important areas of intervention. For most developing countries, the most feasible and pragmatic approach would be a less demanding one that involved identifying some of the most important constraints holding back investment and technology upgrading in already existing sectors or in sectors that are closely related

This is likely to be the most practical way of making progress with investment and technology policies in most developing countries. Policies and interventions can then be selected based on whether effective implementation capacities exist for particular strategies of investment and technology upgrading.

Most developing countries already have a few sectors where global competitiveness has been achieved, as measured by export competitiveness. A pragmatic way of identifying practical investment and technology policy interventions is to begin with sectors in which the country already has some experience and asking the following questions:

? What can be done to increase output, productivity and employment in sectors where the country already has competitiveness?

? What can be done to move production in these sectors into higher value-added products?

? How can these sectors be used as lead sectors to build backward and forward linkages with new upstream and downstream sectors that can raise domestic value added beyond existing competitive sectors?

(In some conflict or post-conflict countries there may be no activities that currently enjoy international competitiveness. In these cases the pragmatic approach will be to identify and start with activities that are closest to achieving international competitiveness).

The answers to these questions will in effect address different types of market failures in a pragmatic way by addressing issues of:

- Coordinating technology acquisition decisions across firms and sectors
- Sharing risk and enabling the financing of investment in new technologies and sectors
- Sharing risks in labour training and learning processes
- Providing targeted infrastructure to critical sectors
- Developing regulatory capacity to maintain and enhance competitiveness

It is best to stick to very simple criteria in making decisions about the sectors to support through investment and technology policies. It is a mistake to believe that governments in developing countries can review all possible investment options to identify the *best* ones. It is good enough to identify some *good* investment options on the basis of already existing competitive and entrepreneurial capacities. (A more ambitious process could also examine assistance for entirely new sectors but a pragmatic approach that begins with existing sectors and capacities is likely to be the best strategy for most countries). The criterion could be that a forum of stakeholders can identify potential investments that can feasibly raise productivity, employment and/or achieve other National Development Strategy goals by *achieving economic rates of return through new investments within relatively short periods of time* if feasible assistance with coordination, financing, learning, and infrastructure were available. The feasibility of the assistance provided depends critically on the fiscal and administrative capacities of the state, and its capacity to monitor improvements in competitiveness achieved through these policies and take prompt corrective action if required. These issues are discussed in turn.

### *Coordination of technology acquisition across firms and sectors*

In Taiwan Province of China (hereafter, Taiwan PoC), from the 1950s, and South Korea, from the 1960s, government-led institutions brought together potential investors in different sectors to coordinate their technology acquisition. The goals were to ensure the compatibility of technologies in different sectors, to ensure that critical backward and forward linkages were achieved, and to ensure that investments in high value-added products that were sensitive to complementary investments were not lost. These types of coordination can significantly enhance the incentives for investing in higher productivity sectors.

In addition, the coordination of potential domestic investors, particularly in higher technology sectors, helped to enhance the bargaining power and information available to domestic investors in their transactions with external technology providers. During the early stages of Taiwan PoC's development the government even took the lead in identifying and licensing critical electronic technologies for domestic producers. The goal of these coordination strategies was to ensure that domestic producers had access to technologies that allowed higher productivity growth over time.

In theory, private investors should do all the coordinating themselves to maximize their potential profits. In reality, private investors face high costs of collecting the relevant information and even higher costs of negotiating and reaching agreement with other investors when there are disagreements about the package of investments they should collectively invest in. Economists call these costs transaction costs, and they are typically very high in developing and transition economies where institutions for generating information are underdeveloped and contracts are difficult to enforce. Developing country investors are likely to be particularly disadvantaged in their access to information about alternative technologies that are available in international markets. The point here is not that governments have better information about technologies, but rather that governments may have an advantage in bringing together different investors and providing a forum where options for upgrading existing sectors and technologies can be discussed.

For coordination to be successful, policy-makers have to be able to follow up on shared information to develop integrated policies to assist technology acquisition in the critical areas identified. The exercise is not just about information sharing between, say, garments manufacturers, accessory manufacturers, the dyeing industry and potential investors in textiles, but also and primarily about following up on discussions with policies to assist and accelerate technology acquisition in these critical sectors.

In many developing countries coordination efforts exist on paper, but little coordination happens in practice. Often, this is because government agencies charged with improving investment coordination are given low priority within government, and have limited access to higher level policy-makers.

One way in which government agencies can play a meaningful role in effective coordination is by working as an effective forum through which domestic investors can collectively bargain with foreign technology providers to purchase a package of integrated technologies. If coordination enhances the information available to individual investors and their bargaining power when trying to acquire better

technologies from abroad, this can provide the incentives to individual investors to take coordination efforts seriously.

A key to the success of this aspect of industrial policy in South Korea or Taiwan PoC was that coordination efforts in these countries were supported by the highest executive levels of government, and effective incentives were provided to individual investors to participate in technology coordination exercises. In addition, despite their considerable bureaucratic capabilities, coordination efforts were limited to a few sectors at a time to avoid overstretching the available capabilities of the government.

### ***Sharing risk and enabling the financing of investment in potentially profitable sectors***

An important component of investment and technology policies in all high-growth developing countries has been government strategies to make finance available to critical sectors. The market failure this addresses is the inability of investors in many critical sectors to get access to finance at the market rate of interest. So even if finance is made available to critical sectors *at the market rate of interest*, this could release an important bottleneck. But in fact in many high-growth countries, government policies made finance available to critical sectors at below market rates.

Market failure happens here because investment and technology acquisition in new areas is an inherently risky activity. If credit and equity markets fail, finance is either not available, or more typically, is available but at a price or with collateral conditions that load all the risk on the investor. This can prevent investment in new areas where investors are unwilling to add to the high levels of risk they face in bringing in the new technologies by taking on finance at a high cost of capital or at high risk to themselves through mortgaging significant assets.

At the same time, governance capabilities are critical here to ensure that free riding does not reduce such strategies to failure. If credit is made available to investors who would not otherwise have had access to it, the agencies providing credit have to make sure it is not wasted. A number of strategies can be used by governments to reduce the risk of poor performance. Making finance available at market rates of interest reduces the risk that the borrower will put in suboptimal levels of effort because the borrower has to generate adequate returns to service the loan. But this does not remove the risk entirely because the borrower may have no intention of repaying a loan that has ultimately been arranged by government.

Similarly, government equity holdings in the company that is financed may improve performance by creating incentives for government to monitor and risks for the firm if performance is poor as the government could decide to sell its holdings to more aggressive investors. But again, these strategies are only likely to work in the presence of credible threats on the part of government to act in case of poor performance and the presence of a well-working stock market. These may not be present to the requisite degree in many developing countries.

The credibility of corrective government action in the face of poor performance is the key. If the government has credibility, rather simple mechanisms may be sufficient to create strong compulsions for the borrower to perform. For instance, in South Korea, lending institutions involved in financing new investments in critical sectors during its industrial takeoff set simple performance targets for borrowers, usually in the form of

easy to monitor export targets. Failure to meet these targets normally resulted in growing pressure on the enterprise from banks and from the government, and could eventually result in a transfer of the asset to new owners.

Developing countries have to think through in the context of their own institutions and political conditions how they can achieve credible sanctions for firms benefiting from industrial policy financing arrangements if they fail to perform. What they need to achieve is an effective government strategy to recover financing through a fast track process from enterprises that have failed to perform. The general effectiveness of bankruptcy laws or of stock markets as mechanisms of imposing discipline on borrowers is limited on their own in most developing countries.

Effective pressure on industrial policy borrowers may therefore depend on the creation of additional and specialized governance and recovery arrangements that create credible compulsions for industrial policy borrowers to exert high levels of effort in making their investments viable. For instance, government equity holdings in these firms could be held by specialized agencies with a clear mandate to monitor performance according to pre-arranged criteria and to terminate the relationship if necessary. Such agencies would be credible only if they had clear backing at the highest political levels.

### ***Sharing risk in labour training and learning processes***

Market failures in organizing training and learning processes are an important impediment to technology upgrading in developing countries. The productivity gap between advanced and developing countries is typically much bigger than the wage gap, particularly in high value-added sectors. This explains why despite very low wages, developing countries find it so hard to move into high value-added sectors. The productivity gap is only partly due to poor infrastructure and the level of education of the workforce. It is primarily due to the fact that productivity growth in manufacturing often requires learning-by-doing, and labour productivity can typically only be raised in the workplace by operating production for a time at a loss measured in international prices. This is the main reason why financing for new technology investments is so critical. But market failures in lending and equity markets can in turn prevent the adequate availability of finance for organizing learning-by-doing.

Successful industrial and technology policies in countries like South Korea, Taiwan PoC and Malaysia have involved governments sharing some of the risk and uncertainty of learning new technologies. This has taken the form of government financing of some of the costs of learning combined with the withdrawal of support when learning fails. The latter was particularly important as success depended on the credibility of strategies of withdrawal if learning failed to take place. The credibility of withdrawal created the appropriate compulsions for firms and industries receiving support to put in the effort and achieve actual productivity increases.

In contrast, many other developing countries attempted to accelerate catching up using similar policies, but without effective state capacity to withdraw support or otherwise enforce learning. In these cases, state support for technology acquisition only resulted in infant industries that never grew up. As a result of widespread failure with these strategies, most developing countries abandoned this approach entirely. But infant industry policies failed in most developing countries because the incentives created for catching up were not combined with effective compulsions or sanctions for sectors or firms that failed to achieve satisfactory competitiveness over time.

The policy space for major interventions in this area has shrunk in most developing countries. With much greater levels of trade openness following WTO agreements in many developing countries, sharing the risk of learning requires a mix of instruments that will not violate the trade agreements. However, specific efforts to improve or accelerate learning in critical areas are not only possible, but essential, if technological progress is to be assured. For this to be effective, policy-makers must have the capacity not only to support learning, but also to withdraw support rapidly if competitiveness does not improve.

These instruments can be devised, and can include:

- support for learning in the form of fiscal and other incentives for setting up in-firm training schemes;
- assistance through targeted infrastructure for sectors involved in learning, and
- bridging loans to finance learning

Many incentive schemes continue to exist and operate in developing countries since WTO rules do not prohibit many forms of assistance for technological catching up. The problem is that these schemes are often not properly thought through in terms of the results expected, performance is not monitored, and no effective sanctions or systems for withdrawing support exist. Unsurprisingly, the results are almost always disappointing.

The capacity to devise appropriate risk-sharing instruments is therefore a necessary capacity for overcoming technology bottlenecks in developing countries. Secondly, outcomes in most cases have been poor because of poor capacities for effectively implementing strategies. In particular, agencies involved in managing incentives for learning have to be linked to executive agencies that have the institutional and political capacity to enforce the withdrawal of support or enforce other sanctions if learning fails to show results within the expected time period. The latter remains a critical condition for success. In many developing and transition economies, developing these governance capacities is not just a matter of strengthening bureaucratic capacities, but also of creating political coalitions that will allow these policies to be effectively implemented.

### ***Providing targeted infrastructure to critical sectors***

The importance of infrastructure for economic development is widely recognized, but when infrastructure cannot be improved rapidly *across the board*, identifying sectors that are critical for achieving national development targets and prioritizing infrastructure to these sectors can pay high dividends. In this context, infrastructure should be broadly interpreted to include both physical and human capital; hence, it includes the ability of the state to provide resources for skills development appropriate to the needs of critical sectors.

The capacity to identify infrastructural priorities and to deliver high quality infrastructure to these critical sectors can significantly improve the incentives for investing in high-productivity sectors, or in sectors deemed desirable according to the objectives of the National Development Strategy.

This capacity to deliver high quality infrastructure to critical sectors when infrastructure cannot be rapidly improved across the board is a vital capacity for accelerating investment. It can also dramatically improve the bargaining power of

government in negotiating technology transfer deals with foreign investors. Foreign investors bringing in high productivity technologies sensitive to the quality of the infrastructure are more likely to invest and to negotiate with countries that can credibly offer them the required infrastructure. One reason why China continues to attract more foreign investment than any other developing country is that infrastructure can be prioritized in China to facilitate rapid investments in critical areas.

In addition, the capacity to provide targeted infrastructure can be a mechanism for providing conditional support to particular sectors and technologies for sharing the risks of learning.

However, the ability to deliver quality infrastructure, even if limited to priority sectors, assumes some minimal fiscal capacities of the state. In some developing countries, even this may not be available. In such circumstances, macroeconomic issues have to be addressed, in particular to increase tax collection and to limit spending in unproductive sectors.

### ***Developing regulatory capacity to maintain and enhance competitiveness***

A crosscutting issue affecting all the questions discussed above is the capacity of government to enhance and maintain competitiveness through industrial and technology policies. Competitiveness is the capacity to produce products at a price and of a quality that can survive in open competition with the best of the rest. Competitiveness is measured by the relative unit costs of production at home compared to the international price of products of similar quality. The aim of industrial and technology policies must be to achieve competitiveness in new higher technology and higher value-added investments. These investments can then survive without further assistance, providing jobs, higher wages and other benefits for the rest of the economy. Competitiveness is not the same thing as competition. Competition is the act of buying and selling in an open market with free entry and exit for other buyers and sellers. The degree of competition in a market can be measured by the degree of freedom of entry and exit into that particular market. Under some conditions, competition can ensure the achievement and maintenance of competitiveness. But in other cases, particularly when industrial and technology policies are involved, competition may not be sufficient and other governance capabilities are necessary to ensure competitive ness.

In theory, if investors have to survive in competitive markets with free entry and exit for domestic and international firms, they can only do so by maximizing their investment in new technologies and making all efforts to sustain learning and best practices within their enterprise. As a result, competition can ensure that entrepreneurs maintain their competitiveness by innovating or by copying innovators. Since this is a hard life, from Adam Smith onwards, economists have also recognized that investors have a natural tendency to try and restrict competition in their own sectors, as this allows them to survive with lower productivity, greater inefficiency, and yet achieve high profits by being able to charge consumers higher prices (Rajan and Zingales 2003).

Not surprisingly, *competition policy* has traditionally been an important plank for ensuring competitiveness, especially in advanced countries. States in advanced countries typically have government agencies charged with investigating and

punishing anti-competitive arrangements and collusion between producers, as well as regulating prices in sectors where only a few large firms can operate. However, competition policy is not always as simple as this. *It is not always the case that more competition is better than less (though that is true in most cases)*. For instance, innovating firms in advanced countries have to be allowed to make extra profits to maintain the incentive to innovate. For these firms, too much competition can cut into their profits too soon, and this can be a problem. Of course, too little competition is also a problem, as it reduces the incentive to keep on improving products and technologies. Thus, in many critical innovating sectors in advanced countries, there is an optimal level of competition that is neither too much nor too little (Aghion and others, 2002). It follows that regulatory bodies have to have the capacity and personnel to make these judgements on an ongoing basis.

What is true for advanced countries applies with greater force to developing countries. Regulatory bodies must have the capacity to make judgements, on an ongoing basis, about competition and competitiveness, particularly in the context of industrial and technology policies. In many sectors, high levels of competition may well be the best policy for ensuring competitiveness over time. These sectors are generally those that have already achieved international competitiveness or can achieve it very rapidly. Low technology export sectors, like the garments industry, which already have global competitiveness in many developing countries, are examples of sectors that should maintain competitiveness through competition. In other sectors that are catching up, and are being supported by industrial and technology policies, more sophisticated regulatory capacities are required.

Whenever a sector gets policy support in any of the ways described earlier for acquiring new technology and catching up, competition as a mechanism for enforcing competitiveness becomes insufficient. The sector receiving support has an advantage over others, both over other sectors within the country and, more importantly, over producers of similar goods in other countries. As a result, the sector can maintain its market share in a superficially competitive setting, even though it is not yet competitive in the sense that it would not be able to survive without the assistance. In these cases, institutions have to be set up to complement market competition in order to ensure the rapid achievement and maintenance of true international competitiveness, so that the support currently being received can be phased out.

For instance, if learning in new industries is supported through subsidies for training programmes, or access to better or cheaper infrastructure, complementary institutional measures are required to ensure that the support is for a pre-determined period, or that it is conditional on continuing improvements in performance, measured by export growth or some other easy-to-observe indicator. Without these measures, the support policy is likely to fail, and international competitiveness will probably not be achieved, because the sector will depend on the continuation of support instead of using the opportunity to catch up to achieve true competitiveness. This type of failure happened in many of the developing countries' catching-up programmes that produced infants which never grew up. Clearly, issues of coordination, financing, learning, infrastructure and competitiveness are closely related and require integrated policy responses on the part of government. Box 1 summarizes this discussion.

### **Box 1**

#### ***Investment and Technology Policies: Justification and First Steps***

Market failures in credit markets, equity markets, insurance markets, coordination failures and externalities can prevent developing countries moving up the value-added chain to create high wage employment and raise living standards. In particular, without targeted policies to enhance productivity through learning-by-doing, developing countries can get stuck in low productivity and low wage activities.

The least demanding industrial and technology policy approach in developing countries is to start with already existing competitive activities and ask:

- ? What can be done to increase output, productivity and employment in areas where the country already has competitiveness?
- ? What can be done to move production in these sectors into higher value-added products?
- ? How can these areas be used as lead sectors to build backward and forward linkages with new upstream and downstream sectors that can raise domestic value added beyond existing competitive sectors?

The aim is to achieve internationally competitive sectors enjoying high productivity and the potential of rapid productivity growth within relatively short time periods using industrial and technology policies of some or all of the following types :

- Coordinating technology acquisition decisions across firms and sectors
- Sharing risk and enabling the financing of investment in new technologies and sectors
- Sharing risks in labour training and learning processes
- Providing targeted infrastructure to critical sectors
- Developing regulatory capacity to maintain and enhance competitiveness

The mix of policies will depend on the technologies being adopted and the pre-existing strengths and weaknesses of entrepreneurs, financial institutions, infrastructure and skills in the sector. The critical determinant of success is likely to be governance and regulatory capacities to maintain and enhance competitiveness through monitoring and taking tough action when required, including the early withdrawal of support if progress is unsatisfactory.

*While most countries have tried variants of industrial and technology policies in the past, the main cause of their differential success has often been the efficacy with which incentives have been implemented, and the credibility with which their withdrawal has been organized in cases of poor performance.*

(Sources: Amsden 1989; Wade 1990; Aoki and others 1997; Khan and Jomo 2000)

## **IV. STEPS IN DEVELOPING AN INVESTMENT AND TECHNOLOGY POLICY**

### **Step 1. Identifying sectors to support**

The implicit market failures that have to be addressed by investment and technology policy will be different in different countries because their economic sectors have developed to different levels and they may face very specific problems. For instance,

developing and transition countries have different initial conditions and levels of development of different sectors (agriculture, industry and services), different initial technical capacities and skills of entrepreneurs and workers in different sectors, the characteristics and limitations of their financial systems and infrastructure are likely to be different, and in particular, their governance capabilities may be different from other countries and vary from sector to sector within the country.

Thus, the first task is to examine the available data and evidence on investment and technology in the national economy, and to engage in a discussion with key stakeholders to identify the constraints that need to be addressed to move existing competitive sectors up the technology ladder and to establish possible backward and forward linkages with these sectors. As this is the first step in the policy-making process, not all of the priorities identified at this stage may be selected for policy attention after all steps in the process outlined in **Figure 1** have been completed. The ultimate aim is to select a smaller number of interventions that are feasible given the resources and governance capacities available to policy-makers. However, it is desirable for the national debate and consultation to be as comprehensive as possible, and to be based on the best available sources of data and evidence on sectors where national competitiveness already exists and the constraints and bottlenecks faced by these sectors in trying to further improve productivity and gain international competitiveness in higher value-added production.

### ***Data Requirements***

The data available for assessing national performance in investment and technology are likely to vary across countries, both in extent and in quality. The more refined the available data, the better informed the identification of constraints and bottlenecks. Hence, improvements in data collection and processing by national statistical agencies are an important part of improvements in policy-making in this area. However, a start can be made with relatively crude data that should be available in almost every developing country.

**Table 1** summarizes some of the data that would be useful for determining national investment and technology priorities according to the objectives identified in the National Development Strategy. The table *indicates* the types of data that are relevant, but not all of it will be available in every developing country. Policy progress can be achieved with much less. In some countries, other sources of data can usefully complement the information available for identifying constraints and setting priorities.

This data provides the starting point for policy-makers to identify areas where investment and technology policies could make a difference to National Development Strategy objectives. It should also allow more informed discussions with stakeholders to identify the areas where investment and technology policies can make the biggest impact on output, productivity, employment and other development objectives.

The outcome of examining the data and the discussion with stakeholders should result in the identification of a number of priority areas where investment and technology policies can assist technology upgrading, productivity growth and the development of backward and forward linkages in sectors that already have some experience of operating at or close to international competitiveness. The next two steps will seek to narrow down the list of possible areas of assistance to a relatively small number that can be addressed given the implementation and fiscal capacities of the state. The aim

in these later stages will be prioritization, to impose discipline on the policy wish list and to force policy-makers and stakeholders to agree on a shorter list of feasible policy priorities. Feasibility very much depends on the limits to policy set by fiscal constraints and the implementation capacities of the state, particularly in critical areas of governance required for successful implementation of investment and technology policies. In the medium term, improving these governance capacities to ensure effective implementation and improving fiscal possibilities to enable support to be more extensive and to cover more sectors should also be the subject of investment and technology policies.

<b>TABLE 1. DATA REQUIRED TO IDENTIFY GOALS FOR INVESTMENT AND TECHNOLOGY POLICY</b>	
<b>Data/Information (Not all categories will be available or required in every case)</b>	<b>Likely Source</b>
<p>1. Critical Economic Sectors and Technologies</p> <p>a. Characteristics of broad economic activities (agriculture, industry, services) in terms of different objectives in the national development strategy (for instance, employment, value added per person, productivity growth, exports, export growth)</p> <p>b. Characteristics of particular subsectors (for instance, garments manufacturing, cotton textiles, groundnut production) in terms of different objectives as above and in comparison with competitors</p>	<p>National income statistics, trade statistics from the balance of payments, employment surveys</p> <p>As above, together with censuses of economic sectors, sample surveys of particular sectors, statistics collected by industry organizations, chambers of commerce and industry, data on international comparisons from World Bank and other agencies</p>
<p>2. Investment Performance</p> <p>a. Aggregate investment (gross fixed capital formation) as share of GDP and in comparison with competitors</p> <p>b. Investment disaggregated by economic activities (agriculture, industry, services)</p> <p>c. Investment disaggregated by economic sub-sectors critical for the national development strategy (for instance, export sectors or high value-added sectors or employment-generating sectors) such as textiles, garments, high value-added crops, etc.</p> <p>d. Investment in infrastructure and human capital serving economic sub-sectors critical for the national development strategy (as above)</p> <p>e. Investment disaggregated into public and private sector investments</p>	<p>National income statistics, World Bank and other international agency estimates</p> <p>National income statistics, World Bank and other international agency estimates</p> <p>Private investment in different sectors can be estimated from a variety of sources, such as imports of capital goods of different types recorded in foreign trade statistics (to estimate investment in machines), sales of cement or other building materials to different sectors (to estimate investment in buildings). Public sector investment in different sectors can be estimated from the national budget</p> <p>Spending in national budget on different types of infrastructure and education (if available) and estimates of private investment in these activities or otherwise qualitative estimates of bottlenecks</p> <p>National income statistics, otherwise public investment can be estimated from national budget, private investment from capital goods imports and other data</p>
<p>3. Technology and Investment Constraints/Bottlenecks</p> <p>a. Qualitative information on constraints preventing technology upgrading required for maintaining competitiveness</p> <p>b. Qualitative information on bottlenecks and constraints limiting investments in critical sectors (for instance, inadequate infrastructure, inappropriate regulatory structure, inadequate policy support for learning, etc.)</p>	<p>Dialogue with industry associations, leading entrepreneurs and technical exports, local and foreign</p> <p>Dialogue with trade and industry associations, leading entrepreneurs, surveys of business opinion</p>

### ***Data on Critical Economic Sectors and Technologies***

The starting point for identifying investment and technology policy priorities is to collect and examine the most basic data about the economy: its important sectors and sub-sectors, its aggregate and sectoral performance in terms of growth, productivity growth, employment growth, export growth, and so on, as shown in the first item in Table 1. The data give us a picture of the allocation and efficiency of investment in the past. It also provides information on the characteristics of different sectors and sub-sectors of the economy in terms of employment, productivity, wages, and so on, both relative to other sub-sectors in the economy, and relative to comparable competitors. Identifying critical sectors that could be prioritized by investment and technology policies can be made more tractable by identifying sectors within the country that have already achieved international competitiveness or are close to international competitiveness. (Sector in this context refers to an area of productive activity, so the ready-made garments industry, or commercial horticulture is an example of a sector in this sense).

It is theoretically possible that there may be potential sectors that do not yet exist at all where (with the right policy push) the developing country may enjoy large gains in employment, output or productivity growth. But given the limited resources that most developing country policy-makers have to carry out a full analysis of market failures that may prevent some potentially profitable sectors from emerging at all, a second-best and pragmatic approach is to start with what appears to be working and investigate how these sectors can be used as the base for investment and technology policy in the ways identified in Box 1. In many developing countries, the sectors that are at or close to international competitiveness are likely to be sectors using labour-intensive technologies to produce manufactured or agricultural products for export markets. The data can help to identify these sectors, and although in many cases these sectors will already be well-known to policy-makers, the data will back up the case for further investigation.

The initial data are also useful for identifying the direction in which more advanced developing countries that had similar sectoral specializations in the past have moved. Did they move into higher-value products within these sectors, into higher productivity methods of production, what backward and forward linkages did they develop? For some sectors, this investigation may reveal that the sector does not offer many possibilities for upward mobility in terms of productivity, or linkages, compared to other sectors. This information will be very useful for prioritizing sectors for attention. For instance, if a country has international markets in ready-made garments and in producing stuffed soft toys, an examination of trajectories of more advanced developing countries could show that ready-made garments have greater potential for productivity upgrading and linkages than stuffed toys. A very precise calculation of potential growth or productivity improvement in different sectors is not necessary. But policy-makers should have data and evidence at hand for stakeholder discussions that aim to identify the most likely sectors where productivity and technology upgrading is feasible on the basis of existing national competences and international evidence of possible improvements.

Discussions about national priorities are likely to be contested by potential winners and losers from particular policy positions. At this stage of the exercise, the task is simply to collate the data and information on different sectors and sub-sectors in the most transparent way possible.

## ***Data on Investment and Investment Performance***

The second item in Table 1 describes data that can be used to assess the share and allocation of investment in the economy at a number of different levels: aggregate and sectoral, and also in specific categories like infrastructure, human capital, and investment in the private and public sectors. Long-term economic growth depends on both the magnitude of investment and the efficiency of investment. Thus, the first item of Table 1 gave us data on economic growth, productivity growth and so on; the second item measures the share and allocation of investment across sectors and in the economy. The relative efficiency of investment between sectors or countries can be deduced from these two sets of data. The higher the historical rates of growth achieved for any given rate of investment, the more efficient the investment.

### **Box 2**

#### ***Sectoral Choices in the National Development Strategy***

For many developing countries, identifying major technological challenges for upgrading and extending their competitive sectors is a relatively simple task. What is required is data on the technologies used by other developing countries that are in similar industries but have moved further up the technology ladder. The policy-making process can look for evidence on how upgrading the value of products produced, improving productivity or product quality was achieved in more advanced countries and the results these countries achieved in areas important for the National Development Strategy, such as employment generation, wage growth, output growth, export growth or other indicators. This comparison of present with potential conditions in competitive sectors can suffice to identify the directions of upgrading that appropriate investment and technology policies should aim to achieve.

However, the national development strategy also needs to consider whether the existing competitive sectors and activities in the country are desirable to maintain and extend over the long term, or whether steps should be taken to develop some sectors over others. There may be many factors to consider here, many specific to particular countries. For instance, if agricultural landholdings are very fragmented and there is significant landlessness in agriculture, or if agricultural land is very poor in quality and suffers from significant ecological or environmental handicaps, it may be prudent to focus on a faster development of high value-added industry or services to create a greater proportion of non-agricultural jobs in the future.

A further consideration that could inform the choice of sectors to prioritize is the statistical observation that a faster growth of the manufacturing sector tends to result in faster growth in productivity in the manufacturing sector, adding to its competitiveness and allowing faster growth to be sustained (Kaldor 1966). Because such a relationship between output growth and productivity growth is not in general observed in the agricultural or service sectors, many economists have argued that developing countries trying to raise social productivity on a sustained basis should put somewhat more emphasis on the manufacturing sector as an engine of growth. In addition to the possibility of virtuous cycles of productivity and output growth, it is also often easier to generate large increases in employment in manufacturing compared to agriculture or services.

Policy-makers need to take these statistical observations seriously but in many developing countries, some high value-added service or agricultural activities have created many relatively high wage jobs. A good example of this is the business-outsourcing sector in India. There may be questions about the rate of employment growth in India compared to China where the manufacturing sector is growing much faster, but developing countries should not ignore high value-added sub-sectors in services and agriculture even though in general it is still true that manufacturing offers the most plausible source of employment growth for low-skilled workers.

Data on investment, particularly at the level of sectors is typically weak in developing countries and sometimes entirely unavailable. Nevertheless, it is useful to marshal the available data to see if some or all of the following questions can be answered. This will help in the policy discussion about directions of upgrading and sectoral priorities. First, it would be useful to know the areas of the economy in which significant public and private investments are taking place. Secondly, are these the areas where international competitiveness exists and needs to be further developed? Thirdly, what can we deduce about the efficiency of these investments from the output or productivity growth that has been achieved through these investments? The answers to these questions may indicate either that not enough investments are being made in critical sectors where competitiveness can be further developed, or that the investments that are being made are not achieving the output or productivity that competitors are achieving.

If national data on investment at the sectoral level is not available to answer these questions, policy-makers can still proceed with second best data on the types of investment that are taking place in sectors that are internationally competitive by looking at the types of output and export growth that the country is achieving. Is the growth in exports in sectors with international competitiveness primarily of low value-added products, or are there signs of moving up the value-added chain over a number of years, as indicated by changes in the average value of exports in these sectors? If the growth of exports is low, this is an indirect indication of insufficient investment in increasing output or keeping up with growing competitive pressures coming from other countries. If output is growing, but the unit value of exports in these sectors is moving up very slowly or not at all, this may be an indication that investments are primarily in output expansion rather than in technological upgrading.

In some countries, the absence of investment data means that policy discussions may have to proceed on the basis of such indirect evidence on the scale and type of investment in critical sectors. This may be sufficient for initiating some steps in investment and technology policy, but better statistical data would be an important priority in these countries for future policy development.

### ***Information on Constraints***

The third item in Table 1 describes the most important type of information required for informing a national debate on investment and technology policy. The information discussed earlier identifies critical competitive sectors, and their performance and limitations. It should also identify the types of technologies and products that are feasible next stages for upgrading in these sectors on the basis of the experience of more advanced developing countries. The critical question here is why the upgrading has not already happened. There may be important market failures that may be preventing upgrading and new investments taking place in these sectors, and preventing the development of backward and forward linkages with new competitive sectors.

The information that is available to assess the constraints that may be preventing upgrading and technological progress is typically not quantitative data, but qualitative information that can be used to answer a number of questions that follow from the discussion of market failures summarized in Box 1. If investment or technical progress is slow in competitive sectors, why is that so? It could be that progress into new higher value products or higher productivity technologies involves coordination, or risks or learning costs or finance of a type or extent that is deterring investment in

this sector (see Box 1 for a summary of the issues). Identifying the most important constraints that are relevant for a particular sector can only be achieved through a process of qualitative assessment of what is blocking the appropriate investment in that sector based on consulting industry associations, leading entrepreneurs in that sector, local and foreign technical experts, particularly those working in similar sectors in more advanced developing countries that have achieved technical progress, as well as other domestic stakeholders.

This largely qualitative information can help to identify the specific constraints and bottlenecks preventing the developing country from: i) increasing investments in sectors that are internationally competitive or close to achieving international competitiveness, ii) investing in upgrading technologies and improving productivity in these sectors and iii) developing new backward and forward linkages to create new competitive activities.

While dialogue with investors and industry or sectoral associations is an important source of information, the procedure here cannot simply be to carry out surveys, but to go beyond surveys on the basis of the comparative data available (some of it referred to in the first two items of Table 1). Comparative data are very important because investors and industry associations are, on their own, likely to give responses based on conventional wisdom that are not necessarily the most important constraints faced by a developing economy in a comparative perspective. For instance, investors in all developing countries want to see improvements in good governance and are likely to respond to general surveys by identifying the absence of good governance as the most important constraint to technology acquisition and long-term investment in the country. In the final section of this Policy Note, we will see that while these responses are perfectly understandable, they do not translate into an achievable policy goal for most developing countries.

In particular, we have seen that at early stages of development, many developing countries can begin to perform better and to converge with advanced countries even when they are not able to achieve significant improvements in good governance conditions in the short run. The evidence from successful high-growth countries is that while immediate improvements in 'good governance' are hard to achieve, successful countries have governance capacities that enable them to overcome specific investment and technology constraints in an effective and pragmatic way.

It follows that surveys of investors should be designed to identify pragmatic steps to overcome specific problems that may be constraining investment in new technologies and developing new products using the expertise already existing in internationally competitive sectors. Critically, the opinion of domestic producers and entrepreneurs should be complemented with information and evidence from more advanced developing countries to identify the processes and possibilities of value and productivity enhancement in existing competitive sectors, and the possibilities of developing profitable backward and forward linkages. The types of issues that policy-makers can assist with and should look for in a general sense are the ones we have already discussed and summarized in Box 1.

Thus, the dialogue with stakeholders should try to identify steps that can be taken to improve the (effective) coordination of technology acquisition, improve the information available and assist with the process of bargaining with external technology providers, relax financing constraints, share some of the financial and other risks involved in learning, and provide effective targeted infrastructure to

critical sectors. Policy-makers also have to be concerned with improving institutional arrangements for ensuring that competitiveness is rapidly achieved through these interventions, a requirement that is absolutely necessary for the successful implementation of all the other measures referred to. The particular policy focus that could be most appropriate will be different in different contexts, depending on the characteristics of the country and the technologies being absorbed (see Box 3).

### **Box 3**

#### ***Identifying possible areas where investment and technology policies may be useful***

Identifying a list of possible areas where investment and technology policies may assist output, productivity and/or employment growth involves a number of steps. The possible list will later be narrowed down further when implementation and governance capacities are taken into account.

i) Use national and international evidence to identify activities where the country already has international competitiveness or is close to achieving international competitiveness. These activities are in any case very obvious as they will be activities producing products or services that the country is already successfully exporting.

ii) Use national and international evidence to identify the magnitude and efficiency of investment in these areas: is output increasing over time, is productivity improving over time (measured by the maintenance of market share against competitors) is product quality (measured by unit values) improving over time, are new products being added to the portfolio of products produced by the sectors in question?

iii) Use primarily international evidence from more advanced developing countries to identify the extent to which these sectors can serve as critical sectors for upgrading products (to higher value products), improve productivity (to allow higher wage employment and to maintain competitiveness), establish backward and forward linkages (to develop other sectors of the economy and to enhance competitiveness of existing sectors). The conclusion here may be to reject some sectors as likely candidates for significant upgrading attempts and the identification of others as possible candidates.

#### **Example 1. Poor developing country with low investment rate**

Economic sectors (not an exhaustive list) include: a low productivity peasant agriculture, a low productivity garments manufacturing export sector enjoying international competitiveness, and a medium productivity large scale chemical industry built under import protection that is currently far from international competitiveness.

#### **Examples of areas where investment and technology policies could be useful**

- i. Absence of backward linkages in the garments industry, necessitating the import of all accessories and of finished fabrics, some of which could be domestically produced. Potential for enhancing investment and technology acquisition through coordination, financing and sharing risks in introducing new machineries to improve product quality and move up the value chain, introducing on-the-job training programmes for workers and middle management to increase supply of skilled labour and share risks and costs of financing learning-by-doing.
- ii. Large losses in chemical industry preclude internal investment to upgrade. Potential of enhancing investment and competitiveness through risk-sharing to bring in new investment (possibly foreign partnerships attracted with special incentives that are clearly defined over limited time periods and tied to performance outcomes), coordinating tie-ups with foreign and domestic buyers to increase markets and change product mix to serve new markets.
- iii. Emerging export crops in agricultural sector constrained by low bargaining power in foreign markets to attract necessary investments in quality control, refrigeration, and marketing. Potential of offering selective incentives to foreign technology providers to attract new technologies, coordinating marketing of high-value products like horticulture or fisheries with foreign retailers (possibly with special incentives limited in time and tied to specific performance outcomes).

**Example 2. Middle income developing country with moderate investment rate**

Economic sectors include significant large-scale manufacturing sector suffering from low competitiveness in many sub-sectors; international competitiveness is achieved in a limited number of niche manufacturing and service sectors; low productivity large farms dominate agricultural sector.

**Examples of areas where investment and technology policies could be useful**

- i. Foreign technology and investment in *potentially* competitive large-scale manufacturing constrained by poor infrastructure and the risk of slow progress in learning. Scope for targeted infrastructure support and assistance in financing on-the-job learning to attract high-technology multinational investment and licensing of technology.
- ii. Absence of coordination within potentially successful clusters of manufacturing (engineering, electronics, etc.) to acquire higher productivity technologies. Potential for coordination and assistance in bargaining with foreign technology suppliers and investors.
- iii. High value-added agricultural products constrained by lack of infrastructure and high risk in moving into high-value export crops. Scope for targeted infrastructure for some agricultural sectors.

**Step 2. Identifying instruments and policies for effective implementation**

The next two steps (see Figure 1) involve limiting the number of potential areas of policy intervention to a manageable number of areas where it is both feasible to intervene and where the payoff, in terms of contributing to the achievement of national development goals, is likely to be large. Step 2 is simply matching a number of policy interventions to the list of possible areas of intervention identified in Step 1, keeping in mind that institutional capacities of most developing country bureaucracies are limited and a further narrowing of options may be necessary once governance capacities are specifically taken into account in the next step

Given the very different activities and competitive sectors in different countries, different strategies may be appropriate for improving productivity and employment in each context. The general areas where theoretical market failures may be operating and where pragmatic policy interventions may be justified are summarized in Box 1. These broad areas of concern (coordination, financing, learning and so on) can provide decision-makers with a template for discussing various pragmatic policies.

The most appropriate way to proceed, for countries that do not already have a successful track record in investment and technology policies, is to begin with a relatively modest set of policies, observe implementation for a few years, and then move on to more ambitious programmes or to re-design existing programmes as necessary. Given that the types of interventions that are likely to be necessary or feasible will vary significantly across countries, we can only consider some examples of policies and interventions that may be appropriate in terms of the policy goals discussed and summarized in Box 1.

***Coordination of technology acquisition across firms and sectors***

At the practical level, coordination requires setting up agencies with the effective power to bring together industrial, trade and business associations, identify areas

where coordination of investment, production or marketing can enhance competitiveness across the board, and then follow this up with pragmatic policies to achieve these outcomes. The leadership of these agencies is critical. Successful countries often relied on lateral transfers to bring in enterprising and experienced individuals, often from the private sector to lead critical agencies tasked with industrial and technological upgrading. The agency leadership will have the task of assessing the data, identifying technologies and coordination strategies that are likely to achieve productivity, output, or employment growth (as prioritized in the National Development Strategy) and following that up with feasible incentives to achieve the coordination.

To be effective, the agency leadership also needs to have the support of the executive to achieve credibility for the incentives and arrangements that are available. These incentives could range from technology licensing coordinated through the agency, to fiscal or infrastructural incentives to achieve coordinated investments. External technology providers and investors are also much more likely to engage in negotiations on the types of technology transferred in investments or through licensing to domestic producers if effective government backing for agreements is visible and credible.

### ***Sharing risk and enabling the financing of investment***

Market failures in credit and stock markets are very likely in developing countries. The provision of targeted credit to critical sectors to finance investment in new technologies and in backward and forward linkages is likely to be an important part of effective investment and technology policies.

Loans from banks at market rates of interest may overcome critical constraints, and these loans are more likely from commercial or public sector banks if the government is closely involved in the coordination of these investments and in policing performance. Entrepreneurs may be unwilling to borrow on the relatively brief repayment time scales required by private commercial banks backed by their personal collateral. But they may be willing to accept a longer term contract with a credible claim on their asset that lenders may effectively exercise with government support if competitiveness is not achieved and repayment is at risk.

The government may also finance technology acquisition and productivity upgrading through equity purchases in companies. This too needs to be credibly constructed so that entrepreneurs risk effectively losing control of their companies if performance is poor. Otherwise, there is little credible compulsion on businesses to put in effort to the fullest extent to raise productivity and achieve rapid learning after receiving government supported financing for technology acquisition.

### ***Sharing Risk in labour training and learning processes***

The problem of low labour productivity at the initial stages of introducing new technologies and processes can often deter their introduction. At the initial stages, while learning-by-doing is still going on, the individual entrepreneur financing learning will face losses. However, if learning is successful, the entrepreneur can eventually become profitable, but the skilled labour may now decide to leave the firm as other entrepreneurs copy the success of the pioneers. This external effect can in turn deter the individual investor undertaking these investments in learning.

As industrial skills are a public good, coordinated strategies for acquiring these in-firm skills are therefore justified.

A number of different types of schemes can be used to share the risks and costs of in-firm learning. The government can assist with in-firm training schemes where skilled personnel from more advanced developing countries are invited to train labour of different categories either within the firm or in training agencies that closely mimic firm environments. In the past, learning could be financed through various subsidy schemes, including protection for infant industries, but these are increasingly difficult and some schemes are entirely disallowed under WTO rules. Most developing countries are coming under WTO jurisdiction and the country agreements they have signed up to need to be carefully examined in designing firm-level training support schemes to ensure that they do not inadvertently fall foul of WTO rules. As most types of labour training are allowed under free trade agreements, a careful design of training schemes such that they do not amount to a free subsidy for the firm should enable these schemes to be legally introduced.

### ***Providing targeted infrastructure to critical sectors***

These interventions are part of any coordinated strategy to accelerate technology acquisition and upgrading in critical sectors. Fiscal constraints in developing countries prevent across the board improvement in infrastructure at early stages of development. However, if investment and technology policy agencies are well coordinated with the relevant public works ministries and the finance ministry, the critical infrastructural bottlenecks that may be constraining investments in competitive sectors seeking to upgrade can be overcome.

This approach involves making transport networks, utilities and other infrastructure available on a prioritized basis for sectors that are also part of a coordinated strategy of investment and technological upgrading. Clearly, an effective policy of prioritizing infrastructure for some sectors requires support from the highest executive levels if it is to be actually implemented. Once again, leadership of investment and technology policy agencies and close contact and support from the executive are critical for effective implementation.

### ***Developing regulatory capacity to maintain and enhance competitiveness***

None of the investment and technology acquisition strategies discussed above are likely to work if complementary regulatory capacities are missing to ensure that supported sectors do not free ride on the support to maintain low productivity beyond reasonable learning periods.

We have seen earlier that interventions that seek to change the level and type of investment must, by their nature, assist some investors more than others. As long as the support policies continue, market competition is not sufficient for ensuring that underlying competitiveness is increasing at the desired rate. An important compulsion for productivity growth and learning is now the credibility of government promises to withdraw support if performance is poor, or even to reclaim loans or other support offered by acquiring ownership of designated assets and either selling them, or more likely, re-allocating them to new and more efficient ownership. Once again, competent and professional regulatory agencies have to be developed to work in parallel with agencies offering support to devise appropriate performance criteria, particularly for monitoring loans and other forms of financial support.

#### **Box 4**

##### ***Examples of investment and technology policies in our hypothetical developing countries***

###### **Example 1. Poor developing country with low investment rate**

- i. Create an effective coordinating body to bring together investors in garments and related industries, particularly those with strong backward linkages to garments. Constructing integrated incentives to encourage investments in backward linkage sectors. Getting expert opinion on upgrading technologies used in the garments industry, to improve styling, packaging and marketing to move up the value chain. Identifying risk factors and determining the type and extent of risk-sharing that may be warranted. If market finance is not available on terms that existing producers will accept for technology upgrading loans, consider equity or loan schemes for garment producers investing in new technologies to improve productivity or product value, backed by strong and credible withdrawal strategies if performance is poor. In-firm training schemes to train workers in new technologies and improve productivity through learning-by-doing when new machinery is introduced.
- ii. Set up a high-powered agency to consult with foreign technology providers and identify the investment required and the risks involved in upgrading the loss-making chemical industry. Investment may be required both in fixed capital, but also in changing management styles and/or changing management. Offer incentives to foreign investors bringing in designated technologies and markets to share risk. Incentives can take the form of targeted or prioritized infrastructure, tax reductions over designated periods, fast-track approvals and so on.
- iii. For high value agricultural products, offer selective incentives to foreign technology providers or domestic firms investing in new technologies to upgrade quality control, refrigeration, and marketing. Strengthen critical regulatory functions to ensure that pre-agreed targets and competitiveness improvements are achieved.

###### **Example 2. Middle income developing country with moderate investment rate**

- i. Set up a high-powered agency to identify investment and technology upgrading required for converting currently uncompetitive large-scale enterprises into profitable enterprises enjoying international competitiveness. Provide incentives for foreign investors bringing in designated technologies and investments to share risks. This could include prioritized infrastructure, tax breaks, more liberal profit repatriation over designated periods, and so on. Adding the credibility and weight of government can assure foreign investors that appropriate regulatory structures, fiscal incentives and infrastructural support will be available. Develop regulatory agencies to monitor progress and set time limits for support.
- ii. Set up coordinating agency to identify and bring together investors in critical clusters of industry (engineering, electronics etc.) to identify possibilities of technology upgrading and backward and forward linkages. Involve government in bargaining with foreign technology suppliers and investors, offering prioritized infrastructure and tax and other incentives if required.
- iii. Provide targeted infrastructure for high value-added agricultural sectors or sectors deemed to contribute to the national development plan. Regulatory support is particularly important in preventing wastage of support in the relatively dispersed agricultural sector.

Box 4 shows examples of some of types of policies that may emerge through the consultation process in the hypothetical developing countries discussed in Box 3.

### **Step 3. Are institutional and governance capacities adequate for effective implementation?**

This is the last of the three steps identified in Figure 1. From the list of possible policy interventions identified in step 2, it is now prudent to only select the policies that can be effectively implemented given the emerging regulatory and implementation capacities of the government. The costs associated with overstretch are more serious than the costs associated with a more modest rate of progress in introducing investment and technology policy. This is because failure associated with excessively ambitious policies can result in the demoralization of policy-makers and of the enterprise sector, and indeed undermine the broader political support behind the strategy. These setbacks can therefore be serious in having lasting negative effects on the gradual enhancement of investment and technology policy capacities in developing countries.

At this stage of the policy-making process, the political and executive leadership of government have to consider very carefully the bureaucratic and political requirements for the effective implementation of particular policies. The bureaucratic requirements include being able to recruit the appropriate high-powered and experienced personnel with an exposure, not just to business in that particular country, but also to countries at more advanced stages of using technologies that the developing country is aspiring to. This is a serious constraint, but is a less serious constraint than trying to reform the entire bureaucracy. A few effective people at the top, charged with carrying out a very narrow remit of policies, can achieve significant success, provided clear and effective political backing is forthcoming for these policies.

The political requirements of effective investment and technology policies are much more demanding, and vary depending on the types of interventions being attempted. This could make some types of interventions viable while others not, and it is at this stage that non-viable or non-implementable policies should be temporarily abandoned, while the requisite bureaucratic and political capacities are being developed.

The political requirements include, but are not restricted to the following:

- *First*, the political leadership should be open enough and legitimate enough to be able to engage in a national dialogue about investment and technology priorities without appearing to be engaged in a sham discourse that intends to benefit supporters of the current regime. Support for investment and technology policy can be developed on a non-partisan basis by involving, from the outset, all industry associations and stakeholders regardless of their partisan and factional affiliations.

If the discussion is seen to be open and responsive, and if the beneficiaries of policies come from a broad range of camps, the political conditions for successful implementation can be achieved. The consultation exercise should not be treated as one that tries to ‘optimize’ the selection of sectors that should be prioritized, since there are many grey areas and an accurate optimization would be impossible in any case. Rather, *the task of consultation should be one of selecting a number of important sectors on which to concentrate the limited fiscal and regulatory capacities of the state to accelerate national development.* This realization can allow a number of diverse sectors to be

selected for upgrading to defuse tensions and limit unnecessary rent seeking that seeks to influence government policy. But it has to be recognized that these minimal conditions do not hold in some developing countries, and in these cases, progress will be more limited. In these countries, effort has to be first put into constructing a broad political support behind investment and technology policies by engaging with business and trade associations.

- A *second* political condition required for more ambitious interventions to assist learning and provide targeted infrastructure is for regulatory agencies to have the effective capacity to negotiate regulatory agreements and withdraw support or assistance from sectors that fail to achieve regulatory targets. This capacity is not just a bureaucratic or institutional capacity (although that is also required); it is primarily a political capacity because regulatory agencies have to have the ability to withdraw support if necessary even from favoured clients of the government. While rent seeking and corruption are widespread in many developing countries, the variant of corruption that involves the political protection of powerful clients has often been the main reason for the failure of investment and technology policies in developing countries (Khan 1996, 2002, 2006).

Developing countries that cannot ensure the separation of the regulation of investment and technology policy from the horse-trading of patron-client politics are unlikely to succeed in these strategies. Note that what is required for success is not the much more demanding task of reducing corruption and rent seeking across the board. What is required is the much less stringent condition that only the critical regulatory agencies charged with implementing and regulating investment and technology strategies should be insulated from rent seeking and political interference. The greater the consensus on the importance of this, the greater the chances of success. In the absence of any consensus within the main political parties, the chances of success are more limited and it may be better to limit investment and technology policies to areas where ongoing regulatory management is not required. For instance, coordination and the provision of help in bargaining with external technology providers are less onerous in terms of regulatory requirements than sharing risks in technology acquisition through the provision of finance or prioritized infrastructure provision.

The final stage of the policy-making process should take these considerations and other political constraints into account to further limit the range of policies being considered to those that can actually be implemented, given existing political and institutional realities (see Figure 1). This is not necessarily a minimalist approach, since *current investment and technology policy can also identify appropriate governance reforms to address some of the political and institutional conditions that would allow more extensive investment and technology policies to be attempted in subsequent years*. We conclude with Box 5, which suggests how the policies identified in Box 4 for our two hypothetical countries need to be further whittled down in line with the current (hypothetical) governance capacities of the two countries. The exercise also identifies the relevant governance reforms that need to be prioritized in each country.

A final check is now required to ensure that the policies going forward as national investment and technology policies have fiscal implications consistent with the macroeconomic policy and fiscal claims of other policies.

### Box 5

#### *Final selection of investment and technology policies in our two hypothetical developing countries*

##### **Example 1. Poor developing country with low investment rate**

- **Current institutional and governance capacities:** Weak bureaucracy, but has capacity to appoint competent professionals at the top of critical agencies. Political party in power enjoys broad legitimacy and is willing to concede entry to rival factions in determining industrial policy.
- **Selection of policies from Box 4:** All three types of policies discussed in Box 4 are potentially feasible in this case. Nevertheless, given bureaucratic limitations, it would be prudent to begin with progress on one of these sectors, say by setting up a coordinating body for upgrading the garments sector and its backward linkages. If there is observable progress, policy can be extended to other sectors in subsequent years.
- **Identification of governance priorities for strengthening Investment and Technology Policy in the future:** Further strengthening of bureaucratic capabilities in key regulatory agencies. Building on consensus between major parties by institutionalizing joint consultations on key investment and technology issues.

##### **Example 2. Middle income developing country with moderate investment rate**

- **Current institutional and governance capacities:** Moderately competent bureaucracy; capacity to appoint competent professionals to head key agencies. But politics is intensely competitive between competing factional parties, with no agreement on national priorities or possibility of reaching agreement in the short term. Rapid turnover of parties with short time horizons.
- **Selection of policies from Box 4:** Regulatory capacities for providing targeted infrastructure or risk sharing finance to enable upgrading of uncompetitive large-scale enterprises or the agricultural sector are unlikely to be sufficiently effective. A coordination agency for identifying technology requirements and upgrading in the major industrial clusters may be the most appropriate place to start, providing shared information and creating pressure on government for targeted infrastructure and fiscal incentives. However, even these can, at best, be modest, given the absence of regulatory capacities to ensure improvement in competitiveness.
- **Identification of governance priorities for strengthening Investment and Technology Policy in the future:** The main priority in this case would be to attempt to construct a minimal consensus between the competing parties on national investment and technology priorities. Political skill needs to be deployed to identify joint benefits for clients of different factions to allow national strategies to be identified and implemented.

The conclusion of the process described above should lead to two types of policy outcomes:

*First*, we should be able to identify a pragmatic and feasible set of investment and technology policies that can make a contribution to the broader goals of the National Development Strategy. Depending on the economic characteristics of the country and its existing governance capacities, these policies may be more or less extensive.

But *secondly*, we should also be able to identify a number of critical governance priorities that can go ahead as recommendations from policy-makers involved in investment and technology policy as necessary conditions for proceeding further with

national strategy. These governance priorities are inevitably going to be more limited than the broad good governance reforms that come from the conventional reform agenda. This is an advantage, because concentrating on a limited and relevant set of governance reforms that have some chance of being partially achieved, can significantly improve the relevance of governance reforms and their impact on development outcomes.

## **V. INVESTMENT AND TECHNOLOGY POLICY COMPARED WITH GOOD GOVERNANCE AND INVESTMENT CLIMATE REFORMS**

Investment and technology policies often do not receive very detailed attention in many developing countries in their national policy-making process. Instead, it is often assumed that general reforms to improve *good governance* and the *investment climate* will indirectly improve the quantity and quality of investment, and help to attract better and more productive technologies. While these reforms are highly desirable in themselves, there are good reasons why the implementation of good governance reforms in developing countries is likely to be very slow, and have a very limited impact on improving investment and technology acquisition over a reasonable planning horizon. A reliance on these policies alone is therefore likely to result in lost opportunities for enhancing investment and technology acquisition in many developing countries. This section provides policy-makers with some basic arguments for not relying exclusively on good governance and investment climate reforms, and instead focusing on appropriate pragmatic governance reforms that can improve the implementation of effective investment and technology policies.

In making the case for a dedicated investment and technology policy, it is important to understand the case for the good governance and investment climate approaches, their merits but also their limitations. Given the importance and appeal of many good governance reforms as goals in their own right, an evaluation of the limits of these reforms for achieving other objectives is particularly important. Figure 2 summarizes the policy priorities of the good governance and investment climate approaches and the linkages through which these reform priorities are expected to lead to increased investments and to improvements in technology.

These approaches stress ‘horizontal’ policies in that they do not target specific investment or technology bottlenecks. Rather, they seek to improve the institutional and infrastructural *environment* in which investments and technology decisions are made. The expectation in these approaches is that if the general environment in which a market economy operates can be improved, market efficiency will improve and better investment and technology decisions will follow. In a poor economy with insufficient investment and poor technology, the expectation is that an improvement in market efficiency and in essential infrastructure will lead to increased private investment and the adoption of superior technologies.

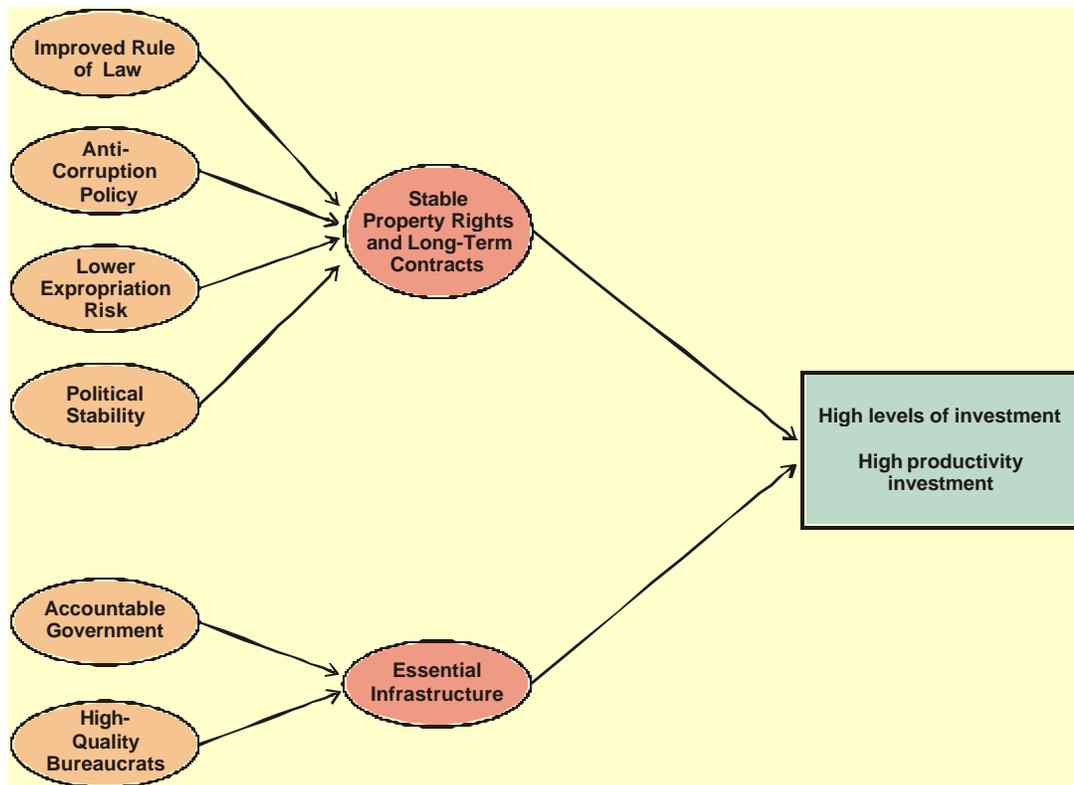
In the *good governance* and *investment climate* approaches, the main constraint to long term investments in developing countries is assumed to be the absence of efficient markets where investors have the confidence to invest for the long term. The critical requirement for efficient markets is that market participants should be able to contract complex exchanges at low ‘transaction cost’, and for this, we require stable property rights and a rule of law. Stable property rights and the rule of law are the

critical factors that allow complex contracting at low cost. These characteristics are therefore necessary if markets are to allow high levels of investment and investments that take a long-term perspective.

However, in developing country markets, the costs of finding trading partners, making contracts, and particularly of enforcing contracts are notoriously high. These high transaction costs can, in general, be attributed to insecure property rights and contracts, and these, in turn, therefore explain why private investment is low and of low quality. With insecure property rights, many investors simply do not invest. In addition, investors stay away from high technology investments with long gestation periods as these investments, in particular, require stable and complex contracts for investors taking significant risks. The good governance approach therefore focuses on a series of governance reforms that address the problem of weak property rights and contracts that, in turn, prevent markets in developing countries from operating efficiently.

This is elaborated in Figure 2. Important reform priorities in this approach are to improve the rule of law and to constrain state and non-state expropriators from threatening to expropriate private property. In addition, transaction costs are also raised by rampant corruption which forces investors to work their way around a maze of restrictions and demands for bribes. Thus, anti-corruption strategies play an important role in the good governance reform agenda. Finally, political stability is required to ensure policy continuity and to reduce uncertainty about future expropriation.

**Figure 2**  
**Good Governance and Investment Climate Reform Priorities**



These requirements define the reform priorities for good governance reforms in developing countries. Many of these reforms are desirable for their own sake, but in the good governance approach, they are also necessary *means* for improving market efficiency, and thereby, increasing investment and enabling investment in more complex higher technology sectors. This is why governance is increasingly at the top of the reform agenda in many developing countries, and these reforms often also dominate the reform agenda for investment and technology policy.

The investment climate approach agrees about the importance of these governance reforms and adds that public infrastructure is often also essential to attract more and better investment. These infrastructure requirements include the efficient supply of utilities like electricity, water, telecommunications, roads, railways and ports. It is assumed that improvements in the accountability of government and improvements in the quality of bureaucrats in key service delivery areas will lead to more effective delivery of key public infrastructure. The size of the bureaucracy should therefore be reduced and the remaining bureaucrats should be selected for quality and paid properly.

Clearly, many of these reform agendas are interdependent; for instance, accountability reforms should improve political stability and reduce corruption, while anti-corruption reforms should improve the quality of public infrastructure. The quality of infrastructure has a direct effect on investment. With better infrastructure, investments become more profitable, thereby increasing both the quantity of investment and investment in high productivity areas that are more sensitive to the quality of infrastructure.

As summarized in Figure 2, these theoretical considerations lead the good governance and investment climate approaches to argue that reforms in these areas will lead to more investment and better quality investment in developing countries. In support of these theoretical arguments, a large number of studies have found correlations between measures of good governance and the growth rate, the rate of investment, and the rate of R&D expenditures in developing countries (Knack and Keefer 1995, 1997; Mauro 1997; Kauffman and others 1999).

While these reforms are highly desirable in themselves, as the central policy plank for achieving better investment and technology performance, the good governance and investment climate approaches are inadequate for most developing countries. It is important to understand why. We argue that *specific policies and instruments are required to directly tackle some of the bottlenecks in investment and technology upgrading*, and that such policies are more likely to yield results in the context of most developing countries.

### **Limitations of Good Governance and Investment Climate Reforms**

The good governance and investment climate reform priorities seek to achieve governance and infrastructure goals that are desirable in themselves. But in many developing countries, *progress in achieving good governance goals and infrastructure improvements across the board is likely to be very slow, with a correspondingly limited impact on investment and technology acquisition.*

However, significant progress in achieving good governance goals – in particular the key goals of stable property rights, a satisfactory rule of law or significant reductions in corruption – requires substantial fiscal resources to finance the requisite policing and enforcement of property rights and contracts (Figure 3). Achieving stable

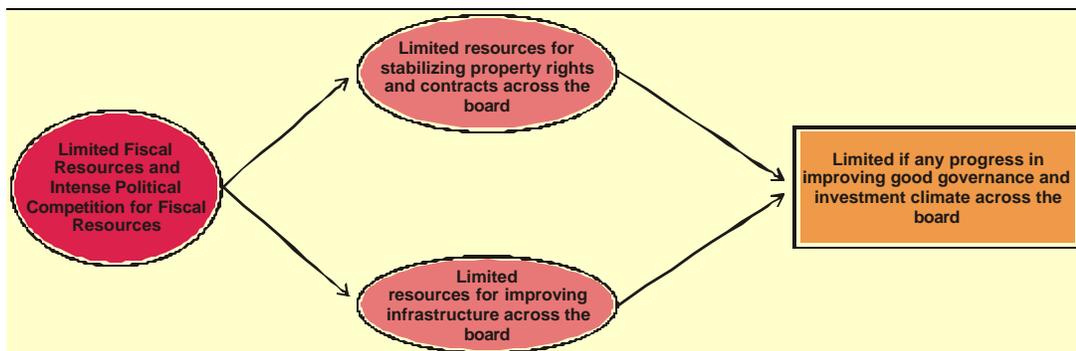
property rights is one of the most expensive public goods, as evidenced by the size of the transaction cost sector in advanced countries like the United States, which by some estimates, absorbs close to half the country's GDP (North and Wallis 1987).

In other words, stable property rights and low transaction costs at the point of exchange in advanced countries can only be achieved if significant expenditures of resources in legal costs, public policing, private arbitration, legalized and regulated lobbying, political processes, and so on can take place.

Given the expense involved, and the intense competition for fiscal resources in developing countries, it is not surprising that developing countries that have set themselves the target of achieving good governance improvements have not, in general, achieved significant success in improving their governance indicators in the short to medium term. For very similar reasons, it is not easy to rapidly improve the quality of infrastructure *across the board* in developing countries, given fiscal constraints and the intense political competition for fiscal resources.

Thus, for most developing countries, achieving good governance and infrastructure improvements across the board have proved very difficult to achieve, even when the political will has been there and these goals have been identified as reform priorities. It follows that if progress on these fronts is slow, progress in investment and in technology adoption that depends on improvements on these fronts is also likely to be very slow. This is summarized in Figure 3.

**Figure 3**  
**Limitations of Good Governance and Investment Climate Approaches**

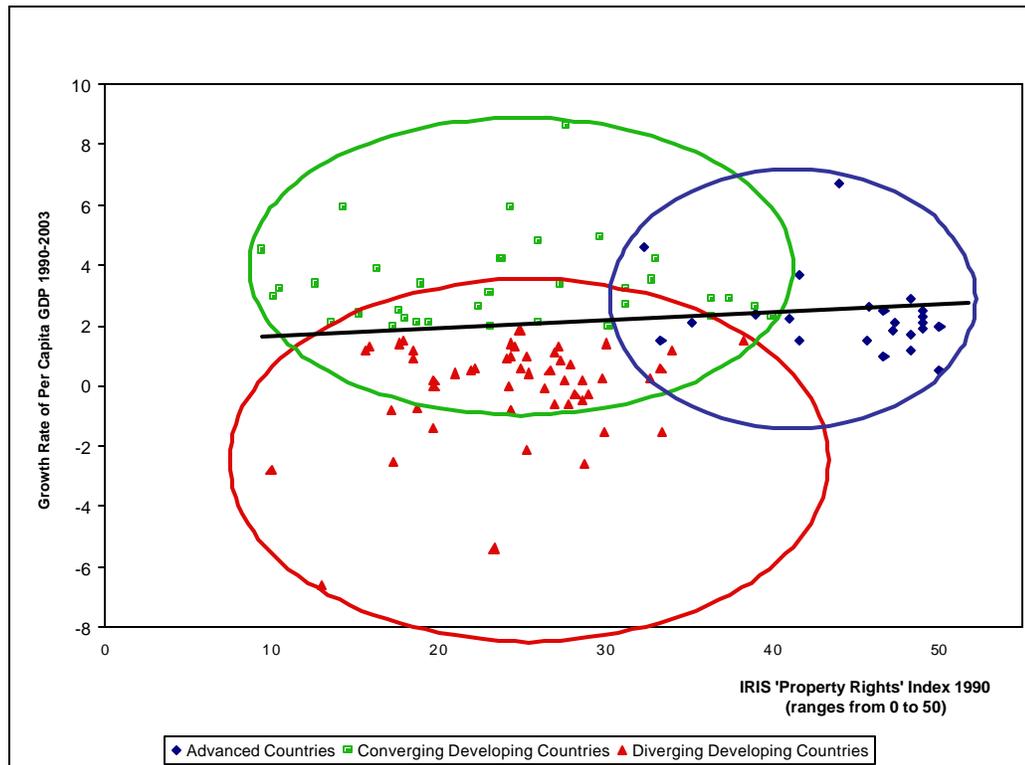


Given the economic constraints preventing the achievement of stable property rights and low transaction costs across the board in poor countries, it is not surprising that the historical evidence shows that high-growth developing countries did not achieve significantly higher property right stability than low growth developing countries. Figure 4 uses the composite property rights index (IRIS-3 2000) constructed by Knack and Keefer at the IRIS centre at Maryland as an aggregate of indices for corruption, rule of law, bureaucratic quality, contract repudiation, and expropriation risk. Figure 4 uses the 1990 values of the property rights index for all available countries, and compares their growth rates over the next 13 years for which data are available.

While there is a weak positive relationship discernible between better governance according to the good governance indicators, and the growth rate (just as the good governance policy approach asserts), *we do not observe any significant difference in the average score or the range of scores when we compare high and low growth*

*developing countries.* In Figure 4, advanced countries are shown with blue diamonds, converging developing countries (with growth rates higher than the median advanced country growth rate) are shown with green squares and diverging developing countries (with growth rates lower than the median advanced country growth rate) are shown with red triangles. The important observation is that high growth developing countries had, on average, a very similar mean score and dispersion on good governance indicators compared to low growth developing countries (Khan 2004; DESA 2006).

**Figure 4**  
**Composite Property Rights Index and Growth, 1990-2003**  
 (using Knack-IRIS data)



What this shows is that high-growth developers did not, in general, succeed because their average property right stability was significantly higher than that of low-growth developers, and they certainly did not have property right stability comparable to advanced countries. Given what we know about the cost of providing the public goods required for achieving stable property rights and effective contract enforcement systems, it would be surprising if the observation was otherwise. Similarly, while it is undoubtedly true that better infrastructure is preferable for investment, growth takeoffs in high-growth countries have not waited for across-the-board improvements in infrastructure. Rather, as growth took off, infrastructure improvements became easier to finance, and better infrastructure made further investments more profitable, thereby setting off virtuous cycles. Exactly the same is true for expenditure on property right stabilization and further improvements in the investment climate.

## **Critical Governance Capacities required for Investment and Technology Policy versus Good Governance Capacities**

The discussion of policy measures, through which investment and technology acquisition can be accelerated, has identified a number of critical governance capacities that states in developing countries need to have if they are to successfully implement these types of policies and programmes. For instance, for some investment and technology policies, governance capacities have to be developed to identify areas of technology coordination and to follow up coordination discussions with effective policies to overcome bottlenecks. In the case of other policies that seek to accelerate learning or to improve competitiveness, governance capacities are required to identify and deal with failing performance through the withdrawal of support and the transfer of support to other sectors and technologies (Khan 2000). Managing exit from support strategies is one of the critical governance capacities required for the success of investment and technology policies.

### Box 6

#### ***Investment and Technology Policy is not about 'Picking Winners'***

'Horizontal' policies of improving the investment climate are likely to take too long to produce significant improvements across the board in most developing countries. Not surprisingly, successful developing countries have always had *specific* investment and technology policies to overcome the most important bottlenecks. At any particular time, these policies implicitly favour some sectors over others, though these change rapidly over time as bottlenecks are overcome. As a result, investment and technology policies have often been misleadingly described as policies of 'picking winners'.

In fact, bureaucrats, politicians or industry associations are likely to be frequently wrong if they were trying to pick 'winning' sectors or technologies for support.

In reality, successful investment and technology policy is based on a pragmatic identification of a few bottlenecks and constraints that are preventing critical sectors from improving competitiveness and moving up the technology ladder. Rather than the ability to pick winners, successful countries have had the capacity to change policies if investment and technology performance in priority sectors turned out to be poor. The capacity to change policy or to shift focus to other sectors is a critical and necessary condition to ensure success. *Ex post* flexibility of response, rather than the *ex ante* ability to pick winners, has distinguished success from failure in investment and technology policy. ***Successful investment and technology policies did not 'pick' winners, rather they helped to 'make' winners, and if winners could not be made in some sectors, policy shifted quickly to other promising sectors.***

This analysis clearly shifts the focus of governance reforms appropriate for investment and technology policy away from the broad good governance reforms that many developing countries are already trying to implement, often with very little success. This does not mean that the *goals* of good governance are unimportant. Good governance goals are desirable on their own terms, and developing countries should attempt to maximize their achievement of these goals at every stage of development. But it does mean that the attempt to improve these conditions to any significant extent with very limited fiscal and reform capacities is too ambitious, and the expected effects on investment and technology acquisition are likely to be low. *While good governance reforms are desirable on their own terms, developing countries should not exclusively depend on these policies to improve their investment and technology performance.*

The capacity to address critical market failures that may prevent investment and technology upgrading and the capacity to prioritize a few sectors at a time has often been wrongly characterized as a strategy of 'picking winners'. If investment and technology policy really depended on the foresight of policy-makers to pick winners, its potential success would indeed be

highly questionable. In reality, success in investment and technology policy of the type we have been describing has been based on a pragmatic identification of bottlenecks and constraints hindering progress in critical economic sectors, combined with the institutional and political capability to respond to continuing poor performance by changing policies or changing the focus of policies towards other priority sectors (see Box 6).

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