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# Costa Rica Competitiveness Diagnostic and Recommendations

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¢ 571.00 = US\$1

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## ABBREVIATIONS AND ACRONYMS

ARESEP	Autoridad Reguladora de los Servicios Públicos
BOT	Build-operate-transfer
CITE	Technology innovation center
CONAPE	National Commission for Education Loans
CONICIT	National Council on Scientific and Technological Research
FCD	Fondo de Crédito para el Desarrollo
FFD	Fondos de Financiamiento para el Desarrollo
FINADE	Fideicomiso Nacional de Desarrollo
GDP	Gross Domestic Product
GNI	Gross National Income
ICA	Investment Climate Assessment
ICS	Investment Climate Survey
ICE	Instituto Costarricense de Electricidad
INA	National Learning Institute
IPP	Independent Power Producers
LAC	Latin America and the Caribbean
LPI	Logistics Perceptions Index
MEP	Ministry of Public Education
MICIT	Ministry of Science and Technology
MIDEPLAN	Ministerio de Planificación
MINAET	Ministerio de Ambiente, Energía y Telecomunicaciones
MSMEs	Micro, small, and medium enterprises
PPA	Power Purchase Agreement
R&D	Research and Development
SME	Small and medium enterprises
TEU	Twenty-foot equivalent unit
UCCAEP	Unión Costarricense de Cámaras y Asociaciones del Sector Empresarial Privado

## ACKNOWLEDGEMENTS

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**Note: Volume 2 contains a comprehensive analysis of each of the above topics. Source citations can also be found in Volume 2.**

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## EXECUTIVE SUMMARY

1. Costa Rica is a clear success story. The country enjoys the highest standard of living in Central America and one of the highest in Latin America and the Caribbean (LAC). Not surprisingly, poverty levels are among the lowest in LAC. Indeed in 2004, Costa Rica had the second lowest poverty headcount in LAC with just 9 percent of households below the US\$2 poverty line.
2. The country's high income and low poverty levels are just a reflection of good growth performance in recent years. Over the 1990-2007 period, Costa Rica averaged GDP growth of 5.2 percent, a rate that allowed the country to double its GDP in less than 14 years. This performance was due first to appropriate macroeconomic management, and second to the successful implementation of an export (goods and services) led growth strategy. In this way, the country's productive structure was effectively transformed from one based on primary products to a (high-tech) manufacturing hub and a mecca for ecotourism.
3. However, there are still important areas for improvement. . Despite significant achievements and being reasonably well-endowed in terms of institutions, human capital, rule of law, capital, and natural resources (tourism related), there are a number of critical aspects that appear to be limiting the growth potential of the country, which are no doubt responsible for the growth rates observed in the last few years. Perhaps more importantly, these aspects could have a significant adverse effect on Costa Rica's future performance and its ability to join the club of countries that have successfully made the transition from developing to developed status.
4. Compounding the need to address constraints to future growth, it is now also imperative to address the impact of the current global financial and economic crisis. GDP growth in Costa Rica is estimated to have dropped from 6.8 percent in 2007 to 2.6 percent in 2008 and is expected to contract by perhaps more than 1.5 percent in 2009. Somewhat paradoxically, despite its stronger fundamentals, Costa Rica is likely to feel the effects of the crisis more acutely than most of its Central American neighbors because of its greater dependence on the global economy.
5. This report is a contribution to those efforts. Based on multiple data sources, it assesses the main obstacles that affect private sector growth in Costa Rica and provides policy options and targeted interventions for improving the business environment and increasing competitiveness, with the goal of achieving sustained and broad-based growth. In this regard, the main focus of the report is on the long-term instead of on cyclical issues.
6. Given that Costa Rica's growth and economic development is driven by exports, this report puts a strong emphasis on the determinants of export performance and on policy actions to address identified obstacles. A detailed analysis of export values, firms, products, and destinations reveals that entrance into export markets is not the biggest obstacle faced by firms but rather the survival in export activities. Therefore, the report focuses on policies that could make firms more productive and competitive to survive the test of exporting.

7. This report outlines a program to address the critical bottlenecks that hamper Costa Rica in diverse fields including infrastructure, technological innovation and quality, human capital, red tape, and access to credit. The result is a rich and encompassing agenda. While all of the recommendations should improve the performance of the Costa Rican economy, a few stand out as having the highest potential impact. The top five actions most likely to have the greatest impact are:

- First, make competitiveness a high priority and a “*política de estado*” by establishing a competitiveness ministry by law, rather than by decree as it is now. This would strongly signal the Government’s absolute commitment to the issue and allow for greater coordination among the various governmental departments.
- Second, award a concession of the Limon-Moin Port, transforming it into a best-practice operation, logistic center, and the anchor of Costa Rican exports.
- Third, transform the current Ministry of Science and Technology into an effective champion of knowledge transfer, innovation, and articulation of SMEs by revamping their programs and procedures.
- Fourth, address the dramatically high attrition rate of secondary education by improving the curriculum, strengthening teacher training programs, and expanding currently successful technical and scientific education programs.
- And fifth, establish an encompassing deregulation initiative to revise the somewhat obsolete and costly procedures that govern daily business life in Costa Rica.

8. The first recommendation of establishing a competitiveness ministry is an overarching result of this report. Implementing competitiveness reforms requires overcoming political obstacles, specifically there is a need for building political will for the reforms and for fighting institutional inertia. More so, some reforms are likely to be politically contentious because of their distributional consequences: groups that lose in the short term are often well organized and in a position to resist, while those that benefit usually do so only in the long run and are too dispersed to matter politically. Reforms are also likely to be institutionally challenging: their implementation may require coordination among diverse departments and levels of government. To face these challenges, the Government must demonstrate a strong commitment to the reforms and legally establishing a coordinating body for these activities sends a convincing signal.

9. The second recommendation is awarding a concession for the Limon-Moin Port. This stands out among the various recommendations related to infrastructure as having the highest potential for impacting productivity. The severe inefficiencies at the Limon-Moin Port are proving to be a critical bottleneck to Costa Rican exports, particularly considering that 90 percent of Costa Rica’s container sea traffic goes through this port. Occupancy rates at the docks have been very high and this led to an average 13.6 hour wait time per ship in 2007. The report recommends developing a new organizational structure for the port that will impact the entire logistic chain and reduce costs to users. Although the report acknowledges that the political difficulty in addressing the port’s weaknesses could be very high, it also argues awarding a concession or several for different parts of the port should increase efficiency dramatically.

10. The third recommendation is to transform the Ministry of Science and Technology (MICIT). This is important given that innovative firms are a critical source of future export and productivity growth and more generally, of products. Faced with intense global competition, not to mention the current economic crisis, Costa Rican firms must innovate not only to survive but also to prosper. In this way, MICIT's programs to promote knowledge transfer, innovation, and articulation of SMEs should be aggressively improved and revamped. The *Fondo Propyme* holds promise, for instance, but it has not reached a critical mass of firms to date. MICIT should coordinate closely with other relevant ministries, including economy, energy, agriculture, and education, as well as the private sector, in the design and execution of programs to promote knowledge transfer and knowledge generation. Programs should encourage linkages between firms and academia/research institutions. If done right, MICIT can be the guiding force to secure the much needed productive/social integration of SMEs into the mainstream of the economy.

11. The fourth recommendation focuses on the need to address the high rate of attrition in secondary education as this appears as one of the most critical human capital impediments to competitiveness. Costa Rica has alarming failure, grade repetition, and dropout rates at the secondary school level – all of which are interrelated. Currently, only 1/3 of students who enter 7th grade will successfully conclude secondary school. This situation not only has serious individual and social ramifications, but also costs the nation close to 0.5 percent of GDP each year. The high failure and dropout rates are related to lack of quality and relevance in secondary education; it would be critical to modernize the curriculum and evaluation systems, strengthen fields important to competitiveness (e.g. science and math), improve teacher training programs, and expand the currently successful technical and scientific education programs.

12. The final recommendation of establishing a comprehensive deregulation initiative covers a variety of aspects that should improve the business climate. There is no doubt that improvements to the business climate increases productivity and Costa Rica could make huge advances in this field. The Doing Business 2009 report ranked Costa Rica 117 out of 180 countries, suggesting its business regulation procedures were not efficient compared to most countries. Among the individual measures, particularly concerning were its deteriorating performance in starting a business, getting credit, and trading across borders.

# COMPETITIVENESS IN COSTA RICA

## I. Introduction

1. Costa Rica is a clear success story. The country enjoys the highest standard of living in Central America and one of the highest in Latin America and the Caribbean (LAC). Not surprisingly, poverty levels are among the lowest in LAC. Indeed in 2004, Costa Rica had the second lowest poverty headcount in LAC with just 9 percent of households (about half of the regional average) below the US\$2 poverty line.
2. The country's high income and low poverty levels are just a reflection of good growth performance in recent years. Over the 1990-2007 period, Costa Rica averaged GDP growth of 5.2 percent, a rate that allowed the country to double its GDP in less than 14 years. This performance was due first to appropriate macroeconomic management, and second to the successful implementation of an export (goods and services) led growth strategy. In this way, the country's productive structure was effectively transformed from one based on primary products to a (high-tech) manufacturing hub and a mecca for ecotourism.
3. Despite significant achievements and being reasonably well-endowed in terms of institutions, human capital, rule of law, capital, and natural resources (tourism related), there are a number of critical aspects that appear to be limiting the growth potential of the country, which are no doubt responsible for the growth rates observed in the last few years. Perhaps more importantly, these aspects could have a significant adverse effect on Costa Rica's future performance and its ability to join the club of countries that have successfully made the transition from developing to developed status.
4. Compounding the need to address constraints to future growth, it is now also imperative to address the impact of the current global financial and economic crisis. GDP growth in Costa Rica is estimated to have dropped from 6.8 percent in 2007 to 2.6 percent in 2008 and is expected to contract by perhaps more than 1.5 percent in 2009. Somewhat paradoxically, despite its stronger fundamentals, Costa Rica is likely to feel the effects of the crisis more acutely than most of its Central American neighbors because of its greater dependence on the global economy.
5. This report is a contribution to those efforts. Based on multiple data sources, it assesses the main obstacles that affect private sector growth in Costa Rica and provides policy options and targeted interventions for improving the business environment and increasing competitiveness, with the goal of achieving sustained and broad-based growth. In this regard, the main focus of the report is on the long-term instead of on cyclical issues.
6. This report outlines a program to address the critical bottlenecks that hamper Costa Rica in diverse fields including infrastructure, technological innovation and quality, human capital, red tape, and access to credit. The result is a rich and encompassing agenda.

7. The rest of the report is structured in the following way. In section II, the report diagnoses the principal obstacles to export growth and of competitiveness in Costa Rica. The diagnostics reveal 4 areas most in need of reform: infrastructure, human capital and innovation, business regulation, and access to finance. Sections III to VI cover each of these areas. Finally, the report closes with a section on conclusions and recommendations.

## **II. Trade, competitiveness, and growth**

8. Costa Rica's growth and economic development is driven by exports of both goods and services (especially tourism). This is not surprising given the size of the country and the difficulties associated with exploiting economies of scale. Indeed, according to a recent study by the World Bank<sup>1</sup>, companies that export are more productive (and pay higher salaries), which suggests that expanding the export sector will accelerate economic growth.

9. However, a critical question is whether exporter premiums are the result of self-selection (better firms become exporters) or learning by exporting (firms become better by exporting). This question is important because the type of policies that should be executed to augment the export base are radically different if the answer is that export premiums are the result of self-selection (in which case public policies should focus on improving the business climate in general) or whether they are the result of learning through exporting (in which case policies should focus principally on promoting exporting). Clearly, these two hypotheses are not mutually exclusive and it is possible to see both in practice.

10. In this sense, the study from Fajnzylber, Guasch, and Lopez (2009) demonstrates that self-selection is more generally observed. In general, exporting firms were more productive than their non-exporting counterparts before entering the export market. However, it is also certain that in a large number of cases the productivity of firms grew faster after entering the export market than that of non-exporting firms. The study indicates that the likelihood of learning by exporting is higher in smaller economies, such as Costa Rica, since firms can exploit economies of scale not available by just operating in the domestic market. The first finding on self-selection points to the importance of increasing productivity of firms so they are able to enter and stay in export markets. The other finding on learning by exporting is significant for Costa Rica and draws attention to the need for policies that help firms survive in the export market because this will eventually lead to productivity gains.

11. What do we know about the dynamic structure of Costa Rican exports? An analysis of firm export behavior between 1997 and 2007 suggests that the principal problem is not entering the export market, but rather surviving the competitive test of exporting - over 40 percent of firms exited export activities after just one year. While attrition rates are usually notable, the levels here are significantly higher than the usual norm in other countries. The usual suspected obstacles to export growth, such as the inability of small firms to enter exporting activities or to grow their exports, are probably not the current binding constraints. In fact, the smallest exporting firms experienced the fastest growth in their export values. Overall, however, Costa

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<sup>1</sup> Fajnzylber, Pablo, Jose L. Guasch, and Humberto Lopez. *Does the Investment Climate Matter?* The World Bank. 2009.

Rica's export growth was not stellar when compared to other countries, and even less so without the contributions of two large multinational corporations (Intel and Abbott).

12. During the studied period, export growth was primarily due to the exports of existing and relatively large firms. This incumbent-export dominance was accompanied by high firm and product turnover rates. As a result, by 2007 almost 60 percent of Costa Rican exports were due to incumbent firms exporting products that were not originally exported in 1997. The long-term contribution of new firms and new products separately was small, totaling less than 8 percent of total exports in 2007. Finally, product turnover was associated with declining unit values and increases in the marginal costs of distance to export markets. The long and short of export growth in Costa Rica since 1997 is a story about rich firm dynamics, where small firms do not seem to face severe obstacles to entry into export activities, but the obstacles seem to lie behind the border and Costa Rica's main challenge is thus to ensure that firms can survive the competitive test of exporting.

13. These findings emphasize the importance of increasing the productivity and competitiveness of firms. In terms of policies, they suggest that export promotion and industrial policies need not be reformed to focus on export-entry costs for small or medium enterprises, but could emphasize general firm productivity and innovation so as to enhance firms' ability to survive the test of exporting. Moreover, policies to reduce international transport and logistics costs could aid future export growth.

## **II.1 Competitiveness Diagnostics**

14. The preceding discussion demonstrated that improvements to competitiveness and productivity are critical elements for accelerating export-based growth. But what should be the areas of focus? To respond to this question, this report employs a variety of diagnostic tools. There is a growing body of analytical tools and information to identify priorities with greater precision, such as:

- Surveys of investors;
- Detailed benchmarking data;
- Impact analysis based on both macro and firm-level data;
- The growth diagnostic methodology, based on market information about prices and return on investments (Hausmann, Rodrik, and Velasco 2005); and
- Value chain analyses.

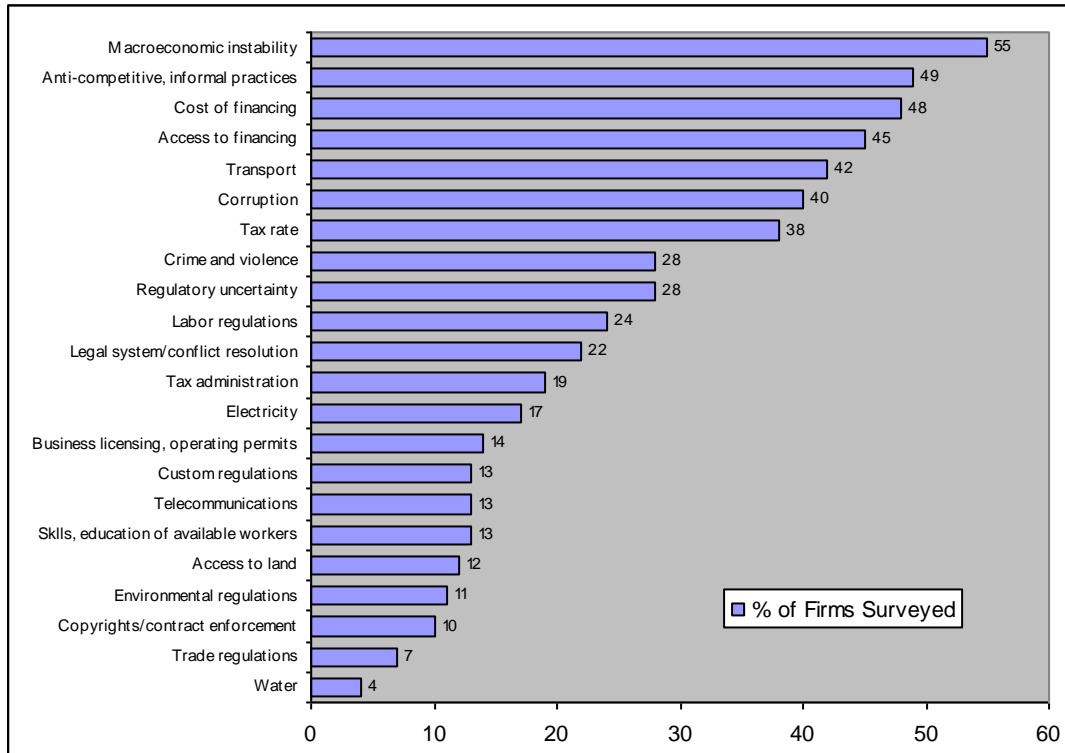
The following sections detail the results of these analyses.

### **II.1.a Business Surveys**

15. Two of the most comprehensive and recent surveys in Costa Rica were the Investment Climate Survey, carried out in 2006 covering 500 firms, and the survey carried out by the Costa Rican business association (UCCAEP) in 2007, with more than 500 firms. Firms surveyed through the Investment Climate Survey in 2005 identified macroeconomic instability, anti-competitive and informal practices, and cost and access to financing as major obstacles to growth in Costa Rica. A five-point scale was used, ranging from "extremely severe" to "not important".

Figure 1 displays the results from manufacturing firms that indicated which constraints were “major” or “very severe.”

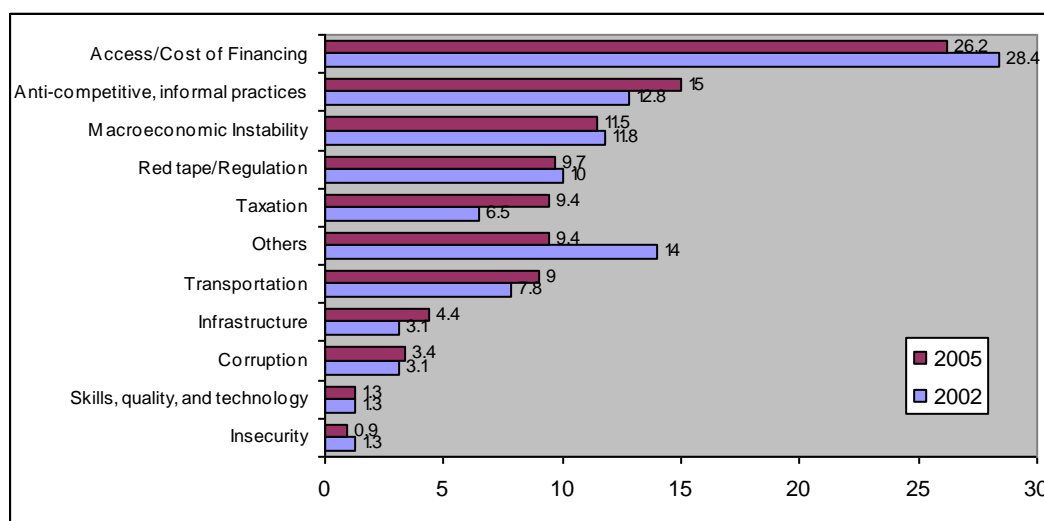
**Figure 1: Investment Climate Constraint rated as “Major” or “Very severe,” percent of firms**



Source: Costa Rica ICS 2005

16. When asked about their main obstacle to growth, access/cost of financing was noted by 26 percent of firms, compared with 15 percent of firms noting “anti-competitive, informal practices” and 11 percent choosing macroeconomic stability (Figure 2). Access to finance is a more pressing concern for micro firms than for larger firms, with 1.7 times more micro-entrepreneurs citing access to finance as a major or very severe constraint.

**Figure 2: Firm's Main Obstacle to Growth, percent of firms surveyed**



Source: Costa Rica ICS 2005

17. Surveyed firms identified transport and infrastructure as categories that worsened between 2002 and 2005. Of all the manufacturing firms surveyed, 52 percent reported that infrastructure was a major or severe constraint to growth. When asked in detail, 40 percent of firms cited road quality as a major obstacle.

18. The ICA reports that even though Costa Rica's endowment of infrastructure is comparatively much better than neighboring countries - underinvestment, lack of innovation, limited private sector participation, and weak regulation are hurting infrastructure quality. Given that Costa Rica is dependent on an export-led growth strategy, poor infrastructure is particularly worrisome since it damages firms' competitiveness in the global market. Bottlenecks preventing the movement of goods or high logistic costs reduce opportunities for greater international integration for Costa Rican firms.

19. A survey of firms completed in February 2008 by the UCCAEP identified the 10 major impediments to Costa Rica's economic and social development. Strictly speaking, the obstacles highlighted were not ranked; however, the order chosen to present them reflects to a certain extent the sense of importance or urgency of the business community. In general terms, the main obstacles listed were infrastructure, especially energy and transportation; security; education; and cumbersome governmental processes.<sup>2</sup>

### II.1.b Benchmarking

20. The World Bank's Doing Business rankings identified shortcomings for Costa Rica's business regulation, a key element of its competitiveness. Costa Rica's overall ranking improved one place (from 118 to 117) between the Doing Business 2008 and 2009 reports. However, the country's ranking in several key categories dropped over the last year and it continues to receive low rankings in other categories. Among the processes where Costa Rica ranked poorly overall

<sup>2</sup> The other topics mentioned are: competitiveness of micro, small, and medium enterprises; macroeconomic stability; labor legislation; environmental norms; and governance.

were starting a business (123), dealing with construction permits (123), protecting investors (164), paying taxes (152), and enforcing contracts (132). Particularly troubling are its drops in starting a business, getting credit, and trading across borders. These drops indicate a faltering performance that could hurt the country’s position as an attractive place for business, even within Central America. (See Table 1)

**Table 1: Summary of Doing Business 2008 and 2009 rankings**

	2008	2009
<b>Overall Ranking</b>	<b>118</b>	<b>117</b>
1. Starting a business	116	123
2. Dealing with construction permits	117	123
3. Employing workers	76	77
4. Protecting Investors	161	164
5. Paying Taxes	164	152
6. Enforcing Contracts	131	132
7. Registering Property	42	45
8. Getting Credit	51	59
9. Trading Across Borders	82	94
10. Closing a Business	107	98

Note: Ranks are out of 181 countries. 2008 numbers are updated to include the 3 new countries for 2009 and changes in the methodology.

Source: World Bank (2008), Doing Business database

21. The World Economic Forum’s 2008-2009 Global Competitiveness Report cites Costa Rica as a success story in competitiveness in Central America. In their ranking, Costa Rica has gained an impressive 9 places since 2006. The report states that the reasons for this are its “fairly efficient institutions, relatively good primary and higher educational systems, flexible labor markets, and the impressive sophistication and capacity for innovation displayed by its business sector.”

22. The report also identifies key bottlenecks, specifically infrastructure. Among the worst performers within infrastructure are the quality of roads, railroads, and ports. Confirming the severity of infrastructure concerns, as part of the report, 20.5 percent of respondents to the World Economic Forum’s executive survey cited infrastructure as the most problematic factor for doing business, ranking second to inefficient government bureaucracy.

### **II.1.c Impact Analysis**

23. In their study, Fajnzylber, Guasch, and López (2009) found that improvements in a country’s investment climate lead to significant gains in labor productivity. Using a broad definition of investment climate, the authors measure its quality through determinants of governance, the regulatory framework, infrastructure, finance, and human capital and technology. The increases in labor productivity that would occur in Costa Rica if it had the investment climate of two best practice countries would be dramatic. If Costa Rica had the same investment climate as Ireland, its labor productivity would improve more than 80 percent. With Chile’s investment climate, its labor productivity would increase at least 40 percent. Productivity gains are measured as sales per worker.

24. When the authors of the study analyzed which of the investment climate factors could produce the greatest productivity gains and have the most potential for improvement given the country context, improvements in bureaucratic processes emerged as the factor with the greatest potential. Other areas with potential are access to finance and infrastructure.

#### **II.1.d Growth Diagnostic**

25. The growth diagnostic approach developed by Hausmann, Rodrik, and Velasco (2005) proposes that reform policies that focus on one or two binding constraints are more effective at improving an economy's performance than completing a laundry list of reforms to address all of a country's woes. Historically the blanket approach of reform has had mixed success and this approach theorizes that a variety of reforms can interact poorly and create unintended distortions. Therefore, the authors proposed a diagnostic for identifying the largest obstacle, which in turn will help formulate more effective reform. The diagnostic framework they developed is based on the theory that income is a function of savings and investment effort, appropriability and productivity.

26. Return on capital is a function of several factors including: savings, human capital, and infrastructure. Defects of each factor are detected through specific symptoms evident in the economy. The analysis found that returns to savings and human capital are not low, meaning neither of these factors are likely Costa Rica's binding constraint. However, infrastructure is noted as an important constraint in the ICS surveys, the Decalogo Empresarial, and the Global Competitiveness Index. The concurrence of results between hard data and opinions of business executives points to infrastructure as a major binding constraint.

27. Besides savings, other factors that reduce the fruits of investment can inhibit investment efforts. The factors Hausmann, Rodrick, and Velasco cite that reduce appropriability are high taxation rates, macroeconomic instability, poorly defined property rights, and political stability. Market failures, such as information externalities, can also deter investment. Although there are some weaknesses in government policy that could inhibit growth, such as relatively weak enforcement of property rights, Costa Rica boasts the longest running civilian democracy in the region and many studies credit this as a chief reason behind its growth. Market failures for Costa Rica can be measured in its capacity for innovation. The analysis found that Costa Rica's limited capacity for innovation can be seen in its poor performance in creating sustainable export products.

28. Inadequate access to finance can limit firms' ability to invest in new products or processes – important factors for growth and competitiveness. Hausmann, Rodrick, and Velasco identify high interest rates as a symptom indicating access to finance is a constraint. The interest rate spread is approximately 6.4 percentage points, ranking Costa Rica 81st in the Global Competitiveness Report. This large spread puts Costa Rica behind Chile, Panama, El Salvador, and other countries in the region.

## **II.1.e Value Chains**

29. In Costa Rica, the importance of exports to growth makes value chain analyses particularly important. Value chain analyses have already been completed that look at mango chains, pineapple exports, and other agribusiness. By examining the chains as a whole, the analyses identify key binding constraints for expanding the industries.

30. The key elements of value chain analysis—market analysis, value chain mapping, measuring performance and benchmarking, and analysis of performance gaps—call attention to the major bottlenecks in a given chain. The clearest example of how the Government can help is through addressing a major government failure—weak infrastructure. Decreasing the costs and time for logistics would mean goods could move more efficiently and overall quality would likely improve. Facilitating customs or easing customs, part of “soft” infrastructure, are also actions Government could take to speed up trade. Moving products quickly is particularly important for perishable agricultural products. The Government could also encourage investment in cold-chain infrastructure, such as refrigerated warehouses, to diminish the urgency for suppliers to sell their produce. Finally, to increase the integration of larger numbers of small and medium enterprises (SMEs), it is critical to facilitate the adoption of proper standards and quality.

31. Although difficulties in initiating exporting were not identified as major constraints above, public policies could help these agricultural sectors (and others) maintain a competitive edge in international markets. The Government could provide information on how to obtain international certifications to agents along the value chain. For entry or expansion into both domestic and international markets, the Government could provide market research particularly on consumer demand. Since this research is costly and yields positive externalities, it is appropriate for the Government to assist chain actors.

32. The mentioned value chains are all buyer-driven, which is often the case in agricultural sectors. Government policies that work to improve auxiliary processes, such as financial management, could increase the bargaining power of suppliers. Also, improved coordination through increased vertical and horizontal integration should lead to efficiency gains. Policies could facilitate integration and shift bargaining power back to the suppliers. All of the chains reviewed were agriculturally based; the recommendations would likely be different for manufacturing, technology, or service chains. The conclusions indicate that there is a role for the Government to make investments and enact policies that improve the quality of value chains and aid overall competitiveness.

## **II.2 Conclusion**

33. What can one conclude by reviewing the preceding analyses? In the first place, one can conclude that there is a certain degree of consensus on the role that infrastructure plays as a barrier to competitiveness and growth. A second area that emerges as problematic is related to inefficient government processes. However, problems with access to finance, education, and innovation also come out as important findings (a summary of the results of the different analyses and their specific sources are listed in Table 2). Each of these challenges is discussed individually in the sections that follow.

**Table 2: Results from Diagnostics**

Analytical Tool	Source	Priority Areas
Surveys	ICS	Macroeconomic instability, anticompetitive and informal practices, cost and access to financing, infrastructure
	UCCAEP	Infrastructure (energy and transport), security, education, government processes
Benchmarking	Doing Business	Starting a business, getting credit, trading across borders (logistics)
	Global Competitiveness Report	Infrastructure (logistics), inefficient government processes
Impact Analysis	Productivity Analysis	Inefficient government processes, investment climate, infrastructure
Growth Diagnostic	Hausmann/Rodrick/Velasco Methodology	Infrastructure, innovation
Value Chain Analysis	Value Chain Studies	Infrastructure, quality of goods (innovation)












### III. The Infrastructure Challenge

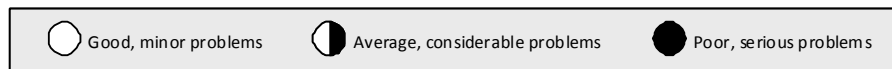
34. The diagnostics performed for this study indicate that deficiencies associated with infrastructure are a major binding constraint to Costa Rica's competitiveness. A number of the surveys and studies, including the value chain analyses, highlight transport and logistics issues as the area in greatest need of reform within infrastructure. Particularly given Costa Rica's dependence on foreign trade, these shortcomings are beginning to take a toll on the country's competitiveness and attractiveness as a place to invest and do business.

35. Different indicators used for measuring logistics performance in Costa Rica demonstrate mediocre results. The Logistics Perception Index (LPI)—probably the best indicator for measuring logistics performance in a country - ranks Costa Rica as number 72 out of a total of 150 countries. The most serious problems that are highlighted by the sub-indices (those that tend to worsen a country's ranking) are linked to the organization of logistics services.

36. The main problems affecting logistics performance are summarized in Figure 3 below.

**Figure 3: Logistics Performance**

<b>INTERNAL TRANSPORT</b>	<b>Highways</b>		Highways in deficient condition, low efficiency trucks, high fees to users.
	<b>Railways</b>	-	Minimum freight services
<b>TRANSFER NODES</b>	<b>Ports</b>		Low efficiency; do not fulfill functions, serious in Limon-Moin, affecting the entire value-chain
	<b>Airports</b>		Juan Santamaria International Airport operates cargos, with room for improvements. Potential in Liberia
	<b>Border Checkpoints</b>		Serious problems in the north; long waits. Poor procedures and infrastructure
<b>EXTERNAL TRANSPORT</b>	<b>Sea</b>		Ports suffer from lack of dredging, lack of cranes, inefficient operations
	<b>Air</b>		No significant problems, with opportunities for improvements
	<b>Land</b>		Companies function well; problems at border checkpoints
<b>BUSINESS LOGISTICS</b>	<b>Managing Supply Chains</b>		Large companies are well organized; there is ample space for improving SMEs
	<b>Logistics Operators</b>		Transport companies do not incorporate logistics functions
<b>TRADE FACILITATION</b>	<b>Inspection</b>		Intermediate performance; need to improve systems and unify inspections
	<b>Security</b>		Problems due to robberies of highway transporters



37. Specific problems affecting each of the three main foreign trade circuits are:

- i. *Trade via sea ports:* A structural problem exists in relation to the organization of activities, which in turn alters the organization of logistics chains and reduces their efficiency. The organization of port activities fragments operations, greatly limiting the scale economies that need the services of an integrated maritime terminal, and imposing a series of additional movements. The problem is most severe in Limon-Moin, the largest port. The flaws of this port model have affected the decisions being made by shipping companies that utilize the nation's ports and have reduced the efficiency of internal logistics.
- ii. *Trade via border checkpoints:* There are excessive delays at Peñas Blancas (the main link to the rest of Central America) and frequent armed robberies on the highway, to the point that some freight is being shifted to air transport. It is worth noting that goods produced by SMEs account for a large percentage of exports utilizing highway transport.
- iii. *Trade via the San Jose Airport:* There are fewer problems, but improvements are possible. Urban congestion increases transit time and reduces the reliability of receiving freight at the airport. There are options for improving this circuit, such as mitigating urban congestion and developing a freight terminal at the Juan Santamaria Airport.

### III.1 Causes of the problems

38. The inadequacy of the port organizational model—and its upstream and downstream effects on the logistics chain— has been identified as a key factor contributing to the nation’s weak logistics performance, along with limited private sector participation and institutional weaknesses. These three factors are also interrelated.

- *The port organizational model*, managing a public port as a “tool port”, has impeded the modernization of management operations and the maintenance of adequate depths and attractive mooring sites. It has promoted the fragmentation of container yard functions, and has therefore altered the local market of logistics services.
- *Limited participation of the private sector*: The concessions law has allowed private operation of a port and a highway, and it is hoped that additional concessions will be awarded in the near future.
- *Institutional weaknesses*: The institutions responsible for infrastructure services are generally weak in terms of their human resources. They are also fragmented and lack coordination with each other.

39. The poor performance of the Limon-Moin complex has been analyzed extensively and has been highlighted in various studies carried out in recent years. Comparisons of service indicators for this port complex—where 90% of Costa Rica’s sea container traffic is concentrated—are clearly unfavorable. Most of the movement of containers between ships and the docks is conducted with ship cranes, rather than port cranes. Occupancy rates have been very high (around 75%, and close to 90% at the docks most in demand), which translated into an average 13.6 hour wait time per ship in 2007.

### III.2 Recommendations

40. Faced with a reduction of maritime shipping, the costs of internal logistics will take on a greater significance. Freightage costs between China and North America and between China and Europe have dropped significantly, reducing Costa Rica’s geographic advantage with respect to both markets (the main recipients of its exports).

41. In this context, three general actions are proposed to improve logistics performance, all in response to the factors that are causing the main problems.

- i. Promote an efficient model of port organization that is geared toward competition*
  - Developing a new organizational structure for ports in the Atlantic coast is critical to modifying the current organization of logistics, and also reducing the costs to users.
  - In addition to awarding a concession for operating part of the current infrastructure at Limon and Moin, the option of developing a new private port should also be seriously considered. The market, now close to one million TEUs annually, has room for two competing terminals without negatively impacting scale economies. This change would require adaptation of laws as well.
  - The varied impacts that an “upstream and downstream” port model has on the logistics chain should be kept in mind.

- ii. *Foster greater private sector participation in the provision of infrastructure services*
  - Some progress is being made in this respect, but it needs to be greater. There is a lot of room for continuing to expand the private role in ports, airports and highways.
  - Third-party road maintenance modalities should be considered, which would reduce the risk that the road network will deteriorate again as it did in recent years.
- iii. *Strengthen public institutions and improve their coordination*
  - The areas with direct responsibility need stable and qualified technical teams; the importance given to logistics problems needs to be matched by the allocation of resources for their management.

42. A series of more specific actions have been defined for pursuing these three general goals. The highest priority actions are detailed in Table 3:

**Table 3: Main logistics actions proposed**

<b>PROPOSAL</b>	<b>DESCRIPTION</b>
Proceed in the process of awarding a port concession in the Atlantic (Limon-Moin), prioritizing efficiency and competition.	The specific decision will be key; its impact on the market of logistics services should be strengthened. The World Bank can contribute to the extent to which this is requested by the government.
Simplify/speed up the border checkpoint at Peñas Blancas.	Create a Supervisory Unit, related to a high level government structure (Ministry of the Treasury), to monitor services on site and propose adjustments and improvements.
Implement an aggressive security program for the highways.	Reinforce intelligence and police control, develop a crime map, and utilize computer and telecommunications technology (satellite monitoring of vehicles and cargo).
Promote the TICA system and unify inspections at a “single window.”	Proceed in implementing the “paperless” system for imports and exports at all entry and exit points for foreign trade; unify the inspections of different services.
Create a National Council on Logistics	To coordinate with the private sector and to strengthen public sector working groups and their information systems. Its first task could be to create an “observatory” for oversight of logistics costs. It could participate in decision-making about port organization in the Atlantic region, and in monitoring border checkpoints. It could promote training about logistics among public and private actors.

### **III.3 Electricity**

43. In addition to logistics, electricity provision was identified by the diagnostics as a major weakness within infrastructure. The impact of the performance of the power industry on the country’s competitiveness has become relevant over the last few years due to unexpected external and internal shocks which have significantly affected the cost and quality of service. Indeed, the system is today financially and technically unsustainable. This has led to recent blackouts and rationing, dramatic tariff increases and to a lack of investments to maintain a sustainable expansion.

44. The power sector in Costa Rica has historically provided a relatively reliable electricity service. Since its creation in 1949 and until the end of the 1990s, the electric utility Instituto Costarricense de Electricidad (ICE, including its subsidiaries) was able to develop the country's hydrologic potential effectively, maintaining an adequate reserve margin. The country achieved the second highest electrification coverage in the Latin American region - 98.6 percent as of March 2008. Even today, the system exhibits the lowest distribution losses in the region.

45. Over the last decade, however, the system has gradually weakened due to a number of internal and external factors, most notably the delay of strategic investments in generation. Despite ICE's solid performance in the past, the company has not evolved to plan efficiently and respond to the combination of internal and external shocks. Between 2001 and 2003 the actual reserve margin lowered from about 16 to 10 percent. With the increase in demand, technical problems with the existing thermal stock and the dramatic increase in fuel prices, ICE was not able to maintain minimum levels of reserve margin in 2007. Other external shocks include the increase in debt service (due to currency devaluation). As a result, limited blackouts and rationing had to be imposed in 2004 and on a more dramatic scale in 2007.

46. Targeted, more stringent energy efficiency measures may be required to lower the vulnerability of the supply-demand balance in the period 2009-2011. In addition, the tariff structure that applies to commercial and industrial users may need to be reviewed, as the pricing structure penalizes consumers with high load factors.

47. **Tariff and Subsidy Issues.** In tariffs, Costa Rican residential consumers have enjoyed one of the lowest rates in the Latin American region; while industrial and commercial users have paid tariffs similar to the average. The current tariff structure is the result of a gradual reduction of cross-subsidies from industrial and commercial users to residential users. Despite these changes, the tariff adjustment still appears to contain important cross-subsidies<sup>3</sup>. Moreover, electricity tariffs in Costa Rica still do not reflect incremental marginal costs and increasing operating costs – together with the cost of subsidies – have led to the reduction of spending on system expansion to meet demand, service quality upgrades, and on operations and asset maintenance.

48. Industrial consumers have expressed concern with regards to the high levels of uncertainty and the lack of transparency associated with tariff setting, tariff increases and subsidy allocation. Micro, small and medium enterprises are particularly affected by the current tariff structure and carry a high proportion of the subsidy burden. Although a “social tariff” is applied to explicitly target basic social activities, the subsidy to the residential sector does not necessarily assist the most poor.

49. **Investment Patterns and Financial Constraints.** ICE has traditionally financed its operations and investment through tariff collection and loans. The reduction of international concessional lending to public infrastructure projects, has led to the emergence of new contractual instruments such as the issuance of bonds through the creation of trust funds and leasing arrangements with banks. Other instruments have included strategic and public-private partnerships (PPPs) - as recently allowed by Law 8660. However, the use of these mechanisms

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<sup>3</sup> World Bank (February 2007); Costa Rica Investment Climate Assessment

has been limited and there has been an intense public debate on the merits of private sector participation and PPPs.

50. Yet, the combination of low tariffs and the lack of efficiency in planning, programming and executing projects, have prevented the timely introduction of investments necessary to sustainably maintain the system. Calculation of electricity tariffs by the Regulatory Agency of Public Services (ARESEP) in the range of 6-8 percent affects ICE's capacity to raise the capital resources necessary to keep a sustainable expansion. In addition, tariff calculation is completely "decoupled" from operating and marginal costs. ICE's efficiency in spending public resources has been acceptable for operational expenditures but relatively low for investment expenditures.

51. The possibility of private sector financing of new investments is limited. Private sector participation has been restricted to the introduction of independent power producers (IPP) and build-operate-transfer (BOT) schemes, which are bound by several constraints limiting their installed capacity. For example, IPP and BOTs cannot represent more than 30 percent of total system's installed capacity. As of November 2008, IPP/BOT schemes were contributing to about 20% of total installed capacity in the system.

52. **Legal Constraints.** The legal framework associated with the electric power industry is complex and lacks clarity in a number of crucial aspects, such as the existence of numerous laws and decrees amending laws, ruling over the different institutional, organizational, economic, financial and technical aspects of the sector. Furthermore, legal voids have been identified in priority aspects concerning the sustainability of the industry. In particular, there are four important legal constraints which affect the sustainable evolution of the system:

- The mentioned restrictions on IPP/BOT, in terms of capacity scale, type of technology and limitation to a maximum of 30% of total system installed capacity.
- No legal provision currently exists to grant water concessions to IPPs as the previous provision did prior to 2000. Consequently, as PPAs terminate and water concessions expire, about 120 MW of hydro capacity will be gradually phased out. Four proposed legal solutions have been blocked in Congress, while the last proposal advanced by the Ministry of Energy, Environment, and Telecommunications (MINAET) is now pending Congress approval.
- Despite the fact that Costa Rica has abundant renewable energy resources, more than 25 percent of the national territory has been designated as natural protected area, limiting the possibility to explore and exploit these renewable sources.
- Legal issues limit Costa Rica's ability to tap into regional electricity markets. While Costa Rica ratified the Central American Electricity System Framework Treaty in 1998, as of today the country has not been able to pass a reform of the electricity sector consistent with the principles established in the Treaty. MINAET has recently completed drafting a new Electricity Law, which would be more consistent with the Treaty, but it seems unlikely that this law will be approved in 2009. For Costa Rica, the opportunity to sell electricity during wet months to regional consumers at market prices is great, given its low cost hydroelectric capacity. Also, Costa Rica could buy firm capacity during the summer from countries like Guatemala or Honduras, whose capacity mix is characterized by a high proportion of thermal capacity.

53. **Planning, Programming, Financing and Procuring.** ICE's capacity to maintain the technical and financial sustainability of the system has been limited by the approval of budget, debt financing (with associated ceilings), tariff increases, and the clearance of planning and procurement processes by various government institutions. Another noted deficiency in ICE's performance is the lack of internal coordination among Business Strategic Units (UENs), most notably between Planning and Dispatching, and also within units in procurement, resulting in long and burdensome processes.

54. In tariff setting, there is continuous disagreement between ARESEP and ICE on the methodology and parameters applied by ARESEP. There is no clear regulatory framework to calculate tariffs and tariff subsidies. This creates a tension between ICE and ARESEP and harms the certainty associated with this crucial aspect, especially affecting commercial and industrial consumers.

### III.3.a Recommendations

55. Costa Rica should address issues related to low capacity, tariffs, private sector participation, and institutional inefficiencies. Without addressing these concerns, further rationing in the next few years is likely and the sector is unlikely to become more competitive in the region. These recommendations require coordination between all involved actors, including ICE, ARESEP, and MINAET.

56. **Capacity Crunch.** Among the policies recommended for reducing the capacity crunch are to strengthen energy efficiency measures and to solve legal bottlenecks related to water concessions for hydropower. For energy efficiency measures, specific suggestions include creating equipment regulating standards, building codes, and new energy efficiency financing mechanisms. Also, the Government should implement a Crises Management Strategy to lower the social and economic impacts of rationing.

57. **Tariff Setting.** In order to reduce uncertainty in tariff changes, it is recommended to implement a program to schedule changes. The tariff structure should be reviewed to ensure that it is promoting sound demand side management measures. Most importantly, the structure should be efficient, transparent, and accountable. To promote this, the government should, among other actions, conduct an assessment for efficient subsidy targeting and increase effective tariffs to cost recovery levels for each category of consumers.

58. **Private Sector Participation.** The government should work to reduce legal constraints for the development of IPPs, improve administrative efficiency, and improve contract design. Among specific policies, it is important to create an inter-institutional working group to help solve legal barriers to IPP operation and development, implement a fast track planning and approval of IPP and PPP projects, and improve power purchase agreement design to avoid disputes on price and other conditions.

59. **Structural Issues.** These recommendations are primarily to increase the efficiency and coordination of ICE and ARESEP. ICE should improve its coordination between the planning and the dispatching units. ARESEP should monitor more closely progress in the execution of

planned projects (especially those aimed at serving the system in the short term) and disclose progress in performance indicators.

## **IV. The Human Capital and Innovation Challenge**

### **IV.1 Education**

60. As noted in the diagnostic, the Costa Rican business association (UCCAEP) identified education as an obstacle to competitiveness. Although Costa Rica has made considerable advances in its educational system and its literacy rates are among the highest in the region, the country still faces important challenges with respect to secondary and tertiary education completion rates and quality, as well as the operation of its National Learning Institute. The UCCAEP particularly mentioned that programs designed to keep secondary students in school should be expanded and more private sector participation is needed to supply training in higher and technical education.

#### **IV.1.a Secondary Education**

61. Costa Rica has alarming failure, grade repetition and dropout rates at the secondary school level. This situation not only has serious individual and social ramifications, but also costs the nation close to 0.5% of the GDP each year. Currently only 1/3 of students who enter 7th grade successfully conclude secondary school. Costa Rica has a very high rate of primary school attendance and a high promotion rate from primary to secondary school. Nonetheless, grade failure rates are very high in secondary education, generating high rates of grade repetition (initially) and dropouts (ultimately) among secondary school students. For example, the failure rate in 2007 was 27.2% for the seventh grade and 24.2% for the tenth grade. A 2008 change in administrative policy made the conditions for grade promotion more lenient, and seems to have had significant effect on dropouts, especially in seventh grade, making clear the link between failure, repetition and dropout. After stagnating for several years, the gross enrollment rate jumped from 79.4% to 82.7% in 2009, probably as a result of this change. However, while this administrative measure may prevent some students from failing and dropping out, it is also necessary to address the root causes of grade failure for the large group of students who do not come close to passing.

62. One of the main shortcomings of the academic branch of the secondary education system appears to be the lack of quality and pertinence, which are associated with outdated curricula and evaluation systems, and poor teacher training. In addition and linked to this, not enough students are being adequately trained in fields that are highly relevant to the nation's competitiveness, such as math, science, and technical programs. This has contributed to an oversupply of professionals in the social sciences, law, and administration, while there is a shortage of technicians, scientists, and engineers.

63. The technical/vocational branch—as opposed to the academic branch—of the secondary education system has untapped potential. Technical programs are closely linked to the needs of the labor market and include practical courses in areas such as computer science and electronics. A recent survey found that 84% of businessmen are highly satisfied by the performance of apprentices from technical schools. Only 19% of students enrolled in secondary education

programs are in the technical/vocational branch in Costa Rica. This number is low relative to comparator countries such as Chile (43%), Panama (55%), Austria (72%), and Israel (35%).

#### **IV.1.b Higher Education**

64. Costa Rica has 5 state universities, approximately 50 private universities, and roughly 60 other higher education institutions (the US equivalent of community colleges/vocational university programs). Despite this relatively high number of schools, the percentage of the population aged 25 or older with complete higher/university education in Costa Rica is low (6%) compared with countries like Chile (11%), Colombia (10%), and Mexico (9%). Moreover, gross enrollment in tertiary education barely increased between 1985 (22%) and 2006 (25%). The uncontrolled proliferation of private universities has led to a situation of confusion regarding the qualifications of graduates. The National Accreditation System for Higher Education (SINAES) has not been effective at monitoring the quality of university level, as its scope never expanded beyond a pilot level, and few incentives are in place for generating demand for accreditation.

65. Costa Rica produces relatively few science and engineering graduates, limiting the country's competitiveness. University students are concentrated in education, social sciences, law, economics, and administration. Only 13% of graduates are in the fields of engineering or basic sciences, compared to 20-25% in Chile, Colombia, Mexico, Spain, Germany and Australia, and almost 40% in Korea. Approximately 74% of graduates are in the areas of education and social sciences, which is higher than in all of the other countries surveyed. Yet, comparisons of labor supply and demand—i.e. job advertisements in different fields versus degrees awarded—find that students with degrees related to computer science and engineering are in great demand.

#### **IV.1.c National Learning Institute**

66. The National Learning Institute (INA) is an autonomous, public institution that has offered vocational training nationwide since 1965 to all sectors of the economy. It is aimed at people over 15 years of age, apprentices, and workers receiving in-service training. INA offers programs related to all of Costa Rica's productive sectors through five types of services: labor skills training plans and programs, technical training programs and modules, technical assistance (for specific worker and/or business needs), certification of labor skills (regardless of how they have been acquired), and accreditation of technical training programs provided by individuals or corporations (33 institutions are currently certified by INA).

67. In 2007, INA had 177,488 people enrolled in its vocational and technical training programs and enrollment increased 218% between 2000 and 2007. Despite this progress, INA still does not generate a sufficient number of trained technicians to satisfy demand from the productive sector. INA lacks sufficient infrastructure and training staff to graduate a larger number of technicians in key areas related to the nation's economic development. This is somewhat surprising given that it has run huge budget surpluses in recent years. In 2008, the budget surplus was 130% of its disbursements for that year.

68. The private sector has limited input into INA's service offering. According to INA's charter, it should have consultative liaison committees (by profession or region), with both business and worker representatives. However, businessmen surveyed indicate that they do not

participate sufficiently in INA's decisions. They are dissatisfied with INA's performance and expect better coverage, diversity and opportunity. Limited practical links with companies reduces coherence between the technical training program and the needs of the labor market.

#### **IV.1.d Recommendations**

69. **Secondary Education.** Costa Rica must improve the quality and pertinence of its secondary education system, with a focus on reducing dropout rates, improving student performance, and training students for the demands of tomorrow's labor market. Possible ways to do this include improving teacher quality and strengthening science and math programs (in the academic branch) and technical/vocational programs.

70. *Improve teacher quality.* Serious questions have been raised about the quality of teacher training provided by higher education institutions, particularly some of the private universities whose quality standards are very low. The Ministry of Public Education (MEP) should impose a requirement that new teachers can only be hired if they have a degree from an accredited teaching program.

71. *Strengthen the curriculum and science and math programs.* Higher teacher quality should help improve the quality of science and math education. Investments in infrastructure—particularly with respect to science laboratories—are also needed. The current secondary curriculum is weak in math and science; making it more relevant to job market demands should encourage students to stay in school. Expanding the number of students in upper secondary science schools would also be a big step in the right direction. This would lead to an increase in the number of higher education students in high-demand fields such as engineering and the sciences.

72. *Strengthen technical/vocational programs.* Efforts should be undertaken to increase enrollment in technical/vocational programs. The occupations for which students receive training should be updated to reflect the current and future needs of Costa Rican businesses. Training for graduates of upper secondary programs could also be linked to skill certification processes.

73. **Higher Education.** There is significant room for the higher education system to improve in terms of access, quality, and relevance. Yet, the traditional financing mechanisms used in Costa Rica, combined with university autonomy, limit the government's ability to greatly influence the system. Looking for flexible financing mechanisms and other incentives to encourage improvements in university programs and performance is required.

74. *Quality and accreditation.* Costa Rica needs a better system for monitoring and ensuring the quality of its university level education. The Government itself could increase the demand for accreditation by requiring, for example, that all public sector teacher recruits be graduates from accredited teacher education programs.

75. *Student loans.* The National Commission for Education Loans (CONAPE) programs could be expanded and adjusted to: a) provide more financial aid to low income students; b) give preference to students in science, technology, and engineering at the undergraduate and graduate levels; c) give preference to students studying in accredited programs; d) promote women's participation in basic science and engineering programs; and e) promote timely conclusion of

studies through student scholarships/loans that would be forgiven if programs are finished within a certain timeframe.

76. *Results-based financing.* Results-based financing can be implemented through performance agreements and/or competitive funds with universities. Performance agreements are agreements between governments and institutions that help promote innovation and academic quality and build institutional capacities. They require performance indicators that reflect institutional and public policy objectives. With competitive funds, institutions and/or faculties compete through transparent and clear processes, presenting projects that respond to specific criteria. In Costa Rica, for example, competitive funds can be useful as an incentive to promote areas of study that are in high demand in the labor market (e.g. engineering and sciences).

77. **INA.** INA's principal challenge is to become more responsive to the needs of the private sector. Special focus should be placed on programs for which there are shortages in the labor market. INA could also diversify its training modalities, creating more up-to-date and customized courses for specific enterprises. INA should also create more and expand current links with the productive sector. Methods for doing this include developing a publicity strategy and a national job skills system jointly with the private sector. To improve its management, INA needs to identify weaknesses in its administrative and financial management systems. This process should include the design and effective implementation of a multi-annual strategic plan for using the accumulated surplus revenues.

## **IV.2 Innovation**

78. Adequate human capital is an important element in a country's capacity to create and absorb innovative technologies. This is critical since innovation is a key driver of economic development and the growth diagnostic found that Costa Rica's investment in innovation and technology is suboptimal. Studies have shown that differences in technological progress, rather than capital investment or labor growth, account for much of the widening gap between rich and poor countries. For example, Hall and Jones (1999) and Dollar and Wolf (1997) found that differences in total factor productivity (TFP), which are generally associated with technological progress, account for roughly half of the cross-country variations in per capita income and growth. Easterly and Levine (2003) argue that productivity differences largely explain global income gaps. To boost productivity, governments need to do all they can to foster an innovation-friendly business environment.

79. This report uses the term "innovation" in the broadest sense, going beyond such traditional sources of innovation as research and development (R&D). Innovation also encompasses technology absorption and the adoption and upgrading of existing products and processes. According to this definition, changes that a firm makes to improve a production process to meet a quality standard would be considered innovation.

80. The analysis finds that while Costa Rica performs well by regional standards, it generally falls behind more dynamic small economies from outside the region. Policy recommendations address the following areas: institutions, knowledge transfer, knowledge generation, quality infrastructure, links between supply and demand for innovation, and regional cooperation.

## IV.2.a Research and Development in Costa Rica

81. Costa Rica is doing well in some areas, there is still much room for improvement if the country is to move to the next stage of development and become an innovation driven economy. R&D expenditures in Costa Rica are relatively low—0.32 percent of GDP, compared with a LAC average of 0.6 percent and much higher levels in fast-growing economies such as Korea (3.2 percent), the Czech Republic (1.5 percent), and Ireland (1.3 percent)—see Figure 4. Furthermore, firms only account for 34 percent of R&D spending, compared with 65 percent in the United States. Costa Rica also seems to have relatively few researchers. As a share of the population, Costa Rica employs about one fourth the number of researchers in R&D as Mexico and 15 percent of the number in Chile. Patent generation (per million workers) is also low relative to comparator countries—less than 1/3 the level of Panama, Mexico, El Salvador, and Uruguay.

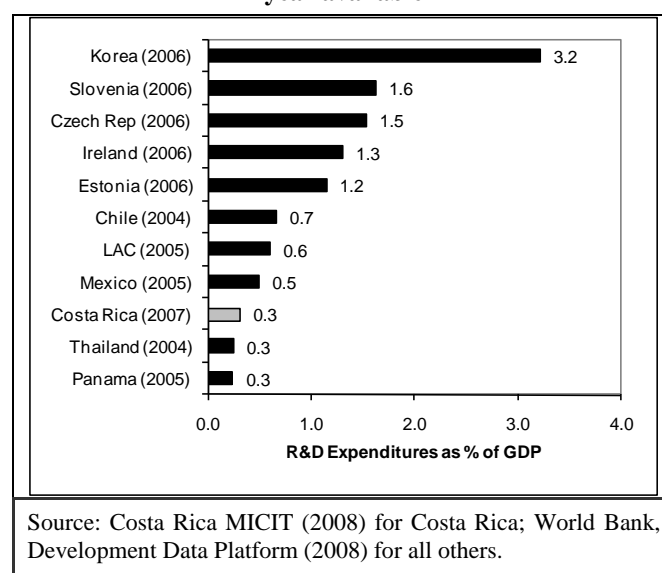
82. Enterprise Survey data show that Costa Rican firms are the most likely to introduce a major new product line of any of the comparator countries—over half of firms reported doing so in the last 3 years. When it comes to introducing new production technologies, Costa Rica falls in the middle of the pack. Twenty-nine percent of Costa Rican firms report new production technologies in the previous 3 years, compared with 62 percent in Mauritius, but only 26 percent in Portugal.

83. University-industry collaboration is a key measure of a country's innovation environment. Based on perceptions of business executives surveyed by the World Economic Forum, Costa Rica performs relatively well by Latin American standards. However, according to a recent innovation survey undertaken by Costa Rica's Ministry of Science and Technology (MICIT), only 24 percent of R&D projects in academia, the public sector, and non-profits had links to private firms. Moreover, only 6 percent of firms reported links to universities for the purpose of R&D.

## IV.2.b Recommendations

84. **Strengthen MICIT and institutional coordination.** MICIT's programs to promote knowledge transfer, innovation, and articulation of SMEs should be aggressively improved and revamped. The *Fondo Propyme* holds promise, for instance, but has failed to reach a critical mass of firms as discussed below. MICIT should coordinate closely with other relevant ministries, including economy, energy, agriculture, and education, as well as the private sector, in the design and execution of programs to promote knowledge transfer and knowledge generation. Programs should encourage linkages between firms and academia / research

Figure 4: Expenditure on R&D as a % of GDP, latest year available



institutions. If done right, MICIT can be the guiding force to secure the much needed productive/social integration of SMEs into the mainstream of the economy.

85. **Facilitate knowledge transfer.** Successful commercialization of technology in Costa Rica requires the establishment and strengthening of linkages between technology developers and those who commercialize it. These linkages are generally referred to as technology brokers. In the broadest sense these professionals or organizations are intermediaries who carry out the functions of finding technical solutions for users, finding users for new technologies, and sometimes assisting with technology packaging. Technology brokers may carry out some or all of these functions and they can range from technology transfer offices of universities or research organizations to private entities, individual technology transfer and licensing consultants, or technology innovation centers (a.k.a. *centros de innovación tecnológica* or CITES).

86. **Promote knowledge generation.** Initiatives to facilitate the creation of innovative firms and innovative projects within existing firms can include, *inter alia*, incubators, seed capital and venture capital, and matching grant programs such as *Fondo Propyme*. Costa Rica has much room to improve in the provision of all of these services.

87. Early stage investing should be driven by private sector investors given that they are normally better at gauging risk and return than the government. That said, the government can play a role in catalyzing such investment. One key to success is combining public money with private to ensure discipline in the selection of investments. Government programs can also help firms that are in the “pre-investment” stage get to the point where they can attract private capital. This can be done through technical assistance, financing of pre-feasibility studies, matching grants programs, and other mechanisms.

88. MICIT/CONICIT’s Fondo Propyme holds promise for facilitating both knowledge transfer and knowledge generation. However, to date it has not reached a critical mass of firms. The program would benefit from reforms along the following lines:

- Direct the program more explicitly toward the private sector and greatly increase publicity and advertising efforts;
- Create a technical assistance unit that can help firms develop proposals, guiding them through each step of the process;
- Undertake a comprehensive evaluation of the program and establish a permanent monitoring and evaluation mechanism;
- Dedicate part of the matching grants funds to activities that help make projects more attractive to seed and venture capitalists.

89. **Strengthen quality infrastructure.** Basic quality infrastructure in Costa Rica is well-developed by regional standards. Improvements therefore should aim to address specific bottlenecks faced by the private sector. To identify such bottlenecks, analyses of priority value chains should be undertaken. Such analyses could identify things like whether certain industries have access to: a) relevant standards; b) accredited organizations that can award quality certifications; c) entities that can calibrate specialized equipment, etc. Efforts could also focus on stimulating demand and raising awareness within the private sector about the benefits of using quality infrastructure services.

90. **Link supply and demand for innovation.** Supply and demand for knowledge and innovation tend to be disconnected. Supply emerges from the universities and public research institutions that generate knowledge, and demand comes from private enterprises that use the knowledge to boost productivity and profits. Linkages facilitate the sharing of costs, risks, and human resources between the public and private sectors. There are good examples of collaboration between universities/research centers and firms in Costa Rica, for instance in food processing. However, there is still much room for improvement. Government-sponsored initiatives to facilitate knowledge transfer and generation (e.g. Fondo Propyme) can strengthen these links. In addition, it is worth considering improving the incentives of academic researchers so that they can more easily benefit from the commercialization of their research.

91. **Consider regional cooperation.** Regional cooperation can stimulate knowledge transfer and generation. Given the size of its economy, Costa Rica will not be able to create world-class research capacity in many sectors. Collaboration with the rest of Central America, Mexico, and other countries makes sense to take advantage of economies of scale in R&D and technology transfer initiatives. Costa Rica is well-positioned to take a leadership role in such initiatives. One example could be the development of regional centers in cross-cutting sectors such as agroindustry, maquilas, and software. These centers could begin as hubs for technical knowledge, collecting information from abroad and disseminating it to firms in the region. Once they become more advanced, the centers could undertake fresh research themselves.

## V. Business Regulation

92. A recurring theme from the diagnostic tools was that inefficient government processes are a major impediment to competitiveness. This is the reason that one of the priority recommendations is to create a comprehensive deregulation initiative.

93. The quality of the investment climate clearly has a significant impact on firm productivity, efficiency, and growth. Fajnzylber, Guasch, and Lopez (2009), through their econometric analysis, found proof that improving the investment climate in Latin American countries can encourage a variety of outcomes, such as increased innovation and improved access to credit. Both the Doing Business and Investment Climate Assessment reports identify critical areas where Costa Rica could improve its business environment.

94. Costa Rica's uneven performance across the Doing Business indicators provides an idea as to what should be the priority areas. While its rankings on registering property (45), getting credit (59), and employing workers (77) are relatively high, in some other areas - protecting investors (164), paying taxes (152), and enforcing contracts (132) - Costa Rica ranks in the bottom quartile of countries.

95. The Doing Business indicators show that there is much room for reform in Costa Rica's investment climate. The Doing Business unit of the World Bank goes further and recommends specific reforms Costa Rica could undertake in 6 areas where its performance is weakest: starting a business, dealing with construction permits, trading across borders, protecting investors, paying taxes, and enforcing contracts. Most of these reforms can be implemented in the short-term

(except for some, where legislative amendments would be necessary, such as in the area of protecting investors).

## V.1 Recommendations

**Starting a business:** *Reduce the number of procedures from 12 to 6, time from 60 to 38 days, and cost from 20.5 percent of Costa Rica's GNI to 3.8 percent.*

96. In Costa Rica, entrepreneurs must go through 12 procedures, taking 60 days and costing CRC 602,514 (USD 1,141), or 20.5 percent of Costa Rica's per capita income, to start a business in San José. These indicators are too high and therefore the following measures are recommended to make starting a business in Costa Rica faster, cheaper, and less procedurally complex:

- Introduce standardized articles of association;
- Make notarization of the public deed of incorporation optional (currently notarization of incorporation documents is the most costly step in the registration process);
- Eliminate the requirement to deposit 25% of capital in a bank account prior to registration;
- Eliminate the requirement to publish a notice about the company's constitution in the official government newspaper La Gaceta;
- Eliminate the obligations to obtain a business license from the municipality and a sanitary permit for companies of low risk to public safety;<sup>4</sup>
- Eliminate the requirement to receive an inspection by the social security authority (Caja Costarricense de Seguro Social) for companies of low risk to public safety.

**Dealing with construction permits:** *Reduce the cost from 212 percent to 176 percent of Costa Rica's income per capita and substantially reduce the number of procedures and time required.*

97. On average, it takes 23 procedures, 191 days, and costs 212 percent of income per capita to obtain all necessary permits and utility connections for the construction of a warehouse in San José, following all the official requirements. The following reforms are recommended to make obtaining building permits in Costa Rica more efficient:

- Eliminate the requirement to obtain an approval of blueprints by the College of Architects and Engineers;
- Speed up project approvals from the National Environment Technical Secretary (currently it takes 60 days);
- Consolidate approvals from the Health, Water and Fire Departments into one, or eliminate them for small and mid-size commercial projects;
- Limit the number of construction inspections (currently an average construction project would undergo about 7 random inspections) by replacing random inspections during construction with inspections linked to specific stages of construction or delegating the authority to conduct inspections to certified private sector experts.

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<sup>4</sup> The *Doing Business* methodology focuses on standard domestic SMEs-retail businesses, such as t-shirt stores. The company is a limited liability company, 100% domestically owned.

**Trading across borders:** *Decrease the number of documents required for trade, and reduce the time for import and exports.*

98. In Costa Rica, goods take on average 18 days to export and 25 days to import at a cost of US \$1,050 for each. Seven documents are required for exports and eight for imports. These results rank Costa Rica 94th in the world and 16th in the region. The complexity of documentation need for trading in Costa Rica extends the time that traders spend exporting and importing goods: 50 percent of export time and 60 percent of import time is spent on preparation of documents. The following reforms are recommended to facilitate trade in Costa Rica:

- Continue ongoing reforms, including the implementation of Sistema de Notas Técnicas de Comercio Exterior and Sistema de Tecnología de Información para el Control Aduanero (TICA);
- Undertake a detailed mapping of customs procedures and documents to identify documents that can be consolidated/eliminated and determine any other bottlenecks and their solutions;<sup>5</sup>
- Enhance risk-management techniques to further reduce the volume of cargo that is inspected; and
- Facilitate processing of the letter of credit by the banking sector.

99. Detailed recommendations on **enforcing contracts, paying taxes, and protecting investors** are included in the full report.

## **VI. The Financial Sector and Access to Finance by MSMEs**

100. Cost and access to financing were identified in the surveys and benchmarking exercises as important constraints for firms. The inability to access affordable financing is particularly difficult for micro, small, and medium enterprises (MSMEs). In Costa Rica, formal MSMEs make up approximately 18 percent of total businesses and informal businesses (presumably microenterprises) make up another 81 percent of all businesses. Informal firms rarely access formal financing.

101. Financial intermediation increased significantly over the last few years, but private sector credit to GDP continues to be below the level expected for a higher middle-income country. With private sector credit to GDP equal to 38.1% at the end of 2008, Costa Rica trails behind other countries in the same income category by 20 percentage points or more. Fueled by the rapidly growing economy, Costa Rica witnessed a credit boom in the last few years, with credit growth rates above 30% annually. Much of this increase was due to a boost in housing, consumer and commercial lending.

102. Loans to MSMEs represented 16% of the total portfolio of the country's financial sector at the end of 2008. However, the total volume of financing available for MSMEs was likely larger than that; some industries, traders and agricultural firms make an intensive use of sources outside of the financial sector (e.g. suppliers), while some consumer credit loans are most probably being used by micro and small enterprises as a source of financing.

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<sup>5</sup> The Doing Business Reform Unit stands ready to do this mapping exercise, if requested by the Government.

103. In the last few years, several studies and surveys were conducted to assess financing to MSMEs, focusing mainly on lending. The main findings of some of the available studies are:

- *Access to loans from formal entities increases with the size of the firm.* Medium sized enterprises are significantly less constrained in accessing loans than formal micro and small enterprises. Smaller enterprises are frequently not eligible for loans because they lack financial statements or credit records, which banks need for their lending decisions. Additionally, smaller enterprises find it harder to comply with the amount of paperwork and the requirements for collateral and guarantees.
- *Informal microenterprises cannot obtain enterprise loans from regulated institutions, as they do not comply with the legal requirements.* Prudential regulation 105 limits the ability of banks and regulated intermediaries to serve businesses that are not registered<sup>6</sup>, do not pay taxes or do not contribute to social security. However, an undetermined number of informal microenterprises may have access to loans from regulated institutions through credit cards and consumer loans.
- *Access to equity and investment capital is negligible:* Small and medium size firms with potential for growth have only limited access to this form of finance. A survey of the Commission for High Technology in 2008 found that only 3.2% of the resources available to innovative firms in the technology sector are provided from “angel” or venture investors. Equity funding could be especially important for small and medium size local suppliers of larger value and export chains that are already complying with the value chain’s quality standards, but which cannot fund a significant growth with loans.

## **VI.1 Supply of Financial Services to MSMEs**

104. Costa Rica’s financial sector continues to be dominated by public banks. The largest three banks in the system are all state-owned or in public hands, and the total assets held by them account for 61% of all banking assets. This is unusually large both for regional standards as well as worldwide (the public banking system comprises 39% in Argentina, 12% in Ecuador, and 13% in Panama).

105. Public banks are the main formal suppliers of loans and dominate the MSME market. Of particular importance is the Desarrollo Program of the Banco Nacional de Costa Rica (BNDes). It is estimated, that 60% of all long-term investment and export loans to MSMEs are financed by the Desarrollo Program. The program is growing at a rate of approximately 400 businesses per month, which indicates that the market is not saturated yet.

106. Private banks and cooperatives are also increasingly reaching out to the MSME segment, but their share in total lending is still small compared to other countries. Cooperatives, which cater to about 6.1% of the population, reportedly also increased their lending to MSMEs. “Angel” or venture capital is only provided to SMEs operating in the technology sector by the Government “Link” program.

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<sup>6</sup> Prudential Regulation (Acuerdo 105), General Superintendence of Financial Entities (SUGEF)

107. The microfinance sector is small and limited. Only a few institutions have reached the level of professionalization and scale that is required for efficient and sustainable operation. The larger MFIs serve about 2,700 small and medium sized enterprises. Furthermore, some 12,500 loans are granted to microenterprises by some small (and in many cases unsustainable) MFIs, whose funding is in part provided by the second-tier lending program of BNDes.

108. Costa Rica also has an informal lending sector that likely plays a very important role in serving microenterprises. So far no research on informal lenders could be found to assess their importance.

109. *Distortions limit the competitive supply of financial services.* For example, private banks have to lend to public banks 17% of resources acquired through current accounts and other short-term deposits at rates below market (the so called “peaje bancario”). This provides cheap funding for state-owned banks, while private banks lose those funds for intermediation and still bear half of the costs for those funds. On the other side, state-owned banks are required to assign 5% of their profits to a specific government fund.

110. Different deposit guarantee schemes apply to different institutions, which further exacerbates distortions in the market. Deposits in state owned banks are implicitly guaranteed by the state at no cost. On the other hand, deposits at private banks are only partially covered by the deposit insurance scheme of the Costa Rican Bankers’ Association. Deposits in cooperatives are not covered at all. This different treatment creates a perception of fragility of institutions not guaranteed by the government. It results in a strong preference of the general public to deposit its savings in state-owned and public banks, despite significantly lower interest rates offered.

## **VI.2 Government Programs**

111. The Legislative Assembly of Costa Rica approved on May 7, 2008 a “Law on Development Banks”, which establishes a new framework to promote the flow of loans to MSMEs in the country by providing funding, partial credit guarantees and technical assistance to MSMEs. The law creates a Development Banking System (DBS) in order to finance and promote entrepreneurial projects which are (i) productive and viable; (ii) technically and economically feasible, and (iii) involves minorities or vulnerable segments of the population. The DBS mechanism brings together three existing sources of funding for MSMEs: (1) *Fideicomiso Nacional de Desarrollo* (FINADE), which gathers all the trust funds hitherto administrated by the Ministry of Agriculture into a Development Financing Trust; (2) *Fondo de Crédito para el Desarrollo* (FCD), a Development Credit Fund created with the resources of the “Peaje Bancario”; (3) *Fondos de Financiamiento para el Desarrollo* (FFD), a “fund to finance development”, which requires each bank to create a fund assigning to it 5% of its profits to finance MSME projects.

112. The design of the new system needs to be improved to enhance results. While the design of the funding and guarantee mechanisms overcomes some of the shortcomings of the prior system, by establishing independent administrative mechanisms and by allowing private and cooperative institutions to access its resources, it does not address the lack of institutional capacity in serving micro-enterprises and it does not consider any measures to promote savings and other financial

services. Furthermore, it is a rather complex system of funds, which will make actual implementation and monitoring more difficult.

### **VI.3 Recommendations**

**113. Research and analytical work about MSME access to finance and equity.** An assessment of supply and demand for financial services for Costa Rican MSMEs would provide a more comprehensive understanding of the funding constraints that MSMEs face. In order to increase the availability of equity finance for Costa Rican SMEs, it is advisable to: (1) assess the experiences gained so far in this field in other countries (e.g. Mexico's NAFIN scheme with angel investors); and (2) evaluate the experience of the Link program, considering explicitly the option of supporting its expansion.

**114. Reform of the deposit guarantee schemes.** In order to contribute to the competitiveness and soundness of the financial system, it is suggested to support existing initiatives to reform and modernize the Deposit Guarantee System of the country. A key element would be the preparation of a draft Project of Law for the establishment of a unified Deposit Guarantee Scheme for the whole financial system.

**115. Replacement of the “peaje bancario” with a comprehensive strategy for access to finance in the longer term.** To improve the competitiveness of the financial system, reduce existing distortions and improve the supply of finance to MSMEs it is suggested to:

- Remove the “peaje bancario”, revise the mandatory assignment of profits by state owned banks; and
- Define a wider strategy to improve access to finance that takes into account the research on supply and demand for financial services described above.

**116. Implementation of the Law on Development Banks.** It is advisable to take measures in the short run for sound implementation of the Law on Development Banks dealing with some of the problematic issues of its design. The Board of Directors foreseen in the Law for this System (Consejo Rector, CR) could implement the following suggestions:

- For the management of the FCD and the FINADE resources, the CR could start a tender among all Costa Rican state owned banks, requesting an administrator with a solid financial performance and strong expertise in lending to MSMEs;
- For the FCD funds, the CR could improve the incentives for the private banks to on-lend these resources instead of transferring them to public banks by elevating or removing interest rate caps; and
- Regarding FINADE the CR could offer an international tender to select a firm specialized in management of residual assets.

## **VII. Conclusions**

117. Although the report includes a wide range of policy recommendations, all of which should have positive effects on competitiveness, the five recommendations listed at the beginning of this

report stand out as having the greatest potential for impact. These five could serve as priority actions for the Government.

118. The first recommendation of establishing a competitiveness ministry is an overarching result of this report. Implementing competitiveness reforms requires overcoming political obstacles, specifically there is a need for building political will for the reforms and for fighting institutional inertia. Some reforms are likely to be politically contentious because of their distributional consequences: groups that lose in the short term are often well organized and in a position to resist, while those that benefit usually do so only in the long run and are too dispersed to matter politically. Reforms are also likely to be institutionally challenging: their implementation may require coordination among diverse departments and levels of government. To face these challenges, the Government must demonstrate a strong commitment to the reforms and legally establishing a coordinating body for these activities sends a convincing signal.

119. The second recommendation is awarding a concession for the Limon-Moin Port. This stands out among the various recommendations related to infrastructure as having the highest potential for impacting productivity. The severe inefficiencies at the Limon-Moin Port are proving to be a critical bottleneck to Costa Rican exports, particularly considering that 90 percent of Costa Rica's container sea traffic goes through this port. The report recommends developing a new organizational structure for the port that will impact the entire logistic chain and reduce costs to users. Although the report acknowledges that the political difficulty in addressing the port's weaknesses could be very high, it also argues awarding a concession or several for different parts of the port should increase efficiency dramatically.

120. The third recommendation is to transform the Ministry of Science and Technology (MICIT). This is important given that innovative firms are a critical source of future export and productivity growth and more generally, of products. Faced with intense global competition, not to mention the current economic crisis, Costa Rican firms must innovate not only to survive but also to prosper. In this way, MICIT's programs to promote knowledge transfer, innovation, and articulation of SMEs should be aggressively improved and revamped. The *Fondo Propyme* holds promise, for instance, but it has not reached a critical mass of firms to date. MICIT should coordinate closely with other relevant ministries, including economy, energy, agriculture, and education, as well as the private sector, in the design and execution of programs to promote knowledge transfer and knowledge generation. Programs should encourage linkages between firms and academia/research institutions. If done right, MICIT can be the guiding force to secure the much needed productive/social integration of SMEs into the mainstream of the economy.

121. The fourth recommendation focuses on the need to address the high rate of attrition in secondary education as this appears as one of the most critical human capital impediments to competitiveness. Costa Rica has alarming failure, grade repetition, and dropout rates at the secondary school level – all of which are interrelated. Currently, only 1/3 of students who enter 7th grade will successfully conclude secondary school. This situation not only has serious individual and social ramifications, but also costs the nation close to 0.5 percent of GDP each year. The high failure and dropout rates are related to lack of quality and relevance in secondary education; it would be critical to modernize the curriculum and evaluation systems, strengthen fields important to competitiveness (e.g. science and math), improve teacher training programs, and expand the currently successful technical and scientific education programs.

122. The final recommendation of establishing a comprehensive deregulation initiative covers a variety of aspects that should improve the business climate. From various sources, the report found that improvements in the business climate increase productivity. Also, in the Doing Business 2009 report, Costa Rica ranked 117 out of 180 countries, suggesting its business regulation procedures were not efficient compared to most countries. Among the individual measures, particularly concerning were its deteriorating performance in starting a business, getting credit, and trading across borders.