



**ATTRACTING
KNOWLEDGE-INTENSIVE FDI
TO COSTA RICA:**
CHALLENGES AND
POLICY OPTIONS

MAKING DEVELOPMENT HAPPEN

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DEVELOPMENT CENTRE

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Foreword

Fostering structural change, creating better jobs and upgrading production and exports are at the core of the development agenda. Countries follow different development models and implement various production development strategies in pursuit of these goals. In global open economies, foreign direct investment (FDI) represents an emerging tool to foster structural change and catching up. In the new global scenario, companies have changed their strategies and started to delocalise more knowledge-intensive activities, including design and research and development (R&D). This creates new opportunities for catching up in countries newly hosting such activities, but it also requires enhanced policy frameworks and improved strategies to deal with the new scenario. FDI can play an important role in upgrading countries' technological and production capabilities, triggering virtuous cycles of socio-economic change in the host economy. However, this process is by no means automatic; it requires a clear vision of development and a sustained and coherent policy framework encompassing different levels of government and stakeholders.

In the framework of the OECD Development Centre's work on production development and innovation this study reviews the experience of Costa Rica in attracting knowledge-intensive FDI and mobilising it as a lever for upgrading exports and fostering economic growth. Costa Rica is an interesting case of a deep economic transformation from primary products to manufacturing and services. This report describes the achievements of the Costa Rican economy during the last decades. It assesses the economic trends, the current development strategy and the policy mix for attracting FDI. It identifies a roadmap for enhancing the policy framework to continue to attract knowledge-intensive FDI and advance in the process of economic transformation. It highlights priority areas for policy action, including skills upgrading.

Acknowledgements

This report was elaborated by the OECD Development Centre as part of the Targeted Policy Support initiative in the framework of the Centre's work on production development and innovation under the guidance of Mario Pezzini, Director of the OECD Development Centre and Carlos Álvarez, Deputy Director of the OECD Development Centre and Head of the Thematic Division. Annalisa Primi, Economist at the OECD Development Centre, co-ordinated the project and the elaboration of the report.

This report was drafted by José Ramón Perea and Annalisa Primi, Economists at the OECD Development Centre, with the collaboration of Nicolo Gligo, consultant at the OECD Development Centre and Rob Cayzer, Director of Business and Market Development for the Malaysian Multimedia Development Corporation (MDeC) who participated as peer-reviewer in the project. The authors acknowledge the excellent research assistance of Alsino Skowronnek, the statistical support of Vararat Atisophon and the collaboration of Monserrat Botey. We thank Laura Recuero Virto for her comments to the draft. The report was edited by Romy de Courta y and production was co-ordinated by Elizabeth Nash and Vanda Legrandgérard.

The report is the outcome of a Targeted Policy Support Project between the OECD Development Centre and the Ministry of Foreign Trade (COMEX) and the Ministry of Science and Technology (MICIT) of Costa Rica. We acknowledge the commitment and contributions of Minister Anabel González (COMEX) and Minister Alejandro Cruz (MICIT) who actively supported the project and favoured access to information and key stakeholders in the country. The project benefited from the commitment and support of a Local Team headed by Irene Arguedas, Director of Investment at the Ministry of Foreign Trade. This project would not have been possible without the commitment and effectiveness of the Local Team, including María José Cordero from COMEX, Irving Soto, Director of Investment Promotion and Benjamín Piza from the Costa Rican Investment Promotion Agency (CINDE). We are particularly grateful to Irene Arguedas for sharing with us her knowledge about the Costa Rican economy, for her comments that improved the quality of the report, and

for facilitating our access to all the relevant sources of information. We acknowledge the support of Ambassador Ronald Saborío, Permanent Mission of Costa Rica to the WTO and Carlos Bonilla, Ambassador of Costa Rica in France.

We are grateful to Eduardo Lizano, Honorary President, Central American Academy, Ricardo Monge, Secretary of the Presidential Council on Competitiveness and Innovation, Keilor Rojas, Vice Minister of Science and Technology of Costa Rica, Olman Segura Bonilla, President, Costa Rica National Institute for Learning, (INA) and Ezequiel Tacsir, Division of Innovation and Competitiveness, Inter-American Development Bank for the constructive discussions on the Costa Rican development.

The report benefited from consultations with a number of stakeholders and institutions in Costa Rica, including (in alphabetical order), Cenibiot (National Centre for Biotechnology Innovations), CINDE (Costa Rica Investment Promotion Agency), CICR (Costa Rica's Chamber of Industry), CONARE (National Council of University Deans), CONICIT (National Council for Scientific and Technological Research), INBIO (National Institute of Biodiversity); Private Council on Competitiveness, PROCOMER (Costa Rica Export Promotion Agency), Universidad Nacional, Universidad Latina, Instituto Tecnológico de Costa Rica. The report benefited from direct interviews with enterprises operating in Costa Rica, including Agilis, Avionix, Boston Scientific, Emerson, Establishment Labs, HP, Intel, Possible Worldwide, and St. Jude Medical.

This report would not have been possible without the financial contribution of the Government of Costa Rica.

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Acronyms and abbreviations

BIT	Bilateral Investment Treaty
CINDE	Costa Rican Investment Promotion Agency (Coalición Costarricense de Iniciativas de Desarrollo)
CODESA	Costa Rican National Development Corporation (Corporación Costarricense de Desarrollo)
COMEX	Costa Rican Ministry of Foreign Trade (Ministerio de Comercio Exterior)
COMTRADE	United Nations Commodity Trade Statistics Database
CONICIT	Costa Rican National Council for Scientific and Technological Research (Consejo Nacional para Investigaciones Científicas y Tecnológicas)
CORFO	Chilean Production Development Corporation (Corporación de Fomento de la Producción, Chile)
DOTS	Direction of Trade Statistics Database, International Monetary Fund
ECLAC/CEPAL	United Nations Economic Commission for Latin America and the Caribbean (Comisión Económica para América Latina y el Caribe de las Naciones Unidas)
EIU	Economist Intelligence Unit
FDI	Foreign Direct Investment
FTZ	Free Trade Zone
GAMA	Expanded Greater Metropolitan Area
GDP	Gross Domestic Product
IDB	Inter-American Development Bank
ICT	Information and Communication Technologies
INA	Costa Rican National Institute for Learning (Instituto Nacional de Aprendizaje)

INEC	Costa Rican National Institute of Statistics and Surveys (Instituto Nacional de Estadística y Censos)
IPA	Investment Promotion Agency
IPR	Intellectual Property Rights
ISI	Import Substitution Industrialisation
LEED	Leadership in Energy and Environmental Design Standards
MICIT	Costa Rican Ministry of Science and Technology (Ministerio de Ciencia y Tecnología)
MIDEPLAN	Costa Rican Ministry of National Planning and Economic Policy (Ministerio de Planificación Nacional y Política Económica)
MNC	Multinational Corporations
MIGA	Multilateral Investment Guarantee Agency
OECD	Organisation for Economic Co-operation and Development
PCGI	Presidential Council for Competitiveness and Innovation of Costa Rica
PPP	Purchasing Power Parity
PROCOMER	Foreign Trade Corporation of Costa Rica (Promotora del Comercio Exterior Costa Rica)
PROPYME	Program for the strengthening of technological innovation in small and medium enterprises (Programa de Fortalecimiento para la Innovación Tecnológica de las Pymes)
RCA	Revealed Comparative Advantage
R&D	Research and Development
RICYT	Ibero-American Network of Science and Technology
SBD	System for Development Banks in Costa Rica (Sistema para la Banca de Desarrollo)
SMEs	Small and Medium Enterprises
S&T	Science and Technology
STIC	Science, Technology and Innovation Council of Costa Rica
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
USPTO	United States Patent and Trademark Office
WTO	World Trade Organization

Preface

The OECD Development Centre, as a policy dialogue platform between OECD countries and non-member economies, undertook this study to contribute to enhancing the policy framework in Costa Rica to attract FDI, mobilise it as a lever for development, and share knowledge with developing and emerging economies about the Costa Rican experience in institutions and policies for FDI attraction.

Industrial development and innovation are key drivers of inclusive and sustainable growth. Governments are often confronted with the challenges of facilitating market efficiency and ensuring the expansion of current endowments and capabilities, and fostering the development of new sectors, activities and enterprises. Successful catching-up countries have followed different models. In many cases, FDI has played an enhanced role in these strategies. However, the linkages between national development strategies and FDI policies should often be strengthened.

The experience of Costa Rica shows that FDI has indeed been a key catalyst in a process of export diversification. This report highlights the successful ingredients of the Costa Rican model and identifies a road map to strengthen the current policy framework.

Emerging and developing economies are heterogeneous; they differ in assets, resources and institutional capabilities. There is no unique response to development challenges, but there are good policy principles to be shared and lessons to be learned from different experiences. This study is a timely contribution on the interplay between FDI and development and the new role of FDI in the global knowledge economy at a time when several economies are debating how to advance in designing and implementing more effective development strategies to tap new sources of growth in the current global context.



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July 2012

Country profile

Territorial and institutional framework of Costa Rica

Costa Rica is a unitary country and an independent and sovereign republic, composed of seven provinces: Alajuela, Cartago, Guanacaste, Heredia, Limón, Puntarenas and San José, the capital. Provinces are divided into 81 administrative units (*cantones*), each of them directed by a mayor who is elected every four years. The lower administrative level includes 421 districts.



Table 0.1. Main economic indicators of Costa Rica, 1960-2010

Costa Rica	1960	1970	1980	1990	2000	2010
Population (million)	1.33	1.82	2.34	3.07	3.92	4.56
Unemployment, total (% of total labour force)	-	-	5.90	4.70	5.20	7.80
Inflation, consumer prices (annual %)	2.43 (1961)	4.65	18.13	19.04	10.99	5.82
Poverty headcount ratio at 1.25 USD a day (PPP) (% of population)	-	-	21.38 (1981)	8.45	5.53	3.12 (2009)
Macroeconomic indicators						
GDP (current USD, million)	507.52	984.83	4 831.45	7 403.46	15 946.44	36 217.51
GDP (constant 2000 USD, million)	2 398.49	4317.14	7 473.02	9578.02	15 946.44	24 175.09
GDP per capita (current USD)	380.45	541.00	2 061.77	2 411.36	4 068.82	7 938.81
GDP per capita (constant 2000 USD)	1 797.97	2371.56	3 189.04	3 119.63	4 068.82	5 188.90
Gross savings (% of GDP)	-	-	12.06	11.60	12.52	15.30
Industrial structure (value added)						
Agriculture, value added (% of GDP)	-	-	13.88 (1983)	12.27	9.46	7.15
Industry, value added (% of GDP)	-	-	32.48 (1983)	29.89	32.08	26.25
Services, etc., value added (% of GDP)	-	-	53.64 (1983)	57.84	58.46	67.62
Employment structure (% of total employment)						
Agriculture	-	-	27.40	25.90	20.40	14.99
Industry	-	-	24.00	25.90	22.30	19.46
Services	-	-	48.30	47.50	56.70	65.56
Employment to population ratio 15+, total (%)	-	-	-	55.20 (1991)	56.50	54.79
Trade structure						
Exports of goods and services (current USD million)	108.69	277.92	1 279.26	2 237.24	7 753.63	13 640.93
Exports of goods and services (% of GDP)	21.42	28.22	26.48	30.22	48.62	38.07
Imports of goods and services (current USD million)	132.85	344.59	1 778.89	2 686.10	7298.08	14 749.98
Imports of goods and services (% of GDP)	26.18	34.99	36.82	36.28	45.77	41.16
Human resources						
Labour force, total	-	-	-	1 158 851.55	1 598 713.83	2 051 696.00
School enrolment, secondary (% net)	-	21.73	33.72 (1985)	36.95	-	76.20
Labour force with tertiary education (% of total)	-	-	-	9.00	16.00	22.10
Public spending on education, total (% of GDP)	-	5.08	7.41	-	4.39	7.20
Technology indicators						
Expenditure on R&D as share of GDP (%)	-	-	-	-	0.39	0.40 (2008)
GERD financed by business enterprise (%)	-	-	-	-	-	8.62 (2008)
Total patents (Patent grants at the USPTO, priority date)	-	-	4.00	3.17	7.00	11.00 (2008)

Source: OECD, UNESCO, World Development Indicators. 2010 data based on national sources.

Assessment and recommendations

Costa Rica is a small economy that has achieved a significant transformation over the last decades.

Costa Rica stands as one of the most politically stable countries in Latin America. It has a development model matching strong equity policies in public services (e.g. free and compulsory basic education and a good public healthcare system) with an open economy that has made FDI the principal engine of the country's dynamism. Since the late 1980s, the country has managed to progressively shift its export composition from primary products to high-tech manufacturing and services, thanks to targeted actions to attract FDI. It has also enjoyed relatively stable and high economic growth, rising GDP per capita, and falling poverty rates.

FDI has contributed greatly to Costa Rica's development. It has fostered export diversification and upgrading, creation of more and better jobs, and accumulation of business capabilities.

FDI has led to profound changes in the country's trade specialisation. A small economy initially specialised in exporting a few primary products (e.g. coffee, bananas and sugar), Costa Rica viewed FDI attraction as a strategic option to sustain growth, enhance exports and create better jobs. The arrival of the major ICT company Intel in the late 1990s helped the country forge a reputation as a place for investment. Since then, much has happened and Costa Rica has developed a strong track record in FDI attraction. In the last three decades, FDI has led to increased exports in knowledge-intensive sectors. The number of jobs created by FDI rose from 7 758 in 2003-05 to 34 385 in 2009-11. Costa Rica has also achieved exports' sophistication, ranking today close to Croatia and Norway, but still below Malaysia.

FDI has also acted as a demand-push for improving education and training and has fostered learning (at the level of workers, management and production), thus improving the business environment in the country. While the United States remains the most relevant investor for Costa Rica, the number of source markets for FDI rose from 8 in 2005 to 18 in 2009, including emerging markets such as China. Foreign companies in Costa Rica have recently been upgrading their business towards more knowledge-intensive activities, including software design and R&D. The government is adopting a more selective approach to FDI attraction, focusing on companies operating in more knowledge-intensive sectors. These two trends have contributed to creating incipient industrial clusters in business services, medical devices and advanced manufacturing.

Costa Rica faces a rising mismatch between the skilled-labour supply and production structure needs.

Although the country produces relatively good quality graduates, there is significant misalignment between the supply of graduates by area of specialisation and the skills required by industry. Costa Rica's PhD graduates stand out in their preference for the social sciences. Of the 93 PhDs granted by Costa Rica in 2000-02, 92 were in the social sciences. This trend recently began to reverse: by 2007-09, Costa Rica had more than doubled the number of PhDs awarded, including in more technology-related disciplines (over 18% in medical sciences, 3% in agricultural sciences and less than 2% in natural sciences). Still, it granted no PhDs in engineering and computer sciences. As in most countries, aligning the skills supply to industry requirements is difficult. Some reactions to this conundrum came from the Costa Rican government in 2011 with the creation of a Working Group, led by the Ministry of Foreign Trade (COMEX) and the Ministry of Science and Technology (MICIT), tasked with identifying and implementing actions to bridge gaps between skills demand and supply.

The national innovation system is scantily developed. Commitment to investment in R&D and innovation, and linkages between foreign and domestic companies remain low.

Costa Rica invests scant resources in R&D (around 0.4% of GDP in 2010, in contrast with an OECD average of 2.3%). Private-sector commitment to R&D is particularly weak, with a 33% share of total national R&D expenditure in 2010 – in stark contrast to other emerging economies (China 70%, Malaysia 84% and Singapore 60%). Emerging economies are starting to host a rising number of R&D

centres, thanks to public policy support and transnational corporations' strategies of opening research labs in emerging markets. This is contributing to rising R&D expenditures in countries such as China, Malaysia and India. Costa Rica has seen a gradual increase in the knowledge content of multinational companies' activities in their economies, but R&D investments are still very low.

Not surprisingly, patent activity in Costa Rica is low. Even though foreign enterprises have started to carry out more complex and knowledge-intensive activities in Costa Rica, the country is still far from the patent performance not only of emerging economies, but also of Latin American countries that have a well-known modest record in patenting. Costa Rica has been granted fewer than 10 patents per year on a constant basis since the late 1970s by the US Patent and Trademarks Office (USPTO). Chile registered fewer than 10 patents per year up to the mid-1990s; since 2005 it has been granted, on average, 20 patents per year. Malaysia was, as Costa Rica, registering fewer than 10 patents per year up to the 1990s before increasing its activity by more than 10 times. Since 2003 it has been granted more than 150 patents per year by the USPTO.

The linkages between local and foreign companies in Costa Rica are still weak. With few exceptions, domestic companies have not been very successful in providing critical production inputs for international companies. Foreign companies have found little incentive to develop a network of local suppliers, due to their global-oriented strategy, weakly developed domestic production system, lack of international certifications and standards and concerns over economies of scope, trust and quality control. As foreign companies shift towards more knowledge-intensive areas, their demand for local client and supplier networks tends to increase, together with quality requirements for domestic industrial and service capabilities.

Today, the country is actively engaged in upgrading its FDI strategy.

Costa Rica has been shifting gradually towards a more selective policy approach to FDI by targeting certain knowledge-intensive sectors, including knowledge-processing services, medical devices and life sciences, advanced manufacturing and (more recently) clean technologies. Prioritising knowledge-intensive FDI in Costa Rica means focusing, on the one hand, on attracting new companies operating in these fields, and on the other hand, on creating the conditions to support the upgrading of already operating companies.

The option of prioritising knowledge-intensive FDI is not specific to Costa Rica; it is an emerging trend worldwide. Several countries are seeking to attract

more sophisticated types of FDI, which in turn leads to prioritising sectors (such as electronics and telecommunications, pharmaceuticals, aerospace, automobile and business and telecommunication services) characterised by increasing production unbundling. Some economies, like Ireland and Malaysia, have been particularly successful in this field. Identifying clear sectoral targets allowed them to concentrate efforts and lay out the conditions required to foster innovation (including availability of technical and skilled workers and a high-quality research and creative environment).

Costa Rica has a potential in low-volume and high-knowledge/technical content products (such as precision and medical equipment) and knowledge-intensive services (including design and software development). Having forged a good reputation as a place for investment, it is gaining ground as a suitable location for software design and advanced manufacturing, thanks to the development of a critical mass of companies operating in life sciences/biomedical devices and knowledge-intensive services. But the prospects for greater and better FDI will depend on the country's ability to design an effective attraction strategy. Attracting knowledge-intensive FDI can help "activate" government policies beyond investment promotion (such as education, competitiveness, innovation, linkages and production development), thus contributing to Costa Rica's overall development. The challenges are well understood by the current government, which is strongly engaged in attracting knowledge-intensive FDI.

Costa Rica is facing a new scenario, which requires an enhanced policy framework.

The Costa Rican strategy, founded on a combination of strategic geographical location, generous fiscal incentives and a well-educated and relatively cost-competitive workforce, can no longer be expected to yield the same returns.

The global competitive scenario has changed. Competition to attract knowledge-intensive FDI is on the rise as more countries rely on those types of investments to sustain innovation and growth. New emerging economies will probably become relevant sources of knowledge-intensive FDI. Thanks to the spread of ICT and reduction in transport costs, production remodelling is reaching new sectors, opening up new opportunities to delocalise and participate in global value chains. Companies are now also increasingly outsourcing or delocalising innovation and R&D-related activities.

Costa Rica has changed as well. After more than two decades of successful FDI attraction, its accumulated business and production capacities have reshaped the entrepreneurial environment. Today, the country has a proven track record in FDI attraction. It has acquired a good reputation as a place to do business and some

incipient industrial clusters are developing around knowledge-intensive sectors, including medical devices and IT services. Attracting FDI to a country that does not yet have a good reputation for doing business is extremely difficult, but Costa Rica has already overcome this barrier.

The country now needs to build on its accumulated capacities, both at the institutional and company level, and define a new strategy. It can reasonably strive for a second generation of FDI, linked to innovative companies and activities as well as efficiency motivations. Yet the drivers of knowledge-intensive FDI differ from those of efficiency-led FDI. Knowledge-intensive FDI is more influenced by the type and quality of skills and competences, the dynamism of production clusters and the availability of high-quality R&D centres. Fiscal incentives, business regulations and the stability of the environment are still relevant determinants, but are not sufficient to attract knowledge-intensive FDI.

Costa Rica is well endowed to improve the policy framework. It offers an attractive incentive package to investors and has accumulated good capacities in managing FDI policy.

Costa Rica appears well placed to pursue a strategy for FDI attraction centred on knowledge-intensive FDI. It has strong institutions – *e.g.* Ministry of Foreign Trade (COMEX) and the Costa Rican Investment Promotion Agency (CINDE) – with experience in investment promotion. It has a Ministry for Science and Technology (MICIT) which is active in the national dialogue about FDI policy.

Costa Rica offers an attractive incentive scheme for investors. The country allows tax-free operations for 8-12 years, extendable on certain conditions, including reinvestment in the country. Private industrial parks offer foreign investors infrastructure facilities and simplify their location search. In addition, CINDE plays a crucial role in operating as a bridge between investors and the government and providing foreign investors with dedicated aftercare services.

Costa Rica also has a relatively good education system and public technical and university training, thus offering a combination of skilled labour at relatively low cost. In the 2010 edition of the OECD Programme for International Student Assessment (PISA) Costa Rica ranks slightly below the OECD average, but close to Chile in reading and higher than Mexico in reading and scientific literacy. Most foreign companies operating in Costa Rica list the availability of an English-speaking labour pool and the quality of technicians and public university graduates as factors that contributed to their choice of establishing operations in the country. The presence of anchor companies and accumulated production capacities has led to incipient industrial clusters that could be further exploited.

Costa Rica needs to enhance the policy framework and increase policy co-ordination.

Prioritising knowledge-intensive FDI requires improving the governance and policy mix for FDI attraction. Beyond focusing on fiscal incentive schemes, knowledge-intensive FDI is more sensitive to the availability of skills and research capabilities (including R&D laboratories, innovation platforms and clusters of companies and research institutions) that foster an innovative environment. Good practices in this field call for higher levels of integration and co-ordination among FDI promotion policies and key complementary policies in the areas of innovation, education and industry.

Costa Rica could unlock potential sources of growth and development by enhancing the policy framework and updating its promotion strategy, advancing in policy co-ordination and establishing specific mechanisms to materialise opportunities and address potential threats. But its future success will not be achieved automatically. It will be the outcome of targeted efforts requiring a well-designed and implemented strategy, more public resources for innovation, and new forms of private-public partnerships for setting priorities and designing policy instruments.

The Costa Rican government has advanced in promoting policy co-ordination in three areas: i) it created a Presidential Council for Competitiveness and Innovation (PCCI) in 2010; ii) the Ministry of Trade (COMEX) strengthened its collaboration with the Ministry for Science and Technology (MICIT) to increase the supply of skilled labour and enhance the national innovation system; and iii) it established a Working Group on skills to identify a plan of action for increasing the supply of skilled labour in key priority areas.

The country has introduced new programmes to improve the quality and quantity of its skilled labour force, for example by offering grants for technical and university studies in partnership with local multinational corporations (MNCs). It has also formally established a Division of Local Linkages at the Foreign Trade Corporation of Costa Rica (PROCOMER) to support SME development and linkages with MNCs. These incipient efforts need to be strengthened.

Enhancing the policy framework will not be a zero-cost change.

The enhanced policy framework needs to go beyond the FDI toolbox. It involves higher degrees of complexity, which require:

- Stronger political leadership, a higher degree of co-ordination among government levels, and new spaces for co-ordination and consensus generation.
- Better metrics and improved diagnostic capabilities to assess new objectives and monitor policy outcomes.
- More public investment and long-term availability of financial resources.

Costa Rica has the potential to forge ahead, but this will require mobilising higher public resources. The country cannot sustain its current development and growth plan without addressing the need to shift towards a superior pattern of government expenditure. Higher resources are not in themselves a guarantee of success; they require effective planning and management. But below a critical mass of public budget, even the most well-designed plan will face implementation obstacles. This is even truer in innovation-related domains, where public effort needs to be backed by private investment.

What are the suggested actions?

Strengthening political leadership and horizontal co-ordination

The Presidential Council for Competitiveness and Innovation (PCCI) was established in 2010. It is run by an executive secretary reporting directly to the President of the Republic, who serves as the Council's Chair. Its 15 members meet every month; participation is mandatory at the ministerial level. The Council was created to align the different policies influencing the country's competitiveness. Its creation holds promise because it generates a space for policy dialogue and information sharing, but assessing it would be premature.

The Council needs to have more enforcement power to elaborate shared guidelines and priorities to foster policy co-ordination among different sectoral ministries. It should be endowed with the highest political support and empowered as the policy space for creating consensus on objectives and aligning policy actions. It should be responsible for ensuring the implementation and follow-up of decisions stemming from its discussions and deliberations – otherwise it will be confined to mere information sharing. It should identify a proper mechanism to channel the voices of the private sector and endow it with an agenda for priority setting and action definition. The recent inclusion of private-sector representatives in Council meetings is a good start. The Council's first task should be to help reduce misalignment between the FDI and innovation policy agendas.

Increasing diagnostics capabilities

Costa Rica would benefit from increasing the diagnostic capabilities to improve priority setting, accountability and monitoring of outcomes. A useful step in this direction would be to create a small and agile observatory-type institution operating under the direction of the Presidential Council for Competitiveness and Innovation (PCCI) in close collaboration with the national statistical office. This institution would be responsible for building an information system centred on production and innovation dynamics, including research centres, universities and foreign and national companies. The observatory could contribute to investigating market dynamics, including the potential misalignment between skills demand and supply.

Promoting the culture of a knowledge-driven society

Costa Rica needs to actively engage in a campaign promoting the innovation culture on the domestic front. It should make a targeted effort to dispel the impression that “technology” belongs to the FDI domain. Promoting a knowledge-driven society does not mean disregarding non-technological professions – but it does mean breaking the vicious cycle that associates knowledge and technology with foreign action, and traditional activities with domestic agents.

Updating Costa Rica branding

The country has accomplished much over the last decades, but the perception that “it is all about Intel” is still prevalent in certain foreign circles. The “Intel effect” has been strong, but much has happened since, both in services and in manufacturing. Additional effort is needed to familiarise potential investors – and the global community in general – with the new Costa Rica. Reputation matters, both in terms of FDI and innovation dynamics. Costa Rica could benefit from developing a new value proposition that is better aligned with its image as a location for advanced manufacturing and software design. The country needs to put some effort into updating its image and branding by co-ordinating its FDI and innovation policies. The establishment of companies such as St. Jude Medical, HP, IBM, Boston Scientific and Hospira could be better exploited to update the country’s branding.

Updating and improving investment promotion

Investment promotion in Costa Rica has been very effective. CINDE is a strong private institution with a high advocacy capacity. The country could benefit from strengthening the trade promotion functions in selected embassies in the short term as a means to improve its network of non-traditional trade partners, scan the

global business climate for potential new investors and, in the long term, identify new locations for CINDE's offices abroad.

Knowledge-intensive FDI is influenced by a more complex set of determinants than FDI in lower-end operations. CINDE should update its promotion strategy by including skills development and innovation, and increasing co-ordination with the institutions responsible for innovation and production development.

Increasing the supply and quality of skilled labour

Increasing the quality and supply of training is a critical factor for Costa Rica's competitiveness. The country has a good educational system, a relatively well functioning national technical and professional training institute, and public universities with a good reputation among domestic and foreign companies. However, to shift its strategy towards knowledge-centred development, it needs to increase the quality and quantity of the skilled labour force (especially in science, engineering and design).

Costa Rica has a critical deficit of PhDs in the scientific and engineering field. In the short run, student and teacher mobility is the best option to close the skills gap. The decision to create training courses for PhDs in certain niche areas should be taken at the national level, after broad consultation with all relevant stakeholders. The recent approval of a PhD course in software engineering at the Technological Institute (ITCR) and of a PhD degree in computer sciences at the University of Costa Rica (UCR) beginning in 2014 are steps in the right direction. Promoting technical training leveraging on the experience of the Institute for National Learning (INA) should also constitute a priority.

Costa Rica is taking steps in this direction. The "Young Talent" programme was recently introduced to advise young people on career choices. Thanks to a World Bank loan, Costa Rica will also invest in updating training courses in public and private universities. The Inter-American Development Bank (IADB) launched a programme with the MICIT to develop and align the country's human capital with production development needs. The IADB will finance specific activities to improve training in the priority areas laid out by the national innovation strategy and provide incentives for the re-conversion of technical professionals specialising in low-priority areas.

To advance further, Costa Rica could create a fund for skills development supported by contributions from the government and MNCs. The matching fund and its governance mechanisms should be carefully designed to maintain both the universities' autonomy and the right of MNCs to participate in defining training content, given their role as employers and cofounders.

Channelling more resources and improving the policy mix for innovation and production development

Costa Rica's innovation gap cannot be closed without a substantial increase in private-sector R&D investment, along with rising public-sector support for scientific and technological development. The resources managed by the Ministry for Science and Technology (MICIT) to finance innovation in companies are low, and the available budgets often under-utilised. To advance in implementing its innovation policy, Costa Rica needs to increase its budget and strengthen institutions that foster business development. MICIT is small and has limited resources, yet it faces an increasingly demanding task. It is a key institution for fostering human capital development, mobilising corporate innovation, facilitating the development of the national innovation system, and attracting knowledge-intensive FDI. To implement its current strategy successfully, Costa Rica needs to devote more resources (innovation resources should be more than tripled from current levels) and strengthen institutional capacities for innovation.

In addition to increasing its innovation budget, Costa Rica needs to improve its policy mix and improve the design of innovation-related incentive schemes. Incentive funds should be complemented by the provision of additional services to companies.

A start-up incubator programme could be introduced to foster business development in the priority industrial clusters benefiting from the dynamism of established multinationals. The two incubation services already operating in the country could serve as basis for scaling up the initiative and creating a national start-up programme providing companies with additional support beyond technology funds. The creation of a new generation techno-park is another viable option, in line with successful experiences in several countries where techno-parks have been used to foster the development of innovative companies by facilitating access to finance and offering services to companies.

Linkages between MNCs and domestic companies also need to be further developed. The recently strengthened collaboration between COMEX, MICIT and PROCOMER is a promising step in this direction. However, a better articulation with the Ministry of Economy (in charge of promoting SME development) would make these efforts more effective. A territorial and local perspective on implementing the co-ordinated actions required to foster SME development would also help upgrade and transform them into dynamic and knowledge-intensive agents of the production system.

Improving local research capabilities

Strengthening domestic research is key to attracting and anchoring knowledge-intensive FDI to the local economy. Not only do domestic research capabilities enhance a country's attractiveness in terms of FDI, they also increase spillovers to the local economy. Costa Rica's small size is a critical factor, which should be taken into account in decisions to create local research capabilities. The country will need to take a pragmatic and selective approach. Given their proximity with priority sectors, those areas (like biotechnology) where Costa Rica has accumulated some capacities should be strengthened. Research centres require not only high-end infrastructure, but also innovation professionals and resources. Costa Rica could develop new partnership mechanisms with MNCs to set up small-scale research laboratories. It should not underestimate the potential of service- and design-driven innovation, which is performed differently to traditional scientific and technological research and driven mainly by human resources and skills.

Prioritising knowledge-intensive FDI is a strategic option for Costa Rica. However, this is not a low-hanging fruit. It will require strong government commitment, leadership, horizontal co-ordination and financial resources.

Costa Rica is on track to enhance its policy framework. Several recent initiatives show the commitment of the current government and different constituencies, including academia and the private sector. Turning FDI into a source of inclusive and sustained development is not automatic; it will require targeted and articulated policies. Prioritising knowledge-intensive FDI is a strategic option. The more complex and sophisticated the task performed in a given plant, the lesser the incentive to move it for reasons of explicit costs. The sunk costs of accumulated learning and established routines for accomplishing tasks contribute to adhering FDI to the host economy, increasing the costs of disinvesting. This type of FDI also engenders higher direct and indirect spillovers on the local economy and acts as an “activator” of policies in critical development areas such as education, innovation and production.

Costa Rica will need to define a more integrated production development and innovation strategy to continue relying on FDI as a key driver. The country is institutionally endowed to do so and can leverage its strong accumulated business and scientific capabilities and reputation. Costa Rica needs to increase significantly its innovation and skills development budget, improve co-ordination capacities, and implement an effective accountability system in order to mobilise resources. One of its major challenges will be to identify appropriate mechanisms for channelling financial resources to implement its strategy.

Chapter 1

Costa Rica as a knowledge economy: achievements and challenges

This chapter reviews the achievements and challenges of Costa Rica as a knowledge economy. It presents stylised facts on Costa Rica's macroeconomic trends, track record in foreign direct investment (FDI) and export diversification over the last two decades. It highlights new global trends and their potential impact on Costa Rica. It identifies strengthening the national innovation system as one of the major challenges the country needs to overcome to achieve a more inclusive and sustainable development pattern.

Introduction

Costa Rica is a small economy which has achieved a significant economic transformation over the last decades. The country has managed to change its export composition from primary products to high-tech manufacturing and services thanks to targeted actions to attract FDI. In parallel, it has increased its GDP per capita, created more and better paid jobs and improved its tangible and intangible infrastructure.

The arrival of the major information and communication technology (ICT) company Intel in the late 1990s helped Costa Rica forge a reputation as a place for investment. Since then, the country has managed to attract several world-class companies. First-mover companies have been upgrading their business activities by adding to basic business services more knowledge-intensive activities, including software design and R&D. In addition, the government is adopting a more selective approach to FDI attraction, focusing on companies operating in more knowledge-intensive sectors or innovation-related activities. These two trends have fostered incipient industrial clusters in business services, medical devices and advanced manufacturing.

This chapter presents Costa Rica's main characteristics with regard to macroeconomic trends, FDI patterns, export diversification and development of the national innovation system. It identifies the country's achievements and the major development challenges it faces today. It also highlights its macroeconomic stability, longstanding democracy, and proven track record in FDI attraction and export diversification. It discusses new global issues that affect Costa Rica, including the new geography of production and innovation and the emergence of China as a global power. It briefly describes the development of the Costa Rican innovation system, both in terms of research and production capabilities. It concludes by summarising the major challenges confronting Costa Rica as a knowledge economy today.

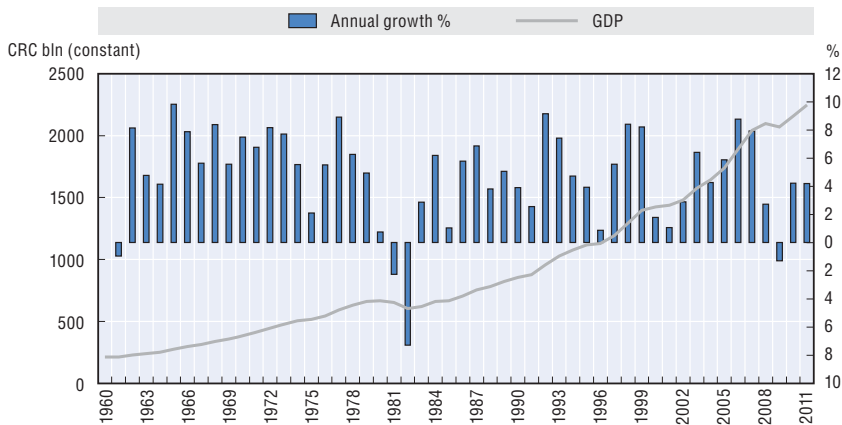
A long-standing democracy and one of the more stable macroeconomic environments in Latin America

Costa Rica is one of the most stable democracies in Latin America. The latest interruption of a democratically elected government dates from the 1948 civil war. Since then, the country has continuously respected democratic rule in a system largely characterised by a pacific alternation between the two main parties.

On the economic front, Costa Rica underwent significant transformation during the second half of the 20th century. Up until the early 1960s, the economy revolved heavily around the agricultural sector, which was critical in terms of employment,

product contribution, exports and fiscal revenues. This concentration on a limited set of primary agricultural commodities (mainly coffee, sugar and bananas) made the economy vulnerable to price shocks, while at the same time imposing a ceiling on growth prospects. The vulnerabilities associated with an economic model focusing on primary product exports were widely documented in the economic literature and found an attentive audience among the era's Latin American policy makers (e.g. Prebisch, 1950). Costa Rica was no exception to this regional trend: beginning in the 1960s, the country embarked on a state-led industrialisation programme aimed at reducing its dependence on primary products. As industry became a fresh source of growth, Costa Rica entered a long period of expansion in the 1960s and 1970s, with annual GDP growth averaging 6% (Figure 1.1).

Figure 1.1. GDP growth, Costa Rica, 1960-2011



Source: Authors' calculations based on World Bank data.

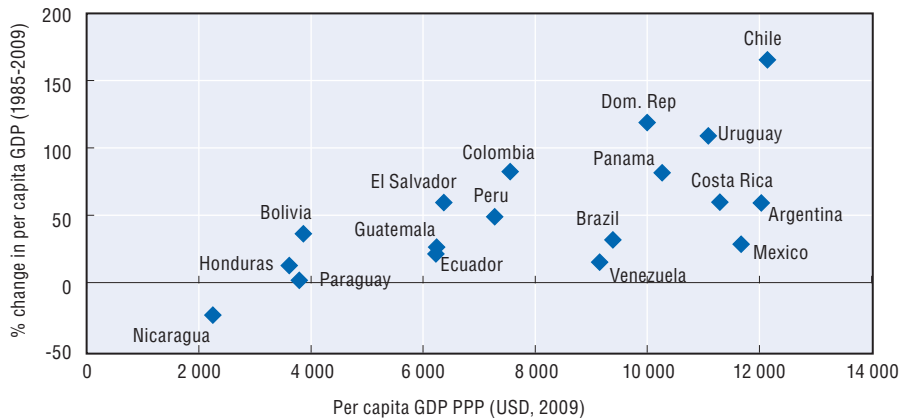
The arrival of the debt crisis in the region marked the demise of the previous economic model and sent many Latin American countries into a deep recession. Thus, on the policy front, priorities shifted to fiscal and debt consolidation, inflation anchoring, the reduction of state presence in the economy and trade liberalisation. This last point led some Latin American countries to recover their former role of commodity exporters.

Costa Rica departs from these regional trends in some critical aspects. As was the case in much of the region, the short-term impact of the crisis was remarkable, with Costa Rica enduring a sharp correction in GDP activity during the 1981-82 period (see Figure 1.1). Yet, the opening to the international economy did not imply a trade specialisation in commodities. Instead, Costa Rica adopted a strategy which relied on FDI to increase the share of non-traditional exports in the economy.¹

In the 2000s, Costa Rica maintained a relatively robust average annual GDP growth rate of 4.1%, in line with the Latin American average. The 2009 contraction consecutive to the global financial crisis was short-lived and the country rebounded strongly in 2010, with annual GDP growth reaching 4.2%. February 2012 consensus forecasts for 2012-14 do not depart significantly from this rate.

The previous growth pattern facilitated a significant increase in per capita GDP since the mid-1980s. By 2009, Costa Rica’s per capita income was the fourth highest among a comprehensive sample of Latin American countries (Figure 1.2). This increase in per capita income also resulted in lower poverty levels. As Figure 1.3 shows, the share of population living in poverty fell from 29% to 18.5% in 1987-2009. The relative reduction in extreme poverty is more notable, falling from 9% to 4%.² Income inequality, on the other hand, slightly worsened during these years, with the Gini index moving up from 0.44 in 1990 to 0.48 in 2008.³

Figure 1.2. Latin America, GDP per capita, 1985-2009

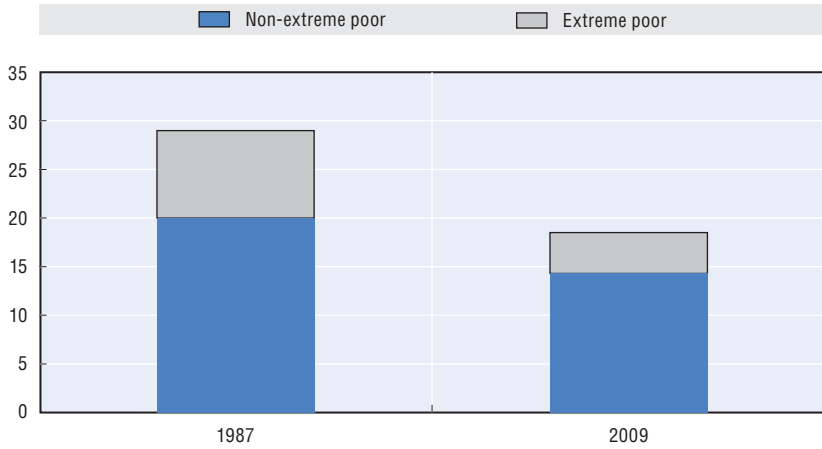


Source: Authors’ calculations based on Penn World Tables.

Despite the positive trend in income and growth, the country faces some structural macroeconomic challenges. First, the ratio of public debt over GDP stood at around 44% in 2011 – which is high for emerging markets standards in general and for Latin America in particular (Figure 1.4). This relatively high ratio is closely related to the low revenue base, which in Costa Rica amounts to around 14% of GDP.

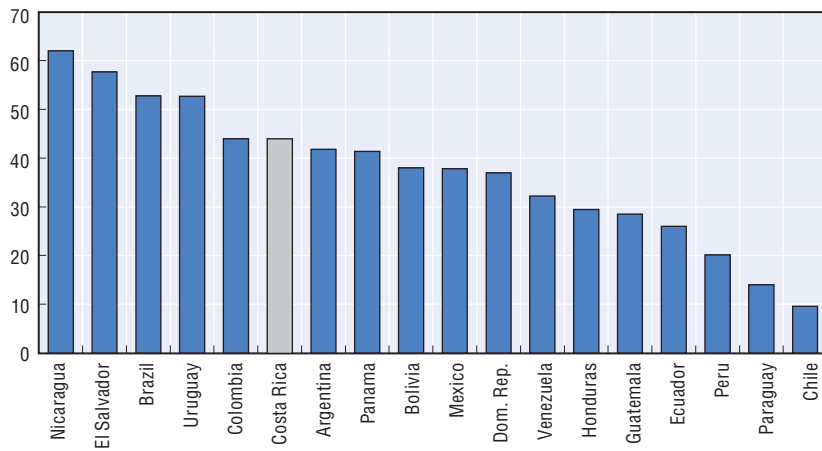
Another recurrent imbalance is in the current account, which shows a persistent deficit stemming from trade and income accounts. In the 2000s, the current account deficit averaged 5% of GDP, reaching a maximum of 9.3% in the wake of the 2008 crisis and receding to 4% in 2010. This external imbalance is largely financed by FDI flows, which comprise the largest share of the financial account.

Figure 1.3. Share of population living in poverty, Costa Rica, 1987 and 2009



Source: Authors' calculations based on Costa Rican National Statistical Institute (INEC).

Figure 1.4. Public debt as share of GDP, Latin American countries, 2011



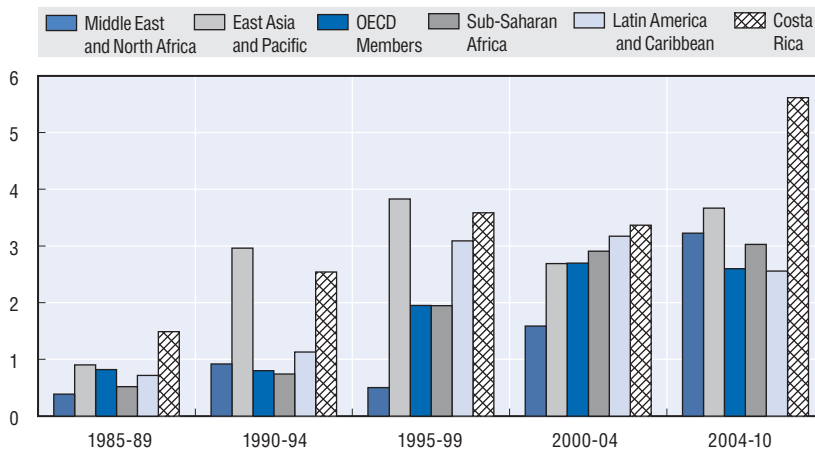
Source: Authors' elaboration based on Economist Intelligence Unit.

A proven track record in FDI attraction

FDI has been a major force in Costa Rica’s trade diversification. In the 1980s, Costa Rica adopted an economic development model based on international integration, export diversification and FDI attraction. Well-known international companies such as Intel, Abbott Laboratories, Procter & Gamble (P&G) and Hewlett-Packard (HP) have established manufacturing and global service operations in Costa Rica to serve international markets. Companies (including Boston Scientific and Saint Jude) operating in the medical devices field also began to invest in Costa Rica.

FDI has gradually gained a critical presence in the economy. From 1970 to the mid-1980s, FDI inflows were relatively low, with an annual average of USD 48.8 million and a high point of USD 69.8 million in 1985. From that point forward, FDI began to grow rapidly as the country implemented its internationalisation policy. FDI in Costa Rica grew from the mid-1980s to 2010: its average share in national GDP rose from 1.5% in 1985-89 to 5.6% in 2004-10 (Figure 1.5). Compared with global trends, Costa Rica appears as one of the world’s most de facto FDI-intensive economies. Since the mid-1980s, its FDI-GDP ratio has consistently exceeded international levels, with few exceptions (Figure 1.5). This difference has been exacerbated in recent years.

Figure 1.5. FDI, selected economies, 1985-2010
(net inflows as percentage of GDP)

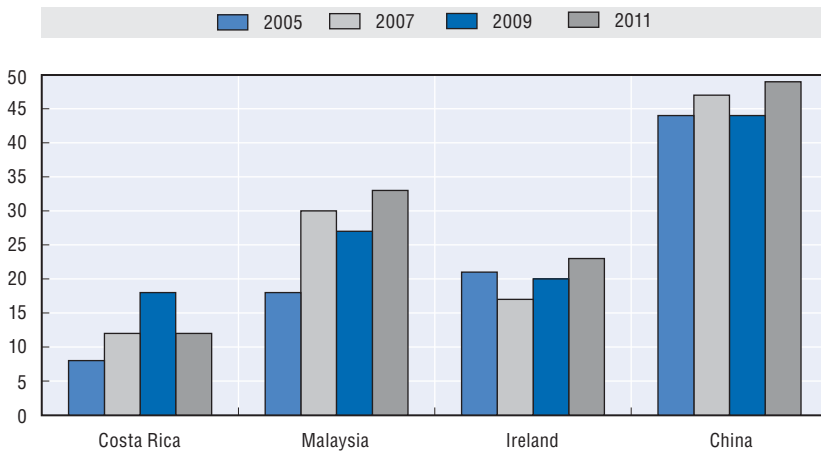


Source: Authors’ calculations based on World Bank data.

Costa Rica has also successfully diversified the origins of its FDI inflows by attracting investments from a growing number of countries. According to estimates by fDi Intelligence,⁴ the number of source countries for Costa Rica rose from 8 in 2005 to 18 in 2009 and 12 in 2011 (Figure 1.6). While in line with a global trend towards broader source markets for FDI, this diversification is still below that of key FDI hosts in high tech industries, particularly in Ireland and Malaysia.

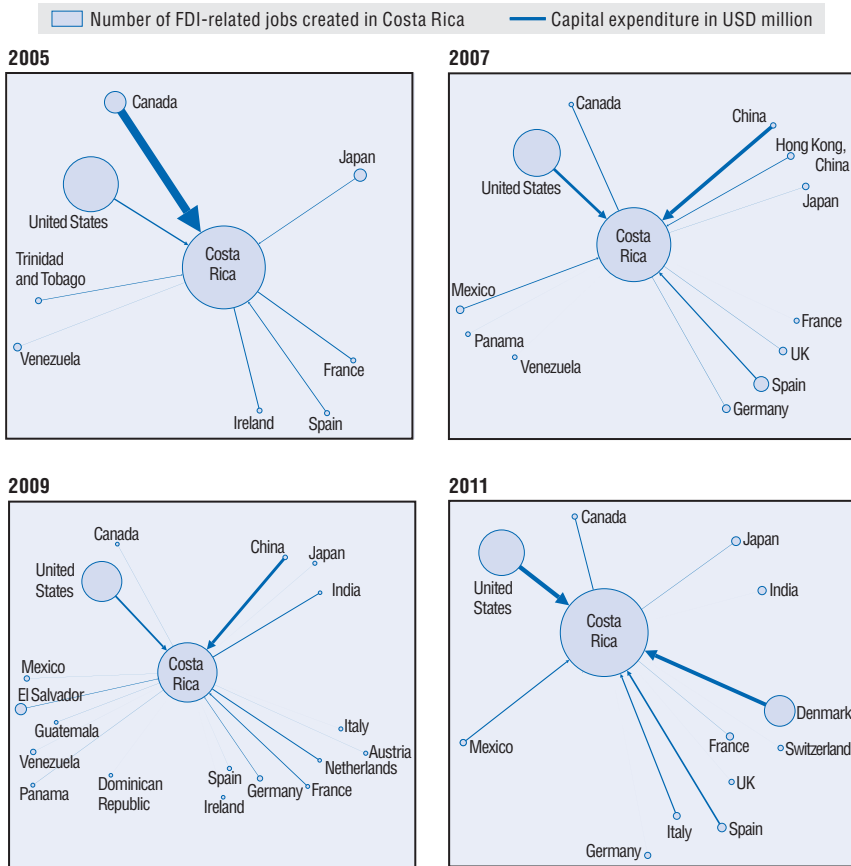
While the United States is the major source country for FDI in Costa Rica, China has recently emerged as a new investment partner. On average, the United States accounted for almost two-thirds of all FDI-related jobs created in 2003-11. Estimations by fDi Intelligence suggest that in 2007 and 2009, China accounted for 30-40% of total FDI in Costa Rica in terms of capital expenditure. However, Chinese FDI in Costa Rica seems to have limited effect on employment generation: China accounts for only about 1-2% of total FDI-related job creations in 2007 and 2009. Further growth of FDI from China in Costa Rica will depend on the diversification of the type of investment, which up to now has been focused on infrastructure and natural resources. On the other hand, traditional partners like Spain and Mexico continue to play a significant role in investment and job creation (Figure 1.7).

Figure 1.6. Number of FDI source countries, Costa Rica and selected economies, 2005-11



Source: Authors' calculations based on fDi Intelligence, 2012.

Figure 1.7. Countries investing in Costa Rica, 2005-11

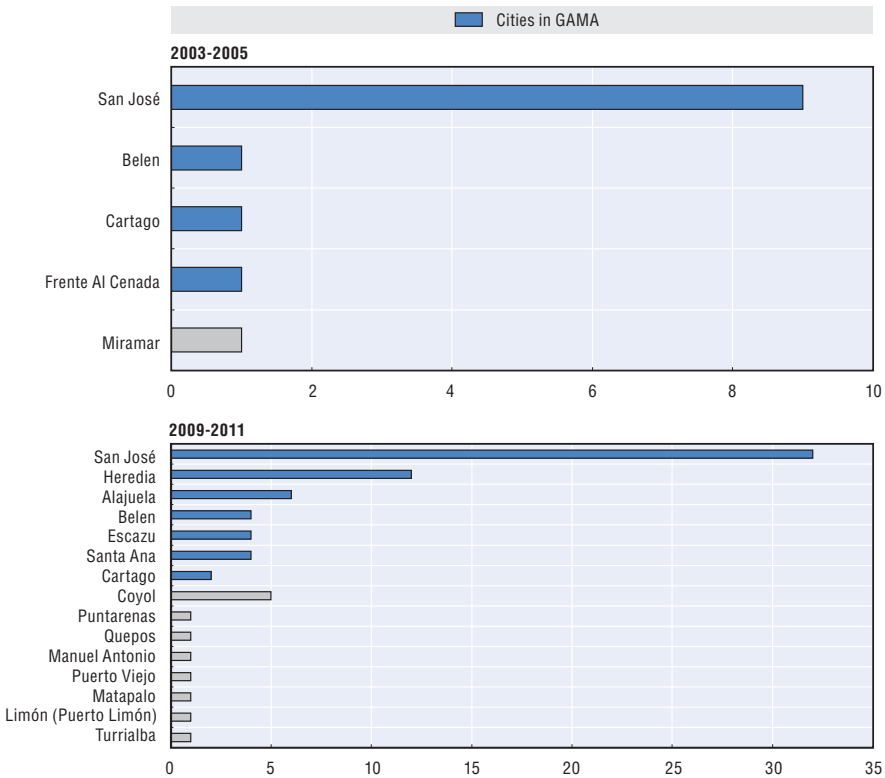


Note: The size of the circles represents the countries’ total number of FDI-related jobs generated in Costa Rica in the given year. The width of the arrows represents the total amount of FDI for the given year (capital expenditure in USD million).

Source: Authors’ calculations, based on fDi Intelligence, 2012.

In Costa Rica, FDI is concentrated in the capital province of San José and the Great Metropolitan Area (GAMA). Data by fDi Intelligence suggests that from 2003-05, 9 out of 13 projects were carried out in San José (Figure 1.8). More recently, a growing number of cities have received FDI, although most of the projects (and thus of the investments) have been carried out in the capital and major GAMA cities. In fact, 64 of the 76 investment projects in 2009-11 were carried out in San José, Heredia, Alajuela and Cartago.

Figure 1.8. Number of FDI projects in Costa Rica by city, 2003-5 and 2009-11



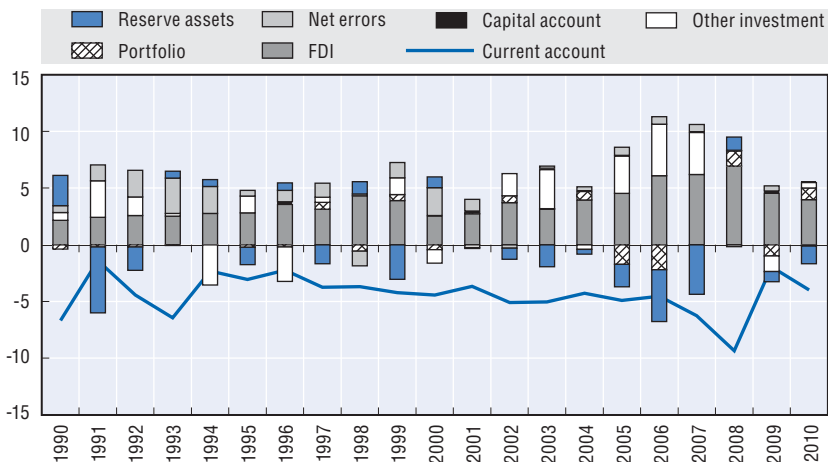
Note: Number of FDI projects not specifying a target city for each period: 2003-2005: 21 projects, 2009-2011: 77 projects.

Source: Authors' calculations based on fDi Intelligence, 2012.

Strong FDI presence is assumed to bring a comprehensive array of positive consequences for the host economy, if it is matched by appropriate policies fostering domestic linkages and production development. FDI benefits may come in the form of growth-enhancing effects or the ability to upgrade the country's production capacity and benefit from technological and knowledge spillovers (Blomström et al., 1992). However, evidence shows that for those spillovers to take place, the host economy must have a highly skilled labour force and a dense and lively innovation environment. In addition, given their non-debt nature and generally lower volatility, FDI flows are considered a superior form of external capital (Perea, 2008). Figure 1.9, which shows the evolution of FDI flows in Costa Rica within the balance-of-payments framework, seems to validate this view. Here, with levels close to 5%

of GDP during much of the last decade, the net balance of FDI flows appears as a consistent and stable financing source of the recurrent current-account deficit. On the back of this trend, portfolio and other investment categories have constituted a considerably more marginal and volatile funding alternative. Further, a comparison across capital flow categories tells a compelling story about the accrual of FDI to Costa Rica, which is far from a one-shot successful event based on the arrival of a few multinationals in the 1990s. While the financial account has tended to diversify across other types of flows – and particularly other investments – the net FDI figure has maintained its predominance. Moreover, its relative size has tended to increase, reaching a maximum of 5% of GDP around the mid 2000s.

Figure 1.9. Balance of payments, Costa Rica, 1990-2010 (% GDP)



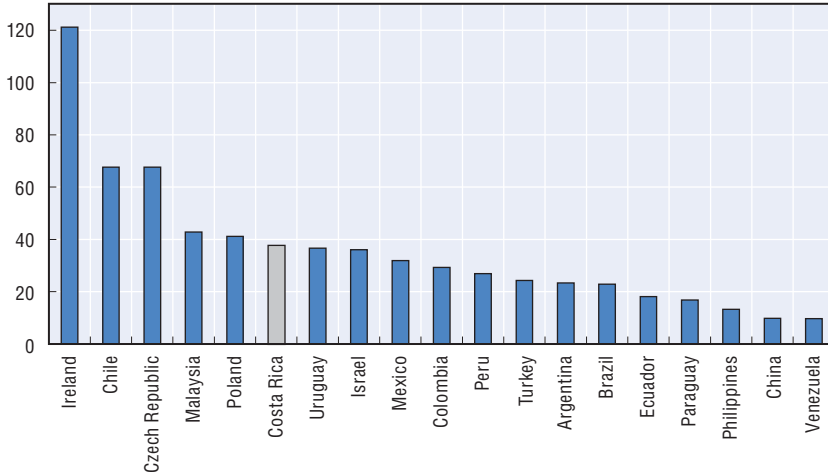
Source: Authors' elaboration based on International Monetary Fund (IMF).

The continuous flow of FDI in Costa Rica has also resulted in foreign capital playing a substantial role in the economy. With an FDI stock comprising 37% of GDP, Costa Rica stands out second only to Chile in Latin America (Figure 1.10). Yet when the comparison includes some of the usual magnets for knowledge-intensive FDI (such as Ireland, Malaysia and the Czech Republic), its record seems more modest.

The nature of FDI inflows to Costa Rica differs significantly from flows to the rest of Latin America. While several countries (particularly in South America) attract most FDI in natural resource sectors, Costa Rica concentrates them in the technology- and knowledge-intensive sectors. The import substitution policies in place prior to the 1980s attracted FDI not only in agriculture, but also in industry and manufacturing. At that time, light manufacturing concentrated 54%, and agriculture

41%, of total FDI. Over 1970-79, the composition of the FDI began to shift towards manufacturing (Figure 1.11) (ECLAC, 2001).

Figure 1.10. Stock of FDI, selected economies, 2010
(% GDP)



Source: Authors' elaboration based on UNCTAD FDI database.

Figure 1.11. FDI flows by sector, Costa Rica, 1970-89
(USD million)



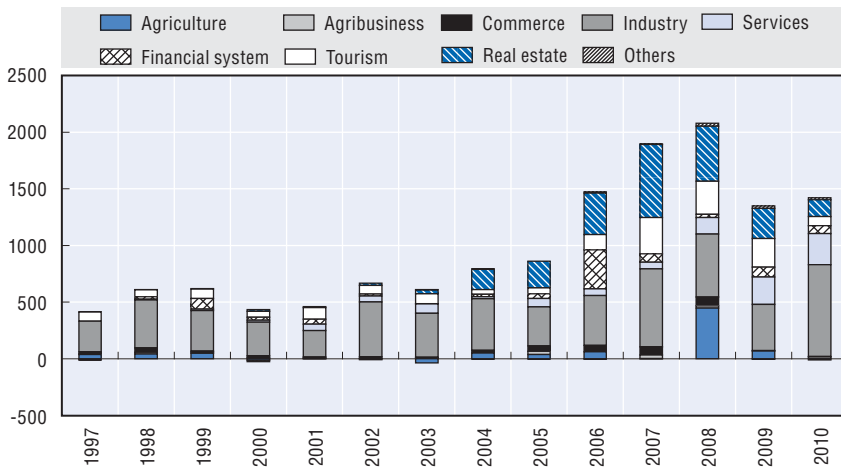
Source: Authors' elaboration based on ECLAC Database: CEPALSTAT.

The economic crisis of the early 1980s had a direct impact on FDI in manufacturing, which decreased over 1980-86. This was compensated with sharply increased FDI in agriculture. ECLAC (2001) attributes this in part to the country's new strategy of strengthening exports of non-traditional products, as opposed to the primary products it emphasised during early FDI accruals.

Matarrita (2007) earmarked 1987-96 as a specific period in FDI development.⁵ He suggests that – combined with a more favourable economic and political environment – the institutional and policy focus on FDI attraction fostered accelerated growth in the manufacturing industry and the development of the services sector (mostly in tourism, but also in business services such as call centres).

The period beginning in 1997 (Figure 1.12) and coinciding with Intel's decision to invest in a microchip assembly and testing plant also marks a new stage in FDI attraction characterised by sector diversification, consolidation of the manufacturing and services sector, and a transition from non-skilled to skilled labour activities (including electronics, medical devices and business and engineering services).

Figure 1.12. FDI in Costa Rica by sector, 1997-2010 (USD million)



Source: Authors' elaboration based on Central Bank of Costa Rica.

The more detailed data produced since 1997 considers new sectors, such as real estate and finance, which have grown considerably in the past decade. Real estate was not included in FDI statistics before 2004, which partly explains the sharp increase in total FDI since then. In the analysed period, real estate FDI (largely linked to US nationals' acquisition of second homes in Costa Rica) represented almost 18% of total FDI flows. While manufacturing consolidated – representing 45% of the total

FDI amount – agriculture and agribusiness shrank to only 7%. Services (not a capital-intensive investor sector) also consolidated, accounting for 8% of total investments.

Box 1.1 The relevance of first movers: the impact of Intel on FDI flows to Costa Rica

In the late 1990s, Intel, the world's largest semiconductor manufacturer, began constructing an assembly and testing plant in Costa Rica. After several expansions and new plant additions, Intel accumulated high investment in Costa Rica with a workforce of more than 3 500 people.

The decision to localise this investment in Costa Rica was in line with the company's risk diversification strategy. Intel does not need to establish its semiconductor assembly and testing plants close to local markets: the nature of the product means that transportation costs are not high. However, the ability to build and expand quickly and cost-efficiently was an important factor. Costa Rica had the capacity and flexibility to fulfil Intel's requirements. The negotiation process took less than a year, during which Costa Rica was able to provide satisfactory solutions to Intel's concerns about infrastructure, supplying qualified human resources, electricity rates, flight frequency, red tape, etc.

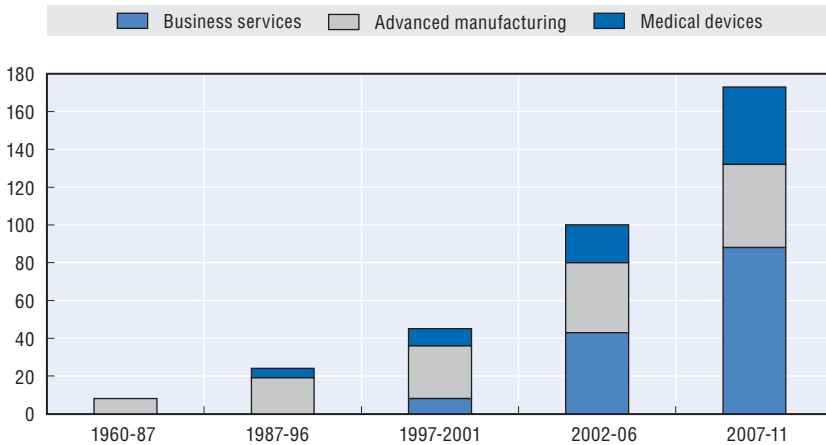
One of the direct and immediate impacts of Intel's decision was the "signalling" effect, as Intel's investment helped to position Costa Rica on decision makers' mental map. Foreign investors have a "before and after Intel" image of Costa Rica: as measured in the number of companies, FDI in the targeted sectors (advanced manufacturing, medical devices and services) has reached 65% since Intel's arrival 15 years ago.

One-fifth of Intel's personnel (mostly located in the United States) are dedicated to R&D. Yet Intel also has a global and diversified R&D strategy: in the late 1990s, the company established research centres responsible for global projects in India and China. It also runs dedicated R&D centres in Ireland, Russia, Malaysia and the Philippines. Half of Intel's R&D budget is allotted to manufacturing and R&D takes place mainly in its manufacturing plants. While the cost savings are considerable, the availability of qualified human resources remains a critical consideration in Intel's internationalisation strategy (EIU, 2007). In Costa Rica Intel recently opened an engineering and design centre with 300 employees.

Source: Larraín, F.B., L.F. Lopez-Calva and A. Rodriguez-Clare (2000), "Intel: A Case Study of Foreign Direct Investment in Latin America", CID Working Paper, No. 58, CID/Harvard University, Cambridge, MA.

The arrival of Intel clearly acted as a “pull factor” for other foreign companies in related sectors. After 1997, Costa Rica registered an increase in the number of companies operating in knowledge-intensive sectors, including business services, advanced manufacturing and medical devices (Figure 1.13). Business services, tourism and medical devices account for the highest number of job creations through FDI in Costa Rica (Figure 1.14).

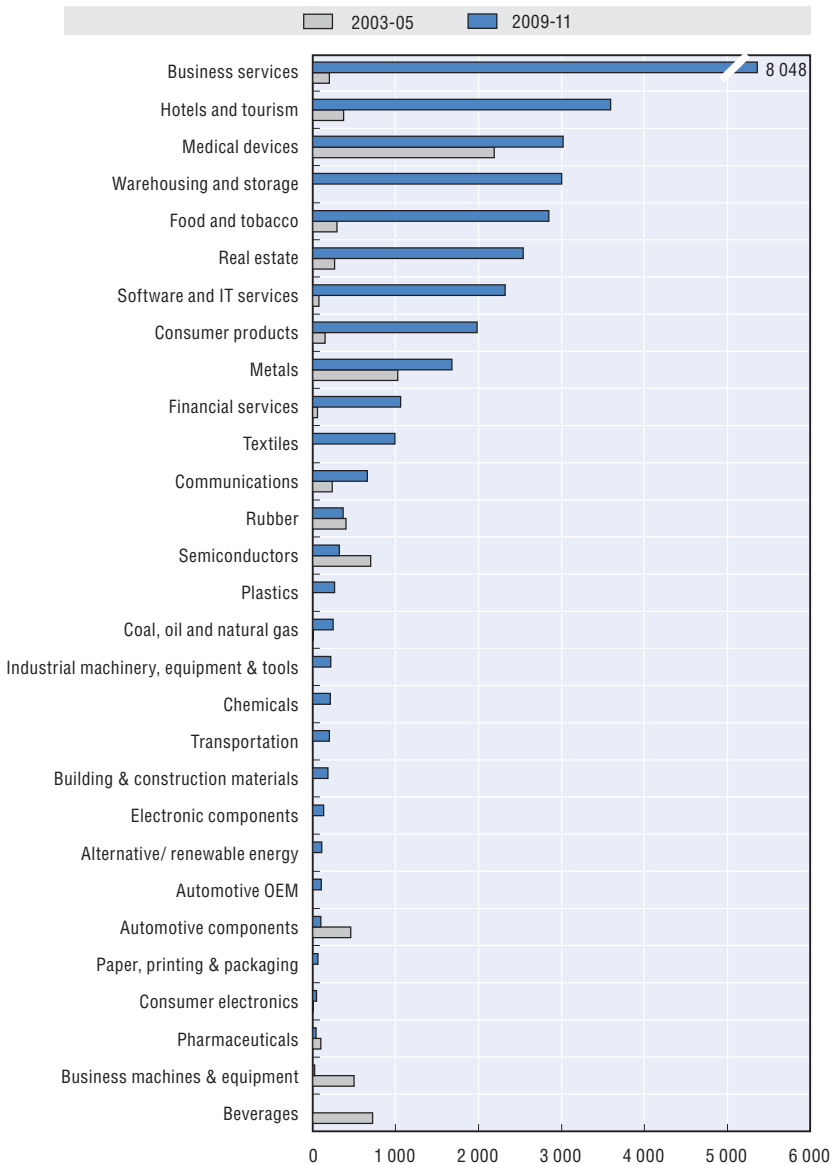
Figure 1.13. Number of companies in knowledge-intensive activities, Costa Rica, 1960-2011



Source: CINDE, April 2012.

Companies investing in Costa Rica are diversifying and embarking on more knowledge-intensive activities. The evolution in the types of business activities shows upgraded FDI in the country (Figure 1.15). According to fDi Intelligence data, the number of business functions carried out in Costa Rica increased between 2003-05 and 2009-11. While manufacturing is still the top activity in terms of number of projects and job creations, it receded in recent years. The 2009-11 data on greenfield investment projects in Costa Rica shows interesting new entries in the types of activities being carried out, including design, development and testing, R&D, and education and training. While these do not comprise the majority of projects or job creations, they are in line with global trends that show manufacturing and low-tech services as the main activities that are being delocalised (See Box 1.2).

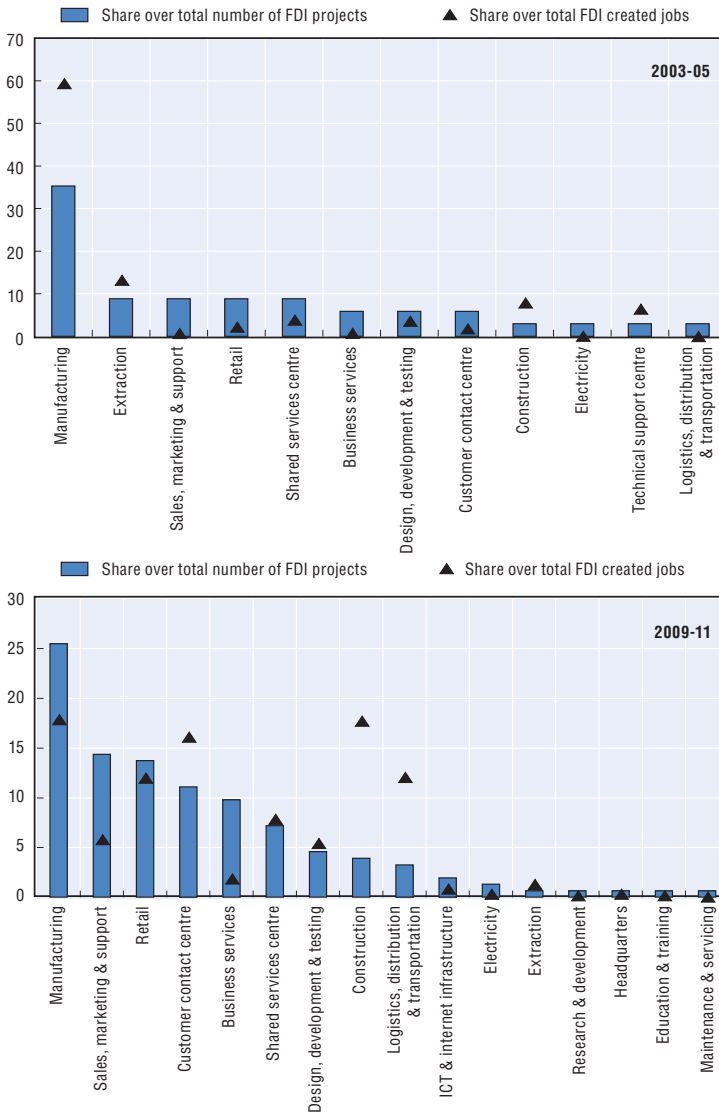
Figure 1.14. Number of jobs created by FDI projects in Costa Rica by sector, 2003-05 and 2009-11



Note: Total number of FDI-related jobs created for each period for green field projects: 2003-05: 7 758 jobs; 2009-11: 34 385 jobs.

Source: Authors' calculations based on fDi Intelligence, 2012.

Figure 1.15. FDI jobs and projects by type of business activity, Costa Rica, 2003-05 and 2009-11



Note: Total number of FDI projects recorded for each period: 2003-05: 34 projects; 2009-11: 153 projects. Total number of FDI-related jobs created for each period: 2003-05: 7 758 jobs; 2009-11: 34 385 jobs.

Source: Authors' calculations based on fDi Intelligence, 2012.

Box 1.2. **Attracting FDI and creating jobs in Costa Rica**

Advancing in services, advanced manufacturing and medical devices clusters

According to CINDE estimates, a total of 173 foreign companies invested in services, advanced manufacturing and medical devices over 1970-2011. This trend has accelerated in the past decade: 75% of those companies invested in the past 10 years and 43% in the past 5 years. Today, these three industries employ more than 66 200 people, compared with only 7 061 in 2000 (Table 1.1). Advanced manufacturing comprises a number of subsectors, some of which (such as electric and electronic goods assembly) invested as early as the 1960s and 1970s. But the sector only began to grow after 1987. Nearly 90% of the companies invested after 1987 and nearly 63% invested in the past 15 years. Intel's USD 500 million assembly and testing semiconductor plant is the largest among them. Launched in 1998 and currently employing 3 500 people, it accounts for more than 20% of Costa Rican exports.

Baxter was the first medical device company to establish itself in Costa Rica in 1987, placing the country on the map for locational decision makers. However, the sector has only begun to grow in the last ten years, creating an interesting agglomeration effect: only 22 of the 44 companies that have invested are pure medical device companies. The rest are contract manufacturers, suppliers and services providers that came to Costa Rica to serve them.

The services sector also comprises a variety of different subsectors, among which one can distinguish at least two groups. The first is business services, which provides back-office administration and support (accounting and finances, human resources, information technology (IT) maintenance, etc.) and front-office customer interaction (sales, technical support, customer service, etc.). Some of these projects are captive centres, while others are service providers. Shared services, contact centres and back-office services concentrate 63 of the 89 companies in the services sector; a steady and growing investment flow in this sector can be observed since the first investments in 1995. The second group, developed in the last ten years, comprises more complex activities such as software development, engineering, architecture and construction, and entertainment and media.

Box 1.2. (contd.)

Table 1.1. Jobs created by FDI, Costa Rica, selected sectors, 2000-11

	2000	2011
Services	1 061	37 049
Advanced manufacturing	4 500	15 590
Medical devices	1 500	13 561
Total	7 061	66 200

Source: CINDE.

Creating jobs through FDI: Costa Rica, Ireland and Malaysia

The contribution of FDI to job creation by type of business activity differs substantially across countries. When comparing three economies such as Costa Rica, Ireland and Malaysia that rely heavily on FDI as a source of growth, several differences and some similarities emerge (Figure 1.16).

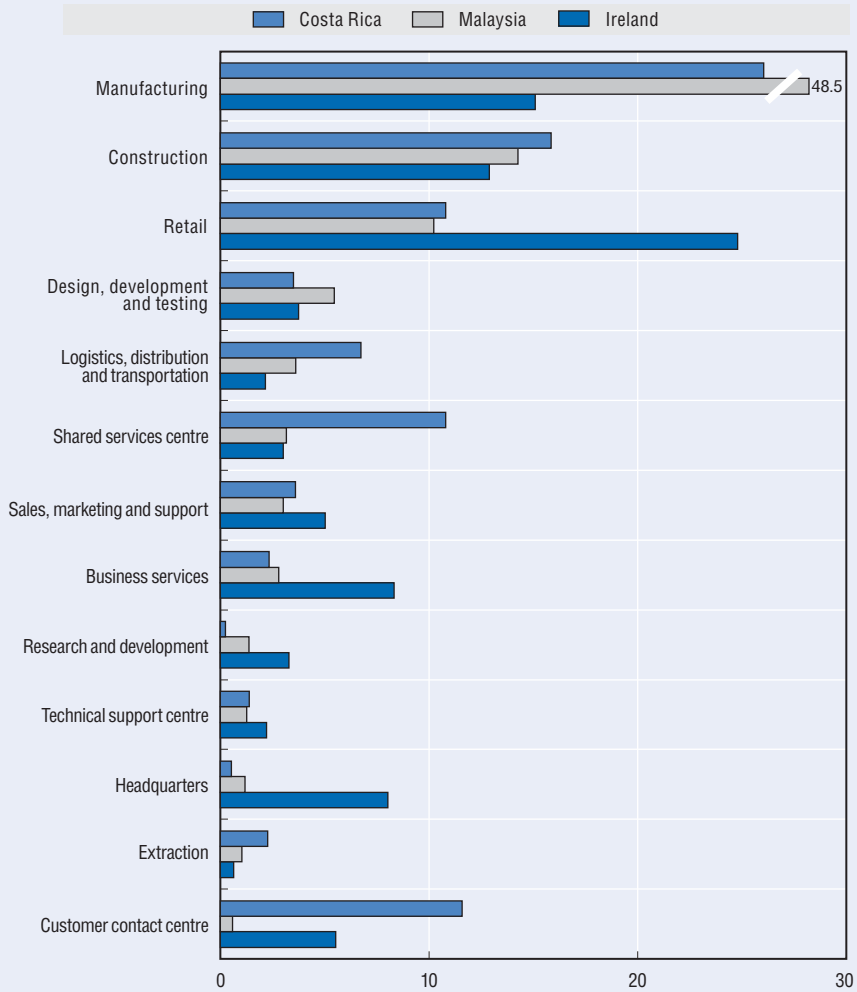
First, there is no unique pattern across countries of job creation by activity type. Malaysia displays the most concentrated pattern, with almost 50% of jobs created in manufacturing in 2003-12. Costa Rica and Ireland have a more diversified pattern – manufacturing, construction, retail, business and customer contact services comprise primary activities in Costa Rica and retail, manufacturing, construction, business services and headquarters are the major activities in Ireland.

Second, activities such as design, development and testing and R&D account for less job creation than other activities, yet usually entail higher capital expenditure and higher-paid jobs. In Costa Rica, design, development and testing accounted for approximately 4% of total national jobs created by greenfield FDI investments. In Malaysia, the share is a little higher (around 6%). As for R&D, it accounts for the highest share of job creation in Ireland and the lowest in Costa Rica (less than 1% of total national FDI-created jobs).

Box 1.2. (contd.)

Figure 1.16. FDI-created jobs by type of business activity, Costa Rica, Ireland and Malaysia, 2003-12

(Share of jobs in each business activity over total jobs created by FDI)



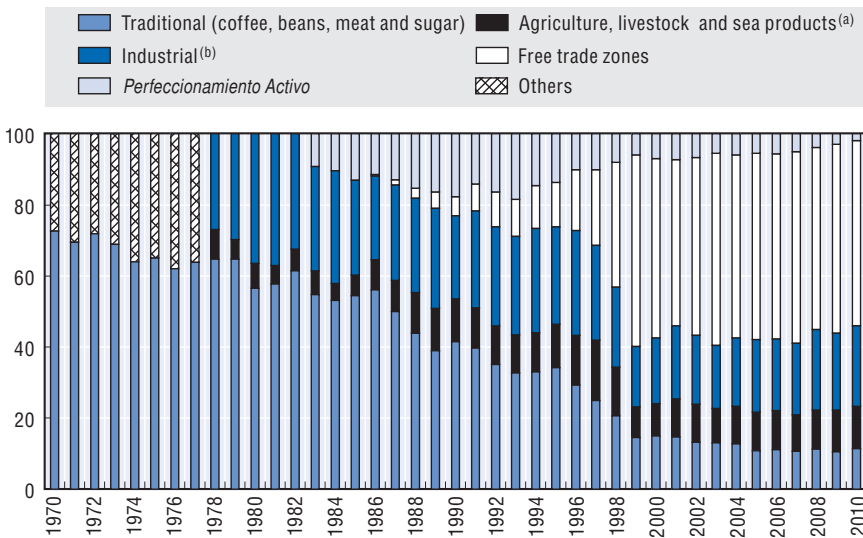
Note: Data recorded from Jan 2003-March 2012.

Source: Authors' calculations based on fDi Intelligence, 2012.

An increasingly diversified export portfolio

Costa Rica has radically changed its export structure, transitioning from agricultural products to manufacturing and more knowledge-intensive activities. The country had traditionally relied on four basic export products – coffee, bananas, meat and sugar – which together accounted for 65.5% of total exports in goods⁶ in 1970-79 and 56.1% in 1980-86. In the late 1980s, the share of traditional products began to drop and they now represent approximately 10% of total exports or 22% of total exported goods when combined with other agriculture, livestock and sea products. The leading forces behind the change in the export structure of the past 20 years are the companies operating under the Free Trade Zone regime (FTZ) and the industrial/manufacturing companies (Figure 1.17).

Figure 1.17. Share of exports by sector, Costa Rica, 1970-2010



Note: *Perfeccionamiento activo* (inward processing fiscal regime) is the customs procedure under which certain goods can be brought into a customs territory conditionally relieved from payment of import duties and taxes; such goods must be intended for re-exportation within a specific period after having undergone manufacturing, processing or repair. (Source: OECD Glossary of Statistical Terms). ^(a) and ^(b), data not available before 1978.

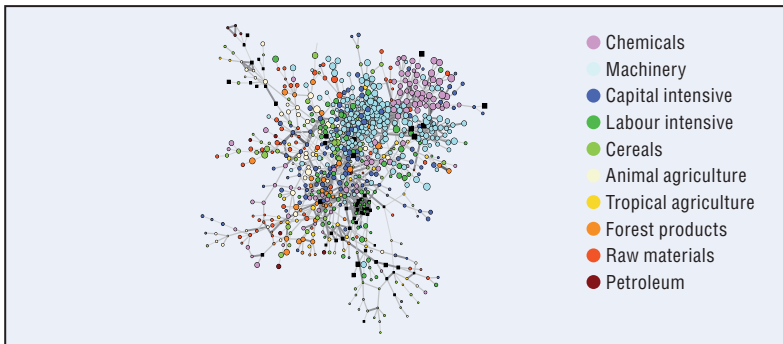
Source: Authors' elaboration based on MIDEPLAN.

FTZ and industrial exports started to grow in the late 1990s. In 1999, FTZ exports accounted for over 50% of total exports in goods – a share that has remained relatively stable, with an average of 52%. Most FTZ exports are manufactured products; electronics accounts for the major share of those exports, with Intel being

a key exporter. The medical devices sector shows an extraordinary performance, growing from USD 87.6 million in 1998 to USD 1 251.7 million in 2011, and contributing more than 12% of total exports in goods that same year. The agriculture and food-related sectors still weigh heavily on the export structure (25.4% in 2011), even after accounting for the continuous drop in the relative weight of traditional exports since the mid-eighties. (Figure 1.17).

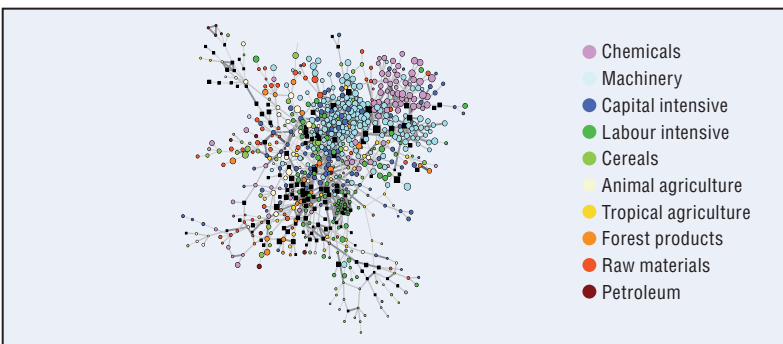
The Costa Rican FDI strategy has proven highly successful. FDI flows led to profound changes in the country’s trade specialisation. Costa Rica evolved from an export structure which was highly concentrated on agricultural products and textiles and garments to a more diversified export structure with new, more knowledge- and technology-intensive products. To illustrate this trend, Annex 1.A1 includes an application of the “Product Space” to Costa Rica’s export profile, from which we extract two graphic representations in Figures 1.18 and 1.19.

Figure 1.18. Product space, Costa Rica, 1988



Source: Authors’ calculations based on Feenstra *et al.* (2005).

Figure 1.19. Product space, Costa Rica, 2008



Source: Authors’ calculations based on COMTRADE.

Both figures represent a “map” of Costa Rica’s export specialisation according to the following elements. Each circle represents an industry under the SITC 4 classification. Each industry is coloured following the Leamer (1984) classification. The product space unveils two additional characteristics of a given industry. The first is an idea of the product’s sophistication value, indicated by the size of the circle. Generally, industries with higher values belong to the machinery and chemicals categories. The second is the distance from one industry to another, which reflects information about their “degree of similarity”. In this manner, industries that are nearby in the product space are “similar”, i.e. they require roughly the same set of inputs, skills and capabilities. Alternatively, industries that are distant in the product space differ significantly in their production requirements.

The position of the country in the product space is indicated by the set of black squares. Each black square represents an industry in which the country has developed a comparative advantage. Following the convention of the literature, the competitive export industries are those where the revealed comparative advantage (RCA) is greater than 1.⁸

With the previous references in mind, Figures 1.18 and 1.19 characterise Costa Rica’s external specialisation transitioning in 1988-2008. In 1988, the country specialised mainly in the textile/garment cluster, but also featured a diverse but small set of additional export industries. Thus the image for 1988 shows a country that is clearly distant from the core of the machinery and chemical industries, which tend to have the highest value.

The same representation for 2008 shows a sharply different reality. By that year, Costa Rica had reached new areas of the product space, increasing its degree of product diversification and entering the “high-value” area of the product space (i.e. the capital-intensive, machinery and chemical sectors). Thus the country substantially reduced its original specialisation in the textile/garment industry. All things considered, the accrual of export-oriented FDI to technology-intensive sectors has allowed the country to move in the product space and “jump” into quite different areas from those in which the country’s original competitiveness was rooted.

Changing global trends: opportunities and challenges

Costa Rica managed to create a reputation as a country for FDI and changed its pattern of insertion into global trade by increasing its participation in knowledge- and technology-intensive sectors and activities. However, the global competitive scenario has changed in the past decades and the global knowledge economy today differs from the setting in which Costa Rica started to promote its integration in

the global economy. The country needs to identify the new trends and their impact on its current situation.

First, the emergence of new technological paradigms, including ICT, biotechnology and nanotechnology, is creating new opportunities for business, inducing changes in the organisation of production and innovation and increasing the relevance of innovation and competitiveness networks.

Second, new actors have appeared in the global arena. China has made the world trade axis shift to the East, becoming a major trade partner not only for Asian economies but also for Latin America and Africa. China has overtaken the United States in manufacturing, accounting for 19.8% of world production in 2001 compared with 19.4% for the United States (OECD, 2012).

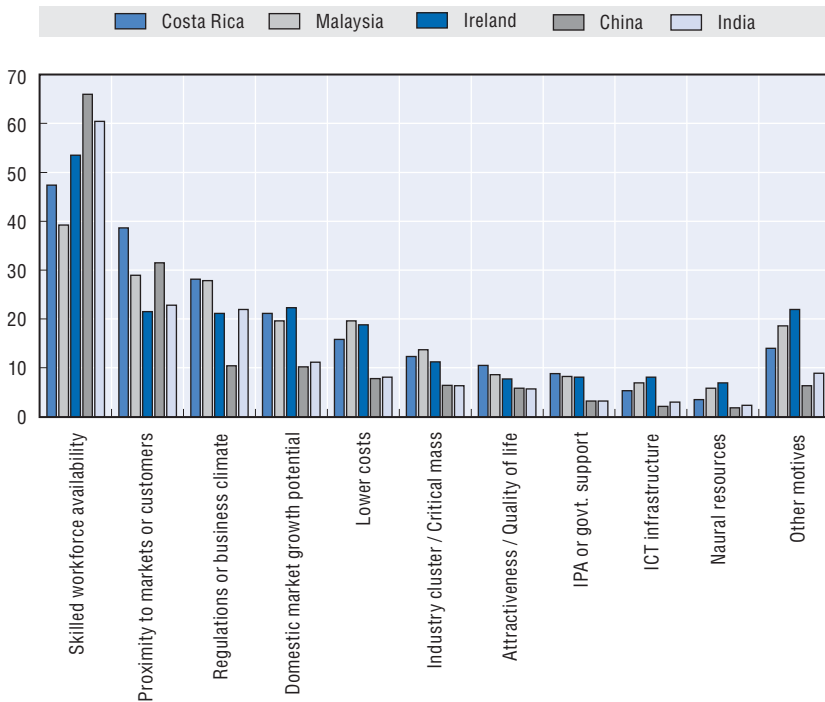
Third, globalisation favoured production unbundling, allowing vertical disintegration processes and delocalisation of corporate activities. This engendered learning dynamics in host economies which have gradually scaled up the value chain and accumulated new skills and production competences, thus contributing to creating a new geography of production in which new innovation hotspots are emerging.

The changing nature of FDI: the mobility of knowledge-intensive sectors and activities

A major change in FDI trends is that in addition to low-end assembly activities or services, companies started to delocalise more knowledge-intensive production phases. The new type of FDI entails delocalising more sophisticated types of activities, upgrading existing ones and offshoring those previously performed in-house, such as R&D and design. Unlike earlier, firms do not delocalise only to take advantage of lower labour costs. As emerging economies consolidate national production systems, delocalisation is being driven by local knowledge assets, such as a skilled labour force, proximity to emerging markets, and information on consumer trends in countries with rising internal demand (Box 1.3).

Location determinants of more knowledge-intensive FDI differ from traditional determinants, with skills availability, proximity to markets and customers, regulations, business climate and market potential ranking higher than lower labour costs. This type of high-value-added delocalisation has mostly benefited countries (including Costa Rica) with some degree of local knowledge capacities: data by fDi Intelligence shows that roughly 46% of foreign companies investing in the country have cited skills availability as the primary driver for their investment decision (Figure 1.20).

Figure 1.20. Determinants of FDI in Costa Rica and in selected economies, 2003-12
(% of total motive-citing investing companies)



Notes: Often more than one investment motive is recorded for any investing company; hence the sum of share of companies mentioning a certain motive exceeds 100%. The share of companies for which investment motives are recorded over the total number of investing companies varies by country: Costa Rica: 51.1%, Malaysia: 51.3%, China: 38.4%, India: 43.6%. Data recorded from Jan 2003 - March 2012. IPA means Investment Promotion Agency.

Source: Authors' calculations based on fDi Intelligence data, 2012.

Box 1.3. Location determinants: what matters most for knowledge-intensive FDI?

FDI location determinants have been thoroughly researched and the first empirical contributions date back several decades. On the other hand, research and analysis of which host country characteristics matter most for knowledge-intensive FDI have been more limited. However, inter-country competition to attract knowledge-intensive FDI forces host economies to build a set of sound institutional and socio-economic endowments to allure potential investors.

A few studies have specifically addressed the drivers of FDI flows in knowledge-intensive industries. OECD (2010) states that this type of FDI requires a differentiated analysis because its location determinants differ substantially from those guiding standard FDI flows. This presumption suggests a dual course of action. One option is to select industries characterised by strong technological requirements and study their location determinants. Another is to analyse knowledge-intensive functions, irrespective of the sector to which they belong. This option acknowledges that innovation activities take place at certain stages of virtually all industries and identifies R&D laboratories – and to a lesser extent corporate headquarters – as the business functions with the most intense use of knowledge.

The same study also indicates that market size, agglomeration forces and access to scientific and technical capabilities (especially skills) are the most important location determinants for knowledge-intensive FDI. Other considerations, such as costs or the protection of intellectual property rights, are more elusive.

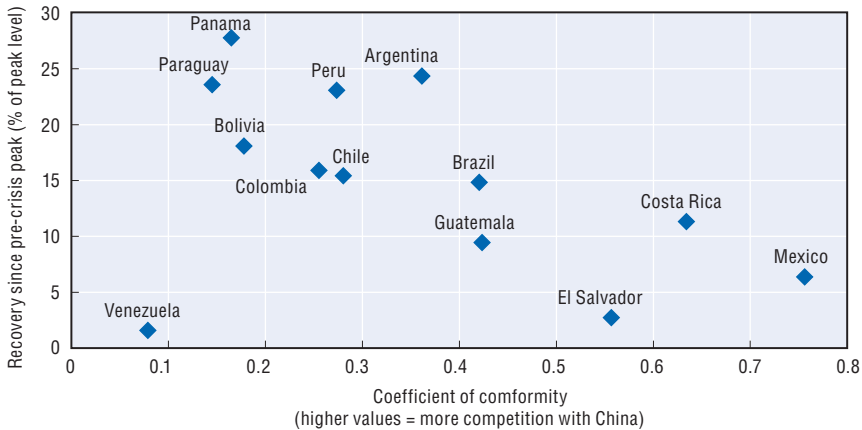
The OECD calls for a specific and tailored policy framework to attract these investments. It stresses the need to view FDI policy as a complement to a broad set of horizontal policies that also include aspects traditionally outside of the policy domain of FDI attraction and closer to the realm of production development policies. Along these same lines, Guimón (2009) concludes that the promotion of knowledge-intensive FDI requires close co-ordination between innovation and FDI promotion policies (and therefore government agencies).

The “China effect”

By and large, one of the most important developments in international trade has been China’s emergence as a global manufacturing powerhouse. Its impact on Latin America is varied, with some countries benefiting in the short term through improved terms and greater volumes of trade and others facing rising competitive pressures on their domestic industries. On the other hand, China is becoming a new source of investment for several of the region’s countries (Santiso, 2007).

More recently, China has been advanced as one of the factors that helped reduce the regional impact of the global financial crisis: evidence shows a strong association between trade complementarities with China and a rapid recovery from the 2008 global crisis (Figure 1.21⁹).

Figure 1.21. Conformity versus crisis recovery, Latin American countries, 2008-11



Source: Authors’ calculations based on COMTRADE and IFS.

In general, countries with low coefficients of conformity¹⁰ with China (i.e. with different export profiles) registered the most rapid recoveries in GDP after the onset of the crisis in 2008. The only obvious exception to this trend is Venezuela, which features a very low coefficient and the most sluggish recovery in the post-crisis era. Costa Rica also differs slightly – the financial crisis left the country with GDP contraction of -1.3% in 2009, which seems relatively mild compared with other countries (especially Mexico) with sizeable trade and investment exposures to the United States. Despite a relatively high conformity coefficient with China (second only to Mexico), Costa Rica shows a post-crisis recovery in line with the sample average – its current GDP level stands at 1.11 times its pre-crisis peak, compared to a sample mean of 1.13 times.

A supporting factor of this relative resilience has been the increased trade exchange between China and Costa Rica – in other words, the low trade complementarity between both countries does not seem to have played a role in determining their trade exchange in recent years. OECD (2011) documents this trend by comparing trade dynamics between Latin America and China. A general pattern emerging from this analysis is China's growing importance as a source of imported goods. All countries – whether Central or South American – have significantly increased China's relative presence as an importer.

Counteracting this common trend, exports show a much more heterogeneous picture, with marked differences in countries' trade specialisation. Some South American commodity exporters (Chile, Brazil and Peru) have seen significant growth in China's relative share as an export destination – more so than for imports. In these countries especially, the new economic exchange with the Asian giant has been instrumental in facilitating sustained improvement in trade and a new source of economic resilience. The rest of the region confirms the asymmetrical exchange between China and Latin America, with most countries facing no significant relative increase in exports to China during the last decade. This trend is more acute for Central American countries, by and large deprived of large natural resource endowments and facing downward adjustments in terms of trade over the last decade.

Costa Rica has efficiently dodged the trade headwinds associated with China's emergence as a global producer. While it shares with its sub-regional peers an absence of natural resources available for export, it registered significant growth in its exports to China – from negligible (0.23%) in 2000 to 6.3% of total exports in 2009. Chinese imports, on the other hand, increased less dynamically – from 1.3% of total imports in 2000 to 4.45% in 2009. Yet the high degree of conformity suggests that Costa Rica could be affected by China's emergence as a global provider of manufactures. This feature of the trade profile should not be overlooked – even if it does not seem to have resulted (so far) in pressure over terms of trade or export volumes.

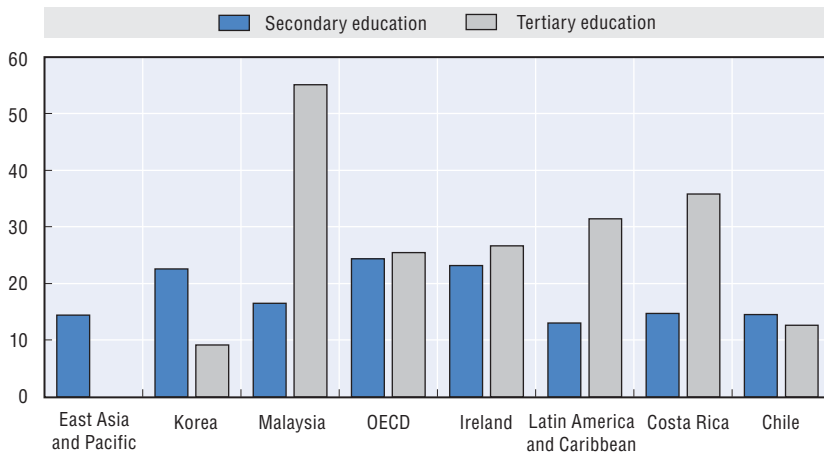
Consolidating the national innovation system: the challenge ahead

The shift of the Costa Rican economy away from its dependency on the primary sector is also evident when considering the changes in domestic production. In 2010, the share of the agricultural sector in national GDP was 7%, industry 26% and services 67% (see Table 0.1.). However, Costa Rica's national innovation system is still scantily developed (Monge et al., 2010).

A good education system, but strengthening the supply of skilled labour is needed

Consolidating and enhancing innovation will entail reinforcing the supply of a skilled labour force. International comparisons illustrate Costa Rica’s commitment to higher education. This is especially true for tertiary education, where the ratio of expenditure-per-student to GDP-per-capita is 37% – significantly higher than the average ratio for Latin America and OECD economies (Figure 1.22). The financial burden of secondary education is more in line with the Latin American standard, and thus below the levels of advanced economies: enrolment rates in secondary education are around 89%, slightly lower than in OECD countries (100%). The gap is higher in tertiary education: below 60% in Ireland and around 25% in Costa Rica (Figure 1.23).

Figure 1.22. Education expenditure per student, Costa Rica and selected economies, average 2004-10
(% of GDP per capita)



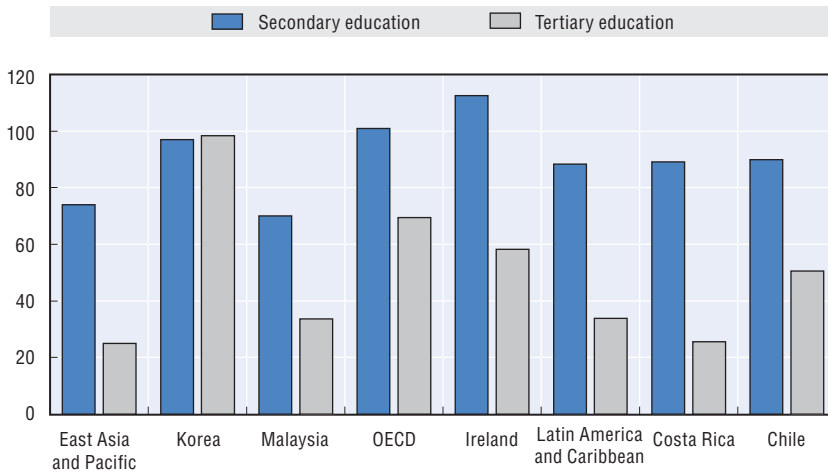
Note: No data are available for tertiary education for East Asia and Pacific.

Source: Authors’ elaboration based on World Development Indicators.

Costa Rica has a sound education system. In the 2010 edition of the OECD Programme for International Student Assessment (PISA), that benchmarks skills and knowledge outcomes among 15-year old students across countries, Costa Rica scores well with respect to the OECD average. On the reading literacy scale, even though Costa Rica attains a mean score of 443 compared to the OECD average of 493, its outcome is comparable to Chile and higher than Mexico. On the mathematical

literacy scale, Costa Rican students attain a mean score of 409, compared to an OECD average of 496, and on the scientific literacy scale, Costa Rica scores 430, which is sensitively lower than the OECD average (501), but it is higher than other Latin American countries, including Mexico. Costa Rica also shows very low levels of gender differences in reading performance in respect to all participant countries (ACER, 2011).

Figure 1.23. **School enrolment ratio, Costa Rica and selected economies, average 2004-10**

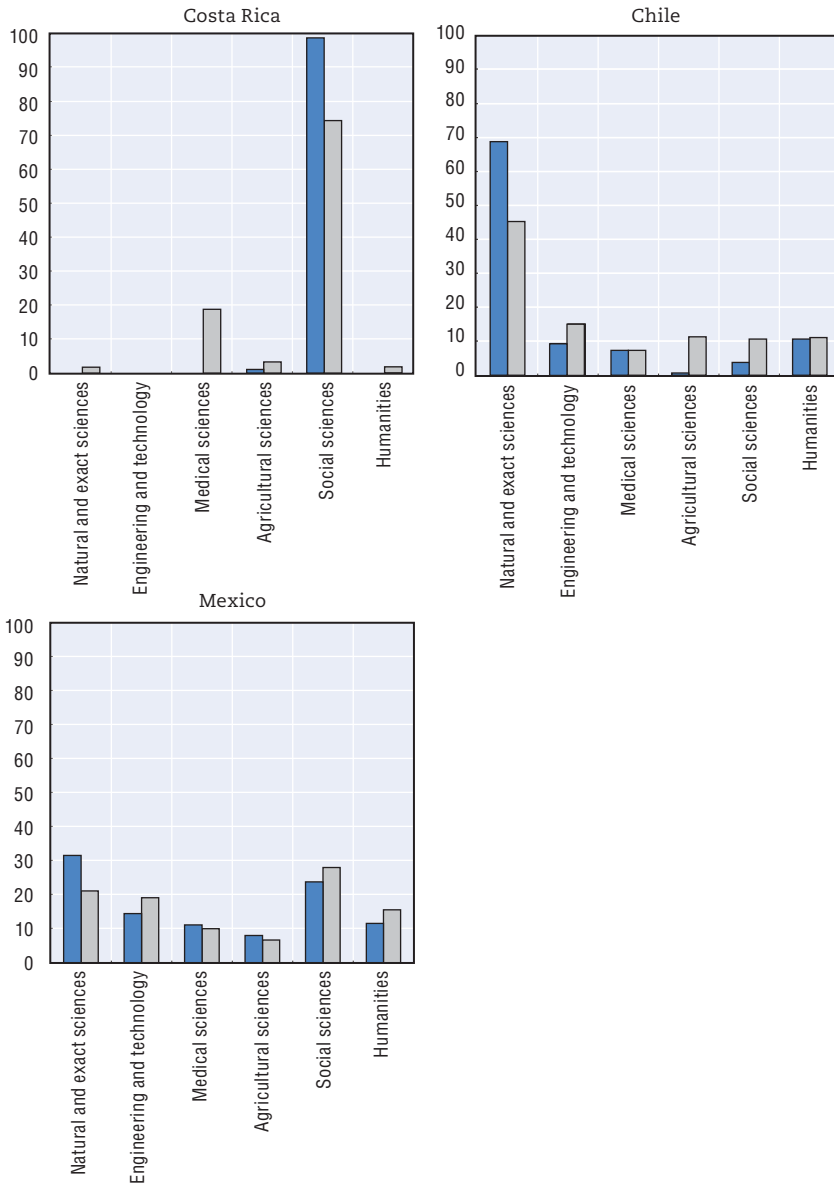


Note: Gross enrolment is the ratio of total enrolment to the population of the age group that officially corresponds with that level of education. This ratio can take levels above 1, since it takes into consideration enrolment irrespective of the age of the student.

Source: Authors' elaboration based on World Development Indicators.

Costa Rica also scores relatively well in the latest edition of the 2012 Webometrics Ranking of World Universities conducted by the Spanish National Research Council (CSIC) which measures the web presence, access and visibility of more than 20 000 universities worldwide. This is often used as a good proxy for the overall quality of higher education institutions (*i.e.* ECLAC, 2008). While only one institution is ranked among the top 500 universities in the world (University of Costa Rica–403rd rank), some Costa Rican universities are among the top 200 in Latin America, including the National University of Costa Rica (152nd rank in the region) and the Technological Institute of Costa Rica (170th rank in the region). According to the same ranking, the University of Costa Rica is second among the top universities in Central America and the Caribbean (CSIC, 2012).

Figure 1.24. Profile of PhDs by area of specialisation, shares over total, Costa Rica, Chile and Mexico, 2000-09



Source: Authors' calculations based on RICYT data.

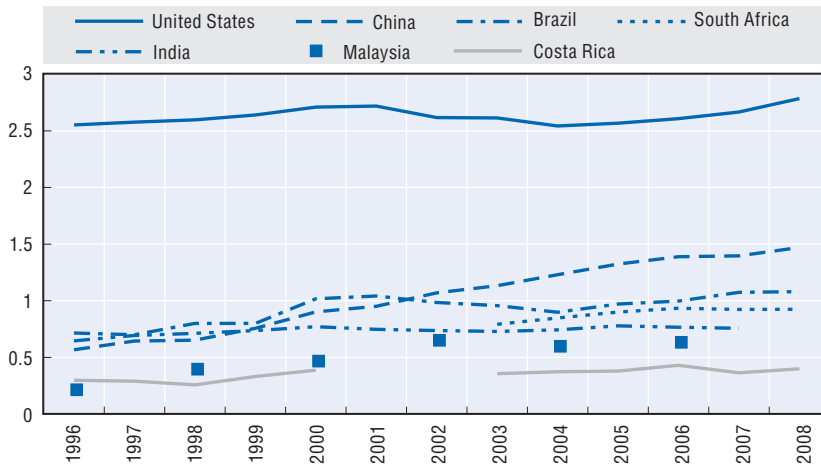
There is no best distribution of PhDs across areas of specialisation – each country has a different profile. However, Costa Rica's PhD graduates stand out in their preference for social sciences, unlike students from other countries (including Chile and Mexico) of the region. Costa Rica granted 93 PhDs in 2000-2002 – 92 of them in the social sciences. This trend recently began to reverse: by 2007-09, Costa Rica had more than doubled the number of granted PhDs, including in more technology-related disciplines (over 18% in medical sciences, 3% in agricultural sciences and less than 2% in natural sciences). Still, there were no PhDs in engineering and computer sciences (Figure 1.24). Costa Rica needs to rebalance the composition of graduation by area of specialisation.

Scant investment in R&D and little commitment to innovation in the private sector

R&D in Costa Rica is lagging as other emerging economies close the gap with the OECD at a faster pace (Figure 1.25). Costa Rica invested 0.3% of GDP in R&D in 1996. That figure rose to 0.4% in 2008, which is still below the Latin American average. While wealthier economies tend to spend higher shares of their GDP on R&D, some emerging economies have significantly increased their investment in R&D and innovation in the last decades. China more than doubled R&D expenditures over the last decade, even if spending remains low compared with the OECD average. In Latin America, R&D investment has remained constant, hardly exceeding 0.5% of GDP. Brazil is the regional exception, with a constant increase in R&D intensity, exceeding 1% of GDP in 2010 (still far from the OECD average of 2.3%). Emerging economies are starting to host a rising number of R&D centres thanks to public policy support and the new strategies of transnational corporations that have opened research labs in emerging markets (such as China and India), contributing to rising R&D expenditures in those countries. Costa Rica and Malaysia have also seen a gradual increase in the knowledge content of multinational companies' activities in their economies. But while on the rise, R&D investments are still very low.

The private sector still invests little in innovation. In spite of the advances of recent decades, developing and emerging economies invest less in R&D than advanced economies and the share of R&D financed by the private sector is lower than in OECD countries (Figure 1.26). Notable exceptions are China and Singapore, as well as other South East Asian countries such as Malaysia where the private sector is the main source of financing for R&D expenditures. Not only does Costa Rica invest scant resources in R&D, its private sector only finances 33% of total national R&D expenditure. This is in stark contrast to the private sector's commitment in Malaysia (84%), China (70%) and Singapore (60%). Costa Rica's innovation gap cannot be closed without a substantial increase in private-sector investment in R&D, along with rising public-sector support for scientific and technological development.

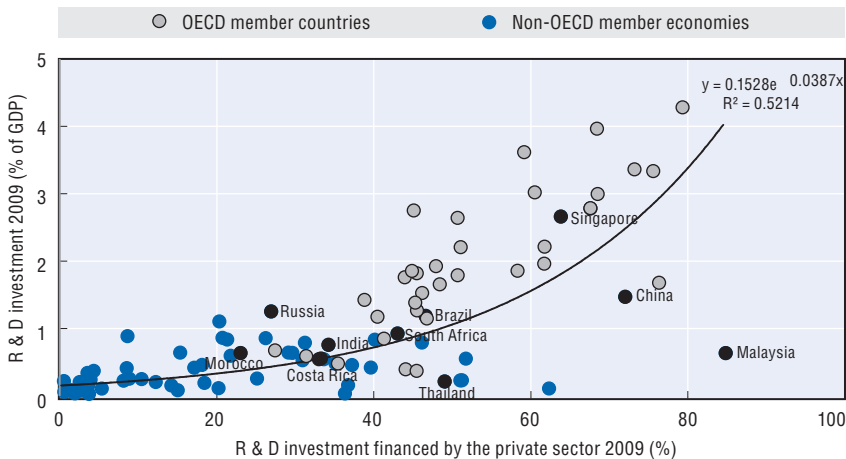
Figure 1.25. R&D expenditures, Costa Rica and selected economies, 1996-2009
(R&D expenditures as % of GDP)



Note: No data available for Costa Rica: 2001, 2002.

Source: Authors' calculations based on data from UNESCO and RICYT.

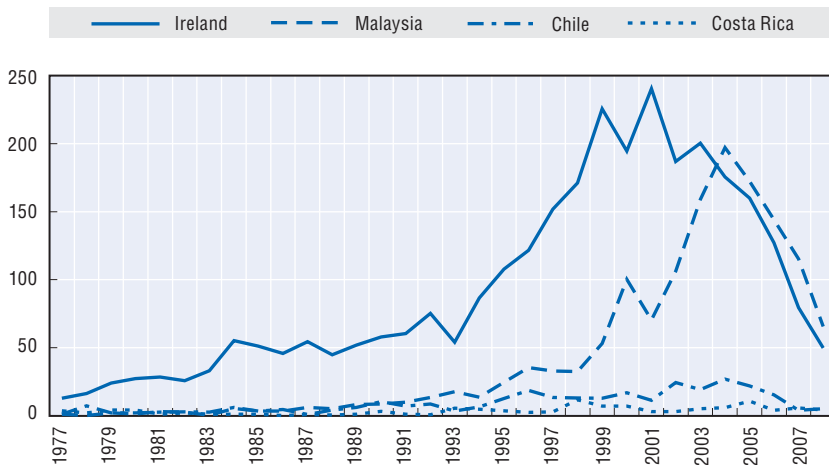
Figure 1.26. R&D intensity and the role of the private sector, OECD and non-OECD economies, 2009



Source: Authors' calculations based on data from UNESCO, RICYT and the OECD Main Science and Technology Indicators database.

The private sector’s low commitment to innovation is also clear in Costa Rica’s patent gap: when measured in United States Patent Office (USPTO) patent grants, the country exhibits low patenting activity. Costa Rica has been granted less than 10 patents per year on a constant basis since the late 1970s, while Malaysia – which also started with low patenting activity in the 1970s – registered a steep increase from the mid-1990s (Figure 1.27). Patents are a fairly debatable indicator of a country’s innovation capacity, due to their sector bias (i.e. certain sectors tend more than others to protect innovations through patents) and the fact that innovation activity should be measured not only in terms of patent numbers, but also of their associated value. Nevertheless, patents can be useful indicators for comparing the relative dynamism of private-sector innovation efforts. While all of the countries reported in Figure 1.27 are marginal actors in world patenting, they display wide differences. In 2008, Malaysia accounted for 0.4% of total patents granted to foreign companies in the United States, Ireland accounted for 0.3% and Costa Rica – a much more marginal actor – for 0.02%. Ireland and Malaysia increased the number of patents granted in the United States as they enhanced their capacity to attract more innovation-intensive activities to their economy.

Figure 1.27. Patents granted by USPTO, Costa Rica and selected economies, 1977-2008

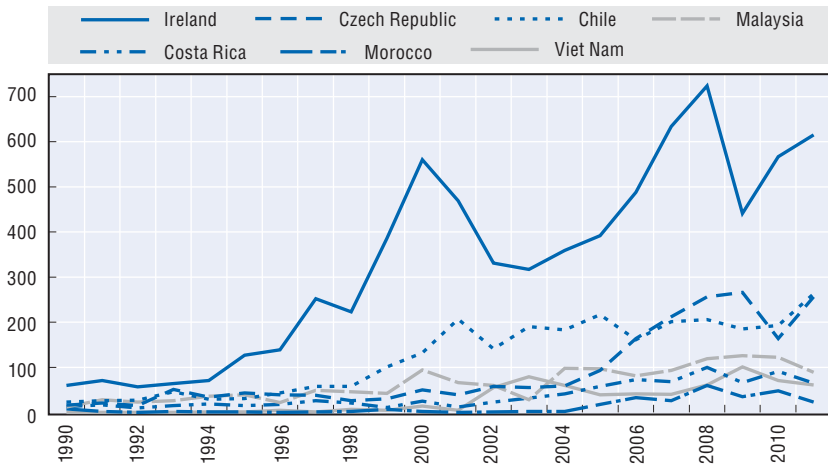


Source: Authors’ calculations based on USPTO.

When compared to other FDI-intensive economies, Costa Rica also ranks low in trademarks applications (Figure 1.28). Trademarks increasingly serve as innovation indicators: companies use them to signal the novelty of their products or services and distinguish them through brands (and hence, through their qualitative attributes in addition to technological characteristics). Trademarks convey information on product

innovation, but also on marketing and service-related innovation. The number of trademark applications to the USPTO rose over 1990-2010, with foreign applications leaping from 23 000 in 1990 to over 85 000 in 2011. Among the countries highly reliant on FDI, Ireland shows the most remarkable increase (from 127 trademark applications in 1990 to 615 in 2011) and now accounts for 0.7% of total foreign trademark applications in the United States (compared to 0.3% in the 1990s). Costa Rica also increased its share of total foreign trademark applications (from 0.06% in 1990 to 0.08% in 2011), but is still a very marginal actor.

Figure 1.28. Trademark applications at USPTO, Costa Rica and selected economies, 1990-2011

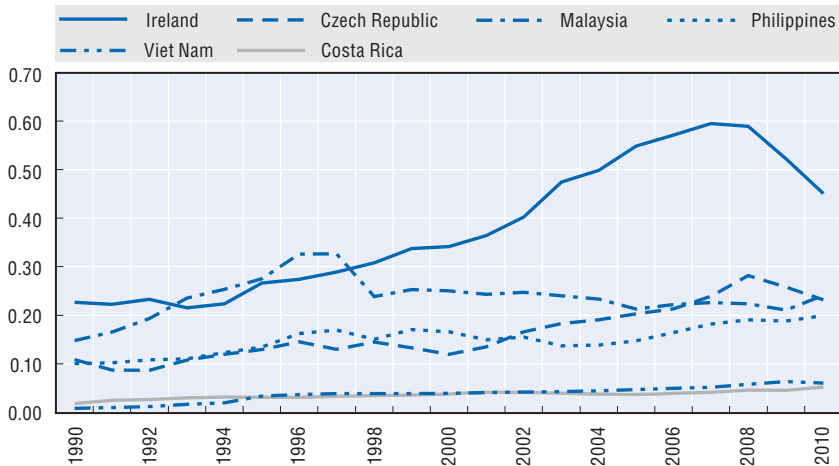


Source: Authors' calculations based on USPTO.

High potential to increase linkages between foreign and domestic firms

Even though it remains a marginal actor in the global economy, Costa Rica's share of total world value-added rose from 0.02% in 1990 to 0.05% in 2010, with the country more than doubling its share of value-added in knowledge- and technology-intensive industries (including technology-intensive manufacturing and knowledge-intensive services). By contrast, Latin America's share posted modest growth (from 4.3% to 5.4%). However, Costa Rica is far from showing the dynamism of countries like Ireland, the Philippines, or China – which increased their participation sixfold (Figure 1.29).

Figure 1.29. Country share of value-added of knowledge- and technology-intensive industries in total world value-added of those industries, Costa Rica and selected economies, 1990-2010



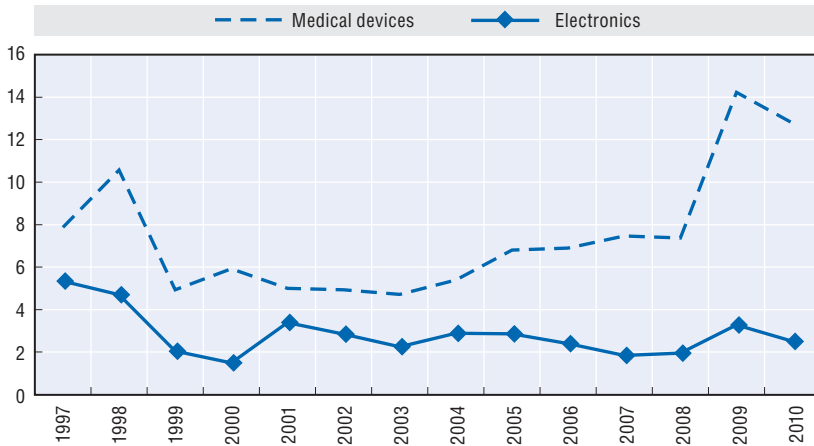
Source: Authors' calculations based on IHS Global Insight, special tabulations (2011) of World Industry Service database.

In Costa Rica, the linkages between local and foreign companies are still weak. On the one hand, local industry is still lagging and has not been very successful in providing critical production inputs for international companies. With the exception of the metal-mechanic and plastics sectors,¹¹ foreign tech companies make most of their purchases of local products and services in non-critical areas such as labels and packaging or support activities like security, cleaning and food. On the other hand, foreign companies have demonstrated little interest to develop a network of local suppliers, for reasons of economies of scale, trust and quality control. As foreign companies shift towards more knowledge-intensive areas, their demand for local client and supplier networks will increase, together with quality requirements for domestic industrial and service capabilities.

FTZ data¹² show that foreign companies' purchases of local goods and services ("national expenditure") have remained steady (in the electric and electronics sector) or have not grown at the same pace as exports of foreign tech companies (medical devices sector) (Figure 1.30). In Ireland, multinational corporations (MNCs) in manufacturing and internationally traded services spend around 9% of their exports on domestic materials and services. In Costa Rica, this share is significantly lower. Costa Rica has followed a similar development path to Ireland and is focusing on similar sectors. Therefore – and at least theoretically – it has an opportunity to increase its participation in the national expenditure of MNCs – which, if they could

integrate local providers in their production process, could better control quality, delivery times and cost savings. But while they have seen improvements in local providers (particularly in the metal-mechanic and plastics sector), their overall evaluation is that the local industry still lacks the capabilities (technology, quality and volume) to fully source them.

Figure 1.30. Domestic expenditures of companies operating in FTZ as percentage of exports in the electronics and medical devices sector, Costa Rica, 1997-2010



Source: Authors' calculations based on data from PROCOMER.

Conclusions

Costa Rica provides an interesting case of a country that has managed to foster structural change and development by focusing on FDI attraction. Costa Rica has transformed from a primary-sector exporter to an exporter of high-value-added services and production. FDI inflows to Costa Rica have contributed to diversify exports and allowed the country to enter new industries. FDI inflows allowed Costa Rica to take a shortcut to structural change. With it, the degree of sophistication of its exports grew significantly. The challenge is now to upgrade the types of activities performed and to create dense local clusters around these poles of export-oriented activities.

Until now, Costa Rica has effectively used FDI as a lever for economic transformation and development. In the wake of Intel's successful move, several other world-class companies invested in the country, contributing to the incipient development of industrial clusters in sectors such as business services, advanced

manufacturing and medical devices. However, linkages with the domestic economy are still limited and the density of the national innovation system is scant, with few knowledge and R&D centres and high margins to improve SME development.

Costa Rica needs to tackle both domestic and international challenges to foster a deeper structural transformation that would help achieve a more stable and inclusive growth pattern. On the domestic side, Costa Rica needs to avoid the risk of dualism between the mostly foreign companies operating under the FTZ regime and the mostly domestic companies operating outside of it, as well as to strengthen the national system's R&D and innovation capabilities. On the international side, Costa Rica needs to embrace the opportunities presented by a changing global environment favourable to new global innovation hotspots. The country needs to update and improve its FDI strategy to fully reap current opportunities and increase potential FDI spillovers to the whole domestic economy.

Annex 1.A1. The product space

To illustrate the depth of the transformation achieved by Costa Rica in its external sector, we use the Product Space methodology, developed through contributions by Hausmann and Klinger (2006), Hausmann *et al.* (2007) and Hidalgo *et al.* (2007). In essence, the Product Space is an analytical framework that allows categorising relationships between export industries, as well as the quality of the export profile of a country at a given time. To do so, two considerations are critical: the notion of relatedness (or proximity between industries) and the value or degree of sophistication embedded in exports.

Similarity or proximity between industries is defined as the minimum of the pairwise conditional probabilities that a country exports one good with revealed comparative advantage (RCA), given that it exports the other with RCA (Hidalgo *et al.* (2007). Thus, good A will be close to good B, if the countries that are competitive exporting A tend to be so in B as well.

$$\varphi_{ij} = \min\{P(RCA_i > 1 | RCA_j > 1), P(RCA_j > 1 | RCA_i > 1)\}$$

RCA is calculated following Balassa (1977), as the ratio of the export share of product *i* in country *c*, to the world's export share of product *i*. Hence a country will be competitive in exporting good *i* if its RCA with respect to product *i* is greater than 1, i.e. if the share of good *i* in a country's export basket is greater than the share of the same good globally.

$$RCA_{ci} = \frac{x_{ci} / \sum_i x_{ci}}{\sum_c x_{ci} / \sum_c \sum_i x_{ci}}$$

The second element is the concept of the value or degree of sophistication embedded in exports. In the Product Space, this notion is approximated in a sequential manner. First, the value associated with a given industry is calculated

through the weighted average of the per capita GDP (measured in PPP terms) of the countries that export it, with the weights being the RCA associated with that country and good. This weighted average is called PRODY, and it roughly represents the income level associated with that product. Hence, a higher PRODY corresponds to goods that are exported by high-income countries. Once this index is computed, the value embedded in a country's export basket (EXPY) is simply the weighted average of the PRODY of the goods exported, with the weights being their relative export shares.

$$Prody_i = \sum_c [RCA_{ci} \cdot GDP_c]$$

$$Expy_c = \sum_i \left[\frac{x_{ci}}{X_c} \right] Prody_i$$

x_{ci} = exports i in country c

X_c = Total value of exports for country C

The above are all the variables needed for creating the Product Space representations in Figures 1.18 and 1.19. As already stated, black squares represent industries where the country is exporting with $RCA > 1$. Thus, the size of the industry is given by its associated PRODY, with bigger circles representing higher-value industries.

Table 1.A1.1 Change in EXPY, 1988-2009

	Expy 1988 (USD)	Expy 2009 (USD)	Change (%)
Chile	8 653	8 686	0.4
Costa Rica	6 516	14 137	117
Ireland	17 870	22 908	28.2
Malaysia	11 449	15 666	36.8
Mexico	14 931	16 781	12.4
Panama	12 616	9 017	-28.5
Peru	8 024	6 615	-17.4
Thailand	10 086	17 109	69.6

To further elucidate the transformation of Costa Rica's export structure, we compare the evolution of the EXPY variable against a set of Latin American economies, as well as others that share the international trade specialisation that Costa Rica has developed in more recent years. As the table shows, Costa Rica is best characterised by a remarkable increase of its EXPY, moving from USD 6 516 in

1988 to USD 14 137 in 2009. This entails an increase of 117%, significantly above the change found in the other economies, some of which (e.g. Panama) experienced a severe downgrading of their export sophistication. Against this trend, the three economies that have also directed their export basket towards the production of knowledge-intensive goods all registered sizeable increases in their respective EXPY, most notably in the case of Thailand.

The previous change in the EXPY index stands out more vividly if we compare it against a more comprehensive set of countries. To do so, we create a ranking of the value of the EXPY index for a sample of 111 countries, both in 1988 and 2009. Here we find that Costa Rica moves from having the 74th highest EXPY value in 1988, to 37th in 2009. This change not only constitutes the 4th largest jump between those two years (in absolute terms), but also leaves the current EXPY value of Costa Rica in line with many of the countries in Eastern Europe that also underwent major transformations of their export profile during the last two decades (e.g. Croatia, being 34th; Lithuania, 35th), or even some of the most advanced economies (e.g. Norway, 32th). All in all, a performance that is nothing short of remarkable, even if it still remains a bit below some of the emerging economies known for their trade specialisation on knowledge-intensive activities (e.g. Malaysia, whose current EXPY ranking is 28th).

Although capable of offering valuable insights, this analytical framework has some limitations worth recalling. The most important one is probably that it relies exclusively on trade data, which in turn gives an incomplete picture of an economy's productive structure. Ideally, sectoral contributions to GDP would better approximate productive transformations. Another drawback is that the Product Space is built from SITC trade data from manufacturing industries, without consideration for the service sector. In our comparative table, disregarding services seems to penalise Panama's EXPY as it does not include two of its strongest comparative advantages: financial offshore services and trade logistics. Last but not least, the DOTS trade data may not reflect actual value-added of final exports due to geographically dispersed assembly industries (like *maquiladoras* industries) which could overstate a country's actual productive capacity.

Notes

- 1 It should be noted that this diversification process occurred without compromising its overall growth rate: Sánchez (2005) states that Costa Rica's annual growth rate during the 1990s averaged 12.5% – almost twice that of Latin America during the same period.
- 2 Extreme poverty households are those that fall under the cost of a Basic Food Basket (CBA in Spanish), calculated by the INEC (Instituto Nacional de Estadística y Censos). Poverty households are those that are above the CBA, but below the poverty line – calculated as the CBA times the inverse of the share of household food expenditure.
- 3 Data collected from ECLAC UN database.
- 4 The FDI Markets database by fDI Intelligence tracks FDI announcements (media releases) which typically include the number of FDI projects, projected investment values and job creation targets. This data source counts FDI projects in the year they are announced, even though it may take years before the investments are fully realised (if they are realised at all). Also, FDI Markets collects data on greenfield and expansion-related announcements only; merger and acquisition transactions are not captured. These differences may cause data to diverge from official data sources (i.e. government sources).
- 5 Cordero (2000) also considers a similar period in his analysis of economic growth and investment, indentifying 1986-89 as the period of “trade opening” and 1990-97 as that of “opening consolidation”.
- 6 Most of the available data on exports considers only goods.
- 7 Based on PROCOMER (Foreign Trade Corporation of Costa Rica) data, a simple calculation for 2011 shows that products not related to natural resources comprised 85% of total FTZ exported goods. Agriculture, food, wood, livestock and sea products, pulp and paper, and minerals represented 15% of total exported goods.
- 8 Annex 1.A1 includes a more detailed explanation of all the variables involved in the analysis.

- 9 The post-crisis recovery measures the change in GDP between the pre-2009 peak and the fourth quarter of 2011.
- 10 The conformity index measures the extent to which country exports resemble those of China, with higher values indicative of more similar export baskets and therefore of greater potential competition with the country. It sets a value between 0 (no coincidence between exports) and 1 (identical export baskets).
- 11 In this sector, the ratio of national purchases over exports was 35.8% for 1997-2010. In the food and agriculture sectors, this ratio was also high (47.3% and 46.9% respectively).
- 12 There is no available information on total exports of foreign companies. However, PROCOMER generates information about the FTZ companies. Since FTZ exports represent 50% of total Costa Rican exports, this information is a good proxy. PROCOMER indicates this proportion is over 80% for companies in the medical devices, services, and electric and electronics sectors.

References

- AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH (ACER) (2011), *PISA 2009 Plus Results: Performance of 15-year-olds in Reading, Mathematics and Science for 10 Additional Participants*, Maurice Walker / ACER, Victoria.
- BALASSA, B. (1977), “‘Revealed’ Comparative Advantage Revisited: An Analysis of Relative Export Shares of the Industrial Countries, 1953-1971”, *The Manchester School of Economic and Social Studies*, Vol. 45, Issue 4, pp. 327-344.
- BLOMSTRÖM, M., A. KOKKO and M. ZEJAN (1992), “Host Country Competition and Technology Transfer by Multinationals”, *NBER Working Paper* No. 4131, NBER, Cambridge, MA.
- BLONIGEN, B (2005), “A Review of the Empirical Literature on FDI Determinants”, *NBER Working Paper* No. 11299, NBER, Cambridge, MA.
- CORDERO, J.A. (2000), “El crecimiento económico y la inversión: el caso de Costa Rica”, *Serie Reformas Económicas*, No. 52, United Nations-ECLAC (CEPAL), Santiago, Chile.
- ECLAC (2001), *Inversión Extranjera y Desarrollo en Centroamérica: Nuevas Tendencias*, United Nations-ECLAC, México.
- ECLAC (2008): *Espacios iberoamericanos: la economía del conocimiento*, ECLAC, Santiago, Chile.
- ECONOMIST INTELLIGENCE UNIT (EIU) (2007), *Sharing the Idea: The Emergence of Global Innovation Networks*, a report from the Economist Intelligence Unit, sponsored by IDA-Ireland.
- FEENSTRA, R.C., R.E. LIPSEY, H. DENG, A.C. MA and H. Mo (2005), “World Trade Flows: 1962-2000”, *NBER Working Paper*, No. 11040
- GUIMÓN, J. (2009), “Government Strategies to Attract R&D-intensive FDI”, *Journal of Technology Transfer*, No. 34, pp. 364-379.
- HAUSMANN, R and B. KLINGER (2006), “Structural Transformation and Patterns of Comparative Advantage in the Product Space”, *CID Working Paper*, No. 128, CID/ Harvard University, Cambridge, MA.
- HAUSMANN, R., J. HWANG and D. RODRIK (2007), “What You Export Matters”, *Journal of Economic Growth*, Vol. 12, Issue 1, pp. 1-25.

- HIDALGO, C.A., B. KLINGER, A-L. BARABASI and R. HAUSMANN (2007), "The Product Space Conditions the Development of Nations", *Science*, Vol. 317, No. 5837, pp. 482-487.
- LARRAIN, F.B., L.F. LOPEZ-CALVA and A. RODRIGUEZ-CLARE (2000), "Intel: A Case Study of Foreign Direct Investment in Latin America", CID Working Paper, No. 58, CID/Harvard University, Cambridge, MA.
- LEAMER, E. (1984), *Sources of International Comparative Advantage: Theory and Evidence*, MIT Press, Cambridge, MA.
- MATARRITA, R. (2007), *Caracterización de la inversión extranjera directa en Costa Rica: algunas consideraciones para su análisis*, Programa Estado de la Nación, San José, Costa Rica.
- MONGE GONZÁLES, R., L. RIVERA and J. R. TJERINO (2010), "Productive Development Policies in Costa Rica: Market Failures, Government Failures and Policy Outcomes", *IDB Working Paper Series*, No. 157, Washington, DC.
- MULTILATERAL INVESTMENT GUARANTEE AGENCY (MIGA) (2006), "The Impact of Intel in Costa Rica: Nine Years After the Decision to Invest", *Investing in Development Series*, World Bank Group/MIGA, Washington, DC.
- OECD (2010), *Attractiveness for Innovation Location Factors for International Investment*, OECD, Paris.
- OECD (2011), *Latin American Economic Outlook 2012*, OECD Development Centre, Paris.
- OECD (2012), "Building Competitive Economies: What Options in a Shifting World?", OECD Development Centre background document for the High Level Meeting, March, 2012, Paris.
- PEREA, J.R. (2008), *An Evaluation of the Conventional Wisdom on Capital Flow Volatility*, VDM Publishers, Saarbrücken.
- PREBISCH, R. (1950), *The Economic Development of Latin America and its Principal Problems*, United Nations publication No. 50.II.G.2, New York.
- SÁNCHEZ, D. (2005), "Inversión extranjera y exportaciones. Un análisis del éxito exportador de Costa Rica" Segundo premio en el primer concurso Ensayo de Economía Latinoamericana para jóvenes investigadores, www.cesla.com/analisis/archivos/PubEns2.pdf
- SANTISO, J. (ed.) (2007), *The Visible Hand of China in Latin America*, OECD Development Centre, Paris.
- CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS (CSIC) (2012): "Ranking Web of World Universities", January 2012. Accessed online via: www.webometrics.info/.
- UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT/UNCTAD (2005), *World Investment Report 2005*, United Nations, New York and Geneva.

Chapter 2

Strategy, governance and policy mix for attracting knowledge-intensive FDI to Costa Rica

This chapter analyses the evolution of the Costa Rican strategy for FDI attraction. It describes: i) the current national strategy for FDI attraction; ii) the policy governance for innovation-related FDI, focusing on the role of the Ministry of Foreign Trade (COMEX) and the Ministry of Science and Technology (MICIT) and on the institutional challenges to foster horizontal co-ordination; iii) the policy mix for attracting innovation and high technology FDI, benchmarking the Costa Rican policy mix against that of other OECD and emerging economies.

Introduction

Costa Rica has evolved over time towards a peculiar development model that matches strong equity policies in public services (e.g. free and compulsory basic education and a good public health care system) with a strong open-economy approach that has made FDI the principal engine of the country's dynamism since the late 1980s.

As a small economy specialised in exporting a few primary products (including coffee, bananas and sugar), Costa Rica has viewed FDI attraction as a strategic option to sustain growth, diversify exports and create better jobs. In the last three decades, it has become an attractive investment location for several companies, thus transforming its export profile and creating jobs in the manufacturing and services sector.

Over the years, foreign enterprises have started to carry out more complex and knowledge-intensive activities in Costa Rica, thanks to corporate strategies, changing conditions in the global competitive environment, and the country's active policy (especially in the last decade) of prioritising investment in technology- and innovation-intensive sectors. Today, the country needs to take some steps forward to fully reap the benefits of its accumulated business capacities and transform the challenges of the new global scenario into opportunities for national development.

This chapter analyses the evolution of the Costa Rican strategy for FDI attraction, nesting it in the broader national development strategy. After a brief historical overview, it describes: i) the current national strategy for FDI attraction in a comparative perspective with OECD and emerging economies; ii) the policy governance for innovation-related FDI, focusing on the role of the Ministry of Foreign Trade (COMEX) and the Ministry of Science and Technology (MICIT) and the institutional challenges to fostering co-ordination among different agents of the national innovation system, sectoral ministries and foreign companies; iii) the policy mix for attracting innovation-related FDI.

Brief historical overview: from import substitution to attraction of high-tech FDI

Throughout the 1950s-70s, Costa Rica followed an import substitution strategy. It invested in creating basic institutional capabilities, particularly in the field of education and training. The National Institute for Learning (INA), for example, was created in 1965 to provide technical training to the industrial labour force. The crisis that hit Latin America in the 1980s did not spare Costa Rica. However, while the

1980s have been defined as a “lost decade” in most Latin American countries, Costa Rica followed a different path.

In 1982 the Costa Rican Investment Promotion Agency (CINDE) was established as a private non-profit organisation, declared of public interest by the Costa Rican government in 1984. CINDE, which was the first investment promotion agency (IPA) in Latin America (Cordero and Paus, 2008), played an active role in country branding and offering pre- and aftercare services to investors. In parallel, the government focused on traditional policy tools for FDI attraction. First, it established the FTZ regime offering fiscal incentives to companies investing in the country. Second, it granted fiscal credits for non-traditional exports. Throughout the 1980s-90s, Costa Rica focused mainly on the US market. The country's proximity to the US, its stable political and economic environment, the effective support provided by CINDE and the quality of its relatively inexpensive labour force made it a good location option for US companies wishing to delocalise some of their production phases.

The mid-1990s marked an inflection point in the country's development trajectory. The establishment of major ICT multinational Intel's first Latin American plant strengthened Costa Rica's record for investment attraction and helped highlight the impact of FDI on job creation and entrepreneurial capabilities in addition to export diversification. From that point on, the country actively fostered FDI attraction in specific technology-intensive sectors. COMEX was instituted in 1986 with the mandate of co-ordinating the country's investment promotion and foreign trade policies.¹ PROCOMER, in charge of promoting Costa Rican exports, was established in parallel.² The institution operates as an implementation agency overseen by COMEX (see Table 3.1 in Chapter 3).

From the 1990s onward, Costa Rica also introduced several reforms in the FTZ fiscal regime, including the possibility of extending its benefits to companies that were not located in industrial parks but met specific requirements for investment types and amounts. The dynamism of FDI inflows to the country has increased since the mid-1990s, reaching a peak in 2011 with a USD 2.1 billion inflow thanks to investments by several world-class companies in knowledge-processing operations, life sciences and biomedical research, and knowledge-intensive manufacturing (See Box 2.1).

Box 2.1. **A proven successful track record in FDI attraction: the experience of Costa Rica**

FDI has been a major force in transforming Costa Rica's economy. Well-known multinational companies (MNCs) such as Intel, HP, P&G, Baxter, IBM and over 200 others have invested in the country and are exporting electronic components, medical devices and services from Costa Rica, changing the productive landscape and employing more than 66 000 people.

Well-known US electronics giants are not the only ones driving this trend. Of the top ten companies investing in Costa Rica in 2003-12, two operate in electronics and six are from the US. According to fDi Intelligence estimates, the company to have invested in the highest number of projects is the Japanese tyre manufacturer Bridgestone (six projects), followed by the retailing company Wal-Mart (five projects) – which alone generated more than 3 000 jobs. Among the top ten, three (Boston Scientific, MedTech and Baxter) are active in the medical devices sector (fDi Intelligence, 2012).

Costa Rica's medical devices cluster is developing thanks to investments by big players, including Boston Scientific and St. Jude Medical. In January-March 2012 alone, fDi Intelligence recorded three projects in the sector, including an estimated USD 50 million project by Irish healthcare products supplier Covidien – which has opened a new manufacturing plant in Alajuela producing medical devices for vascular therapies. The reputation effect is crucial in this sector; following the lead of these world-class companies, not only are other foreign enterprises investing in Costa Rica, but some local companies have also started to operate in medical devices. While their development is still marginal, it signals a strengthening of the cluster in the country.

Source: fDi Intelligence, January 2003-March 2012.

Having forged a good reputation as a place for investment, Costa Rica is gaining ground as a suitable location for software design and advanced manufacturing, thanks to the development of a critical mass of companies operating in life sciences/ biomedical devices and knowledge-intensive services. But the prospects for greater and better FDI and further mobilising it as a lever for development will depend on an effective strategy to strengthen science-industry linkages, foster linkages with the domestic economy, and develop industrial clusters in priority areas. This challenge is widely understood by the current government, which is strongly engaged in promoting the attraction of knowledge-intensive FDI. The following sections review the current strategy on FDI attraction, the policy governance and institutions

in charge thereof and the country's policy mix to attract innovation-related FDI. This assessment will serve as the basis for the road map for short- and medium-term policy action presented in Chapter 3.

The national strategy for FDI in Costa Rica: prioritising knowledge- and technology-intensive sectors

FDI attraction is a key element in Costa Rica's development strategy. The country has a multi-annual National Development Plan identifying government priorities, targets and budgets to achieve them. The 2010-14 plan identifies four priority areas: i) social and family welfare; ii) security and social peace; iii) environment and land; and iv) competitiveness and innovation. Within the latter, FDI is a major line of action; the plan sets a target of attracting USD 9 billion by 2014.

The 2010-14 plan states the objectives of the FDI policy: to contribute to production development, innovation and job creation both within and outside the Expanded Greater Metropolitan Area (GAMA). The strategy has sectoral targets and COMEX is responsible for policy design and implementation (Table 2.1). Half of the expected FDI inflow should come from productive investment in advanced manufacturing, clean technology, life sciences and knowledge processing services; the other half is linked to investments in infrastructure, especially transport, energy and telecommunications. The four priority sectors were selected as a result of established capacities (thanks to prior FDI inflows) and the sectors' promising development prospects. However, while the plan sets specific lines of action for other initiatives (including education and health), it does not list specific actions to achieve FDI targets.

Table 2.1. FDI targets, amount by sector, Costa Rica, 2010-14

Sector	Target (USD million)
FTZ companies	2 050
Regular companies	1 200
Tourism sector	1 150
Telecommunications	900
Power generation	1 500
Public work biddings	1 100
Financial sector	400
Real estate sector	700

Source: MIDEPLAN, National Development Plan 2010-14.

To better analyse the Costa Rican strategy, it is useful to compare the country's approach with that of other countries. An international analysis of policies for FDI attraction identifies three types of strategies: i) horizontal; ii) selective; and iii) systemic (Table 2.2). Each has different implications for policy governance, for the policy mix and for positioning the FDI policy in the hierarchy of the country's development strategy.

The horizontal approach does not prioritise any sectors, even if countries may have an institution dedicated to investment promotion. The policy mix focuses on fiscal incentives and commonly features FTZs, the policy objective is usually framed as an increase in FDI inflows and job creation, and the level of co-ordination with other policies is moderate. The policy mainly entails investing in infrastructure and upgrading framework conditions for business development.

The selective approach also features a targeted policy and specific institutions for FDI promotion, but with a focus on investments in specific sectors. The need for co-ordination is stronger because sectors have specific requirements (*e.g.* in terms of skills, technological and scientific capabilities, and cluster development). Recently, most OECD and non-OECD economies have favoured a selective policy focused on innovation-related FDI. In that strategy, beyond infrastructure and business costs, the availability of certain types of skills and the presence of an industrial cluster and centres of excellence in basic and applied research are key determinants of investment attractiveness.

The systemic approach is usually mastered by countries that have successfully managed FDI policy for some time. They have acquired a strong reputation in the investor community, attracted companies in more knowledge- or technology-intensive sectors or high-value-added production phases, and accumulated the key capacities to make FDI a lever for development for the whole national economy. This approach requires nesting the FDI strategy in the overall national development strategy and matching FDI attraction with a strong policy to support scientific, technological and production development; enhancing co-ordination with sectoral policies (including education, training, and science and technology policies); and mastering a wider policy mix beyond traditional fiscal incentive schemes (including incentives and tools for fostering innovation dynamics and entrepreneurship).

In this approach, the need for co-ordination increases since different sectors have specific requirements, for example in terms of skills, technological and scientific capabilities, and cluster development. Some countries have recently prioritised attracting FDI in knowledge- or innovation-related activities. In this respect, beyond infrastructure and business costs, the availability of certain types of skills, the presence of an industrial cluster, and the existence of centres of excellence in basic and applied research are key determinants of attractiveness for investment.

There is no automatic progression from one approach to the other. A country can persist with a horizontal or selective policy for several years if it is in line with national objectives. The shift towards the systemic approach is the result of a deliberate country effort to make FDI a lever for national development. But the experience of countries that have managed to do so shows that they did so by adopting a systemic approach and enhancing co-ordination between the FDI policy and industrial, scientific and technological policies. For example, Ireland (where FDI attraction has been integral to the national development strategy since the 1990s) has moved from a sectoral approach to a systemic policy approach. Four “sister” agencies, operating under the aegis of the Department of Jobs, Enterprise and Innovation, guarantee its implementation through co-ordinated action: i) IDA Ireland, the foreign investment promotion agency; ii) Enterprise-Ireland, the agency responsible for the development and growth of Irish enterprises; iii) Science Foundation Ireland, the agency for scientific and engineering research; and iv) Forfas, the advisory board for enterprise, trade, science, technology and innovation policies.

Malaysia, which has designed and implemented National Industrial Master Plans since the 1980s, has also evolved towards a systemic approach to FDI attraction. Each of the multi-annual plans states the role and objectives of FDI in the country’s industrialisation effort. FDI has contributed to the development of a strong domestic manufacturing sector, including in export-oriented electronics. The current Industrial Master Plan (2006-20) still assigns an important role to FDI, but strongly prioritises investments with higher domestic value-added.

In the framework proposed in Table 2.2, Costa Rica appears to follow a targeted approach. Today, the country prioritises four sectors: ICT, advanced manufacturing, life sciences and clean technologies. As of 2001, CINDE in fact focused on FDI in electronics, medical devices and business services; as new investments reached the country and incipient industrial clusters started to develop, it upgraded and fine-tuned its policy to reflect the sectors’ global evolution – for example, the medical devices sector now includes life sciences, biotechnology and pharmaceuticals. Costa Rica has prioritised sectors in which it has accumulated capacities and begun prioritising types of activities and business functions (including R&D activities). It is also striving to attract FDI in new sectors (including clean technologies and advanced manufacturing) with high innovative potential which might benefit from technological proximity to already established sectors. In addition to identifying priority sectors, the country is prioritising FDI projects by amount of investment and number of jobs generated. Costa Rica does not have a specific policy to target source markets; in practice, however, it has demonstrated a clear preference for attracting US companies, backed by efforts to increase the availability of an English-speaking workforce (Table 2.3).

Table 2.2. A taxonomy of strategic approaches to FDI attraction

	Strategic approach		
	Horizontal	Selective	Systemic (or integrated)
Main characteristic	The country does not prioritise any specific sector for FDI attraction	The country prioritises FDI attraction in selected sectors or specific business activities	FDI policy is fully integrated in the country's economic development strategy
Objectives	Increasing FDI inflows Creating jobs Sustaining growth via rising exports	Increasing FDI and industrial capabilities in given industrial sectors/ clusters Creating jobs Sustaining growth via rising exports	For example, in countries prioritising an innovation-centred national development strategy, some objectives include: creation of skilled jobs, increasing national technological and knowledge capabilities, and sustaining growth via innovation
Sector prioritisation	<u>NO</u>	<u>YES</u> Targeted to specific sectors or business functions (recently several countries have tended to prioritise FDI attraction in innovation-related areas)	<u>YES</u> Usually includes the identification of priority sectors or functions; the priorities are aligned with the national development strategy (in terms of sector development and employment objectives)
Main institutions	Usually the Ministry of Trade and/or Industry, and/or economy is in charge of setting the policy Most countries have an investment promotion agency (IPA) (which can be public or private)		Ministry of Science, Technology and Innovation (STI) Ministry of Education and national institutes for technical learning
Co-ordination requirement	<u>Medium-Low</u> Requires co-ordination between the ministry in charge of foreign trade and the IPA. Ad hoc co-ordination with sector ministries, mainly infrastructure and energy	<u>Medium</u> On top of what is stated in the previous column it requires continuous co-ordination with sectoral ministries, for example those responsible for the prioritised areas, and education/ training institutions	<u>High</u> In addition to the former requirements, also requires co-ordination across several ministries, including economy, finance, STI, education, infrastructure and energy

Table 2.2 (contd.)

		Strategic approach		
		Horizontal	Selective	Systemic (or integrated)
Co-ordination mechanism		None in specific terms	Working groups or forums for discussion between the private and public sectors	There are different models, but in general countries have national competitiveness councils that foster articulation between the different policies
	Framework conditions (administrative and regulatory framework)	X	X	X
	Investment promotion through services to investors (road shows, aftercare services, etc.)	X	X targeted to specific sectors	X
Policy mix	Fiscal incentives	X	X	X FDI-targeted conditional upon types of investment (investments in R&D projects, etc.)
	Incentives for talent creation and attraction		X	X
	R&D grants, fiscal incentives, support to research infrastructure, etc.			X
Country examples		Spain	Costa Rica Chile	Ireland Malaysia France

Source: Authors' elaboration.

Table 2.3. Main targets for FDI attraction, Costa Rica, 2011

Type of Target	Description
Sectoral	ICT (software) Advanced manufacturing (advanced electrical components, automotive components, aerospace) Life sciences (medical instruments, pharmaceuticals and biotechnology, new materials) Clean technologies
Functional (e.g. business activities)	R&D Back office/ shared services Regional distribution centres
Project type	Investments of more than USD 10 million with more than 100 formal jobs Employment targets of at least 200 formal jobs per year
Firm type	Top performing companies
Geographical	United States Europe Asia Latin America

Source: Authors' elaboration based on information provided by COMEX.

Costa Rica is not alone in wishing to attract FDI to specific sectors of relatively high-value-added business functions. Several OECD and non-OECD economies are following the same strategy; some, like Ireland and Malaysia, have been particularly successful in this field. A review of OECD country priorities for FDI attraction shows that despite the differences, most tend to prioritise the same sectors (electronics and telecommunications, pharmaceuticals, aerospace, automobile and business and telecommunication services) characterised by a growing trend in production unbundling. Countries tend to target both specific sectors and specific business functions, such as innovation or R&D (Table 2.4). Identifying clear sectoral targets allows to concentrate efforts and lay out the conditions (including availability of technical and skilled workers and a high-quality research and creative environment) required to foster innovation. Those requirements are highly sector-specific and better established when the country follows a sectoral approach to FDI.

Table 2.4. Priorities in innovation-related FDI policies, OECD countries, 2011

Country	Priorities
Austria	R&D, automotive, mechanical engineering, medical technology, biotechnology, ICT.
Czech Republic	Automotive, electronics, microelectronics, telecoms, engineering, to a lesser extent nanotech and life sciences, software, eco-energies, marketing, training centres, consulting, sourcing.
France	Focus on innovation-related activities, high-tech manufacturing and high-value-added services. - “Invest in France” agency especially focuses its promotion policy on 15 niche activities with high growth potential, most of which are innovation-intensive. - Since 2003, a global attractiveness policy has been set up; attraction of talents, skills and expertise are considered a major priority of this policy.
Ireland	- Promotion policies based on the concepts of “areas of convergence” and “platform technologies” rather than on traditional industry classification (explicitly devised to take into account “technological and industry convergence”). - Targeted promotion priorities: global services, high-tech manufacturing, R&D and innovation, life sciences, pharmaceuticals and medical devices, ICT, financial services, content industries, consumer and business services, diversified industries, clean technologies. - Notion of “smart economy”: services, innovation, clean tech, convergence, health informatics, financial analysis, digital lifestyle management, smart buildings, nanotech, surgical implants, IP trading.
Korea	The strategic aim of “Invest in Korea” is to promote the country as a regional hub in North-East Asia, acting as a link between Pacific and continental economies. High-valued-added activities are considered a priority.
Netherlands	A new promotion strategy was implemented in 2006 focusing on innovation-related activities where the Netherlands enjoy a comparative advantage. At the same time, the Netherlands focuses more on aftercare to retain existing activities.
Sweden	Focus on some key sectors mainly related to innovation: R&D centres, life sciences and health, ICT, mobile communication, material sciences, automotive, high-value-added services (logistics, headquarters), green solutions, wood products, tourism.
United Kingdom	- Low-carbon economy. - Engineering technologies (mix of promotion activities and development of domestic capacities through Targeted Small Business (TSB) programmes). - Creativity and innovation (movies, music, design).

Source: OECD, 2011a, *Attractiveness for Innovation: Location Factors for International Investment*, OECD Publishing, Paris.

Box 2.2. **Co-ordinating FDI policy and national development strategy: the French experience**

In late 2003, France began to develop a set of priorities and ten strategic objectives to improve the country's attractiveness,³ grouped in three categories: attracting skills and competencies; attracting foreign investments; and initiatives in strategic sectors. The work programme was supported by four permanent initiatives:

- Regular meetings of different ministries in charge of economy, industry and trade to foster co-ordination. Meetings are organised annually, and participants define policies, review the work programme and make adjustments in priorities.
- Establishment of a Strategic Council for the Attractiveness of France: comprises 20 executives from leading French and foreign companies. The role of this advisory body is to identify and propose initiatives for improving France's attractiveness to foreign investors. It also meets once a year and is led by the Prime Minister; and IFA (Invest in France Agency) acts as its technical secretary.
- Development of Attractiveness Indicators: created with the purpose of measuring and comparing attractiveness with relevant competitors and supporting a more technical policy analysis.
- International communications campaign: launched to improve France's image among international businesses.

Source: The Invest in France Agency (IFA) (2011), "France Attractiveness Scorecard 2011 Edition".

Ireland and Malaysia as interesting benchmarks for Costa Rica

Policy outcomes are also a consequence of the social, institutional and economic environment in which they are conceived. FDI attraction is not an exception to this rule. Costa Rica finds itself in an interesting situation in this regard, because its socio-economic and institutional endowment creates conditions for FDI attraction that are almost unparalleled anywhere else in Latin America.

A simple cluster analysis helps identify a set of countries that might serve as good benchmarks for Costa Rica (see Annex 2.A1 for details of the cluster analysis exercise). Costa Rica's institutional endowment is in line with the most developed economies, particularly with regard to governance indicators. But taking into

account a comprehensive set of socio-economic indicators – some of which are usually portrayed as FDI determinants – tends to break up this association, linking Costa Rica instead with a set of emerging markets with a more modest record in attracting knowledge-intensive FDI. This suggests that Costa Rica needs to enhance its domestic innovation and production development capabilities to improve its positioning as a knowledge-intensive Latin American production hotspot.

Costa Rica's economic and institutional endowment also resembles that of some key magnets of knowledge-intensive FDI in the 1990s (i.e. Ireland and Malaysia), but this affinity fades when compared with their more recent values. Studying the evolution of policies and governance schemes in those countries can provide valuable guidance. For example, Malaysia offers some interesting insights: in the 1990s, FDI focused mainly on large-scale manufacturing operations. Many of the industries drawn to Malaysia were high technology, but on-site employment centred mostly on medium- to low-value wage activities (i.e. assembly, testing and packaging). This was due in part to the government's industrial master plans focusing almost entirely on manufacturing activities, with minimal attention to services. Also, due to the nature of global trade and FDI flows during that period, the main contributors to FDI in Malaysia were the United States, Japan and a few European countries.

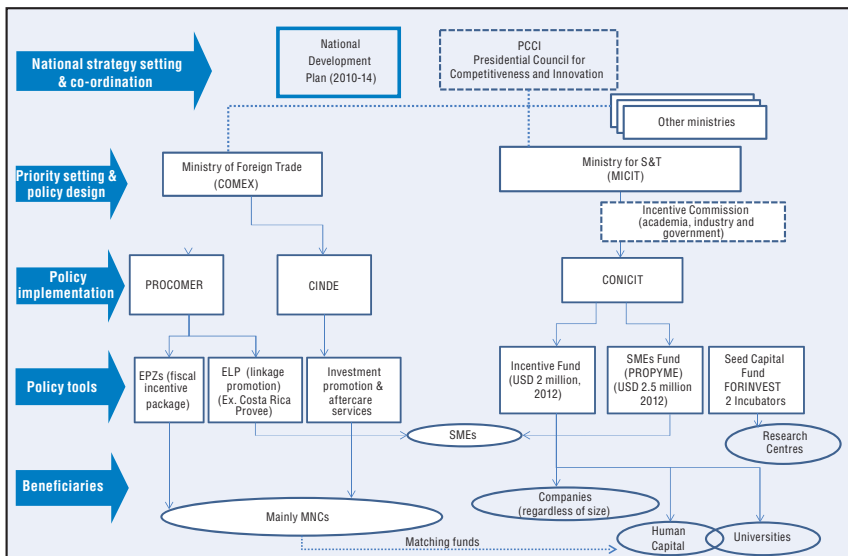
In the second half of the 1990s, Malaysia implemented new measures to move into new higher-value-added activities in the ICT sector. While the key pillar of this new strategy was the newly created Multimedia Super Corridor, it also featured wide-scale expansion in infrastructure and education: Malaysia concurrently built a new administrative capital (Putrajaya), a 2 900-hectare technology park (Cyberjaya), the Petronas twin towers, the Kuala Lumpur International Airport and an extensive network of paved roads; meanwhile, new laws enacted in 1996-97 facilitated the creation of several new educational institutions. All things considered, Malaysia's transition to higher-value industries – either through domestic or foreign companies – required a massive effort to improve education and infrastructure. The country focused on co-ordinating FDI promotion with national industrial development.

The governance for FDI attraction: the challenge of increasing policy co-ordination

Costa Rica started to strengthen the governance for FDI policy in the mid-1990s (see Figure 2.1 for an overview of the current governance for FDI, focusing on the role of COMEX and the Ministry of Science and Technology). Created in 1986 through budgetary law, COMEX was formally instituted in 1996 as the government agency for trade and FDI policy. It is responsible for defining the country's FDI policy, overseeing

the FTZ regime and co-ordinating FDI-related strategies and plans. In 2005, COMEX introduced the Directorate for Investment and Cooperation, reformed in 2010 as the Directorate for Investment, responsible for advising on policy priorities and implementing investment promotion policy guidelines as defined by the minister. The directorate is also responsible for co-ordinating with CINDE and other relevant institutions, as well as identifying necessary adjustments in the legal framework to improve the investment climate. This institutional reform signalled the government’s willingness to move towards a more integrated approach to FDI attraction.

Figure 2.1. The governance for FDI and innovation policy, Costa Rica, 2011



Note: COMEX and MICIT interact with other ministries in designing and implementing FDI policies, including the Ministry of Planning, which is in charge of setting overall national development targets, and the Ministry of Education.

Source: Authors’ elaboration.

COMEX works with two implementing agencies: PROCOMER, created in 1996 as a non-state public agency, and CINDE. PROCOMER is responsible for promoting Costa Rica’s exports; it administers the FTZ regime and the Export Linkage Programme fostering linkages between local companies and MNCs. It is governed by a board chaired by the Minister of Foreign Trade and comprising eight members (three from the government and five from the private sector). Its activities are funded by an initial state contribution as well as fees collected from customs declarations by export and import companies and from use of the FTZ regime.

CINDE is a private institution declared of public interest by the government. In the 1980s, the agency focused on fostering the country's international insertion by promoting exports. In 1996, it started to specialise in attracting FDI. In 2001, it adopted a sectoral focus targeting companies operating in the priority sectors. As a private association, CINDE operates independently and reports to a board of businessmen and professionals, which in turn reports to a general assembly. While its peculiar ownership structure differentiates it from other IPAs, it has a similar operational model.

Over the years, CINDE has accumulated high-level management and operational capacities and gained a good reputation in the investor community, thereby making it central to the institutional framework for FDI policy. CINDE collects and disseminates relevant information about production and investment dynamics in Costa Rica and serves as an effective channel for voicing private-sector needs to policy makers. Taking into account its limited resources and personnel (Table 2.5), CINDE seems quite effective compared with other countries. However, should FDI play a more important role in the national development strategy, the organisation's operational structure would need to adjust in order to face rising and more diverse source markets and increase its participation overseas.

Table 2.5. Investment promotion agencies, Costa Rica, Ireland and Czech Republic, 2011

Agency	Costa Rica CINDE (2011)	Ireland IDA Ireland (2010)	Czech Republic CzechInvest (2010)
No. of employees	34	+300 ^(a)	196 ^(c)
No. of overseas offices	1	20	7
No. of regional offices (within the country)	0	9	12
Budget (USD million)	3.05	56.60 ^(b)	7.26 ^(d)

Source: Authors' elaboration based on CINDE. IDA Ireland annual report; CzechInvest annual report.

Notes: ^(a) Estimate; ^(b) Total IDA budget was USD 292.57 million, including USD 156.28 million in grants; ^(c) Total number of employees. CzechInvest supports foreign and local investments; ^(d) Includes only "support for foreign investment, including foreign offices". Total budget of agency was USD 18.34 million, including USD 6.92 million in EU structural funds (grants). Exchange rates (31 Dec. 2010): USD 1 = EUR 0.77. USD 1 = CZK 18.64.

A substantial flow of FDI in Costa Rica comes from companies that are already present in the country and re-investing to fund growth in a current operation or expansion in a different function. CINDE estimates that about 50% of FDIs in targeted sectors (advanced manufacturing, medical devices and services) are re-investments. To improve its capacity to deliver services to investors, the agency created an

aftercare department that follows up on companies' post-establishment needs. It is a relevant tool both for companies (for which CINDE serves as a permanent contact and government intermediary) and the government itself. The aftercare services allow CINDE to monitor companies' needs and strategies and better perform its policy advocacy function. CINDE operates in strong synergy with COMEX. The interaction between the two allows the government to increase its awareness of the country's competitiveness challenges and advance in the required reform efforts.

Several Costa Rican ministries influence policy governance for FDI: the Ministry of Planning, which sets long-term objectives; the Foreign Trade Ministry responsible for setting the lines of actions of the FDI policy, and several line ministries, including education and science, technology and innovation.

Prioritising knowledge-intensive FDI requires improving the governance and policy mix for FDI attraction. In addition to fiscal incentive schemes, knowledge-intensive FDI is more sensitive to the availability of skills and competences, as well as research capabilities (including R&D laboratories, innovation platforms and clusters of companies and research institutions) that foster an innovative environment (OECD, 2011a). Good practices in this field call for higher levels of integration and co-ordination among FDI promotion policies and key complementary policies in the areas of innovation, education, labour and industry.

A major challenge for Costa Rica (and one of the areas in which it has recently registered significant improvements) is the need to further align innovation and FDI promotion. As one of the few Latin American countries endowed with a ministry in charge of science, technology and innovation, it is in a good position to do so. However, the vastly different budget allocations between COMEX and MICIT undermine their potential collaboration.

Costa Rica recently introduced two major institutional reforms to foster higher levels of co-ordination among FDI and competitiveness policies. In 2011, a co-operation agreement increased alignment between COMEX, CINDE and PROCOMER. The agreement is too recent to allow assessing its impact, but it signals recognition of the need for a more integrated policy approach (Monge et al., 2010).

The Presidential Council for Competitiveness and Innovation (PCCI) was established in 2010. It is run by an executive secretary reporting directly to the President of the Republic – who serves as the Council's Chair. Its 15 members (including 10 ministers and the president of the INA) meet every month; participation is mandatory at the ministerial level. The Council was created to align the different policies influencing the country's competitiveness. Its creation holds promise because it generates a space for policy dialogue and information sharing, but here again, assessing it would be premature. Notwithstanding, PCCI needs to have more

enforcement power to elaborate shared guidelines and priorities to foster policy co-ordination among different sectoral ministries.

The Council has identified five priority areas in need of better policy co-ordination: i) infrastructure; ii) permit simplification; iii) creation of new financial instruments, especially for start-ups and SMEs; iv) FDI and foreign trade; v) human resources development. While it has played until now an important role in fostering information sharing, it needs to set more ambitious targets (see Box 2.3 for an overview of competitiveness council models in other countries).

In 2011, Costa Rica established an inter-ministerial working group on skills to identify mechanisms and lines of action to elaborate supply and demand projections and align skills development and training with the changing needs of the labour market. The working group comprises representatives from the ministries of foreign trade, science and technology, and education, as well as the National Institute for Learning, Technical Secretariat of the Council for Competitiveness, Private Council for Competitiveness, National Council of University Deans and the main public universities.

COMEX has also started co-operating further with other agencies in key priority areas. First, it is hosting regular meetings with MICIT and universities and business groups; second, together with MICIT, it has promoted a project to enhance skills development in priority sectors; third, it has reinforced its collaboration with MICIT to improve and promote the functioning of PROPYME. This convergence between both ministries shows that the country is on track to create more sophisticated policy governance for innovation-related FDI attraction.

MICIT is responsible for innovation priority setting, policy design and strategy setting. Since innovation is a cross-sectoral and cross-ministerial function, it is involved in several national councils, including the PCCI. In 2010, it launched the National Plan for Science, Technology and Innovation 2010-14 (Boxes 2.4 and 2.5). The National Council for Scientific and Technological Research (CONICIT) is the implementing agency. It manages the two national funds for innovation, PROPYME (with a USD 2 million budget for 2011) and the Incentive Fund (USD 2.5 million budget for 2011). MICIT has a budget of USD 12 million, of which 50% is transferred to S&T institutions. The innovation department manages a USD 600 000 budget.

Box 2.3. **Variety of competitiveness councils in OECD and non-OECD economies**

Competitiveness and innovation councils are created to foster co-ordination between the private and public sector and among public-sector institutions. In practice, they assume different functions, including technical advising, policy monitoring and initiative follow-up and accountability. They can be permanent or operate for a defined period or until they accomplish a set goal.

The National Economic Advisory Council (NEAC) of Malaysia was created by the Prime Minister in 2009. The NEAC was charged with providing a “fresh view on Malaysia’s strategic position in the global economic arena and recommending a transformational strategy for the country”. It was also mandated to be a bridge between the public and private sector as well as to create a new public-private partnership, intensify regional co-operation and increase global competitiveness. The NEAC comprised a chairman’s office, a council of 11 representatives from the private and public sector and academia, a research team, working groups, and administrative and support staff. It operated for two years and officially ended its mandate in May 2011, publishing its findings and recommendations in two documents.

The Irish government established its National Competitiveness Council (NCC) in 1997 as part of the Partnership 2000 Agreement. The NCC reports to the Taoiseach (Prime Minister) and offers recommendations for policy actions on key issues affecting the competitiveness of the Irish economy. The NCC developed a special framework model to understand national competitiveness and publishes each year an Annual Competitiveness Report (and other reports on particular issues). The report features indicators to benchmark Ireland’s competitiveness performance with 17 other economies and outlines the main challenges and policy responses required. The NCC comprises 16 members from the private and public sector and academia and 8 advisory members from different ministries. The research and secretariat support is provided by the policy advisory agency Forfas, which is part of the Department (Ministry) of Enterprise, Trade and Employment.

Box 2.3. (contd.)

Established in 2005, Chile's National Council for Competitiveness and Innovation (NCCI) is a public-private partnership that acts as a permanent advisor to the President of Chile on matters of public policy for innovation and competitiveness (including science and technology development, human resources training and entrepreneurship). It has a staff of four professionals and a 20-member board (only four from the public sector and the rest from academia). Representatives of government agencies also attend. In its first years of operation the Council proposed a long-term national strategy of innovation for competitiveness. In addition to its regular tasks of public policy analysis and recommendations, it now helps promote the country's innovation culture. In 2007, the "Government Committee on Innovation for Competitiveness", consisting of seven secretaries of state (ministers of finance, foreign affairs, education, public works, transport and telecommunications, agriculture and economics) was created on the suggestion of the NCCI to achieve co-ordinated action by all public agencies and establish an authority responsible for carrying out the National Innovation Strategy.

Colombia's Private Council for Promotion of Competitiveness (PCPC) was created in November 2011 to create a space for dialogue between the private and the public sector. Seventeen companies (both national and foreign) founded the initiative, whose members are required to commit their CEO to participate actively in its activities. The PCPC plans to have a very specific agenda and be "action-oriented", co-ordinating initiatives among the private sector, government and academia. It was inspired by similar initiatives, such as the US and Colombian Private Council on Competitiveness.⁴

Box 2.4. The Costa Rica innovation strategy 2010-14

The Costa Rica innovation strategy aims to double the R&D investment as a percentage of GDP. It has four main priorities:

- Strengthening national capabilities in S&T and increasing its contribution to production development.
- Improving the quality and quantity of high-skilled human resources in science and engineering in particular.
- Fostering the application of science to social challenges and the country's innovation culture.
- Strengthening the regulatory and institutional framework for S&T.

The strategy has seven sectoral priority areas: earth and space sciences, digital technologies, new materials, biotechnology, renewable energies, health and natural resources. Costa Rica followed a participatory approach for priority setting by creating sectoral forums with participants from the public, private and academic sectors.

FDI is one of the strategy's lines of action, entailing support to cluster development and business incubation, development of venture capital schemes, and grants and fiscal incentives for R&D. However, MICIT does not have a specific road map for policy implementation.

The national innovation strategy's sectoral priorities are not aligned with sectoral targeting for FDI attraction. While some areas do overlap (for example, the scientific area of renewable energies is close to the clean technology sector and health is linked to the life sciences industrial cluster), aligning sectoral priorities would make government action more effective, especially in creating the innovative environment at the cluster or sectoral level necessary to attract more innovation-related FDI. This low level of co-ordination is reflected both in the innovation policy's relatively weak support to companies and in the scant support for training and research in S&T fields.

**Box 2.5. International collaboration in S&T:
an emerging issue in Latin America**

International collaboration in science, technology and innovation is today a key element on the policy agendas of most OECD countries. Given the rapid transformation of the new global production and innovation landscape, an active and sustained policy dialogue among different countries on S&T strategies is key to enable joint learning processes and the strategic alignment of national priorities.

Both OECD and EU countries have established relevant institutional spaces in this regard which allow for the identification of good practices of policy design and implementation on both the member country and the supra-national level. The OECD hosts thematic committees and technical working groups convening the different member countries as well as outside experts in the field of Science, Technology and Innovation. This provides an example of how such continuous policy dialogue for mutual knowledge sharing can be institutionalised over time thus contributing to strengthen domestic policy learning.

In Latin America there are incipient efforts to strengthen regional collaboration in science, technology and innovation policies. A targeted policy dialogue on these issues could facilitate not only an exchange of “how to” design and implement relevant policy measures but also support effective co-operation in science, technology and innovation (Primi, 2010).

Costa Rica participates in the regional agreement between Latin America and the European Union (EU-LAC), especially in the fields of biodiversity and renewable energies. It is also an active member of the Ibero-American Program for Science and Technology for Development (CYTED), the Ibero-American S&T network. The Ministry of S&T also supports national research centres in accessing US agencies (such as NSF and NIH) resources. Beyond the traditional role played by Spanish and German co-operation, Costa Rican innovation projects have recently been financed by new partners such as Korea and China. Costa Rica also actively participates in S&T initiatives in the region, including the training for S&T managers organised by ECLAC-UN.

Source: Primi, A. (2010), “Regional co-operation in S&T policies: a view from Latin America”, in CGEE (Centro de Gestão e Estudos Estratégicos), 2010, *Cooperação Internacional na Era do Conhecimento*. CGEE, Brasília, Brasil and OECD Development Centre (2011), “Hacia un mecanismo para el diálogo de políticas de innovación: oportunidades y desafíos para América Latina y el Caribe”, Working Document, OECD Development Centre, Paris

The policy mix

The policy mix for attracting knowledge- and technology-intensive FDI is broader than the traditional one. In addition to FDI framework conditions, investment promotion and fiscal incentives, it includes tools for nurturing the innovation system, including incentives for talent creation and retention and support for research, innovation and business development (Table 2.6). The following sections briefly describe the policy mix in Costa Rica, focusing on recent policy tools and incentives.

Table 2.6. The policy mix for knowledge-intensive FDI attraction

Traditional FDI promotional tools			Innovation system promotional tools	
Framework conditions for FDI attraction	Investment promotion activities	Fiscal incentives for FDI	Incentives for talent creation and attraction	Incentives for research, innovation, business & cluster development, competitiveness
FTAs, BITs	Country branding	FTZ regimes	Migration policy for executives and technicians and for students and trainers	Grants for R&D and innovation projects
	Investors relationships			
Capital movements	Aftercare services		Training	Support to business development (e.g. linkages with FDI/supplier development, techno parks, business incubation)
Business climate	Policy and advocacy			

Source: Authors' elaboration.

Framework conditions for FDI attraction

Costa Rica grants Most Favoured Nation Treatment and National Treatment to foreign investors under the World Trade Organization (WTO) regime. It does not have a special legal regime for foreign investors and provides equal treatment to all investors irrespective of capital origin. Since 2008, it has implemented several reforms to improve framework conditions for investment. For example, it recently approved data protection legislation essential to improving the business environment for service companies and allowed new companies to establish themselves in the country.

To comply with the requirements of the Central American and Dominican Republic Free Trade Agreement (CAFTA-DR), Costa Rica has opened the telecommunications and insurance sectors to foreign investors and improved the Intellectual Property Rights (IPR) regime. In addition, Costa Rica has eased immigration legislation to facilitate the entry of business and technical personnel.

It allows free capital movement, with no restrictions on profit repatriation. While the country ranks low (121st out of 183 countries in 2012) in the World Bank Doing Business Report (World Bank/IFC, 2012), the Global Competitiveness Report 2011-12 ranks Costa Rica 61st out of a total of 142 countries, thanks to its good performance in health and primary education (WEF, 2011).

Costa Rica has signed preferential trade agreements with 54 nations, including Canada, China, Chile, Mexico and the United States. Treaties with the EU, Peru and Singapore are pending legislative approval. The country also has several bilateral investment treaties (BITs) with a wide range of partners, including Argentina, Canada, Chile, Czech Republic, Germany, France, Korea, Netherlands, Paraguay, Chinese Taipei, Spain, Switzerland and Venezuela. Costa Rica is involved in additional negotiations of FTAs (*e.g.* Colombia) and BITs (*e.g.* India).

Investment promotion activities

CINDE performs Costa Rica's investment promotion activities, which include the usual mix of business monitoring and analysis, country branding and marketing, direct services to investors and policy advocacy (Box 2.6). The agency has put much effort into aftercare services and monitoring business trends and needs. It offers services to investors completely free of charge at all phases of their investment project (Table 2.7).

Table 2.7. Investment promotion activities in Costa Rica, CINDE, 2011

Type of services	Activities
Business analysis and monitoring	Business intelligence analysis Industry and sector monitoring
Country branding and marketing	Organisation and participation in road shows, fairs and conferences Visits to headquarters and business trips Organisation of agendas/business trips in Costa Rica for potential investor companies
Services to investors	Support in administrative and bureaucratic procedures Network brokerage Aftercare services
Policy advocacy	Platforms for dialogue with government representatives

Source: Authors' elaboration based on interviews with COMEX, CINDE and investors.

Box 2.6. **The effectiveness of investment promotion: evidence from country assessments**

Several studies have assessed the impact of investment promotion policies on FDI inflows. Countries spend large budgets on investment promotion and governments and society call for accountability on these expenditures' effectiveness. According to OECD (2011) over USD 1 billion is spent worldwide to promote FDI.

Investment promotion policies include not only incentive packages, but also non-financial support (including information co-ordination and dissemination, which make impact assessment a difficult and sometimes subjective exercise). Some studies show that investment promotion is positively correlated with larger FDI inflows (Morisset and Andrews Johnson, 2004; Bobonis and Shatz, 2007). Others demonstrate that targeting specific industries results in larger FDI inflows (Charlton and Davis, 2007; Harding and Javorcik, 2007).

The Foreign Investment Advisory Service carried out a survey to analyse the effectiveness of IPAs, focusing in particular on organisational structure and embedment in the government decision-making process (FIAS, 2006). The results show that a quasi-governmental status is preferable, since the public good nature of investment promotion requires some degree of alignment of the IPA with the government. But it also demonstrates that a degree of independence is necessary, since IPAs have to be close to the business sector to be effective. This private-public sector functional mix shapes IPA management requirements and should be reflected in the personnel selection process, the formation of steering/advisory boards and the financing of IPA activities (Harding and Javorcik, 2007).

Success in investment promotion benefits from a clear distribution of responsibilities among the relevant government bodies, especially those in charge of science, technology and innovation, and industrial, trade, education and labour policy. A clear distribution of responsibilities is also necessary at the regional level. Investment promotion is increasingly undertaken at the sub-national level but, in some countries regional IPAs tend to compete for attracting FDI.

Source: OECD (2011), *Attractiveness for Innovation: Location Factors for International Investment*, OECD Publishing, Paris.

CINDE focuses on priority sectors, including services (contact centres, shared services, etc.), advanced manufacturing, medical devices and life sciences, and clean technologies.

CINDE has a promotion office in New York City employing a full-time professional dedicated to “facilitating direct contact and liaison with potential investors from North America and other countries”. Its work abroad is supported by the Ministry of Foreign Affairs, which has trained and instructed its embassies and diplomatic missions to provide basic information on Costa Rica’s investment climate and connect potential investors with CINDE or COMEX. Additionally, COMEX has an office in Washington D.C. to support attracting investments. PROCOMER has export promotion offices abroad (in Canada, Chile, China, Dominican Republic, Germany, Mexico, Panama, United States, and Trinidad and Tobago) which support COMEX and CINDE activities in their respective areas. At the sub-national level, neither COMEX nor CINDE has offices in Costa Rica’s different regions.

Fiscal incentives for FDI: the FTZ regime

Fiscal incentives are commonly used to attract FDI and are an important mechanism in Costa Rica in addition to CINDE promotion activities. Costa Rica applies an FTZ Regime (a legislation that grants foreign and domestic companies tax breaks for investing in the country, provided those investments comply with certain conditions), granted by COMEX and administered by PROCOMER. The FTZ applies to companies “dedicated to handling, processing, manufacturing, production, repair and maintenance of goods and services” (COMEX, 2010).

Companies investing in Costa Rica enjoy several exemptions, including full exemption from corporate income tax, renewable after the initial period as long as the company makes significant re-investments in the country; full exemption from customs duties on import/export tariffs (for intermediate capital goods, raw materials and other inputs); full exemption from local taxes (sales, fees, dividends and royalties); and full exemption on remittances abroad. FTZ access conditions vary according to the type of company, investment’s amount, sector of investment and location (inside or outside GAMA, inside or outside an industrial park). Investors in strategic sectors receive preferential treatment (Table 2.9). Companies investing in R&D activities in Costa Rica can enjoy preferential fiscal treatment; however up to the present no company has applied to the FTZ regime through this provision, partly due to the difficulties in demonstrating the effective level of R&D carried out in the country.

The FTZ regime in Costa Rica is ruled by Law 7210 of 1990. It was amended by Law 8794 in 2010⁵ to comply with the provisions of the Agreement on Subsidies and Countervailing Measures (ASCM) of the WTO. In order to comply with WTO regulations, the category A will be granted only up to 2015; from that moment forward there will be no more linkage between export requirements and incentives granted.⁶

Table 2.8. Conditions for benefiting from the FTZ regime, Costa Rica, 2012

Category	Manufacturing companies (Type A)	Manufacturing companies (Type F)	Service companies	Manufacturing companies (Type F- Large-scale projects)	Significant supplier*
Minimum export level	75%	Not required	50%	Not required	Not required
Investment in strategic sectors (and or activities)	Not required	Only if located in GAMA	Not required	Yes	Not required
In the Expanded Greater Metropolitan Area (GAMA)					
Minimum amount of investment in fixed assets	USD 150 000 (USD 2 million if outside a FTZ Park)	USD 150 000 (USD 2 million if outside a FTZ Park)	USD 150 000 (USD 2 million if outside a FTZ Park)	USD 10 million (on depreciable fixed assets)	USD 150 000 (USD 2 million if outside a FTZ Park)
Minimum employment	Not required	Not required**	Not required	100 employees	Not required
Outside the Expanded Greater Metropolitan Area (GAMA)					
Minimum amount of investment in fixed assets	USD 100 000 (USD 500 000 if outside a FTZ Park)	USD 100 000 (USD 500 000 if outside a FTZ Park)	USD 100 000 (USD 500 000 if outside a FTZ Park)	USD 10 million (on depreciable fixed assets)	USD 100 000 (USD 500 000 if outside a FTZ Park)
Minimum employment	Not required	Not required	Not required	100 employees	Not required

Notes:

* A supplier is considered significant when its sales to companies established under the FZR are equal to or higher than 40% of its total sales.

** Except for those cases in which the company claims to be strategic for the employment it generates, which shall be at the minimum 200 people reported in the payroll.

The category “Type A” refers to export processing companies as defined by Law 7210. Minimum export level is mandatory. This category will be granted until 2015 as for WTO commitments. Investments belong to a strategic sector if they comply with at least one of the following characteristics: Size: project employs at least 200 people, reported in the payroll; Industry: project relates to any of the following industries: advanced electronics; advanced manufacturing; advanced electrical components; devices, equipment, implants and medical supplies and their highly specialised packaging or containers; automotive (devices and supplies); high-precision machined parts and components; aerospace and aeronautics; pharmaceuticals and biotechnology; renewable energy manufacturing; automation and flexible manufacturing systems; and advanced materials; R&D: projects in which the company allocates at least 0.5% of its sales to R&D expenses in its local operation; Certification: projects in which the company uses in its operation at least one of the following certifications: ISO 14001 (14004) or its equivalent; LEED or its equivalent.

Source: Authors’ elaboration based on official information by COMEX, PROCOMER and CINDE.

Several companies point to skills and labour conditions as most relevant in their decision making. However, almost all countries use fiscal incentives (i.e. temporary or indefinite reduction or elimination of certain types of taxes for companies complying with certain requirements) to attract FDI. Some countries also offer direct financial incentives (i.e. direct subsidies that decrease these investments' materialisation or operational costs).

Malaysia has a fairly articulated fiscal incentive framework for FDI attraction (see Box 2.7). Other countries, such as Ireland,⁷ the Czech Republic and Chile, rely on financial rather than fiscal incentives (Box 2.8). For example, the Irish investment promotion agency (IDA Ireland) manages a set of financial incentives for employment, training and fixed assets, as well as incentives (some their own and others belonging to sister agencies) for R&D projects. IDA Ireland can negotiate directly with foreign investors. During 2004-10, the cost per job sustained by IDA was EUR 14 287, calculated "by taking into account all IDA Ireland expenditure to all companies in the period of calculation. Only jobs created during and sustained to the end of each seven-year period are credited in the calculations." In addition, Ireland recently developed a 25% tax credit for R&D and a specific incentive to support patent generation (see Box 2.8). In 2010, IDA Ireland approved 37 R&D projects representing an investment of EUR 500 million.

Box 2.7 **The incentive framework for FDI in Malaysia**

The Malaysian incentive framework is aligned with the government's development and growth priorities and is mainly based on corporate tax exemptions and relief. Malaysia requires that manufacturing companies - with shareholders' funds over MYR 2.5 million (Malaysian ringgits) or employing over 75 full-time workers - submit an application for a manufacturing license to the Malaysian Industrial Development Authority (MIDA). In the past, the percentage of foreign equity participation in investment projects was restricted. Before 1998, the level of exports used to be a determinant in the level of foreign equity participation. Since 2003, other restrictions (such as participation in specific sectors where Malaysian companies have capabilities and expertise) were lifted, allowing 100% unrestricted foreign equity in new projects.

The two main incentives are the Pioneer Status and the Investment Tax Allowance. They are mutually exclusive; a company can apply for one or the other. Eligibility depends on criteria (such as value-added, technology used and industrial linkages with local companies) which define the "promoted activities and products" compiled in detailed government lists. The Pioneer Status grants a 70-100% corporate tax exemption for up to 10 years (the actual corporate tax rate is 28%). Alternatively, the Investment Tax Allowance grants a 60-100% allowance on qualifying capital expenditure for the approved project, which can be used against 70-100% of its statutory income.⁸ The incentive framework also considers special benefits in promoted geographical areas..

Box 2.8. **Fostering innovation-related FDI in Ireland and the Czech Republic**

The role of the Industrial Development Agency, IDA, in Ireland

IDA Ireland plays a leading role in R&D by providing funding support for suitable projects and identifying other supports available from partner organisations such as Enterprise Ireland (EI), Science Foundation Ireland (SFI) and Sustainable Energy Authority Ireland (SEAI). IDA Ireland also offers a number of direct support mechanisms (including employment and training grants) and its property portfolio comprises a set of property offerings to enable companies to fast-track their project start-ups. IDA Ireland works closely with these progressive companies to ensure they have the facilities, resources and supports necessary to establish and expand their R&D operations and that they continue to flourish in Ireland as key drivers of its future economic success.

Box 2.8. (contd.)

IDA Ireland's grant programme for R&D and innovation projects includes grants for R&D feasibility studies and training. A 25% R&D tax credit designed to encourage companies to undertake new or additional R&D activity in Ireland covers wages, equipment, buildings and related overhead costs. Irish legislation provides MNCs with incentives to generate qualifying patents: up to EUR 5 million of annual qualifying income can be exempt from Irish tax and a maximum 12.5% corporate tax rate applies to all corporate trading profits generated by R&D activities. IDA Ireland/EI competence centres finance industry-led collaborative research on commonly identified industry problems.

The Innovation Partnership Programme established by EI funds small-scale industry/academic research which provides fast payback to companies. SFI Centres for Science, Engineering and Technology fund major university-based centres of collaborative research with industry. SFI also funds Strategic Research Centres performing collaborative research in selected research themes vital to Ireland's future economic growth and participates in the EU Seventh Framework Programme for Research and Technological Development (FP7). Ireland now has research clusters featuring global leaders in key high-tech industries including pharmaceuticals, biotechnology, medical devices, ICT and financial services.

Offering temporal incentives to technology centers in the Czech Republic

In 2004-08, the Czech Republic investment and economic development agency (CzechInvest) set up a specific incentive package to attract technology centres (investments in research, development and innovation) and business support centres. It provided grants to cover part of the costs of fixed assets, salaries, and training. CzechInvest database calculations indicate that the agency supported 58 technology centre projects (23 by local companies and 35 by foreign companies). Foreign companies created 2 026 new jobs, accounting for 70% of total new jobs created under the programme.

Technology centres focus on development and innovation in high-tech products and technologies (including the software and applications that comprise them) and production lines and processes, technologies, existing development services and other developed operations, provided these modifications represent an improvement that can be transferred to and used in production. Centres of business support offer services, including shared services centres, high-tech repair centres, software development centres, ICT expert and solution centres.

Source: www.idaireland.com and www.czechinvest.com.

Promoting the innovation system

Promoting the development of the domestic innovation system should be a priority for Costa Rica since it will help achieve higher and more sustained growth and productivity and it will also help to attract more knowledge-intensive FDI. Today, Costa Rica invests scant resources in innovation (see Chapter 1). The 0.5% R&D-over-GDP investment ratio is on a par with the average in the Latin American region, but notably lower than values in more dynamic countries and lower than the OECD 2.5% of GDP average. Investment in innovation is shaped by several factors, including the specialisation pattern, the availability of human resources for innovation, and public and private financial resources. Countries in knowledge-intensive sectors of production phases tend to invest more in innovation activities and R&D (Cimoli, Ferraz, Primi, 2009).

FDI in knowledge-intensive sectors and activities helps endow Costa Rica with a production structure that could foster and invest more in innovation. However, the country has significant shortages in financial resources for innovation and in human capital for innovation.

Strengthening human capital and fostering talent creation and attraction

Costa Rica's excellent free and compulsory basic education system, established in 1870, represents a good basis for human capital development. Furthermore, the country's relatively inexpensive skilled labour is an advantage. However, the skills requirements of the Costa Rican production system have evolved, creating the need for a new skills strategy to support the transition to a knowledge economy.

Costa Rica has five public universities providing tertiary education and several private universities and institutions offering professional training. Because the quality of student training and competences is higher in public universities, an accreditation system for private institutions would help improve the overall quality of skills development. One of the public universities in Costa Rica (the Technological Institute) offers specialised training in S&T, while the others include science and engineering training, but are more oriented towards social sciences. This mismatch between the supply of training and the demands of the production structure is a major obstacle to Costa Rica's development. Training at PhD level is limited. For example, although the country is highly focused on developing upper-end ICT services, Costa Rica does not have any active PhD course in engineering and electronics. The country just introduced two PhD programmes that will start in 2014. Given Costa Rica's small size, strengthening human capital would require not

only more and better programmes, but also new ways of fostering talent mobility by taking advantage of international collaboration and linkages with anchor companies.

Promoting technical and university training in S&T should constitute a key priority for Costa Rica. In collaboration with COMEX and the Ministry of Economy, MICIT is actively involved in programmes to foster demand in this field. The “Young Talent” programme was recently introduced to advise young people on career choices. Thanks to a loan by the World Bank, Costa Rica is investing in updating training courses in public and private universities.

In parallel, Costa Rica is involved in revising the curricula of public universities. It recently signed partnership agreements with Intel and HP, both of which are financing grants for graduate students. MNCs are also collaborating *ad hoc* with public universities by offering training courses that are better tailored to private-sector needs. Furthermore, Costa Rica now issues residence permits to special categories of workers, including managers, technical personnel, scientists and specialised technical workers.

The Inter-American Development Bank (IADB) recently launched a joint programme with MICIT to align the country’s human capital with production development needs. The IADB will finance specific activities to improve training in the priority areas laid out by the National Innovation Strategy and provide incentives for the re-conversion of professionals. The programme derives from the need to better define the national strategy for human capital development, which should result from co-ordinated choices between the ministries of education, science, technology and innovation, COMEX, universities and the private sector. The major challenge for Costa Rica will be to strengthen co-ordination among these agents and create a permanent base for dialogue on the issue (Box 2.9).

Box 2.9. **Aligning skills development with the changing priorities of competitiveness: the Korean experience**

Korea is a well-known case of catching up. Several factors contributed to the Korean success, including: i) the capacity to target sectors and finance investment in bundles to achieve competitiveness in the targeted sectors; ii) the concomitant evolution of skills development with the industrialisation priorities; iii) the capacity to mobilise the private sector to support production development goals; and iv) the implementation of synchronised policies in different areas, such as export promotion, import and capital controls, direct support to companies, and incremental support to technological development and innovation.

Over the decades, Korea has implemented targeted policies to support skills development, adjusting the educational and training system to the changing priorities of global competitiveness. After the Korean War in 1953, the government prioritised investment in educational infrastructure, i.e. building classrooms, training teachers, etc., and made primary education compulsory in 1954. Universal education was achieved at the primary level by 1970 and at the secondary school level by 1985.

During the early development phase, education and training policies were carefully synchronised with the national industrial development strategy. The government invested in technical secondary schools and junior technical colleges, following the targets of the first and second Technology Promotion Five-Year Plans (1961-72) to increase the supply of advanced middle-level skilled and technical workers (such as technicians, technical engineers and mechanics) for heavy and chemical industries. The average growth rate of vocational schools during 1970-80 was 24.5% and the annual growth rate of the number of students enrolled in technical schools was 10.5%. In addition, the government supported companies to provide on-the-job training programmes for students.

In the late 1960s, the government started to invest in higher education, particularly to nurture talents in applied research. The Korea Advanced Institute of Science (KAIS), the first research-oriented graduate school in science and engineering, and the Korea Institute of Science and Technology (KIST), the first multidisciplinary scientific research institute, were therefore created. From 1975 to 1981 (until the two institutes merged to become the Korea Advanced Institute of Science and Technology (KAIST)), they had a total of 1 070 graduates (masters and PhDs), representing over 30% of the total number of graduates nationwide.

Box 2.9. (contd.)

In the 1980s, education policies started to make tertiary education a priority. The system was reformed from offering two-year vocational college courses in engineering and natural sciences to four-year college and university courses. These policies included the creation of additional higher education institutions and incentives to increase enrolment, including the elimination of specific entrance examinations, adoption of graduation enrolment quota systems and expansion of enrolment quotas. In spite of the efforts to create a national supply of qualified labour, demand for high-quality R&D employees in S&T fields exceeded the supply. To address this mismatch, the government created an integrated S&T educational system, which offered integrated support to top students from high schools to scientific high schools, to university and graduate schools such as KAIST. In addition, a privately funded institution, POSTECH, was established in 1986 to support education in science and technology.

Since the 1990s, the government has emphasised the knowledge-based economy as the new growth model stemming from the financial crises of the 1990s. A key pillar has been the improvement in skills development and qualification of the labour force. The government prioritised improving the quality of university programmes as part of the overall shift towards a knowledge economy. Private-sector demand for engineers and researchers also increased and the government started to invest in supporting the development of PhDs. The number of Korean PhD graduates from national universities increased from 530 in 1980 to more than 11 645 in 2011. The trend of Korean nationals obtaining PhDs abroad has been stable since the 1990s. The share of PhDs in natural sciences and engineering increased from 26% in 1980 to 47% in 2011; the number of researchers in Korea has risen from fewer than 3 000 in the late 1960s to 320 000 in 2009. In 1995, the 5.31 Education Reform was approved to restructure the education system. The reform included administrative deregulation, decentralisation of the school system, and use of ICT in training. The country also started to prioritise capacity building at the global level, fostering mobility of talents through programmes such as Brain Korea 21 (BK21) which supports the global competitiveness of Korea's skilled labour force. The programme gives priority to information and business technologies and channels resources to universities on the basis of excellence in performance; it supports talent generation (by fostering the international mobility of Korean students) and university reforms (such as the introduction of more competitive student selection processes). Programme funding allocations are made by academic discipline, geographical location, and scale of research group, with science and engineering receiving 85% of the funding for large-scale research projects.

Source: OECD (2012), *Industrial policy and territorial development: lessons from Korea*, OECD Development Centre Studies, OECD Publishing, Paris.

Promoting research, business innovation and linkages

In addition to qualified human resources, the availability of research and entrepreneurial capabilities is essential to innovation. Despite low investment in R&D activity, Costa Rica should strengthen its existing research centres. For example, Costa Rica has a national institute for biodiversity (INBIO), a Centre for Biotech Research (CENIBIOT, recently created with EU funds to carry out production-oriented research in biotechnology), and the Clodomiro Picado Institute, a world-class centre in snake poison research. Resources for research are scarce, undermining the possibility of carrying out ambitious programmes. The assets could be strengthened if more financial and human resources were made available. Costa Rica would also benefit from fostering business development; techno parks have been widely used by emerging economies to create a pro-innovation environment, even though to be effective they need to be well planned and managed (Box 2.10).

The resources managed by MICIT to finance innovation in companies are also low, and the available budgets often under-utilised. Hence strong efforts are needed to improve both the policy mix and budget endowment for innovation. A successful innovation policy requires not only financial resources, but also investing in capacity building at the entrepreneurial level. MICIT recently launched a practical market-oriented innovation training programme for public- and private-sector managers. The programme has trained 10 people from the public sector and 60 from the private sector; it aims to train 200 managers by 2014.

A key pillar of an integrated FDI promotion strategy is the set of incentives for promoting research, business innovation and company linkages. Costa Rica's policy mix is not particularly strong in this respect. While PROCOMER manages the linkage promotion, the articulation with other SME-targeted policies of the Ministry of Economy is still weak. The recent joint IADB-MICIT programme aims to strengthen technological diffusion and absorption in SMEs, improve their potential as local providers and support investment in innovation by offering resources for the creation of new knowledge-based companies.

Like other countries that have prioritised FDI attraction, Costa Rica has sought to establish policies supporting backward and forward linkages between domestic and foreign companies, with mixed results. In Costa Rica PROCOMER runs a matchmaking programme between export companies and local suppliers. This initiative started in 2001 as a pilot programme funded by the IADB and focused on “high-technology international companies”; in 2005 it was broadened to include all exporters and institutionalised as “Costa Rica Provee”. This programme evolved into the Export Linkages Department in PROCOMER that manages a database of 720 providers. It has facilitated to date the establishment of over 1 000 linkages between local and foreign companies, valued at around USD 46.5 million. Yet this is a small figure compared with FTZ companies' expenditures (USD 1.78 billion) in Costa Rican goods and services in 2010.

Box 2.10. Techno parks as tools to foster business development

OECD and non OECD economies use techno parks to support business development and innovation. Techno parks offer different types of services and perform different functions. They offer infrastructure and location facilities for business and R&D activities, they provide business services and high-knowledge-content services to firms, including managerial, marketing and technological services, and they principally target local and medium-sized firms located near the park. Some techno parks support the creation of start-up companies, others focus on support to existing firms and still others offer a mix of the two services. Techno parks often perform as intermediary institutions for facilitating access to national public policy tools for SMEs. In several cases techno parks have been built close to technical universities to facilitate the transfer of knowledge.

International experience has demonstrated that collaboration among industries, universities and research institutes creates positive externalities and promotes technological innovation and industrial development in clusters of economic activities in specific places. However, assessments of the impact of techno parks on regional development are varied; there is a risk of high mobilisation of resources for the creation of infrastructure and a low capacity to mobilise private-sector development. When techno parks are well-planned and strategically managed, they can play a key role in supporting private-sector development in specific sectors, such as ITC in Silicon Valley or in lagging regions, as is the case of the Techno Park on IT services for Tourism in the Balearic Islands in Spain, or the various techno parks in Korea.

A recent assessment on the performance and impact of techno parks in Spain showed that beyond external factors (effective policies and availability of resources), efficient and professional park management and processes built on “trust, communication and coherence” determine the effectiveness of parks. Long-term political and institutional support, and experience exchanges within networks and working groups of the International Association of Science Parks (IASP) or Association of Technology Parks (ATPS) are important. From the Spanish experience a key factor for effectiveness is the integration of Science and Technology Parks (STPs) and Technology Centres (TCs) in broader territorial R&D strategies. Techno parks are also positive tools for mapping the current specialisation existing in a territory in terms of innovative, emerging or high-tech activities. In Spain several techno parks also operated as key players in strategic territorial marketing. Additionally, they performed well as links with international and European territories within the same specialisation.

Box 2.10. (contd.)

In Korea techno parks are specialised in different industries, some are green-field developments, and others build on installed industrial capacities. Some support business creation, others favour technological upgrading of existing firms and others perform both functions. Over the years, the central government has carried out several impact evaluation studies which conclude that there are performance gaps between the 18 techno parks; on average techno parks contributed to technology transfer, venture business and rising sales and employment in the hosting region.

The Chungnam Techno Park (CTP) was founded in 1998 by the Chungnam provincial government and the central government. The park employs 130 people and is located close to the major production sites of Samsung Electronics and Hyundai Automobiles. The province is specialised in high-tech industries and the local innovation system is dense, hosting 36 universities and 623 research institutes. The CTP plays a key role in fostering science and industry linkages and supporting the creation of knowledge-based companies. The support from the central government also includes incentives for localisation in the province and infrastructure provision. The CTP promotes regional strategic industries in information technology, automobiles, multi-media content, and agricultural biotechnology. It manages three research and business development centres for strategic industries, and three agencies for provincial industry planning, business services, and one enterprise education programme. The CTP offers funding to R&D, infrastructure facilities, road map services to firms, training and commercialisation services. Firms located in the park can benefit from park location between three and seven years. The park has to report to the central government (Ministry of Knowledge Economy) performance indicators, including number of firms created, sales and employment. During the decade of the 2000s CTP created 245 new enterprises and 13 000 new jobs.

Source: European Commission (2011), "Estudio sobre la contribución de los Parques Científicos y Tecnológicos (PCT) y Centros Tecnológicos (CCTT) a los objetivos de la Estrategia de Lisboa en España" elaborated by Información y Desarrollo, SL (INFYDE) for the European Commission DG-Regio, Brussels, Belgium; OECD (2011b), *Regions and innovation policy*, OECD Reviews on Regional Innovation, OECD Publishing, Paris; OECD (2012), *Industrial policy and territorial development: lessons from Korea*, OECD Development Centre Studies, OECD Publishing, Paris.

The lack of linkages is not only due to the lack of local capabilities: MNCs rarely ask to partner with local companies for several reasons including lack

of international certifications and standards. Countries implement linkages programmes to increase their chances of reaping the benefits of FDI. (Box 2.11).

PROPYME is a grant offered to SMEs (or groups of SMEs) to implement innovation-related projects and finance personnel training. Candidates apply through a system of open calls; proposals are evaluated monthly by the incentive commission. The fund covers up to 80% of total project cost and finances human resources training and R&D projects in companies and universities. Costa Rica has low science and industry linkages; it therefore introduced incentives to fund joint funding requests presented by a research centre (or group) and a company (or group of companies). The experience of other countries shows that the collaboration between science and industry is not easy and that adding a conditionality on collaboration as a prerequisite for accessing public financing helps to foster collaboration (Cimoli, Primi, Rovira, 2011). However, collaboration with a local university or companies is not always proven to enhance innovation performance. Several companies prefer to choose research partners that are not local and should have a degree of freedom in choosing the most appropriate research partner (OECD, 2011b).

Box 2.11. Business linkages and supplier development programmes, selected OECD and non-OECD economies

Ireland

Ireland's National Linkage Programme was established in 1985 to maximise the amount of raw materials, components and services sourced in Ireland by MNCs. The programme initially focused on the electronics sector and was administrated by IDA Ireland.

The Linkage Programme worked with both local companies and MNCs. In the beginning, IDA focused on improving local suppliers' technical competences (building capability), later focusing on scale (building capacity) rather than providing "brokerage services". At the same time, it helped MNCs build a European supply chain, rather than constraining them to Irish suppliers. This approach reinforced the willingness of MNCs to join the programme and allowed IDA to collect information as Irish suppliers upgraded their technical capabilities (Ruane, 2001).

The programme had a screening process: local companies seeking to participate were assessed on their technical, financial and managerial capabilities. The companies selected were supported by IDA, which co-ordinated eight co-operating government agencies. Over 1987-92, local purchases of electronic materials by MNCs increased from 9% to 19%. The 83 local companies participating in the programme increased their sales by 83%, productivity by 36%, and employment by 33%, dramatically outperforming similar companies (World Bank, 2007).

Box 2.11. (contd.)

In the mid-1990s, IDA assumed its current role supporting FDI and MNCs, and EI was created to support local industry. The evolution of Ireland's linkage policy reflected these institutional changes, but also the changing needs of MNCs and the evolution of local industry. EI assumed administration of the Linkage Programme – thus reflecting the importance of the capability- and capacity-building component, even though the brokerage services component was also reinforced in this new phase. In 1998, the programme began to evolve from a traditional “linkage programme” to a “globalisation programme”, helping incorporate companies in global value chains rather than supply MNCs in Ireland. As Ruane (2001) established, “[T]hese policy developments are not described as linkages – the use of the term “linkage” in this context appears to have completely disappeared from all Irish policy literature”.

Malaysia

Malaysia's Industrial Linkage Programme (ILP) promotes competitive SMEs as suppliers of parts and components, products and services to large companies, MNCs or government-linked companies. To strengthen industrial linkages, ILP provides fiscal incentives to both large companies and local providers.

Large companies are allowed to deduct from their income tax expenditures incurred in ILP activities (such as employee training, product development and testing, and factory auditing to ensure the quality of vendors' products). Local providers offering to manufacture promoted products or participate in promoted activities (detailed in an official list) are eligible for a 100% tax exemption of their statutory income for five years (under the Pioneer Status) or a tax allowance of 60% on qualifying capital expenditure incurred within a five-year period (this allowance can offset 100% of their statutory income). In addition, local providers who participate in an approved ILP and are capable of achieving world-class standards in price, quality and capacity are encouraged to manufacture promoted products, or participate in activities for the international market receiving similar incentives: a 100% tax exemption for ten years or 100% tax allowance for five years.

The incentives are provided by MIDA and the ILP is implemented by the Small and Medium Enterprise Corporation Malaysia (SME Corp. Malaysia) – since 2009, “the single dedicated agency to formulate overall policies and strategies for SMEs and to co-ordinate programmes across all related Ministries and Agencies”.

Czech Republic

Launched in 1999 by CzechInvest, the Czech Republic's Supplier Development and Linkage Programme was created with a dual premise: first, the availability of competitive local suppliers improves the Czech Republic's competitiveness and supports attracting new investments; second, it provides a way to embed the benefits of FDI in the economy.

Box 2.11. (contd.)

The programme's "development" component seeks to strengthen Czech companies' abilities to become sub-contractors of investors and other international companies. CzechInvest's support process initially assesses business activities and identifies areas for improvement, based on an external assessment by consultants and a self-assessment by the company. A detailed long-term plan to meet the requirements of MNCs is then formulated and executed through consultancy and training. These "twinning" programmes for selected companies and specific sectors take place over a two-year period. CzechInvest estimates a 10% average growth in labour productivity and 40% average export growth for companies that participated in the 2000-07 programmes.

In addition, CzechInvest provides information and matchmaking services for MNCs seeking local providers or business partners. It manages a database of more than 3 000 Czech suppliers from which it selects suppliers based on investor requirements. It then organises meetings and events, makes introductions and helps companies find partners for joint ventures.

Chile

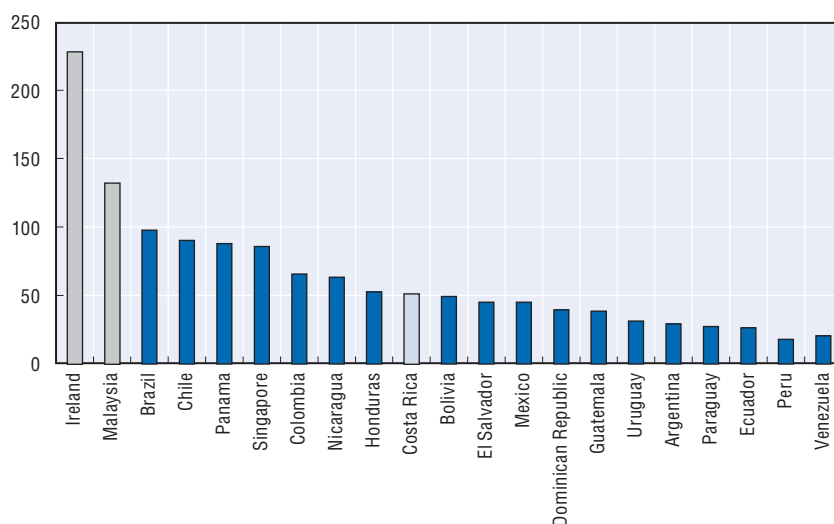
Launched in 1998 by the Chilean government's economic development agency, (CORFO,) the Chilean Suppliers Development Programme provides financial incentives to companies that develop projects to improve the quality and productivity of their providers. The programme was not specifically designed to link local providers with MNCs, but to strengthen the business relationship among SMEs (providers) and large companies (programme sponsors), thereby improving SME competitiveness. CORFO co-finances all the activities necessary for the diagnostic of suppliers and the applicant company, as well as the preparation and implementation of a work plan. Among the supported activities are the hiring of consultants, technical assistance, training, technology transfer and promotion.

A recent evaluation of the Programme's impact found that both SME suppliers and large corporate customers benefited: "The programme increased sales, employment, and the sustainability of small and medium-sized suppliers. It also increased the sales of large companies and raised their ability to become exporters" (IDB, 2011).

Sources: www.idaireland.com; www.czechinvest.org; www.smecorp.gov.my; www.corfo.cl.

The financial sector plays a limited role as a facilitator in Costa Rica. Onsite interviews suggested few vertical linkages between foreign and domestic companies. Beyond lack of capabilities, this is also a consequence of the limited access to finance. Figure 2.2 shows the ratio of domestic credit to GDP provided by the banking sector in 2010; Costa Rica hovers slightly above the median of the Latin American sub-sample with a rate of 51%. But while the rate is not far removed from prevailing values among regional peers, it stands below that of countries that have relied more strongly on attracting technology-intensive FDI. Such is the case of Ireland or Malaysia, included in the same graph with ratios far above Costa Rica's (227% and 132% respectively). Comparisons across other "access to finance" indicators (e.g. prime lending rates, interest bank spreads, market capitalisation of listed companies) yield essentially the same results and suggest that the financial sector has provided funds to corporate investment much more efficiently in these countries than in Costa Rica.

Figure 2.2. Domestic credit provided by the banking sector, 2010
(% GDP)

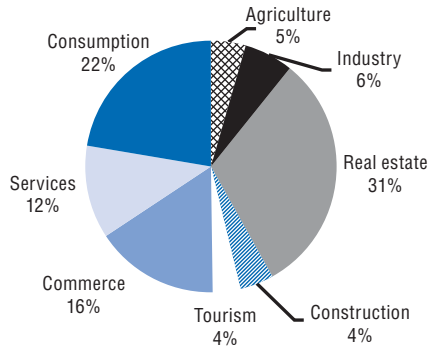


Source: Authors' elaboration based on World Bank data.

The allocation of domestic credit resources in Costa Rica reveals an even more limited pool of funds available for technological upgrading by domestic companies. Figure 2.3 shows that the bulk of the banking credit to the non-financial private sector is concentrated in activities detached from target industries, particularly real estate and consumption, which concentrate more than half of total credit to the private sector.

Costa Rica is currently envisaging strengthening the Development Banking System (SBD) to facilitate access to finance for domestic companies.

Figure 2.3. Credit to the non-financial private sector, Costa Rica, 2006-11



Source: Authors' elaboration based on Central Bank of Costa Rica. Average of monthly balances, Nov. 2006-11.

Box 2.12 Facilitating linkages: the role of the financial system

A well-functioning financial system is a precondition to fully reap the benefits of FDI because it helps to foster the establishment of linkages by allowing the development of domestic companies. Empirical studies have not provided a clear record on the direction – or even the existence – of FDI spillovers. In a survey of econometric studies on the topic, Gorg and Greenaway (2004) draw a sceptical picture, with more than half of the papers surveyed identifying either negative or nil effects.

Several reasons account for this. A clear drawback to horizontal spillovers is the lack of incentives for the foreign subsidiary to disseminate knowledge that could be potentially used by market competitors. This resistance should be greater when proprietary knowledge is used for market dominance (e.g. knowledge-intensive industries). On the other hand, vertical linkages should encounter much less resistance from the MNC, insofar as they can lead to efficiency gains in the form of reduced shipping costs, cheaper local suppliers, etc. (UNCTAD, 2001).

Despite these mutually beneficial effects, vertical linkages are not guaranteed. In fact, the difficulty in documenting them is one of the reasons some researchers have turned their efforts to documenting how certain features of the host economy might influence prospects for externalities between company types. Among these, the financial sector is seen as a fundamental agent for fostering spillovers. Alfaro *et al.* (2004) find that host economies with well-developed financial markets are in a better position to translate FDI inflows into economic growth.

Linkages, finance and SME development

The literature points to the idea that FDI spillovers are far from automatic. Financial institutions reduce transaction costs and allow for a more efficient allocation of resources. Enhanced access to credit helps reduce the technology gap between domestic companies and MNCs⁹ – a critical requisite for the former to upgrade their absorptive capacity and improve their chances of integrating into the production chain of a foreign subsidiary.

While the previous consideration applies to the entrepreneurial community at large, it is most valid in the case of SMEs. In a comprehensive study of the financing constraints faced by these companies, OECD (2006b) identified some of the factors behind the under-provision of financial services to them.

Box 2.12. (contd.)

The extent of the gap is greater in emerging economies

By and large, OECD countries have built mechanisms to remove financing bias against SMEs. First, commercial banks have designed specific strategies and business lines to deal with the specificities of SME borrowing needs. Second, capital markets are well developed to constitute an alternative source of fundraising for these enterprises. The situation in emerging economies is drastically different. The study unveiled limited access to financing for SMEs in emerging countries, even though they comprise (just as in advanced economies) the bulk of the entrepreneurial network.

The sources of the financing bias against SMEs

The OECD report also advanced some of the factors (apparently more applicable to emerging economies) underlying the limited range of financial services available to SMEs. These include regulatory rigidities that inhibit SME funding, either with regard to lending (*e.g.* inadequate protection of creditor rights) or borrowing (*e.g.* regulatory dispositions that discourage SMEs from leaving the informal sector). Another key factor relates directly to SME features that impede their access to finance (*e.g.* greater volatility in business revenues, lower survival rates than large companies, or monitoring difficulties associated with principal/agent problems).

How to eradicate the bias

In all, governments have established several policy initiatives to reduce the SME financing gap. Government action is especially necessary in incomplete markets, but it should not deter the private sector from funding SMEs. In fact, the study concluded that market-based principles should guide banking sector reforms whenever possible, insofar as this framework is more likely to contribute to SME financing needs than a publicly controlled banking system.

The above measures should be complemented with other measures falling outside of the banking sector, such as facilitating the transition of SMEs to the formal sector (*e.g.* through devising tax schemes that do not put them at a disadvantage). Another focal policy point is the development of alternative channels for SME financing, particularly through institutional savings and venture capital, which necessarily requires a policy commitment to financial development in emerging economies.

Box 2.13. Chile: improving the policy mix and advancing towards an integrated approach to FDI attraction

In 2000, the government of Chile engaged in a more proactive approach to attracting FDI and created the InvestChile programme within CORFO, with the purpose of materialising foreign investments in sectors that develop or use new technologies and positioning Chile on the mental map of location decision makers. As part of the overall strategy, it created a set of incentives for FDI which included co-financing of pre-investment studies, human resources training and fixed assets. InvestChile has evaluated and adjusted its incentives over the past 12 years. The last amendment resulted in the following incentives:

Table 2.9. FDI incentives in Chile, 2012

Category of incentive	Description
Pre-investment	This incentive partially covers the cost of studies prior to investment consolidation, e.g. choosing a prime location or evaluating the feasibility of an investment in Chile's regions, excluding the Metropolitan region. The incentive will cover up to 50% of the cost of studies, with a maximum of USD 60 000 per project.
Human resources training	This subsidy can be used to finance the training costs of employees in industries that are developing or using new technologies in their production methods. For customer and shared service centres up to 25% of the worker's annual gross salary, with a maximum of USD 5 000, will be subsidised. In information technology, up to 50% of the gross annual salary, with a maximum of USD 25 000, will be subsidised.
Fixed assets	This subsidy encourages investment in fixed assets in Special Economic Zones and in high technology. In the Special Economic Zones, the benefit will not exceed 50% of the investment in fixed assets, with a maximum of USD 210 000 and USD 70 000 for industrial and tourism areas in the Province of Valparaiso. This incentive is designed to promote private investment in remote regions or regions in production lag by subsidising investment in fixed assets (such as land, technological equipment and construction of industrial infrastructure).

In addition, CORFO manages a wide range of incentives to encourage and promote entrepreneurship and innovation. Two of these are worth mentioning because they focus on attracting foreign institutions and talent.

International Centres of Excellence

In 2009, CORFO launched a programme to attract and set up technology research and development entities linked to International Centres of Excellence (ICE). The purpose was to “complement within the country, the current capacities of the National System of Innovation, and to provide opportunities for local research

Box 2.13. (contd.)

centres, business consortiums, technological institutes and local universities, in areas of development of frontline technologies”. The ICE should be associated with at least one Chilean private or public entity (university, national technological centre or consortium) which will provide complementary R&D services. Five priority sectors (aquaculture, mining, global services, food industry, and special-interest tourism) and five transverse sectors (biotechnology, energy, environment, information and communication technology, and hydric resources) were considered. Projects passing the qualification phase could apply to a second phase comprising up to three stages (set up, operation and consolidation), subsidised up to 50% (stage 1) and 35% (stages 2 and 3) up to a maximum of USD 19.5 million over 10 years.

CORFO has approved eight centres, three of which announced their decision to begin operations in 2011 and one in 2012:

- Fraunhofer – Germany (biotechnology, USD 49 million total investment)
- Csiro – Australia (mining, USD 63 million)
- Inria – France (information technology, USD 41 million)
- Wageningen – Netherlands (food industry, USD 40 million)

Start-Up Chile

Start-Up Chile is a programme designed to attract world-class, early-stage entrepreneurs to start their businesses in Chile, using it as a platform to “go global”. The programme’s goal is to improve the local entrepreneurship ecosystem; its ambitious end goal is to make Chile the innovation and entrepreneurial hub of Latin America. It provides seed capital of USD 40 000 (given as a refund of expenses incurred) and a one-year working visa (the entrepreneur should stay in the country at least six months), along with logistical support and access to domestic capital networks. The selected entrepreneurs are required to participate in local events and present their expertise in workshops.

The entrepreneurs go through a selection process conducted by Silicon Valley experts and a Chilean board. The current criteria include: quality of talent and commitment of the founding team members, the project’s international market potential, and the value of the applicant’s affiliated networks that will be injected into the Chilean entrepreneurship ecosystem. Begun in 2010 as a pilot project, the programme is entering its third year of operation. In 2011, there were three calls for tender and 1 511 entrepreneurs from 65 countries applied; 337 projects have been selected to date and the goal is to reach 1 000 projects by 2014.

Source: CORFO, InvestChile, Programme to Attract International Centres of Excellence for Competitiveness, InnovaChile-CORFO publication, 2009.

Conclusions

Costa Rica has an ambitious strategy to keep attracting FDI in order to sustain growth and job creation and prioritise investment attraction in knowledge-intensive activities and sectors.

Costa Rica is well endowed with government capabilities to pursue knowledge-intensive FDI attraction. It has a well functioning Ministry of Trade, a good Promotion Investment Agency and a Ministry for Science and Technology in an increasingly open dialogue with FDI policy. It also has good schools and universities and some small research capabilities in a few niches. But it needs to advance policy coordination by creating a mechanism for aligning actions in different fields and overcome the persistent duality between FDI and domestic activity. Chapter 3 presents a road map for policy action, taking into account the assessment presented in Chapters 1 and 2.

Annex 2.A1 cluster analysis

Clustering is a basic technique in data mining that divides a number of elements into subgroups, or clusters. The broad criterion for selection is that elements belonging to a cluster are more similar to each other than to elements outside of the cluster – in other words, to maximise the difference between clusters relative to the difference within clusters. While many methods and algorithms can perform this task, this section presents the results of a hierarchical agglomerative clustering, that builds a hierarchy of clusters in a “bottom-up” fashion. We start with each country as a cluster in itself, and from there we merge clusters according to similarity. In our case, we employ Ward’s method (1963), which uses an analysis of variance to evaluate the distances between clusters. At each step, the method merges the clusters with the minimum distance between them with the criterion of minimising the increase in ex-post within-cluster variance.¹⁰ In addition, we require a criterion for the number of clusters to be created, which in general will have to negotiate the trade-off between the final number of clusters and the within-cluster heterogeneity. We select the number of clusters by looking at the Cubic Clustering Criterion (CCC), a statistic widely used for deciding on this issue when using Ward’s method.

Data and analysis

Our data includes a representative sample of Latin American, Asian and OECD countries. Our selection aimed for a sample that would include Costa Rica’s geographical peers and some of the most relevant countries in emerging Asia and the OECD. Within these groups, we were particularly interested in those countries that – like Costa Rica – have engaged in policies for attracting knowledge-intensive FDI.

We included a set of economic, social and institutional indicators that hinge on the country’s structural features. Here, we selected variables based not only on their alleged relevance, but also on their availability to a large sample of countries. This consideration precluded us from including relevant variables available only to

a limited number of countries. In all, Table 2.A1 comprises the variables selected, taken from two World Bank datasets.¹¹

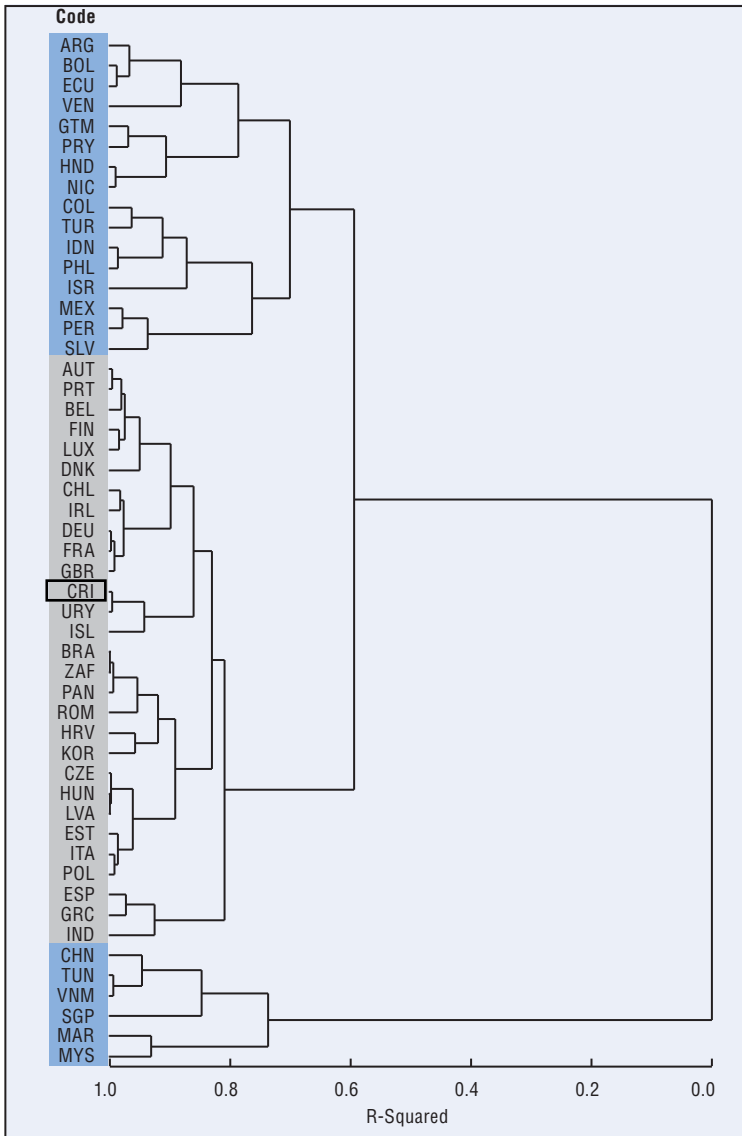
Table 2.A1.1. Variables used for the cluster analysis

Type	Variable
Macroeconomic	GDP per capita (PPP) Investment (% of GDP)
Demographic	Life expectancy Population (millions)
Economic structure	Industry in GDP (%) High-tech exports (% of total) Private capital (% of GDP) Trade openness (% of GDP)
Education/skills	% of labour force with secondary education Expenditure in public education (% of GDP) Expenditure in R&D (% of GDP)
Institutional governance	Corruption Regulatory quality Government efficiency Political stability Rule of law Accountability

Source: Authors' elaboration.

We conduct our exercise in a sequential manner, with several specifications. As a starting point (Figure 2.A1.1) we select only the institutional variables that illustrate the extent to which Costa Rica stands above its regional peers in terms of governance indicators. The analysis points to the existence of three clusters, explaining about three-quarters of the total variance. First, we have a group created by most Latin American countries, as well as other emerging economies (Turkey, Philippines, Indonesia). A second group (which includes Costa Rica) features most European OECD countries, several Eastern European countries (Baltic countries, Poland, Czech Republic, Croatia), two Latin American countries usually regarded as having sound institutions (Chile and Uruguay), and two Asian countries (India and Korea). Finally, a third and smaller cluster joins countries from emerging Asia (notably, China) and the Maghreb (Morocco, Tunisia).

Figure 2.A1.1 Cluster analysis: institutional variables



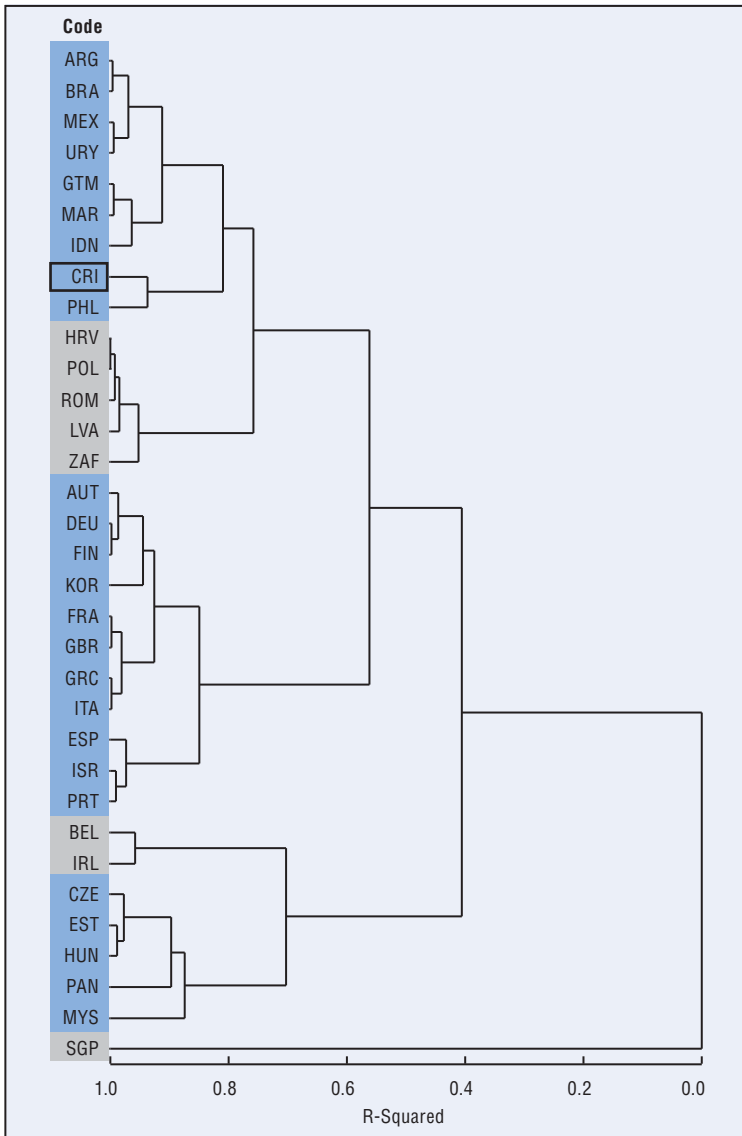
Source: Authors' elaboration based on World Bank data.

With Costa Rica clustered to some of the countries with the soundest institutions, our next step adds all the other variables (from macroeconomic to skills-related) to see the extent to which this addition distorts the previous results (we do not include the graphical representation to avoid excessive length). As in the previous case, the CCC statistic suggests three clusters. The first comprises advanced and emerging economies whose most immediate common feature is the existence of a large internal market. The second group is more heterogeneous, comprising middle and small economies (including Costa Rica) with otherwise distinct characteristics. The final group features exclusively the Brazil-Indonesia dyad.

This clustering representation is far less informative, insofar as it seems to be guided mainly by the population variable. We therefore double-checked this result without including our population variable. Figure 2.A1.2 reflects these changes: the clustering is more discriminating, since the CCC coefficient suggests six groups. Costa Rica is clustered mainly with Latin American countries (Argentina, Brazil, Mexico, Uruguay and Guatemala), in addition to Morocco, Indonesia and the Philippines. In all, we can conclude that the inclusion of economic variables separates Costa Rica from the advanced countries while including it within a cluster of Latin American countries.

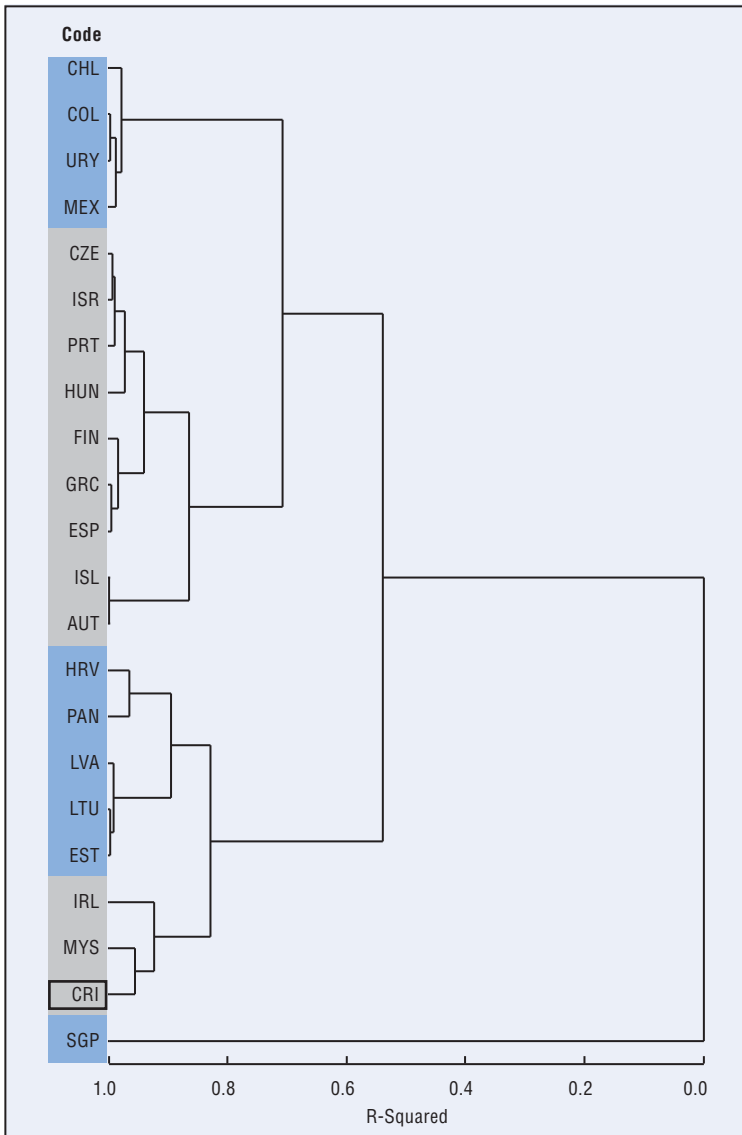
So far, our analysis suggests that economic variables at large (as opposed to those based on governance) are what de-links Costa Rica from the group of countries most associated with knowledge-intensive activities. To elucidate, we conduct a final inquiry that aims to determine whether contemporary Costa Rica bears any resemblance to those countries that successfully engineered a transformation towards this type of economic activities. We compare Costa Rica's current values with the rest of the sample, computed in both 1990 and 2000. Figure 2.A1.3 includes the first comparison and leads to five clusters. Here, the interesting outcome is that Costa Rica ends up associated with Ireland and Malaysia, which have gone a long way towards becoming knowledge economies. Yet replicating this exercise for 2000 (figure not included) erases these results and places Costa Rica in a more diverse mix of Latin American (Chile, Mexico, Colombia, Uruguay) and Eastern European countries (Latvia, Lithuania, Croatia).

Figure 2.A1.2. Cluster analysis: all variables (excluding population)



Source: Authors' elaboration based on World Bank data.

Figure 2.A1.3. Cluster analysis: Costa Rica (current) vs. rest (1990)



Source: Authors' elaboration based on World Bank data.

Notes

- 1 Even though the law that formally instituted COMEX was enacted in 1996, a budgetary law, passed in 1986, created COMEX and included among its responsibilities the formulation of investment policy.
- 2 Actually, PROCOMER was created in 1996 by the fusion of two pre-existing institutions – one in charge of FTZ management and the other in charge of export promotion.
- 3 France began to use “attractiveness” instead of “competitiveness”. If the country could improve its attractiveness to attract the best human resources and investments, it could also improve its competitiveness.
- 4 The Colombian Private Council on Competitiveness has a staff of six associate researchers and publishes a bi-annual National Competitiveness Report analysing and providing policy recommendations on different topics, such as education, social security, the labour market, science, technology and innovation, infrastructure, information and telecommunications technology, the financial and tax system, competition, justice and corruption, and sustainability.
- 5 Law No. 8794 of 12 January 2010, entitled “Amendments to the DutyFree Zone Regime Law, No. 7210 of 23 November 1990” came into effect on 22 January 2010 when it was published in the Official Gazette. The Implementing Regulations came into effect on 15 June 2010.
- 6 FTZ regime measures incompatible with the ASCM are those which concern export subsidies and import substitution or domestic content subsidies.
- 7 However, in the case of Ireland, the low 12.5% corporate tax rate operates as an important incentive.
- 8 Statutory income is derived after deducting revenue expenditure and capital allowances from gross income.
- 9 In an empirical study of Chinese firms, Girma *et al.* (2008) find that credit access is a relevant channel through which FDI affects the innovation efforts of domestic firms.

- 10 The method calculates the means for all variables in each cluster. Then, for each case, it calculates the squared Euclidean distance to the cluster, with the distances summed for all the cases. Refer to Ward (1963) for a more detailed explanation.
- 11 Institutional variables are taken from Worldwide Governance Indicators and the rest from World Development Indicators.

References

- ALFARO, L., CHANDA, A., KALEMLI-OZCAN, S. and SAYEK, S. (2004), “FDI and economic growth: the role of local financial markets,” *Journal of International Economics*, Vol. 64(1), pp 89-112.
- BOBONIS, G.J. and H.J. SHATZ (2007), “Agglomeration, Adjustment and State Policies in the Location of Foreign Direct Investment in the United States”, *The Review of Economic and Statistics*, Vol. 89, No. 1, pp. 30-43.
- CHARLTON, A. AND N. DAVIS (2007), “Does Investment Promotion Work?”, *The B.E. Journal of Economic Analysis and Policy*, Vol. 7, No. 1, pp. 1-19.
- CIMOLI, M., J.C. FERRAZ and A. PRIMI (2009), “Science and Technology Policies in Global Open Economies, Reflections from Latin America and the Caribbean”, *Globalization, Competitiveness and Governability Journal*, 2009, Vol. 3, No. 1, 32-60, Georgetown University, Universia, US.
- CIMOLI, M., A. PRIMI and S. ROVIRA (2011), *National Innovation Surveys in Latin America: Empirical Evidence and Policy Implications*, ECLAC United Nations and IDRC, Santiago, Chile.
- COMEX (2010), Ley No. 7210, Ley del Regimen de Zonas Francas (text of the Law 7210 amended by Law 8794), COMEX, Costa Rica.
- CORDERO, J. and E. PAUS (2008), “Foreign Investment and Economic Development in Costa Rica: The Unrealized Potential”, Working Group on Development and Environment in the Americas Discussion Paper No.13.
- CZECHINVEST (2011), *Annual Report 2010*, CzechInvest, Prague.
- EUROPEAN COMMISSION (2011), “Estudio sobre la contribución de los Parques Científicos y Tecnológicos (PCT) y Centros Tecnológicos (CCTT) a los objetivos de la Estrategia de Lisboa en España” elaborated by Información y Desarrollo, SL (INFYDE) for the European Commission DG-Regio, Brussels, Belgium;
- GIRMA, S., Y. GONG and H. GÖRG (2008), “Foreign Direct Investment, Access to Finance, and Innovation Activity in Chinese Enterprises”, *The World Bank Economic Review*, Vol. 22, No. 2, pp. 367–382.

- GORG, H. and D. GREENAWAY (2004), “Much Ado about Nothing? Do Domestic Companies Really Benefit from Foreign Direct Investment?”, *World Bank Research Observer*, Oxford University Press, Vol. 19(2), pp. 171-197.
- HARDING, T. and B.S. JAVORCIK (2007), “Developing Economies and International Investors: Do Investment Promotion Agencies Bring Them Together?”, *CEPR Discussion Paper*, No. 6418, London, United Kingdom.
- IDB (2011), “Impact of the Chilean Supplier Development Programme on the performance of SME and their large firm customers”, Working Paper, Office of Evaluation and Oversight, Inter-American Development Bank, Washington, DC.
- IDA IRELAND (2010), *IDA Ireland Annual Report and Accounts 2010*, IDA Ireland, Dublin.
- MIGA-FIAS (2005), “Competing for FDI. Inside the Operation of Four National Investment Promotion Agencies”, *Investing in Development Series*, World Bank, Washington, DC.
- MONGE GONZÁLES, R., L. RIVERA and J. R. TIJERINO (2010), “Productive Development Policies in Costa Rica: Market Failures, Government Failures and Policy Outcomes”, *IDB Working Paper Series*, No. 157, Washington, DC.
- MONGE GONZÁLES, R. et al. (2011), “Innovation and Employment Growth in Costa Rica: A Firm Level Analysis”, *IDB Technical Note*, No. 318, Washington, DC.
- MORISSET, J. and K. ANDREWS-JOHNSON (2004), “The Effectiveness of Promotion Agencies at Attracting Foreign Direct Investment”, *Foreign Investment Advisory Service, Occasional Paper*, 16.
- OECD (2006a), *Policy Framework for Investment: Review of Good Practices*, OECD, Paris.
- OECD (2006b), *The SME Financing Gap: Theory and Evidence*, OECD, Paris.
- OECD (2011a), *Attractiveness for Innovation: Location Factors for International Investment*, OECD, Paris.
- OECD (2011b), *Regions and innovation policy*, *OECD Reviews on Regional Innovation*, OECD, Paris.
- OECD (2012), *Industrial Policy and Territorial Development: Lessons from Korea*, OECD Development Centre Studies, OECD, Paris.
- PRIMI, A. (2010), “Regional Cooperation in S&T Policies: A View from Latin America”, in *CGEE (Centro de Gestão e Estudos Estratégicos)*, 2010, *Cooperação Internacional na Era do Conhecimento*. CGEE, Brasília, Brasil.
- RUANE, F. (2001), *Reflections on Linkage Policy in Irish Manufacturing – Policy Chasing a Moving Target*, United Nations Economic Commission for Europe, Geneva.
- UNCTAD (2001), *World Investment Report 2001: Promoting Linkages*, United Nations, New York, NY, and Geneva.
- UNCTAD (2006), *Developing Business Linkages*, United Nations, Geneva.

- WARD, J.H., JR. (1963), "Hierarchical Grouping to Optimize an Objective Function", *Journal of the American Statistical Association*, Vol. 58, Issue 301, pp. 236-244.
- WORLD BANK (2004), *Chile New Economy Study*, World Bank, Washington, DC.
- WORLD BANK (2007), *Building Knowledge Economies: Advanced Strategies for Development*, World Bank Institute Development Studies, Washington, DC.
- WORLD BANK/IFC (2012), *Doing Business 2012: Doing Business in a More Transparent World*, World Bank, Washington, DC.
- WORLD ECONOMIC FORUM (WEF) (2011), *The Global Competitiveness Report 2011-2012*, WEF, Geneva.

Chapter 3

A road map for attracting knowledge-intensive FDI to Costa Rica

This chapter highlights the factors that characterise the new landscape Costa Rica is facing and calls for enhancing the current policy framework. It clarifies why attracting knowledge-intensive FDI is a strategic option for Costa Rica and presents a road map for policy action, with concrete recommendations to improve the policy framework.

Introduction

FDI has been a driver of growth, structural change and employment generation in Costa Rica. The experience of the country in FDI attraction has led to accumulated entrepreneurial and technical capabilities in specific industrial clusters, including ICT and medical devices which, if appropriately stimulated, could generate multiplier effects on the country's development and competitiveness.

The Costa Rican success in diversifying exports, scaling-up the value chain and fostering the development of incipient industrial clusters in knowledge-intensive sectors and activities is indeed a positive outcome. But rather than the end of the catching up process, it is only the beginning. Costa Rica could extract more and deeper benefits from FDI attraction. A major challenge in identifying and achieving those potential benefits consists in updating the national strategy for FDI attraction, recognising the advances of the past decades and taking into account the new challenges and opportunities offered by the new global environment.

Costa Rica today faces a new scenario; its future development will not be an automatic consequence of past success. An enhanced policy framework and improved business dynamics are needed to allow the country to advance in its development trajectory and to allow Costa Rica to play a stronger role in global knowledge economies. Costa Rica cannot risk developing a dual economy – where international companies will be sophisticated and technologically advanced, installed in state-of-the-art industrial parks, hiring the best people, and dedicated to export, while local businesses will be less competitive, with limited access to resources, and focusing primarily on the local market. The country needs to tackle this challenge using adequate means.

This chapter discusses why attracting knowledge-intensive FDI is a strategic option for Costa Rica and identifies the strengths, weaknesses, opportunities and challenges of this strategy on the basis of the evidence presented in Chapters 1 and 2. It highlights the characteristics of the new scenario and identifies the need to complete the transition towards a new, more integrated policy approach for FDI attraction. It concludes by presenting a road map for policy action and features some concrete proposals to improve the policy framework.

The new landscape requires an enhanced policy framework

Costa Rica's success in attracting FDI in the first phase rested on a combination of three major factors: the availability of a skilled labour force at competitive cost, geographic location and a rather generous fiscal incentive framework.

The country's proximity to the United States has been one of the major determinants in investment decisions. Costa Rica offers an advantageous geographic position combined with good living standards and a stable macroeconomic environment. Costa Rica is in the same time zone as the Central United States, thus allowing operation during regular US business hours. Depending on the company's location, travel to Costa Rica might be shorter than to another US state.

Costa Rica offers an attractive incentive scheme for investors. The country allows tax-free operations for 8 to 12-year periods, which are extendable upon the fulfilment of conditionalities, including significant reinvestment in the country. Private industrial parks offer foreign investors infrastructure facilities and simplify their search for location. In addition, the Costa Rican Investment Promotion Agency (CINDE) operates as a bridge between investors and the government and provides foreign investors with dedicated aftercare services.

Costa Rica also has a good basic education system combined with relatively good public technical and university training, thus offering a combination of skilled labour at a relatively low cost. Even though Costa Rica is not the cheapest location within the 3-5 hour flying range from the United States, the country has managed to attract low volume and high quality production instead of high-volume and low cost operations. Most foreign companies operating in Costa Rica list the availability of an English-speaking labour pool and the good quality of technicians and public university graduates as factors that contributed to identify Costa Rica as a good investment location.

However, Costa Rica today faces a new competitive scenario. Its strategy, founded on a combination of its strategic geographical location, generous fiscal incentives and well-educated and relatively cost-competitive workforce, can no longer be expected to yield the same returns.

Inter-country competition to attract knowledge-intensive FDI is on the rise, because many more countries are endowed with relatively low-cost skilled workers that make them a suitable destination for these investments. At the same time, emerging economies represent new opportunities for attracting FDI. As this process takes place, Costa Rica needs to be aware that other countries besides the United States could become relevant sources for FDI in knowledge-intensive industries.

Costa Rica has also changed. After more than two decades of successful FDI attraction, it has reached more advanced stages of development, accumulating business and production capacities which have reshaped the entrepreneurial environment. Today, Costa Rica has a proven track record in FDI attraction. It has acquired a good reputation as a place to do business and incipient industrial clusters are developing around some knowledge-intensive sectors, including medical devices and IT services. Attracting FDI to a country that does not yet have a good reputation

for doing business is extremely difficult, but Costa Rica has already overcome this barrier. The country now needs to build on its accumulated capacities both at the institutional and company level and define a new strategy. It can reasonably strive for a second generation of FDI, linked to innovative companies and activities in addition to efficiency motivations. The drivers of knowledge-intensive FDI differ from efficiency-led FDI drivers. While the fiscal incentive regime, business regulations and stability of the environment are still relevant determinants for FDI attraction, it is likely that new FDI will be more influenced by the type and quality of skills and competences, the dynamisms of the production clusters and the availability of research and development centres.

In the first generation of FDI, delocalisation was mainly driven by the search for lower labour costs and the proximity to the US market. Today, the situation has changed. Costa Rica is striving to attract companies in knowledge-intensive sectors. In addition, companies already established in the country are also engaged in moving up the value chain by increasing the intangible component of the value-added generated in the country, such as several companies in the life-sciences and biomedical cluster (cfr. Chapter 2). In this phase, strengthening the national innovation system becomes a key objective to achieve national development, while enhancing the competitiveness of foreign and domestic entrepreneurs.

Until recently, Costa Rica's policy was mostly tailored to FDI attraction, weakly articulating the promotion of domestic production and innovation capacities (see Table 3.1 for the evolution of the Costa Rican policy model). The choice of targeting innovation-related FDI in specific technology and knowledge-intensive sectors, together with the MNCs' trend of upgrading the types of operations they carry out in the country, requires Costa Rica to enhance the policy framework by fostering innovation-led growth through FDI. This can be achieved only by greater articulation among policies, including the innovation, education and production development policies (Figure 3.1).

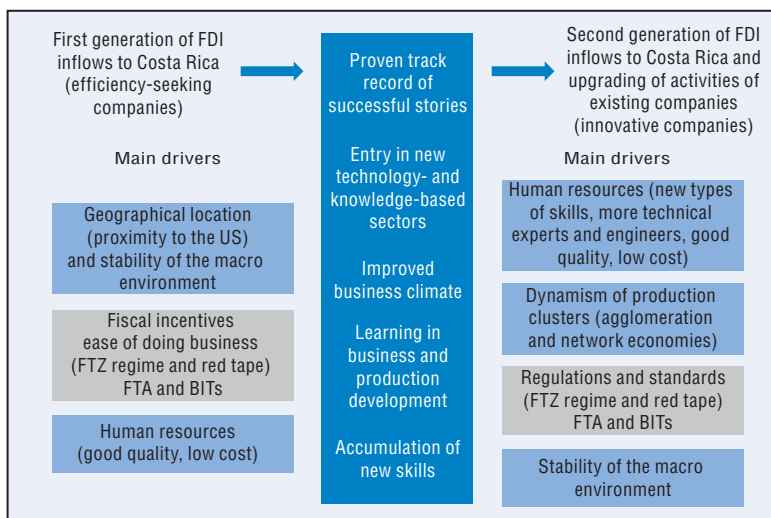
The creation of the Presidential Council for Competitiveness and Innovation (PCCI) in 2010 represented a step forward in improving governance and evolving towards a more strategic approach to FDI attraction, by creating a space for dialogue among different government bodies involved in fostering Costa Rica's catching up. In addition to fiscal investment incentives, the policy framework should include strengthened and new policy tools, concerning human resources training, talent mobility and support to innovation activities through improved R&D infrastructure and innovative business development.

Table 3.1. Evolution of the policy model in Costa Rica, 1950-2011

	1950-70	1980-mid-1990s	Mid-1990s-2012	Towards a new model?
Economic development model	Industrialisation via Import Substitution (ISI)	Liberalisation and opening of the economy	Growing by export diversification	Innovation-led growth (Costa Rica as a knowledge economy)
Main priorities	Creating domestic institutional and production capabilities; Upgrading traditional sectors	Attracting FDI; Promoting non-traditional exports	Supporting export diversification; Attracting FDI in technology-intensive sectors	Mobilising FDI as a leverage for national development; Increasing the density, quality and dynamism of the innovation system
Main newly-founded institutions	CODESA (Corporación Costarricense de Desarrollo) INA (National Institute for Learning)	COMEX (1986) PROCOMER (1968 and 1981) CINDE (1982) MICIT (1986)	Presidential Council for Competitiveness and Innovation (PCCI) (2010)	Empowering the PCCI; Strengthening the MICIT and the Ministry of Economy
Policy tools	State-owned companies and credit support to priority sectors	FTZ (1981) Fiscal credits for non-traditional exports - CATs (Certificados de Abonos Tributarios) Active promotion of CR as investment location (CINDE before and aftercare services)	Reforms to the FTZ (2009) incentive package – extension of incentives to companies outside industrial parks Definition of new priority and strategic sectors/activities, including R&D (2010) Incipient grants to human resources (HR) training (in partnership with MNCs) Support to local companies development (PROPYME)	Targeted support to skills development (technical and engineering capabilities) Creation of domestic research capacities in specific areas and creation of incubation support (Techno Parks) Rising articulation between FDI promotion, innovation promotion and industrial promotion
Priority markets and trade partners	Focus on domestic market	United States	United States Central America and DR (CAFTA-DR) Canada Mexico European Union	United States Asia Latin America European Union

Source: Authors' elaboration.

Figure 3.1. Changing drivers for FDI attraction: first and second generation of FDI in Costa Rica



Source: Authors' elaboration.

Costa Rica should enhance the policy framework accordingly. Improving the triple mix of the first Costa Rican strategy for FDI attraction (and hence identifying new forms of taking advantage of the geographical proximity with the United States, improving the fiscal incentive framework and increasing the availability of a competitively priced labour force) is helpful, but not enough for Costa Rica to advance. Costa Rica needs to complete its evolution towards an enhanced and more sophisticated policy framework.

Important steps are:

- Stronger political leadership, a higher degree of co-ordination among government levels and new spaces for co-ordination and consensus generation.
- Better metrics and improved diagnostic capabilities to assess new objectives and monitor policy outcomes.
- Long-term availability of financial resources and more public investment.

The enhanced policy framework will not be a “zero-cost” change. Costa Rica has the potential to forge ahead, but this will require mobilising higher public resources. The country cannot sustain its current development and growth plan without addressing the need to shift towards a superior pattern of government expenditure. Higher resources are not in themselves a guarantee of success; they require effective planning and management; but below a critical mass of public budget, even the most well-designed plan will face implementation obstacles. This is even truer in innovation-related domains, where public effort needs to be backed by private investment.

Opportunities and challenges to attract knowledge-intensive FDI to Costa Rica

Prioritising knowledge-intensive FDI is a strategic option for Costa Rica because that type of FDI could better contribute to: i) upgrading the production system and fostering a more innovative and dynamic production specialisation; ii) maximising the opportunities for growth by favouring trade and participation in global production networks; iii) increasing the creation of more and better jobs. In addition, Costa Rica has been successful in attracting FDI in technology-intensive sectors, including ICT and medical devices. The country has a good track record in attracting companies operating at intermediary segments of the productive chain. It is also experiencing an upgrading of operating companies’ activities. In the early stages, companies’ activities mostly involved low-knowledge-intensive production and services, but the last decade has seen an improvement due to market dynamics and government action prioritising innovation-related FDI.

The option of prioritising knowledge-intensive FDI is not peculiar to Costa Rica; rather, it is part of an emerging trend. At the global level, several countries are looking to attract more sophisticated types of FDI either in high technology or in knowledge-intensive sectors or activities with higher value-added. First, these types of investments are deemed most beneficial for the host countries in terms of technology transfer, spillover dynamics and impact on the average productivity of the economy. Second, knowledge-intensive FDI tends to rely more on cluster dynamics. These are stickier, since company performance is more related to know-how and capabilities nested in the production and innovation system. Also, they cannot be relocated as easily as simple assembly or low-value-added services and their linkage with the host economy is higher. Knowledge-intensive FDI is thus seen as a strategic option that allows countries with certain capabilities to compete in a niche where low-cost countries – which lack a skilled and educated labour force – are not so attractive.

Prioritising knowledge-intensive FDI can stimulate a nationwide reflection on Costa Rica's development strategy, thus helping to improve it and to forge ahead in fostering more sustainable and inclusive knowledge-centred development. Attracting knowledge-intensive FDI can work as an “activator” of government policies beyond investment promotion (such as education, competitiveness, innovation, and production development), contributing to Costa Rica's overall development. Attracting FDI in knowledge- and innovation-related activities requires shifting the policy approach towards more sophisticated incentives and support frameworks, in addition to fiscal incentives schemes (OECD, 2010).

Box 3.1. Opportunities in life sciences, digital industries and aeronautics in Costa Rica

Life Sciences (and in particular biodiversity, agri-business, pharmaceutical and medical devices) have high development prospects, both in terms of FDI attraction and domestic company development. Costa Rica has a wide range of capabilities (such as raw materials, know-how, engineering staff, experienced management and scientific knowledge) required by those sectors, which also have high potential for linkages with the local industry. For example, molecular development for biodiversity may represent a major windfall for Costa Rica. Already hosting Boston Scientific, Baxter Healthcare and St. Jude Medical, Costa Rica has the potential to move up from manufacturing to R&D in the medical devices field.

Digital industries (including software, hardware and global services) have significant job creation potential and could replicate the role they already play in Malaysia and the Czech Republic. Although this sector has low propensity for developing linkages with local suppliers, it has high potential for spillovers, for example by offering experiential learning to workers, who can swiftly move up their skill base. Some companies (such as HP and Intel) may lead the sector's transformation in Costa Rica. Their ongoing efforts to carry out more sophisticated activities in the country are a positive and encouraging signal.

Aeronautics is an incipient sector with potential for development in specific production niches (mainly software design) offering technological convergences with the digital industry. The NASA rocket plasma project currently being developed and delivered by a Costa Rican company is a good example.

Costa Rica appears well placed to pursue a strategy of FDI attraction centred on knowledge- and innovation-related investments. However, it will need to clarify and update its promotion strategy, advance and improve policy co-ordination and establish specific mechanisms to materialise opportunities and address potential threats.

As Table 3.2 shows, Costa Rica has strong and long-standing professional and technical training institutions (INA), relatively high-quality public universities and good hiring rates for technical and engineering graduates of public universities. It also has a positive track record in FDI attraction and a good reputation as a place for investment. It offers skilled workers with a sensible wage differential compared with the United States, Europe and several Latin American countries (even though innovative companies consider this cost advantage less relevant than the availability of skills, talents and finance for innovation). The presence of anchor companies and accumulated production capacities has led to incipient industrial clusters which could be further exploited. Furthermore, Costa Rica has strong institutions (like COMEX and CINDE) endowed with highly qualified professionals and long-term experience in investment promotion.

Competing in attracting large-scale mass production no longer seems an opportunity for Costa Rica. But the country has strong potential in low-volume and high-knowledge/technical content products, such as precision and medical equipments and knowledge-intensive services including design and software development. Targeting this type of FDI requires identifying the drivers that mobilise investments in these sectors. While determining factors vary by country, sector and the specific phase targeted in the value chain, innovation-related FDI in low-volume and high-knowledge/technical content products and services is generally driven by cluster development and the availability of both skilled human resources and a pro-innovation environment, featuring good quality university and research centres and a dynamic innovation system.

Costa Rica seems to be facing a shortage of talent in certain higher skill categories. Although the country produces quality graduates, there is significant misalignment between the supply of graduates by area of specialisation and industry-required skills. As in most countries, aligning the skills supply to industry requirements is extremely difficult. Some interesting responses to this conundrum come from the Costa Rican government that in 2011 fostered the creation of a Working Group led by COMEX and MICIT to elaborate and implement a skills strategy for the country and from MNCs, which are partnering with the government to offer new training opportunities, as well help train university students.

Table 3.2. Costa Rica and the attraction of knowledge-intensive FDI: SWOT analysis, 2012

Strengths	Weaknesses
<p>Relatively strong institutions in technical and professional training</p> <p>Relatively good universities</p> <p>Good hiring rates of graduates from public universities</p> <p>Accumulated capacities and know-how in manufacturing, service provision and management</p> <p>Incipient cluster development in some sectors/activities (i.e. software design, medical devices)</p> <p>Anchor companies that can nurture cluster development</p> <p>Accumulated government and institutional capabilities in FDI attraction and management capacities (Ministry for Foreign Trade and FDI promotion agency)</p> <p>Good quality of basic education system</p> <p>English-speaking friendly environment</p> <p>Good quality of ICT infrastructure</p> <p>Long-term business ties with the United States</p> <p>Attractive and investor-friendly fiscal regime</p> <p>High integration to global economies through FTAs</p> <p>Stable macroeconomic environment and longstanding democracy</p> <p>Geographic location (Latin American hub and proximity to the US)</p>	<p>Small size of the economy</p> <p>Misalignment between supply of training and the potential demand of skills from industry</p> <p>Scant development of national innovation system</p> <p>Lack of critical mass in top-quality R&D and innovation centres</p> <p>Low commitment to innovation in domestic private sector and universities</p> <p>Low financial resources for innovation and scientific/engineering training</p> <p>Low linkages of FDI with local companies</p> <p>Financial sector with scant propensity to finance innovative activities</p> <p>Quality and coverage of physical infrastructure and logistics</p> <p>Reduced budget for innovation and high-skills development</p>
Opportunities	Threats
<p>Rising global trend in delocalisation of high-value-added functions</p> <p>Emerging markets as new partners for Costa Rica</p> <p>Quite unique position and proven track record in the Latin American region</p> <p>Strengthening the capacity and dynamism of the created industrial clusters by improving linkages with domestic companies and country's research capability</p> <p>Ministry of Science and Technology as a key agent for promoting innovation and training</p> <p>National technological institutes and national research centres in niche areas</p> <p>Good relationship with anchor investors and potential commitment to collaborate on domestic upgrading efforts</p>	<p>Rising uncertainty of global scenario</p> <p>Economic crises in the US and EU</p> <p>Rising costs of skilled labour force and potential shortage of highly-skilled labour force</p> <p>Rising international competition in attraction of knowledge-intensive FDI</p> <p>Supply chain of MNCs tend to be dominated by foreign suppliers (higher competences, technologies and reputation)</p> <p>Dual economy (MNCs versus domestic companies)</p> <p>Little spillovers of FDI to the rest of the economy, unless specific programmes/policies are put in place</p>

Source: Authors' elaboration.

Knowledge-intensive FDI is usually determined by the quality and density of the host country's innovation system. Costa Rica is particularly weak with respect to the availability of top research centres and R&D laboratories and local private sector dynamism. Evidence shows that innovation-related FDI is mainly driven by proximity to a rising market, to which new products can be adapted and tailored (OECD, 2010). Being a small economy, Costa Rica cannot aspire to attract innovation-related activities based on potential domestic demand, as is happening in several emerging economies (such as Brazil, China and India), where MNCs are increasingly setting up R&D and innovation-related operations to move closer to rising and potential consumer markets. However, Costa Rica has high opportunities in export-oriented, low-volume, high-knowledge content manufacturing, as well as in knowledge-intensive services and design.

The linkages between local and foreign companies are still weak. In general, local industry is lagging, and MNCs tend to rely on local suppliers mostly for low-hand services such as security, cleaning or packaging. Even though there are interesting examples of domestic companies working as suppliers for MNCs this is not a common feature of the system and there is much room for improving the linkages between FDI and the domestic economy. Another weakness of Costa Rica is that it lacks a viable source of financing for upgrading the national innovation system. Beyond the export sector, which mostly operates under the FTZ regime, few sources are able to channel funds for innovation. This is a major bottleneck, which the country will need to address in order to implement its new strategy for knowledge-intensive FDI attraction.

Road map for policy action

FDI in knowledge-intensive activity can strengthen its role as a driver for economic and social development for the whole country. It can extend its impacts over traditional sectors and become a driving force to strengthen the country's innovation and production system.

This potential is not a low-hanging fruit but the future outcome of targeted efforts. It will require a well designed and implemented strategy, more public resources for innovation, and new forms of private-public partnerships for setting priorities and designing policy instruments.

Strengthening leadership in the definition of the national development strategy

Costa Rica needs to further advance in nesting the FDI policy in its national development strategy. National development plans are useful instruments to orient policy action; however, their existence is not a guarantee of clear governmental vision and effective implementation. In order to be effective plans need to be endowed with “execution power” and with strong political leadership and commitment to execution. They also need to be matched with implementation guidelines, targeted budgets and be subject to monitoring and evaluation. Why is the country establishing a strategy for FDI attraction? Clarifying the objectives influences not only the targets for policy implementation and monitoring, but also reveals the effective alignment (or misalignment) between declared and actual objectives.

Costa Rica’s current priorities for FDI attraction are: fostering economic growth, creating skilled jobs, increasing production capacity, export diversification, technology transfer and business learning, and improvement in the trade balance. An OECD survey of policy priorities in OECD countries reveals, on the other hand, that the countries that target knowledge-intensive FDI primarily do it to increase domestic R&D and innovation capacity (Table 3.3). Clarifying upfront the contribution of FDI to the innovation dynamics of the hosting country could help in defining better targets for the FDI policy and highlight the horizontal co-ordination that is needed to effectively attract that type of investment.

To define innovation-related targets for the FDI policy, Costa Rica will need strong political support to guarantee the commitment and co-ordination of several actors, including universities, private sector and institutions in charge of innovation policy. Innovation is a cross-sectoral issue that requires the mobilisation of actions from several sides, including skills, production development and access to finance; hence the horizontal co-ordination between different institutions and actors is crucial for designing and implementing an effective policy. This is required to better define FDI policy objectives and align them with desired R&D and innovation outcomes and strengthening industrial clusters. The Costa Rican government’s commitment to mobilising FDI as a driver for national development is a good start to fostering renewed reflection on the role of FDI.

Table 3.3. Policy priorities for FDI attraction in innovation-related activities

	Policy priorities	
	Costa Rica	OECD countries
Create skilled jobs	XX	XX
Strengthen R&D capacities		XX
Improve innovation capacity		XX
Transfer technology	X	XX
Increase exports	XX	
Increase management capacities, foster learning	XX	
Increase investment through opening new production units	XX	
Foster improvement in the balance of payments	X	

Note: x indicates the level of priority (x = priority; xx= higher priority).

Source: Authors' elaboration based on OECD (2010) and consultations with Costa Rican Government institutions carried out by the OECD Development Centre in 2011.

Clarifying development objectives for Costa Rica and identifying specific priorities for FDI policy will also help to address potential internal tensions between FDI policy and the development of domestic constituencies. While FDI policies should not be driven by equity priorities, nesting them in the overall development strategy could help identify the indirect impact on the Costa Rican socio-economic structure and the complementary actions required to transform potential into effective benefits (*e.g.* backward and forward linkages, knowledge and technological spillovers or cross-sectoral knowledge and market externalities). A clear definition of national targets will help align different actors and stakeholders.

Ensuring horizontal co-ordination

The creation of the Presidential Council for Competitiveness and Innovation (PCCI) represented progress in shifting towards a more integrated policy model, in which FDI is a line of action to implement the national development strategy. The Council was created too recently to assess its impact. However, it filled a policy vacuum, creating a space where FDI, education and innovation policies could share their agendas and address common challenges.

The Council should be strengthened, endowed with the highest political support and empowered to be the policy space for creating consensus on objectives and aligning policy actions. It is the policy space where discussion and identification of cross-sector agendas should take place. To advance in attracting knowledge-intensive companies and make them a lever for national development, Costa Rica needs to enhance the policy framework and increase the integration and co-ordination between different policies, including FDI promotion, innovation, education and production development.

The Council should identify a proper mechanism to channel the voices of the private sector and endow it with an agenda for priority setting and action definition. The recent incorporation of private-sector representatives to the monthly meetings of the Council is a good start. Working groups on specific topics are often used internationally to foster assessment and recommendations on several OECD and non-OECD economies. In Costa Rica, COMEX and CINDE have accumulated strong institutional capabilities in creating multi-stakeholder groups to address challenges such as skills requirements. The Council could build on this experience and set up similar groups in charge of defining concrete agendas for innovation and competitiveness.

The Council needs to be empowered with a specific agenda and executive capacities. It should be responsible for ensuring the implementation and follow-up of decisions stemming from its discussions and deliberations – otherwise it will be confined to a mere information-sharing function. Its first task should be to help improve the alignment between the FDI and innovation policy agendas. Costa Rica suffers from weak co-ordination between the sectoral priorities of the national innovation strategy and FDI sectoral targets. While there is synergy in some areas (for example, renewable energies are close to the clean technology sector, just as health is linked to the life sciences industrial cluster), a better alignment of sectoral priorities would increase the effectiveness of government action – especially by fostering backward and forward linkages and an innovative environment at the cluster or sectoral level. This could also help identify potential successful sectors (including areas related to agri-science) that are not yet on the radar of the FDI promotion agency. Increasing the support to innovation and to training and research in scientific and technical fields will contribute to raise the synergy between FDI and innovation policies.

Improving the diagnostics capabilities

Costa Rica would benefit from increasing its diagnostics capabilities to improve priority identification, policy targets, accountability and outcome monitoring. A key challenge for enhancing the policy framework in Costa Rica is to identify effective

mechanisms to increase the spillovers from FDI and to foster the development of a more dense innovation system. A useful step in this direction would be to create a small and agile observatory-type institution, operating under the direction of the Presidential Council for Competitiveness and Innovation (PCCI) in close relationship with the national statistical office. This institution should be responsible for building an information system centred on production and innovation dynamics, including research centres, universities and foreign and national companies. The observatory could contribute to investigating labour market dynamics, including the potential misalignment between skills demand and supply.

Promoting the culture of a knowledge-driven society

A targeted effort to promote the culture of a knowledge-driven society is necessary to fully exploit the advantages of an improved FDI strategy. Costa Rica needs to actively engage in a campaign promoting the innovation culture on the domestic front. The duality between FDI and the rest of the economy is a structural weakness that needs to be addressed not only through policies supporting innovation and production development, but also on the cultural front. Promoting a knowledge-driven society does not mean disregarding non-technological professions – but it does mean breaking the vicious cycle that simplistically associates knowledge and technology with foreign action and traditional activities with domestic agents. In fact, there are innovative Costa Rican companies operating in both high tech (such as medical devices) and traditional sectors (like agri-foods). The challenge is to increase the number and collaborations of these innovative and knowledge-centred companies.

Updating the country branding and fostering outreach

Costa Rica needs to update its branding to promote itself better. The country has accomplished much over the last decades, but the perception that “it is all about Intel” is still prevalent in certain foreign circles. The “Intel effect” has been strong and determinant, but much has happened since, both in services and in manufacturing. Additional effort is needed to familiarise potential investors – and the global community in general – with the new Costa Rica. Reputation matters, both in terms of FDI and innovation dynamics. Costa Rica could benefit from developing a new value proposition better aligned with its image as a present and future location for advanced manufacturing and software design. Several regions and countries have invested in defining a locational branding strategy that helps create their image and highlight their uniqueness. Costa Rica needs to put some effort into updating its image and defining its new branding by co-ordinating FDI and innovation policy

visions. The establishment of companies such as St. Jude Medical, HP, IBM, Boston Scientific and Hospira could be better exploited to update the country's branding.

Diversifying and updating investment promotion activity

Investment promotion in Costa Rica has been very effective. CINDE is a strong private institution with a high advocacy capacity. However, it has mostly focused on the United States as a source market. With the new scenario, it will need to look increasingly to other markets as FDI sources. Costa Rica already started to strengthen trade promotion functions in embassies in selected locations. This might help to improve the connection with non-traditional trade partners along with scanning the global business climate to advance in diversifying the promotion strategy and in identifying potential locations for new representative offices abroad. Knowledge-intensive FDI is influenced by a more complex set of determinants than FDI in lower-end operations. CINDE should update its promotion strategy by including skills development and innovation and by increasing co-ordination with the institutions responsible for innovation and production development.

Improving the quality and supply of the skilled labour force

Increasing the quality and supply of skilled labour is a critical factor in Costa Rica's competitiveness. The country has a relatively good educational system, public universities with a good reputation among domestic and foreign companies and a good technical and professional training institute. However, in order to shift its strategy towards knowledge-centred development, it needs to increase the quality and size of the skilled labour force (especially in science and engineering) by enhancing its training and research capacities.

Costa Rica also has a critical deficit of PhDs in the scientific and engineering fields, which means that it needs to invest in training them. In the short run, student and teacher mobility is the best option for closing the skills gap as Costa Rica defines a plan to create a domestic supply of PhDs. The country's small size poses a challenge in terms of critical mass. The decision to create training courses for PhDs in certain niche areas should be taken at the national level, after broad consultation with all the relevant stakeholders. The recent approval of a PhD course in software engineering at the Technological Institute (ITCR) and of a PhD in computer sciences at the University of Costa Rica (UCR) that will start in 2014 are good steps in this direction.

Costa Rica has started to introduce new programmes to improve the quality and size of its skilled labour force, for example by offering grants for technical and university studies in partnership with local MNCs. It has also started to upgrade

and modernise the technical training offered by the National Institute for Learning (INA). But these efforts are incipient and need to be strengthened.

Costa Rica could create a fund for skills development supported by contributions from the government and the MNCs. The fund and its governance mechanisms should be carefully designed to maintain both the universities' autonomy and MNCs' right to participate in defining training content given their role as employers and co-founders.

Improving local research capabilities

Strengthening domestic research is key to attracting and anchoring knowledge-intensive FDI to the local economy. Domestic research capabilities not only make a country more attractive to FDI, but also increase spillovers to the local economy. Costa Rica's small size is a critical factor that should be taken into account in decisions to create local research capabilities. The country will need to take a pragmatic and selective approach. Those areas (like biotechnology) where Costa Rica has accumulated some capacities should be strengthened given their proximity with priority sectors. Research centres need not only high-end infrastructure, but also innovation professionals and resources. Costa Rica could develop new partnership mechanisms with local MNCs to set up small-scale research laboratories. It should not underestimate the potential of service- and design-driven innovation, which are performed differently to traditional scientific and technological research and are mainly driven by human resources and skills.

MNCs recently started to delocalise or invest in specific areas to collaborate with top-notch small research groups. Costa Rica could exploit this new trend and opportunity by strengthening its research capacities in universities and research centres. It could also build up its activities in niche areas such as biodiversity, biotechnology, earth sciences and software design, which seem natural given their competitive advantage and cross-sectoral impact. Costa Rica also needs to foster collaboration among existing structures.

Improving the policy mix and channelling more resources into innovation and production development

To advance in implementing its innovation policy, Costa Rica needs to increase its budget and strengthen institutions that foster business development. The country's Ministry of Science and Technology is small and has limited resources, yet it faces an increasingly demanding task. It is a key institution for fostering human capital development, mobilising corporate innovation, facilitating the development of the national innovation system and attracting knowledge-intensive

FDI. To implement its current strategy successfully, Costa Rica needs to devote more resources (innovation resources should be more than tripled from current levels) and strengthen institutional capacities for innovation.

In addition to increasing its innovation budget, Costa Rica needs to improve its policy mix as well as the design of innovation incentive schemes. Incentive funds need to be complemented by the provision of complementary services to companies. It is well known that demand-oriented incentives in the context of a low dynamism of innovation demand result in low execution rates for the funds.

A start-up incubator programme could be introduced to foster business development in the priority industrial clusters that benefit from the dynamism of established multinationals. The two incubation services already operating in the country could serve as a basis for scaling up the initiative and creating a national start-up programme providing companies with additional support beyond technology funds. This could be accomplished through creating an innovation promotion agency, which could partner with existing industrial parks to offer innovation support and business development to both domestic companies and consortia of domestic and foreign companies. These activities should be implemented in a pilot priority sector in order to fine-tune the operating model. The creation of a techno park is another viable option provided that the country opts for the new generation of parks. This is in line with successful experiences in several countries, where techno parks have been used to foster the development of innovative companies by facilitating access to finance and by offering services to companies.

Linkages between MNCs and domestic companies also need to be further developed. The recently strengthened collaboration between COMEX, MICIT and PROCOMER is a promising step in this direction; this initiative should be strengthened. In the future, a better articulation with the Ministry of Economy (in charge of promoting SME development) would be a key step in making efforts more effective. A territorial and local perspective on implementing the co-ordinated actions required to foster SME development would also be helpful to upgrade and transform them into dynamic and knowledge-intensive agents of the production system.

Conclusions

Prioritising knowledge-intensive FDI is a strategic option for Costa Rica. The more complex and sophisticated the task performed in a given plant, the lesser the incentive to relocate due only to cost-related reasons. The sunk costs of accumulated learning and established routines for accomplishing tasks and solving problems contribute to making FDI stick to the host location and to increasing the costs of

disinvesting or switching tasks. This type of FDI also engenders higher direct and indirect spillovers on the local economy and acts as an “activator” of policies in critical development areas such as education, innovation and production.

Turning FDI into a source of inclusive and sustained development is not automatic; it will require targeted and articulated policies. To advance, Costa Rica will need to move beyond a pure FDI attraction policy and define a production development and innovation strategy, leveraging FDI as a key driver. The country is institutionally endowed to do so and can leverage its strong accumulated business and scientific capabilities and reputation. Costa Rica needs to significantly increase its innovation and skills development budget, improve horizontal co-ordination and implement an effective accountability system in order to mobilise higher resources. Its major challenge will be to identify appropriate mechanisms for channelling adequate financial resources to implement its strategy. This should be one of the priority items on the Presidential Council’s agenda.

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ATTRACTING KNOWLEDGE-INTENSIVE FDI TO COSTA RICA: CHALLENGES AND POLICY OPTIONS

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Please cite this publication as:

OECD (2012), "Attracting knowledge-intensive FDI to Costa Rica: challenges and policy options", *Making Development Happen Series* No. 1, OECD Publishing, Paris.

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