



Latin American Economic Outlook 2016

TOWARDS A NEW PARTNERSHIP WITH CHINA



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Foreword

The *Latin American Economic Outlook* analyses issues related to Latin America's economic and social development. Ever since the first edition was launched at the 17th Ibero-American Summit of Heads of State and Government in November 2007 in Santiago (Chile), the report has offered a comparison of Latin American performance with that of other countries and regions in the world, sharing experiences and good practices with the region's public officials.

Since 2011, the report has been published in conjunction with the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and has tied in with the economic theme of the annual Ibero-American Summit organised by the Ibero-American governments and Ibero-American General Secretariat (SEGIB). In 2013, CAF – Development Bank of Latin America joined the team of authors. This edition was released at the CAF Annual Directors' meeting in Montevideo (Uruguay) in November 2015 and at the SEGIB Summit of Foreign Affairs Ministers held in Cartagena (Colombia) in December 2015.

Each edition includes a macroeconomic analysis and explores how the global context influences the region's economy. This report also includes a chapter that analyses the role of China and Latin America in the process of shifting wealth as well as a chapter on the growing trade linkages between Latin America and China. Finally, the report includes a chapter that discusses the trends in the relationship between China and Latin America, given the changing patterns of China's development strategy. All chapters analyse and make recommendations about the region's challenges and priorities regarding economic development and structural policies.

This ninth edition focuses on the growing bond between China and Latin America in a context where the world's economic centre of gravity has shifted away from OECD economies towards emerging economies during the past two decades, a phenomenon called shifting wealth. It provides in-depth analysis of where Latin America stands with China and where ties have evolved well beyond trade. These inputs will contribute to understanding the upcoming challenges and opportunities for Latin America, so as to adopt specific reforms to boost inclusive growth and build a mutually beneficial partnership with China.

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Acronyms and abbreviations

AAGR	Average Annual Growth Rate
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
ALADI	Latin American Integration Association
ASEAN	Association of Southeast Asian Nations
BANDES	Venezuelan Economic and Social Development Bank
BCRP	Central Reserve Bank of Peru
BIS	Bank for International Settlements
BITs	Bilateral Investment Agreements
BRIC	Brazil, Russia, India, China
BRICS	Brazil, Russia, India, China, South Africa
CAF	Development Bank of Latin America (Banco de Desarrollo de América Latina)
CARICOM	Caribbean Community
CC	Coefficient of Conformity
CCP	Chinese Communist Party
CDB	China Development Bank
CELAC	Community of Latin American and Caribbean States
CEO	Chief Executive Officer
CEPAL	Economic Commission for Latin America and the Caribbean
CIAT	Inter-American Center of Tax Administrations
CMI	Chiang Mai Initiative
COMTRADE	United Nations Commodity Trade Statistics Database
Corfo	Chilean Economic Development Agency
DRC	Development Research Center of the State Council of the People's Republic of China
ECI	Economic Complexity Index
ECLAC	Economic Commission for Latin America and the Caribbean
Edstats	World Bank Education Statistics
EIU	Economist Intelligence Unit
EU	European Union
Ex-Im Bank	Export-Import Bank of China
FAO	Food and Agriculture Organization of the United Nations
FC	Fiscal Conditions
FDI	Foreign direct investment
FED	Federal Reserve System
FR	Fiscal Rules
FTA	Free Trade Agreement
FX	Foreign exchange
GDP	Gross domestic product
GVC	Global value chains
HI	High-income
HKND	Hong Kong Nicaragua Canal Development Group
HP	Hodrick-Prescott
HSLE	Humanities, social services, law and education
IBRD	International Bank for Reconstruction and Development
ICBC	Industrial and Commercial Bank of China

ICIOs	Inter-Country Input-Output Tables
ICT	Index of Competitive Threat
ICTs	Information and Communications Technologies
ICTUM	Index of Competitive Threat in the US Market
IDA	International Development Association
IDB	Inter-American Development Bank
IFI	International financing institutions
IFR	International Federation of Robotics
IFS	International Financial Statistics
IIF	Institute of International Finance
ILO	International Labour Organization
IMF	International Monetary Fund
INDSTAT	UNIDO, Industrial Statistics Database
ISIC	International Standard Industrial Classification
ISO	International Organization for Standardization
IT	Information Technology
ITF	International Transport Forum
KLEMS	Capital, Labor, Energy, Materials and Services
LA	Latin America
LAC	Latin America and the Caribbean
LI	Low-income
LMI	Lower-middle-income
MERCOSUR	Southern Common Market
MNCs	Multinational companies
MOFCOM	Ministry of Commerce of China
NAFTA	North American Free Trade Agreement
NBS	National Bureau of Statistics of China
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
P.R. China	People's Republic of China
PAE	Pan American Energy
PBoC	People's Bank of China
PDPs	Productive Development Policies
PFI	Public Financial Institutions
PISA	Programme for International Student Assessment
PPP	Purchasing power parity
R&D	Research and development
RCA	Revealed Comparative Advantage
RCEP	Regional Comprehensive Economic Partnership
RMB	Yuan renminbi
ROW	Rest of the World
SITC	Standard Industrial Trade Classification
SMEs	Small and medium-sized enterprises
SOE	State-owned enterprises
STEM	Science, technology, engineering and mathematics
STRI	OECD Services Trade Restrictiveness Index
TFP	Total Factor Productivity
TISA	Trade in Services Agreement
TiVA	OECD/WTO Trade in Value Added database

TPP	Trans-Pacific Partnership
UMI	Upper-middle-income
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
US	United States of America
US Ex-Im Bank	Export-Import Bank of the United States
USA	United States of America
USD	United States Dollar
VAR	Vector Autoregressive
WB	World Bank
WDI	World Development Indicators
WEO	IMF World Economic Outlook
WTO	World Trade Organization
YoY	Year over year

Editorial

After a full decade of convergence with advanced economies and important progress in addressing inequality, Latin America's average growth will fall below the average of OECD countries in 2015 for a second consecutive year. Medium-term prospects are not encouraging either. These developments reflect well-known domestic weaknesses, illustrated by below par productivity and investment growth paired with the external environment's deterioration and key social challenges. Latin America remains the world's most unequal region; poverty still affects 28% of its population and labour informality persists. The consolidation of the US economy has been positive for a few economies in Latin America but the medium-term effects are still not visible, particularly as the ensuing monetary retrenchment leads to tighter financial conditions. Economic activity is also recovering but at a slower pace than expected in Europe and Japan.

China's performance is a relatively novel but key factor for Latin America's development, creating both challenges and opportunities. Trade between China and the region has experienced an unprecedented expansion over the past 15 years, multiplying 22-fold over this period. Now, lower Chinese demand for commodities, together with a fall in prices, is affecting Latin American commodity exporters, which show different patterns of slowdown depending, in part, on their bilateral relations with China. The overall picture reveals the structural weaknesses of commodity-based growth. Policy action to counter this slowdown is thus urgent: stronger productivity growth, economic diversification and more effective skills, innovation and social policies should be at the core of long-term development interventions to deliver inclusive growth. China will continue to play a critical role within this development path.

This year's *Latin American Economic Outlook* analyses in depth the economic linkages between China's current transformation and Latin America's development model. It proposes a forward-looking framework to discuss trends over the next two decades. Covering key issues from trade and finance to skills and productive development policies, the *Outlook* identifies strategies and policy responses for Latin America to address its development challenges, some of them in partnership with China. These challenges account for the advantages stemming from China's transition to a new, more consumption-based socio-economic model with a growing urban middle class and greater financial openness. The report explores valuable experiences and best practices in these fields and proposes strategies to remove the structural restrictions that impede Latin America's economic and social development.

The middle-income trap continues to pose a challenge for Latin America and requires immediate action. In this respect, the region needs to pursue a greater degree of productive diversification, upgrading and regional integration. China's transformation represents an important opportunity for the region's development strategy towards this goal, highlighting the importance of building effective co-operation schemes. Latin American governments should invest in innovative productive development policies to remain competitive worldwide and attractive to China. These policies include increasing integration into supply chains, strengthening physical and human capital, improving logistics, and forging regulatory improvements in areas such as services, investment, intellectual property rights and competition policy.

The skills and innovation deficit also remains at the forefront of the region's challenges, as analysed in the 2015 edition of the *Latin American Economic Outlook*. The impressive track records of China and other emerging regions in improving the stock, quality and relevance of skills for the economy are a wake-up call for Latin American

countries to rethink and rebuild their skills strategies. The quality of skills adds to the persistent problem of widespread informality, a situation that affects the most vulnerable as well as Latin America's emerging middle class. It is also central in the region's commitment to innovation. Attracting Chinese investment to close Latin America's infrastructure gaps, notably in energy, transport and logistics, is equally important to overcome both barriers to productivity and integration in global value chains. This will require better regulation, stronger government capacities to ensure environmental sustainability and further commitment to transparency. China's collaborative schemes on science and technology with Brazil and Chile or the China-Mexico binational fund for energy and infrastructure are good examples.

We hope this joint effort by CAF – Development Bank of Latin America, the Economic Commission for Latin America and the Caribbean (ECLAC) and the Development Centre of the Organisation for Economic Co-operation and Development (OECD) will contribute to policy discussions on strengthening the bond between China and Latin America, with the objective of building a mutually beneficial partnership for development.

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Executive summary

The Latin American Economic Outlook 2016 explores how Latin America should deepen and improve its partnership with China as part of its development agenda. China has been – and will continue to be – a game changer for the region. The world’s economic centre of gravity has shifted away from OECD economies towards emerging economies during the past two decades, a phenomenon called “shifting wealth”. Ties between Latin America and China are now evolving well beyond just trade, challenging Latin American countries to adopt specific reforms to boost inclusive growth and build a mutually beneficial partnership with China.

Trade between Latin America and China has expanded in an unprecedented way over the last 15 years, but the commodity-based growth model is revealing its limits. China and Latin America have experienced an impressive trade boom since 2000, increasing trade 22-fold. Between 2001 and 2010, mining and fossil fuels exports from Latin America to China grew at an impressive 16% annually, followed by agriculture products at 12%. Today, China is the largest trading partner for Brazil, Chile and Peru. The result is stronger, though uneven, global value chain linkages between China and Latin America. Commodities accounted for 73% of the region’s exports to China (versus 41% worldwide), while technology manufactures only reached 6% (versus 42% worldwide). China’s higher reliance on consumption instead of investment is already reducing its demand for commodities, which, together with the fall of prices, is affecting Latin American commodity exporters.

Latin America grew by only 1% in 2014, well below the 5% growth rates of the mid-2000s, suggesting that potential growth is weaker than expected. As commodity trade, particularly with China, slowed, so did regional economic growth, albeit with significant differences among countries. The region’s vulnerability to external conditions explains the current slowdown and reinforces the lower-than-expected growth projection of around 3%. Domestically, low confidence of firms and households, increasing financial leverage, weak public and private investment, and scant productivity gains cast doubt on the region’s economic fundamentals. Growth has helped to reduce poverty dramatically, but profound socio-economic challenges are still evident. Poverty still affects 28% of Latin America’s population, or about 164 million people. Latin America remains the world’s most unequal region. However, the region’s heterogeneity should be acknowledged. Manufacture exporters, such as Mexico and Central America, integrated into value chains in the United States, are outperforming net commodity exporters in South America.

China is undergoing a deep socio-economic transformation that poses challenges and opens opportunities for Latin America’s development. China is implementing an ambitious development agenda to maintain a leading role in the second phase of the shifting wealth process. Its so-called “new normal” implies a growth transition characterised by greater domestic consumption, demographic ageing, the consolidation of an urban middle class and a shift towards skill- and technology-intensive industries. Also, China’s broader development strategy could affect infrastructure financing in the region since Latin America will be one of its priority investment regions.

To remain competitive to the Chinese, Latin America will have to diversify and upgrade its production structure, based on innovative productive development policies. Unlike China, which exhibits one of the most diversified trade baskets and has developed comparative advantages in nearly 60 industries, Latin America shows very little progress. Only Colombia and Costa Rica, Latin America’s best performers, match the Chinese increase. China’s transition could negatively affect traditional commodity exports from Latin America. According to our projections, by 2030, metal

and ores exports could decrease from 16% in the previous decade to 3%, fossil fuels exports could tumble from 16% to 4% and food exports from 12% to 2%. At the same time, China's recomposition of consumption will open opportunities for Latin American exports, especially in certain foods, services and tourism sectors. Yet, Latin America's participation in global value chains is considerably lower than those of other regions. To overcome this, some countries in the region could target upgrading in the agricultural sector as well as services, especially knowledge- and technology-intensive services.

Latin America needs to invest in innovation, in the quality and pertinence of skills and in closing the infrastructure gaps to benefit from global value chains. Innovation capital in Latin America is far lower than in the OECD. This demands efforts to invest domestically and attract in innovation, but also foreign investment. In the field of skills, projections estimate that by 2030, 220 million Chinese will have attained tertiary education (21% of its labour force), more than doubling the number in Latin America (90 million; 19% of its labour force). Moreover, half of China's tertiary students are enrolled in science- and technology-related studies, compared to only one-fifth of Latin American students. Designing a real strategy in education, skills and innovation will be essential to keep up with China's strengthening of its human capital. This includes not only the traditional education path, but also workplace training to update workers' skills. Improving infrastructure and logistics are also key to helping Latin America's economies reposition themselves and to better integrating into global value chains.

Financing is important in building an improved partnership with China. China has declared Latin America a priority region for financial investment. Since 2010, loans from China alone reached USD 94 billion, compared to USD 156 billion from the World Bank, the CAF — Development Bank of Latin America and the Inter-American Development Bank combined. This trend is likely to persist given China's long-term financial strategy to broaden its portfolio of countries and sectors. This opportunity should be matched by transparency and regulation, especially *vis-à-vis* the environment. China's presence in Latin America also resulted from direct investment, especially in telecommunications, electricity, green technologies and land purchases.

Regional trade agreements and platforms could also help increase Latin America's competitiveness and strengthen its bargaining power with China. Partnering with China will not realise its full potential unless the region moves beyond individual bilateral efforts. Existing platforms, such as CARICOM, Central American Common Market, Mercosur and the Pacific Alliance, could build the co-ordination strategy *vis-à-vis* China. Regional trade agreements can strengthen behind-the-border disciplines that are undermining the region's capacity to integrate new markets, including regulations in services, investment, government procurement, intellectual property rights, competition policy and regulatory transparency.

Ultimately, building a China-Latin America partnership for development would be mutually beneficial, but requires global governance. China's transformation could fuel growth in times of economic slowdown in Latin America. Yet, the region requires better regulations, stronger government capacities to develop bankable projects, environmental sustainability and a stronger commitment to transparency and good governance to make the most of China's transformation. China would benefit in this new relationship by maintaining Latin America as a reliable source of commodities, a sound market for its exports and an attractive destination for diversifying its outward investment. Moreover, collaboration efforts between China and Latin America, such as the current science and technology schemes with Argentina, Brazil, Chile and Mexico, showcase mutually beneficial technical exchange. Overall, China needs to understand Latin America's development challenges as a whole and dialogue with a co-ordinated region to further sustainable growth goals.

Chapter 1

Towards a partnership for development between Latin America and China

The *Latin American Economic Outlook 2016* explores the evolving relationship between Latin America and China. This chapter provides an overview of recent and future economic links, covering key issues from trade and finance to skills and productive development policies. It identifies strategies and policy responses for Latin America to address its development challenges, both in the short and medium term, some of them in partnership with China.

To address its present challenges, Latin America should deepen and improve its development partnership with China. China is a game changer in the region's external environment. In the last decades, the world's economic centre of gravity has shifted away from OECD economies and towards emerging economies (OECD, 2010; Quah, 2011), a phenomenon called "shifting wealth". In the first phase of shifting wealth, starting in the early 2000s, the trade association between Latin America and China expanded. That relationship is changing now. Moving forward, Latin America's competitiveness depends on each country's ability to implement its own specific reforms to boost broad-based and inclusive growth. Reforms include productivity and innovation improvements, production diversification and investments in infrastructure, human capital and formal job creation to address the opportunities and challenges posed by China's so-called "new normal".

This conclusion rests on four findings:

First, trade between Latin America and China experienced an unprecedented expansion, but the region's current slowdown reveals the structural characteristics of commodity-based growth.

Second, in light of this weakening, Latin American governments are looking for ways to remain competitive in and attractive to China, exploring innovative productive development policies to better participate in global value chains and boost economic diversification. Chinese domestic consumption may open new opportunities for Latin American exports in foods, services and tourism.

Third, Latin America needs to invest in innovation, skills, regional integration and infrastructure to benefit from China's new normal.

Fourth, attracting Chinese investment to further Latin America's development can be mutually beneficial. For this, Latin America requires better regulations, stronger government capacities to develop bankable projects, deeper and more liquid capital markets, environmental sustainability and a stronger commitment to transparency and good governance, both in principle and practice. China, too, would benefit in this new relationship by maintaining Latin America as a reliable source of commodities, a sound market for its exports and an attractive destination for diversifying its outward investment.

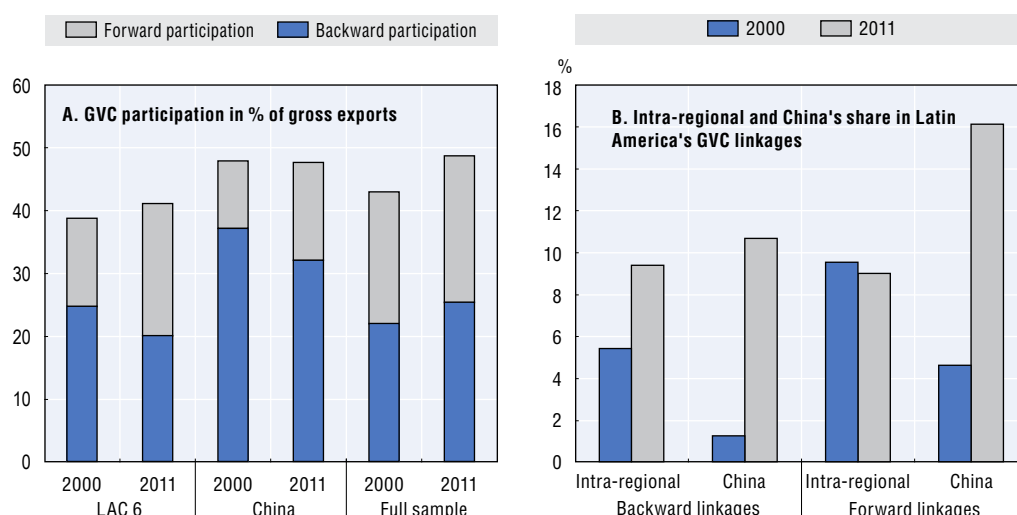
Trade between Latin America and China experienced an unprecedented expansion, before weakening because of the structural characteristics of commodity-based growth.

In the first phase of shifting wealth, China and Latin America experienced a trade boom that favoured the region's commodity exporters. As both a manufacturing powerhouse and an intense commodities consumer, China's demand for commodities characteristic of this phase constituted a fresh source of external funds for commodity exporters. In the period 2001-10, mining and fossil fuels exports from Latin America to China grew at an impressive 16% annually, followed by agriculture products at 12%. As a result, Latin American countries well-endowed in natural resources intensified their trade specialisation in these products, referred to as the reprimarisation of exports. In primary goods, the five leading exports from all countries in the region (except Mexico) accounted for at least 80% of the total value of exports to China in 2014, with commodity exports topping the list. The greatest contributors in export value were oil, iron ore, copper in different forms, soybeans, scrap metals, fishmeal, wood and sugar.

These trade links resulted in stronger, though asymmetric, global value chain (GVC) linkages between China and Latin America. In the period 2000-11, Latin America's total participation in GVCs slightly improved, although it remained lower than the global

average, whereas that of China was similar to the global average (Figure 1.1, panel A). During the same period, the evolution of China's participation in Latin America's GVC linkages has been remarkable. While the region's intra-regional share of backward linkages grew from 5% to 9% between 2000 and 2011, China's share soared from 1% to 11% (Figure 1.1, panel B). The surge in China's share in the region's forward linkages from 5% to 16% over the same period confirms this dramatic increase. In other words, the role of China for Latin American GVCs has become even more important than intra-regional linkages. This also suggests that there exist new segments within global or regional value chains that may present an opportunity for export diversification for the region, (IDB, 2014). Asymmetry is seen too in the range of goods and services Latin American exports to China versus the region's worldwide export basket. In 2013, commodities accounted for 73% of the region's exports to China, compared to 41% of its worldwide sales. Low-, medium- and high-technology manufactures accounted for just 6% of the region's exports to China, compared to 42% of its global exports. By contrast, whereas low-, medium- and high-technology manufactures accounted for 91% of Latin American imports from China in 2013, they represented 69% of its global imports.

Figure 1.1. Global value chains in Latin America and China



Note: 'LAC 6' refers to Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico, due to data availability. 'Full sample' covers 61 high- and middle-income countries.

Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

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The asymmetry of China-Latin America trade relations is not surprising given China's unmatched capacity to develop comparative advantages in manufacturing. China was able to develop comparative advantages in 58 new export industries (4-digit Standard International Trade Classification) between 1990 and 2008; thus it achieved the 8th most diversified trade basket, compared to the 10th position two decades before (OECD/CAF/ECLAC, 2013). In Latin America, only Colombia and Costa Rica diversified significantly, each country adding 60 industries to its trade basket. This increase allowed Colombia to climb from the 54th to the 45th position in the same ranking, and Costa Rica from the 57th to the 47th. The rest of the region showed very little progress in export diversification, with some countries significantly falling back. Brazil moved from 26th to 35th, Argentina from 34th to 39th, Chile from 52th to 69th, and Venezuela from 58th to 107th.

Now, against the backdrop of China's economic rebalancing, Latin America is experiencing a slowdown resulting from the structural characteristics of commodity-based growth. The high economic growth rates of the 2000s evaporated. Latin America is facing unresolved challenges, as well as new ones. Following the swift recovery in the aftermath of the global financial crisis in 2009, the growth momentum in Latin America has been faltering since 2012. Regional gross domestic product (GDP) expanded a mere 1% in 2014, far from the 5% average rates of the previous decade as strong global demand, high commodity prices and abundant liquidity boosted the region's economic expansion between 2003 and 2011. Weaker global growth, lower commodity prices and subdued capital flows are now denting activity. The current context highlights Latin America's unresolved structural transformation, exemplified by low levels of productivity and productivity growth (OECD/CAF/ECLAC, 2014). The region, however, is not homogeneous; manufacture exporters in Mexico and Central America integrated into value chains in the United States, for example, are outperforming net commodity exporters in South America.

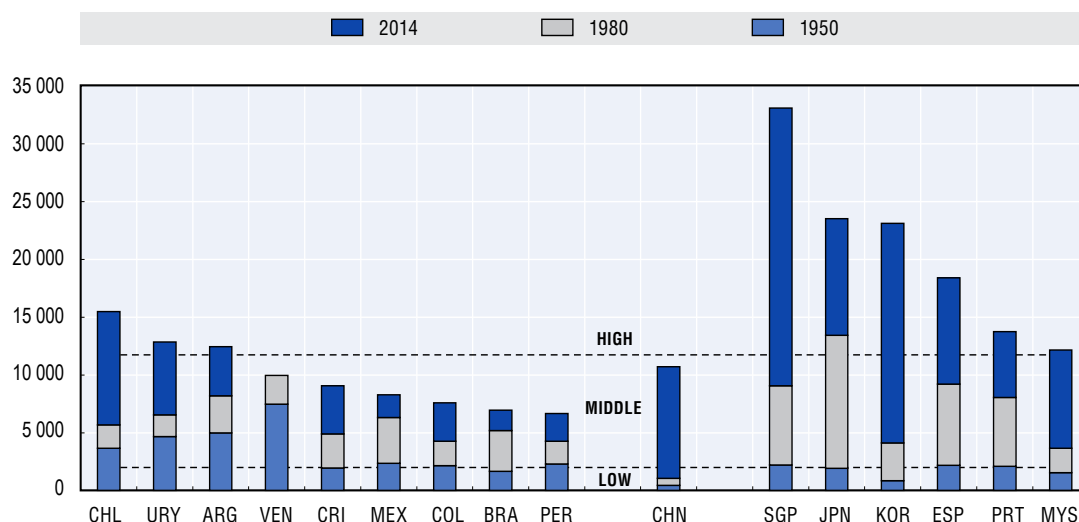
Domestically, the loss of investment momentum is an additional factor behind Latin America's slowdown. While investment's contribution to growth was pivotal in 2010 during the aftermath of the crises, by 2014 its contribution to growth was negative. External headwinds, notably lower commodity prices, the gradual retrenchment of monetary easing in the United States and the ensuing tighter financial conditions, as well as some (probably) short-lived domestic factors, such as policy uncertainty and the passing of reform bills (notably on taxes in some countries such as Argentina, Chile, Colombia, Ecuador, El Salvador and Venezuela), are leading companies to defer investment plans. Tighter credit conditions cloud the prospects of a swift recovery in the near future. Public investment was not strong enough to compensate for the retrenchment of private investment; actually, in some cases, it reinforced it.

Medium-term growth projections suggest that potential output in Latin America is less robust than previously thought and requires structural change. Evidence indicates that potential growth is lower than expected, close to 3%. This stands in sharp contrast with the 5% average annual growth rate that characterised the mid-2000s. Growth increased in most countries over the first half of this decade, but it may slow over the next few years for several reasons. First, less dynamic capital accumulation, low efficiency in factor utilisation, limited labour's contribution to growth and population ageing are all slowing productivity (IMF, 2013; Powell, 2015). The growth gap between Latin America and emerging Asia during the past decade is attributed largely to lower total factor productivity growth. Second, macroeconomic management has not been accompanied by significant structural change. The region needs to address supply-side bottlenecks and shift more resources from low- to higher-productivity sectors and activities within sectors. The growth of small- and medium-sized enterprises is constrained by difficult access to and high cost of credit, particularly in the case of long-term credit (see OECD/ECLAC, 2012). Improved infrastructure and logistics performance are needed to bolster structural change and strengthen regional integration (see OECD/CAF/ECLAC, 2013). Better integrated regional markets can offer opportunities to serve larger consumer demand, achieve economies of scale and attract greater foreign direct investment, combined with measures enhancing competition. Employable skills and innovation are also crucial since Latin American firms are 3 times more likely than South Asian firms, and 13 times more likely than Pacific Asian firms, to face serious operational problems owing to a shortage of human capital (see OECD/CAF/ECLAC, 2014 and Melguizo and Perea, 2015). Stronger productivity should go hand-in-hand with more inclusive growth and reduce inequality and poverty further, given the 164 million Latin Americans, or 28% of the population, living below the poverty threshold in 2013. Informality levels

are also high, with around half of the middle-sector workers in the informal sector. New challenges have emerged or worsened, namely a weakening trust in political institutions, an unsatisfied demand for quality public services, still vulnerable emerging middle-classes and persistent inequalities. Necessary fiscal reform will be even more challenging especially for those economies in Central America and the Andean region with a pending agenda to strengthen their tax burdens (OECD/ECLAC/CIAT/IDB, 2015).

The middle-income trap stands as a potential challenging scenario both for Latin American countries and China. In China, more than three decades of very high growth have allowed the country to reach the upper-middle income country category in a very short period of time. The country entered the range of the low-middle income category (2 000 1990 USD purchasing power parity [PPP]) in the early 1990s, reached the upper-middle income threshold in 2009 and currently stands very close to the high-income mark (11 700 1990 USD PPP). China's rapid growth has fuelled strong improvements in multidimensional living standards (OECD, 2015a). For Latin America, the trap has affected the large majority of countries in the region, many of which have suffered recurrent and pronounced episodes of per capita income stagnation particularly after the 1980s (Figure 1.2). Institutional shortcomings related to the rule of law and rent-seeking behaviours and productive structures less concentrated in knowledge-intensive activities account for the special incidence of the middle income trap in Latin American countries. China has so far cruised through the middle income range, and might be able to avoid this trap relatively easily. Some risk factors, however, could compromise China's future growth pattern. First, the public sector's active involvement in the economy could have deleterious effects by crowding out the private sector. Second, the impressive growth of the past decades has come at a substantial cost to the environment. Third, the increase in income inequality, which has pushed up the Gini index from 32 in 1990 to 42 in 2010, could slow growth.

Figure 1.2. Evading the middle-income trap in Latin America
(GDP per capita in selected Latin America economies, Asia and OECD countries; 1990 USD PPP)



Source: OECD/CAF/ECLAC calculations based on the methodology proposed by Felipe, Abdon and Kumar (2012). Data extracted from International Monetary Fund, *World Economic Outlook* database (2015) www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx, and Maddison (2010) database www.ggdc.net/maddison/.
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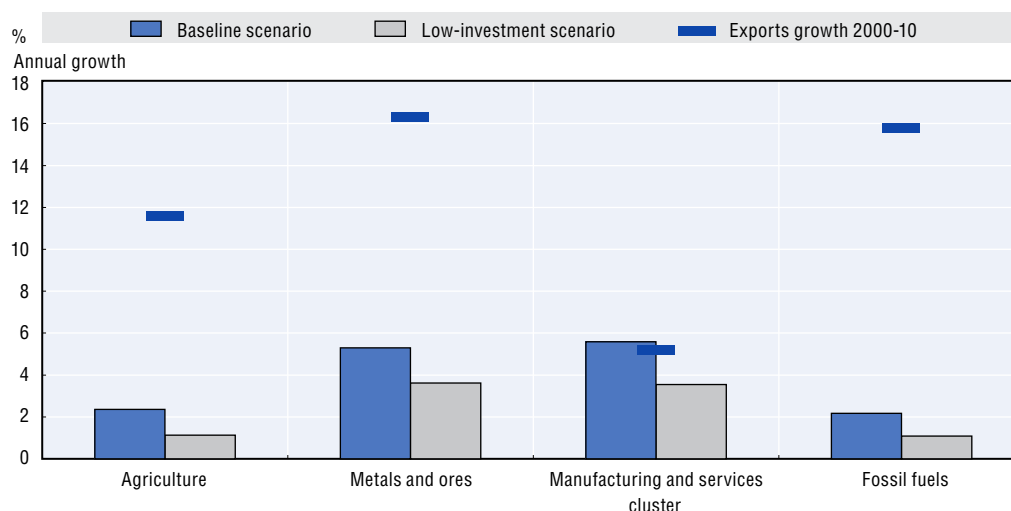
Latin America should embrace a second phase of shifting wealth and define a new economic model anchored in productive development policies to improve participation in global value chains, foster economic diversification and strengthen exports of food, services and tourism.

China is implementing an ambitious development agenda that would allow the country to maintain a leading role in the future course of shifting wealth. This process is currently transitioning to a second phase, namely Shifting Wealth II. While Shifting Wealth I was largely characterised by a single event, the initial opening of China and India to world markets, this new phase refers to a longer-term recalibration. Large emerging markets will sustain future growth and income convergence on the back of drastic economic and social transformations (World Bank, 2015). China will remain a key force in this process, thanks to its “new normal”: a growth transition characterised by less dynamism and greater reliance on domestic consumption; a social transformation underpinned by demographic ageing, urbanisation and the continuous rise of middle-income households; and the process of structural transformation, which will lead towards skill- and technology-intensive industries while maintaining a solid grasp on traditional manufacturing industries.

Latin America still has to define an agenda of diversification and upgrading of its production structure to benefit more from new trade and investment opportunities, to be more resilient to shocks and to optimise the financial flows to close infrastructure gaps. A successful transition to China’s new normal implies a more sustainable growth path based on rebalancing through higher consumption, a focus on higher added-value and service industries, the strengthening of education and skills systems, and a more prominent role of the Asian country in global governance platforms (OECD, 2015b; World Bank/DRC, 2014). All these factors need to be incorporated in Latin America’s future development strategies. Therefore, it is a good time for Latin America to re-evaluate how to maximise benefits and face the challenges posed by China’s new normal. These circumstances call for proactive and strategic integration efforts with China as well as within Latin America itself to strengthen diversification and competitiveness.

Trade links between Latin America and China will continue to be a defining feature of their relationship in the medium and long term, but traditional commodity exports will significantly decline, given China’s shift from investment and exports towards consumption. According to our analysis, using official macroeconomic scenarios for China (World Bank/Development Research Centre of the State Council, P.R. China, 2013, updated), Latin American exports to China will experience a significant slowdown of different intensities depending on the export baskets and their exposure to the country. Mining exporters such as Chile and Peru would be hit the hardest, since their exports will slow down from an impressive 16% annual growth between 2001-10, to less than 3% up to 2030 in the baseline scenario. Fossil fuel exporters (Venezuela, Ecuador, Colombia and Bolivia) and economies with more prominent agriculture sectors (Nicaragua, Guatemala, Uruguay, Brazil, Honduras, Paraguay and Argentina) will experience similar decelerations (from 16% to 4% in the case of energy, and from 12% to 3% in the case of agriculture products). Manufacturing and service-based economies (Mexico, Dominican Republic, El Salvador, Costa Rica) are also likely to experience a decline, although from lower rates (from 5% export growth before 2010, to a 2% increase in coming years). Under the “low investment scenario” for China, mining exporters would face an even more challenging environment, while manufacturers would be more resilient (Figure 1.3).

Figure 1.3. Projections for Latin American exports to China, by clusters of countries, 2010-30
(% exports annual average growth rate)



Note: Baseline scenario and low-investment scenario refer to average annual exports growth for the period 2011-30. Clusters are defined as follows: Agriculture (Argentina, Brazil, Guatemala, Honduras, Nicaragua, Paraguay, Uruguay), Metals and Ores (Peru, Chile), Manufacturing and Services (El Salvador, Costa Rica, Dominican Republic, Mexico) and Fossil fuels (Venezuela, Colombia, Bolivia, Ecuador).

Source: OECD/CAF/ECLAC calculations using estimates from Avendano, Obach and Perea (forthcoming).

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China's rebalancing also involves the recomposition of consumption, opening opportunities for Latin American exports, notably in certain agro-food sectors. China covers just 7% of the world's arable land and 6% of its water resources, yet it is home to 19% of the world's population. Additionally, China is experiencing changes in its food consumption patterns owing to the urbanisation process and the consolidation of its middle class (from slightly over 50 million in 2005 to around a billion in 2030, measured as population with income per capita between 10 and 50 PPP USD, while Latin America's will go from 135 to 310 million in the same period; [Bussolo, Maliszewska and Murard, 2014]). Proteins and processed foods are in demand, along with higher levels of quality and safety. Over the next decade, China will increase its consumption per capita of sugar, poultry and sheep meat by over 20%, while products such as fish, vegetable oils, fruits and vegetables, milk and beef will increase between 10% and 20%. Conversely, per capita consumption of basic crops such as rice and wheat will fall (OECD/FAO, 2015). China's looming demand for these products will not be solely satisfied with internal production, given its limited stock of land and water. Latin America is well-positioned to respond to this consumption shift and the prospects for meat, milk or vegetables exporters, such as Argentina, Brazil, El Salvador or Guatemala, are promising.

The prospects for increasing Chinese food demand should be addressed with proactive productive development policies in these sectors and, more broadly, through horizontal policies. To fully capture the growing consumption trends of food products, Latin America's governments should try to position firms in higher value-added stages of the production chain, incorporating various types of services. This could avoid the price volatility of commodities. China's share in the region's agricultural exports rose from 1% in 1990 to 3% in 2000 to 13% in 2013, resulting in a large and growing surplus in agricultural trade. China's growing consumption of products such as processed meat, fish and fruits makes room for more added-value exports from Latin America. The examples of electronic traceability in the meat industry in Uruguay or the creation of seeds in the Argentine soy sector are illustrative. While tariff escalation and non-

tariff barriers such as sanitary and phytosanitary measures on semi-processed products over raw materials limits access of Latin American-processed food exports to China, increasing demand may offer opportunities in the future. Value is not only concentrated at the start of the value chain, in activities such as research and development (R&D) and product design, but also in upstream activities like marketing and logistics (OECD/FAO, 2015). The rise in Latin American value-added incorporated in Chinese final demand points to an increasing share of exports from Latin America to China that are used for internal consumption (OECD/WTO, 2015; ECLAC, 2015). This is particularly relevant for exports in the agricultural sector. If Latin American agricultural firms want to reach the Chinese consumer with final products, they need to create awareness, country and brand recognition.

Mining firms in Latin America need to define a strategy to expand their activities from extraction to include logistics, infrastructure and services. Successful productive development should promote local industry's capabilities and linkages with local suppliers and encourage upgrading activities between Chinese and local firms. Mining projects, such as Mirador in Ecuador or Minas Gerais in Brazil, that are investing in mining-related services and industries illustrate this strategy.

Latin America should expand its range of services to respond to new opportunities created by the structural transformation of the Chinese economy. These include back-office and offshore services for the global networks of Chinese multinational companies, providing around-the-clock services. Other examples are entertainment, architecture, urban planning, environmental management, medical and other services for an ageing population and more traditional services such as tourism, transport and logistics. The OECD *Services Trade Restrictiveness Index* shows that in Brazil, Chile, Colombia and Mexico restrictions tend to be relatively higher in broadcasting, courier, telecommunications and air transport services. This is partly due to sector-specific rules, such as thresholds to foreign participation and general regulations. (OECD, 2015c). In particular, tourism shows potential for further development. The number of visitors from Latin America to China (251 000 in 2013) and from China to Latin America (334 000 in 2013) has increased significantly in recent years (UNWTO, 2015), but still represents less than 1% of China's tourism. Latin America's visa restrictions and complex migratory procedures could be revisited to allow for a more fluid regional exchange.

Intra-regional trade, including participating in global value chains (GVCs), could further boost Latin American productivity. Latin America's participation in GVCs is considerably lower than those of other regions, such as the European Union and Asia, mainly due to lower *backward linkages*. A considerable share of GVC trade takes place at the intra-regional level. Aside from Mexico, which is well integrated into the NAFTA region, the share of intra-regional trade in Latin America is low in both intermediate and final goods, and lower for intermediates. In 2011, Latin America's backward linkages (covering the six countries of Argentina Brazil, Chile, Colombia, Costa Rica and Mexico due to data availability) were 20% of gross exports, compared to the European Union and Asia, which have nearly 30% each. The region's level of backward linkages is significantly influenced by Mexico, whose backward linkages are 32% of gross exports thanks to its integration in NAFTA. Excluding Mexico, the region's backward linkages fall to 13% of its gross exports. In contrast, the region's forward linkages are similar to those of the European Union and Asia (between 21% and 23%). These forward linkages are particularly high for Chile and Colombia, whose share rises to between 30% and 32% (OECD/WTO, 2015), confirming the region's upstream position in GVCs.

Latin America could target knowledge- and technology-intensive services such as information and telecommunication technologies and other business services in global value chains, including those with China. Services value chains are less sensitive to distance from manufacturing hubs, and more so to investment climate and openness to foreign direct investment. They would facilitate Latin America's diversification efforts in

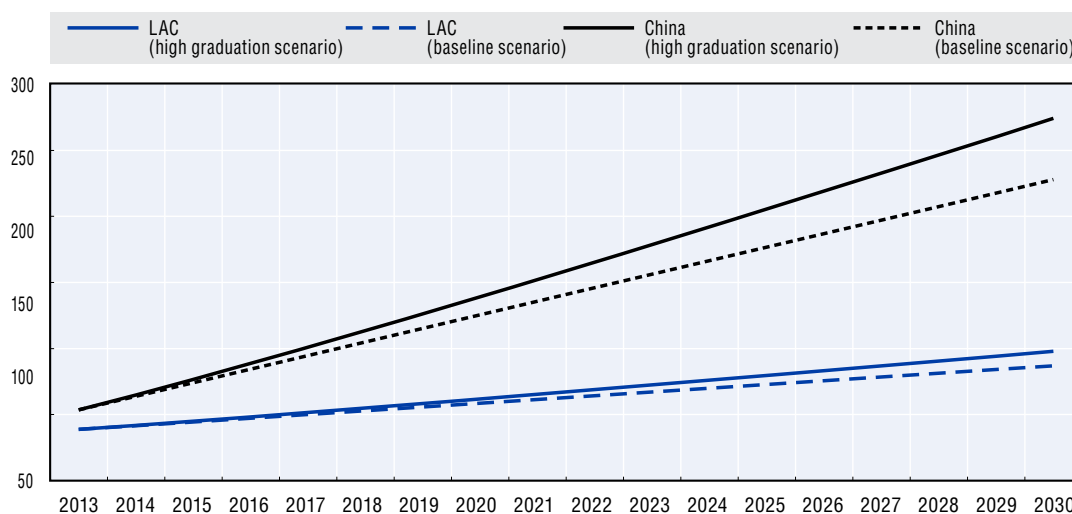
the face of current structural and geographic constraints. So far, exports to China have been concentrated in relatively traditional services such as transport and storage, and wholesale and retail trade. Only Brazil and Costa Rica have successfully expanded into knowledge-intensive services sectors. The dynamics suggest that services offer avenues for diversification and greater integration across regions. The rest of Asia (excluding China) and European Union countries offer the greatest opportunities in computer and other business services; while integration with the United States, Canada and China offer opportunities in other sectors.

Investing in innovation, skills, regional integration and infrastructure can help Latin America benefit from China's new normal.

Latin America's pool of skills needs to be improved to benefit from the opportunities in global value chains. For Latin America to compete and tap emerging opportunities, skills need to be upgraded and the quality of education and training systems needs to be improved. As stressed in the *Latin American Economic Outlook 2015*, the quality of education in the region is still low. In secondary education, the gulf between the performance of Latin American students and that of students in the OECD countries is equivalent to more than two years of schooling according to the 2012 PISA tests. Areas such as the quality of training for teachers and early education are crucial to upgrading overall education performance. Improving education and skills can raise labour productivity, a persistent challenge for Latin America, create high-quality jobs and reduce the size of the informal economy (OECD/CAF/ECLAC, 2014).

Current trends suggest that China might be the main provider of tertiary-educated people in the world, with a much larger and more skilled workforce than Latin America. In our baseline scenario, China's current skills strategy could raise its global supply of tertiary-educated students to around 125 million by 2020 and more than 220 million by 2030 (21% of Chinese working-age population, a similar level to Australia today), considerably higher than the projected 90 million tertiary-educated people in Latin America by 2030 (corresponding to 19% of the region's working-age population, a similar level to Austria today) by 2030 (Figure 1.4). The high-graduation scenario for China, based on recent past trends, would aggravate the gap. China increasingly will be able to capture high value-added segments of global value chains, producing more sophisticated goods and developing its services sector. This could leave Latin America in a compromised position to compete in these areas.

Figure 1.4. Skill projections in Latin America and China, 2013-30
(population with tertiary education, million people)



Source: OECD/CAF/ECLAC calculations based on *World Development Indicators* and UNESCO Institute for Statistics.
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In sharp contrast to China, the composition of skills in Latin America is concentrated in fields less connected to the productive sphere of the economy, with under-investment in science and technology. The pertinence of skills should be a priority in the region for employability. While in China around half of students in tertiary education are enrolled in science, technology, engineering and mathematics (STEM) fields, only 1 out of 5 in Latin America is enrolled in these areas. Given that technology will be an increasingly important driver of productivity, the right skills will be crucial to both absorb and produce technological advancements. China's incorporation of technology into the production processes, mainly through robotisation, highlights Latin America's lack of strategy to respond to this challenge. The employability potential of STEM fields of study seems underestimated by a large share of the population. Systems to provide information on the returns to skills in these fields of study, such as *Mi Futuro* in Chile and *Ponte en Carrera* in Peru, may stimulate enrolment. Strengthening the quality of technical and vocational education remains a priority for bridging Latin America's deficit in technical skills. These goals require establishing mechanisms for skills matching between industry's demand and labour's supply, providing information on career paths through qualification frameworks and anticipating future demands.

More and better education and job skills must be accompanied by greater innovation. The stock of innovation capital is far lower in Latin America (13% of GDP) than in OECD countries (30% of GDP), in the same way as R&D expenditure. The institutional arrangements to favour the dissemination of technology and innovation need to be improved, while attracting foreign direct investment would provide an opportunity to develop skills and innovation in Latin America, but only if the investment flows are more closely tied to policies on innovation and structural change (OECD/CAF/ECLAC, 2014).

Successfully joining global value chains calls for a regional integration agenda, supported by better infrastructure. China's willingness to strengthen ties with Latin America demands a regional co-ordination mechanism to successfully dialogue and negotiate. The recent experience shows that bilateral agreements, while beneficial for some countries or markets, could impact others negatively. The use of regional platforms and the development of Regional Trade Agreements should increase the region's competitiveness and strengthen the region's bargaining power in coming negotiations with China. Existing platforms, such as CARICOM, Central American Common Market, Mercosur and the Pacific Alliance, can contribute to building the co-ordination mechanism and designing a strategy vis-à-vis China, while also creating a larger regional market, more attractive to foreign investors. Improvements in infrastructure and logistics, based on public and private investments, can contribute to the integration agenda, helping the region's economies reposition themselves within global value chains. In Latin America, 57% of exports consist of perishable or logistics-intensive products, cargo costs are high, and transport services unreliable. There is a wide margin for action to improve access to global production networks through infrastructure upgrading (OECD/CAF/ECLAC, 2013).

Within the dialogue with China, Latin American regional trade agreements should go beyond tariff policies and include disciplines in services, investment, government procurement, intellectual property rights, competition policy and regulatory transparency. A high degree of regulatory restrictiveness, particularly in services, can affect competitiveness. For services value chains in particular, easing investment barriers, eliminating restrictions on foreign entry across most sectors and reducing barriers to competition can help attract foreign direct investment. Enhancing labour mobility and market integration in professional services, such as legal services, accounting and engineering, will allow countries to mutually recognise foreign qualifications and free up licensing regimes that constrain the right to practice. This will not only help harmonise regulations within the region, but also introduce sector reforms in areas like telecommunications and financial services.

Also, co-operation efforts between China and Latin America prove that there is a rich arena for technical exchange in areas such as agriculture, energy, infrastructure and environmental management. As part of the Brazil-China Ten-Year Co-operation Plan (2012-21), the two countries signed a USD 50 billion infrastructure agreement. Similarly, China has become an important supporter of Chile's energy diversification through an ambitious solar energy plan. In Argentina, local scientists from the Centre of Science and Food Technology work with Chinese counterparts on the areas of agri-food, biotechnology, nanotechnology, energy, sustainable food processing, preservation, packaging and transport research.

China's investment in Latin America's development can be mutually beneficial.

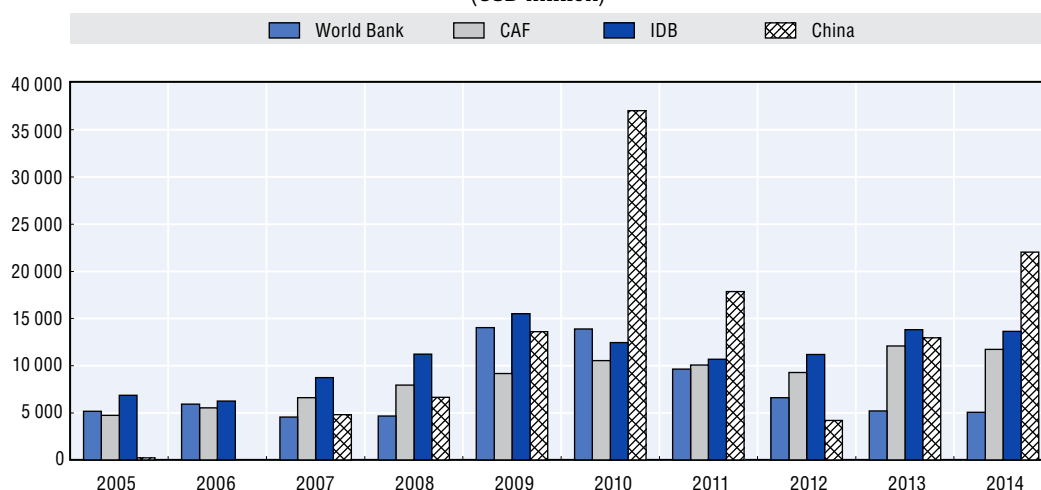
China's *Zouchuqu zhanlue* (“走出去战略”) “going-out strategy”, has driven Chinese engagement over the past three decades by promoting acquisition of global resources and the internationalisation of Chinese firms. More recent activity is often driven by these same objectives, but also by China's efforts to fundamentally transform its economy. This offers a key opportunity for infrastructure financing in Latin America. Unlike previous decades, Latin America will be one of China's priority regions, as signalled by the visits of the Chinese Prime Minister to the region during 2015. Although policy instruments such as bilateral free trade agreements and investment treaties have existed for years, China is looking to further deepen trade and investment integration by engaging with plurilateral platforms (CELAC, Mercosur, Pacific Alliance). China today is a key actor for restructuring the global financial architecture through major financial loans and investments. For Latin America, these steps include a significant presence through bilateral loans, membership in multilateral development banks – from joining the Inter-American Development Banking 2009 to deepening relations with the Development Bank of Latin America – and the launch of the New Development Bank operated by the BRICS (Brazil, Russia, India, China and South Africa). Moreover, Latin American governments should play a more active role in attracting investment, providing more information and associating with local partners. In particular, exports and investment promotion agencies can be critical in setting predictable investment policy frameworks, and improving knowledge and communication between China and the region.

China-Latin America financial flows have seen unprecedented growth during the last decade, often concentrated in infrastructure, energy and mining. Chinese lending to Latin America has become the largest source of external financing for a specific group of countries (Argentina, Brazil, Ecuador and Venezuela), overcoming well-established international financial institutions in the region. Since 2010, loans from China reached USD 94 billion, compared to USD 156 billion from the World Bank (WB), the Development Bank of Latin America (CAF) and the Inter-American Development Bank (IDB) combined (Figure 1.5). Chinese financing complements the economic sectors and countries in which international financial institutions operate. Chinese financing is concentrated in mining, transport infrastructure and energy, whereas 60% of international financial institution (IFI) projects focus on other sectors (finance, education, health, environment, public administration). Argentina (16%), Brazil (19%), Ecuador (9%) and Venezuela (47%) were the most active in Chinese financing, accounting for 91% of Chinese loans between 2005 and 2014. This also highlights that countries borrowing from China have higher barriers to accessing international financial markets (e.g. average spreads in sovereigns among these countries is 750 basis points, compared with 350 for the rest of the region).

China's presence, not only in the region's extractive sectors but also in telecommunications, electricity, green technologies and land purchases, is growing. By 2025, accumulated investment of China in Latin America is projected to reach

USD 250 billion, according to President Xi Jinping's declaration in the China-CELAC Forum in Beijing in early 2015. China's participation in telecommunications has expanded since the early 2000s, deploying networks of local providers and technical assistance in large markets like Argentina, Brazil and Mexico, and extending to others like Bolivia, Cuba, Ecuador, Nicaragua and Venezuela. China is active in the region's hydropower development through products in Argentina, Brazil, Costa Rica and Ecuador, among other countries. In addition, owing to China's excess capacity in its own market, Chinese companies have started to play a role in providing green technologies to the region in the form of wind and solar energy generation. The USD 900 million electricity plant project in the Atacama Desert in Chile is one such example.

Figure 1.5. Loans to Latin America from China and from selected multilateral organisations
(USD million)



Note: Chinese loans include loans provided mainly by China Development Bank and China Ex-Im Bank. World Bank loans are IBRD and IDA commitments. CAF loans refer to loans commitments, and IDB data include loans and guarantees approved.

Source: OECD/CAF/ECLAC calculations based on annual reports of CAF, IDB, and World Bank, and Gallagher and Myers (2014) for Chinese loans data.

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As Chinese companies seek new opportunities in the region, Chinese finance and investment will very likely be directed towards a wider variety of countries and industries. Credit lines – announced in 2014 and 2015 during high-level Chinese visits to the region – are available and should target new countries in the region in coming years. The increasing presence of Chinese commercial banks could also help diversify China's portfolio in the region and reduce somewhat China's financial exposure. Whereas finance continues to focus on traditional sectors, such as energy, transport infrastructure and telecommunications, foreign direct investment is already being directed towards a wider variety of sectors, including manufacturing, scientific and technological innovation and information technologies.

Opportunities for increasing China's participation in Latin America's financing should be matched by efforts in transparency and regulation, especially on the environmental front. Latin American governments can be more proactive in strengthening transparency and regulations, particularly those related to the environment. China's focus on extractive industries calls for reinforcing evaluation and monitoring mechanisms, improving ministries' capacity to enforce standards and laws in extractive projects,

establishing a clear consultation process to address local concerns (including ILO Convention 169), collaborating with civil organisations and the Chinese government to hold investors accountable to comply with local environmental guidelines and informing Chinese investors about current regulations (Ray et al., 2015). The regulatory framework also extends to international standards. China's increasing demand for goods, and the potential surge of Chinese instruments (i.e. foreign direct investment, special economic zones) in Latin America, recommends revising existing standards and certifications in exports (ISO, European CE Marking Guidance, China Compulsory Certification), particularly when China challenges convergence.

A successful Latin America-China partnership needs adequate multilateral governance. China's transformation introduces new challenges and opportunities for the region. These need to be incorporated into the broader development strategy aimed at upgrading, diversification and integration. For this to happen, China also needs to understand Latin America's development challenges. The willingness to establish channels of co-operation should go beyond bilateral forms of dialogue and include a structured dialogue with the region as a whole. Finally, this partnership should complement the current agenda to include sustainability goals and regulatory issues as main elements of co-operation.

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Chapter 2

Macroeconomic prospects for Latin America

The high economic growth rates of the 2000s experienced in Latin America fuelled by favourable external conditions are over. Instead, the region continues to deal with a deteriorating external environment that, without experiencing any major internal crises, is leading to modest growth rates. Medium-term growth projections, however, show further downward revisions. This suggests that potential output growth is less robust than expected, which could present a risk to recent socio-economic achievements. This chapter assesses Latin America's growth prospects in the challenging international environment and explores how vulnerable the region is to further adverse changes in external conditions. The domestic outlook focuses on the need to stabilise and increase investment rates and productivity. The external outlook focuses on the effect of China's "new normal" and looks at how slower growth and structural change in China is altering the Latin American landscape, as well. It then discusses how these factors influence the main real and financial indicators in the region, and will shape the external environment for decades to come. The chapter ends with short- and long-term proposals for economic policy, highlighting the diverse socio-economic landscapes in Latin American countries.

China: A game-changer for macro prospects in Latin America and the Caribbean?

China has become an economic powerhouse over the past two decades, which has significantly changed the global dynamics of trade and financial flows as it expanded its economic interests across several continents. Many trade regions and countries increased their ties with China as its exceptionally high growth rates offered promising economic opportunities.

Latin America and the Caribbean (LAC) are no exception to this trend. China is now one of the main trading partners of several countries in the LAC region, and an increasingly important source of direct investment and bilateral funding (as analysed in Chapter 5). Nevertheless, LAC is heterogeneous in its patterns of engagement. Commodity exporters in South America increased trade links with China at a faster pace than manufacturing exporters in Central America; the latter remain more integrated into value chains with the United States. Links also vary significantly depending on the type of commodity exported – oil, minerals or agricultural products. Direct investment shifted to commodity sectors, while bilateral funding gained more importance in countries with less access to international capital markets.

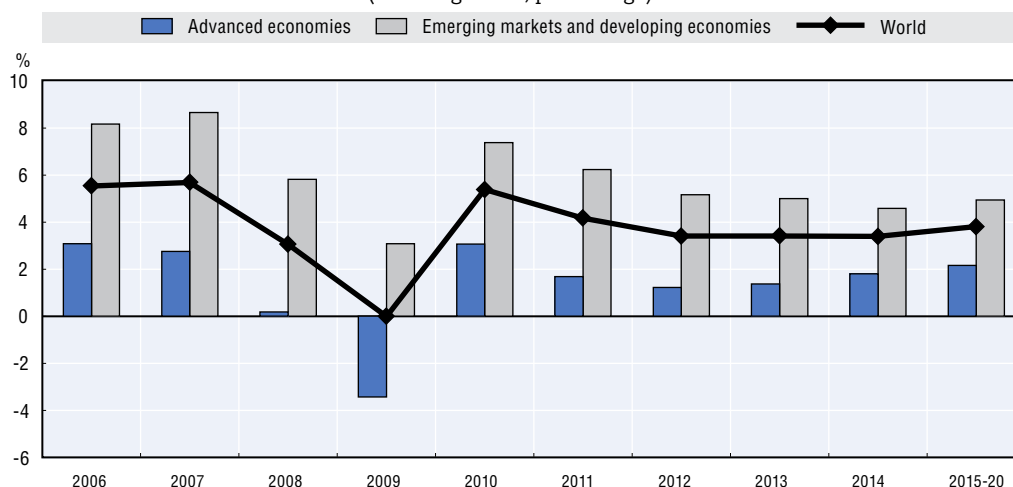
Times are changing, however, and quickly. Economic growth rates in China are lowering to more sustainable ones, as the economy shifts from an investment-led growth model to one driven by consumption. These macroeconomic developments are accompanied by profound structural transformations, including a remarkable investment in skills, economic diversification and an openness strategy that goes beyond finance, as is discussed in Chapter 5, which looks at future trends. These internal changes are having a differential impact across partner countries, with smaller and more open emerging markets, particularly metal commodity exporters, affected the most.

Despite the slowdowns and shifts in China's economy, because its share of global gross domestic product (GDP) soared over the past decade, it is still expected to account for nearly 30% of global growth in the next five years, even over its slowdown trajectory. Moreover, the rebalancing of the Chinese economy towards consumption could open new markets for the LAC region, also in some commodity sectors (e.g. food). Regardless of location or past trade and investment patterns with China, LAC countries could be poised to take advantage of changing circumstances; they do, however, require new strategies to seize opportunities with China.

Global context: Living through challenging times

The global economy is moving to lower economic growth, albeit with diverse paths across countries. Emerging global patterns show that recovery in advanced economies is gaining footing, while growth in most emerging markets continues its slowdown trend (Figure 2.1). This will have differentiated effects in LAC countries' growth dynamics. In spite of a weak start in 2015, growth is expected to consolidate the United States, supported by employment and credit. The dollar appreciation may take a toll on exports, but not enough to derail the recovery. In the European Union (EU), economic activity is slowly recovering as credit conditions improve and unemployment diminishes; whilst uncertainty about a permanent resolution for the Greek debt crisis remains. The depreciation of the euro and the yen against the dollar should increase exports in both regions and reduce deflation risks.

Figure 2.1. Economic growth outlook by groups of economies
(annual growth, percentage)



Source: OECD/CAF/ECLAC calculations based on IMF (2015), World Economic Outlook database, www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx.
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The big emerging economies of Brazil, Russia, India and China (BRIC) are facing quite different economic situations as 2015 comes to a close. In China, economic activity is slowing down, although the risks of a hard landing are being contained as the efforts to rebalance growth progress. Nonetheless, the turbulences caused in the summer of 2015, first by the stock market crash in China and then by the yuan devaluation, reveal that the reform process may not be easy (see Box 2.1). Whereas, in India, expansion is picking up pace; Russia is undergoing a deep recession; and Brazil's growth remains in the negative territory. Overall, manufacturing exporters are outperforming net commodity exporters.

Box 2.1. Yuan devaluation: Today's volatility, tomorrow's growth?

On 11 August 2015, the People's Bank of China started weakening the renminbi (RMB), which in the following days endured a depreciation of over 4% with respect to the United States dollar (USD). The original intention of the measure was to let the daily reference rate follow the closing spot rate of the previous day, a step to a more market-led system. The devaluation sent shockwaves through global financial markets, fuelling fears about the vulnerability of the Chinese economy. For many observers, the decision to devalue might confirm that Chinese authorities share these concerns to some extent.

While there is no consensus regarding the possible exchange rate misalignment of the Chinese currency, there is evidence that points to a sizeable overvaluation. For instance, the broad measure of the Bank for International Settlements (BIS) effective (trade weighted) exchange rate concludes that the RMB has appreciated by approximately 30% over the past five years. A trend that would have left the Chinese currency as the second most overvalued in the world, according to Barclays Bank (Euromoney, 2015). A further indication of RMB overvaluation is that markets, as well as Chinese corporates, had been expecting depreciation for some time. This is evident in that onshore foreign exchange deposits in China surged in 2014, largely owing to corporates holding more of their export proceeds in foreign currencies. Also, China's foreign exchange reserves had diminished by a tenth from their peak level reached in 2014.

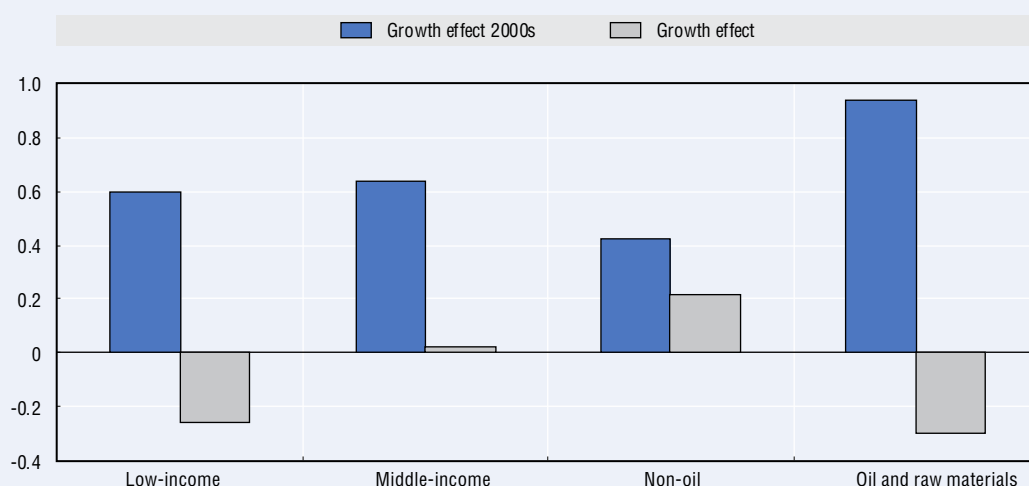
RMB devaluation is a matter of special attention for Latin America. With several countries in the region specialised in commodity exports, the devaluation has rapidly depressed the prices of many of these products. For instance, soy and oil prices registered the greatest short-term effects, with accumulated falls of 7% and 6% between 10 and 13 August 2015.

Box 2.1. Yuan devaluation: Today's volatility, tomorrow's growth? (cont.)

Moving beyond these immediate effects, RMB devaluation can act as a catalyst for economic growth worldwide. It is largely ignored that China is the world's most efficient country to turn currency depreciation into higher world growth, both through its direct effects over growth in China, but also to other countries. Concerning internal growth, a 10% RMB nominal effective appreciation would have brought down China's annual per capita growth by 0.9% (Rodrik, 2010). Thus, the 30% appreciation that occurred over the past five years may have chipped away some 2.5% from China's growth rate. With regards to the second, the growth link between China and the emerging markets, both low- and middle-income countries, has tended to increase during the 2000s (Garroway et al., 2012). Specifically, 1% change in China's growth rates results in a change around 0.3% in the same direction in the low-income countries. For middle-income countries, this same growth association reaches 0.7%.

In the longer term, the question is whether China will speed up the devaluation rate in the future in order to boost exports. A growing number of observers are inclined to believe that this may not be the case, and rightly show its potential effects on capital outflows and disincentives to continue the long-term strategy to shift the economy away from an investment and export-led model.

Figure 2.2. Impact of China over economic growth in developing countries



Note: Beta coefficients of a fixed-effects panel regression of growth rates for various categories of countries (low income, middle income, non-oil exporters and oil and raw material exporters). The columns quantify the country's growth elasticity to China's growth, both for the period 1993-2009 ("growth effect") and for the decade of the 2000s ("growth effect 2000s").

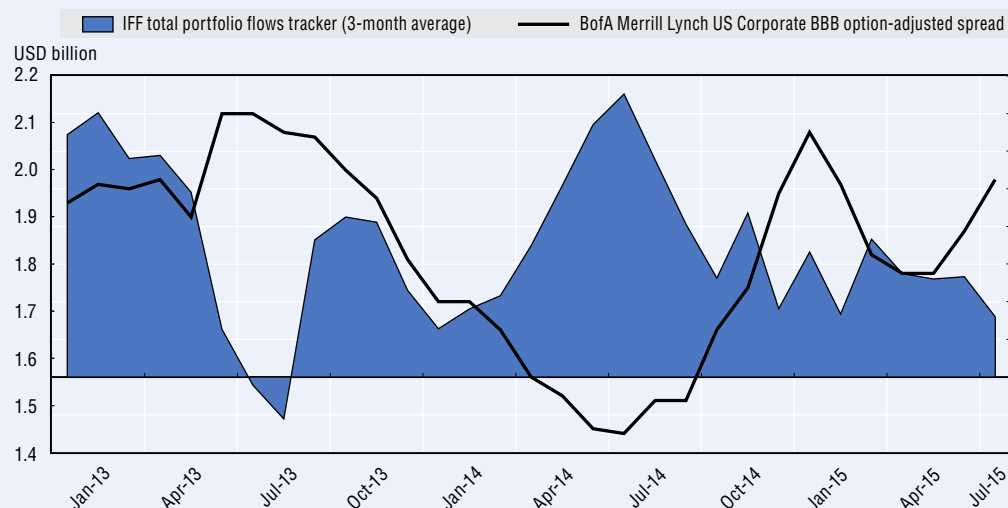
Source: Garroway et al. (2012), "The Renminbi and Poor country Growth", *The World Economy*, Vol. 35(3), <http://onlinelibrary.wiley.com/doi/10.1111/twec.2012.35.issue-3/issuetoc>.
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Differentiated growth dynamics also depict diverging monetary policies among developed economies. The US Federal Reserve (FED) is expected to start increasing rates in late 2015, while the EU and Japan will further loosen monetary policy to fight deflation risks and support activity. Narrowing interest rate spreads will retrench capital inflows to emerging markets, further weakening asset prices and currencies (see Box 2.2). Markets should have priced in the beginning of the tightening cycle in the United States, but if the FED increases rates faster than expected, this may stir new volatility in capital markets.

Box 2.2. Recent trends in capital inflows to emerging markets: Lower, volatile, but not collapsing

Capital inflows to emerging markets continued to subside in 2015, possibly marking a multiyear low by the end of the period. Push and pull factors have affected appetite for emerging markets assets. The year started on a weak note with a rise in global risk aversion that marked a retrenchment of private portfolio flows from non-residents to emerging markets (Figure 2.3.).

Figure 2.3. Portfolio flows to emerging markets and global risk aversion



Note: Risk aversion is captured by the US BBB Corporate Spreads.

Source: OECD/CAF/ECLAC calculations based on IIF Portfolio Tracker data (Aug. 2015) and Bank of America Merrill Lynch.

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A weakening growth outlook marked by a delayed recovery in advanced economies and softer activity in emerging economies – particularly in China, Russia and Brazil – kept investors at bay. Although much more stable than portfolio flows, FDI flows have also slowed down on the back of weaker conditions in emerging markets and lower commodity prices. The latter is dragging down investment in the mining and oil sectors across the board. Natural resource dependent countries are more vulnerable to this trend.

What can be expected? A full-blown sudden stop is not the most likely scenario, but neither is a recovery, and the balance of risks is tilted downwards. The rise in interest rates by the FED does nothing to support the prospects for portfolio for equity or debt flows, especially as monetary policy in emerging economies remains neutral or expansionary to stimulate growth.

Quantitative easing in the EU may be supportive of flows to emerging markets, but it is far from clear that it can compensate for the effect of the tightening in the United States (US). Changes in expectations about interest rates in the US seem to be the dominant push factor for flows to emerging markets. This was clear during the taper tantrum in 2013.

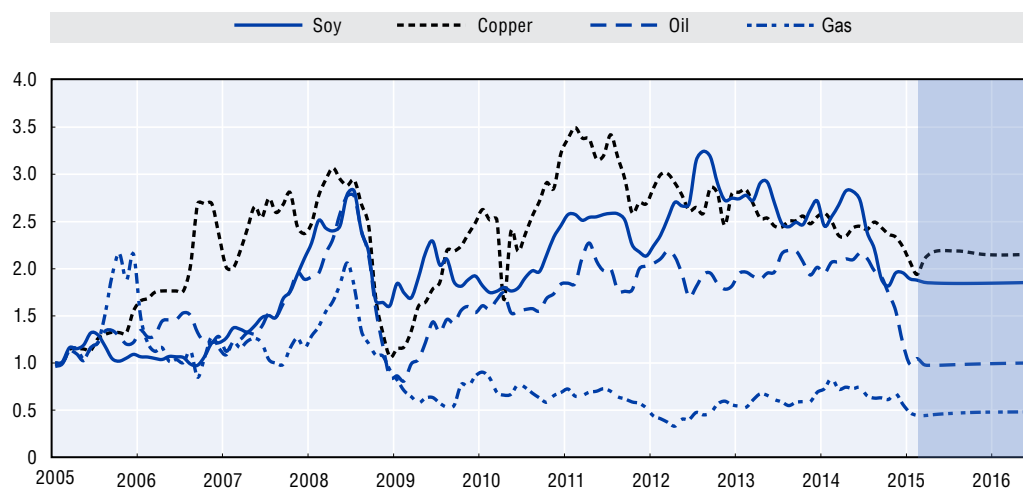
The uncertainty surrounding the pace of the increase is keeping markets jittery. So capital flows to emerging markets could recede further amid larger volatility, if the FED raises rates faster than expected.

Emerging markets with weaker fundamentals and policy frameworks may be more vulnerable. For example, large current account deficits and poor policy credibility have correlated with weaker performance in recent volatility episodes (IIF, 2015). Going forward, this may be a source of risk. In addition, countries where the non-financial corporate sector has rapidly increased USD-denominated debt over the past few years may face challenges as domestic currencies weaken.

The euro and the yen lost ground against the USD and will remain subdued as expansionary policies by the European Central Bank and the Bank of Japan continue. Although inflation remains contained, it is either close to central banks' targets or above them in some cases, limiting their scope to reduce rates. If a large fraction of liabilities is dollarised, financial stability considerations could also deter central banks from additional rate cuts.

Commodity prices have further receded due to the combined effects of sluggish growth of global demand and increased supply. Metal and agricultural prices have declined since 2011, while oil prices maintained their ground until mid-2014, when they dropped by a stark 50% in the course of six months. In the case of oil, quantity changes in tight markets can induce drastic price variations. The effects on prices by the United States' large increase in shale oil production was offset by output disruptions in the Middle East until 2014, when output, mostly from Libya, re-entered the market and contributed to excess supply. The decision by the Organization of Petroleum Exporting Countries (OPEC) not to defend prices along with the appreciation of the US dollar further contributed to the price slump. Although prices regained some footing after Q2 2015, high prices comparable to the ones in the 2000s are not expected to return in the near future (Figure 2.4). Lower oil prices support consumers (i.e. net energy importers), but impair net energy exporters. While Gulf countries seem able to withstand the shock, oil exporting countries with existing imbalances before the oil prices plunged will face a dire situation.

Figure 2.4. **Selected commodity prices**
(index 2005=1)



Source: OECD/CAF/ECLAC calculations based on CAF and Bloomberg data.

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Industrial metal prices continued their downward trend due to increased supply capacities in iron ore, copper and nickel, and weak demand and rising inventories. As China is one of the main price-movers in this market, the slack in its property sector and the shift to a less investment-led form of growth have been key determinants in global demand of metals. These trends are not expected to change in the near future and will keep exerting downward pressures on prices. Precious metal prices have largely declined since 2011, although some price hikes have been seen in moments of rising risk aversion in markets, particularly for gold. Prices are likely to keep struggling in the short term, as interest rates are adjusted upwards and the US dollar appreciates, dampening the demand for safe-haven assets.

Finally, agricultural prices have continued to ease since 2013. Good harvests of key grains (wheat and maize) and oilseeds contributed to lower prices over 2014. In the case of soy, the increase in cultivated land and yields is playing a key role in maintaining lower prices (i.e. prices are supply driven). Other key cereal prices, such as rice, remained somewhat stable. Beverage prices declined, led by coffee, as the effects of the drought in Brazil that pushed prices up in 2014 dissipated. Unexpected weather conditions may affect supply conditions, but no major changes lie in the forecast horizon.

Macroeconomic trends in Latin America: Looking for potential

Following the swift recovery in the aftermath of the global financial crisis in 2009, the growth momentum in Latin America and the Caribbean has been faltering since 2012. GDP expanded a mere 1% in 2014, leaving behind the 5% average growth rates of the previous decade. As strong global demand, high commodity prices and abundant liquidity boosted growth in the region between 2003 and 2011, weaker global growth, lower commodity prices and subdued capital flows are now reducing activity.

The average hides Latin America's heterogeneity

Trade dynamics explain much of the heterogeneity seen in the LAC region these days. Manufacture exporters integrated into value chains in the United States are outperforming net commodity exporters in South America. By contrast, major commodity exporters that increased their exposure to China over the past decade suffered a large contraction in their terms of trade; this has harmed aggregate activity since 2012, by reducing both the purchasing power of exports and investment in commodity sectors. The end of the so-called “commodities super-cycle” is affecting, particularly, oil and mineral exporters in South America. Subdued investment perspectives in the oil sector will negatively affect economic activity in Mexico, although the recovery in the United States will allow it to grow well over the region's average. In contrast, net energy importers in Central America and the English-speaking Caribbean, which benefit from lower crude prices, have better growth perspectives.

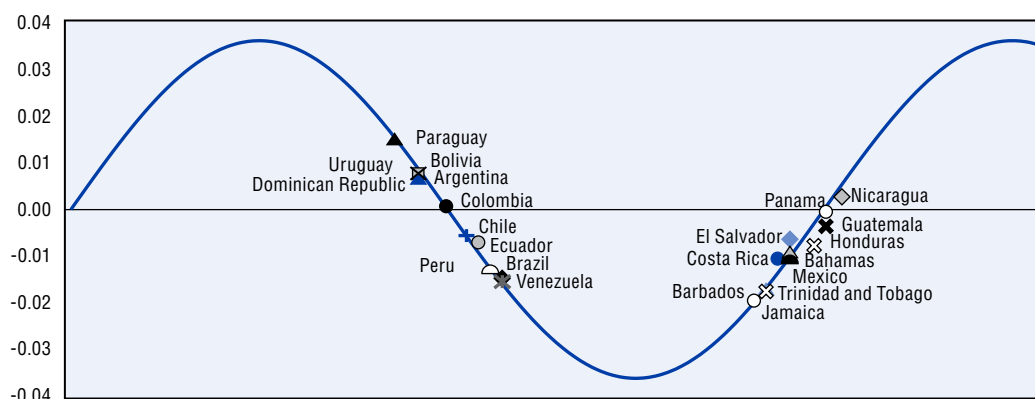
The scope and ability of policy frameworks also help explain the heterogeneity across countries in the region. Commodity exporters with strong monetary and fiscal frameworks, such as Chile, Colombia and Peru, are faring better than those with weaker frameworks that accumulated imbalances (see Box 2.4 for a deeper analysis in the case of fiscal policy and stabilisation).

This heterogeneity can be illustrated in the cyclical position of countries placed within a stylised economic cycle, depending on their current (in 2015) and projected (in 2016) output gap based on the Organisation for Economic Co-operation and Development (OECD) and International Monetary Fund (IMF) forecasts. As shown in Figure 2.5, most countries in South America are exhibiting negative output gaps, notably Brazil, Venezuela and Peru, but also Chile and Ecuador. Weak output still lies ahead until these economies reach a trough in the cycle, although with different intensities. While Colombia is close to its potential, the severe contraction in oil prices will probably show up more clearly in the future. This could be the case in Bolivia and Ecuador as well. Chile and Peru are further along the transition, as they had previously adjusted to the effect of declining metal prices. The inability to implement countercyclical policies is having a deeper impact in Argentina, Brazil and Venezuela, highlighting the importance of policy frameworks in difficult economic times.

Central American and Caribbean countries seem to be rising from below to their potential output, supported by the recovery in the US and lower energy prices. Mexico's performance is a little weaker than other countries, affected by subdued investment perspectives in the oil sector despite the recent reforms and soft domestic demand. The countries of the English-speaking Caribbean, except for Trinidad and Tobago, generally benefit from low oil-prices, given that they are net exporters with fiscal sustainability being their main risk ahead.

Figure 2.5. An illustration of the cyclical position of selected Latin American and Caribbean economies

(2015, deviation from trend using HP filter)



Note: The output gap is calculated as a deviation from trend using Hodrick-Prescott (HP) filter ($\lambda=400$). Countries are placed depending on output gap level in 2015 and its projected evolution in 2016. The figure depicts a stylised cycle for presentation purposes, and should not be understood as a country forecast.

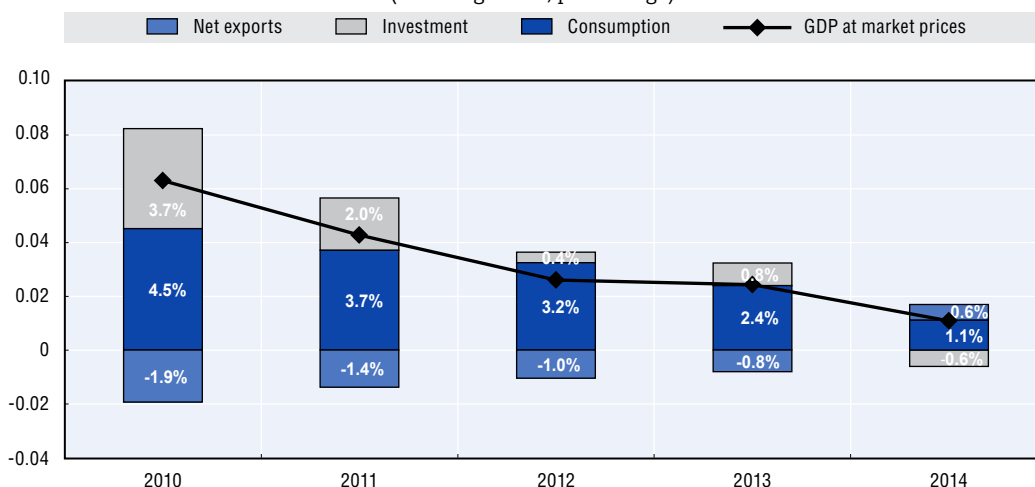
Source: OECD/CAF/ECLAC calculations using OECD (2015), OECD Economic Outlook, <http://dx.doi.org/10.1787/eco-outlook-v2015-1-en>; and IMF (2015), World Economic Outlook Update, www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx.

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Higher and more stable investment is needed in the region

Loss of investment momentum is one of the key factors behind the recent slowdown in Latin American economies (Figure 2.6). While investment was pivotal in contribution to growth in 2010 in the aftermath of the 2009 crises, it had a negative contribution to growth by 2014. Investment tends to be highly procyclical. Investors' expectations have deteriorated over the past few years, affecting investment plans in LAC economies. Two different types of factors may be behind this. First, changes in the global context led to subdued external conditions for Latin America (e.g. softer global demand, lower commodity prices and tighter financial conditions). Second, domestic factors such as policy uncertainty and the passing of reform bills (notably on taxes) in some countries (Argentina, Chile, Colombia, Ecuador, El Salvador and Venezuela) may defer investment plans. While the second group of factors may be short-lived, the first group may be more persistent and influence future investment prospects as agents adapt to less favourable external conditions. The contribution of public investment was not strong enough to compensate for the retrenchment of the private component; actually, in some cases, it even reinforced it.

Figure 2.6. GDP growth in Latin America and demand component's contribution
(annual growth, percentage)



Note: Latin American simple average includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela.

Source: OECD/CAF/ECLAC calculations based on Economic Commission for Latin America and the Caribbean (ECLAC) compilation from official sources.

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So, in spite of the region's heterogeneity, most economies are undergoing a cyclical investment contraction, as shown in Table 2.1 for 11 South American and Central American economies. These contractionary investment cycles have two important features. The available empirical evidence shows that the contraction in investment tends to last significantly longer than those of GDP (on average, around 30% more). More importantly, it also suggests that the amplitude of the contraction in investment is four times that of GDP (Figure 2.7). In addition, these investment cycles tend to be more pronounced in Latin America and the Caribbean than in other regions (see Pérez Caldentey, Titelman and Caldentey, 2014). Between 1990 and 2014, the median cyclical contraction of investment in Latin America was 30% larger than in Asia and around 45% larger than in emerging European and OECD countries.

This volatility poses many policy challenges in the short-term, and can affect trends. The average investment rate in Latin America is just shy of 20% of GDP. This is close to investment rates in more capital-intensive industrial economies and much lower than in other emerging economies. Characteristically, the average conceals a wide dispersion in the region. Low investment rates in the largest economies, Brazil, Mexico and Argentina, weigh on the regional average, while Andean economies and Panama increased investment rates to nearly 27% over the past five years (Figure 2.8).

Table 2.1. Indicators of the contractionary non-residential investment cycle in selected economies in Latin America

(2012-14, quarterly data)

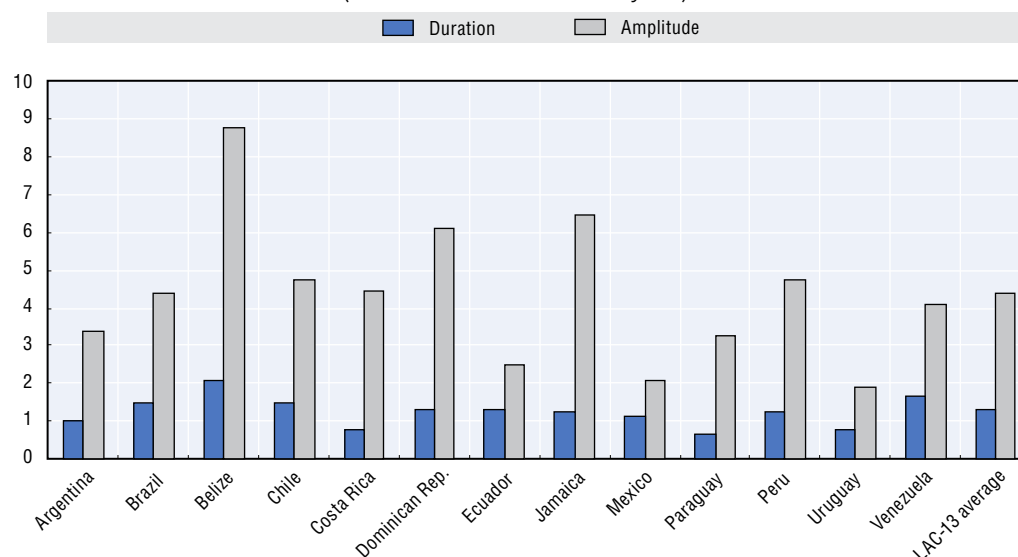
Country	Start of the contractionary investment phase	End of the contractionary investment phase	Quarters of contraction	Amplitude of the contraction (percentage change)
Argentina	2011q4	2012q2	3.0	-12.5
	2014q1	on-going	4.0	-8.1
Bolivia	2012q1	2012q3	3.0	-5.7
Brazil	2012q1	2012q3	3.0	-2.2
	2013q3	on-going	6.0	-6.2
Chile	2013q1	on-going	8.0	-6.2
Peru	2013q3	on-going	6.0	-4.2
Uruguay	2014q2	on-going	3.0	-5.5
Venezuela	2013q1	2014q3	7.0	-29.9
Costa Rica	2014q2	on-going	3.0	-3.9
Dominican Rep.	2012q4	2013q2	3.0	-9.2
Guatemala	2013q4	on-going	5.0	-7.7
Nicaragua	2013q3	2013q4	2.0	-15.4

Note: Colombia and Mexico were analysed, but the methodology, Harding-Pagan (Quarterly Bry-Boschan) Business Cycle Dating procedure, did not identify a common cycle.

Source: Authors' calculations based on ECLAC (2015a), *Economic Survey of Latin America and the Caribbean 2015*.

Figure 2.7. Duration and amplitude of investment contraction cycles in selected economies in Latin America and the Caribbean

(ratio over GDP contraction cycles)

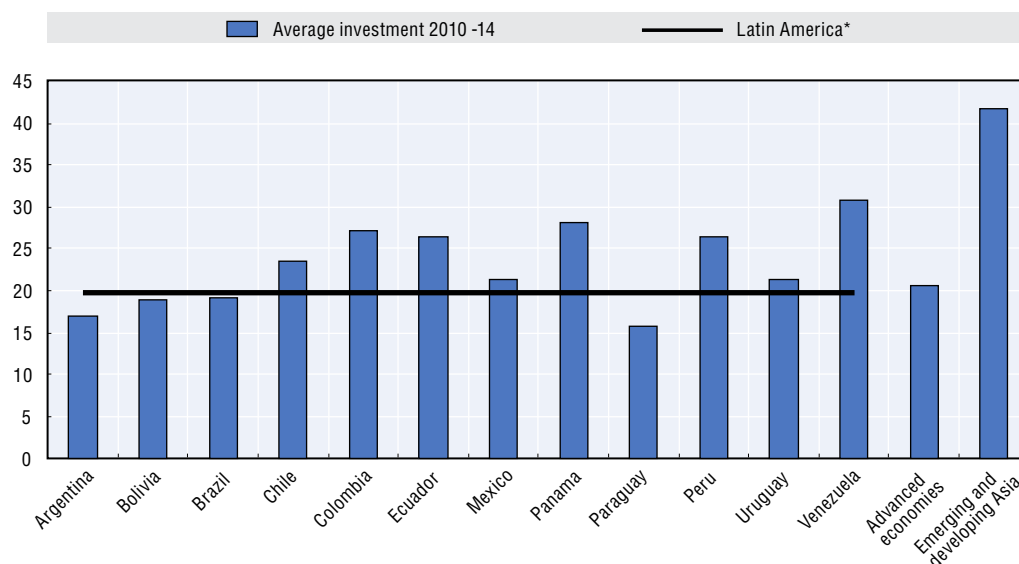


Note: LAC-13 reflects the simple average of the 13 selected economies.

Source: OECD/CAF/ECLAC calculations based on ECLAC (2015a), *Economic Survey of Latin America and the Caribbean 2015*.

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Figure 2.8. Investment rates in selected economies in Latin America and the world
(percentage GDP; average 2010-14)



Note: *Latin America reflects the simple average of the 12 selected economies.

Source: OECD/CAF/ECLAC calculations based on domestic sources for Latin America and IMF (April 2015), *World Economic Outlook*, www.imf.org/external/pubs/ft/weo/2015/01/.

StatLink  <http://dx.doi.org/10.1787/888933291421>

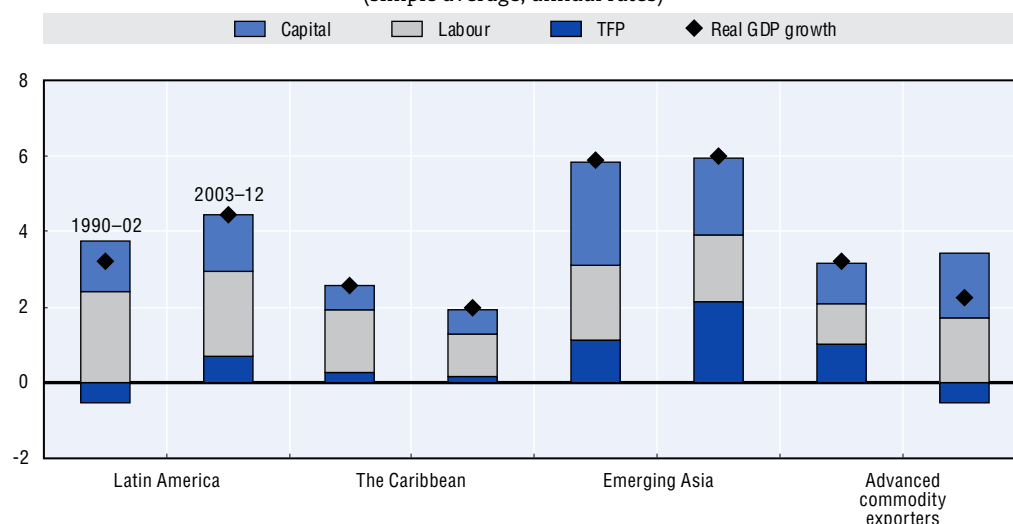
Invigorating investment is, therefore, crucial and should be a policy priority. This would not only foster economic activity during the current slowdown but also increase long-term growth. While cyclical actions may involve public investment, structural reforms may be needed to address the issues that have kept investment rates historically low in many countries.

Low and volatile capital accumulation and weak productivity hinder potential output growth

Strengthening productivity is essential for sustaining long-term growth and development. The scant contribution of productivity to growth in Latin America is at the heart of the growth gap between the region and Asia (IMF, 2013; OECD/CAF/ECLAC, 2013). Many Latin American countries (with the exceptions of Chile, Uruguay and a few Caribbean countries) remain stuck in the so-called “middle-income trap” (see OECD/CAF/ECLAC, 2014 and Chapter 3 of this report).

Figure 2.9 illustrates that the growth gap between Latin American and Caribbean countries compared to emerging Asia during the past decade can largely be attributed to lower total factor productivity (TFP) growth. By contrast, the gap in terms of the contribution of factor accumulation (considering both human and physical capital) between LAC and emerging Asia narrowed between 2003 and 2012. The contractionary cycles highlighted before might be also reversing this catch-up factor, and might be even linked to the former TFP slowdown, posing additional challenges to macroeconomic policy (Ros, 2014).

Figure 2.9. Contribution to real GDP growth in Latin America and the Caribbean and selected groups of economies
(simple average, annual rates)



Note: TFP refers to Total Factor Productivity.

Source: OECD/CAF/ECLAC calculations based on IMF (2013), *Economic and Financial Surveys*, "Regional Economic Outlook Western Hemisphere: Time to Rebuild Policy Space", www.imf.org/external/pubs/ft/reo/2013/whd/eng/pdfwreo0513.pdf.

StatLink <http://dx.doi.org/10.1787/888933291438>

As with investment, productivity tends to experience sharper and longer contractions than GDP. In addition, the expansions in productivity are significantly shorter and less intense than those of GDP, as shown in Table 2.2 for a sample of Latin American economies.

Table 2.2. Expansionary and contractionary phases of productivity relative to GDP in selected economies in Latin America, 1980-2012
(median duration and amplitude; annual data)

Country	Expansion		Contraction	
	Duration	Amplitude	Duration	Amplitude
Argentina	0.7	0.5	1.0	0.9
Bolivia	0.4	0.2	0.9	1.1
Brazil	0.4	0.3	1.7	1.9
Chile	0.5	0.3	1.3	1.0
Costa Rica	0.1	0.0	0.8	0.5
Dominican Republic	0.4	0.3	1.5	1.6
Ecuador	0.2	0.1	1.8	2.3
Guatemala	0.3	0.1	2.4	1.9
Mexico	1.0	0.5	2.5	2.2
Peru	0.9	0.7	1.4	1.8
Uruguay	0.5	0.5	0.9	1.0
Venezuela	0.7	0.5	1.4	1.6
LAC-12 average	0.5	0.3	1.5	1.5

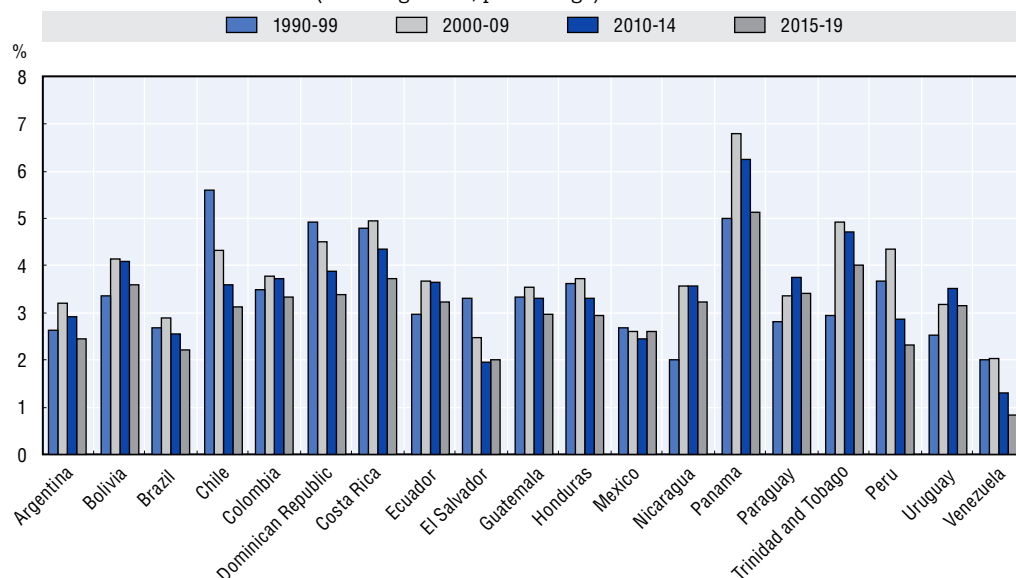
Note: The analysis for Colombia did not identify any cycle in the period analysed.

Source: Authors' calculations based on ECLAC (2015a), *Economic Survey of Latin America and the Caribbean 2015*.

Furthermore, the challenge of fostering productivity in the region goes well beyond managing cyclical volatility. While a lack of innovation and low technology adoption keep LAC countries from expanding their frontiers of production, frictions and deficiencies (infrastructure gaps, logistical deficiencies, low skills, weak institutions, inadequate regulations, among many others) impede an efficient allocation of resources within and between sectors.

The large fraction of the population working in low-productivity informal jobs is an obvious reflection of this challenge. Estimates show that nearly 130 million workers in the LAC region, around 55% of total workers, are informal (Bosch, Melguizo and Pagés, 2013). Labour does not easily mobilise from low-productivity informal jobs to larger and more productive formal firms. Even during expansions, the transition probability from informality to formality remains low. This resource misallocation is costly. Reallocating capital and labour from low-productivity to higher productivity enterprises of the formal sector could increase total factor production in manufacturing between 45% and 127%, in Latin America, depending on countries (Busso, Madrigal and Pagés, 2013). In other words, overcoming low productivity demands structural solutions. Increasing productivity is of utter importance considering that potential growth is losing steam in the region, even if dynamics differ significantly across countries (Figure 2.10).

Figure 2.10. Trends in output growth in selected economies in Latin America
(annual growth, percentage)



Note: Trend output is calculated using a HP filter, $\lambda=400$.

Source: OECD/CAF/ECLAC calculations based on IMF (2015), *World Economic Outlook*, www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx.

StatLink  <http://dx.doi.org/10.1787/888933291448>

Potential growth increased in most countries over the first half of this decade (2010-15) (except in Mexico, some Central American countries and Chile), but it may be subdued over the next five years for reasons other than global economic slowdown and the role of China in this. Some have to do with the aforementioned factor accumulation. Weaker investment, due to tighter global financial conditions and reduced commodity-linked revenues, drives dismal prospects for capital accumulation. Also, labour's contribution to growth is being limited by the inability to increase formal labour participation, to reduce unemployment rates further and by population ageing. Finally, as economies decelerate, productivity growth may decline as factors will be used with lower intensity (IMF, 2013; Powell, 2015).

Most Latin American countries seem to be moving toward lower growth rates, as highlighted in last year's *Latin American Economic Outlook* (OECD/CAF/ECLAC, 2014). Others are experiencing stronger adjustments, but their potential growth prospects are not strong. Moreover, potential growth rates may be smaller than currently estimated. Statistical models incorporate changes in trends very slowly, so the current slowdown may not be captured fully. This may have implications for demand policies, since output gaps may actually be smaller than currently estimated, which reinforces the need for policies to manage structural deficiencies that hamper long-term growth.

Structural reforms to enhance potential growth will be crucial, coupled with sound demand policies

One of the main reasons of the dismal productivity evolution is that macroeconomic management has not been coupled with a productive transformation. In 2011, commodities accounted for up to 60% of goods exports in LAC, up from 40% in 2000. While commodity exports increased, Latin American economies substituted imported goods for locally made goods, contributing to a slowdown in manufacturing. Productive development policies can be a key factor in driving economic modernisation, as shown by emerging Asian economies and OECD countries. Policies must address supply-side bottlenecks through more efficient allocation of resources. For example, the growth of small- and medium-sized enterprises (SMEs) is constrained by both the high costs and difficult access to financing and services, particularly for long-term credit. Public policies that target improvements in access to financial resources – including the growing role of development banks, for SMEs and start-up enterprises – could have a notable transformative impact (see OECD/ECLAC, 2012 and Chapter 5 of this report). Mechanisms that support new enterprises are equally crucial to productive growth, such as, creating new and enhancing existing information portals, which can alleviate current information deficiencies that curtail access to credit solutions for potential entrepreneurs.

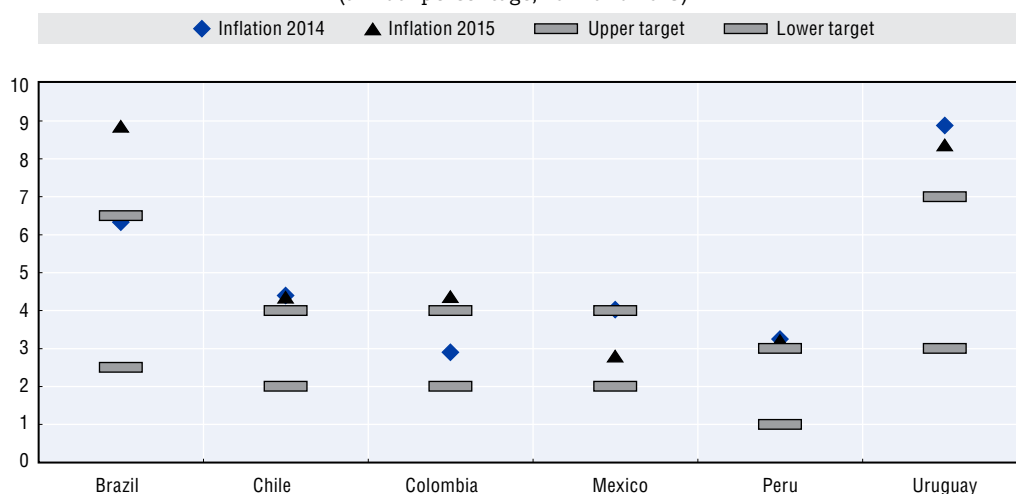
Improvements in infrastructure and logistics are needed to help bolster structural changes and strengthen regional integration. In Latin America, 57% of exports consist of perishables or products that require a high degree of logistics performance, three times more than the OECD average. Elevated transport costs significantly limit regional integration with only 27% of total trade taking place intra-regionally in Latin America, relative to 63% in the European Union and 52% in Asia. Better roads, railways, ports and airports are essential. Solutions can include developing integrated logistics policies; providing modern storage facilities and efficient customs and certification procedures; making better use of information and communication technologies; and promoting competition in transport. (See OECD/CAF/ECLAC, 2013 and Chapter 5 of this report for the issue of infrastructure financing and the potential role of China).

Skills and innovation are also crucial. Latin American firms are three times more likely than south Asian firms are, and 13 times more likely than Pacific Asian firms, to face serious operational problems due to a shortage of human capital. Car and machinery industries are particularly affected. Vocational education and training, as well as the ties between higher education institutions and the private sector, need to be strengthened. Efforts to build human and physical capital must be accompanied by greater innovation within a broad productive development strategy (see OECD/CAF/ECLAC, 2014 and Chapter 5 of this report).

Shifting focus to demand side policies suggests there is a relatively limited room for intervention in the current economic climate. In terms of monetary policy, in 2014-15, the countries generally adopted a countercyclical approach in an attempt to revitalise economic activity (with the exception of Brazil). The countercyclical monetary policy

stance has been made possible by relatively low inflation rates. Recent data suggest that the scope for monetary policy is shrinking. In other words, the policy dilemma arising in some Latin American economies is that of negative output gaps and inflation rates that are close to (or above) targets. Price dynamics have remained contained in most countries in the region. Inflation-targeting regimes have been helpful to anchor expectations. Nonetheless, though inflation is getting closer to targets in some countries owing to recent currency depreciation and supply shocks, it is well beyond the target in others (Brazil and Uruguay) (Figure 2.11). In addition, countries with dollarised financial systems may face additional constraints to cut rates in the face of rate increases by the FED. Exchange rates have weakened in countries with floating regimes (Figure 2.12). This is not necessarily a bad thing. It increases competitiveness and is helping rebalance external accounts, but with a short-term cost to inflation. Therefore, the pass-through to inflation – modest so far – and expectations, anchored within targets in most countries, should be closely monitored.

Figure 2.11. Inflation rate and targets in selected economies in Latin America
(annual percentage, 2014 and 2015)

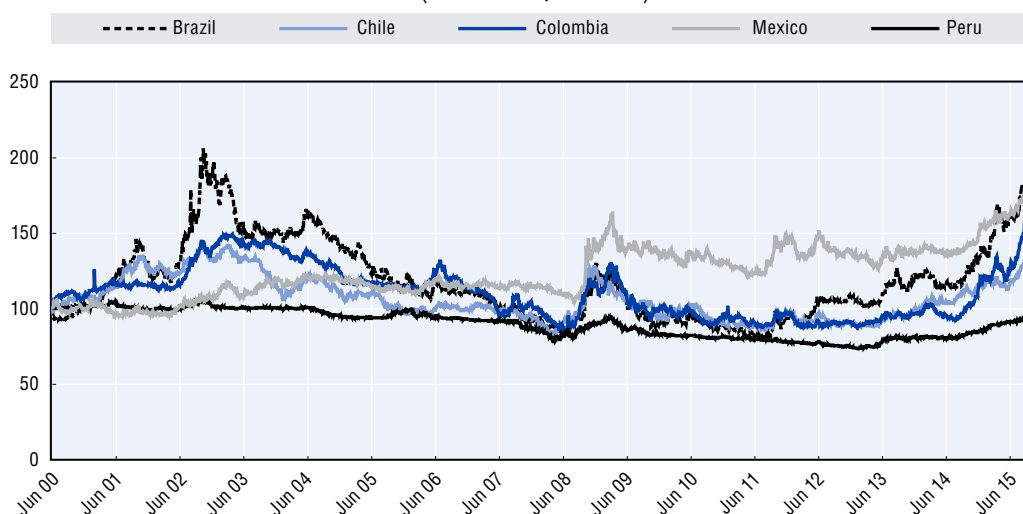


Note: Data for 2015 from the IMF.

Source: OECD/CAF/ECLAC calculations based on IMF (2015), *World Economic Outlook*, www.imf.org/external/pubs/ft/weo/2015/02/ and the central banks of selected countries.

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Figure 2.12. Exchange rate in relation to USD in selected economies in Latin America
(index 100 = June 2000)



Source: OECD/CAF/ECLAC calculations based on Datastream.

StatLink <http://dx.doi.org/10.1787/888933291460>

Once the FED starts hiking rates, Latin American central banks will face the challenge of a likely decoupling of interest rates. Central banks in more dollarised economies are taking steps to de-dollarise credit and intervene to smooth the transition to a weaker rate. Exchange rate volatility could affect financial markets and have an impact on firms' investment decisions. To preserve financial stability, central banks might intervene to reduce exchange rate volatility. Such financial stability considerations may somewhat limit the range of lower interest rates to support activity (see Box 2.3). Countries with pegs or fixed rates that use currencies as nominal anchors are facing challenges to rebalance their external accounts; some of them are resorting to rationing or imposing barriers to imports to avoid foreign exchange asset depletion (Argentina, Ecuador and Venezuela). This is taking a toll on activity while undermining competitiveness.

**Box 2.3. Financial stability, exchange rates and monetary policy:
Still a trade-off?**

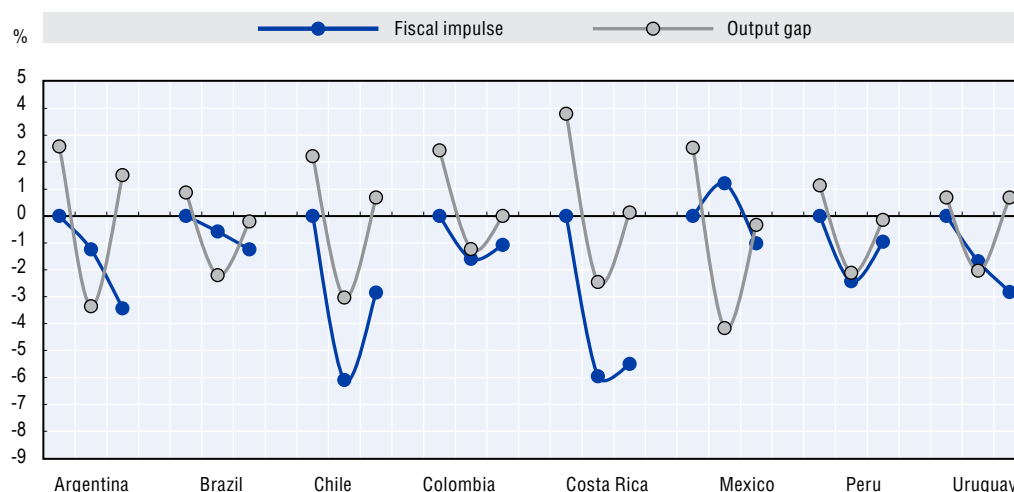
Most countries with inflation-targeting regimes in Latin America have allowed sharp currency depreciations since the “taper tantrum” in the summer of 2013. Any interventions were to reduce volatility and smooth the transition to weaker exchange rates, not to curb the depreciation itself. This allowed central banks to focus their interest rate policy decisions on cyclical considerations. However, liability dollarisation may affect the tolerance of central banks to depreciate currency. When large fractions of corporate, sovereign or banking sector debts are denominated in foreign currencies, large depreciations lead to currency mismatches causing firms and banks to fail. Central banks may be reluctant to let currencies freely float (Calvo and Reinhart, 2002; Caballero, Cowan and Kearns, 2005; Levy Yeyati, Sturzenegger and Reggio, 2006).

Banking credit dollarisation has declined over the past 15 years, but it remains high enough to be a cause of concern in certain countries, such as Peru or Uruguay. In fact, after 2013, the monetary policy of the Central Reserve Bank of Peru (BCRP) focused on the use of reserve requirements to reduce financial dollarisation and currency volatility. Measures included differential reserve requirements on the local currency (6.5%) and foreign currency deposits (70%), additional provisioning liquidity and capital requirements for foreign currency loans. Between December 2012 and May 2015, banking credit dollarisation reached 35% from 43%.

De-dollarising is not risk-free either. Fulfilling liquidity regulations to reduce foreign exchange credit imposes costs on banks. Non-speculative hedging will also be discouraged and this may prevent the government from further issuing public debt in local currency they are unable to hedge.

Fiscal balances have deteriorated in most countries owing to lower growth and a setback in commodity-related revenues. Countries with low public debt (and therefore more readily available financing) have reacted to the slowdown with more active fiscal policies (e.g. Chile, Peru). In countries with higher levels of public debt or those confronting financing difficulties, weaker public accounts have prompted announcements of future budget cuts (Brazil, Costa Rica, Ecuador, El Salvador). Spending containment should take into account the need to protect investment and avoid vicious cycles whereby fiscal over-adjustments strangle growth and tax revenues, ultimately widening the deficit and increasing the public debt burden. In general, despite sounder fiscal frameworks, fiscal balances are weaker now than before the financial crisis, a sign of a lower resilience in case the slowdown takes longer or even deepens (Figure 2.13).

Figure 2.13. Fiscal impulse and output gap in selected economies in Latin America
(2007, 2009 and 2013; percentage and percentage points of GDP)



Note: The cyclically adjusted primary fiscal balance was set to 0 in 2007.

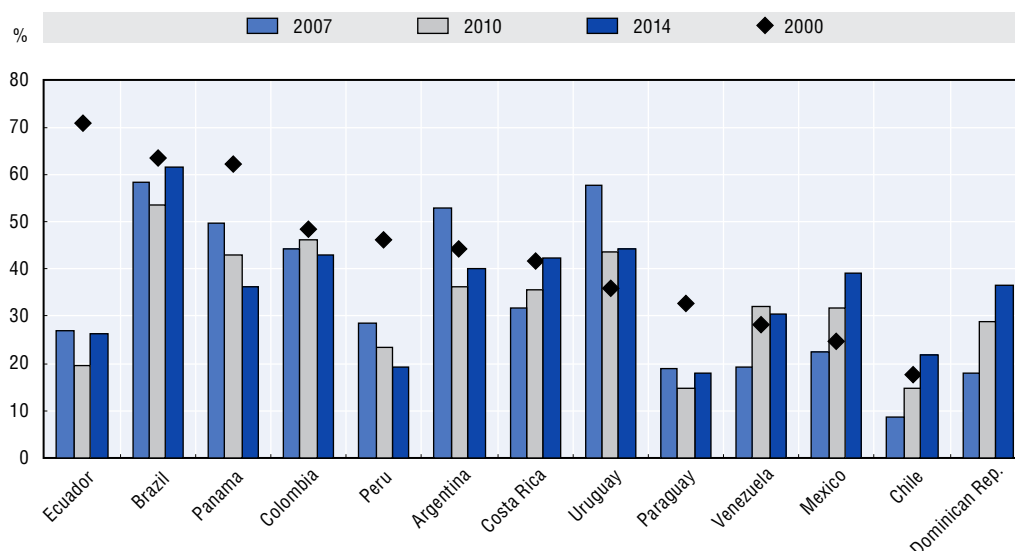
Source: OECD/CAF/ECLAC calculations based on Alberola et al. (2015), "Fiscal policy and the cycle in Latin America: The role of financial conditions and fiscal rules", Banco de España.

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This lower growth scenario and deteriorated fiscal balances have prompted slight increases in public debt ratios as a percentage of GDP in 2014-15 in the majority of Latin American economies. Countries had been on paths to decrease their debt since the beginning of the millennium. Panama, Peru and Ecuador managed to decrease their debt as a percentage of GDP by over 20 percentage points. Nevertheless, this positive debt reduction path could be at peril. Since 2010, which marked the highest growth after the crisis for the region, debt levels started to increase in most countries. The composition of debt has also fluctuated in the last 14 years. In 2000 more than 72% of total debt was external and by 2014, it was reduced to around 54%, making countries less vulnerable to currency depreciations. The level of debt among Latin American economies varies widely. Debt ratios as a percentage of GDP vary, with Brazil at 62% to Peru or Paraguay at less than 20% of GDP (see Figure 2.14).

Beyond levels of spending and revenues, governments have to improve spending efficiency searching a better design of social policies so that governments can provide public goods to enhance productivity and guarantee equality. For example, low state capacities may hinder the effectiveness of countercyclical policies. A clear example of this is the case of Peru, where the inability of local governments to advance investment plans has actually reinforced the cycle in spite of central government's efforts to increase public investment. Similarly, in Colombia, local governments are facing difficulties to spend royalties, limiting the impact of countercyclical actions by the central government. Public-private partnerships could also play a crucial role in the region to meet the challenge of reducing the infrastructure gap in a context of lower fiscal revenues and higher costs of financing.

Figure 2.14. Public debt in selected economies in Latin America
(percentage of GDP)



Source: OECD/CAF/ECLAC calculations based on ECLAC (2015b), *Fiscal Panorama of Latin America and the Caribbean 2015: Policy Space and Dilemmas*.

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Box 2.4. Fiscal rules, stabilisation and investment in Latin America. *The times they are a-changin'?*

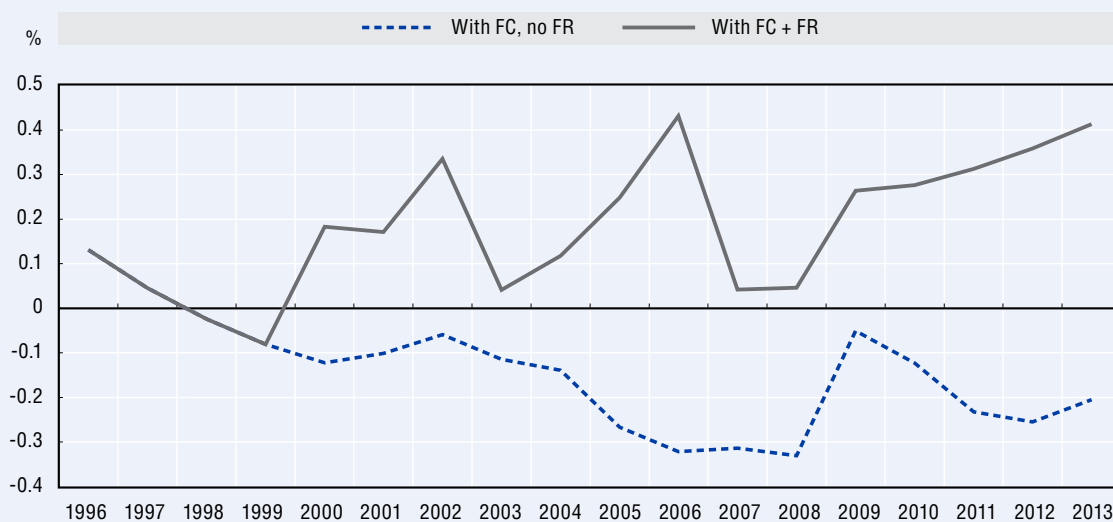
Macroeconomic management has improved considerably in the region in the last two decades, based on sounder monetary and fiscal frameworks. A particular case has been the spread, since the early 2000s, of fiscal rules. According to the IMF, nine countries in the region are implementing a fiscal rule (albeit different types): Brazil, Chile, Colombia, Costa Rica, Ecuador, Jamaica, Mexico, Panama and Peru. These rules have usually followed three main objectives, namely: ensuring debt sustainability; strengthening stabilisation and improving the expenditure composition (investment). This box focuses on the last two.

Fiscal policy in Latin America has been traditionally procyclical. Countries in the region, as seen in other emerging regions, tended to spend too much in good times and then were forced to save during economic downturns. These policies exacerbate the economic cycle. Latin American dependence on external financing and the recurrence of sudden stops may have made the region more prone to this behaviour. Nevertheless, since the 2009 financial crisis, things may be changing. Fiscal policy has become less procyclical as the relevance of financial restrictions has diminished; economies with fiscal rules have shown a more countercyclical behaviour (see Alberola et al., 2015). As Figure 2.15 explains, countries under a fiscal rule (represented by the grey line) are less procyclical than those without such a rule (blue line). The former even display episodes of countercyclical fiscal policy, a result traditionally reserved for developed economies. Nevertheless, despite sounder fiscal frameworks, fiscal balances are weaker now than before the financial crisis, raising doubts of resilience in case the slowdown becomes long term or deepens. In response to the crisis, some countries in the region approved fiscal stimulus, but expenditure packages, mostly current spending, are not flexible in the recovery (see Celasun et al., 2015; or Powell, 2015). In other words, few economies have applied an exit strategy from the stimulus and the region is far from the levels of fiscal space seen before the crisis.

Box 2.4. Fiscal rules, stabilisation and investment in Latin America.
The times they are a-changin'? (cont.)

Fiscal rules also aim to improve expenditure composition. A well-documented bias in budgeting results in a volatile and low public investment, notably in infrastructure in most emerging regions. Latin America is no exception, exhibiting investment rates (both public and private) far below the rates observed in emerging Asia or those needed to close the gaps with more developed regions. In this respect, exit strategies should not only reconstruct fiscal space, but also develop fiscal frameworks more favourable to public infrastructure (see Carranza, Daude and Melguizo, 2014 for an analysis for Latin America, and the Economic Survey of ECLAC, 2015a). A good practice is Peru's, which combined a deficit ceiling for the non-financial sector and a cap in the growth rate of current expenditures to allow for a significant increase in public investment.

Figure 2.15. Fiscal stance in selected economies in Latin America
 (fiscal impulse; rolling-regression on seven-year periods)



Note: Latin America refers to Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay, 1990-2013, based on data availability. The fiscal impulse is defined as the variation of the structural primary fiscal balance to the economic cycle.

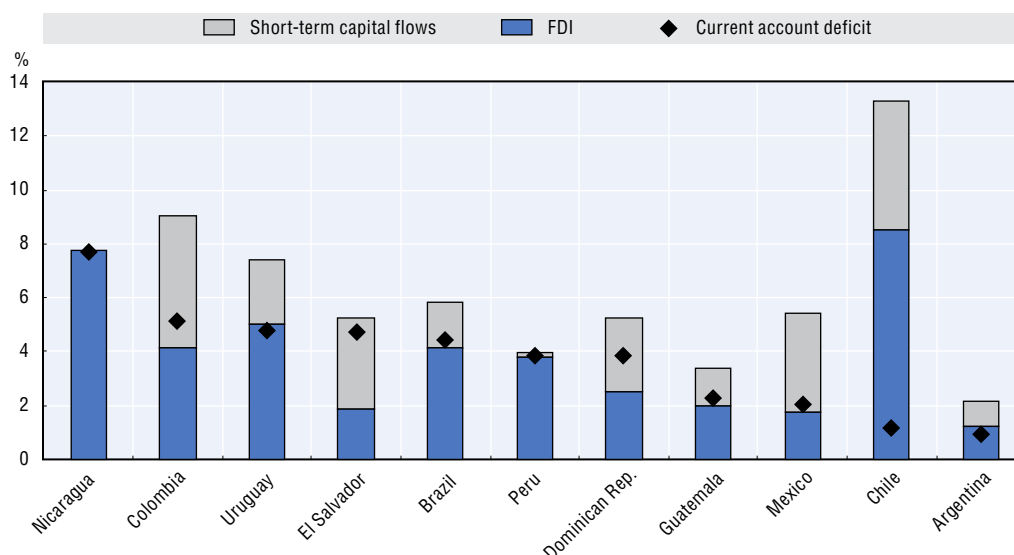
Fiscal Stance is controlled for Financing Conditions and differentiates between countries with (With FC+FR) and without Fiscal Rules (with FC, no FR).

Source: Alberola, E. et al (2015), "Fiscal policy and the cycle in Latin America: The role of financial conditions and fiscal rules", Banco de España.

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On the external front, current account deficits widened in most countries in 2014 as trade results continued to deteriorate. While Central American countries benefited from lower energy prices, countries like Nicaragua and Panama still display some of the largest current account deficits in the region (between 8% and 10% of GDP). Commodity exporters in South America exhibited the largest setbacks, with Brazil, Colombia and Peru moving to nearly 5% of GDP. Net energy exporters such as Ecuador, Bolivia and Venezuela also experienced important losses in trade as oil prices plunged. Chile, on the other hand, started to see some improvements (Figure 2.16).

Figure 2.16. Current account deficit and capital flows in selected economies in Latin America
(percentage GDP, 2014)



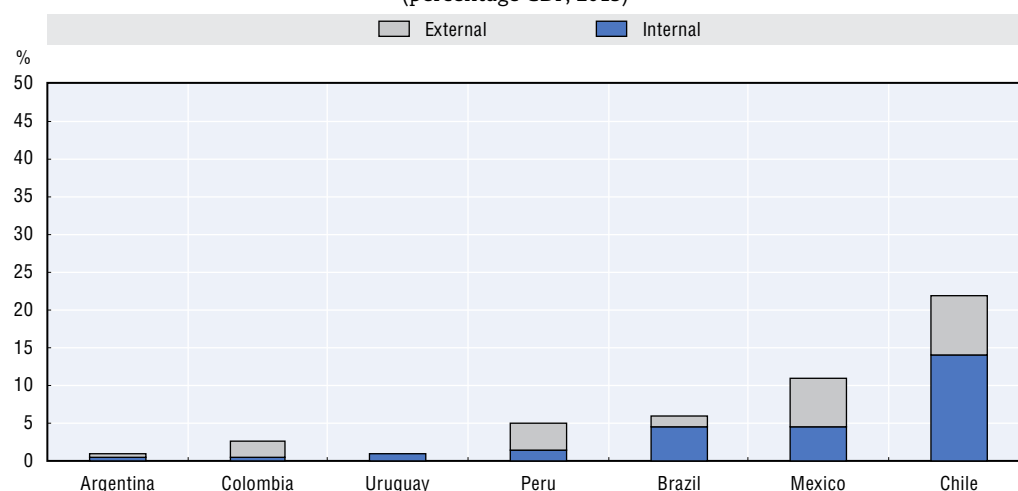
Source: OECD/CAF/ECLAC calculations using IMF Balance of Payments statistics and local sources.
StatLink  <http://dx.doi.org/10.1787/888933291506>

Current account deficits are still financed by FDI in most countries, although some countries, particularly in Central America and the Caribbean, rely on banking flows. As the commodity cycle comes to an end, FDI flows directed to primary sectors are slowing down, which has been a clear trend in Colombia, Peru and Brazil. Available foreign-exchange reserves should be used to buffer against further deterioration of external conditions in most countries.

Currency depreciation is expected to help expenditure switching and improve current account balances over the next two or three years, although it is unlikely that the region will attain the large trade surpluses of the last decade. Curbing deficits will become important as the cost of external financing is expected to increase. Countries with less flexible regimes are using external assets and controls to defend their currencies. This strategy may be harder to sustain in the face of a persistent change in the terms of trade, necessitating some kind of future currency adjustment.

Private sector indebtedness is another factor to monitor. Private debt levels remain relatively low across the region (see Figure 2.17). Nevertheless, they have increased considerably in the current decade, and some companies could be vulnerable to balance-sheet risks given local currency depreciation. Even if the extent of currency risk coverage by firms in the region is unclear (see Powell, 2014), problems associated with currency mismatches have not arisen after the sharp depreciations in some countries. So, firms with dollarised liabilities may have a natural coverage (exporters) or some other form (FX derivatives or assets in USD).

Figure 2.17. **Non-financial corporate sector securitised debt in selected economies in Latin America**
(percentage GDP, 2013)



Source: OECD/CAF/ECLAC calculations based on official sources.

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The effects of China's demand shocks on Latin America: Much ado about something?

Economic ties between China and Latin America have strengthened since 2000. This trend will continue in novel ways in the future. For this reason, this section explores the extent in which output in China fluctuates with output in Latin America.

Growth in China directly affects Latin American countries via trade and indirectly through several variables as discussed below, which are captured in the model, including commodity prices. The analysis is based on the results of a multi-regional global vector autoregressive model that estimates the inter-relations between macroeconomic variables in Latin American countries and trading partners outside the region such as Europe, the United States and China. The technical aspects of the model are described in Box 2.5.

Box 2.5. Global Vector Autoregressive (VAR) model for Latin America

This model forecasts the main macroeconomic variables and assesses the impact of global shocks for a selected number of Latin American countries.

It incorporates the interdependencies between domestic variables and their linkage with international variables, considering trade patterns across countries. The model follows Pesaran and Smith (2006) and later developments (e.g. Smith and Galesi, 2014), with some additional refinements.

First, the data are adjusted to control for regime changes that likely alter the data generating process. The method assigns more weight to recent regimes that may produce better predictors than past regimes. Exploiting the historical data in this way generates forecasts with more plausible trends. This is crucial for Latin American countries. For example, past hyperinflation episodes may introduce an upward bias to the trend and volatility of nominal variables that are unlikely under the current regimes, characterised by lower and more stable inflation.

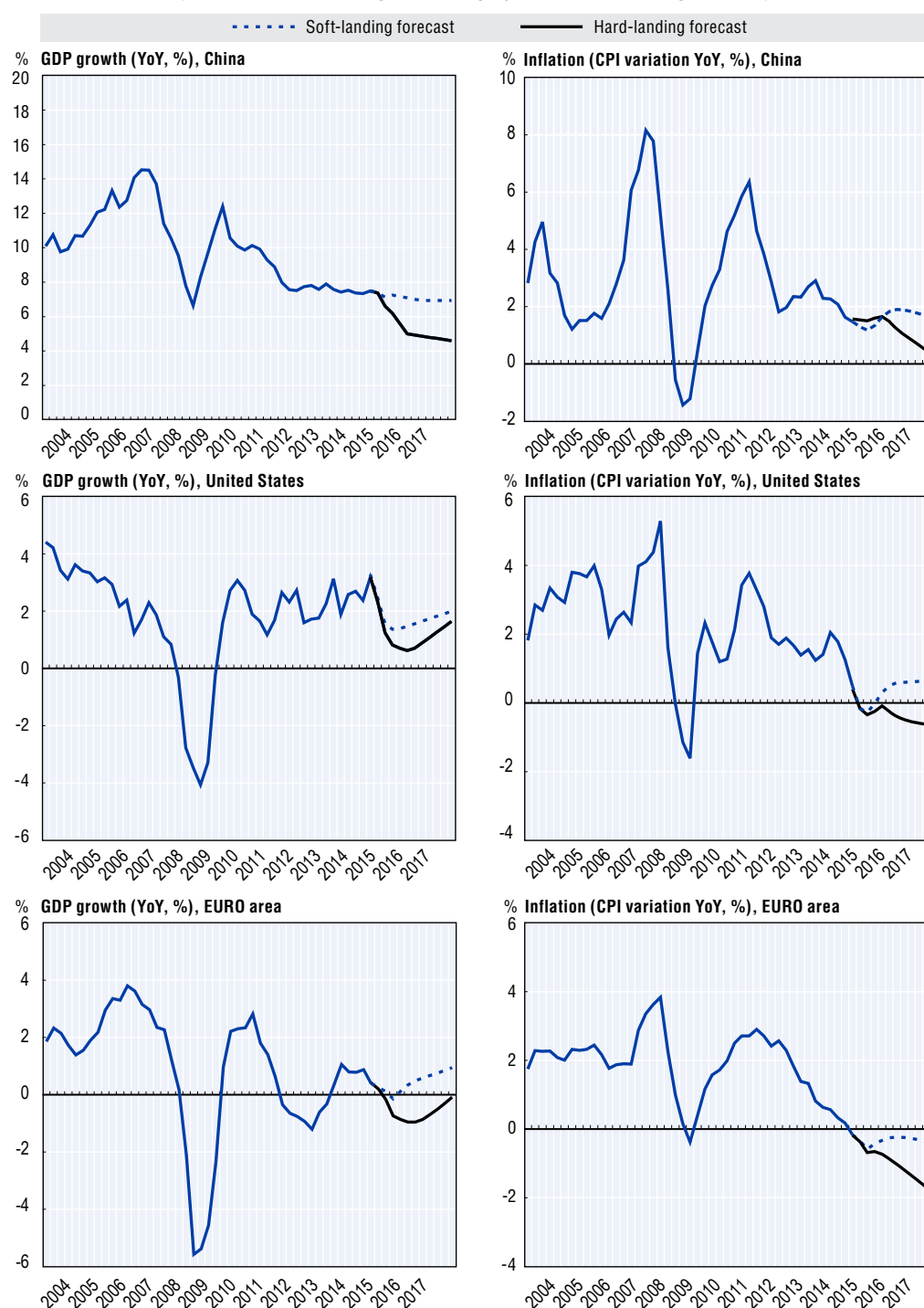
Second, the model is regressed in first differences without an error correction term. This allows the data to revert to the mean and the possibility to reconstruct the variables in levels.

The model is fed with quarterly data between Q1 1979 and Q4 2014. The variables included are: GDP growth; inflation; exchange rates; interest rates (long and short); and commodity prices (energy, raw materials and metals). Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, Venezuela (depending on data availability), the United States, the European Union countries and China are included. The data are from Haver Analytics, Bloomberg and national statistics sources.

The implications of a baseline scenario of a soft landing in China on Latin American countries versus that of a hard landing are analysed. In the soft-landing scenario, China gradually moves to lower growth rates of about 6.7% between 2016 and 2018 (as explained in Chen and He, 2015). In the hard-landing scenario, China's growth slows to 5.5% by 2015 and further drops to 4.3% by 2018. The data in China are conditioned to follow such growth paths, then simulated and compared. The results are depicted in Figures 2.18 to 2.22.

Figure 2.18. GDP growth and inflation rates: Hard-landing versus a soft-landing scenario in China

(blue line: soft-landing forecast; grey line: hard-landing forecast)

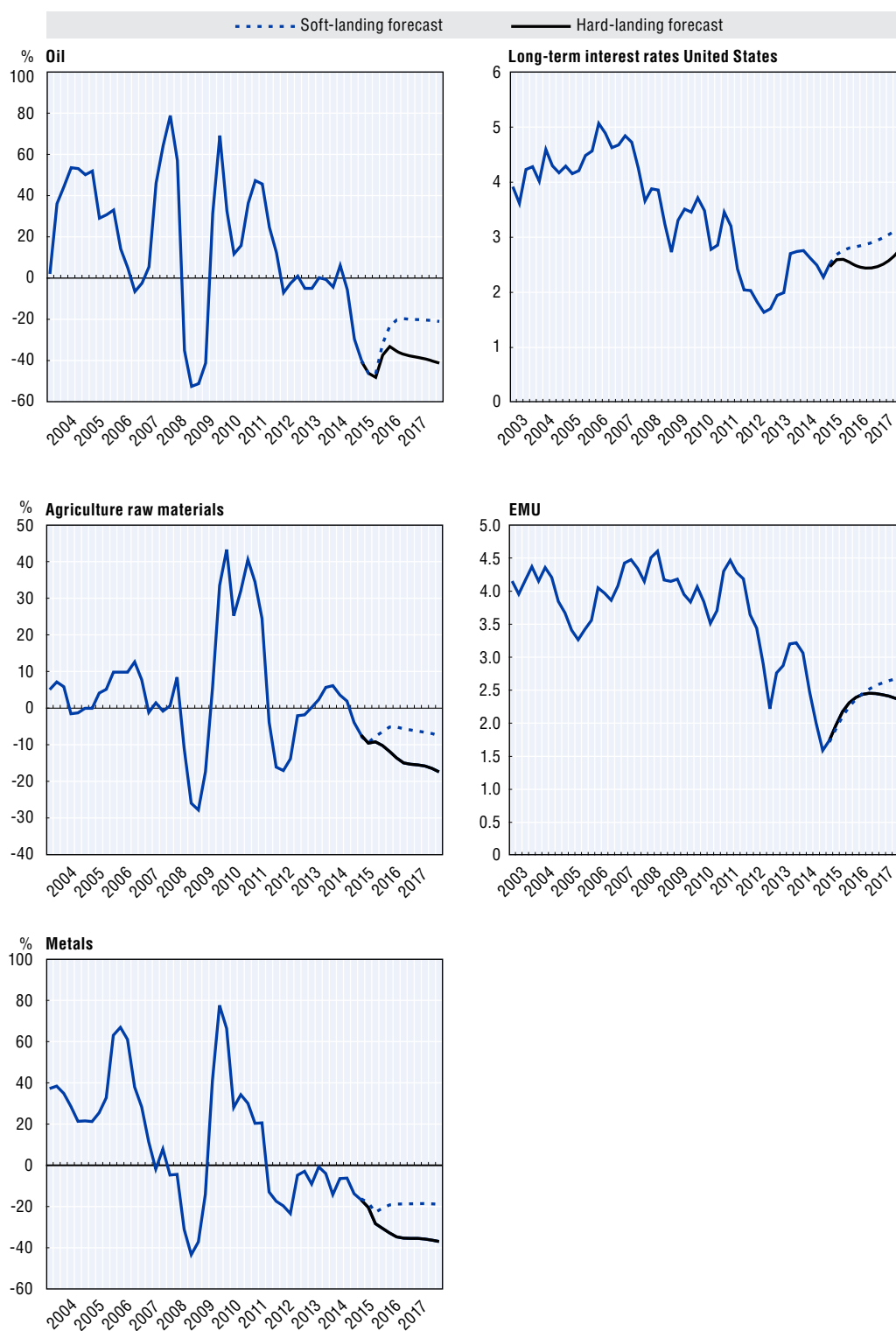


Source: OECD/CAF/ECLAC calculations.

StatLink  <http://dx.doi.org/10.1787/888933291524>

Figure 2.19. **Commodity prices and interest rates: Hard-landing versus a soft-landing scenario in China**

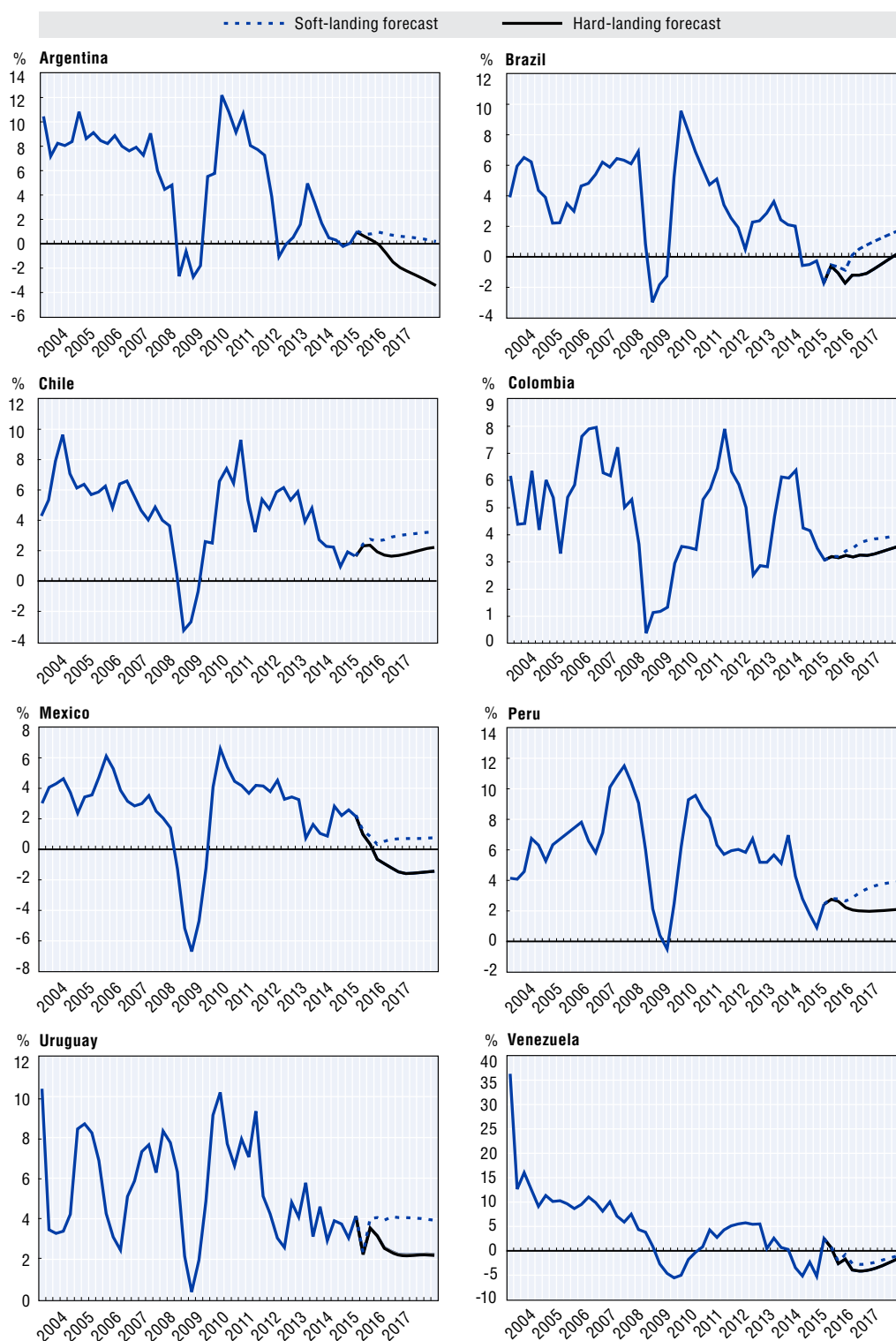
(blue line: soft-landing forecast; grey line: hard-landing forecast)



Source: OECD/CAF/ECLAC calculations.

StatLink  <http://dx.doi.org/10.1787/888933291531>

Figure 2.20. GDP growth in selected Latin American countries: Hard-landing versus a soft-landing scenario in China
(blue line: soft-landing forecast; grey line: hard-landing forecast)

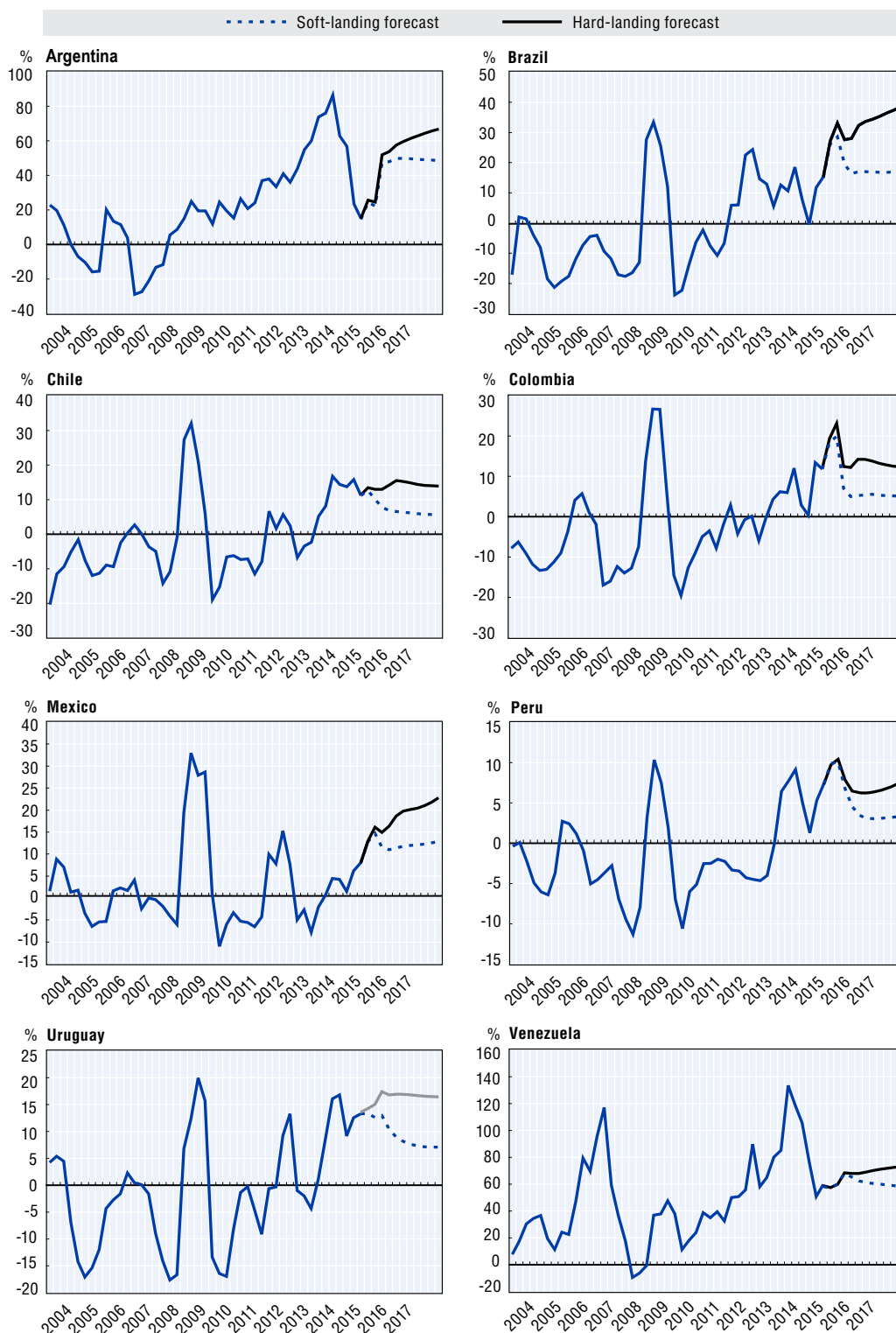


Source: OECD/CAF/ECLAC calculations.

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Figure 2.21. Exchange rates in selected Latin American countries: Hard-landing versus a soft-landing scenario in China

(blue line: soft-landing forecast; grey line: hard-landing forecast)

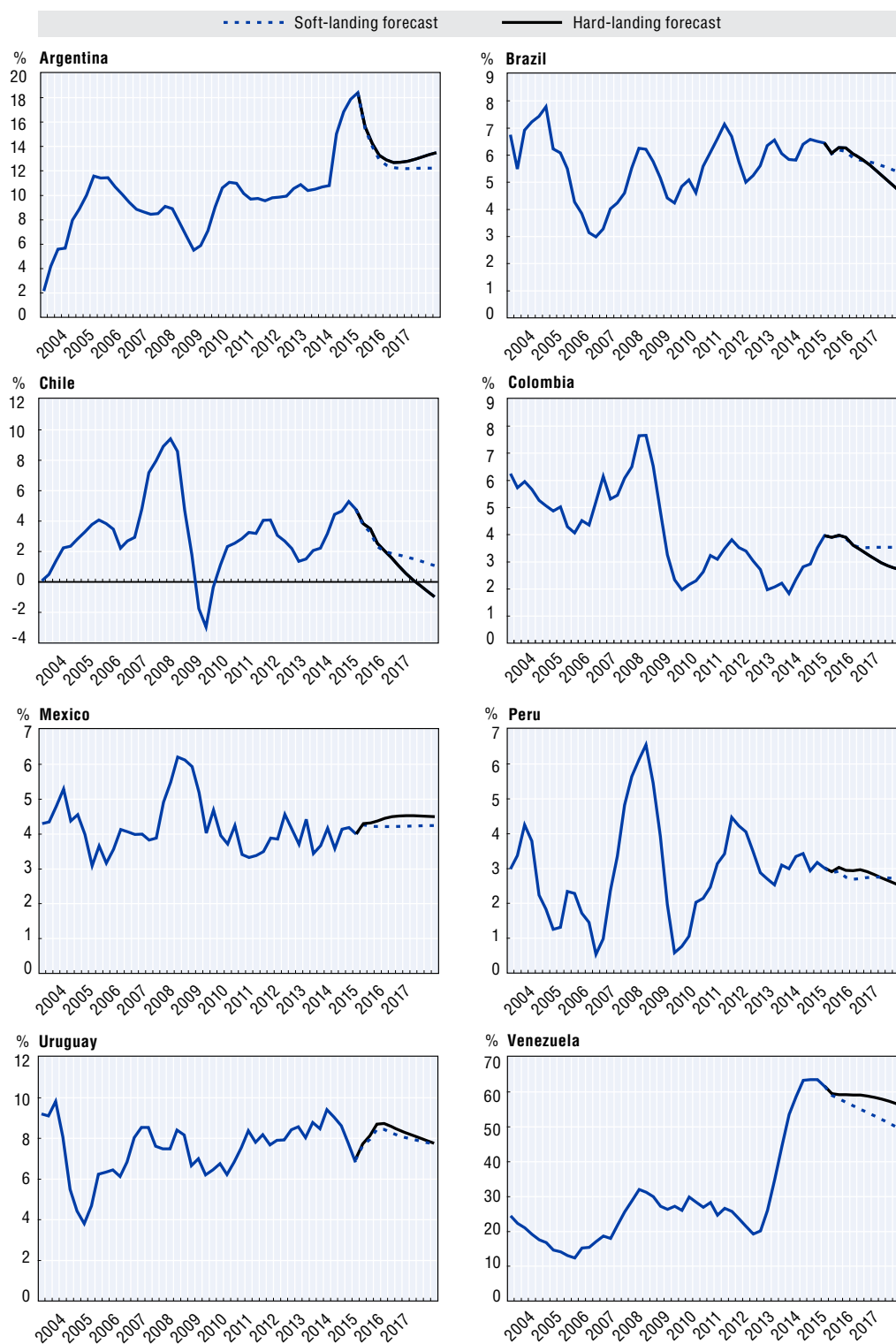


Source: OECD/CAF/ECLAC calculations.

StatLink  <http://dx.doi.org/10.1787/888933291556>

Figure 2.22. Inflation in selected Latin American countries: Hard-landing versus a soft-landing scenario in China

(blue line: soft-landing forecast; grey line: hard-landing forecast)



Source: OECD/CAF/ECLAC calculations.

StatLink  <http://dx.doi.org/10.1787/888933291567>

According to the model, changes in output in China do have an important and persistent impact in the LAC region. In terms of global effects, slower growth in China would affect advanced economies, but to a larger degree in Europe than in the United States, which is a more closed economy. In a context of sluggish growth and inflation, interest rates would take longer to adjust upwards in advanced economies. Commodity prices would drop at a faster pace.

The implications of this scenario for Latin America are also clear, projecting a longer and more difficult recovery time than in the advanced economies considered. In some cases, the empirical exercise suggests that growth would stall, particularly in Brazil, Argentina and Venezuela. Even Mexico does not seem to fare well in this context. This, of course, does not take into account policies that governments may undertake to reignite growth, which are the focus of this edition of the *Latin American Economic Outlook*. Therefore, they could be considered as the “no-policy change” scenarios. All countries would have a steeper depreciation, but some countries may benefit more from it than others in terms of output. Finally, inflation does not appear to be significantly affected, since the effect of weaker output compensates for the depreciation.

Actions for the short term and beyond

The LAC region is likely to continue recording modest economic growth rates in the near future, but is far from collapsing as in the aftermath of external shocks as in previous decades. It is facing both domestic and external headwinds, which will make progress more difficult (notably because of the weakness of demand for commodities and China’s slowdown). Thus, governments must focus on ensuring their economies are able to respond to increasingly adverse conditions.

In the short term, governments must rebuild the financial shield by expanding fiscal space and enhancing the credibility of central banks to apply countercyclical management strategies for monetary policy. As highlighted in previous editions of the *Latin American Economic Outlook*, the measures required to expand the fiscal space will depend on each country’s initial conditions. In some countries, including some Central American countries, the Andean region and Mexico, the authorities should focus their efforts on strengthening their tax burdens (OECD/ECLAC/CIAT/IDB, 2015). South American governments with more consolidated income structures should focus on curbing increases in current public spending, strengthening investments in physical and human capital and developing automatic stabilisers. The Caribbean countries, meanwhile, will need to deal with the recurring problem of public-debt sustainability before they can expand their fiscal space. They also need to communicate effectively the conditions in which they will make use of their macro-prudential frameworks and stabilisers.

Without significant intervention, the major challenges posed by lower growth rates will remain for the long term, however. Increasing evidence suggests that potential growth is lower than expected, closer to 3%, or lower, than the 5% that characterised the mid-2000s. Hence, it is time for the region to embark on a series of ambitious, bold reforms. Productivity and innovation improvements, production diversification, policies to reduce infrastructure gaps, investment in human capital and formal job creation are all vital reforms.

Latin America’s productivity in recent years has been disappointing compared with that of OECD countries and other emerging economies. Stronger productivity should lead to growth that is more inclusive, which will lead to reductions in inequality and poverty. Poverty reduction is crucial as 28% of the population (164 million Latin Americans) live

below the poverty threshold (ECLAC, 2015a). The policies needed to achieve these two goals of increasing economic growth and reducing poverty are not incompatible.

As each government establishes its reform programmes, it can deliver policies that take into account the heterogeneity of Latin America, the geographic advantages of close inter- and intra-regional trade links and the benefits of a strong, stable development partner with multiple global trade links and massive purchasing power such as China. The country could be a positive “game changer” comprehensively redrawing the external and internal environment of LAC. After the first phase of the so-called Shifting Wealth (OECD, 2010), characterised by a very dynamic trade association, it is time to redefine the Latin America-China relationship. The region’s wellbeing, especially over the long term, will depend on whether governments make the most of this opportunity and respond effectively to the challenges it poses.

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Chapter 3

Shifting wealth, China's new normal and Latin America

This chapter analyses the role of China and Latin America in the process of shifting wealth. The first section discusses how the integration of China into the global economy shaped the initial phase of shifting wealth, in which Latin America was mostly a spectator. The second section analyses the foreseeable evolution of this process, namely shifting wealth II, in light of several structural and policy trends unfolding in China (e.g. demographic ageing, the rise of the middle class and the structural transformation process). The third section explores the relationship of both China and Latin America with the “middle-income trap”, through a discriminant analysis that highlights the characteristics that separates them from the countries that escaped the trap. The chapter concludes with a summary of key findings.

Box 3.1. Shifting wealth

Shifting wealth is the process through which the world's economic centre of gravity has shifted away from the OECD and towards emerging economies. The main catalyst of this process has been the strong economic growth registered in Asia, particularly in China and India. Yet, the phenomenon has spanned over other emerging regions as well.

Source: OECD (2010).

The role of China and Latin America in shifting wealth I

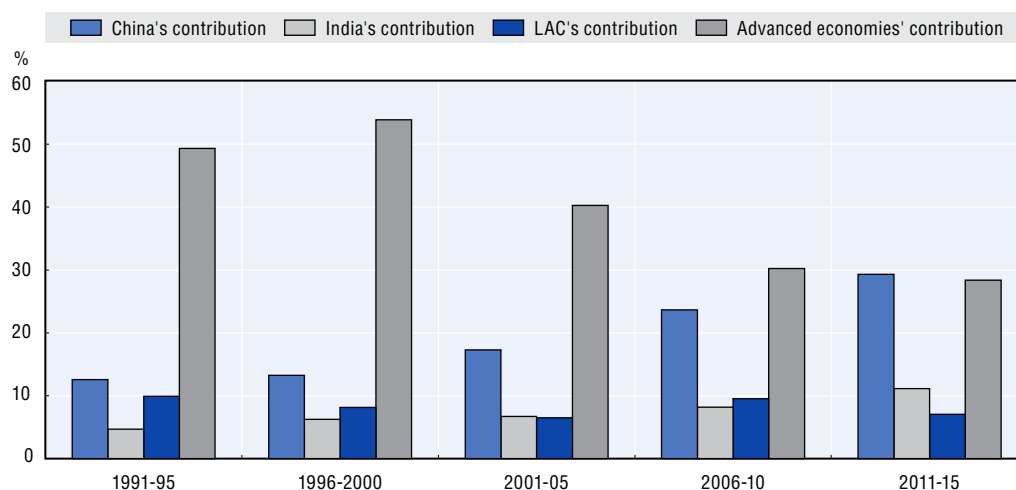
The initial period of shifting wealth was characterised by robust growth in China, which fuelled an increasing contribution to global growth and rapid income convergence with advanced economies. These trends rested on China's strong policy initiative to better integrate with the global economy. In this process, China has become one of the most important providers of manufactured products to the rest of the world suggesting their policies have succeeded.

Contribution to global growth

Growth dynamics in China have been a fundamental feature of the initial phase of shifting wealth. China's contribution to world growth has only increased over time, becoming more important after 2001, and reaching its height with the arrival of the global financial crisis. During the 1990s, China's average contribution to global gross domestic product (GDP) growth was almost 0.4 percentage points per year. This annual rate jumped to 0.75 percentage points between 2001 and 2008; between 2009 and 2014 it increased further to an annual average contribution of 0.8 percentage points. This contribution to global growth is even more striking stated as GDP levels: in 1991, the initial stage of shifting wealth, China added to the world economy the GDP size of Colombia. By 2001, this contribution reached the size of Argentina. By 2005, it had reached the size of both Argentina and Chile. And by 2013, this contribution reached the size of Argentina, Chile and Bolivia (calculated from IMF, 2015). The growth differential that the country has maintained with major economies, both advanced and emerging, is a critical force behind a new geography of growth (Quah, 2011), with the centre of gravity of the world economy shifting eastwards.

In stark contrast to China's performance, Latin America shows an increasingly marginal contribution to global growth. As Figure 3.1 highlights, both areas start with a relatively similar contribution at the beginning of shifting wealth (i.e. 11% in China and 8% in Latin America during the 1991-95 interval). From this point onwards, China has increased its contribution, reaching a maximum of 29% in recent years. In contrast, Latin America increased its contribution moderately during the 2006-10 period (9%), significantly decreasing to 6% during the 2011-15 period. Especially during the 2010s, Latin America took a back seat in shifting wealth, while Asia, particularly China, determined the process.

Figure 3.1. Contribution to global growth, by areas
(percentage)



Note: Latin America covers 32 economies from Latin America and the Caribbean. The advanced economies category includes 37 countries.

Source: OECD/CAF/ECLAC calculations based on IMF, 2015, World Economic Outlook database, www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx.

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Progress in income convergence

The superior rate of growth registered in China for over two decades also contributed to a significant progress in income convergence with advanced economies and the rise of an emergent, yet vulnerable, middle class. Although coming from very low levels, per capita income in China has grown much faster than most of the economies in the emerging world. Specifically, China's per capita income multiplied by more than four times, jumping from USD 2 500 in 1995 to USD 11 525 in 2013.¹ This is far above rates posted by other key emerging economies such as India (153%), Indonesia (60%), Russia (95%) or South Africa (28%) in the same period. It is also above the rates found in Latin America, with Panama (113%), Dominican Republic (90%), Peru (83%) and Chile (70%) registering the highest relative increases during the 1995-2013 interval. This dynamism in income convergence is thought to be a marker in an early phase of a “catch-up cycle,” characterised by robust investment accumulation and economic growth, as well as rapid structural change (see Box 3.2).

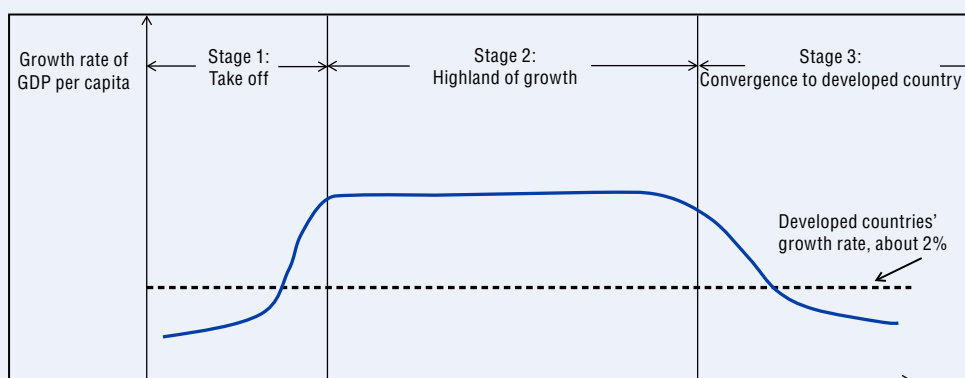
Box 3.2. Catch-up cycle and China's new normal

The catch-up cycle (Liu, Jia and Zhang, 2015) is an analytical framework that explains how developing economies converge their growth rates with those of developed economies. It is different from the well-established types of long-term cycles based on the experiences of industrialised countries, like the Kondratiev wave, the Kuznets swing, the Juglar cycle or the Kitching cycle (Kwasnicki, 2008; Korotayev and Tsirel, 2010; Solomou, 1988; and Tylecote, 1994).

Figure 3.2 illustrates the way the catch-up cycle works, with the growth of developed countries as a benchmark. Per capita GDP growth rates in a developed country are about 2% per year with small fluctuations. Thus, developing economies experience an “inverse U” shape in per capita GDP growth on their path to convergence with developed countries.

Box 3.2. Catch-up cycle and China's new normal (cont.)

Figure 3.2. Catch-up cycle



Source: OECD/CAF/ECLAC calculations.

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In stage 1 of the cycle, the developing economy takes off from a growth rate which is lower than that of the advanced economies. In stage 2, the developing economy sustains that superior growth rate for about 20-30 years. As the income level gets closer to that of the advanced economy, the catch-up process enters into stage 3, in which the pace of economic growth gradually slows down, converging with that of the developed country.

Each stage of the catch-up cycle has its own defining features. Stages 1 and 2 represent a period of creative construction in which many new industries emerge. In stage 2, fast technological progress more than offsets the diminishing return to physical capital, and consequently keeps capital returns at a relatively high and stable level. Finally, stage 3 is defined by creative destruction, with declining shares of investment in total demand and of industry in total output. Stage 3 is further defined by weaker technological progress and diminishing capital returns. These considerations ultimately bring the rate of economic growth to converge to the prevailing one in developed economies.

The defining nature of China's economic new normal, from the perspective of the catch-up cycle, is the transition from stage 2, the peak of growth, to stage 3. Through this process, the economy would gradually diversify its productive structure, while embracing a more sustainable and inclusive rate of growth (Hu, 2015). This transition departs significantly from other analyses, notably the "regression to mean" (Pritchett and Summers, 2014).

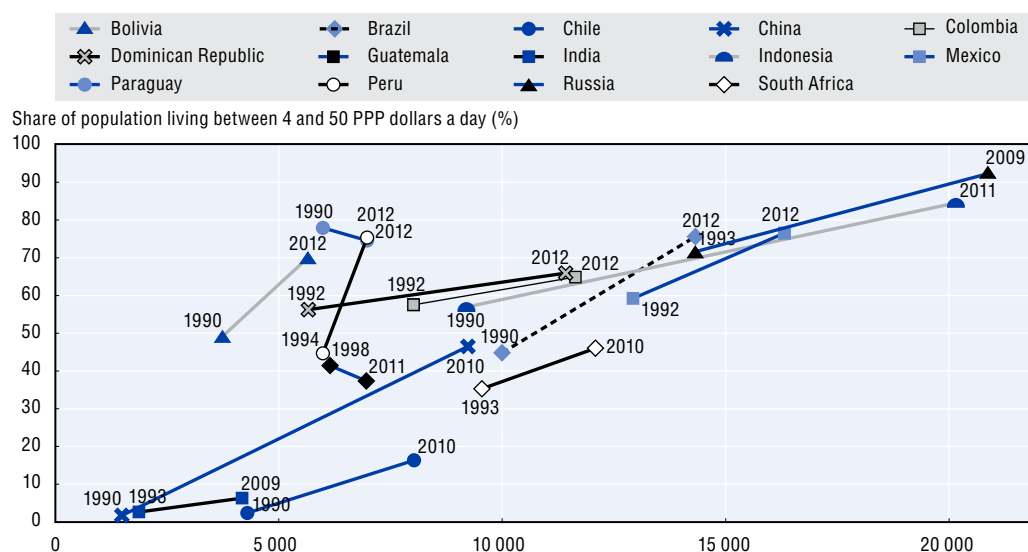
To cushion the landing of economic growth, China has to deepen institutional and policy reforms. First, the tax structure and relationship among different levels of government needs to be reshaped, with the purpose of levelling the quality of public services among regions. Second, financial institutions should be reformed to allocate capital more efficiently and in closer connection with the real economy. Third, state-owned enterprises' (SOE) competitiveness must be improved. Fourth, land governance should be adjusted to enhance efficiency and smart urbanisation, while granting fair compensation rights to those affected by expropriation. Fifth, segmented social-insurance institutions should be integrated to allocate labour more efficiently. Finally, financial risks emanating from local government debt and non-performing financial assets need to be reduced.

The evolution of labour productivity levels in Asia and Latin America versus the United States suggests that, for the most part, Latin American countries are losing ground; even though, in the last few years, their relative productivity record improved. In contrast, Asian countries are closing the gap (ECLAC/EU-LAC Foundation, 2015). This is particularly the case of China, which shows the most remarkable reduction in the gap, even if its productivity level is still below certain Latin American countries (e.g. Mexico).

Progress in per capita income is shaping China into a nascent middle-class society. In China, the share of people living within the broad range of the middle sectors (between USD 4 and USD 50 per day measured in purchasing-power parity (PPP) and comprising the middle class and the vulnerable; Ferreira et al., 2013) increased by 44.8 percentage points between 1990 and 2010. This is the highest increase among the main emerging economies (Figure 3.3). After China, the countries with the greatest increases in the headcount ratio during approximately the same interval are Brazil and Peru, both with increases of 30 percentage points.

In parallel, poverty reduction in China is nothing short of dramatic. During the 1995-2010 interval, China had the 3rd biggest drop in the USD 2.5 per day headcount ratio in the world, with a fall of 45 percentage points, above the best performing Latin American countries (i.e. Mexico with a fall of 24.7, Peru with 20.7 and Ecuador with 20.1 percentage points; [World Bank, 2014]). Thus, China's large population and high initial levels of poverty allowed the country to lift more people out of extreme poverty than the rest of the world combined (Quah, 2011).

Figure 3.3. Middle-sectors population (income between USD 4 and USD 50 PPP) vs per capita GDP
(constant 2011 international USD)



Note: GDP per capita is measured in constant 2011 international USD in PPP terms.

Source: OECD/CAF/ECLAC calculations based on World Bank (2014), PovCalNet database, <http://iresearch.worldbank.org/PovcalNet/> and World Bank (2015a), World Development Indicators database, <http://data.worldbank.org/products/wdi>.

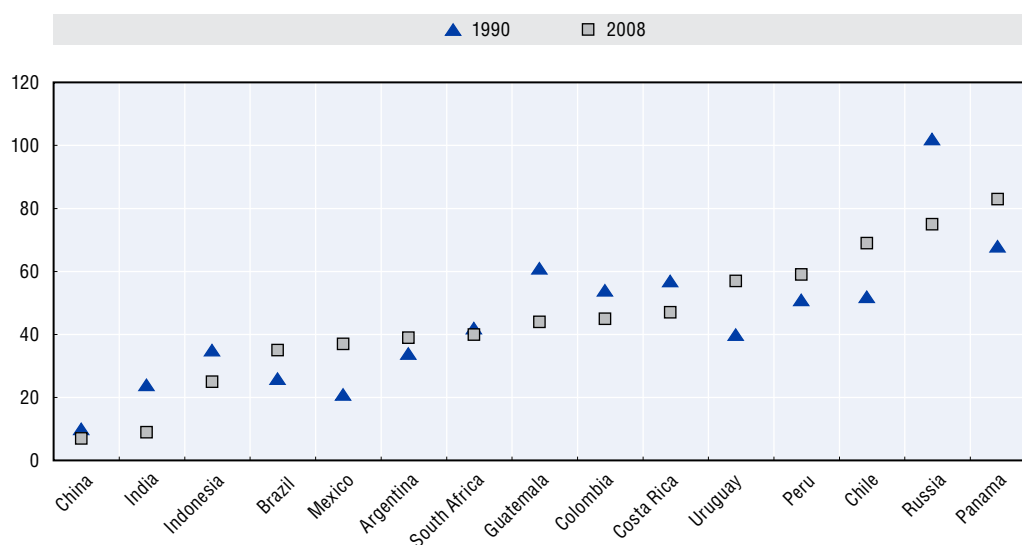
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Integration into the global economy

During the shifting wealth phase, trade was the fundamental way in which China shaped the global economy. This phase is defined largely by the integration, in the early 1990s, of the two main emerging economies in Asia – China and India – into the global economy. This doubled the number of people working in open economies, and consequently sliced the capital/labour ratio by half (OECD, 2009). As most of these new workers were unskilled, labour-intensive manufactured goods became cheaper and more accessible to many developing countries. Coupled with the falling land/labour ratio, commodity exporters, notably in Latin America, improved significantly their terms of trade (OECD, 2009).

Shifting wealth had a critical effect over the trade specialisation of many countries, particularly in Latin America. The integration of China into the global economy allowed the country to become competitive² in a larger number of export industries (Figure 3.4). Between 1990 and 2008, China added 58 new export industries to its pool of industries with revealed comparative advantage greater than 1, reaching a total of 287 sectors, becoming the country with the 8th largest number of comparative advantages (OECD/CAF/ECLAC, 2013). In Latin America, Colombia and Costa Rica³ also climbed several positions in the same ranking, with Colombia moving from 54th to 45th position and Costa Rica from 57th to 47th. Apart from these positive examples, the rest of Latin America progressed poorly in the diversification of export industries. In the same ranking, Brazil moved from 26th to 35th, Argentina from 34th to 39th, Chile from 52th to 69th and Venezuela from 58th to 107th. These trends support the idea that shifting wealth created a more difficult context for Latin American economies to advance their productive and trade diversification (Moreira, 2006; OECD/CAF/ECLAC, 2013).

Figure 3.4. **Diversification in export industries, selected emerging economies**
(country ranking; 1990 vs 2008)



Note: Ranking of countries according to the number of export industries with Revealed Comparative Advantage greater than 1.

Source: OECD/CAF/ECLAC calculations based on United Nations (2015a), United Nations Commodity Trade Statistics database (Comtrade), <http://comtrade.un.org/>.

StatLink <http://dx.doi.org/10.1787/888933291607>

The policy dimension in China

China's record in income and productivity convergence with more advanced economies, poverty alleviation and successful integration into the global economy has rested on strong policies. China pragmatically used a variety of industrial policy instruments – from temporary protection, subsidies and credit control to incentives for foreign investment – to entice technology transfer. Moreover, China has co-ordinated policies, which maximised their economic achievements. Macroeconomic policy (fiscal, monetary and exchange-rate policy) has emphasised stability and growth, so that efforts in the area of technology and competitiveness at the micro-level have benefited from a favourable macroeconomic environment.

There are many possible interpretations for China's success. The traditional explanations of externalities, increasing returns and market failures are among the most cited. The evidence is also consistent with a “self-discovery” process in which public and private stakeholders gradually discover new potential and open up spaces to new industries through a process of trial and error, in which institutions adapt and function more or less efficiently, making decisions based on the specifics of each country, rather than following a single formula (Rodrik, 2013; Felipe, Abdon and Kumar, 2012). Finally, there is very strong evidence of a long-term vision in which public policies built markets that restricted investment and learning and steered them to support structural change, without compromising competitive pressure (Mazzucato, 2013; Cimoli, Dosi and Stiglitz, 2015; a pioneer discussion of this growth pattern is found in Amsden, 1989). All these interpretations highlight the synergy between market mechanisms and heavily development-focused public policies.

Chinese industrial policy has had two stages (Lo and Wu, 2014). Before 1990, policies promoted the expansion of consumer goods industries, for which there was a broad domestic market. The almost unlimited (i.e. “Lewisian”) supply of labour particularly benefited multinationals in coastal areas and exports based on cheap labour and poor working conditions (partly compensated by available public services and social security). During this process, state firms became less prominent, providing fewer jobs and holding less capital stock. A second stage, driven by investment and exports, began in the late 1990s and early 2000s, and was stepped up when the global economic crisis broke out (Heilmann and Shih, 2013; Gourdon, Monjon and Poncet, 2015). While public enterprises focused on the “commanding heights” of the economy, the most successful businesses in terms of competitiveness and expansion were joint ventures. Chinese joint ventures have internalised cutting-edge technologies with growing success, even setting up their own brands in some sectors (Ahrens, 2013).

Favourable growth policies in China have enabled acquisition of technology and expert knowledge. Chinese firms have acquired foreign technology (through licences and joint ventures), which they used to build domestic capabilities based on the specific advantages of Chinese manufacturing firms. Applying exploration and production design and research and development (R&D) with physical production is a distinct area within which China built competitive advantages. Chinese firms succeeded in bringing large-scale leading technologies into the markets, some still untried at a commercial level. They were also able to do this with speed, exploiting windows of opportunity. This strategy has been referred to as “backward design” instead of “reverse engineering”. Such a broad outlook of the production process implies linkages between the different modules and stages of production, and a learning process in which interaction with other producers and suppliers was much more intense.

Towards shifting wealth II: The role of China

China's development process will influence a new phase of shifting wealth (i.e. shifting wealth II), which will further alter the global economy, and in particular Latin America. While shifting wealth I was characterised largely by a single event, namely the initial opening of China and India to world markets, shifting wealth II refers to a longer-term process through which large emerging markets will sustain growth and income convergence with more advanced economies. This will occur in a variety of ways: i) through the accumulation of skills and technology; ii) growth of the middle class; iii) increased consumption; and iv) structural transformation (OECD, 2013a).

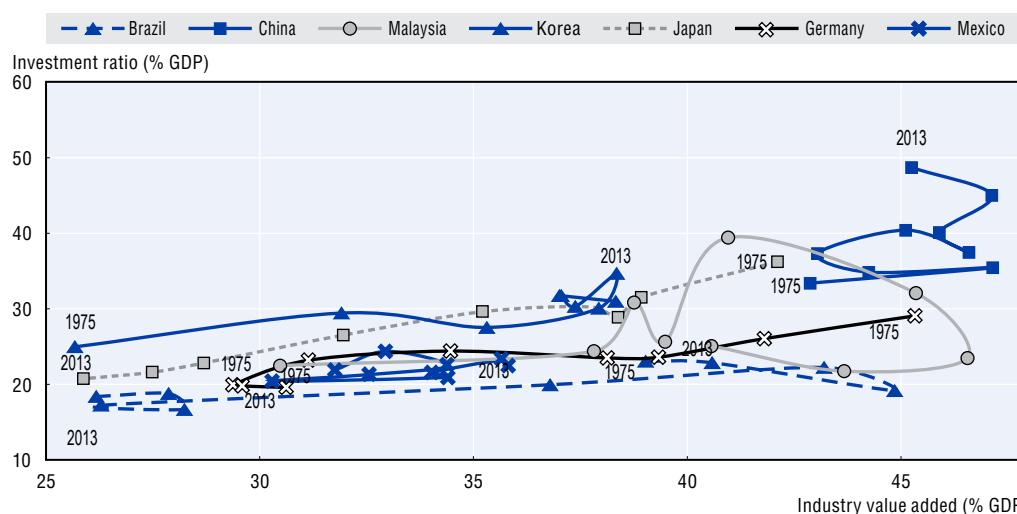
These trends should strongly influence the development prospects of other economies, certainly in Latin America. The analysis of how shifting wealth II will shape Latin America's development is covered in Chapter 5 of this report, through an analysis of trade and investment channels.

Rebalancing the growth engines in China

Growth in China is being rebalanced away from external demand and toward domestic demand, with a greater focus on consumption rather than investment. The high-savings and high-investment economic model in China has been grounded in diverse factors. One often-cited factor is the preference towards precautionary savings by households (Blanchard and Giavazzi, 2005). Another explanation is the declining share of household income in national income, in favour of corporate savings (Huang, Chang and Yang, 2013).

In comparing China with a select group of advanced and emerging economies, two characteristics stand out. First, as Figure 3.5 illustrates, a high investment-to-GDP ratio has been a seminal characteristic of the Chinese economy for a long time. The other striking characteristic is that the investment ratio has increased consistently since 1985, with only a minor retreat at the time of the Asian crisis. At the same time, the value added by industrial sectors to GDP has not changed significantly during the period under consideration, and has remained close to the current value of 45%. In this way, China almost always registers the highest relative share of value added from industry and the highest investment ratio, well above the usual figures at that level of development.

Figure 3.5. Investment ratio vs. industry value added
(percentage GDP, selected OECD and emerging economies)



Source: OECD/CAF/ECLAC calculations based on World Bank (2015a), World Development Indicators database, <http://data.worldbank.org/data-catalog/world-development-indicators>.
StatLink <http://dx.doi.org/10.1787/888933291614>

A final aspect of this rebalancing process is that it should come hand-in-hand with a moderation in economic growth (as shown in Box 3.2). The experiences of advanced Asian economies (e.g. Japan and South Korea) suggest that in the process of rebalancing, the fall in investment is not fully replaced by a rise in consumption (Citigroup, 2012). In addition, the nature of investment also changes: the share of private capital investment – intensive in the use of industrial metals – is expected to recede owing to the overcapacity of many manufacturing industries, as well as the rise of public investment in infrastructure (OECD, 2013a).

Older, richer and closer together: The transformation of Chinese society

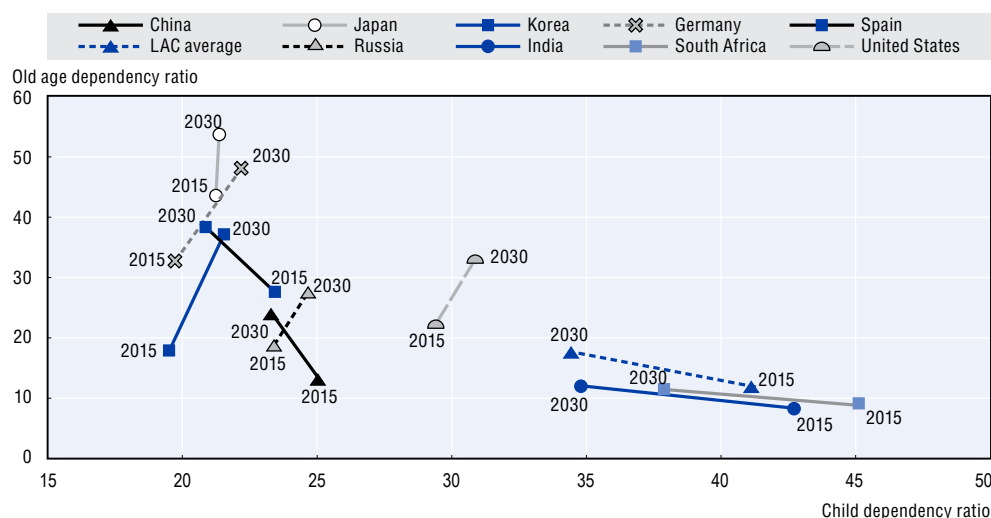
A set of socio-economic changes, already observed, will deepen during shifting wealth II. First, China is undergoing substantial demographic changes as its population ages at a higher rate than replacement. This trend is mainly due to a drop in fertility rates, a process that is rooted in population control policies, as well as socio-cultural norms regarding childbearing, which are linked to economic development (Becker and Barro, 1988; Galor and Weil, 1996). Drops in the fertility rate became particularly intense during the 1970s, as well as during the first half of the 1990s. The reduction enabled China to go from a fertility rate of six births per woman in 1965 to a current rate of 1.67, lower than the average of OECD countries, currently at 1.74 (World Bank, 2015a).

Reduced fertility and a rapidly ageing society will alter significantly China's demographic structure, and have drastic consequences. The working-age population (ages 15-64) is already decreasing, and this drop will intensify further: between 2030 and 2060, China will be one of the countries where this share will decrease most in absolute numbers, with a decrease of 7 percentage points.⁴

The “one child per couple” policy in place since 1980 and the unexpected outcomes of that policy have had negative consequences, such as state-forced abortions, sex-select abortions and an unbalanced gender ratio that has altered the natural ratio from approximately 105 male births to 100 female births to 116 to 100 (United Nations, 2015b). Aware of this expected demographic path, the Chinese government is already implementing a partial relaxation of this policy, which includes certain ethnic minorities and rural families (*The Guardian*, 2015). Bolder moves towards greater reproductive rights are expected, through allowing having a second child if at least one of the parents is a singleton (OECD, 2015a).

Figure 3.6 illustrates the demographic imbalances of these trends over age dependency rates (i.e. age dependency ratio is the ratio of dependants to the working-age population – younger than 15 or older than 64). China will register one of the most striking transformations in the emerging world between 2015 and 2030. Currently, it has a dependency rate mostly driven by the young population, with child dependency at 25% and old-age dependency at 13%. By 2030, however, the old-age dependency ratio will surpass child dependency for the first time (23.8% vs 23.4%). The relative increase in old-age dependency rates (82%) between 2015 and 2030 will only be greater in South Korea. Moreover, China in 2030 will be the emerging economy with the lowest child dependency ratio and the second highest old-age ratio (after Russia).⁵ With regards to total dependency rates, China will reach a maximum of 65% in 2060. This rate will be roughly the same as the one registered in the mid-20th century, but this time based largely on old-age dependency instead of child dependency (OECD, 2013a). These dependency rates differ from those of other emerging economies. India, in particular, will maintain relatively high child dependency rates throughout the forecast horizon, and accordingly a solid supply of labour for future economic growth.

Figure 3.6. Old and young dependency rates (2015 and 2030)
(selected OECD and emerging economies)



Note: LAC average includes the following economies: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela and Mexico.

Source: United Nations (2012), *Revision of World Population Prospects*, <http://esa.un.org/unpd/wpp/>
StatLink <http://dx.doi.org/10.1787/888933291629>

The expected demographic evolution in China unveils two important challenges. First, the need to establish the means to sustain an increasing share of the elderly within the population in a country whose pension system is underdeveloped (Du and Wang, 2010). Second, productivity will need to become more relevant for economic growth, given the declining contributions from labour and capital (OECD, 2013a).

Another prominent feature of future China is the continuous expansion of the emerging middle class.⁶ Projections of the future size of the middle class in China point to dramatic increases from 2015 to 2030, even under moderate assumptions of growth or income distribution changes.⁷ The emergence of the middle class is seen not only as one of the most important determinants for social change (Tomba, 2004), but also a trigger for a change in consumption patterns towards durable consumer goods, health, education and tourism (World Bank and Development Research Center of the State Council, P.R. China, 2013). The continuous rise of the middle class will sustain the rebalancing of China's economic growth from external to domestic demand and from investment to consumption.

A final trend that will shape the China of the future is ongoing urbanisation. The share of the *de facto* urban population has more than doubled between 1990 and 2013, from 26% to 53% (World Bank, 2015a). It is predicted to rise to 75% in 2030, an increase that implies adding a city bigger than Tokyo each year to the pool of the urban population in China (World Bank and Development Research Center of the State Council, P.R. China, 2013). Yet the process of urbanisation has not been without challenges, notably access to services and sustainability. More than 260 million urban residents do not have access to all the basic public services. Sustainability is also a concern, owing to the high energy intensity of urbanisation in China, inefficiencies in urban planning and development and the environmental costs borne by the urban population (World Bank and Development Research Center of the State Council, P.R. China, 2014).

To address these challenges, future urbanisation in China is expected to follow a new model of “smart urbanisation”. This model emphasises improving the fiscal capacity of municipalities to provide adequate levels of public services; limiting the geographical expansion of cities and increasing density, wherever possible, to lower infrastructure costs; strengthening urban planning and governance; and turning cities into incubators for innovation. Further reforms could promote inclusive and sustainable economic growth by allocating resources in urban development, shifting industrial activities to more cost-competitive cities or reducing migration pressures and environmental degradation (World Bank and Development Research Center of the State Council, P.R. China, 2014).

Structural transformation in China

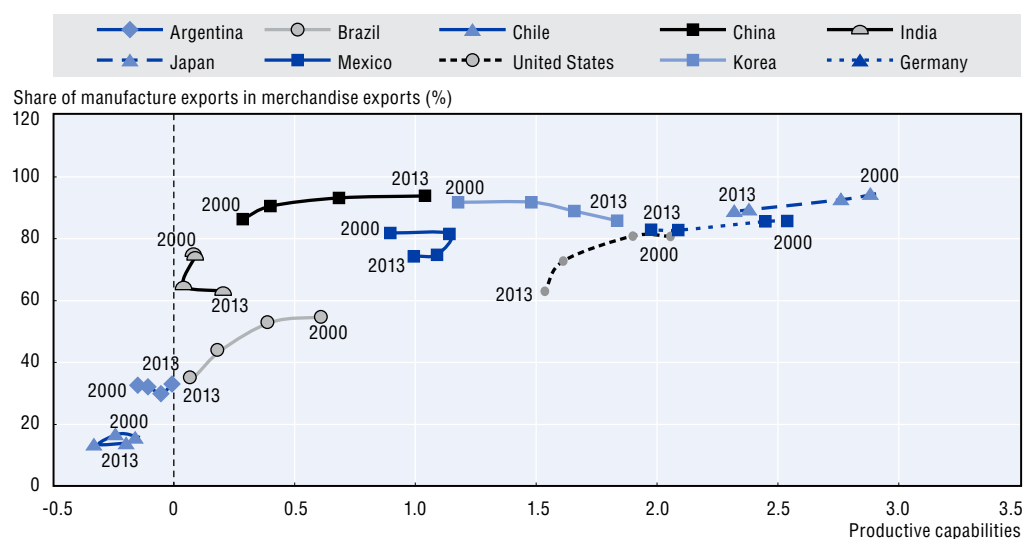
Another dimension of the expected changes in China relate to its process of structural transformation. In China, this process will be defined by several characteristics, as discussed in the following paragraphs.

Diversification into high-skills industries

The original specialisation in assembly operations in manufacturing is gradually evolving towards greater value-added segments of the productive chain. The domestic market size, efforts in expanding education and R&D and a targeted policy to conquer superior areas of the productive chain are boosting China’s competitiveness in a wide set of medium- and high-technology products (Altenburg, Schmitz and Stamm, 2008). With regards to R&D activities, a marked increase in spending over the late 2000s and early 2010s (OECD, 2013a) allowed China to push its level of R&D intensity beyond 2% of GDP, above the European Union average (OECD, 2015a).

These efforts are shaping China’s productive diversification, which appears as one of the fastest accumulators of productive capabilities. The capabilities measure refers to those non-tradeable elements that matter for productive activities, including institutional endowment, the availability and quality of skills and infrastructure. Given that these capabilities are assumed to be non-tradeable, only the countries that develop a stock that is sufficiently large or complex (i.e. a higher index value) are able to conquer comparative advantages in the most sophisticated industries. Using the “index of capabilities”,⁸ developed by Hidalgo and Hausmann (2009), against the share of manufacturing in exports, Figure 3.7 shows a steady decrease in the relative stock of capabilities in advanced economies. This is allegedly due to the entry of other countries in these industries. Prominent examples of these newcomers are South Korea and China, which both increased their stock of capabilities substantially. Moreover, China is the only one that combines an increase in capabilities with an increase in its relative presence as a provider of manufactured products to the world.

Figure 3.7. Index of capabilities vs. manufacturing share of exports in selected economies (2000-13)



Policy priorities in China are tightly aligned with achieving structural transformation. The effect of these factors is already noticeable through an increase in the value added reaped by China in many manufactured goods (*The Economist*, 2015a). This trend can potentially create better conditions to diversify further China's export basket, since a broader role in the supply chain implies more manufacturing competitiveness.

Finally, policy strategies facilitate this process. In March 2015, the Chinese government launched the "Made in China 2025" programme, which aims to upgrade China's manufacturing industry in the coming ten years (through two successive five-year plans). The programme involves a wide range of sectors, including information technology, aerospace and aviation equipment, maritime engineering equipment, rail equipment, energy-saving vehicles, electrical equipment, biomedicine and high-performance medical apparatus and agricultural equipment. This plan will be linked with the "Internet Plus" plan that is based on innovation, smart technologies and other Internet-related fields (e.g. cloud, big data).

Maintaining competitiveness in low-skill, labour-intensive manufacturing

Another feature of the future course of the process of productive diversification in China involves the loss of comparative advantages in standardised manufacturing. The rationale behind this trend is that China is getting closer to its "Lewisian turning point", where the transition of surplus labour from the subsistence (agriculture) sector to the modern sector cannot be done without increasing wages. This assertion is supported by the existing evidence on the lower pool of surplus labourers in rural China (Cai and Wang, 2008) and rising trend in wages in China since the early 2000s (Zhang, Yang and Wang, 2010). Under these circumstances, maintaining comparative advantages in industries that are most sensitive to labour costs will be increasingly difficult.

China could, however, pursue its diversification into high-skill industries without surrendering its competitiveness in low-skill, labour-intensive manufacturing. First, the increase in labour costs also needs to be traced to greater productivity. Annual growth in labour productivity has averaged 11% since 2007 (*The Economist*, 2015b), allowing China to reduce a still large labour and total factor productivity gap with advanced economies (OECD, 2014a). When productivity considerations are factored in, however, China's labour costs remain low compared to most other countries (Ceglowski and Golub, 2012). More importantly, a unique characteristic of the Chinese productive structure is its lumpiness (i.e. the asymmetrical distribution of production factors across its geography). This pattern is particularly noticeable in the skill intensity incorporated in labour (Lu, Milner and Yu, 2012). In line with the high segmentation of the labour market, several policy initiatives are also helping to maintain competitiveness in a wide range of industries. A prominent example is the "Silk Road Fund", a USD 40 billion fund whose goal is to connect the inland areas and entice industrial and financial co-operation.

Industry automation is another consideration that can help China maintain a solid control both in standardised and advanced manufacturing. The depth of automation and robotics in Chinese manufacturing is headed towards a significant increase: currently, the degree of automation in China is far below that of manufacturing industries in advanced economies. However, automation is seen as a sound strategy to minimise the effects of a shrinking working-age population and rising labour costs over competitiveness (*Financial Times*, 2015), while at the same time allowing for developing comparative advantages in certain technology-intensive industries. Aware of these benefits, the Chinese government is providing subsidies to entice this shift towards automation (Devonshire-Ellis et al., 2014). The combination of structural and policy incentives call for a rapid increase of automation and robot utilisation, which, if successful could become the largest robot market worldwide by the end of the decade (*The Economist*, 2014).

All of these considerations (productivity, lumpiness and automation) should allow China to pursue its structural transformation. This is a process that would be characterised by the development of new comparative advantages in high-end industries, while at the same time maintaining solid footing in the industries and activities that have marked the country's original integration into the world economy.

Developing comparative advantages in service sectors.

A final element of the future evolution of productive diversification in China would include diversification into services. China's share in services has increased steadily, overtaking the share of the secondary sector in 2013 (Molnar and Wang, 2015). By 2014, the tertiary sector reached 48% of the total economy, compared to 42% for manufacturing and 9% for agriculture. In addition, productivity has been growing steadily. For instance, productivity in business services has climbed from 20% of the OECD average in 1999 to above 50% in 2009. Yet an important barrier for further development of the service sector is the relatively large presence of state-owned enterprises, present even in commercially oriented service sectors such as construction or tourism.

The increasing importance of services is noticeable both in intermediate and final goods. With regards to the first, high value-added logistics services, such as warehousing or order handling, together with professional services, such as accounting or engineering, are expected to be new areas of productive diversification. In addition, China would reaffirm its leading role in the development of regional and global value chains. Regarding final goods, the demographic transformation and rising levels of income will also increase the demand for health care, cultural and commercial services (World Bank and Development Research Center of the State Council, P.R. China, 2013).

These changes might receive an additional impetus from policy. Service industries have not traditionally received as much support as manufacturing, fostering the relative underdevelopment of these industries (Zhang, 2011). More recent policy initiatives are addressing these needs, especially the current Five-Year Plan for 2011-15, which ranks services among its priorities. Policy efforts will foster the country's transition from "made in China" to "created in China".

Development policies in China

China's new development strategy aims to address the new domestic and external conditions and improve the quality of growth. As specified in the 2011-15 Five-Year Plan, growth with broader welfare and sustainability goals are among China's main priorities in the near future and coming decades.

Six main directions of China's new strategy summarise the policy response for adapting to the development model that targets welfare and sustainability along with growth, each of them supported by a series of structural reforms (see Box 3.3). The first direction refers to the appropriate role of the government and the private sector in the economy, with some agreement on a more competitive economy, particularly regarding entry and exit of firms. The role of state-owned enterprises is also reconsidered, aiming to better align the standards of corporate governance between public and private sectors. The second direction encourages systemic innovation and the adoption of open innovation systems. As China's investment in R&D becomes more important, the country aims to position its product space in line with advanced economies. The third direction deals with the greening of the economy and the adoption of environmental standards that have undermined the country's competitive profile in the 2000s.

Box 3.3. China's structural reforms agenda: Towards a balanced growth model

Since the mid-1990s, China's economic and social transformation has been accompanied by a number of structural reforms to improve the quality of growth, by making it more resilient and more inclusive, while smoothing the risks of an abrupt deceleration. The reforms encompass objectives within the six strategic directions: state-owned enterprises, the financial sector, fiscal policy, labour mobility, education/skills and agricultural development.

The comprehensive reform agenda set out in the Third Plenum of the Chinese Communist Party (CCP) in November 2013 emphasised the role of market mechanisms and innovation, whereas the Fourth Plenum focused on governance and stressed the importance of the rule of law. The level of implementation of the reforms is mixed, but the government has expressed its willingness to complete them in the 2030 horizon. The following reforms are the ones more connected to the trends described in this chapter.

Economic and financial reforms

In the area of financial reform, the government objectives are to build a competitive and sound financial system. It has set out objectives for liberalising interest rates, improving the renminbi's exchange rate formation, assuring renminbi capital account convertibility and establishing a management system for foreign debt and capital flows, among others (OECD, 2015b).

The competition reform has allowed for higher participation of non-state entities in projects financed by the state, opening to private investment and opening access to foreign investors in some sectors (e.g. trade and logistics, accounting, electronic commerce).

At the same time, the innovation reform looks to improve support for pioneering scientific research and financing for technological small- and medium-sized enterprises (SMEs).

The fiscal reform looks to improve the transfer payments mechanisms, targeting regions with high poverty rates, ethnic minorities and vulnerable communities. Beyond improving the regulatory framework of these transfers, it also looks to grant larger towns rights of jurisdiction according to population and economic size.

Social reforms

The urbanisation and rural development reform (or *hukou* reform) has been designed to help the eligible population to move from rural agriculture areas towards urban centres. It incorporates farmers registered as urban residents to access urban housing and social security, so as to endow them with the rights to transfer land and contract land-use and property.

The demographic reform, which entails the gradual relaxation of the one-child policy introduced in 1980, aims to counteract social and economic concerns brought on by the demographic pressures of an ageing population.

Environmental reforms

The environmental reform seeks to address the supply, demand and scarcity of natural resources, including the environmental and restoration costs associated with their use. Pricing reforms of water, oil, natural gas, electricity, transport and telecommunications are considered (OECD, 2014b). In addition, the reform includes creating a trading system for energy, carbon emission, waste discharge and water usage and implementing mechanisms for restricting excessive use in some regions.

Although the effects of these reforms will be more visible at the domestic level over the next 10-15 years, they play an important role in contributing to China's transition process described in this chapter.

The next three groups of directions are related to improving equity, fiscal sustainability and integration. Hence, the fourth direction aims to promote equality of opportunity and extend social protection. China's fifth direction aims to consolidate

a fiscal system to meet public finance needs in the coming decades, given the potential reduction of fiscal revenues. Moreover, this direction is aimed towards making the national and subnational fiscal systems more transparent, as fiscal risks and contingent liabilities are important. Finally, the sixth direction, also known as *Zouchuqu* or “going-out strategy”, aims to integrate China with the rest of the world. Beyond commercial integration, China’s aims are to engage with global governance institutions and play an active role as a stakeholder. This is reflected in China’s interest in creating or participating in international institutions, multilateral agreements and other international platforms (see Chapter 5).

China, Latin America and the middle-income trap: An exploratory analysis

The phenomenal record of income growth in China has brought it into the group of upper-middle income countries. This has peaked fears that China might fall into the middle-income trap (Woo, 2012; Zhuang, Vandenberg and Huang, 2012). This *Economic Outlook* contributes to this debate by identifying the growth determinants that matter most in the transition from upper-middle to high income, as well as revealing where the gaps in these determinants are most acute, both in China and in Latin America.

Box 3.4. The middle-income trap

The middle-income trap refers to the long-lasting slowdown in growth that many countries endure when they approach middle levels of per capita income. In this way, the rapid growth that some countries register at early stages of development is followed by a persistent stagnation.

The economic literature (Eichengreen, Park and Shin, 2011; Aiyar et al., 2013; Felipe, Abdon and Kumar, 2012; Zhuang, Vandenberg and Huang, 2012; OECD, 2013b) links the prevalence of the middle-income trap to the difficulty of adjusting the economy to the sources of growth that become more important after reaching middle-income levels. Growth in low-income countries arises essentially through labour reallocation from low- to high-productivity activities and industries. On the other hand, arriving at middle-income levels usually requires new engines of economic growth, which are based on capital- and skill-intensive manufacturing and service industries (Kharas and Kohli, 2011). Economies that are successful in transitioning to these activities have a set of requirements (i.e. large pool of skilled labour, favourable rates of investment, a developed system of national innovation and a macroeconomic and institutional environment conducive to entrepreneurial activity) that are not easy to achieve, much less to co-ordinate their actions towards the goal of productive diversification.

Middle-income trap: Stylised facts and determinants

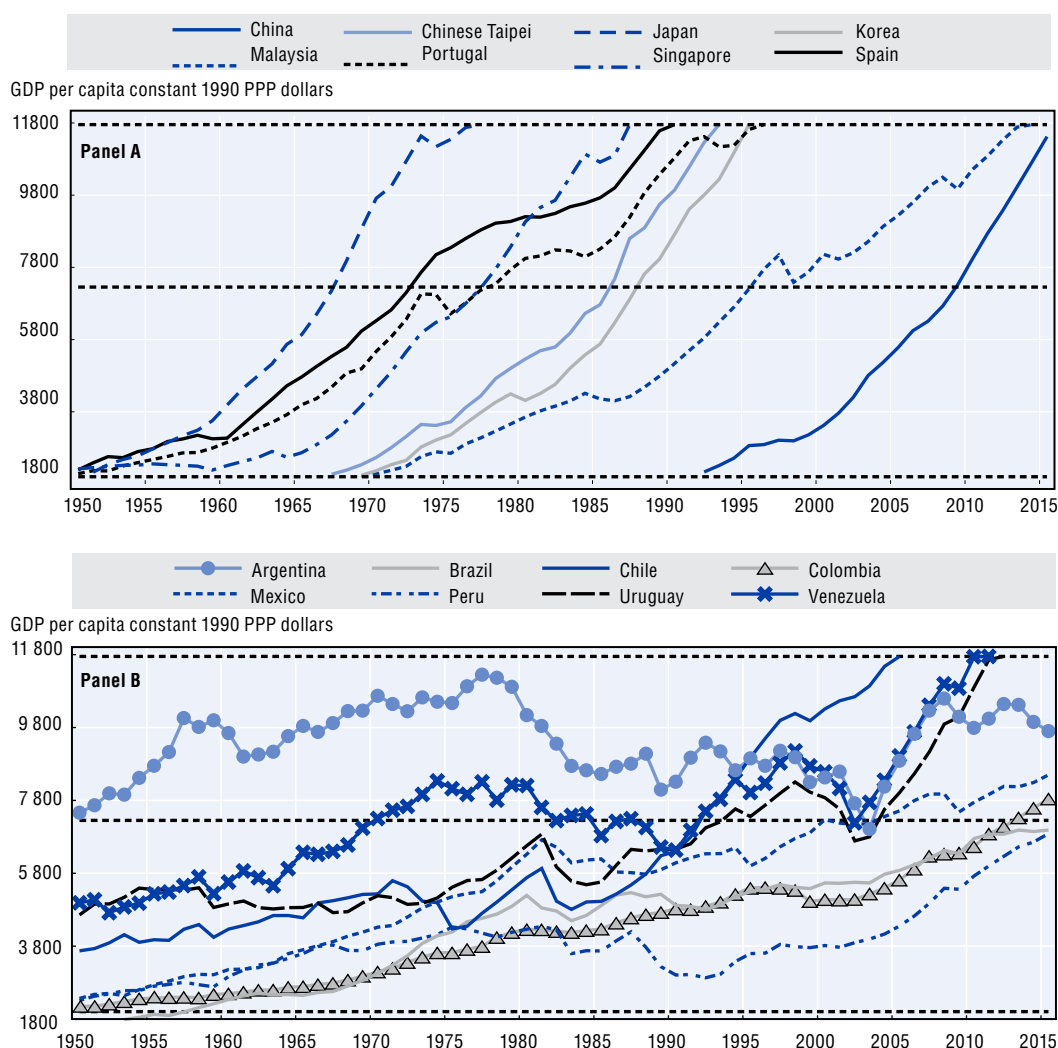
The middle-income trap stands as a potential challenging scenario for both China and Latin America. In China, more than three decades of very high growth have allowed the country to reach the upper-middle income country category. In Latin America, on the other hand, the middle-income trap seems an all-too-familiar concept, affecting some countries in the region for as much as 60 years (OECD/CAF/ECLAC, 2014). The example of Latin America raises the question of whether China could be affected in the same manner.

Figure 3.9 (panel A) compares the progress of China throughout the range of the middle-income trap against a set of countries that have entered the high-income group in the last decades. To define the lower and upper bounds of the middle-income group, the thresholds defined in Felipe, Abdon and Kumar (2012) are used, which are USD 2 000 and USD 11 750, measured in 1990 constant levels and adjusted for PPP. According to these thresholds, China entered the lower-middle income bound (USD 2 000) in 1992. The rapid growth that the country experienced allowed it reach a level of USD 10 716 in 2014. In other words, it took 23 years to cover 89% of the middle-income range. In this way, the country is in a very favourable position to match and even improve upon some of the

fastest evasions of the middle-income trap. Korea and Chinese Taipei required 27 years to cover the full range of middle income, whereas Singapore and Portugal needed 39 and 47 years, respectively.

The record of Latin American countries with the middle-income trap is clearly more alarming (panel B). Only Chile, Uruguay and Argentina¹⁰ superseded or are right at the limit of the middle-income trap. Thus, Latin American countries differ most significantly from the countries in panel A in the higher starting income levels and the existence of long-lasting income stagnation. These patterns are particularly noticeable in Argentina and especially Venezuela, a country that was already upper-middle income in 1950. In all, joining the ranks of the high-income group has proved to be an insurmountable challenge for Latin America. While several factors can explain why Latin America is a fertile ground for the middle-income trap, prominent ones are the relative inability of the region to base growth on total factor productivity (Kharas and Kohli, 2011), or the difficulty for achieving structural transformation (Felipe, Abdon and Kumar, 2012; Jankowska, Nagengast and Perea, 2012).

Figure 3.9. Evading the middle-income trap (selected countries)



Source: OECD/CAF/ECLAC calculations based on Felipe, Abdon and Kumar (2012). Data extracted from International Monetary Fund, World Economic Outlook database (2015) www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx and Maddison (2010) database.ggdc.net/maddison/.

StatLink <http://dx.doi.org/10.1787/888933291652>

With the Latin American experience as reference, various claims point to the possibility of China falling into the middle-income trap. Some of these link the recent moderation in economic growth with the idea that Chinese development has been the result of a catching-up process, favoured by the reforms implemented since the 1990s (OECD, 2013b). Other evidence links the current level of per capita GDP to the income range where long-lasting slowdowns in economic growth unravel most frequently.¹¹

Some theoretical considerations also warn about the possibility of a pronounced slowdown in growth. First, the active involvement of the public sector in the economy could have deleterious effects over productivity and growth by crowding out the private sector (Zhuang, Vandenberg and Huang, 2012). Second, the impressive growth of the past decades came at a substantial cost to the environment, casting additional doubts about its sustainability over time (Woo, 2012). Air pollution stands as one of the most significant environmental problems, with associated health costs that add up to 3.8% of GDP, while being a leading cause for 17% of annual deaths in China (approximately 1.6 million individuals; Rohde and Muller, 2015). Third, the impressive pace of economic development has come hand-in-hand with a drastic increase in income inequality. This pattern of income distribution has been critically influenced by rising skill premiums, a declining contribution of labour to total income, and, particularly, urban-rural inequality (Zhuang, Vandenberg and Huang, 2012). The Gini index has risen from 32.4 in 1990 to 42 in 2010 (World Bank, 2015a). Thus, in terms of spatial inequality, the ratio of urban-to-rural per capita income rose sharply between 1978 and 2011, from 2.5 to 3.3 (OECD, 2015a).

This unequal distribution of returns has grown relatively unchecked, owing to an institutional environment lacking most of the fiscal and regulatory tools that ameliorate income distribution patterns in advanced economies. In these circumstances, income inequality could compromise the chances of an effective structural transformation, erode social cohesion, and ultimately, increase the risk of falling into the middle-income trap (Woo, 2012).

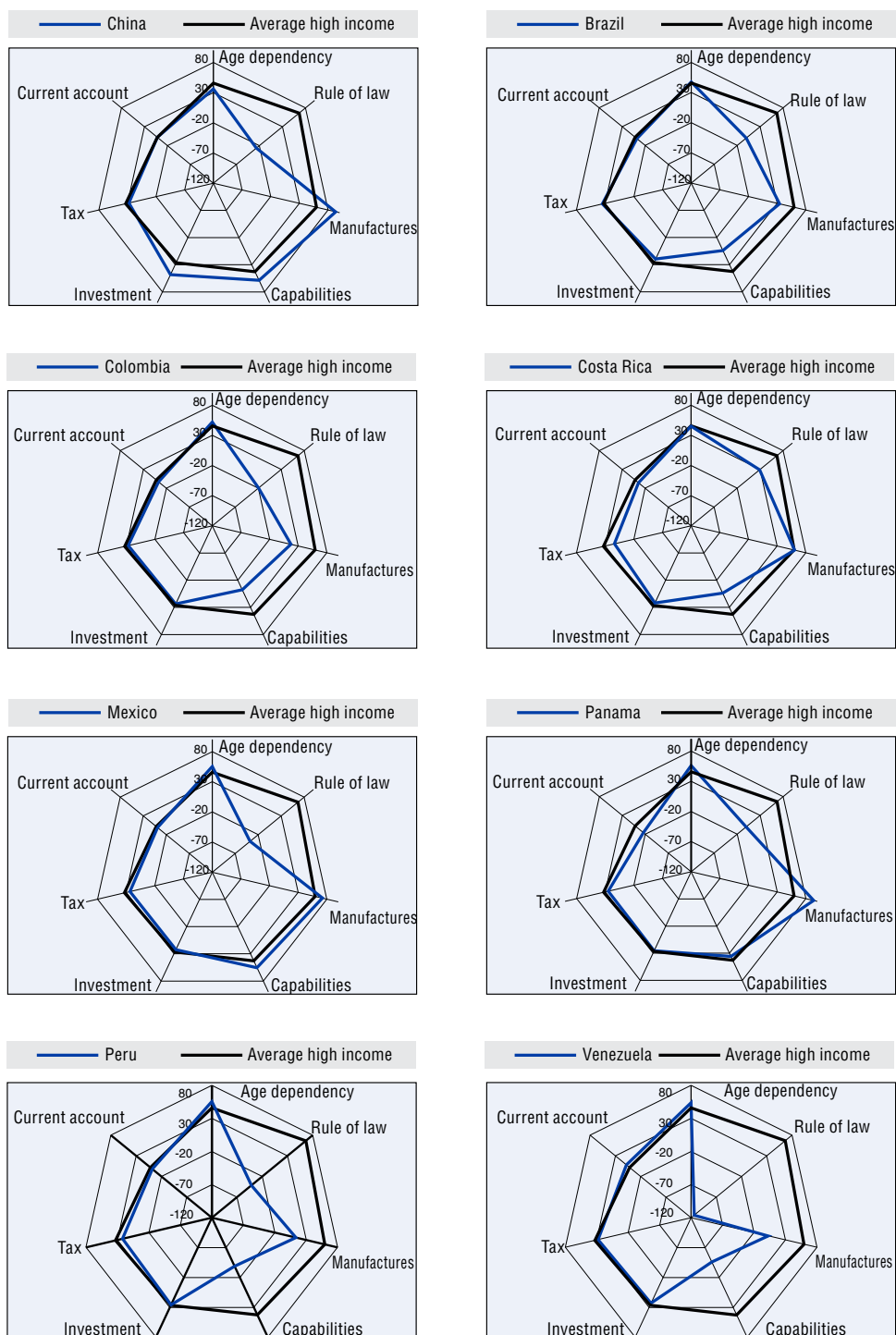
Empirical exercise: Middle-income trap determinants in China and Latin America

In this section, the results of a discriminant analysis that singles out the socio-economic features that associate China and Latin America with the middle-income trap are summarised.¹² The analysis shows that China is correctly categorised as an upper-middle income country when we consider a comprehensive set of socio-economic indicators. In addition, our analysis also reveals a few misclassified countries, three of which are located in Latin America.¹³

Another key result in this analysis finds that the rule of law, the index on productive capabilities and the investment ratio are the variables that separate best between upper-middle income and high-income countries evaluated at their “graduation time”¹⁴ from the middle-income trap. By singling out these variables, the analysis also compares the gaps between the average “graduating” country and China, as well as with Latin American economies located in the upper-middle income category. Figure 3.10 shows that both China and Latin America diverge from high-income countries particularly in areas related to the rule of law.¹⁵ This institutional indicator appears in the economic literature as an important determinant of growth, through causal mechanisms that include the provision of security to individuals, property, contract enforcement, the establishment of checks on government and on corruption and private capture (Haggard and Tiede, 2011).

The analysis also highlights significant differences with regards to variables related to the productive structure. The unique characteristics of the Chinese economy elevate various indicators substantially above the average of high-income countries. This is particularly the case of the share of manufacturing in GDP and the investment ratio, results that also suggest the foreseeable economic rebalancing in China. In contrast, the majority of Latin American countries show lower levels for both the share of manufacturing and the capabilities index. These results suggest that Latin American countries differ in more fundamental ways than China to the typical evader of the middle-income trap, with most significant differences related to both institutions and the productive structure.

Figure 3.10. Middle-income trap determinants: China and Latin American upper-middle income vs average high-income country



Note: Capabilities and rule of law are the only variables not originally extracted as ratios. Hence, they are transformed into an index where the minimum (maximum) value of the sample is made equal to 0 (100). Latin American countries are included according to data availability.

Source: OECD/CAF/ECLAC calculations based on World Bank (2015a), *World Development Indicators*, <http://data.worldbank.org/products/wdi>.
 StatLink <http://dx.doi.org/10.1787/888933291668>

Concluding remarks

China and Latin America have played very distinct roles during shifting wealth. The massive scale of its economy, coupled with high and sustained growth rates, has enabled China to become the main driving force of the first phase of shifting wealth. Thus, in this process, China is undergoing significant socio-economic changes, which range from a remarkable progress in income convergence, poverty alleviation and the emergence of a new middle class. Latin America, while having participated in these global trends with regards to poverty of the rise of middle-income households, has had a much more modest record in terms of income convergence, and particularly its contribution to global growth.

China is currently undergoing a set of major changes that will shape a new phase of shifting wealth, towards what is called shifting wealth II. These changes are the transition to a lower rate of growth, increasingly supported by consumption instead of investment. In addition, a society whose age-dependent population is growing, becoming increasingly urban and with a larger share of middle-class households, will yield important changes in internal demand, both through consumption and savings. Another critical element of change and movement to shifting wealth II is China's own structural transformation process. In this regard, a plausible scenario will see China moving closer to a knowledge economy, becoming increasingly competitive in skill- and technology-intensive industries.

This is not to say that future development in China is free of risks. On the contrary, the experience of Latin America with the middle-income trap is a powerful reminder of the greater difficulty involved and the need to reinvent the course of development once a country has reached middle-income levels. The risk of China falling into the middle-income trap is not negligible, if we take into account the large institutional gap, particularly in the area of the rule of law, which is atypical in countries that dodge this development trap.

The development challenge for Latin America is by no means more tractable. On the contrary, the process of structural transformation in Latin America has encountered more trouble, in the midst of strong commodity demand from Asia and the rise of China as a manufacturing powerhouse. Moreover, this chapter reveals that many Latin American countries lack many of the structural features that characterise the countries that successfully evaded the middle-income trap, particularly those related to institutional endowment as well as the sophistication of the productive structure.

These results point to two areas of policy reform that are especially urgent for Latin American countries. These include, first, policies aiming to diversify the productive economy towards more value-added industries and activities; and second, policies aiming to improve institutions, particularly those related to the business environment, corruption and governance.

Notes

1. Measured in constant 2011 international USD in purchasing power parity (PPP).
2. A country is considered to be competitive in exporting a product if its Revealed Comparative Advantage (RCA) is greater than 1. For computing RCAs, we follow the method outlined in Balassa (1977).
3. Costa Rica shifts from 68 to 128 industries and Colombia from 73 to 133.
4. In a comparison of 42 advanced and emerging economies, Johansson et al. (2012) find that China will be the 8th country with the largest decrease in the share of working-age population between 2030 and 2060.
5. In 2030, old-to-young dependency ratios in China and Russia will reach 1.01 and 1.12, the largest in the emerging world.
6. This trend is expected to continue into the future and it will be observable in other key emerging markets. Notably in India which, although poorer than China, has a large middle class that could surpass that of China as early as 2020 (Kharas, 2010).
7. For instance, Chun (2010) shows that under a “neutral growth” scenario, where income distribution remains the same as in 2005, China unambiguously becomes a middle-class society.
8. The index is normalised, so that a value of 0 implies a level of capability similar to the worldwide average. A value of 1(-1) refers to capabilities one standard deviation above (below) this average.
9. In the case of China, however, patent utilisation rate (5%) is significantly below the levels of advanced economies (OECD, 2015a).
10. Data for Argentina are available only until 2011.
11. Eichengreen, Park and Shin (2011) identify two levels of income per capita where the risk of slowdown is the highest: around 11 000 and around 15 000 constant 2005 USD PPP dollars. By this measure, income per capita in China is currently USD 12 170.
12. See Melguizo and Nieto-Parra (forthcoming), “Overcoming the middle-income trap in Latin America: The role of skills, infrastructures finance and fiscal policy”, *OECD Development Centre working paper*.
13. These countries are Panama and Venezuela, both of them appearing as low-middle income in our analysis, while being upper-middle income when measured only through per capita income. The opposite occurs with Brazil. Other misclassified countries are Algeria, Hungary, Poland, Sri Lanka and Tunisia.
14. In this way, the focus is on the differences within a relatively thin range of per capita income, with all the high-income countries evaluated at the time their income was USD 11 750 against a set of upper-middle income countries that range between USD 7 359 and USD 11 393.
15. Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence World Bank, 2015b, *Worldwide Governance Indicators*.

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Chapter 4

Trends and opportunities in trade between China and Latin America

The recent trade boom favoured commodity exporters in Latin America and resulted in a strong concentration of exports to China in a few products, relative to trade with the world overall. Imports from China also increased considerably, and import penetration and competition with regional manufacturing producers grew in certain markets. The impact of imports remains mixed. In some cases, growth in Chinese imports boosted competitiveness and productivity in the region, through the supply of cheaper and more efficient intermediate inputs for its firms. Trade in intermediate goods and through global value chains (GVCs) also expanded considerably between the two regions. Nevertheless, the dynamics appear to be changing. After strong growth in trade between the region and China for the last decade and a half – which increased the value of trade 20 times between 2000 and 2014, versus 3 times with the rest of the world – trade has weakened recently owing to the slacking off in Chinese demand. This decrease in demand signals the importance of re-evaluating the opportunities that trade with China offers the region, such as increasing demand for agricultural products, as well as presenting challenges for diversification. To increase gains, Latin American countries could deepen regional value chains to take advantage of diverse opportunities globally, particularly in stronger integration in services sectors.

Is low bilateral trade growth here to stay?

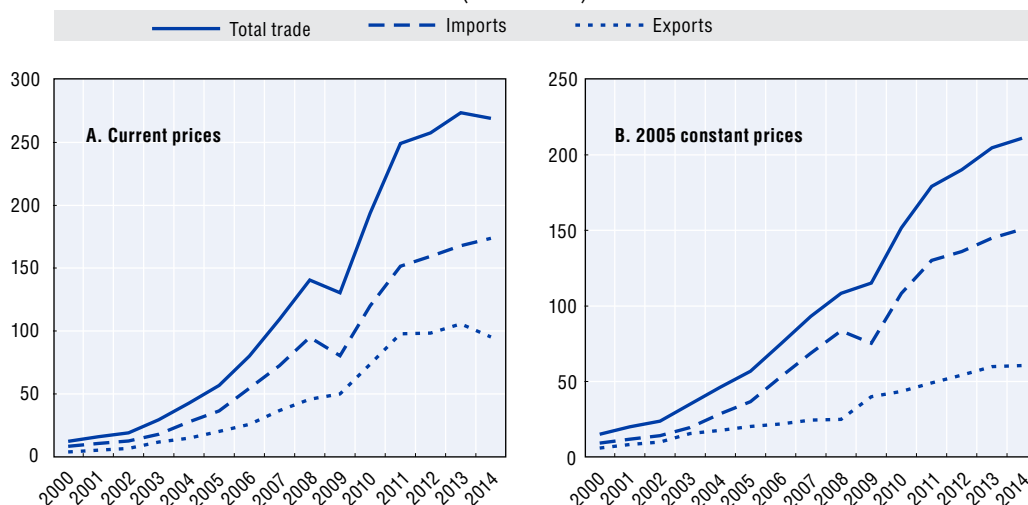
In 2014, merchandise trade between Latin America and the Caribbean (LAC) and China decreased by 2% in value terms compared with 2013, the first fall since 2009. The reduction in the value of LAC exports to China (around 10%) mainly explains this fall, which was partly offset by a 3% rise in the value of Chinese imports (Figure 4.1A). The region's exports to China in 2014 fell much more steeply than its exports to the world as a whole (2%). Moreover, 2014 was the first year in which exports from LAC to China decreased in this century, having grown even in 2009 and 2013, when exports to the rest of the world faltered.

The decline in the region's value of exports to China in 2014 reflects a slackening of Chinese demand for raw materials. The value of exports to China was down in 13 of the 16 countries for which information is available, representing almost 94% of the region's total sales to China. The slightly lower growth of the Chinese economy since 2012, and its reorientation from investment and exports to consumption, reduced demand for the raw materials that make up the bulk of the region's basket of exports to China.

China's lower demand has resulted in lower commodity prices, which largely explained the fall in the value of LAC's exports in 2014. When trade flows are measured in constant prices, the evolution of exports to China shows a smoother increasing trend in the 2000-14 period, while exhibiting a 1% rise in 2014 (Figure 4.1B). This underscores the impact of commodity prices on these exports' value, reflecting the fact that a significant part of the increase in exports during this period was fuelled by an increase in the prices of products exported and not of their volume. The 2014 increase was one-tenth of that observed in 2012 and 2013, indicating that decreased Chinese demand has also significantly affected the volume of the region's exports.

The LAC trade deficit with China is driven by the growing deficits maintained by Mexico. Central America and the Caribbean also run a persistent deficit with China, whereas South American nations, for the most part, have a broadly balanced trade account. LAC, as a whole, has a growing trade surplus with China in commodities and natural-resource-based manufactures. In contrast, the region and all of its sub-regions are running a growing trade deficit with China in other manufactures.

Figure 4.1. Value of goods trade between Latin America and China, 2000-14
(USD billion)



Note: The data for 2014 are from official sources in 16 countries: Argentina, Venezuela, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Bolivia and Uruguay. Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>. StatLink <http://dx.doi.org/10.1787/888933291676>

Given the lower gross domestic product (GDP) growth forecast over the next few years for both China and LAC, bilateral trade is unlikely to expand at the pace seen in the last decade and a half. Between 2000 and 2013, the value of merchandise trade between Latin America and the Caribbean and China expanded by a factor of 22, growing at an average annual rate of 27%. In comparison, the region's trade with the world grew just threefold by value in the same period, at an average annual rate of 9%. In the current decade, however, trade with China has slackened – growing at just 5% per year between 2011 and 2013, and falling by 2% in 2014. If bilateral trade were to expand in the next few years at the pace recorded in 2013 (6%), it would reach USD 500 billion between 2023 and 2024. The 2015-2019 Co-operation Plan, which the Community of Latin American and Caribbean States (CELAC) and China agreed to in January 2015, proposes to achieve this target in ten years.

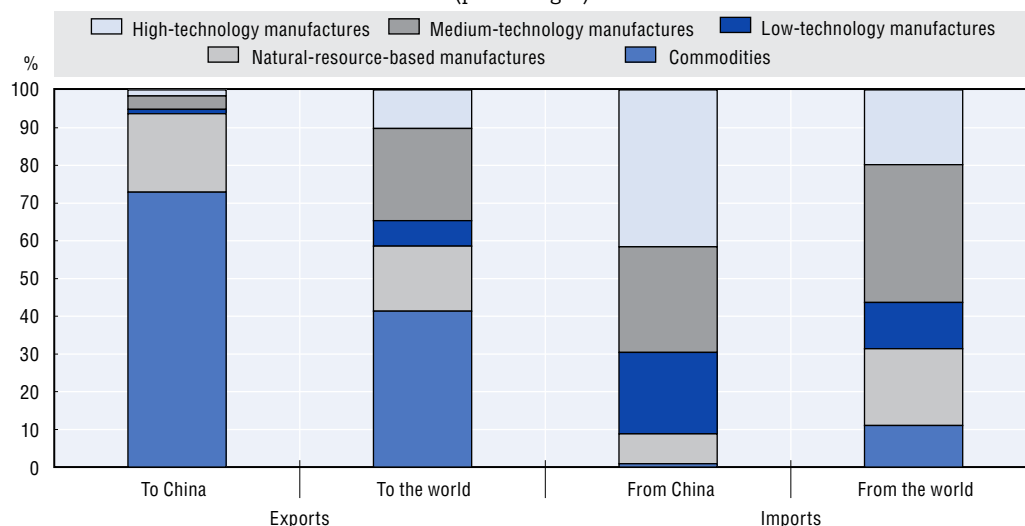
The high rates of growth in trade with China have resulted in increased concentration in commodities

China is now the region's second largest import source and third largest export destination (Comtrade, 2015; World Bank, 2015). Between 2000 and 2014, China's share in the region's imports grew from just over 2% to 16%, while its export share rose from 1% to 9%, attaining 10% in 2013. Thus, in 2014, China and the European Union (EU) accounted for virtually the same share of the region's merchandise trade with the world as a whole (12.4% and 12.5%, respectively). Although the EU remains the second largest market for the region's exports after the United States (US), since 2010 China has overtaken the EU as the second largest import source, also behind the US. Latin America and the Caribbean gained ground as a trading partner for China. Whereas in 2000 the region absorbed 3% of China's total goods exports and supplied 2% of its imports, in 2014 the equivalent shares were 6% and 7%, respectively.

The range of goods that LAC exports to China is much less sophisticated than its worldwide export basket. In 2013, commodities accounted for 73% of the region's exports to China, compared to 41% of its worldwide sales. In contrast, low-, medium- and high-technology manufactures accounted for just 6% of the region's exports to China, compared to 42% of its global exports. The opposite is true of imports, however: whereas low-, medium- and high-technology manufactures accounted for 91% of regional imports from China in 2013, they represented just 69% of its global imports (Figure 4.2).

Trade between Latin America and the Caribbean and China is clearly inter-industry: commodities in exchange for manufactures. Exports to China are concentrated in a small number of commodities. Nevertheless, between 2000 and 2013, the region nearly doubled the number of products exported to China, from 26% of the number of products exported within the region itself in 2000 to 53% in 2013. Nonetheless, the difference between the numbers of products sent to the two markets is much more pronounced at the country level. Except for Brazil and Mexico, this difference varies between 8 and 35 times. Moreover, just five products, all of them commodities, accounted for 75% of the value of regional sales to China in 2013. The same five products generated just 47% of the value of the region's exports to China in 2000, thereby demonstrating the strong reprimarisation process – a return to the concentration of exports to China in primary products – that has occurred since then (Figure 4.3).

Figure 4.2. Structure of Latin American trade with the world and China by technological intensity, 2013
(percentages)

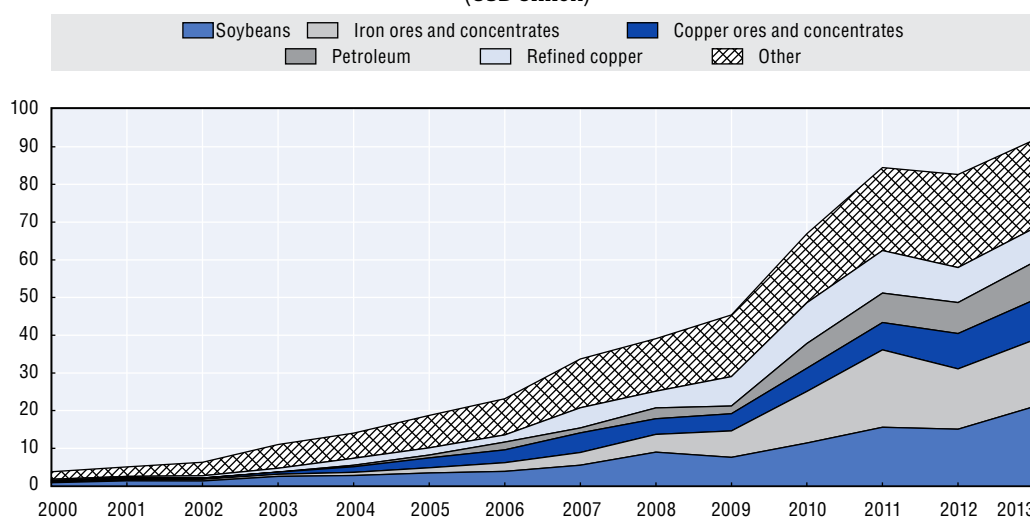


Note: the definition of the five product categories is based on their technology content calculations found in Lall (2000).

Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>.

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Figure 4.3. Latin American exports to China by product, 2000-13
(USD billion)



Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>.

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The five leading exports from all countries in the region (except Mexico) accounted for 80% or more of the total value of exports to China in 2013. Commodity exports make up the largest share by far. The greatest contributors in value are oil, iron ore, copper (in different forms), soybeans, scrap metals, fishmeal, wood and sugar. Except for products in the soybean chain, agricultural and agribusiness products still make up a very small share of the region's basket of exports to China despite their increase in the past decade. The same applies to manufactures, except for Costa Rica and Mexico.

The expansion of trade between LAC and China and the composition of these flows have had important effects on employment and job creation in the region. Owing to the high concentration in commodities of the region's exports to China in comparison with its worldwide export basket, job creation in exports to China is lower than in its total exports. The direct effects of this increased trade with China in overall employment depend on the balance between the increase in employment in exporting sectors and the decrease in sectors competing with Chinese imports. These results are heterogeneous across countries, depending on the nature of their trade with China (see Box 4.1).

Box 4.1. The impact of trade patterns vis-à-vis China on employment in Latin America

The expansion of trade between Latin America and China has had an important impact on jobs. In terms of employment generation, trade volumes have proven to be as relevant as trade patterns. As such, the nature of this commercial relationship was an important determinant of the effects that this expansion of trade has had in Latin American labour markets.

Exports to China have had a limited impact on employment creation in LAC mainly because of their concentration on commodities, especially on extractive ones, since exports in these products support less job creation than agricultural or manufactured exports (Ray et al., 2015). As a result, the job creation supported by exports to China has been relatively smaller than that of exports to other trading partners, which are relatively less concentrated on these industries. Recent evidence shows that Latin American exports to China create about 20% fewer jobs per USD 1 million exported than the region's overall exports (Ray et al., 2015). While total exports generated 56 jobs for every USD 1 million in 2012, exports to China created only 44 for every USD 1 million in the same year. Moreover, in 2002, exports to China created 67 jobs for every USD 1 million, with the sharp reduction in this indicator reflecting the increasing weight of commodities in the export basket to China (Ray et al., 2015).

The country-specific impact on employment, however, depends on the export and import profile that each country holds with China (World Bank, 2015). Evidence shows a mixed picture across countries. In Argentina and Brazil, trade with China has had a positive impact on agriculture and mining employment, which was offset by the decrease in employment in manufacturing. As a result, total employment in these two countries was practically unchanged. Nevertheless, jobs reallocated from manufacturing into agriculture and mining, and shifted from the informal to the formal economy (Artuç, Lederman and Rojas, 2015).

Additional research on Brazil shows how its trade profile with China determined the impact on employment also at the sub-regional level. The regions most affected by the demand shock from China (i.e. the demand of commodities) have seen job creation – though limited – and an improvement in the quality of jobs, with an increase of the share of formal employment and a larger proportion of the local workforce in skilled occupations in the agriculture and extractive sectors. In the regions most affected by the supply shock (i.e. imports of manufactures from China), the impact has been a relative decline in the share of the workforce employed in skilled manufacturing jobs, with an increase in unskilled jobs in non-traded sectors (Costa, Garred and Pessoa, 2014).

In Mexico, the net effect on employment derived from trade with China has been negative, mainly owing to the weight of manufacturing in its economy. While employment increased in agriculture and mining, this was not sufficient to offset the reduction of employment in manufacturing caused by competition from Chinese imports. Formal employment increased, and a reallocation of employment from manufacturing to agriculture and mining took place (Artuç, Lederman and Rojas, 2015).

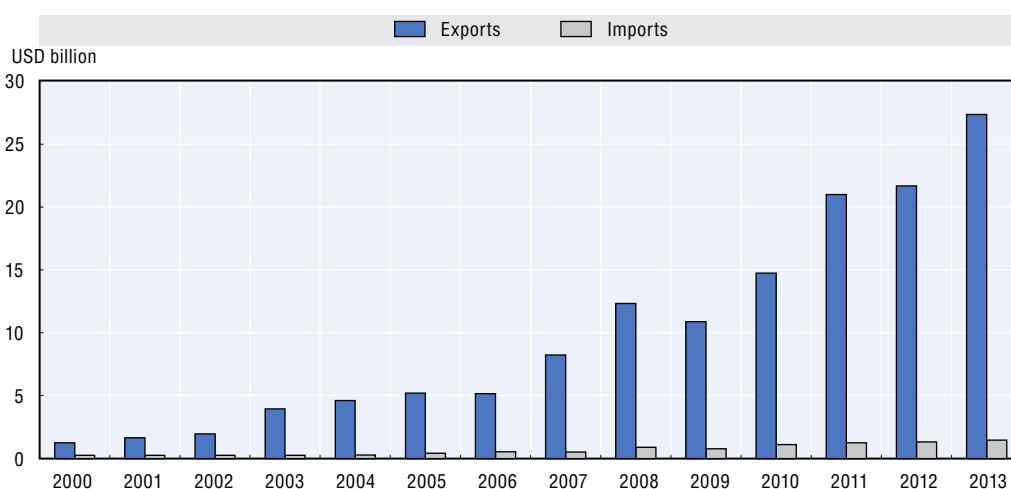
All in all, the nature of the commercial relationship of Latin America vis-à-vis China seems to have had a limited – although heterogeneous – impact on aggregate levels of employment mainly owing to two factors: the concentration of exports on low labour-intensive commodities and the competition posed by Chinese manufactured imports. If trade patterns remain unchanged, LAC exports to China will continue to have a limited job-generating impact. However, China's economic model is going through a transformation which might pose new challenges and opportunities for employment in the region that should be kept in mind when designing policy actions.

Source: Ray et al. (2015); Costa, Garred and Pessoa (2014); Artuç, Lederman and Rojas (2015), World Bank, (2015).

Increased potential for agricultural trade¹

China's importance as a destination for Latin America's agricultural exports has increased dramatically. China's share of the region's agricultural exports rose from 1.1% in 1990 to 2.5% in 2000 and to 13.2% in 2013 (Figure 4.4). As a result of this dramatic growth, the region is running a large and growing surplus with China in agricultural trade. Whereas its value of agricultural exports has grown by 27% per year since 2000, reaching USD 27.4 billion in 2013, its value of imports has grown at 15% per annum, attaining USD 1.5 billion in the same year. As a result, in 2013, the region recorded a surplus of USD 26.0 billion in its agricultural trade with China.

Figure 4.4. **Agricultural trade between Latin America and China, 2000-13**
(USD billion)

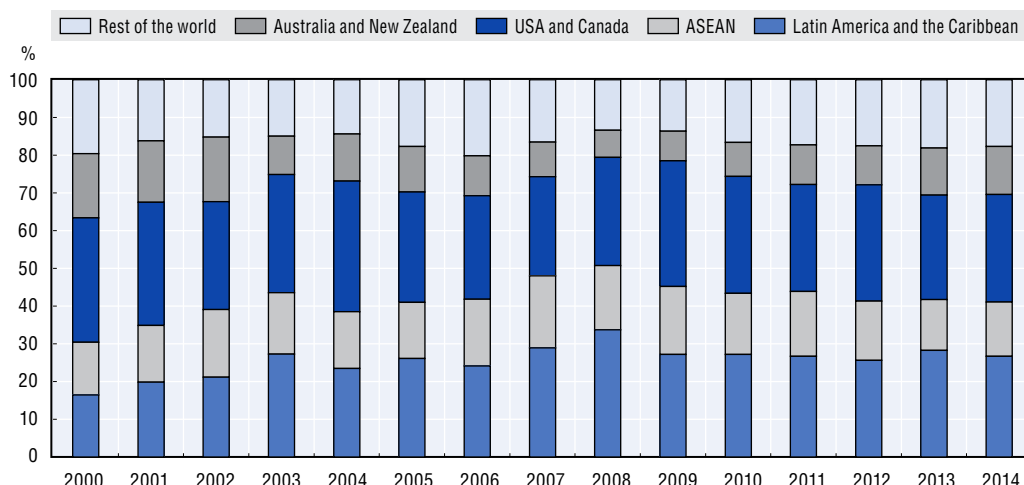


Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>.
StatLink <http://dx.doi.org/10.1787/888933291706>

The LAC region has also greatly increased its importance as an agricultural supplier for China. The region's share in Chinese imports of crop and livestock products rose from 16% in 2000 to 28% in 2013. The latter figure is similar to that recorded by the United States and Canada jointly, and more than double the shares of competitors in these sectors, such as the members of the Association of Southeast Asian Nations (ASEAN), as well as Australia and New Zealand (Figure 4.5).

The momentum of the region's agricultural exports to China is likely to continue in the next few years. Unlike total trade, agricultural trade between the region and China has not slackened in recent years, growing 25% in 2013. This may be due to the vigorous processes of urbanisation and middle-class expansion underway in China, and to the challenges in feeding its population. These trends, in combination with those that will be explained in Chapter 5 regarding China's increasing demand for better quality food, generate important opportunities for Latin America to increase further its agricultural exports, or even to diversify its export basket to China. Considering that the Chinese agri-food industry suffers from significant shortcomings in satisfying this demand, and that several Latin American firms have built up strengths in food production and distribution after successfully entering the most demanding markets in this regard, it would be a natural step for those firms to increase their exports to China, both in new and already exported products.

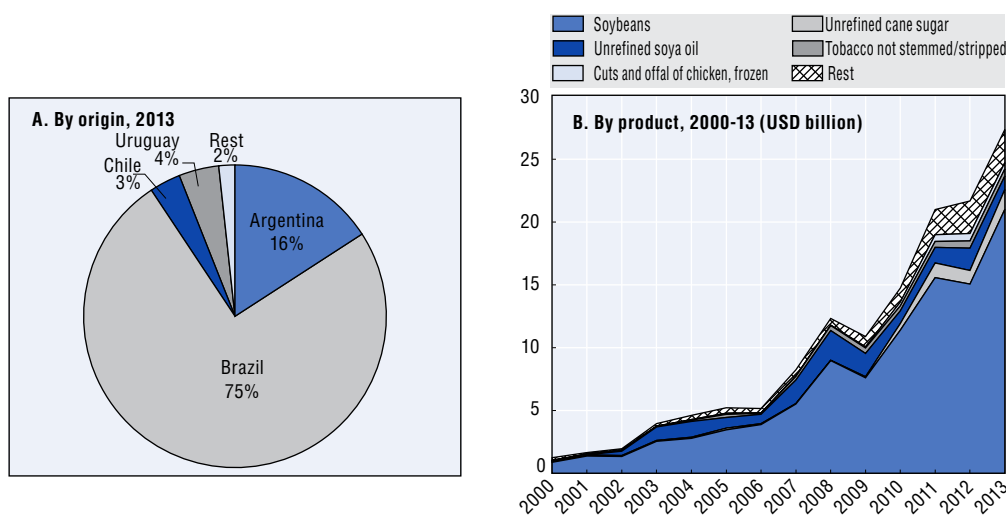
Figure 4.5. China's shares of agricultural imports from selected partners, 2000-14 (percentages)



Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>, StatLink <http://dx.doi.org/10.1787/888933291718>

Despite the buoyancy of the region's agricultural exports to China, their very high concentration by origin and by product limits current benefits for the region. At the country level, Brazil accounts for 75% of agricultural sales to China; when Argentina, Uruguay and Chile are added, their joint share is close to 100% (Figure 4.6A). Brazil is China's second-largest agricultural supplier after the United States, with a 20% share in imports in 2013. At the product level, agricultural exports to China are very concentrated, since a single product – soybeans – represented 77% of the total value exported in 2013. When the next four leading exported products are added, their joint share is 90% (Figure 4.6B). Processed products have a minimal share in the current export basket to China, with a notable exception being soybean oil, though its share in total agricultural exports was just 4% in 2013.

Figure 4.6. Composition of Latin American agricultural exports to China



Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>, StatLink <http://dx.doi.org/10.1787/888933291729>

China's agricultural imports from the world are much less concentrated by product than those from Latin America and the Caribbean. The ten leading products imported by China worldwide account for 60% of its total agricultural imports. Soybeans are by far the leading agricultural product imported by China from the world and LAC; but while this product accounts for 34% of China's total agricultural imports, its share in agricultural imports from LAC is 77%. This suggests that there are still untapped opportunities for diversifying the region's agricultural exports to China. However, opportunities for moving into processed food may be limited for the moment. This may be driven by the substantial tariff escalation on processed versus primary products in food industries, exceeding in some cases 20% in nominal value for semi-processed foods, which is significantly higher than tariffs in other manufacturing industries (WTO, 2012). Similar to agricultural imports from the region, agricultural products imported by China from the world contain few processed items, but the demand dynamics are likely to change in the coming years (see Chapter 5 for projections of agricultural demand from China).

Manufactured imports from China and their implications for regional competitiveness

The rapid growth of Chinese imports in the LAC region has raised concerns about increased competitive pressure on domestic producers. More specifically, countries with a significant manufacturing base are concerned that Chinese products could displace domestic production and employment, and may threaten their exports of manufactures to third markets, thus accelerating the “deindustrialisation” process of the region's economies. Since 2000, the growth of Chinese exports to Latin America has indeed been impressive: the share of total regional imports represented by China increased from 2.3% in 2000 to around 16% in 2013. While in 2000 China was not among the top three sources of imports for any of the countries, it currently represents the first or second origin of imports for all the major countries of the region. Chinese exports to Latin America increased at higher rates than imports from the rest of the world in all manufacturing sectors. However, most of this growth was observed in the first decade of the century. Since 2010, the growth of Chinese manufacturing imports moderated, with annual growth rates much closer to overall imports from the world.

Box 4.2. Estimating import penetration

The increase in Chinese manufactured imports by sector² does not indicate the extent of their competition in Latin American markets. To confirm whether Chinese imports erode domestic production, it is necessary to estimate Chinese import penetration. This is defined as the share of Chinese imports in apparent consumption of manufactured products. The estimated value of apparent consumption in eight Latin American countries (Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Uruguay) is calculated as:

$$AC_{it}^k = NS_{it}^k + M_{it}^k - X_{it}^k \quad (1)$$

where: AC = Apparent Consumption; NS = National Supply; M = Imports; X = Exports; k = sector; i country; and t = year. Domestic output for ten manufacturing macro sectors is estimated with data from the United Nations Industrial Development Organization, Industrial Statistics Database (UNIDO INDSTAT 2) 2015 database for 2000, 2005 and 2012 (or the latest year available); complemented with data from ECLAC's LA KLEMS project; Central Banks and national input-output tables. For imports and exports, data from the UN Comtrade database are used.

Box 4.2. Estimating import penetration (cont.)

As a measure of import competition, the share of Chinese imports in total apparent consumption is calculated by sector, formally:

$$I_t^k = \frac{M_{it}^{ck}}{AC_{it}^k} * 100 \quad (2)$$

where I_t^k = *Incidence of Chinese Imports in Apparent Consumption*

Results show a gradual increase in Chinese import penetration in all countries from 2000 to 2012 (Figure 4.7). In Brazil, the country with one of the largest manufacturing bases in the region, Chinese imports account for the lowest share (3%) of domestic consumption in manufacturing. In the other seven countries, except Argentina, the Chinese import penetration index is over 5% in the latest available year, with the most affected countries being Chile, Ecuador, Mexico, Uruguay and Colombia.

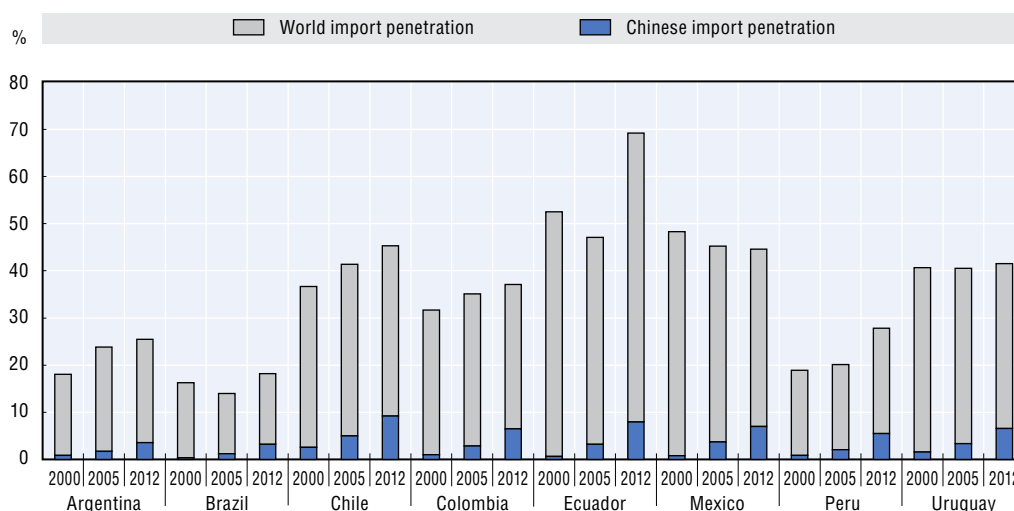
Source: OECD/CAF/ECLAC calculations based on UNIDO (2015), INDSTAT2 – 2015 edition at the 2-digit level of ISIC Revision 3, www.unido.org/en/resources/statistics/statistical-databases/indstat2-2015-edition.html; ECLAC LA-KLEMS (2015), www.cepal.org/cgi-bin/getprod.asp?xml=/la-klems/noticias/paginas/4/40294/P40294.xml&xsl=/la-klems/tpl-i/p18f-st.xsl&base=/la-klems/tpl-i/top-bottom.xsl; United Nations (2015), United Nations Commodity Trade Statistics Database, (Comtrade), <http://comtrade.un.org/>; and central banks.

Chinese competition since 2000 increased the most in the textiles and apparel sector, and in the computer, machinery and electronics sector. Among the ten selected macro-sectors, these two stand out for their percentage point increase in their share of Chinese imports in apparent consumption. For example, in textiles and apparel the share of Chinese imports in apparent consumption increased from 23% in 2000 to 65% in 2011 in Chile, from 3% in 2000 to 19% in 2012 in Colombia, and from 8% in 2000 to 20% in 2010 in Uruguay. In computer, machinery and electronics, Chinese import penetration between 2000 and 2011 increased dramatically from 23% to 41% in Chile, from 3% to 34% in Colombia, from 1% to 36% in Peru and from 1% to 28% in Mexico.

Chinese import penetration continued to grow in all countries and sectors throughout the first decade of the 2000s. However, an increase in Chinese import penetration does not *per se* imply erosion in domestic production, as cheaper Chinese imports could have simply replaced imports from other countries. It is therefore important to compare Chinese import penetration with import penetration from other countries. In fact, Chinese and world imports as a percentage of apparent consumption in all manufacturing show two very distinct patterns (Figure 4.7). Chinese import penetration increased in all countries, but total import penetration only increased in Chile, Colombia, Ecuador and Peru. In all other countries, total import penetration was quite stable or even decreased, as in the case of Mexico. Therefore, in these countries, the increase in Chinese import penetration was offset by a drop in import penetration from the rest of the world.

The analysis by sector shows that the textiles and apparel sector was the most affected by Chinese competition. In Chile, Chinese import competition clearly displaced national production, as overall import penetration reached almost 90% in 2011. Albeit to a lesser extent, the same pattern is repeated in other countries such as Brazil, Colombia, Ecuador and Peru, where increased Chinese import penetration brought about a higher world import penetration index. In computer, machinery and electronics, however, the situation is distinct. World import penetration increased everywhere between 2000 and 2005 at even higher rates than China's. Since 2005, in spite of an increase in the Chinese share of apparent consumption, no country showed a corresponding increase in world import penetration. This suggests that the rise in Chinese imports in this sector was mostly at the expense of imports from other countries.³

Figure 4.7. Chinese and world import penetration of manufacturing, selected countries and years
(as a percentage of apparent consumption)



Note: Latest data available refer to 2011 for Chile, Mexico and Peru, 2010 for Uruguay, 2009 for Argentina, and 2008 for Ecuador.

Source: OECD/CAF/ECLAC calculations on the basis of UNIDO (2015), INDSTAT2 2015 edition at the 2-digit level of ISIC Revision 3, www.unido.org/en/resources/statistics/statistical-databases/indstat2-2015-edition.html; United Nations (2015), United Nations Commodity Trade Statistics Database, (Comtrade), <http://comtrade.un.org/>; ECLAC LA-KLEMS (2015), www.cepal.org/cgi-bin/getprod.asp?xml=/la-klems/noticias/paginas/4/40294/P40294.xml&xsl=/la-klems/tpl-i/p18f-st.xsl&base=/la-klems/tpl-i/top-bottom.xsl; and central banks. StatLink <http://dx.doi.org/10.1787/888933291731>

Competition in third markets

China's accession to the World Trade Organization (WTO) in 2001, together with the elimination of quotas in several goods, granted Chinese exports access to previously untapped developed markets and sectors. Accordingly, the degree of trade competition that Latin American exports could face in third markets has increased. Different methodologies have been used to measure the extent of trade competition between the two blocs.⁴ Most studies have found that China's expansion over the previous decade had indeed some negative, yet moderate, impact on Latin American exports to third markets.⁵ The effects have been unequal across industries and countries, but there is some consensus that labour-intensive industries (textiles, clothing), high-wage industries and some manufacturing sectors have been the most affected (Lopez-Cordova, Micco and Molina, 2007; Moreira, 2007).

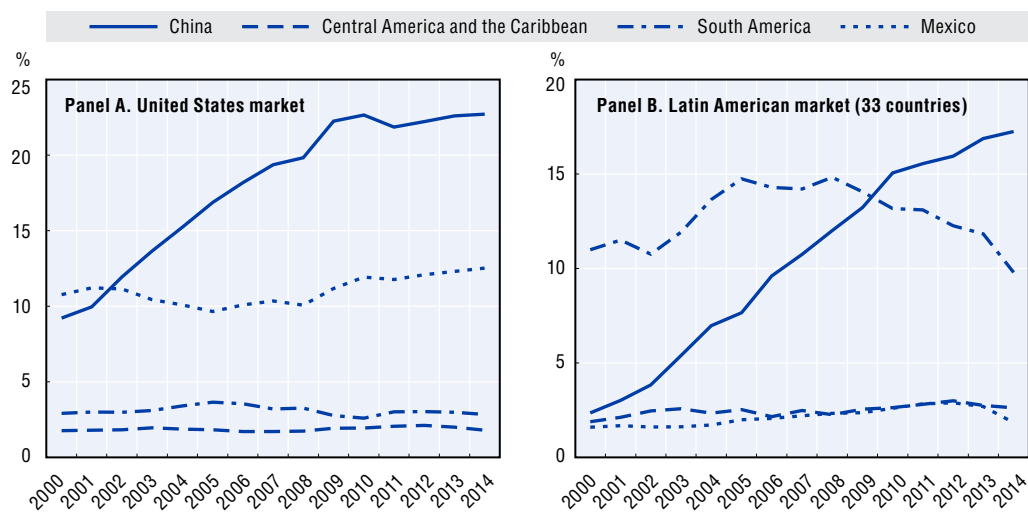
This competition analysis is done by calculating the change in the share of regional sales in the imports of the most relevant destination markets for LAC manufacturers: the United States and in the region itself. In 2002, China overtook the participation of Mexico in US manufacturing imports, and since 2004 China's share in US manufactured imports has been higher than that of the whole region (Figure 4.8A). Moreover, China increased its market share between 2000 and 2010 in all product groups, while Latin American countries lost ground in a number of sectors.

Textiles and apparel is the sector where the loss of Latin American market share can most clearly be attributed to the increase of China's. In this sector, the Chinese share of US imports rose from 22% in 2000 to 48% in 2010, while at the same time the share of the whole Latin American region decreased from 23.1% to 11.7%. In other sectors, Latin America's market share did not decline, but Chinese imports grew at a much higher

rate than imports from the region. This may suggest that the sale of similar products from China has been crowding out opportunities of higher growth for Latin American exports. This is especially the case in wood and paper, rubber and plastics, basic metals, and machinery and equipment. In the last sector, Chinese participation in US imports increased from 9% in 2000 to 32% in 2010, while Latin America only managed to raise its share from 15% to 18% in the same period.

Even though Chinese exports to the region boomed, increasing their share in the regional market from 2% in 2000 to 16% in 2014, until 2010 this was much more at the expense of US exports to the region rather than to the detriment of intraregional trade (Figure 4.8B). Therefore, from 2000 to 2010 Chinese imports substituted products manufactured in the United States rather than those imported from other countries of the region. However, Chinese imports grew at a much higher rate than imports from other regional countries in a number of sectors, especially rubber and plastics, non-metallic minerals, and machinery and equipment. Once again, the sector where China's market share gain was strongest was textiles and apparel, where the Chinese share of Latin American imports rose from 7% in 2000 to 37% in 2010, while the regional countries' share remained stable at 15%. China increased its market share in all product groups in the 2010-14 period as well, while at the same time the share of the whole LAC region decreased from 18% to 14%. In this case, South American countries were the most affected as their participation decreased in all manufacturing sectors.

Figure 4.8. Import market shares in the United States and Latin America, 2000-14 (percentages)



Note: LAC 33 includes Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay and Venezuela.

Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>.

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Trade competition between Latin American and Chinese exports in third markets has indeed been evident in some sectors. To understand the potential competition that Latin American goods are facing, export similarity indexes, such as the coefficient of conformity (CC) and co-efficient of specialisation were employed (OECD, 2007). These indicators compare the structure of exports of two countries and measure their overlap,

concluding that the possible Chinese threat to Latin American exports in third markets was low (IDB, 2004; OECD, 2007). However, this approach does not capture the effect of the size of the Chinese economy. Thus, these indicators may not properly reflect the competitive effect by underestimating the extent to which the competitor's exports are threatened (Jenkins, 2008b).

Measures of trade competition need to take into account the size effect from the Chinese economy. To analyse the competitive effect with China, the Index of Competitive Threat (ICT) provides a better measure. This indicator focuses on the percentage of goods in exports where China is globally competitive; namely, those sectors where Chinese exports have grown faster than world exports over the period (Figure 4.9). Two main conclusions emerge from this index. First, some Latin American countries, like Mexico, faced more significant competition than expected over the past decade when, on average, 45% of exports grew slower than Chinese exports of the same basket of goods. Second, the index shows a decreasing trend, reflecting the declining nature of competition for Latin American goods *vis-à-vis* China in third markets. Nevertheless, the landscape for large Latin American economies is less pessimistic than the one for Central American economies (see Box 4.3).

Box 4.3. Central America and China: Prospects for development

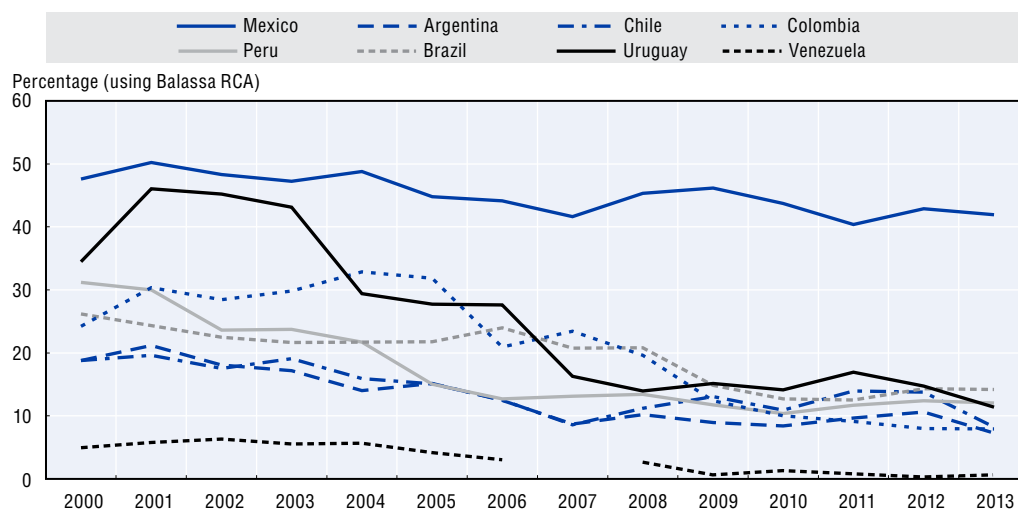
Central America remains among the poorest sub-regions of Latin America, and many Central American countries are among the most dependent upon primary-product exports in the hemisphere. Unlike other commodity exporters in Latin America, however, Central American countries have not benefited from booming Chinese demand for primary products. Avendano and Dayton-Johnson (2015) assess Central American countries' trade structure and inward investment, and find that they face increasing competition with Chinese products in third country markets (like Mexico) but also little complementarity with Chinese demand (unlike Argentina or Chile). Central American countries continue to be very dependent upon the US market for exports – and, to a lesser extent, for foreign direct investment and foreign aid inflows – though dependence upon the US has declined even as most of the countries in the sub-region have entered into a preferential trade agreement with the US. The pattern of exports has shifted from agricultural to assembly plant manufactures in several countries, and some countries, notably Costa Rica, now export sophisticated manufactured products to the US and China alike. The triple China effect on Central America, on the one hand Chinese imports concentrated on goods away from the Central American export baskets, together with potentially high oil and gas prices for these hydrocarbon-importing countries, and the increasing competition in the US market, offers a low-spirited scenario for the subcontinent.

As in the case of trade, official development assistance (ODA) has dwindled in importance in Central America, although some countries (Nicaragua, El Salvador) are still relatively important recipients of aid, from notably the US and Spain. Much less is known about the portfolio of Chinese development assistance in these countries, even if some Caribbean countries have benefited from Chinese demand-driven aid. Two cases in particular stand out: Cuba, owing to its status of the oldest Chinese aid recipient in LAC (since 1960) and Costa Rica, which has strengthened its relationships with China in recent years. These funds are granted to finance infrastructure, social projects and training, as well as to support technical co-operation and humanitarian projects.

Central America's relationship with China is increasingly more complex given its relationship with Chinese Taipei. Only 22 countries currently maintain diplomatic relations with Chinese Taipei, and 12 of those are in Latin America and the Caribbean. All of these, save Paraguay, are small to very small economies in Central America and the Caribbean. This context calls for the design of a clear strategy as a sub-region towards external partners, which could improve the limited bargaining power in current bilateral negotiations. Nevertheless, the critical tasks for Central American development strategies are not fundamentally changed by the China factor.

Source: Avendano and Dayton-Johnson (2015).

Figure 4.9. Evolution of the Index of Competitive Threat for Latin American countries, 2000-13

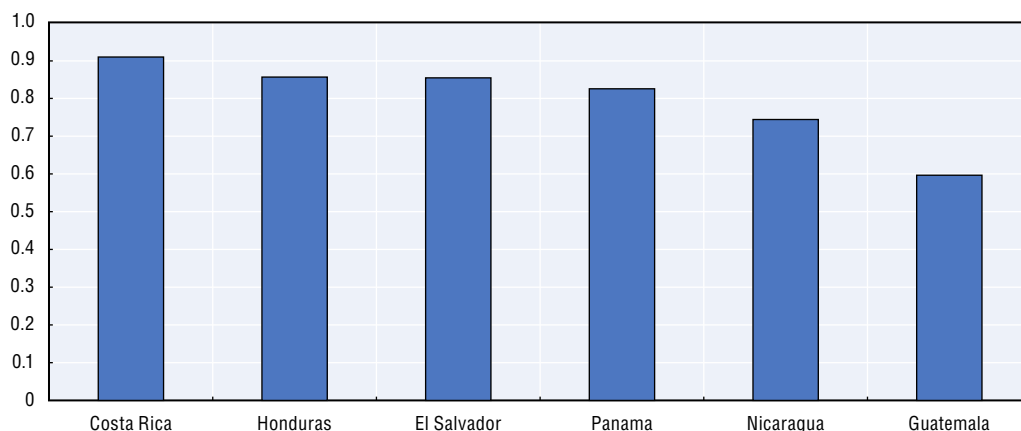


Note: The Index of Competitive Threat is estimated as the percentage of sectors (for all 4-digit sectors in SITC Revision 3 classification) where China exhibits growth in excess of global export growth over the period 2000-12.
Source: OECD/CAF/ECLAC calculations based on Jenkins (2008b), and United Nations (2015), United Nations Commodity Trade Statistics Database, (Comtrade), <http://comtrade.un.org/>.

StatLink <http://dx.doi.org/10.1787/888933291758>

Differences in trade data between international and national sources call for the use of secondary sources to measure the level of competitive threat for Latin American countries. Estimating the competitive threat in the US market allows for another picture of LAC's competition with China in its main export market. An Index of Competitive Threat in the US Market (ICTUM) with US data is reported on a consistent basis and includes maquiladora imports, exports from free trade zones and export processing zones. Figure 4.10 offers a less optimistic view regarding trade competition in some sectors for Central American countries.

Figure 4.10. Index of Competitive Threat in the US Market in 2013: China vs Central America



Note: Index of Competitive Threat in the US market is estimated as the percentage of sectors (for all 2-digit sectors in US Census Bureau classification) where China exhibits growth in excess of the country's growth over the period 2004-13.

Source: OECD/CAF/ECLAC calculations based on US Census Bureau, Foreign Trade (2014).

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Box 4.4. Measuring trade competition in US markets: The case of Mexico and Brazil

To propose an alternative measure of trade competition, data of US imports from China are used to estimate a *modified RCA* (Revealed Comparative Advantage) index, limited to the US market. The share of China's exports to the United States was considered. All goods that in 2014 had a *modified RCA* below 1 and those having a lower *RCA* in 2014 than in 2002 can be considered a decreasing threat and were therefore excluded.

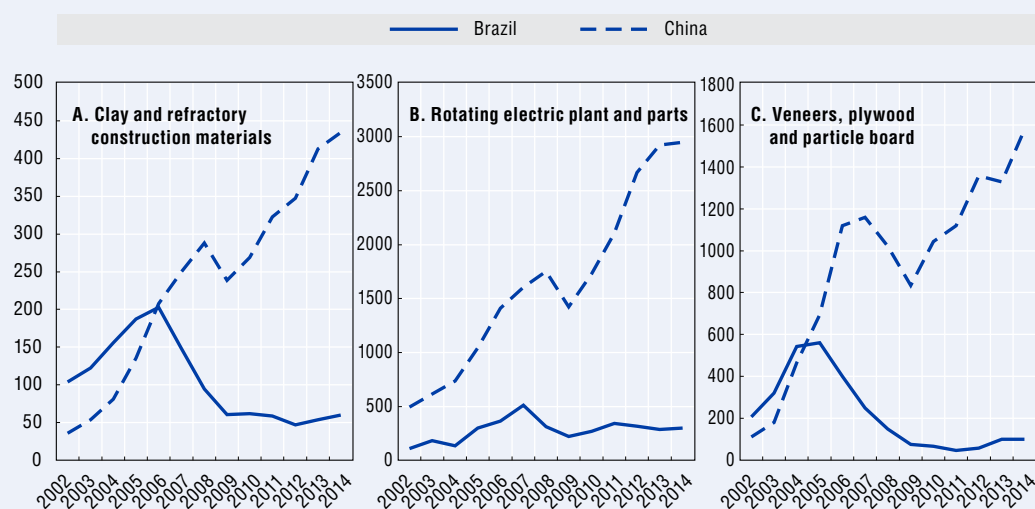
For the remaining goods, each good's share in total exports for two representative countries in the region, Brazil and Mexico was estimated. The focus was on goods whose share of exports to the US is above the 75th percentile, and the analysis compares the export evolution to the US market from China, Brazil and Mexico.

The results suggest that Brazilian exports to the US from the construction and electronic equipment sectors are the most threatened. For some of these goods, exports from Brazil to the United States have decreased significantly. Although a causal relationship has not been established, Brazil's competitiveness relative to China over the period 2002-14 has fallen in the US market for these goods.

For Mexico, electronic equipment and textiles are revealed as the most threatened goods in the US market. For those goods, Mexican exports have followed the same trend as those from China, but nevertheless, Mexico's relative competitiveness has decreased.

Figure 4.11. Brazilian and Chinese exports to the US in selected industries

(USD million)

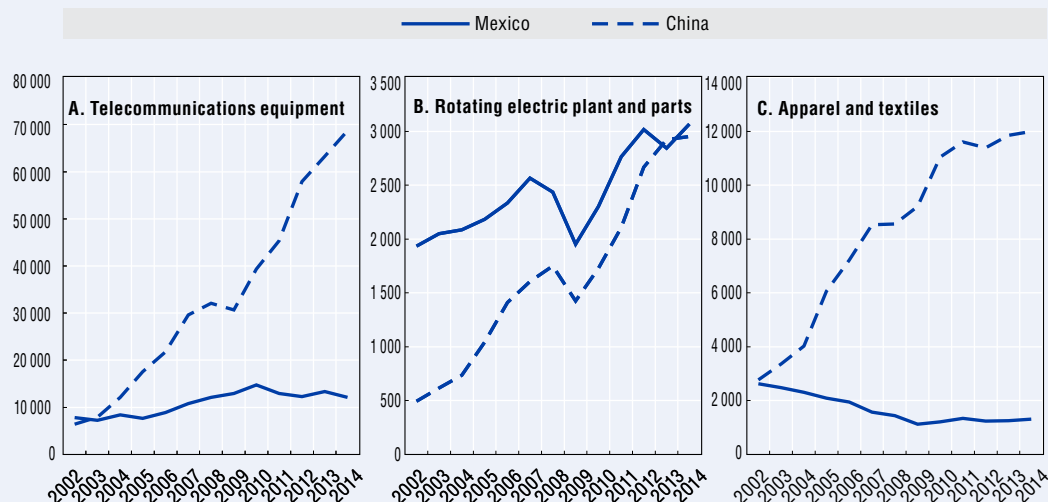


Source: OECD/CAF/ECLAC calculations based on US Census Bureau Foreign Trade (2014).

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**Box 4.4. Measuring trade competition in US markets:
The case of Mexico and Brazil (cont.)**

Figure 4.12. Mexican and Chinese exports to the US in selected industries
(USD million)



Source: OECD/CAF/ECLAC calculations based on US Census Bureau Foreign Trade (2014).
StatLink <http://dx.doi.org/10.1787/888933291782>

Nevertheless, imports from China may also play a significant role in boosting competitiveness and productivity in the region. Evidence from the Trade in Value Added (TiVA) data suggests that the increased use of cheaper and more efficient intermediates sourced from China, proxied by the average annual increase in the share of Chinese foreign participation in value added by industry, was positively and significantly correlated with stronger export growth for the region at large, as well as in Brazil, Argentina, Chile and Costa Rica. This competitiveness enhancing impact was particularly evident in agriculture, medium-high technology industries, and in traditional as well as other services sectors. While this doesn't provide causal evidence, this does suggest that imports from China play a more complex role in shaping export dynamics in the region, and may be an important input towards fostering stronger export and productivity performance in certain sectors.

Global and bilateral linkages between Latin America and China

The following sections analyse trade flows between Latin America and China from a Trade in Value Added perspective. Accounting for value added at each stage of the production process enhances the measurement of how countries benefit from their engagement in international trade. Furthermore, it allows for tracking the value-added shares aimed at final demand and consumption, versus those which are further incorporated into regional and global value chains.

Exports geared towards final demand and consumption in the Chinese market

The analysis of the trade linkages between China and Latin America considers each region's value added incorporated in each other's final demand as well as exports which are then incorporated into value chains destined for other countries. These complementary components of the bilateral trade linkages between the two markets contribute valuable information relevant to the changes taking place in China, both as an active participant in value chains, as well as the ongoing rebalancing efforts and importance as a destination market.

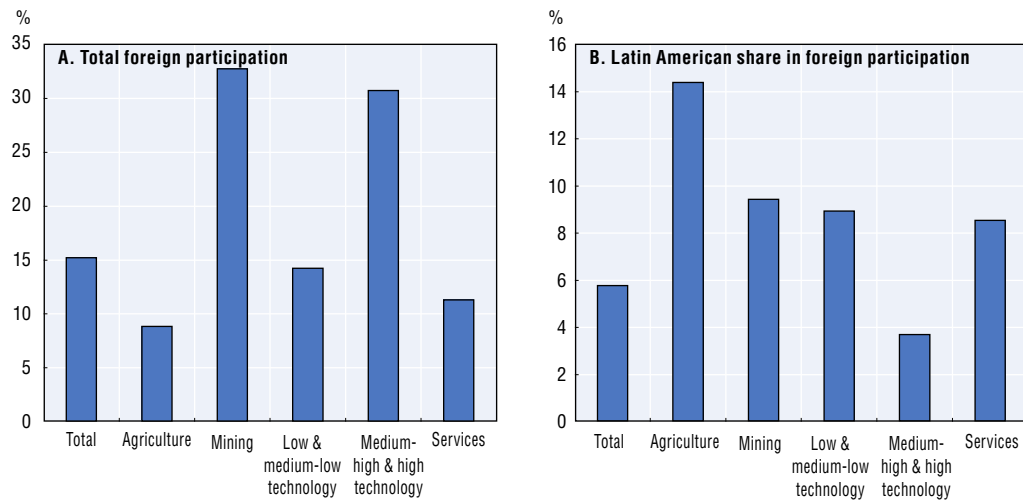
Latin America's participation in the supply chains that service Chinese domestic final demand is very relevant in the analysis of the bilateral trade linkages between both regions, given the magnitude of China's domestic market. This component in the trade relationship between China and LAC has been gaining importance and is expected to continue to do so in the future owing to its potential growth. The ratio between Latin American value added incorporated in Chinese final demand and in Chinese gross exports has risen from 1.5 in 2000, to nearly 2 in 2011. Chinese final demand offers some productive development opportunities for Latin America, as highlighted in Chapters 2 and 5, and will affect its economic development in the future to a greater degree.

The ratio of LAC value added in Chinese final demand (calculated by source industries) is highest, in descending order, in agriculture, mining and services.⁶ Thus, changes in Chinese demand in these sectors are likely to have a stronger impact in spurring increased imports from the region. At the country level, this is likely to create differing degrees of new opportunities. The countries with the biggest ratios of exports serving Chinese final demand and destined for Chinese gross exports are Brazil and Argentina, owing to their specialisation in agriculture, in the case of both countries, and also owing to a high share of mining and services in value-added exports, in Brazil's case. Colombia and Mexico also have high ratios, though lower than those of Brazil and Argentina, owing to their strong specialisation in mining and services. The countries with the lowest ratios are Costa Rica and Chile, given the importance of manufactures (which include basic metals) in their trade linkages with China.

Latin American participation in foreign value added in Chinese final demand is low, despite having grown in recent years, increasing from 2% in 2000 to 6% in 2011. Asia is the main origin of imported value added in Chinese final demand with a share of 37% in 2011, followed by the rest of the world, accounting for 30%. LAC's value-added contribution is highly concentrated in Brazil, which accounted in 2011 for 55% of the total (followed by Chile, Mexico and Argentina, with 18%, 13% and 8% respectively).

The Chinese domestic demand sectors with the biggest foreign value-added share are medium-high and high-technology industries, and mining, while those sectors with the lowest share are agriculture, low and medium-low-technology industries, and services. These shares are closely aligned to the degree of openness, not only in the trade of final products but also in the trade of intermediates used in the production of each sector's final goods. As a consequence, the sectors with the lowest shares may offer unexploited production and supply opportunities in the future if Chinese tariffs and regulatory barriers in these sectors are lowered. This is particularly relevant for LAC as its share of foreign value added in final demand is greatest precisely in agricultural and services sectors and lowest in high technology industries. This is true regardless of classification by final demand industries or by source industries.

Figure 4.13. Share of foreign value added by industry of Chinese final demand, 2011 (percentages)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).
 StatLink <http://dx.doi.org/10.1787/888933291794>

The sector in which Latin America has a stronger comparative advantage in meeting Chinese final demand relative to other regions is agriculture (Figure 4.13). This leads to the region being in a strong position to benefit from a possible increased openness in this sector, and from this country's rebalancing process and increased demand for better quality food explained in Chapter 5. In the distribution among countries of Latin American value added in Chinese final demand in agriculture, Brazil has the highest share with 66%, followed by Argentina, Chile and Mexico, with 21%, 7% and 5% respectively. Thus, Brazil and Argentina are the countries that would experience more directly the impact of the changes mentioned above, as well as the effect of any variations in the performance of China's agricultural sector.

In light of the potential future importance for Latin America of China's process of rebalancing, it is important to look beyond value added in Chinese final demand to Latin American value-added in Chinese final consumption. The broad sector composition of this value added follows the same pattern as in Chinese final demand, with the most notable difference being the larger share of agriculture in consumption relative to final demand. This increased importance of agriculture in final consumption also has consequences regarding the distribution of Latin American value added among the region's countries. In this distribution of value added, Brazil has the biggest share (60%), followed by Argentina (13%), Chile (12%) and Mexico (11%).

Changing realities in the context of GVCs

Global value chains (GVCs), which are the result of the fragmentation of production of goods and services into distinct stages in diverse countries, have transformed world production and trade in recent decades because of decreasing transport costs, advances in information and communication technologies (ICT), and trade liberalisation. GVCs are led mostly by multinational companies (MNCs), and represent about 80% of world trade (AfDB/OECD/UNDP/UNECA, 2013). As a result, trade in intermediate goods has become increasingly important.

This reorganisation of production introduced both new opportunities and challenges for developing economies to participate in these value chains. Countries can now specialise in specific tasks or segments of production chains, rather than building up the

entire supply chain at home from scratch. This allows for participation in new industries, and provides access to new markets through MNC distribution networks (Baldwin, 2012). The emergence of new segments within global or regional value chains may also present an opportunity for export diversification (IDB, 2014). GVCs also pose certain risks, as trade within these chains may be more volatile, with the need to constantly adapt to changing market conditions and strict buyer requirements. Furthermore, participation in these increasingly time-sensitive operations requires appropriate logistics infrastructure, specialised services and speedy customs handling. Such factors may limit access to GVCs for countries and regions that lack these elements.

The increasing geographic fragmentation of production complicates the measurement of trade activities. As intermediate goods often cross international borders multiple times before their final assembly, this phenomenon duplicates entries in trade statistics, and reduces their precision in capturing GVC trade. To solve this double-counting issue, Inter-Regional or Inter-Country Input-Output (ICIOs) tables may be used to properly account for international trade flows in value-added terms. These tables capture the productive linkages between countries and separate domestic from foreign value-added contributions. Furthermore, this methodology also allows for analysing the contribution of service sectors, which play an increasingly important role in GVC trade (Duran and Zaclicever, 2013).

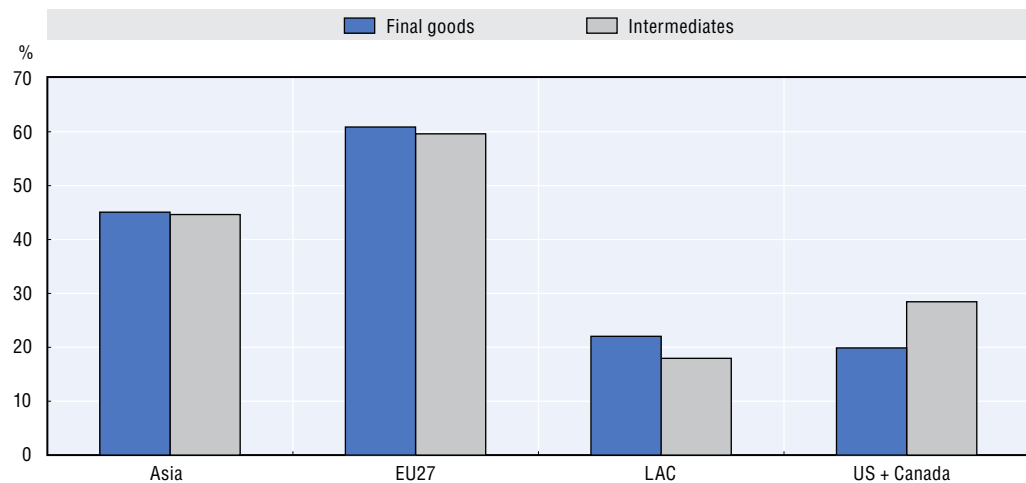
This section analyses general trends in GVC participation of Latin America and China. In particular, it explores the bilateral production linkages between these two. It also explores to what extent GVCs offer Latin American countries real opportunities for export diversification, particularly in services sectors, and whether GVC linkages with China provide greater opportunities than those with other regions.⁷ The section ends by looking at how to maximise the benefits from trade linkages with China, while minimising risks and seizing diversification opportunities.

Latin America's slow integration into regional and international value chains

Regional integration differs significantly across regions and is strongly associated with economic specialisation and trade complementarity, with different degrees of trade in intermediate and final goods. While North America, Asia and Europe are highly integrated through trade in intermediates, other regions such as South Asia are integrated mostly in final goods. The Middle East and North Africa, Western and Central Africa, and Eastern and Southern Asia show increasing levels of integration in value chains that extend beyond their regions. Dynamics of intermediate trade between regions also appear to be shifting. Recent evidence suggests that North America and the European Union are losing some of their importance as sources of intermediate inputs for developing countries, while links between African, Central Asian, Latin American and East Asian countries are increasing (Kowalski et al., 2015).

Except for Mexico, most of Latin America remains on the periphery of GVCs activity. GVCs, as demonstrated by the dynamics of intermediate trade and vertically integrated foreign direct investment (FDI) flows, are largely organised around three regional hubs, "Factory North America" "Factory Asia", and "Factory Europe" (IDB, 2014). From 2000 to 2011, these regions have registered strong increases in trade in intermediate goods, with an average annual growth rate of 7.8%. A considerable share of this trade takes place at the intra-regional level. Aside from Mexico, which is well integrated into the North American Free Trade Agreement (NAFTA) region, in Latin America the share of intra-regional trade and growth rates in both intermediate and final goods are low; although integration in final goods is significantly higher (Figure 4.14). This level of intra-regional integration is low in comparison to that of other regions considered, underscoring the limitations of current efforts at fostering regional integration. Furthermore, this low integration and the fact that it is considerably lower in intermediate than in final goods, shows the limited degree of GVC participation in the region, particularly the dearth of regional value chains.

Figure 4.14. Share of intra-regional trade in intermediate and final goods, selected regions, 2011



Source: OECD/CAF/ECLAC calculations based on United Nations (2015), United Nations Commodity Trade Statistics Database, (Comtrade), <http://comtrade.un.org/>.
 StatLink  <http://dx.doi.org/10.1787/888933291807>

GVC participation indicators have become a standard measure of countries' insertion into regional and global value chains. They reflect the intermediate products imported from abroad that are embodied in a country's exports (backward linkages), as well as the country's exported intermediates that are incorporated into other countries' exports (forward linkages) (Bohn et al., 2015). Both are measured as shares of gross exports. Higher backward linkages are generally observed in countries with larger shares of manufacturing in GDP. Larger domestic markets are associated with lower backward linkages – because of larger domestic capabilities for sourcing inputs – and larger forward linkages (OECD, 2013). Furthermore, recent studies show that stronger backward linkages are also positively related to diversification, productivity growth and positive structural change (Rieländer and Traoré, 2015; AfDB/OECD/UNDP/UNECA, 2013). Thus, a country's upstream position in a value chain as a provider of primary inputs may offer different opportunities from a further downstream position that integrates inputs into final products.

Recent research analysing the drivers of GVC participation underscores the significant impact of exogenous factors (such as distance to the manufacturing hubs of Germany, Japan and the United States, share of manufacturing in GDP, and market size) compared to policy-related factors (Kowalski et. al, 2015). The distance to manufacturing hubs has a stronger negative impact on sourcing intermediates than on final-goods trade. Of the four Latin American countries considered (Argentina, Brazil, Chile and Mexico), only Mexico meets the expected level of integration given its structural characteristics. The analysis suggests that many Latin American countries face particular hurdles to greater GVC participation, in the form of economic specialisation in less fragmented industries than manufacturing, as well as distance and logistical and infrastructure bottlenecks.

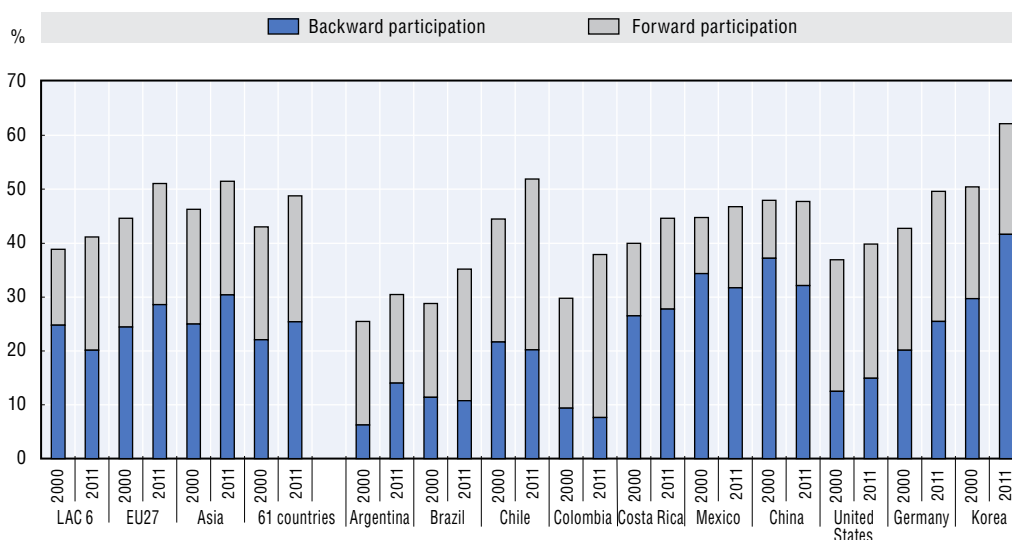
Latin America's participation in GVCs is considerably lower than those of other regions, such as the European Union and Asia, mainly owing to the lower backward linkages component of GVC participation (Figure 4.15).⁸ In 2011, the share of foreign value added in gross exports was 20% for Latin America (six countries), versus the European Union and Asia, both with around 30%. However, Latin America's level of backward

linkages is significantly influenced by Mexico, which is strongly integrated in the NAFTA region (mainly with the United States in the automotive and electronics sectors). Excluding Mexico, the region's backward linkages fall to 13% of its gross exports.

The geographical composition of the forward linkages component of GVC participation also signals very low intra-regional integration in Latin America. At the aggregate (six countries) level, only 9% of the region's value added included in third countries' exports was incorporated into Latin American exports in 2011. However, there are significant differences across countries and sectors (Figure 4.18A). Argentina and Colombia have large shares of intra-regional forward linkages (17% and 14%, respectively, in 2011), while Mexico has a small share (3% in 2011). In terms of sectors, medium-high and high-technology industries have higher intra-regional forward linkages than the rest. In contrast, China's forward linkages are concentrated in its own region (which accounted for 40% of the total in 2011, followed by the European Union with 28%), because it is firmly integrated into "Factory Asia".

Nevertheless, regional aggregates mask a great deal of heterogeneity across countries, driven primarily by structural issues such as the share of manufacturing in exports and market size. Countries with larger markets, as well as those more specialised in agriculture, mining and services, tend to have lower levels of backward linkages (as they source fewer intermediate inputs from abroad) and greater forward linkages, indicating upstream positions in international value chains. This is the case of Brazil, Colombia and Chile. In contrast, countries with greater integration in manufacturing activities, such as Mexico and Costa Rica, exhibit higher levels of backward linkages (around 32% and 28% of gross exports, respectively, in 2011), since manufacturing sectors tend to be fragmented across more stages of production. The case of Argentina is somewhat unique, with relatively low levels of both backward and forward linkages.⁹ China has strong backward linkages (32% of gross exports in 2011), despite its large market size.

Figure 4.15. Backward and forward GVC participation in selected regions and countries, 2000 and 2011
(percentages)



Note: Regional indicators were computed by aggregating data for the countries that make up each country group.

Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

StatLink <http://dx.doi.org/10.1787/888933291819>

The general trend of increasing international fragmentation of production is evident in the growth of GVC participation indicators from 2000 to 2011 (Figure 4.15). In most countries considered here, the aggregate participation index (i.e. the sum of forward and backward components) increased during this period. In the case of Korea, the increase was exclusively driven by backward linkages (which reached around 42% of gross exports in 2011). In China, the aggregate participation index remained almost unchanged but the degree of backward integration decreased significantly (from 37% to 32%) while that of forward linkages increased (from 11% to around 16%). In LAC countries, Brazil, Chile, Colombia and Mexico show a large increase in their forward linkages, while their backward linkages decreased. In Argentina, the opposite occurred.

Directions and degrees of integration across Latin American countries¹⁰

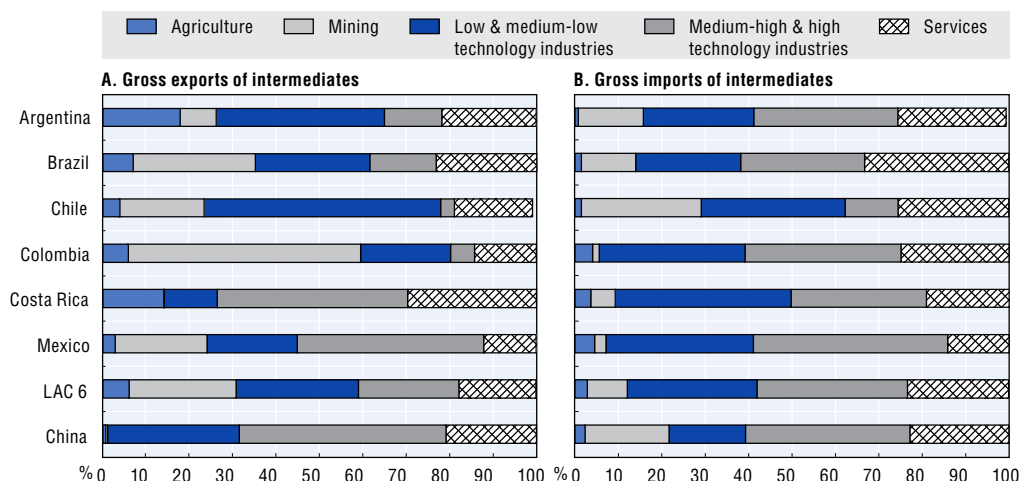
Latin American countries show diverse degrees of integration across the region, and across trading partners. The composition of intermediate exports by destination region reveals important differences between these countries that translate into different types of insertion into GVCs (Figure 4.16A).¹¹ Brazil and Chile have particularly strong links with China and the rest of Asia as destinations for their intermediate exports, which are highly concentrated in mining products and basic metals (with a greater share of the former in the case of Brazil and the latter in the case of Chile).¹² These products also account for a large share of Brazilian and Chilean intermediate exports to the United States and Canada, and the European Union.

In Argentina, intermediate exports are concentrated in agriculture and food products. They are sold primarily to other Latin American countries and the rest of the world, although China also accounts for a considerable share of agricultural intermediate exports. The main intermediates exported to the United States and Canada are basic metals and mining products, while most intermediate exports to the European Union consist of agriculture and food products.

Colombia, Costa Rica and Mexico are more integrated with the United States, and to some extent the European Union. The majority of Colombia's intermediate exports, mainly mining products, are sold to the United States which is also the main destination for Mexico's intermediate exports, concentrated in the automotive and electronics sectors. For Costa Rica, intermediate exports are concentrated in the electronics sector and their main destination market is China, followed by the United States (which is also the main destination for agricultural products, along with the European Union).

Within Latin America, intermediate trade between Argentina and Brazil is noteworthy, reflecting integration through Mercosur. In 2011, Brazil was the origin of one-third of medium-high and high-technology intermediates imported by Argentina and also accounted for a significant share of other intermediate imports (particularly, mining products and natural resource-based manufactures). For Brazil, by contrast, Argentina is not a large source of intermediates, unlike the United States and the European Union. These two regions are important sources of intermediates for all six Latin American countries considered, with a significantly larger share from the United States in the case of Mexico, Costa Rica and, to a lesser extent, Colombia. Latin America sources a significant proportion of its intermediates from China, particularly of high-technology industries.¹³ All six Latin American countries included in the dataset show a strong increase of China's share in intermediate imports from 2000 onwards, albeit from a low base.

Figure 4.16. Trade in intermediates in Latin America and China, by broad sector composition, 2011
(percentages)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

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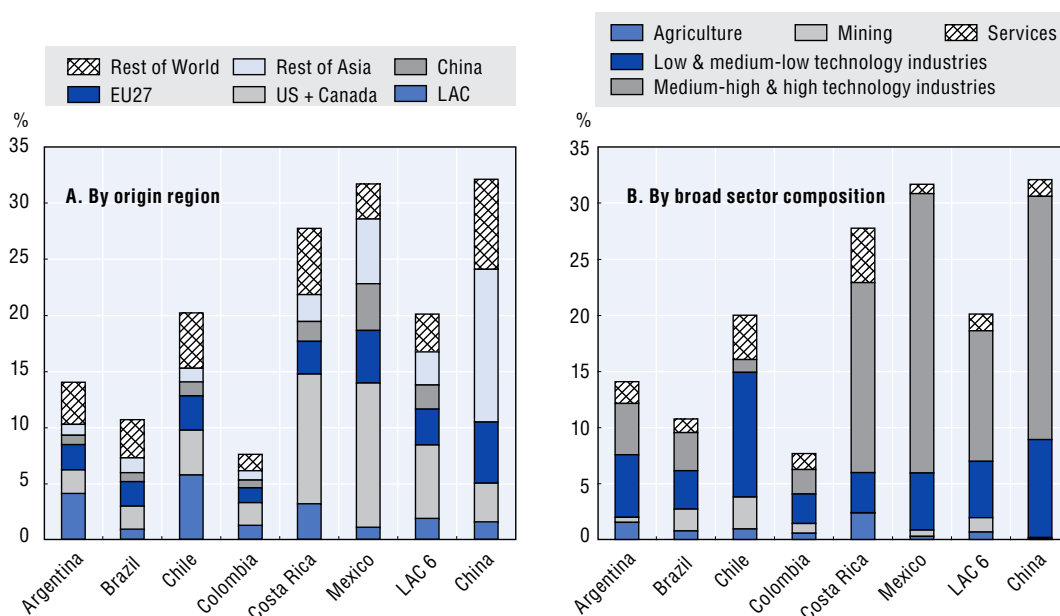
The importance and product composition of backward linkages, which refer to the foreign content of gross exports, depends strongly on the trade specialisation of each economy. In Latin America (six countries), the majority of backward linkages are concentrated in medium-high and high-technology industries (58% of the total in 2011, equivalent to 12% of total gross exports). The main origins of these linkages are the United States and Asia, with a small share from the region itself (Figure 4.17). However, there are significant differences between countries. For Argentina, whose backward linkages are concentrated in low and medium-low as well as high and medium-high technology industries, the Latin American region accounts for a significant share of the foreign content of these sectors' exports (28% and 36%, respectively, in 2011). The other main supplier of imported inputs for Argentine exports is the rest of the world, with larger shares than Latin America in most product groups (particularly agriculture and mining), except medium-high and high technology industries. Argentina's backward linkages from China represent only 6% of the foreign value added contained in total exports and around 8% of that in medium-high and high technology exports, although both have increased considerably since 2000 (from 1.4% and 1.6%, respectively).

The backward linkages of Mexico and Costa Rica are largely concentrated in medium-high and high technology industries (around 80% and 60% of the total, respectively, in 2011), and their main origin is the United States. However, the increase in backward linkages from China to Mexico is noteworthy, particularly in this group of industries (from 1.3% in 2000 to around 15% in 2011). Brazil and Colombia, with lower backward linkages than the other four Latin American countries, also experienced an increase in the share of China as origin of these linkages.

The six Latin American countries also show significant differences in the level and composition profiles of their forward linkages (Figures 4.18). As a share of gross exports, forward linkages tend to be more significant in natural resource-specialised countries like Chile, Colombia and Brazil (32%, 30% and 24%, respectively, in 2011), and lower in countries with a higher share of non-natural resource-based manufactures in their exports, like Mexico and Costa Rica (15% and 17%, respectively, in 2011). However, natural resource specialisation

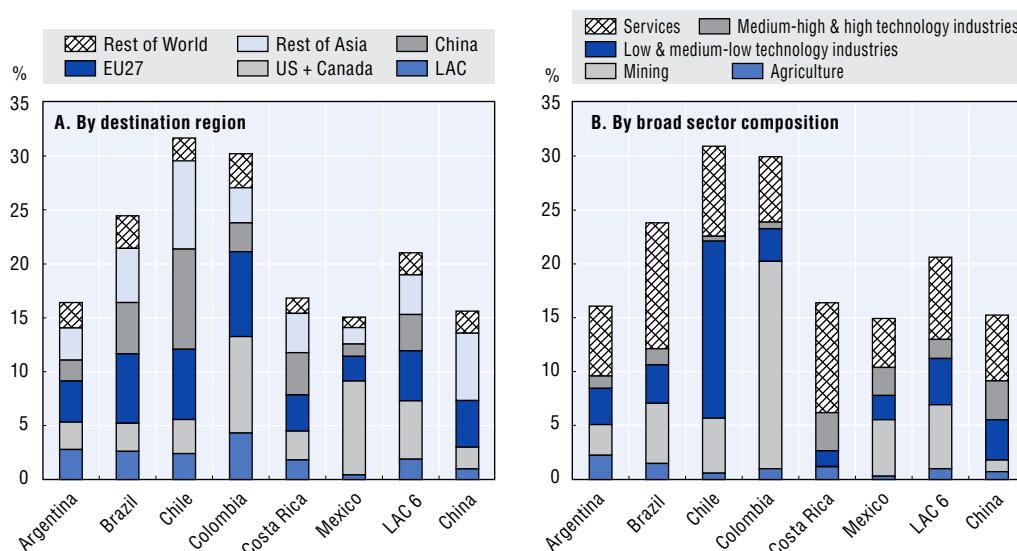
does not necessarily imply a high level of forward linkages, as illustrated by Argentina (where forward linkages reached 16.4% of gross exports in 2011). These results also suggest that the degree of forward linkages is less dependent on the domestic market size.

Figure 4.17. **Backward participation in GVCs in Latin America and China, 2011**
(in percentages of total gross exports)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).
StatLink <http://dx.doi.org/10.1787/888933291831>

Figure 4.18. **Forward participation in GVCs in Latin America and China, 2011**
(in percentages of total gross exports)



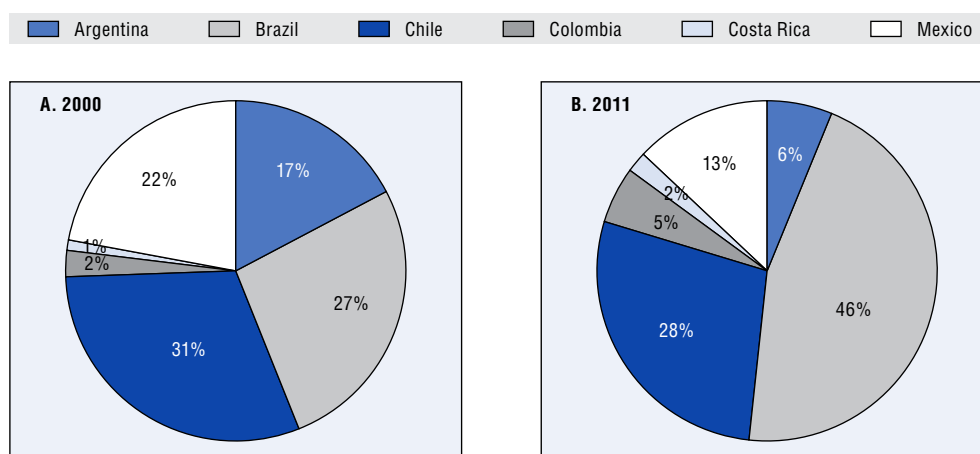
Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).
StatLink <http://dx.doi.org/10.1787/888933291843>

The sector composition of forward linkages varies across countries. In Argentina, Brazil and Costa Rica, services represent the largest share of forward linkages.¹⁴ Business services are strongly present in these, as well as the more traditional services (wholesale and retail trade and transport and storage). The mining sector predominates in Colombian and, to a lesser extent, Mexican forward linkages, having also a significant share in the case of Brazil. In Chile, low and medium-low technology (natural resource-based) manufactures have the highest degree of forward linkages, especially basic metals.

Value chain linkages between China and Latin America

Intermediate trade links between Latin America and China are increasing rapidly on average, but also vary significantly across countries. The six Latin American countries considered are not among the top destinations for China's intermediate exports, despite the significant increase observed since 2000. Also, Latin America has a low share as the origin of China's intermediate imports (except for agriculture products). Within the limited, but growing, integration, the degree of backward linkages with China varies considerably across countries in the region. Brazil is the region's greatest contributor of inputs into Chinese exports accounting for nearly half of its value added incorporated in these exports in 2011. Chile accounts for roughly one-fourth of this value added, followed by Mexico, Argentina, Colombia and Costa Rica, which together account for the remaining 25% (Figure 4.19).

Figure 4.19. Country shares of China's backward linkages with Latin America, 2000 and 2011
(percentages)

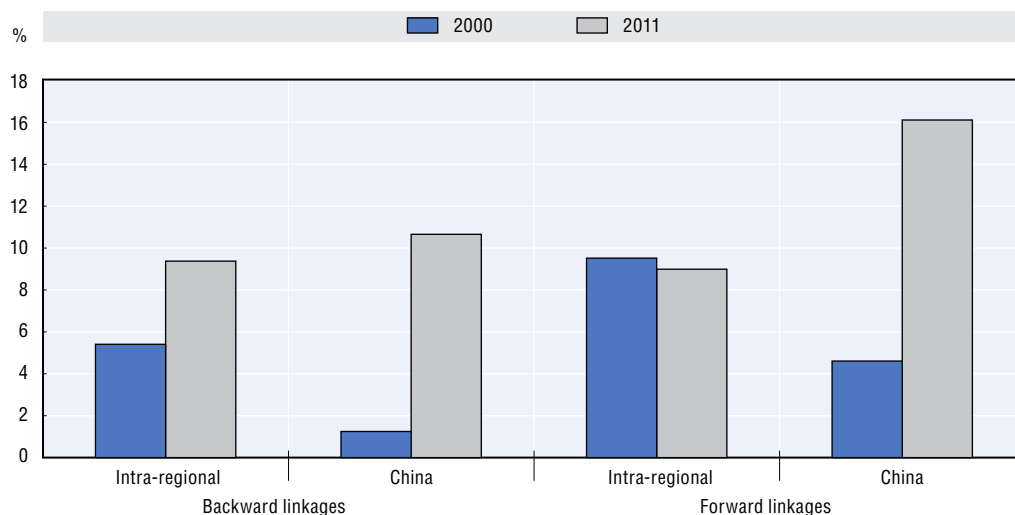


Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).
StatLink <http://dx.doi.org/10.1787/888933291858>

Latin America incorporates a greater share of Chinese imports in its exports than China does with imports from Latin America. This pattern is consistent across all product groups. The share of Chinese exports embodied in Latin American exports more than doubles that of Latin American exports embodied in exports from China. Around 6% of China's forward linkages (i.e. 6% of the total Chinese value-added exports incorporated in third countries' exports) correspond to Latin America, while Latin America's forward linkages with China represent 16% of the region's total forward linkages (i.e. 16% of the regional value added embodied in third countries' exports is incorporated in Chinese exports). The respective figures in 2000 were 3% and around 5%. As mentioned, China's forward linkages are concentrated in the Asian region, while those of Latin America are spread across different regions (with low intra-regional linkages). Also, the region's GVC linkages with China

have become even more important than intra-regional ones (Figure 4.20). These dynamics demonstrate the importance of strengthening insertion of Latin American firms into GVCs, and moving into higher value-added niches within Chinese value chains. Lessons from the firm level perspective, particularly with respect to learning by doing at the regional level, can be quite pertinent to foster progress in these areas (see Box 4.5.)

Figure 4.20. Intra-regional and Chinese share in Latin American GVC linkages, 2000 and 2011
(percentages)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

StatLink  <http://dx.doi.org/10.1787/888933291862>

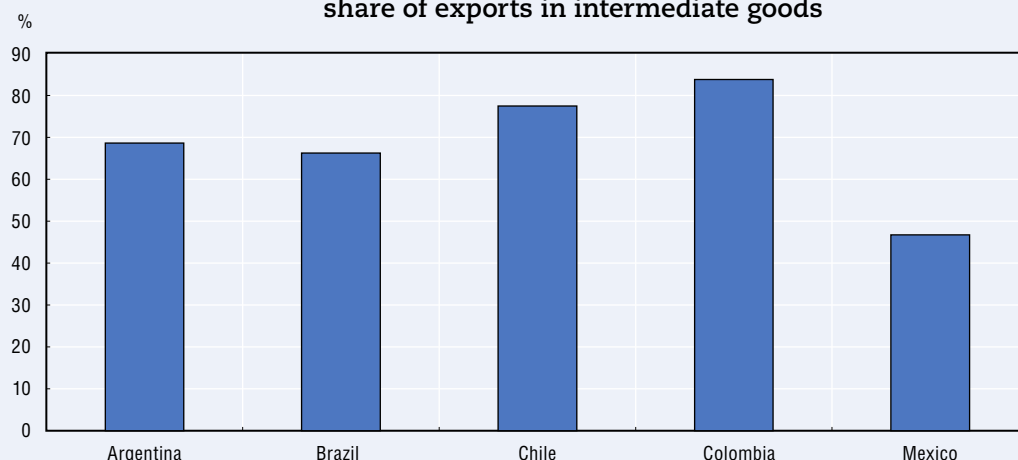
Box 4.5. Participation in international production linkages: Some lessons from case studies¹⁵

The production linkages that Latin America has established with China are based primarily on the exports of natural-resource intensive products. For example, using data from the OECD-WTO's TiVA dataset for the year 2011, Figure 4.21 shows the exports of agriculture, mining and basic metals to China for a group of Latin American countries as a share of total exports in intermediate products (a raw indicator of international production linkages). Not surprisingly, these shares all exceeded 60% with the exception of Mexico, and even for this country the share is relatively high at 46%. These patterns of Latin American production linkages with China, based on natural-resource intensive products, are also similar with respect to other Asian countries. Indeed, this reflects the traditional way that countries in Latin America have participated for decades in some forms of international production networks, mainly as suppliers of raw materials and basic inputs, but mostly unable to capitalise on the recent surge of production fragmentation in which goods previously produced in one country are sliced up and co-produced in many parts of the world.

While the commodities-for-manufacturing trade will continue to dominate the relationship between Latin America and China, it is not inconceivable that the increasing international fragmentation of production could open some doors for Latin American countries to participate in some segments of supply chains that were off-limits in the past. The question is what factors need to be addressed to improve the likelihood that Latin America joins these international production networks. A look at some case studies provides some insightful answers.

**Box 4.5. Participation in international production linkages:
Some lessons from case studies¹⁵ (cont.)**

Figure 4.21. Exports of agriculture, mining and basic metals to China, as a share of exports in intermediate goods



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

StatLink  <http://dx.doi.org/10.1787/888933291879>

The case studies were developed as part of a research project that was published in IDB (2014) on ten firms across five countries in Latin America that were successfully inserted in global value chains.¹⁶ The supply chains were not focused on Asian countries; nevertheless, the lessons that emanate from the cases are likely to apply to production linkages in general, including those with Asia. While each case has its own peculiarities, some similarities in the characteristics of the firms participating in these networks were found. Two similarities are particularly important in what they reveal about challenges and policy implications.

1. Prior exposure to international practices and/or markets

One of the most common similarities observed across all the cases was prior international business experience. Typically, the manager, the CEO, or the owner of the firm had some exposure to international practices and/or markets even before the firm was established. This reveals a challenge that is common in accessing international production networks: lack of information. In GVCs, suppliers typically need to customise their production to the requirements of particular buyers, while buyers need to convey this information to the suppliers and make sure they are capable of delivering the product with the correct specifications. In other words, the amount of information required for a match between a buyer and a supplier in an international supply chain can be vast, and lack of information can easily keep potential suppliers on the sidelines while buyers rely only on a few known providers. Exposure to international practices can certainly facilitate access to information, which may explain why evidence of prior international experience was so widespread in the successful cases analysed.

What kind of policies can be used to address this problem of information gaps? In general, governments should promote environments that facilitate exchanges of information across players in the supply chains. Programmes could consist of some form of coaching, whereby a group of potential exporters meets with firms that have achieved success in the international markets. The government could also help organise exchanges where the information gap is filled by current or retired staff from international buyers. Yet another approach would be for representatives of the local firms to visit the facilities of global firms. Some information gaps can also be addressed by improving visibility through certifications. Global firms screen potential suppliers for compliance with relevant standards in their respective supply chains. The public sector could assist in promoting the establishment of local certification agencies or in the development and administration of quality labels.

**Box 4.5. Participation in international production linkages:
Some lessons from case studies¹⁵ (cont.)**

2. Firms leveraged resources and collaborated with other peers to address common challenges

The evidence from the case studies also indicated that successful suppliers in Latin America seldom joined an international production network on their own, but through co-ordination with peers. This mostly reflects another characteristic of many Latin American firms: the lack of adequate capacity to meet all the standards required by global buyers. Accordingly, the successful cases in the studies tended to leverage resources with other firms, particularly as a means of attaining specific capabilities, addressing common barriers, or covering the fixed costs of activities, such as attending an international trade fair.

This implies that another area for potential public action is supporting mechanisms of firm co-operation, such as business associations. Since some of the existing business associations are weak or are designed for rent seeking, governments could support sectors that want to improve their organisation or help create new associations when common interests may extend beyond sectors.

Governments can also support the consolidation of interested firms as a way to complement capabilities. Government-designed programmes for mergers and acquisitions, for example, can be helpful in encouraging companies to grow their businesses and acquire capabilities more quickly. Finally, the evidence shows that in some cases the suppliers in Latin America needed to import high-quality inputs from peers in neighbouring countries in order to complement their own production. Complementing the skills of a supplier with the skills and capacities of suppliers in other countries implies having low levels of trade protection at home.

Addressing these issues outlined here should be part of a broader agenda that also tackles other more commonly cited challenges faced by the region, for example the lack of adequate transport and logistics infrastructure.

Source: IDB, 2014.

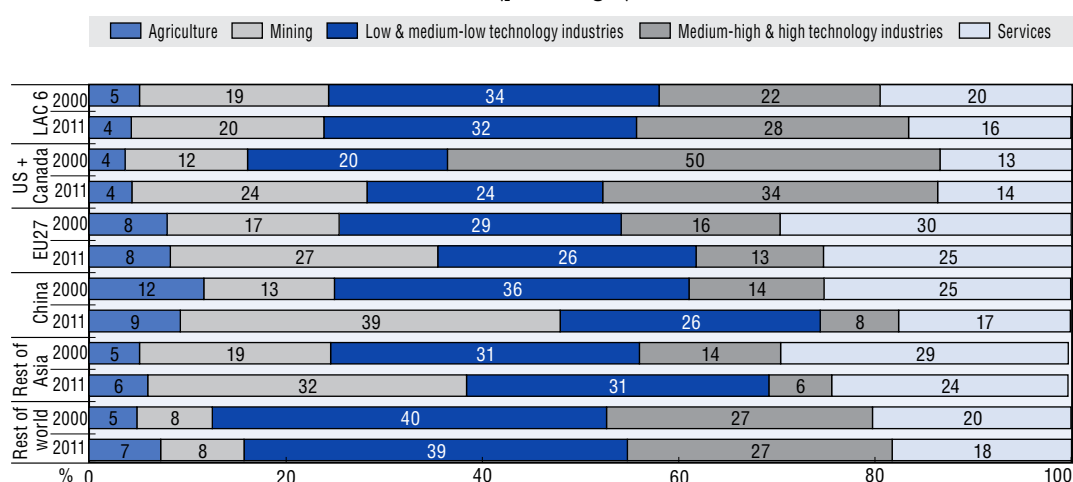
Do GVCs with China offer distinct opportunities for diversification in Latin American countries?

Exports from Latin America as a whole to China are heavily concentrated in commodities. Yet, one of the benefits attributed to GVC insertion is the opportunity to participate in new segments of value chains and effectively diversify exports (IDB, 2014). Recent research looking at trade dynamics in processed intermediates and opportunities for diversification through value chains in Asian and African regions documents increases across intensive margins of trade. These reflect increases in quantity in the same exported products and to already established markets, although there is also some evidence of spreading to new markets but solely for products already exported. The exception identified so far has been in West and Central Africa, where new products were identified with very low export survival rates, (Kowalski et al., 2015). Nevertheless, the extent to which existing value chains provide new diversification opportunities for Latin American countries is worth exploring. The TiVA dataset can be used to demonstrate how the relative shares of foreign value added in Chinese exports at the sector level sourced from Latin America changed over time. While the level of disaggregation at 34 sectors has its limitations, it does provide a perspective on the relative concentration and or diversification across sectors. It also allows the rare opportunity of a direct comparison with services sector dynamics.

The growing dominance of the mining sector in Latin American exports of intermediates is strongest in exports to China. Figure 4.22 provides a broad overview of the composition of Latin America's intermediate exports by destination region for 2000

and 2011, showing that the mining share of intermediate exports to China tripled during this period, while the shares of manufacturing, services and agriculture decreased. This pattern suggests that, at the aggregate level, intermediate trade broadly reflected similar patterns seen in gross exports. China is the only region in which mining represents the biggest share of intermediate exports, since manufacturing represents the greatest share of intermediates exported to all other regions. Furthermore, during this period intermediate exports showed an increase in their share of mining products for all regions except the rest of the world, with this sector representing at least 20% of total intermediate exports to each of these regions in 2011.

Figure 4.22. Latin American exports in intermediates by destination region and broad sector composition, 2000 and 2011
(percentages)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

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Among the region's destinations of intermediate exports, China is the one in which the agricultural sector has the biggest share, with 9%, followed by the European Union and rest of world, with 8% and 7%. This sector's share has been relatively stable between 2000 and 2011 in all destinations of intermediate exports, with China experiencing the biggest decrease, from 12% to 9%, and rest of world having the biggest increase, from 5% to 7%. The destinations with the service sector's biggest share in intermediate exports are the European Union, rest of Asia, and rest of world, with 25%, 24% and 18%, respectively. This share has decreased for all regions, with the exception of the United States and Canada, where it increased slightly from 13% to 14%. The destination with the most dramatic decrease in this share is China, with a decrease from 25% to 17%.

Upon closer analysis of China's backward linkages from Latin America at the sector level, this pattern of strong concentration in mining and basic metals is broadly reinforced across countries. In Chile, mining and basic metals accounted for over 60% of domestic content in Chinese exports in 2011, while the share of services fell from 35% to 24%. In Mexico, mining and basic metals increased considerably as shares of domestic content of Chinese exports, while computers and electronics and services fell from 9% to 5% and 55% to 34%, respectively, between 2000 and 2011. In Argentina, agriculture and mining shares of domestic content of Chinese exports rose, while services also fell. In Colombia, the value-added shares of mining and basic metals nearly doubled between 2000 and 2011; services dropped from 13% to 9%.

Nevertheless, in the evolution of backward linkages from Costa Rica and Brazil, the effect is more nuanced. In Brazil, while the mining share experienced the largest increase, the share of wholesale and retail trade services also increased slightly, and research and development (R&D) and business services maintained a steady share of Brazilian value added in Chinese exports. The case of Costa Rica is quite distinct, with an actual decline in commodity shares in its content in Chinese exports. While agricultural shares dropped, shares in computer and electronics held steady around 10%, whereas total services, and business services in particular, both increased slightly during the 2000-11 period. Nevertheless, the experience of Costa Rica is a very isolated case in the region.

Dynamics in services trade

In the context of increasing competition in manufacturing and, until recently, increasing incentives for exporting commodities, services may provide complementary avenues for diversification. Services accounted for 21% of gross exports from Latin America in 2011. While this share is lower than that found elsewhere, such as the European Union, Asia and the United States and Canada – although similar to that of China at 23% – there are multiple reasons for optimism about its growing potential. Services GVCs participation, as measured by the share of services forward linkages in gross exports while controlling for GDP, are higher than predicted average in Chile, Brazil and Costa Rica. This is especially encouraging given that overall participation in GVCs tends to be lower than predicted by other structural factors in these countries (see Kowalski et al. 2015).

Relative to manufacturing industries, the drivers of participation in services GVCs depend less on distance to current hubs and more on investment-related policies (Kowalski et al., 2015). This increased link between services sectors and investment – specifically FDI – has also been observed in the emergence of a trade-investment-services nexus (see Box 4.6). The relatively open investment climate in Latin America in many services sectors thus places the region at a relative advantage. Furthermore, the proximity and time zone compatibility with both US and EU markets is another supportive factor. Several countries in Latin America (including Chile, Costa Rica and Uruguay) have already shown dynamic exports of information technology enabled business services. According to AT Kearney's Global Services Location Index 2014, 8 countries in Latin America are part of the 51 most attractive countries to establish back office activities (AT Kearney, 2014).

Box 4.6. The trade and foreign direct investment nexus

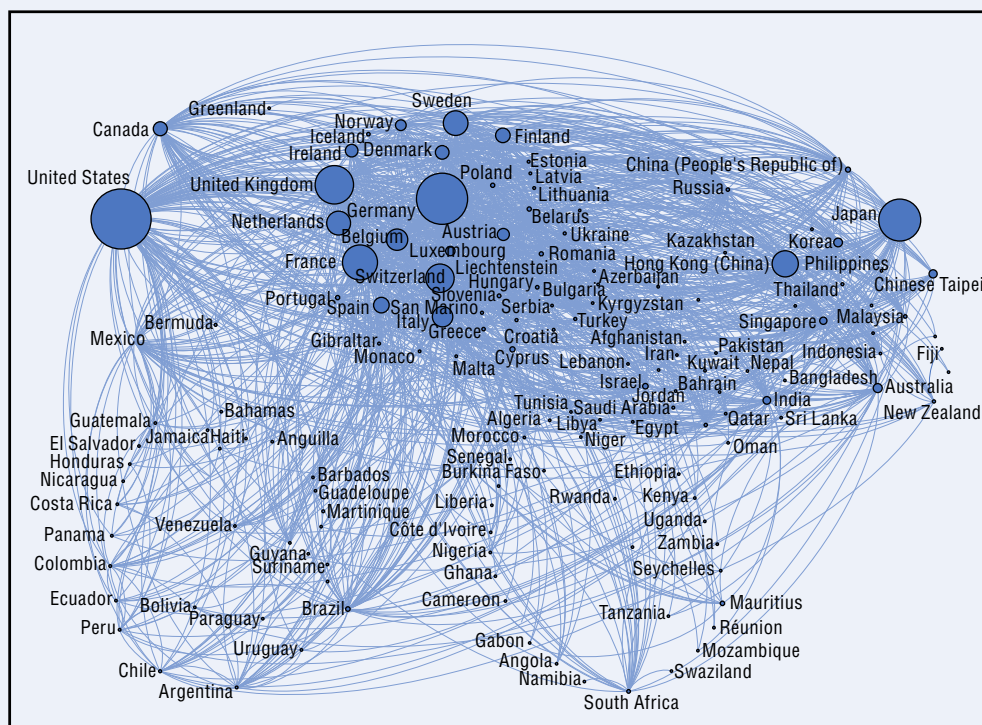
Traditionally trade and foreign direct investment (FDI) were considered substitutes for each other. With the spread of global value chains from the 1990s onwards, however, trade and FDI have become important complements. With the geographic dispersion of production, trade in goods has become intertwined with international production facilities, training technologies, and long-term business relationships as well as services needed to link production processes and deliver the goods to their end markets (Baldwin, 2011). This new relationship is the trade-investment-services nexus, and demonstrates the increasing interdependence of trade, finance and service provision in the global economy. Global production networks controlled by multinationals accounted for four-fifths of global trade in 2011. Moreover, UNCTAD (2013) found a strong correlation between the FDI inward flows and participation in GVCs, both in developing and developed countries.

Using the Dun & Bradstreet (D&B) Worldbase dataset, IDB (2014) depicts the networks of parents and their vertically linked subsidiaries around the world. It shows that most parent companies and their foreign subsidiaries are also located in high-income countries. Most supply chains are regional, with the United States, Germany and Japan in the middle of the North American, European and Asian value chains, respectively. It also shows that Africa and Latin America are largely outside these production networks (Figure 4.23). This evidence coincides with the low participation of these regions in international trade in intermediate products, suggesting a nexus between FDI and international trade.

Box 4.6. The trade and foreign direct investment nexus (cont.)

The close link between Chinese commodity imports from Latin America and Chinese FDI in the commodity-producing sectors in the region from 2008 to 2012 also suggests a correlation between FDI and trade. During this period most FDI took place through mergers and acquisitions, predominantly (70%) in the oil and gas sectors (Ray et al., 2015).

Figure 4.23. Network of parent companies and vertically linked FDI worldwide



Note: The thickness and colour intensity of the lines show the number of bilateral vertical subsidiaries between each parent country and a corresponding host country. The size of the circles in each country illustrate the total number of parent firms located in that country that own vertically linked subsidiaries in other countries.

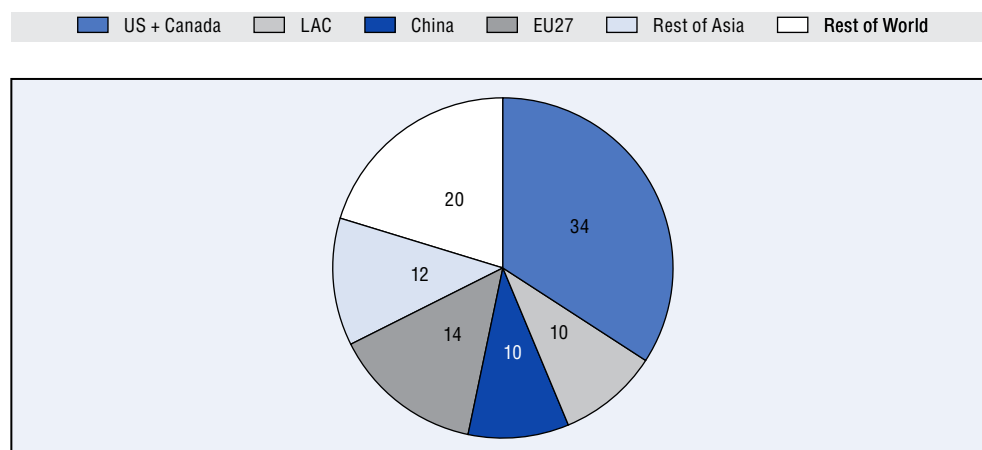
Source: IDB (2014).

StatLink  <http://dx.doi.org/10.1787/888933291895>

Source: Ray et al. (2015); Baldwin (2011); UNCTAD (2013); IDB (2014).

The strongest demand for intermediate services from Latin America stems from the US market (34%) (Figure 4.24). All other regions account for at least 10% each. Overall, Latin America's exports of intermediate services have grown at an average annual rate of 9% between 2000 and 2011. Brazil has the strongest performance, increasing its share of the region's intermediate services exports from 23% to 39% between 2000 and 2011. By contrast, Mexico lost a significant part of its market share during this same period (47% to 28%). Of the other countries included in the TiVA dataset, Argentina has the third-highest share, Chile the fourth, Colombia the fifth, and Costa Rica the smallest. For the region as a whole, the destination with the highest export growth is China, followed by Latin America, Rest of Asia, and rest of world. At the sector level, the highest growth for the region was observed in Computer and R&D, especially in Colombia and Costa Rica. For Chile, Brazil and Mexico, traditional services (transport and wholesale and retail trade) were the fastest growing sector, and for Argentina it was financial intermediation.

Figure 4.24. Destination regions of Latin American gross exports of intermediate services, 2011
(percentages)

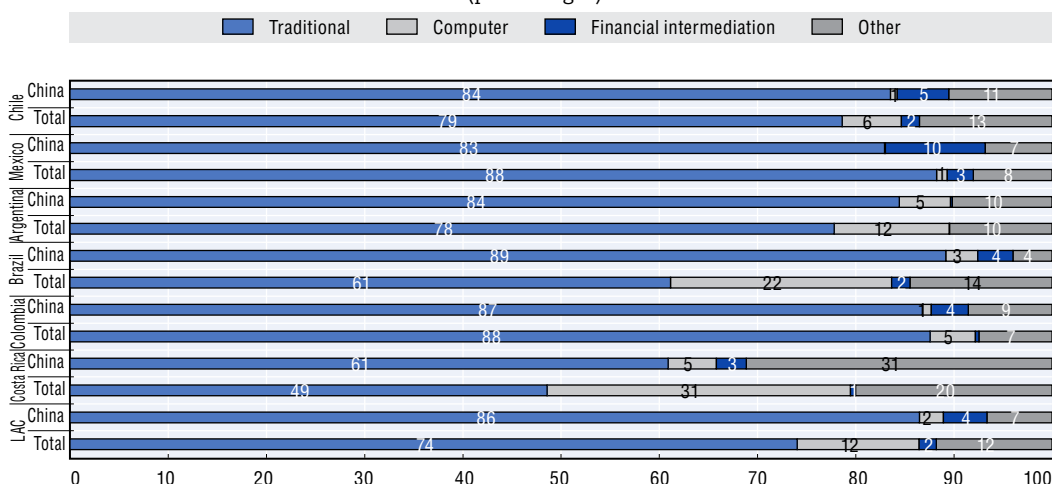


Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).
StatLink <http://dx.doi.org/10.1787/888933291908>

When broken down at the sector level, 74% of regional intermediate services exports are in traditional services, a share above that of the world average, but opportunities for increases in business services and computer and R&D sectors are growing, with these latter sectors accounting for 12% of the region's intermediate service exports, slightly below the world average. This pattern broadly holds at the country level as well, with two notable exceptions. The first one is Brazil, where the share of computer and R&D services account for 22% of intermediate services exports. The other exception is Costa Rica, where traditional services have a 49% share and computer and R&D services have 31%. These two countries are important for their high shares of computer and R&D exports, and in Costa Rica's case for the smaller share of traditional services as well.

While growth in demand for intermediate services has been significant in China, the opportunities for diversification are limited. Intermediate services exports to China for nearly all countries in the region tend to be in more traditional services sectors such as storage and distribution services, which are an important component embedded in the commodity exports (Figure 4.25). For all the LAC countries considered, computer and R&D services' share is smaller in exports to China than to the world at large. This tendency is particularly evident in Brazil and Costa Rica whose shares of intermediate services exports to China are 3% and 5% respectively, compared to 22% and 31% to the world at large. Part of the explanation for these trade patterns which are skewed toward traditional services could be due to the relatively high levels of services trade restrictiveness found in China. According to the OECD Services Trade Restrictiveness Index analysis, China scores above the average in all of the sectors considered, with significant restrictions on foreign entry including limitations on foreign direct investment by sector, conditions on capital transfers, limitations on cross-border mergers and acquisitions, labour market tests for temporary suppliers and limited access to the public procurement market (OECD 2015). These regulatory issues may explain the different possibilities that Latin American service exporters encounter in the Chinese market relative to others in Asia.

Figure 4.25. Latin American gross exports of intermediate services to China and the world, by sectors, 2011
(percentages)

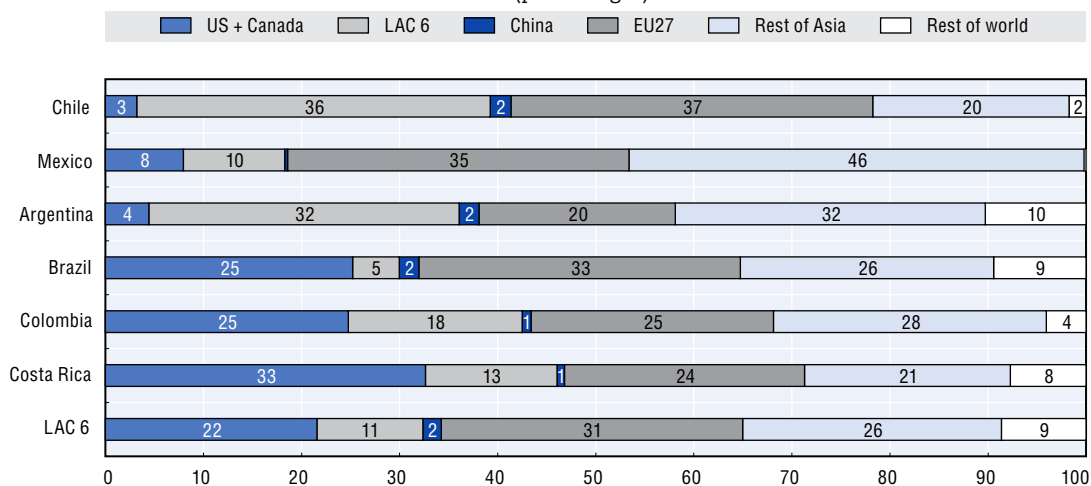


Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

StatLink <http://dx.doi.org/10.1787/888933291914>

Opportunities for exports in computer and R&D services differ from those of intermediate services on average; with the European Union and rest of Asia being the predominant destinations of the former (Figure 4.26). For this sector, exports are relatively evenly distributed among the top three destinations, which, in order, are the EU, rest of Asia, and the US and Canada. Between 2000 and 2011, the highest growth export destinations were the rest of Asia and the US and Canada. Latin America's services trade with the rest of Asia and the European Union has a bigger share of computer and R&D services than average, with the opposite tendency in China. Thus, if expanding activities in these knowledge-intensive services sectors is desirable, closer integration with Asian and EU countries could be advantageous. These dynamics suggest that services offer avenues for diversification and greater integration across regions. The European Union and Rest of Asia offer the greatest opportunities in Computer and R&D services but the United States and Canada and China offer opportunities in other sectors. While services exports to China tend to be more traditional, these can be counterbalanced with strategies for greater integration with other regions.

Figure 4.26. Latin American exports of computer and R&D services, 2011
(percentages)



Source: OECD/CAF/ECLAC calculations on the basis of 2015 OECD/WTO TiVA data (OECD/WTO, 2015).

StatLink <http://dx.doi.org/10.1787/888933291922>

Trade and investment agreements between Latin America and China

Bilateral free trade agreements (FTAs) with Asia have multiplied across the Pacific in the last 15 years. These agreements go from the Chile-Korea FTAs in 2004 to the Costa Rica-Singapore FTA in 2013. Similarly, China has used FTAs as a means to further deepen trade integration, signing 14 FTAs since 2000 with five more under negotiation at the end of 2014. Three of these bilateral agreements have been signed with Latin American countries: Chile (2006), Peru (2009) and Costa Rica (2011). In contrast, a more defensive strategy has been adopted by countries like Argentina, Brazil and Mexico that have increased protectionist actions towards China, including anti-dumping measures and demanding extra certification or permits. (Wise, 2015; Belén Lico and Sica, 2014). For Central America, the United States continues to be the main export destination, and their links with China are still nascent (see Box 4.3).¹⁷

Box 4.7. Latin America's free trade agreements with China

Having entered into the World Trade Organization (WTO) in 2001, China quickly jumped onto the FTA bandwagon. In 2002 it signed an FTA framework agreement with the ASEAN bloc (Brunei Darussalam, Myanmar, Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Singapore, Thailand and Viet Nam) and has since signed separate bilateral FTAs with three Latin American countries: Chile (2006), Peru (2010) and Costa Rica (2011). On China's side, the motives for these three FTAs are expressed in its first formal policy statement on Latin America issued in 2008.¹⁸ First, China's FTAs with Chile and Peru speak directly to its own resource scarcity in copper, iron ore, and other minerals; second, the China-Costa Rica FTA embodies China's efforts to advance on its "One-China" policy in a sub-region where the majority of states continue to recognise Chinese Taipei. On 1 June 2007 Costa Rica formally recognised the People's Republic of China.

These three small open economies were thus able to jump ahead of any number of countries seeking to export more to China and to attract Chinese FDI. In contrast with the multitude of FTAs negotiated over the past two decades, which comprise agreements between developed and developing countries, these three China-Latin American accords qualify as south-south accords. The region's track record on FTA deals between developing countries (for example, the Andean Community and the Southern Cone Common Market) has been disappointing, at best.

However, in contrast with these south-south FTAs within the region, all three of these China-Latin American FTAs approximate 21st century standards *vis-à-vis* the WTO and its new trade agenda (services, investment, and intellectual property rights). Although the impetus for negotiating all three of these FTAs was quite diverse, the outcomes are still WTO-plus.

A comparison of these three China-Latin American FTAs reflects a learning curve over time on both sides. The Chile-China FTA is the least comprehensive of the three FTAs (see Table 4.1). This is so, even though Chile had already completed an FTA with the US in which coverage was so deep and binding with respect to investment, services, intellectual property and government procurement that some have referred to it as "new age". China's later FTAs with Peru and Costa Rica reflect a greater willingness on its part to include chapters on investment and competition policy, which are lacking in the 2006 Chile-China FTA. Peru and Costa Rica had similarly concluded "new age" FTAs with the US prior to negotiating with China, so the learning curve has been twofold: on China's part, a testing of the waters with the negotiation of bilateral FTAs that gradually conform to some WTO+ standards; on the Latin American side, having established their WTO+ credentials with the US FTAs, it was a matter of how hard to push in securing greater access to the Chinese market and laying the regulatory ground work for the expansion of Chinese FDI and services trade.

Box 4.7. Latin America's free trade agreements with China (cont.)

As the trailblazer with China, Chile trod softly, while Peru and Costa Rica drew on the Chilean experience in pushing harder for wider and deeper coverage. However, in 2012 Chile and China did conclude a “Supplemental Agreement on Investment of the China-Chile FTA”. Government procurement is still an outlier here, as China has been reluctant to negotiate in this category owing to the large number of Chinese state enterprises involved in overseas direct investment. Nevertheless, China's entry into the FTA fray challenges standing assumptions and expectations concerning what can be accomplished between developing countries at the FTA negotiating table. As the US and China have squared off in the quest of each to create a preferred regional integration network over which one or the other can dominate the substantive agenda and control membership, this has left outsiders scrambling to find their place in this evolving integration scenario. As far as Latin America is concerned, the US-led Trans-Pacific Partnership (TPP-12) already includes Chile, Mexico, and Peru (along with Canada, Australia, Brunei Darussalam, Japan, Malaysia, New Zealand, Singapore and Viet Nam). Colombia and Costa Rica are in the queue for TPP membership.

In Asia, the more recent China-led Regional Comprehensive Economic Partnership (RCEP) includes ASEAN, Australia, China, India, Japan, Korea, and New Zealand (all of which have FTAs with ASEAN). Despite the risk of both TPP and RCEP becoming a mere expansion of the spaghetti bowl of bilateral deals, those with membership in both schemes (Australia, Brunei Darussalam, Japan, Malaysia, New Zealand, Singapore, and Viet Nam) will be at a clear advantage. Although not members of RCEP, Chile, Costa Rica and Peru, by virtue of having negotiated separate bilateral FTAs with the US and with China, will be the only countries in Latin America to enjoy privileged access to the two largest markets in the world. For once, these small, open “price-takers” in the global economy have found themselves in an advantageous and even enviable situation.

Table 4.1. China-Latin America FTAs

FTA	Level of development	Tariff liberalisation	Services coverage	Investment chapter	Competition policy	Intellectual property rights
1. PRC-Chile FTA (2006)	Developing-Developing	Relatively fast	Some	No provision	No provision	Above standard
2. PRC-Peru FTA (2010)	Developing-Developing	Relatively fast	Some	Standard	Standard	Above standard
3. PRC-Costa Rica FTA (2011)	Developing-Developing	Relatively fast	Some	Standard	Standard	Above standard

Source: Wignaraja, Ramizo and Burmeister (2013).

Free trade agreements in place between the three Latin American and Caribbean countries that have signed bilateral agreements with China (Chile, Peru and Costa Rica) suggest these may contribute to the diversification of their export basket. As a consequence, these countries, in particular Chile, which was the first to sign an agreement, pay tariffs to enter the Chinese market that are considerably below the general Most-Favoured-Nation (MFN) regime. In addition, sanitary marketing authorisations, which often take years to obtain, are processed more expeditiously. These FTAs may have contributed to the diversification of the export basket of these countries, in particular in terms of the number of products exported to China as a share of the number of products exported to the world. This trend is most clear in the case of Chile, as this share increased from 8.8% in 2006 to 24.6% in 2014. In the case of Peru, this share grew from 15.4% in 2010 to 18.3% in 2014. Costa Rica's FTA with China is too recent to allow for discerning a clear trend.

In addition to bilateral agreements, China's participation in multilateral and plurilateral instances has increased. Since 2001, China is a member of the World Trade Organization, and has significantly increased its trade and investment with several countries. Other platforms where China has become active include Mercosur (since 2012), the Pacific Alliance (since 2013) and the recent Trade in Services Agreement – or TISA – (since 2014).

Negotiations between Mercosur and China have started, but a bilateral approach prevails. Although informal talks took place to establish a free trade zone between China and Mercosur (comprising Argentina, Brazil, Paraguay, Uruguay and Venezuela), co-operation agreements have been negotiated bilaterally without consulting the other members of Mercosur. For instance, the co-operation agreement signed by Argentina and China in February 2015 was exclusively a bilateral effort (see Box 4.8).

Box 4.8. China and Mercosur: Between bloc and bilateral negotiations

Since the re-establishment of diplomatic relations by the members of Mercosur¹⁹ with China in the 1970s and 1980s (with the exception of Paraguay, which still has diplomatic relations with Chinese Taipei), trade between both actors has increased exponentially, making China Mercosur's biggest trading partner.

The instruments used by China in trade negotiations with the different countries of Latin America, including the members of Mercosur, are mainly three: free trade agreements (FTA), agreements for the promotion and reciprocal protection of investment, and bilateral agreements (covering double taxation, technical and financial co-operation, financing, infrastructure, etc.).

FTAs

In Mercosur's case, the previously mentioned growth in bilateral trade has not been formalised in the form of trade agreements, as no country in the bloc has a FTA with China. This is in contrast to the three countries in the region that have agreements with China, which are Chile (who also has a FTA with Hong Kong, China), Costa Rica, and Peru. Colombia has also started FTA negotiations with China, which would lead to three of the four members of the Pacific Alliance having this kind of agreements with this country. A FTA between Mercosur and China confronts multiple obstacles. The first of these are diplomatic ones, since Paraguay does not have diplomatic relations with China. Furthermore, the industrial and trade policies implemented by Brazil and Argentina in recent years also limit the degree of trade openness with China. China is particularly active in the application of trade defence measures in reaction to other trade barriers against it.

Agreements for the promotion and reciprocal protection of investment

Some of Mercosur's members have advanced with regards to the signing of investment agreements with China, with Argentina and Uruguay having this kind of agreements in place since the 90s. These arrangements are bilateral and do not imply a common unified negotiation with the other members of Mercosur. Other Latin American countries show greater dynamism than Mercosur in the application of these instruments, something that reflects the different models used in efforts to integrate with China.

Bilateral agreements

The dearth of FTAs and limited number of investment agreements in place with China has placed the diplomatic channel at the forefront of co-operation. This has resulted in the signature of agreements of a very varied nature and implications, and that cover several subjects. Some of these agreements have a particular role in some countries, owing to the difficult economic climate they are experimenting lately, due in part to the slowdown in Chinese economic growth. In the context of these agreements, Brazil, Argentina, and Venezuela are considered by China as countries with a Special Strategic Association.

Box 4.8. China and Mercosur: Between bloc and bilateral negotiations (cont.)

All factors indicate that these bilateral agreements will continue to be used owing to the impossibility that Mercosur reacts in a joint and united manner to the diversity of proposals put forward by China. This joint action is not a possibility because of the diplomatic situation of Paraguay with China, and by the absence of a united regional strategy by Mercosur with regards to China. This void favours China and might have implications in regional development, since some of the definitions put forward in the referenced agreements, in terms of their impacts, would require a regional negotiation scheme and not a bilateral one.

Source: Latin America – Asia Pacific Observatory (2015).

China's participation as an Observer in the Pacific Alliance could bring some further engagement with countries in the future. In 2011, Chile, Colombia, Mexico and Peru formed the Pacific Alliance to pursue regional integration. The Alliance now includes 30 observer countries, including China since 2013. So far, China has had a limited role in the agreement as it can only participate in some of the activities (i.e. regulatory coherence). However, although China does not formally participate in the NAFTA, it definitely has had a strong impact on its dynamics, becoming a predominant trade partner with the United States after adhering to WTO. As a result, the NAFTA process has slowed down and Mexico has been displaced from its position as the United States' second trading partner (Dussel-Peters and Gallagher, 2013).

New partnerships and agreements, led by the United States and China, have emerged in recent years and offer the prospect of strengthening ties with the region. The Trans Pacific Partnership (TPP), led by the United States, is further developing trade ties between member countries, while negotiating in areas like intellectual property rights and commercial operation of state-owned enterprises. The partnership involves 12 nations including Chile, Mexico and Peru. As a counterweight to the TPP, China is leading the Regional Comprehensive Economic Partnership (comprising 16 economies) promoting regional economic integration in East Asia. Rather than promoting integration and trade openness, both agreements could compete in parallel generating the adverse effect of disintegration.

To develop its services sector, China has recently increased its involvement agreements, with potential effects for the LAC region. The Trade in Services Agreement (TiSA) is a plurilateral agreement which brings together 24 member countries of the WTO, including the European Union and the United States. TiSA aims are to improve and expand worldwide trade in services. The TiSA participant countries account for 70% of the world's trade in services, and eight of these countries are from Latin America.²⁰ China is not yet formally taking part in the negotiations although, in mid-2014, it signalled intentions to join the negotiations and has been backed by the EU.

Bilateral investment agreements (BITs) with China could have greater potential to develop in the future. These instruments have been widely used between Latin America and China, accounting for 12 BITs today. The majority of these treaties were signed before the year 2000, with the exception of Mexico and Colombia, both signed in 2008. With the global trend towards fragmented production, firms do not just look for increased market access but, more importantly, for favourable conditions for producing their goods. In this context, BITs have been widely used to promote certain standards for the treatment of foreign investors. China has not lagged behind, signing 108 BITs so far. BITs usually provide non-discrimination clauses, fair and equitable treatment provisions, security for investors and protection against expropriation, and provisions on the transfer of funds.

Seizing benefits and minimising risks

Export diversification is an urgent challenge for Latin America. The trade boom with China over the last decade and a half has brought significant benefits to the region, particularly for commodity exporters. Nevertheless, although the region has benefited in various ways from the growth of its sales to China, the growing concentration in the export basket is an increasing cause for concern. This trend hinders attempts in the region to move towards a more diversified, knowledge-intensive and socially and environmentally sustainable productive and export structure.

These circumstances call for forward-looking and strategic integration efforts with China as well as within Latin America itself. This strategic approach could include: i) seizing continuing opportunities for exports in agricultural goods with China, and diversifying the number of products to the greatest extent possible, in particular of processed products with higher value-added contents. FTAs may create new opportunities to achieve this goal, but need to be complemented by other policies; trade agreements at the regional level strengthen export flows by 33% on average, versus trade agreements with non-regional partners (10% on average) (Kowalski et al, 2015). Moreover, to promote diversification efforts, recent evidence shows that export survival rates tend to be higher in intra-regional trade than between regions. This is significant, since, on average, only one-third of new exports launched remain active after three consecutive years, signalling the risks associated with new export activities (Kowalski et al, 2015). Thus, regional trade can provide an important opportunity for learning-by-doing to sharpen competitiveness for further exports beyond the regional level; ii) exploiting opportunities in more knowledge-intensive service sectors; iii) deepening regional integration and co-operation efforts. Regional integration is particularly important for supporting manufacturing activities, as their intermediate sourcing patterns tend to be particularly sensitive to distance; iv) closing the infrastructure gap through improvements in regulatory frameworks, which may attract more FDI and diversify its financing sources; v) implementing productive development policies to foster innovation, upgrading of skills, cluster-based policies, and mobilisation of financial resources to broaden the export base; vi) increasing Latin American FDI to China to seize new business opportunities for Latin American exporters of higher value-added products and services arising from the structural transformation of the Chinese economy; vii) emphasising the efforts under the 2015-2019 China-CELAC Co-operation Plan that contribute to regional integration and export diversification such as infrastructure investment, bilateral FDI and trade facilitation.

Chapter 5 provides a glimpse into what the coming decades of partnership with China could imply for Latin America, and deals with these issues of proactive and strategic integration in greater detail.

Notes

1. In this section agricultural products are defined according to the classifications provided in the WTO Agreement on Agriculture, which includes commodities, agribusiness products, beverages and alcohols, along with other products such as hides, skins, wool, silk and cotton.
2. This analysis has the important caveat of considering all Chinese imports as perfect substitutes of locally produced final products. However, it could well be the case that some of these imports were intermediate inputs to locally produced products. If the increase in intermediate inputs sourced by China were substantial in the period under analysis, our import competition measure would be overestimated.
3. It has to be noted that a stable world import penetration at the 2-digit industry sector could well be masking a displacement of local production by Chinese imports in some more disaggregated sub-sectors, offset by increases in national production at the expense of importers from other countries in other sub-sectors. Data limitations do not unfortunately allow us to undertake an analysis at this more detailed level.
4. These methodologies include gravity models for trade flows, estimation of elasticities of substitution and market share analysis (Jenkins, 2008a).
5. Lederman, Olarreaga and Soloaga (2007), in contrast, find a positive effect from Chinese exports, as a result of the creation of production networks, even if, as illustrated in Chapter 3, Latin American countries continue to be poorly integrated to global production networks.
6. Source industries are the sectors to which the inputs that are going to be used in the production of final goods and services belong. Final demand or exporting industries are the sectors to which the final goods, destined for either final demand or gross exports, belong.
7. The analysis is based on the OECD/WTO Trade in Value Added Database (TiVA). The 2015 release includes data for 61 countries and a “rest of the world”, with ICIOs for 1995, 2000, 2005, 2008, 2009, 2010 and 2011. The 2015 version includes the following six Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico. For further details, please consult: www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm.
8. We use the six Latin American countries included in the TiVA dataset (Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico) as a proxy for the region. These countries represent 71% of the region's population, 76% of its GDP, 78% of its total trade and 67% of its intra-regional trade in 2011. The rest of the region is included in the rest of world category, implying an underestimation of regional integration. The share of Latin American countries in the trade that LAC-6 has with rest of world is approximately half (55% for 2000, 48% for 2011) (United Nations, 2015), showing the average underestimation of intra-regional trade in average, if value-added trade broadly follows gross trade flows. However, there are differences in these levels of integration among these six countries. The level of integration within Latin America at the country level is most underestimated for Costa Rica and Colombia and least for Argentina and Brazil.
9. The European Union and Asia also show more heterogeneity, with the smaller countries showing significantly larger levels of backward linkages.
10. Integration is measured by analysing trade in intermediate goods and services, as well as through backward and forward linkages which are inputs incorporated into exports coming from and destined for third countries.
11. TiVA database's countries are grouped here in six regions: i) Latin America (6 countries); ii) NAFTA excluding Mexico (i.e. the United States and Canada); iii) European Union (27 countries); iv) China; v) Rest of Asia (Brunei Darussalam; Cambodia; Chinese Taipei; Hong Kong, China; India; Indonesia; Japan; Korea; Malaysia; Philippines; Singapore; Thailand and Viet Nam); and vi) rest of the world (all other countries included in the TiVA database).
12. In 2011, exports to Asian trade partners jointly accounted for 37% and 54% of total intermediate exports for Brazil and Chile, respectively.
13. Except for Costa Rica, China was the main source of high-technology intermediates imported by Latin American countries in 2011, with over 40% of the total.
14. Brazil and Costa Rica present forward linkages in services above the regional average (11.7% and 10.2% of gross exports, respectively, in 2011, compared to 7.6% on average for Latin America).
15. This box was prepared by Juan Blyde based on material from IDB (2014).
16. The case studies encompass the following industries and countries: footwear and auto parts in Argentina, aeronautics and coffee in Brazil, food products in Colombia, software and electronics in Costa Rica, and IT services and aeronautics in Mexico.

17. The performance of agricultural exports suggests some positive impact from the FTAs signed with China. This is more patent for Chile, whose FTA with China has been in force the longest. China's share in Chile's agricultural exports to the world has grown, from 1.2% in 2006 to 7.8% in 2013, and the number of agricultural products exported by Chile has increased, as a share of total agricultural products exported to the world, from 11.2% in 2006 to 17.2% in 2013. For the cases of Costa Rica and Peru the effect is less visible.
18. See Chinese Government, China's Policy Paper on Latin America and the Caribbean (Chinese Government, 2008), [http:// english.gov.cn/official/2008-11/05/content_1140347.htm](http://english.gov.cn/official/2008-11/05/content_1140347.htm).
19. In respect of Mercosur, Argentina, Brazil, Paraguay, Uruguay and Venezuela are considered. Even though Bolivia was recently accepted to become part of the bloc as a partner with full membership, the Adhesion Protocol has not been ratified by the national parliaments of each member.
20. Latin American countries participating in TiSA include Chile, Colombia, Costa Rica, Mexico, Panama, Paraguay, Peru and Uruguay.

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Chapter 5

Future trends and scenarios for a Latin America-China Partnership

This chapter lays the ground work for discussing trends in the relationship between China and Latin America, given the changing patterns of China's development strategy. Based on the analysis of potential transmission channels created by China's transformation to the region, including the trade, finance and structural challenges that this may trigger, the chapter identifies strategies and policy responses for Latin America to make the most of this partnership.

Latin America's structural challenges and the way forward

Latin America must circumvent the “middle-income trap” to create an equitable and sustainable future. Although facing long-term challenges that do need to be addressed, the region has the tools and capacities to overcome present and forthcoming challenges. This final chapter of the *Latin American Economic Outlook 2016* presents a synthesis of the obstacles facing the region outlined in previous chapters, adding further analysis of the most salient channels – those that define the path forward – in the relationship between Latin America and China, before concluding with various policy measures that can lead to growth along a sustainable development path.

Productivity growth in Latin America remains modest compared to that of OECD countries and to other emerging economies. The productivity gap between most Latin American countries and the most developed countries is still increasing, while the gap with much of Asia is lessening. Although many countries in the region, as Chapter 3 illustrates, are in the middle-income trap, some have managed to avoid it; hence, the goal for some countries is to escape from it, while the goal for others is to avoid it altogether. This is in part explained by the fact that macroeconomic management, while improving in some countries, has not been coupled with true productive transformation. Structural change is necessary to progress Latin American economies toward convergence with the advanced economies and ensure its full participation in the global economy.

Persisting structural challenges

Diversification and upgrading pose two major challenges for Latin America's productive structure. The long-term unsustainability of primary sector specialisation – particularly agriculture and mining – in some countries, though beneficial for the short term, has affected regional productivity. At the same time, countries focused on low-sophistication sectors have been unable to reach the level of complexity in exports that allow increases to added value.

Improved infrastructure performance is needed to bolster structural change and strengthen regional integration. In Latin America, 57% of the exports consist of perishable or logistics-intensive products, three times more than the OECD average. Elevated transport costs significantly limit regional integration with only 27% of intra-regional trade taking place, compared to 63% in the European Union and 52% in Asia. Better roads, railways, ports, airports and other critical logistics infrastructures are essential (OECD/CAF/ECLAC, 2013).

Full integration into the shifting wealth process requires improved skills and innovation. Latin American firms are 3 times more likely than South Asian firms, and 13 times more likely than Pacific-Asian firms, to face serious operational problems due to deficiencies and shortage of human capital (OECD/CAF/ECLAC, 2014). Car and machinery industries are particularly affected. Vocational education and training, as well as the ties between higher education institutions and the private sector, need to be strengthened. Efforts to build human and physical capital must be accompanied by greater innovation. Education and skills should be seen as drivers of economic growth, but also of social inclusion and greater equality.

It is crucial to implement a targeted set of productive development policies (PDPs) at both country and regional level. Improving the prospects for diversification and upgrading involves developing the region's stock of capabilities, which are associated to its non-tradeable skills, the quality of institutions and human and physical capital stocks. Improving these conditions, together with creating a coherent regulatory framework, will help the region to respond to its major structural challenges.

China's new normal will bring challenges and opportunities for Latin America

A number of questions are emerging on the effects of China's new normal on its increasingly complex relationship with Latin America. China's new development model responds to the need for a more sustainable growth path to overcome the perils of falling into the middle-income trap. China's economic rebalancing is, and will continue to be, characterised by the growing role of consumption in the economy, an increasing focus on higher added-value industries, the development of education and skill systems to support the changing production structure, the gradual shift toward service industries and more active participation in global governance platforms. As China adopts new policies and procedures to adapt to its changing economic environment, it will generate new challenges and opportunities for Latin America, which will need to be addressed in the region's development strategies for the future.

Considering the long-term challenges for the region, this chapter explores the transmission channels of China's new normal in Latin American economies. First, bearing in mind the main trends of China's development model from Chapter 2, the chapter identifies the main outcomes that may affect Latin America in this new context. Second, it proposes appropriate policies for Latin American countries to not only mitigate the consequences of the new normal in China, but to deepen ties and enhance growth opportunities; specifically in four broad spheres: financing, skills, regulatory frameworks and partnership, including intra-regional, extra-regional and global partnerships.

Identifying the trade effects of China's new normal in Latin America

Chapters 2 and 3 discussed the many changes inherent to the new normal in China, noting that it is already shifting from an investment and exports economy to a consumption-driven economy, a process that will have significant spillovers in emerging economies (Drummond and Liu, 2013; IMF, 2014). They will generate potential advantages and potential threats, as Latin American countries, highly dependent on commodity exports, will not be immune to the effects of China's transformation. As China's demand will gradually move from investment and commodity inputs towards services and high value-added products – to satisfy domestic consumption – the demand for Latin American countries' exports will be affected. China's declining growth and investment path is underpinned by structural changes in the economy. Rising labour costs due to a steady rural-urban migration and the demographic transition, along with a natural decrease of returns to capital, have started to reallocate resources from investment to consumption. These underlying trends have also been accompanied by policy reforms that have accelerated the investment-to-consumption shift. The tax reform introduced in 2011, the creation of a social safety net based on pension reforms, the liberalisation of interest rates are all intended to increase consumption and remove frictions that have made the cost of capital cheaper.

China's rebalancing and Latin American exports

The impact of the structural rebalancing of China from an investment- to a consumption-driven economy together with the link between Latin American exports and China's future investment path are assessed in this chapter to deepen understanding of the likely effects and the offsetting policy solutions. For this, both dimensions of the rebalancing are considered: the effect of China's falling investment on the demand for inputs, particularly metals, and the increase and re-composition of consumption, and its subsequent effect on the demand for Latin American exports, in particular food exports.

Given the high heterogeneity of Latin American countries' exports, the rebalancing process will likely have differential effects across the region and thus, varied response mechanisms may be necessary.

This section analyses the potential impacts of China's rebalancing in Latin America's exports given an eventual slowdown in China's investment using the results of a modelling exercise. A cluster analysis and fixed-effect panel regression were used to gain better understanding of the possible impacts, particularly of the effects of China's decline in investment (see Annex). The methodology entailed clustering Latin American countries according to their exposure to China. Then, creating a fixed-effect model for 18 countries over the period 1994-2013, the relationship between China's investment level and exports of Latin American countries was estimated, distinguishing different impacts by cluster (Drummond and Liu, 2013). Lastly, two scenarios for the pattern of Latin American total exports were projected, based on China's own growth scenarios up to 2030: one scenario assumes steady reforms and no major shocks and a second scenario assumes a more rapid and pronounced slowdown in China's investment rates (Chen and He, 2015; World Bank-DRC, 2013). The five clusters identified to distinguish the impact among Latin American exporters are: agricultural-food products and some manufactures (Argentina, Brazil, Guatemala, Honduras, Nicaragua, Paraguay and Uruguay), fossil fuels (Venezuela, Colombia, Bolivia and Ecuador), metal and ores (Peru, Chile), manufactures (El Salvador, Costa Rica, Dominican Republic and Mexico) and commercial services (Panama).

The results suggest a positive and significant link between China's domestic investment and Latin American countries' exports (see Table 5.A1.2 in the Annex). However, the association of China's investment with Latin American countries' exports is mixed across the region. The cluster composed of Chile and Peru is the most sensitive to China's investment level, given their dependence on natural-resource extraction (gold and copper) and their exposure to the Chinese market (share of exports destined to China of 23% and 16%, respectively).¹

Projecting China-Latin America export scenarios for 2030

As China's rebalancing from an investment- to a consumption-driven economy will certainly involve a slowdown in growth, two scenarios for China's economy up to 2030 were modelled to understand the possible resulting structural changes: a normal-pace transition (baseline scenario) and a high-pace transition (low-investment scenario).² This exercise assumes a constant export profile of Latin American goods to China up to 2030.

While both scenarios for China reflect declining growth and investment rates, the high-pace transition or low investment scenario shows a lower predicted gross domestic product (GDP) growth per year, especially evident from 2021-30. None of these scenarios assume specific external/internal shocks to China's economy, but different trajectories for the transition of China from a middle-income, investment-driven economy towards a high-income, consumption-based one.

Table 5.1 illustrates the average annual exports growth rates for Latin American countries from 1990 to 2030, by cluster, without considering recomposition of consumption. Projected years are based in the "baseline" scenario. The commodity boom experienced during the last decade is reflected in the impressive 16.3% annual growth of metals and ores exports for cluster 3 (Chile and Peru) and the 15.8% of cluster 2 for fossil fuels exporters (Venezuela, Colombia, Bolivia and Ecuador).

Table 5.1 shows a significant deceleration of export growth for all clusters over the next two decades (2011-30) in relation to 2001-10 for both scenarios, consistent with China's slowdown in growth and investment. Overall, while export growth rates over the last 20 years (1990-2010) ranged from 7.5% to 16%, the predicted rates for the decade 2021-30 will sharply decrease down to 2% to 3%.

Table 5.1. Annual exports' growth by cluster in the "baseline" scenario

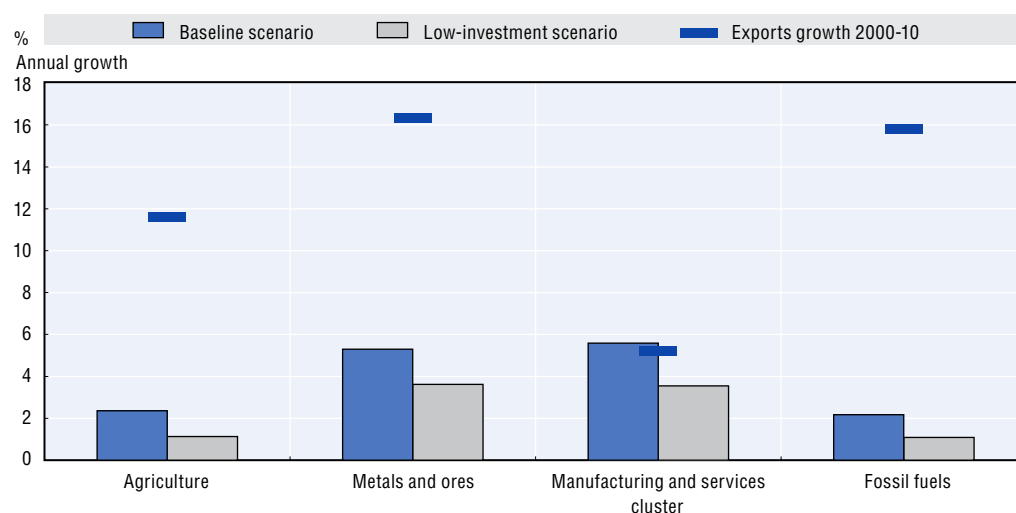
Cluster	Countries	Time period			
		1990-2000	2001-10	2011-20	2021-30
Agriculture	Argentina, Brazil, Guatemala, Honduras, Nicaragua, Paraguay, Uruguay	8.8	11.6	3.8	2.0
Comm. services	Panama	7.9	9.6	9.8	2.0
Mining	Chile, Peru	8.2	16.3	5.8	2.8
Manufacturing and services	Costa Rica, Dominican Rep., Mexico, El Salvador,	15.2	5.2	4.0	1.6
Fossil fuels	Bolivia, Colombia, Ecuador, Venezuela	7.5	15.8	6.1	2.7

Source: OECD/CAF/ECLAC calculations. 1990-2013 data from World Bank (2015a), *World Development Indicators* <http://data.worldbank.org/products/wdi>; 2014-30 projections based on fixed-country-effect model [see Avendano, Obach and Perea (forthcoming), "China's rebalancing: What scenarios for Latin American exports?"]

The average difference by cluster between the "baseline" and "low investment" scenarios to 2030 can be relatively high, illustrating cluster's sensitivity to China's exposure (Figure 5.1). Countries in the metals and ores cluster are most exposed to China's eventual slowdown in investment, with a difference of nearly 2 percentage points of average annual exports growth between the two scenarios for China.³ The impact in fuel fossil exporters for the two scenarios is less pronounced, with a difference of 1 percentage point. However, both metals and ores and fossil fuels experience large reductions on their average export growth when compared to the period 2000-10. In contrast, countries specialised in manufacturing show little difference in their average export growth when compared to their past performance (2000-10).

Functional upgrading (i.e. adopting new activities in the value chain) can decrease the volatility that China's rebalancing process may cause in natural resource-exporting countries. By upgrading in the value chain, firms can realise part of the value concentrated in activities such as research and development (R&D), product design, logistics or marketing. Furthermore, firms can move not only along the value chain of their products but jump (or build alliances with other firms) into related activities and industries. In the mining sector, these secondary industries range from machinery to engineering services and transport. Examples illustrating the capacity of firms and national strategies to respond to the challenges of growth slowdowns in specific sectors are discussed in the policy section of this chapter.

Figure 5.1. Projections for Latin American exports to China 2014-30, by clusters of countries
(percentage exports, annual average growth rate)



Source: OECD/CAF/ECLAC calculations using estimates from Avendano, Obach and Perea (forthcoming), "China's rebalancing: What scenarios for Latin American exports?"

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China's changing food consumption pattern and spillovers to Latin America

With just 7% of the world's arable land and 6% of its water resources, China must feed 19% of the world's population. China became a net food importer in 2004 and since then it has had a growing trade deficit in the agriculture sector. As illustrated in Chapter 3, China is going through an intense process of urbanisation and consolidation of the middle class. The urban population, which totalled 758 million in 2014 (54% of the total population), is expected to increase by 39% by 2050, when it will reach 1.05 billion (76% of the total) (United Nations, 2012). The middle class (defined as households with an average expenditure of between USD 10 and USD 100 per day) comprised 247 million people in 2012 (18% of the population), and is projected to reach 607 million (44% of the total) by 2020 (Burkitt and Davis, 2012).

This massive economic and demographic change indicates that agriculture and agribusiness are promising sectors for diversifying Latin American exports to China, particularly as the transformation has already begun to change lifestyle and food consumption preferences. Urban income growth is usually associated with a change in diet, to one that includes more proteins, processed and "ready-made" foods, and generally foods with higher levels of quality and safety or special properties (see Box 5.1). While this phenomenon poses challenges for China in terms of productive capacity, trade channels, regulatory environment and safety risks; it also opens vast economic opportunities to Latin America's trading partners. To satisfy this new demand, China is expanding its linkages with foreign partners in the food supply chain. With vast natural and water resources, Latin America has comparative advantages to become one of China's leading suppliers of nutritious, safe and high-quality foods.

Box 5.1. Prospects for the food market in China to 2040

The November 2011 study *Food 2040: The Future of Food and Agriculture in East Asia* presents a forward-looking analysis of the estimated trends in the region's food market over the next three decades. This study identifies six broad trends that are likely to shape that market going forward. These are summarised below, stressing the features of the trends and specific implications for China.

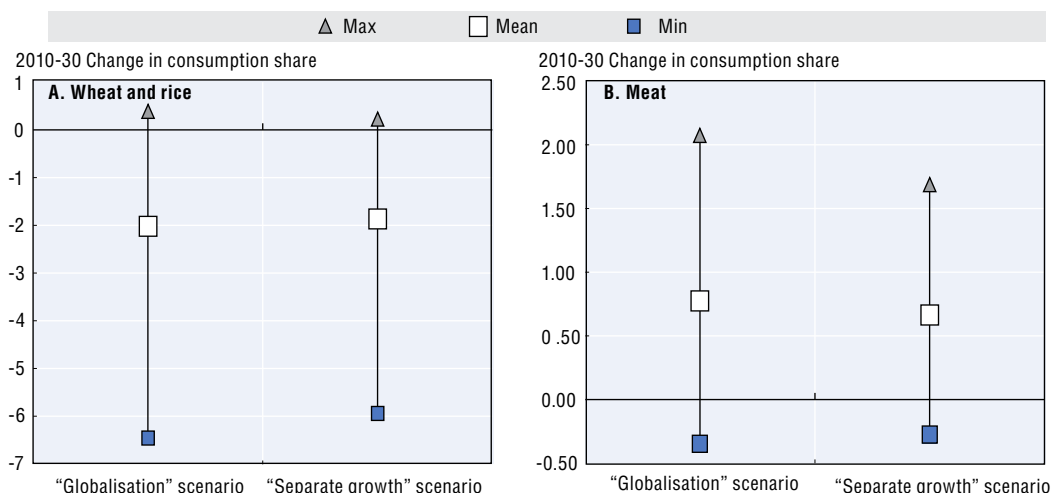
1. **East Asia will become a world leader in bioscience.** This largely responds to the need to improve agricultural incomes, given the disparity that exists between its vast population and limited arable land area. China, in particular, has invested heavily in biotechnology and supports the development of genetically modified foods. Ongoing and future research will increasingly focus on developing crop varieties that are more resistant to the effects of climate change.
2. **The behaviour of Chinese consumers will heavily influence the world's agricultural and food product markets.** This influence will be reflected in many ways. China will redefine global agribusiness, biotechnology, processing, logistics and food trade, increasingly from a position of strength. It will also continue to expand its production abroad, by renting or buying agricultural land in other developing regions, the produce from which will be exported to China to guarantee its food security.
3. **Asian consumers will demand more safety in their food products.** In 2040, a large proportion of the value of foods in East Asia will stem from the capacity to provide verifiable information on their safety, quality and traceability. Products that can fulfil these standards will obtain significant price differentials. Nonetheless, China's food industry has lagged behind in this area, and this has opened up spaces for imported products. A key example is the success of Sancor's baby milk powder exported to China since 2013.
4. **East Asia offers major opportunities for food products with special properties.** This region of the world has a long tradition of using food consumption to achieve health objectives. This, together with, in particular, the ageing of China's population, opens up vast opportunities for "functional foods", which, in addition to their nutritional characteristics, contain various biological components to improve health and reduce the risk of contracting diseases.
5. **The Asian population will increasingly consume foods prepared outside their homes.** This trend is particularly clear in Japan for a number of reasons, including the fact that fewer people are getting married and those who do, marry later. This is compounded by a trend towards smaller families, greater female labour participation and the penetration of Western fast-food chains. China is likely to follow a similar path in the coming decades, which means that the retail market for ingredients will shrink, relative to wholesale, as the market for prepared foods expands. Opportunities will also open up for new technologies and methods of food production, preservation and even delivery.
6. **The Asian food market will evolve towards the co-existence of multiple niches.** Consistent with these trends, the next few decades will see a "hyper-nichification" of the food market in East Asia. Its population, with increasingly high incomes and more sophisticated tastes, will demand a wide range of specialty foods. This will generate multiple markets for foods, differentiated by brand, style, nutritional or health properties, mode of cultivation or preparation.

Source: Authors' elaboration on the basis of US Grains Council (2011), *Food 2040: The Future of Food and Agriculture in East Asia*, www.usdajapan.org/en/food2040/Food%202040%20Fact%20Sheet%20English.pdf.

Food consumption patterns in China are also shifting away from grains and rice towards animal proteins, a common feature of the second stage of nutrition transition (World Bank, 2015b). The looming high demand for high-protein food (livestock based) in China will not be solely satisfied by internal production. Moreover, expanding demand for animal proteins will increase the need for grains for livestock consumption, further compounding agricultural land pressures. In the grains markets, China's stock of land and water are limited, with a gradual loss of cropland to urbanisation, growing soil desertification and a shift towards vegetables and fruits as income grows (Moreira, 2014). This will inhibit shifting grain production for the use of livestock feed as demands for animal protein increase. Under this scenario, the prospects for meat, dairy or vegetable exporters – such as Guatemala, El Salvador, Brazil or Argentina – are promising.

Under different scenarios, results show a transition of China's consumption towards a goods basket with a larger share of meat and oilseeds (see Figure 5.2). The OECD work on long-term scenarios illustrates some of the trends for China and other major economies regarding consumption, imports, land use and other dimensions (von Lampe et al., 2014, von Lampe, 2015), providing more evidence of opportunities for Latin American exports. On average, models suggest that the share of wheat and rice in total calorie intake in China is projected to decline by 2 percentage points, while the share for meat consumption will increase by between 0.5% and 1%. As China's consumption per capita of beef and fish lag compared to benchmark countries such as Japan and Korea, countries with similar consumption trajectories. A catch-up scenario entails escalation of various food imports. In 2013, beef consumption per capita in China reached 3.4 kilograms per year, while the average for Japan and Korea was 8.0 kilograms. For fish products, the proportion changed to averages of 36.4 kilograms for China and 52.3 kilograms, in average, for Japan and Korea (Figure 5.3). The growing demand for these products suggests that Latin American exporters of livestock and marine food products, as well as oilseed producers, could be in advantageous positions to capture a greater share of the growing market.

Figure 5.2. Projected change in the share of agriproducts consumption in China (2010-30)

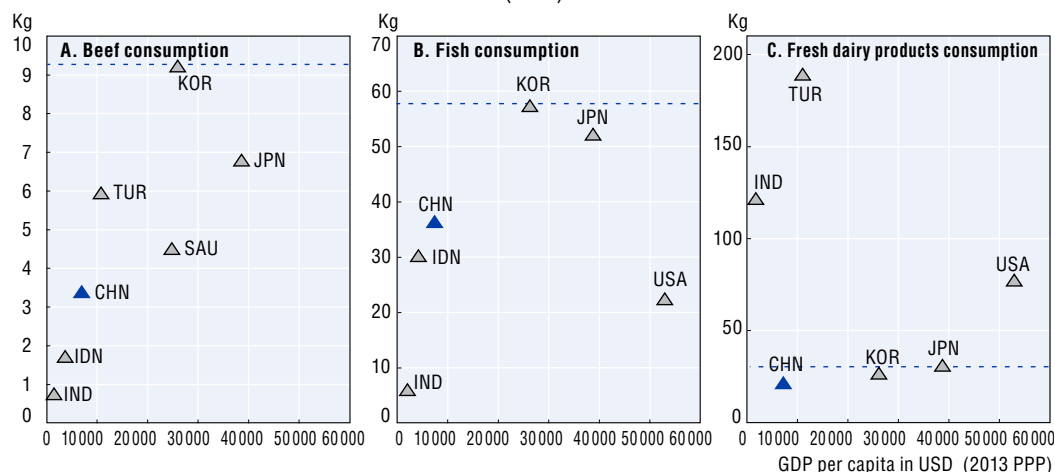


Note: Base year 2010. Vertical axis denotes absolute changes in the share in total calorie intake.

Source: Based on Von Lampe (2015) "Alternative futures for global food and agriculture: Developing robust strategies", OECD Joint Working Party on Agriculture and Trade, TAD/TC/CA/WP(2015)1/FINAL.

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Figure 5.3. China's consumption per capita of beef, fish and fresh dairy products (2013)



Note: The horizontal line represents the maximum consumption among Asian economies, representing the potential percentage growth for this good's demand in the future.

Source: Data from OECD-FAO (2014), *Agricultural Outlook 2014-2023*, http://dx.doi.org/10.1787/agr_outlook-2014-en and IMF (2015), *World Economic Outlook 2015: Uneven Growth: Short- and Long-Term Factors*, www.imf.org/external/pubs/ft/weo/2015/01/.

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Building a Food Opportunity Index for Latin America

The many economic and demographic changes in China call for better understanding of the demands of the new consumer and the prospects for Latin American exporters. According to the OECD-FAO *Agricultural Outlook 2015-2024* (OECD-FAO, 2015), not only will beef and fish increase in demand, but so will several other products, including sugar, poultry, vegetable oils and produce. Table 5.2 shows that, over the next decade, China will increase its consumption per capita of sugar, poultry and sheep meat by over 20%, while products such as fish, vegetable oils, fruits and vegetables, fresh dairy products and beef will increase between 10% and 20%. Conversely, per capita consumption of basic crops such as rice and wheat will fall.

Table 5.2. Actual and projected per capita consumption of food products in China (2014-24)

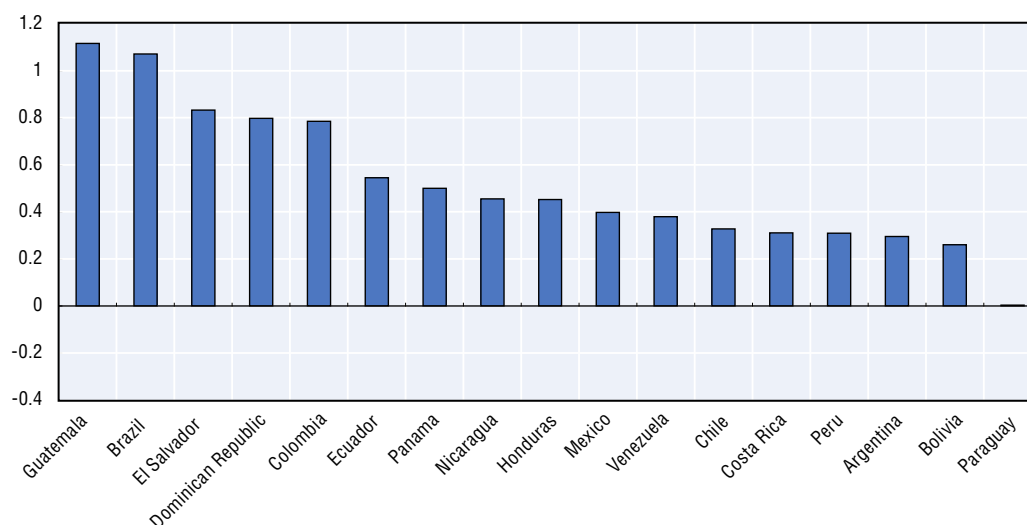
Product	Consumption per capita (kg.)			Growth 2014-24 (%)
	2014	2020	2024	
Sugar	11.9	14.1	15.5	29.9
Poultry	11.4	13.2	14.1	23.7
Sheep meat	2.8	3.2	3.4	21.3
Fish	38.0	43.1	44.8	17.6
Vegetable oils	22.8	25.0	26.3	15.0
Fruits and vegetables*	224.5		256.8	14.4
Fresh dairy products	23.6	25.1	26.8	13.5
Beef and veal	3.6	3.8	4.1	11.5
Coarse grain	11.3	11.8	12.2	8.1
Pork	32.0	33.0	33.4	4.5
Rice	76.3	75.1	75.0	-1.7
Wheat	65.0	61.8	60.2	-7.44

Note: * Fruits and Vegetables consumption are calculated from Von Lampe (2015), "Alternative futures for global food and agriculture: Developing robust strategies", OECD Joint Working Party on Agriculture and Trade.

Source: OECD-FAO (2015), *Agricultural Outlook 2015-2024*, <http://www.agri-outlook.org/>.

Further evidence of the potential benefits for Latin American food exporters regarding emerging consumption trends is provided by a “Food Opportunity Index”, which was developed to capture the potential effect of the 12 export-food products listed in Table 5.2 (sugar, poultry, sheep meat, fish, vegetable oils, fresh dairy products, beef and veal, coarse grain, pork, rice and wheat). The 2014-24 growth rate of the 12 products is standardised, creating an index.⁴

Figure 5.4. Food Opportunity Index in Latin America from China’s demand



Notes: The index weighted average is between -2.4 and 2.1; data correspond to year 2013 and SITC Revision 4 with the exception of Honduras and Venezuela. For Honduras, the last year available was 2012 and for Venezuela, while we used 2013 data, only SITC Revision 3 was available.

Source: OECD/CAF/ECLAC calculations based on data from United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/> and OECD-FAO (2014) *Agricultural Outlook 2014-2023*, http://dx.doi.org/10.1787/agr_outlook-2014-en.
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Guatemala and Brazil are the countries in the region with the best prospects to meet the next decade of food demand from China. Sugar cane emerges as the key product that may boost future trade with China. While in Brazil this product accounted for 7% of total exports in 2013, for Guatemala it increased to 13%. Other relevant products are palm oil for Guatemala and bovine meat for Brazil. While three countries (El Salvador, Dominican Republic and Colombia) also export sugars, they can also take advantage of various other products. Fish products such as tuna and Atlantic bonito (El Salvador), fruits like avocado and mango (Dominican Republic) and bovine animals (Colombia) represent concrete opportunities to drive trade with China for the next decade.

Bolivia may face challenges responding to the Chinese food demand in the next years as its exports reliance is on unmilled cereals, which have moderate growth demands predicted for China. However, as a producer-exporter of quinoa, it is well-positioned to improve trade prospects to meet both the growing international and Chinese demand. This could be a niche market as quinoa is high in protein (one of only a few plant foods that provides complete protein), gluten free and high fibre content (as noted previously, an increasing demand for “healthy” foods in Asia is a part of the consumption trend predicted to grow). As Paraguay and Uruguay are highly dependent on bovine meat exports which, as shown in Table 5.2, should see an increase of 11.5% over 2014-24, they are poised to improve trade in bovine products. However, if beef-exporting countries diversified production to poultry or sheep meat, which shows greater future growth in demand, they would be better positioned to improve their export profiles with China.

The Food Opportunity Index for the clusters studied show promising prospects for enhancing exports in some country groups. As stated in Chapter 4, soft-commodity exporters can take advantage of their signed Free Trade Agreements (FTAs) with China to boost their exports. In Chile the salmon industry is a mature sector with proved know-how to supply international markets, so tightening links with China should be a natural step. In the case of Peru, the prospects for the industry of scallops (bivalve mollusc) are promising. While a small sector, Peruvian scallop producers have seen exports to China increase more than 300% in 2012 alone.

To take advantage of the changes in food consumption trends – and avoid the price volatility properties of commodities – Latin American governments should pursue more proactive policies that help to position firms in stages of the production chain where added value is more concentrated. As exporters of several foods for which Chinese demand is predicted to increase significantly, and have the scope to be value-added commodities (meat, fish, vegetables and fruits), they are well-positioned to capture a larger market share.

Chapter 4 analysed some of the indirect effects of China's exports boom on the region. The first is the domestic competition effect, whereby Chinese exports to Latin America compete with local producers. The impact is, however, moderate. A second effect is on Latin America's trade in third markets, where China, as shown in the Index of Competitive Threat (ICT), has been a more significant competitor than had been thought previously (Jenkins, 2008; Dussel Peters and Gallagher, 2013; Avendano, Reisen and Santiso, 2008; Santiso, 2007) and could continue to be so. Indeed, China's expansion over the previous decade has had some detrimental effects on Latin American exports to third markets, though the severity varies across industries and countries.

Another effect is associated with China's effect on global commodity prices, which has been positive, but moderate. To what extent the recent cycles (2003 onwards) of commodities can be attributed to China is still a matter of debate, and it is not entirely clear that future commodity booms will be explained by Chinese demand. Several methodologies have been proposed to estimate the effect of Chinese demand on commodity prices. A commonly accepted method isolates the "China effect" on global commodity prices (Jenkins, 2011).⁵ The overall effect of China on commodity prices is estimated to be less than 10%. All in all, during the 2000s the largest effects of China on additional demand were observed in minerals, ores and metals (between 10% to 25% increase on average), followed by foodstuffs and, to a lesser extent, oil, forest products and meat (Jenkins, 2011).

Overall, net commodity exporters benefited the most from the latest commodity boom, but this trend is changing. Depending on each country's net import and export of commodities, the "China effect" has more or less benefited Latin American countries. In general, during the period 2002-09 the countries that benefited the most were mineral-exporter economies such as Chile, Peru and Bolivia, followed by oil exporters Venezuela and Mexico. Central American countries (El Salvador, Nicaragua, Costa Rica and Panama) experienced a negative net effect from the "China effect", with the gains from higher export prices being offset by higher import prices (Avendano and Dayton-Johnson, 2015). Today, as commodity prices stabilise at lower levels, the trend seems to inverse. As in previous decades, the evolution of commodity prices over the next decade will define net effects of China's demand.

Structural transformation and skills

China's transition to a new growth and development model is, and will continue to be, largely based on an expansion and upgrade of the available skills in the country. Access to education is rising for all levels of education, despite significant gaps with

the OECD countries, mainly in pre-primary, upper-secondary and tertiary education. Measures to strengthen the quality of education and the link with labour markets are also being implemented and are expected to be central in the years to come. In China's transition from being the world's factory to standing out as a leading innovator, skills are at the centre of the policy strategy and thus a substantial upgrade of the available skills can be expected in the medium to long term.

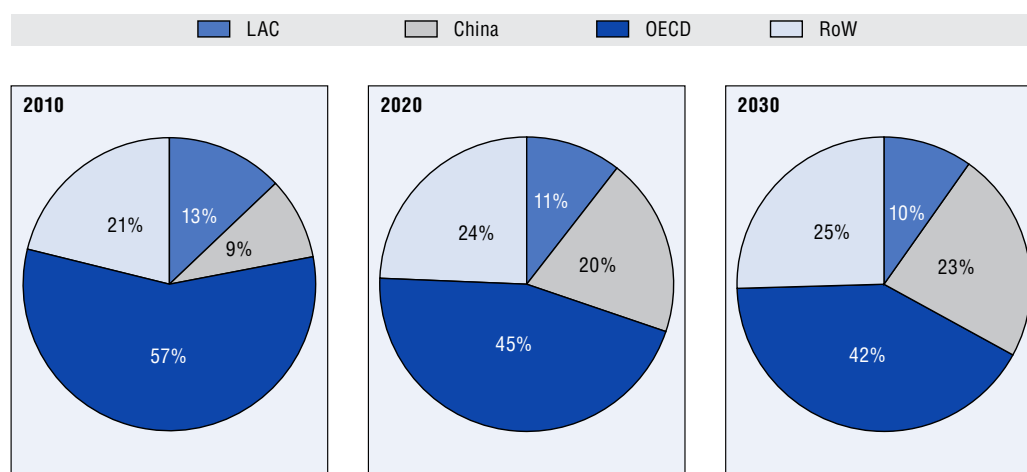
Improvements in education and skills in China will place the country in a better position than the Latin American region to compete in global markets and overcome the middle income trap. In the absence of new and enhanced policies, the skills-based transformation of China could have a strong impact in Latin America, which could face stronger competition particularly in crucial areas for upgrade and diversification. However, China's transformation and upgrade may also open new opportunities for LAC, and thus the region should be ready for both the challenges and opportunities posed by China's skills-based transformation.

This section presents scenarios that look at how an integrated, globalised China with commensurate human capital growth (education and skills) along with an advanced economic model may affect Latin America's possibilities to compete in a globalised economy and overcome the middle-income trap.

LAC's presence in the global talent pool stagnates: The skills dimension of shifting wealth

China's emphasis in education and skills will lead to a growing share of the global population with tertiary education, while Latin America's weight in the global talent pool will decline. The future of the *shifting wealth* process, by which emerging countries gain stronger presence in the global economy, will be strongly determined by the capacity of economies to invest in and develop skills that lead to further innovation and to progressing and diversifying the economy. In this respect, China is preparing to be a strong skills-based economic power in the years to come, supplying 20% and 23% of the global tertiary-educated workforce in 2020 and 2030 respectively (Figure 5.5). Meanwhile, Latin America's relative supply of tertiary-educated people in the global talent pool is projected to decrease to 10%.

Figure 5.5. Projected share of tertiary-educated population by region (25+):
(2010-30)



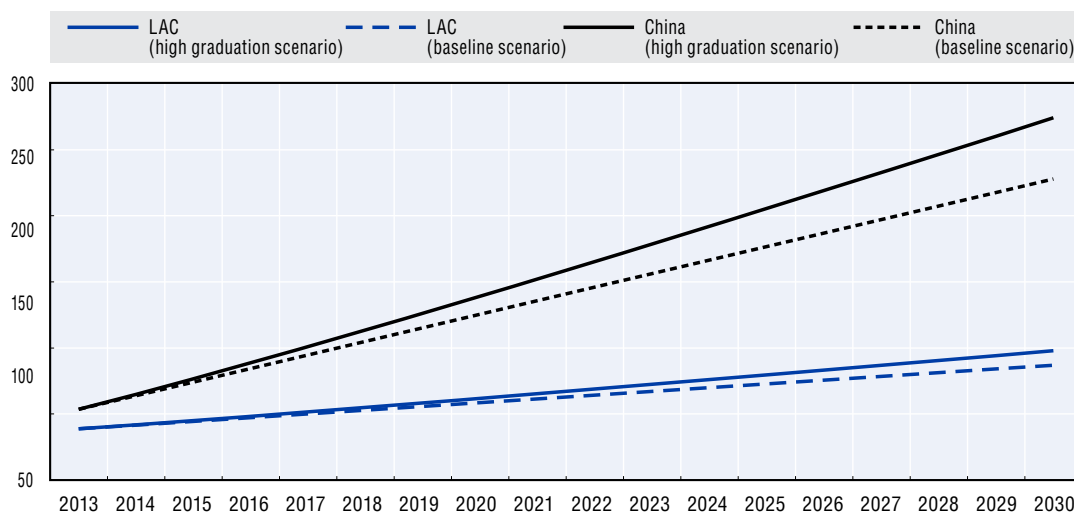
Note: India not included owing to lack of data.

Source: OECD/CAF/ECLAC calculations based on World Bank (2015a), *World Development Indicators*, <http://data.worldbank.org/data-catalog/world-development-indicators> and UNESCO Institute for Statistics, www.uis.unesco.org/Pages/default.aspx.

StatLink <http://dx.doi.org/10.1787/888933291972>

Current trends will leave China as the main provider of tertiary-educated people in the world, with a much larger and more skilled workforce than Latin America. China's emphasis on skills could raise its global supply of tertiary-educated students to around 125 million by 2020 and more than 220 million by 2030, in the baseline scenario, relative to around 90 million tertiary-educated people in Latin America by 2030. These projections⁶ show that, in this scenario, the expansion of China's tertiary-educated labour force is much faster than that of Latin America, based on the recent evolution of tertiary graduation in both regions (Figure 5.6). The high-graduation scenario projects an even faster expansion of the tertiary-educated labour force, and a larger gap between China and Latin America, and this despite the fact that the difference in the number of tertiary-educated graduates between China and Latin America is relatively small today. Under these assumptions, China's share of tertiary-educated people over total labour force will reach by 2030 a level of 21% in the baseline scenario, similar to Australia today, and a level of 26% in the high graduation scenario, similar to Germany today. In Latin America, tertiary-educated people over total labour force will reach around 19% in the baseline scenario, similar to Austria today, and around 21% in the high graduation scenario, similar to Australia today. All this could have strong implications for Latin America. China will be able to capture many of the high value-added segments of global value chains, as well as produce more sophisticated and innovative goods and services. This could leave Latin America in the difficult position of having to compete in these areas, with the potential risk of remaining cornered in lower value-added segments of production.

Figure 5.6. Projected population with tertiary education in China and Latin America, 2013-30
(millions of people)

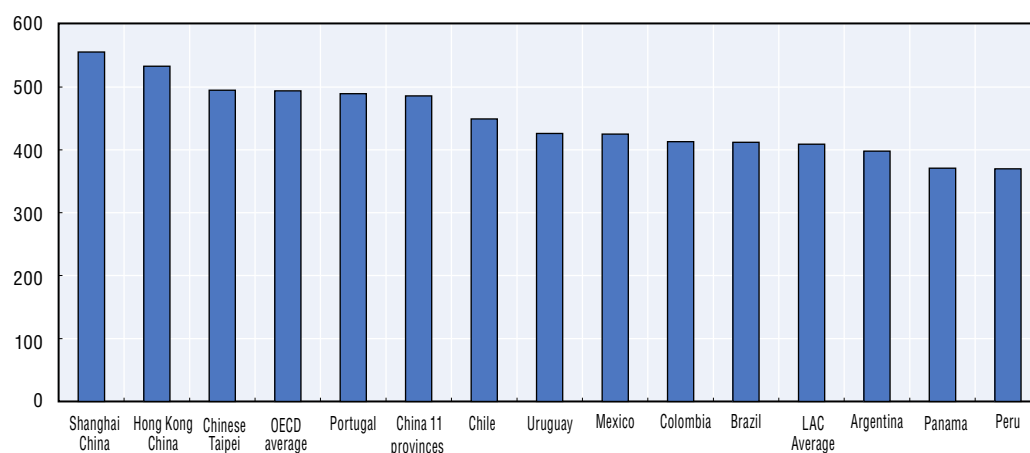


Source: OECD/CAF/ECLAC calculations based on World Bank (2015a), *World Development Indicators*, <http://data.worldbank.org/data-catalog/world-development-indicators> and UNESCO Institute for Statistics, www.uis.unesco.org/Pages/default.aspx.
StatLink <http://dx.doi.org/10.1787/888933291987>

Beyond the increase in the quantity of skills, the challenges for both Latin America and China remain in other areas: quality, pertinence and the match of the available skills with the economy. Despite the current and expected expansion of the pool of skills in both China and LAC, an open question is whether countries are ready to transform

this increase in knowledge and competences into productivity gains, further innovation and an overall upgrade of the economy. This makes such elements as the quality of education and skills, the ways in which the workforce is distributed across fields of study, and matching the supply and the demand of skills of utmost importance.

Figure 5.7. Quality of secondary education: Performance in PISA reading tests, China vs. Latin America



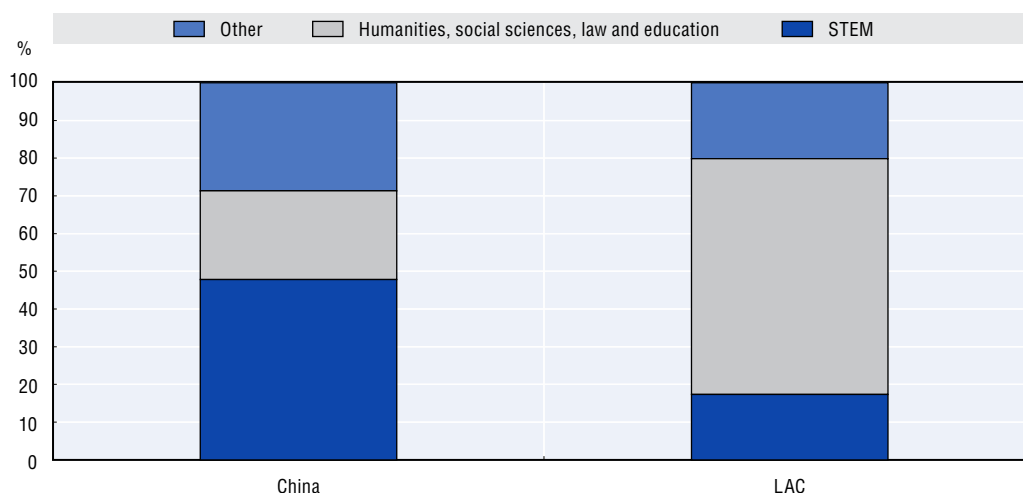
Note: The ranking of countries and provinces is according to the reading score. Vocational schools are included except in “Shanghai-China” and “China 11 provinces”. China’s sample includes 21 003 pupils from 621 schools in 11 provinces and municipalities (Fangshan District in Beijing and Tianjin Municipality, Hainan, Hebei, Hubei, Jiangsu, Jilin, Ningxia, Sichuan, Yunnan and Zhejiang provinces). Data from PISA 2012, except for China (PISA 2009) in order to include scores for 11 extra regions.

Source: PISA dataset and OECD (2015a), available at www.oecd.org/pisa/.
 StatLink <http://dx.doi.org/10.1787/888933291998>

In terms of quality, the Chinese education system performs relatively well when compared to Latin America and several OECD member countries. A measure of performance such as the OECD PISA test (Programme for International Student Assessment) illustrates a better performance of secondary students in China (11 provinces) compared to those in Latin American countries (Figure 5.7).

China presents a much more balanced mix of skills than Latin America, with students more evenly distributed across different fields of education and with a stronger share of science, technology, engineering and mathematics (STEM) graduates than in Latin America. STEM-related programmes are commonly seen as education disciplines more directly related to the needs of an advanced productive system and with stronger capacity to promote innovation and productivity gains. In China, almost half of the population prefers STEM fields of study, in contrast with preferences in Latin America, that concentrate in the fields of humanities, social sciences, law and education (Figure 5.8). This may have a strong future impact, as an expansive pool of skills in China results in many tertiary-educated workers able to further productivity gains and innovation. Conversely, Latin America may suffer not only from a lack of students in STEM areas, but also from an imbalanced mix of fields of study that could lead to skills mismatches.

Figure 5.8. Tertiary educated students by field of education in China and Latin America, (percentages)



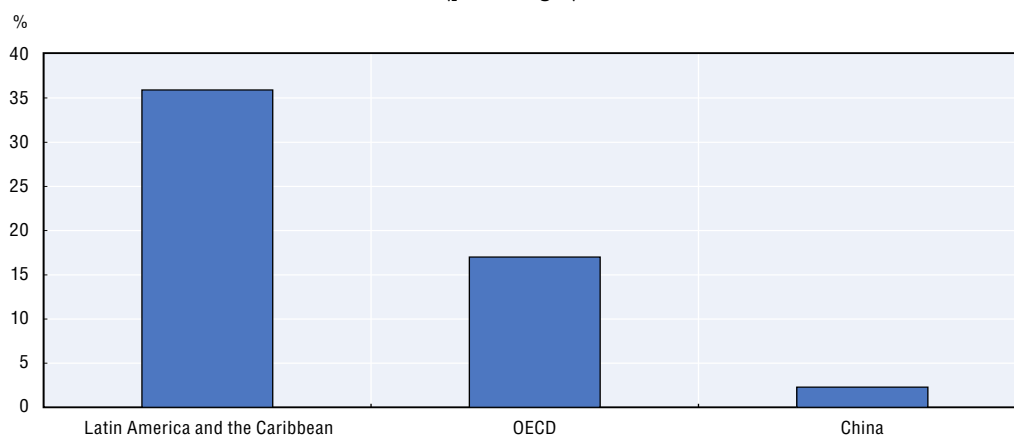
Source: OECD/CAF/ECLAC calculations based on National Bureau of Statistics (China), www.stats.gov.cn/english/ and World Bank Edstats (Education Statistics), <http://datatopics.worldbank.org/education/>.
 StatLink <http://dx.doi.org/10.1787/888933292007>

Employers in Latin America face large difficulties in finding the workforce they need, to a much larger scale than employers in China. Latin America is the region where these difficulties are the most pronounced in the world (OECD/CAF/ECLAC, 2014; Melguizo and Perea, 2015) (Figure 5.9). Nevertheless, there is additional evidence suggesting that China does have some difficulties in this domain, although these are well below the global and the Latin American average: 22% of firms in China face difficulties filling job vacancies, while the global average is 38% and the Latin American average is slightly over 50% (Manpower Group, 2015). All this suggests that a better matching between the demand and supply of skills takes place in China than in Latin America. However, averages of workforce supply and demand can hide details about the type of workforce available and the type of skills demanded by the economy. Soft and technical skills appear to be in particular demand in both regions. In China, the graduate survey “My China Occupational Skills” ranked soft skills as the most important skills for students’ jobs (OECD, 2015), while employers in Latin America also face more difficulties to find soft and technical skills among workers. Skill gaps appear in both regions and could increase as these regions evolve towards more developed and sophisticated economic structures.

Overall, China seems better prepared than the countries in the region for a transformation into a high growth, skills-based economy, as it is in the process of expanding its human capital and creating the high-skilled workforce needed for this transformation.

The identification of comparative advantages will be more challenging for Latin America. Competition from China will intensify along the broader segments of the value chain. China will progress towards the structure of a more advanced country, with a larger presence of services and of higher value-added manufactures. Even so, it will probably remain competitive in more standard manufacturing. It will likely expand the range of areas where it can effectively compete, making the identification of comparative advantages in Latin America a more challenging task. However, opportunities may also emerge for Latin America from China’s transformation, including: competition in good quality services adding value to natural resource exports, or placing more emphasis on the needs of the new economy.

Figure 5.9. Skills gap: Firms that face difficulties to find their required workforce, circa 2006-09
(percentages)



Source: Based on World Bank Enterprise Surveys, <http://data.worldbank.org/data-catalog/enterprise-surveys>.
StatLink <http://dx.doi.org/10.1787/888933292011>

Skills are key to reap the benefits of a technological change that will transform the nature of jobs. Technological progress will be at the heart of the capacity of both China and Latin America to avoid the middle-income trap. Both China and Latin America seem to be at a stage of development where old drivers of growth, such as the accumulation of labour, are insufficient to sustain economic progress. In this context, and with demographic change in China leading to a decline of the working-age population and with rising labour costs, new drivers of growth will be needed to support economic expansion. Technological change, and in particular the application of advanced technologies to production processes, will remain crucial to improving productivity.

China is forging ahead of Latin America in technological progression. In addition to the more traditional R&D indicators, new technological advances are gaining relevance. Automation and robotics have progressed greatly in recent years and are expected to be powerful drivers of growth as they transform production processes and lead to commensurate impacts on productivity. China is ahead of Latin America in this field, as it became the biggest robot market in the world in 2013 (IFR, 2014). In Latin America, only Mexico and Brazil stand out as participants in this trend. Mexico increased its incoming sales of robots by 30% in 2013, while Brazil, though declining in the inflow of robots, still purchased around 1 300 units in 2013 (IFR, 2014).

Rapid technological change may create challenges for Latin America, as the process of production automation, or the robotisation process, can have a strong impact on the economy. This is particularly true for a region like Latin America where poverty, inequality, informality and the vulnerability of an emerging middle class could be affected adversely as automation and robotics replace low- and mid-skilled workers. At the same time, high skills could gradually be in greater demand, particularly digital skills. This could lead to a situation where the global demand for low and middle skills dramatically shrinks, while the demand for high skills rises; a process which could take place in both China and Latin America. In a region where inequalities are particularly large, such an evolution in the demand of skills could lead to even larger disparities. In addition, with many newcomers to the middle class vulnerable to falling back into poverty, the potential job disruption created by technology could affect them directly. Finally, technology will make it more difficult to survive in the market with inefficiencies: this will have a direct impact on the informal sector, which is particularly large in Latin America and characterised mainly by low skills.

High levels of informality in Latin America exacerbate the relevance of skills challenges. High informality is a crucial aspect of Latin American labour markets, and it can exacerbate the complexity and impact of skills challenges in the region. Incoming technologies could displace workers in the informal sector disproportionately, and will not lead to new employment in the formal sector without significant skills upgrading opportunities. Likewise, observed skills gaps in the region refer only to the formal sector, and are potentially larger when including the informal sector into the analysis (OECD/CAF/ECLAC, 2014). Therefore a better understanding of the magnitude and roots of informality is crucial when designing the responses to future skills challenges.

Labour formality is low on average in Latin America and very low in many countries. On average, only 45 of each 100 workers (aged between 15 and 64 years old) are contributing to or affiliated to social insurance in the 19 Latin American countries analysed (Bosch, Melguizo and Pagés, 2013; OECD/IDB/World Bank, 2014). In other words, approximately 130 million workers are not contributing to a social insurance scheme, and are therefore vulnerable if they lose their job, get ill or get old.

The low levels of formality correlate to a series of socio-economic characteristics. Educational attainment has a powerful impact on the likelihood of contributing to pension systems; more educated workers are more likely to contribute than less educated workers. In Latin America, on average, only 22% of workers with eight years of education or less contribute to any pension scheme, compared to 42% of those who have between 9 and 13 years of education, and 68% of those who have 14 years or more. Again, there are large differences between countries. The likelihood that a worker contributes also has a gender dimension. The average labour force participation rate for women in the 19 Latin American countries is 56% compared to 83% for men (which compares with OECD averages of 62% and 80%, respectively). Income differences between households also have an important impact on the probability to be formal. In all Latin American countries, workers in the highest quintile (the 20% highest-income workers) have relatively high rates of contribution of between 80% and 98%.

Financial and investment channels: Lending and firm internationalisation

With China's increasing financial integration and firm internationalisation, the financial channel between the two regions has seen an unprecedented growth during the last decade. Chinese lending to Latin America has become the most important source of external financing, overcoming well-established international financial institutions in the region. Furthermore, Chinese foreign direct investment (FDI) has moved from traditional sectors like mining and broadened its horizon to multiple industries, including telecommunications, green technologies and banking. These trends attest to the need for a reassessment of the financial and investment linkages between the two regions.

China's rebalancing process implies that domestic investment will slacken, encouraging capital outflows towards other regions. For 2025, the stock of investment between China and Latin America is expected to reach USD 250 billion, well above the previous USD 99 billion invested over the past decade. As China becomes more limited in its capacity to absorb domestic investment in the coming decades, and excess savings will thus have to be reoriented, investment and financing abroad should increase. In addition, the spare capacity of Chinese infrastructure, telecommunications and service companies will focus on foreign markets such as Latin America.⁷ As a net exporter of capital (since 2014), China's role in providing financing and technical capacity in other sectors in the region could increase.

International financing in Latin America: The role of Chinese loans⁸

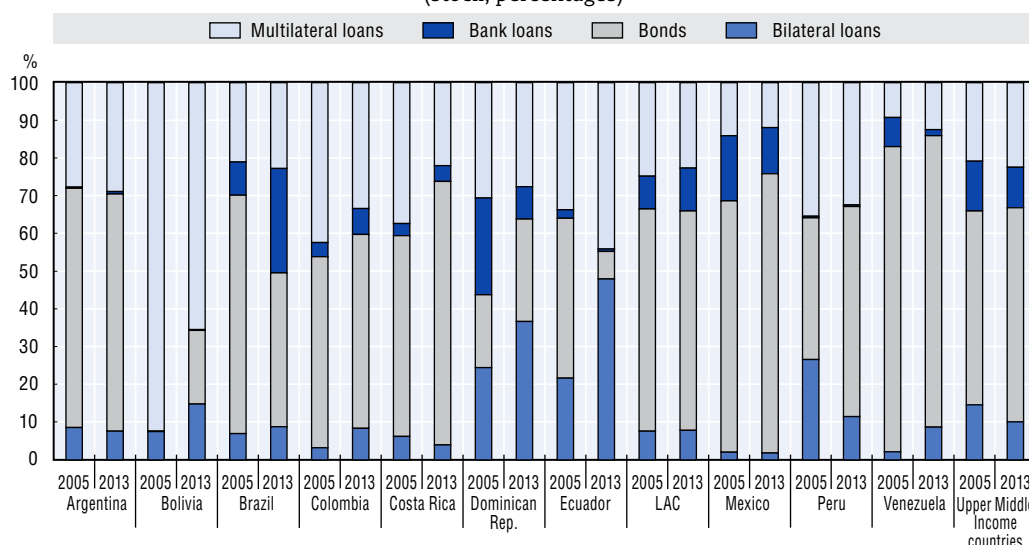
If the trade channel was prevalent in explaining the first phase of shifting wealth, the financial channel will become a key conduit in the second phase. This section examines the role of China's financing in Latin America. It looks at the evolution of Chinese loans to traditional financing vehicles in Latin America (e.g. debt markets and international financial institutions). In addition, it focuses on the financing structure of these Chinese loans in terms of issuers (mostly China Development Bank [CDB] and the Export-Import Bank of China [Ex-Im Bank]), cost of capital, maturity and conditionality.

Chinese loans to Latin American economies are complementary rather than substitutes for the region. Chinese loans are concentrated in countries where access to capital markets is very costly and where the loans provided by international financial institutions are limited. Also, Chinese loans aim to finance a few specific sectors (such as infrastructure, energy and mining) in comparison with the large number of activities and sectors covered by traditional loans provided by international financial institutions. The role of China in the future of Latin America's financial architecture and the stability of international capital markets needs to be explored fully.

Financing sources for Latin American economies are associated with different policy objectives. Three key types of actors are determining international access to finance in Latin America: international financial markets, international financial institutions (such as the Development Bank of Latin America [CAF], the Inter-American Development Bank [IDB] and the World Bank) and public financial institutions (PFIs) categorised as development banks and export-import banks. At the same time, international financial markets have two components: the banking system and the bond market. In general, an issuance in capital markets is not targeted towards a specific policy. However, bond pricing is affected by the solvency risk of the issuing country. For international financial institutions, on the contrary, loans provided are usually linked to specific policies. They are also accompanied by technical assistance to support governments in the policy-making process of reforms. Finally, loans provided by foreign PFIs, either development banks or other agencies, are linked to specific programmes or firms in which the country is involved. Chinese banks impose no policy conditions on borrowing governments but do require equipment purchases, use of Chinese companies and sometimes oil-sale agreements. Chinese financing does operate under a set of environmental guidelines, but those guidelines are not always on par with those of Western counterparts.

Although the most predominant source of financing is concentrated in the bond market, bilateral loans have increased in recent years in some Latin American economies. Similar to upper-middle income countries, close to 60% of the total financing to Latin American economies comes from the bond market. Bilateral loans only represent close to 8% of the total stock of international financing, and this proportion has remained constant in comparison with 2005 (Figure 5.10). However, in some countries, including Bolivia, Colombia, Dominican Republic, Ecuador and Venezuela, the proportion of bilateral loans has increased dramatically in recent years. Notably, in the Dominican Republic and Ecuador, the proportion of bilateral loans has increased by 12 and 26 percentage points, respectively.

Figure 5.10. Sources of financing in international markets in Latin America and upper-middle-income countries
(stock, percentages)



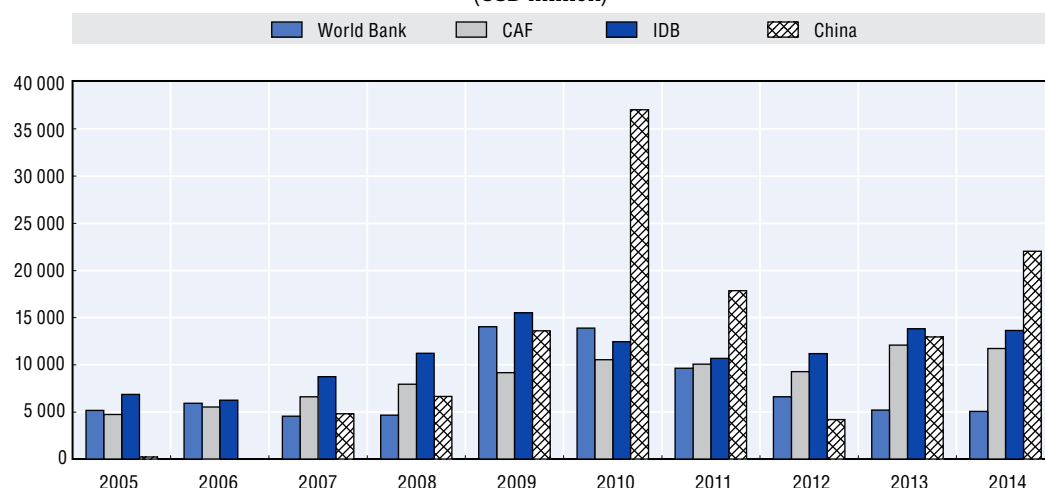
Source: World Bank, *International Debt Statistics*, <http://databank.worldbank.org/data/reports.aspx?source=International%20Debt%20Statistics>.
StatLink  <http://dx.doi.org/10.1787/888933292029>

The role of Chinese financing began increasing dramatically only at the end of the 2000s. This trend has been increasing and has become a fundamental source of financing for some Latin American economies.⁹ Estimates show that in 2010, 2011 and 2014, Chinese loans were the main form of financing, including bilateral and multilateral sources (Figure 5.11). In 2010, Chinese financing was particularly important owing to two operations. First, the CDB provided a USD 20 billion loan to the Venezuelan Economic and Social Development Bank (BANDES) and the state-owned petroleum and natural gas enterprise, PDVSA, to fund infrastructure linked to oil production. Second, the Argentine government borrowed USD 10 billion to renovate Argentina's railway systems. In 2014, more than USD 22 billion of Chinese loans to the region were outstanding, a 71% increase compared to the previous year.¹⁰ Several new multi-billion dollar regional credit lines were announced in 2014 and 2015, with the CDB and China Export-Import Bank as predominant lenders in the region joined by the growing activity of commercial banks (Gallagher, Irwin and Koleski, 2012).¹¹

Chinese financing complements the economic sectors and the countries in which international financial institutions (IFIs) are traditionally present. In contrast to a wide range of assets financed from traditional IFIs, the core of Chinese financing in the region is concentrated in infrastructure, energy and mining. In 2014, all operations financed by Chinese banks focused on these sectors. In contrast, international financial institutions, including CAF, IDB and the World Bank, financed more than 60% of their total volume in financial markets, education, health, environment and public administration (e.g. modernisation of the state, rule of law and justice). More importantly, Chinese loans target different countries from those receiving the bulk of multilateral and bilateral financing. The most active countries in Chinese financing are Argentina, Brazil, Ecuador and Venezuela, accounting for almost 91% of Chinese loans to the region between 2005 and 2014.¹² Venezuela, the most active borrower, has received USD 56.3 billion since 2005, about 47% of China's regional lending, followed by Brazil (19%) and Argentina (16%). Operations by IFIs in the region are different; in 2014, CAF focused 90% of its activities

in South America, whereas more than 70% of IDB-financed projects were concentrated in Brazil, Mexico and Peru. Overall, Chinese loans to the region are complementary in terms of country coverage compared to traditional multilateral financing.

Figure 5.11. Loans to Latin America: Selected bilateral and multilateral loans
(USD million)



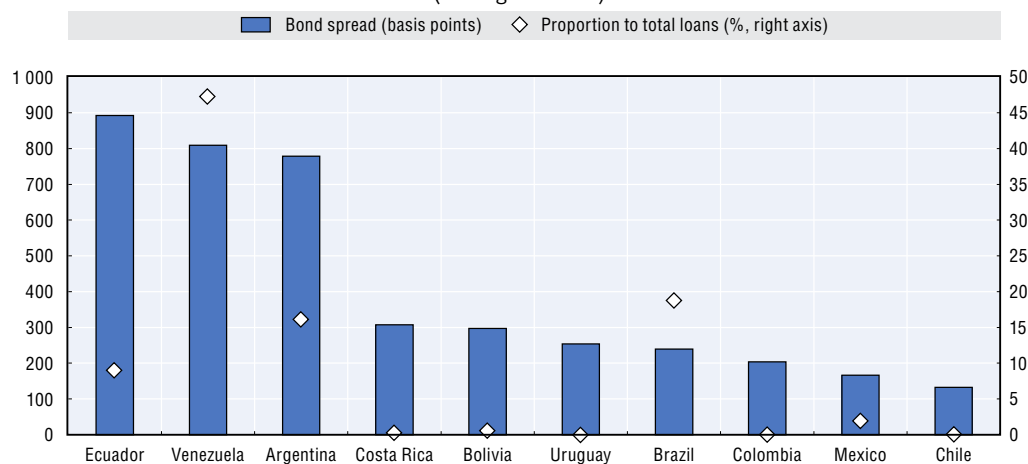
Note: Chinese loans include loans provided mainly by CDB and China Ex-Im Bank. World Bank loans are IBRD and IDA commitments. CAF loans refer to loans commitments and IDB data include loans and guarantees approved.

Source: OECD/CAF/ECLAC calculations based on annual reports (CAF, IDB, World Bank), and Gallagher and Myers (2014) for Chinese loans data, www.thedialogue.org/map_list/.

StatLink <http://dx.doi.org/10.1787/888933292035>

Countries borrowing from China have higher barriers to accessing international financial markets. Chinese financing is concentrated in countries with higher risk perception, as conventionally measured in global capital markets. They have lower debt ratings and higher sovereign bond spreads (Figure 5.12), with an average of 680 basis points compared with 225 basis points for the rest of the region.

Figure 5.12. Bond spreads in Latin America and Chinese loans
(average 2005-14)



Note: Data on Bolivia for sovereign bond spread are only available from 2013. No data available on spreads for Bahamas, Guyana, Honduras and Jamaica.

Source: Thomson Reuters, <http://thomsonreuters.com/en.html> and Gallagher and Myers (2014), www.thedialogue.org/map_list/.

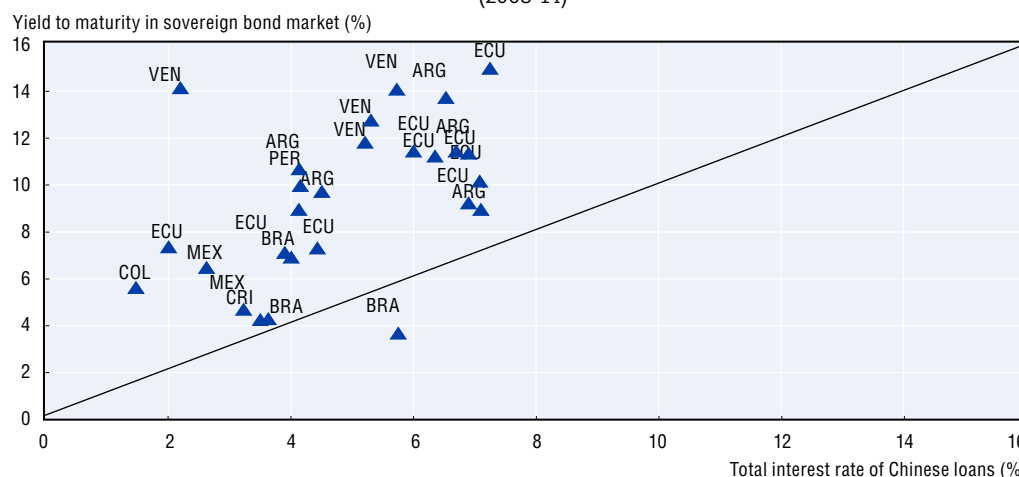
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Commodity-backed loans are increasing, reducing the risk of default to Chinese issuers. Nearly 15% of Chinese loans to Latin America today have a commodity-backed clause. This particularly has been the case with Ecuador and Venezuela. China has used loans-for-oil and purchase requirements to reduce the cost of lending to otherwise non-creditworthy borrowers. A loan-for-oil generally combines a loan agreement and an oil-sale agreement that involves two countries' state-owned banks and oil companies. When a Chinese bank grants a loan to an oil-exporting country, the oil company pledges to ship oil to China for the life of the loan. Chinese oil companies then buy the oil at market prices and deposit their payments into China's national bank account.

Financing costs with Chinese banks are not necessarily lower than traditional financing from international financial institutions. Although it is difficult to compare the financing costs between Chinese loans and other sources of financing, interest rates from Chinese loans have been similar or even higher than those provided by international financial institutions. CDB loans carry more stringent terms than World Bank loans. Indeed, CDB interest rate spreads are generally much larger than those of the World Bank. In contrast, China Ex-Im Bank generally offers lower interest rates than the US Ex-Im Bank (Gallagher, Irwin and Koleski, 2012). Furthermore, detailed information from Ecuador's 2013 Statistical Bulletin on External Public Debt indicates that Chinese interest rates are similar to those of international financial institutions and regional development banks.

However, these financing costs remain lower than those provided by capital markets, and the discrimination across countries, in terms of risk of default, is low compared to the bond market. During the period 2008-14, the yield to maturity in Latin American countries at the issuance date of Chinese loans is in most cases higher than the interest rate paid to Chinese banks (Figure 5.13). This reflects, in part, the high cost of financing for risky countries in the sovereign bond market. In addition, Chinese banks do not discriminate considerably across countries in the region. Indeed, the standard deviation of the yield to maturity in the sovereign bond market at the borrowing date with Chinese banks is 1.8 times higher than the standard deviation of the interest rates for Chinese loans. This is also evident independently if the loans are commodity-backed or not.

Figure 5.13. Financing costs in Latin America: Chinese loans vs. sovereign bonds
(2008-14)



Note: The cost of financing in the sovereign bond market is calculated from the stripped yield to maturity defined by JP Morgan.

Source: Thomson Reuters <http://thomsonreuters.com/en.html> and Gallagher and Myers (2014), www.thedialogue.org/map_list/.

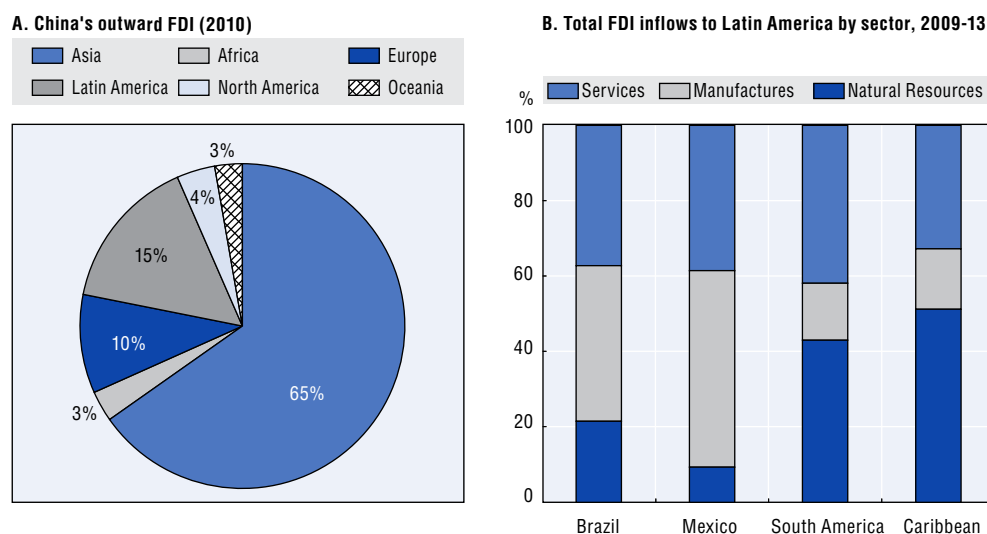
StatLink <http://dx.doi.org/10.1787/888933292058>

China's emergence in the financial sector raises some questions about its role in the region's financial architecture. As China's financing is accruing, some costs could be imputed, in particular to the development of bond markets. Under the baseline scenario, and since Chinese loans have no direct comparison with traditional financing sources in capital markets, the yield curve formation will be more difficult. In addition, bond pricing differentiation by inherent risk of default among countries in the region has increased (see Figures 5.12 and 5.13 above), Chinese loans can acknowledge their signalling role in the region's allocation of capital.

Foreign direct investment and the internationalisation of China's firms

Together with lending, China's presence in the region through FDI investments has gained some prominence in recent years. This is not an isolated effect as, after the 2008 financial crisis, Latin American countries received significant FDI volumes. In 2014, however, total FDI inflows to the region (USD 153 billion) experienced a 16% slowdown compared to the previous year. While FDI composition in South America is mostly focused on extractive and natural-resource industries (i.e. mining in Chile, Colombia and Peru; hydrocarbons in Bolivia, Ecuador and Venezuela), Brazil and Mexico attract investment in manufacturing (i.e. automotive and electronics) and services. On average, services attract relatively more FDI inflows in the region, particularly telecommunications, financial services, energy distribution and retail (Figure 5.14).

Figure 5.14. Latin American FDI inflows (2009-13) and China's outward FDI (2010)



Note: South America includes Argentina, the Plurinational State of Bolivia, Chile, Colombia, Ecuador and Uruguay. The Caribbean includes the Dominican Republic and Trinidad and Tobago.

Source: OECD/CAF/ECLAC calculations based on data from national sources and the National Bureau of Statistics of China, www.stats.gov.cn/enGLISH/.

StatLink  <http://dx.doi.org/10.1787/888933292064>

In 2013, total Chinese FDI outflows became the third largest in the world, together with the United States and the European Union (USD 348 billion). Yet, Chinese FDI to Latin America remains relatively low when compared to other regions (Figure 5.14A). This is partly explained by under-reporting in the official data collected by the Ministry of Commerce (MOFCOM) of China. In recent years, measurement issues regarding these

flows have been highlighted, owing to three main factors. First, an important group of firms make their investments through the Special Administrative Region of Hong Kong, China; Macao; Chinese Taipei and other financial centres. In 2011, about 79% of Chinese FDI conducted abroad was registered from Hong Kong, China, Cayman Islands or British Virgin Islands (ECLAC, 2013). Second, some Latin American countries do not register a flow's source of origin, making it difficult to gauge China's FDI. Third, it is common that the investment is made through subsidiaries located outside the country. For example, one of the most important investments from China in Brazil, the acquisition of 40% of Brazil's Repsol (over USD 7 billion) by China's Sinopec, was registered as FDI from Luxembourg, where a subsidiary of the company is located. Despite data limitations, available information suggests that Chinese firms participate in critical sectors, and in some cases, like Brazil, go beyond manufacturing and electricity.

Table 5.3. Latin America: Largest mergers or acquisitions, 2014

N	Company	Country of origin	Assets acquired	Assets located in	Seller located in	Sector	Amount (USD million)
1	MMG Ltd and partners	China	Xstrata pic Las Bambas copper deposit	Peru	Switzerland	Mining	7 005
2	Royal Dutch Shell	Netherlands	LNG Portfolio	Peru, Trinidad and Tobago, Spain	Spain	Oil	4 100
3	Gas Natural SDG	Spain	Cia General de Electricidad (54%)	Chile	Chile	Electricity	3 300
4	Banco Santander	Spain	Banco Santander Brasil (14%)	Brazil	Brazil	Finance	3 199
5	China National Petroleum Company	China	Petrobras Energia Peru	Peru	Brazil	Oil	2 600
6	PPG Industries	United States	Consorcio Comex SA Mexico		Mexico	Manufacturing	2 300
7	Lundin Mining Company	Canada	Candelaria and Ojos del Salado mines (80%)	Chile	United States	Mining	1 800
8	Global Logistics Properties	Singapore	34 Industrial properties	Brazil	Brazil	Real Estate	1 368
9	Corpbanca SA	Chile	Helm Bank Sa	Colombia	Colombia	Banking	1 320
10	Millicom	Sweden	Telecoms business of EPM (50%)	Colombia	Colombia	Telecommunications	1 300
11	Eutelsat Communications	France	Satelites Mexicanos	Mexico	Mexico	Telecommunications	1 142
12	American Tower Corp	United States	BR Tower SA	Brazil	Brazil	Telecommunications	1 012
13	Mubadala and Trafigura Beheer	United Arab Emirates and the Netherlands	Porto Sudeste de Brasil (MMX) (65%)	Brazil	Brazil	Infrastructure	971
14	Brookfield Asset Management	United States	VLI SA (27%)	Brazil	Brazil	Transport	845
15	Celsia SA	Colombia	Seven power plants	Costa Rica and Panama	France	Electricity	840
16	Pearson PLC	United Kingdom	Grupo Multi	Brazil	Brazil	Education	829
17	Mitsui & Co	Japan	Jirau Hydropower plant (20%)	Brazil	France	Electricity	750
18	Partners Group	Switzerland	Fermaca	Mexico	United States	Infrastructure	750
19	Walgreens and KKR	United States	Farmacias Ahumada	Chile and Mexico	Mexico	Commerce	740
20	China Construction Bank	China	Banco Industrial e Comercial (72%)	Brazil	Brazil	Banking	725

Source: ECLAC (2015a), Foreign Direct Investment in Latin America and the Caribbean, http://repositorio.cepal.org/bitstream/handle/11362/38215/S1500534_en.pdf?sequence=4.

Sector analysis: Infrastructure, green energy and land

Latin America's needs for infrastructure will be important in the medium and long term and China's financing and investment have become important sources to help close the infrastructure gap in the region. If Latin America closes its infrastructure gap with other middle-income countries, the region could increase its annual growth by an estimated 2 percentage points (Calderón and Servén, 2010). To meet the infrastructure needs between 2006 and 2020, Latin American countries should invest about 5.2% of the region's GDP every year, and 7.9% just to reach the level of infrastructure stock as select Asian economies (Korea, Malaysia, Singapore and Hong Kong, China) (Perrotti and Sánchez, 2011). These funds would be directed for new infrastructure projects (52%) and maintenance costs (48%). Yet, in 2012, private and public investment in infrastructure was below 3.5% of GDP (CAF, 2015; ECLAC, 2014).¹³

In addition, as a highly urbanised region (80% of the population is concentrated in urban areas), Latin America is expected to reach a 90% urbanisation level by 2050 (OECD/ITF, 2014). A simulation of transport volumes, modal shares and transport-related CO₂ emissions for the region anticipates drastic changes and room for policy action. In a baseline scenario following major trends, mobility in urban Latin America will grow rapidly, reaching almost twice its size by 2030. Passenger transport-related CO₂ emissions would also increase 1.5 times by 2030. Scenarios for urban sprawl, considering road infrastructure development and public transportation modes for Latin America highlight a factor growth of 3.1 to 3.6 for CO₂ emissions.

China, however, has been rapidly building infrastructure and will extend abroad in the next few years. Its dynamic infrastructure sector has been critical during the 12th Five Year Plan (2011-15) for supporting the transition towards a more sustainable growth model, focusing less on the export sector and more on the domestic market. Gradually, China has started to export infrastructure-related services to other regions (see Box 5.2), consolidating its role as a major provider of capital for infrastructure.

Box 5.2. The Silk Road Economic Belt: China's infrastructure model in Asia and Europe

Introduced in 2013, and part of China's 13th Five-Year Plan (2016-20), the Silk Road economic belt, often called the "One Belt, One Road" initiative, is an ambitious project by the Chinese government to extend a complex infrastructure network outside China, into countries whose locations span from Southeast Asia to Europe. This plan includes overland road and rail routes, oil and natural gas pipelines and other infrastructure projects that will extend from central China to Asia and Europe, as well as the development of ports and coastal maritime projects in South East Asia, East Africa and the Mediterranean (Kennedy and Parker; 2015).

The regions that form the Silk Road have an important participation in Chinese trade, representing 33% of its exports and 20% of its imports (United Nations; 2015). They have different specialisation patterns, broadly replicated in their trade with China. This diversity of trade patterns is reflected in the share of commodities in total exports to China (70% for Central Asia, 60% for Middle East and Northern Africa, 5% or less for the other regions). Supply-chain integration of different blocs in the Silk Road in which China participates is heterogeneous. This reflects the potential opportunities for the Middle East and for the European Union to deepen their integration in supply chains in which China participates, which might be exploited with further integration.

Intra-Silk Road foreign direct investment is also relevant for China, since 33% of all Chinese FDI outflows are directed towards regions that are part of the Silk Road, and 46% of jobs created by FDI inflows in China are created by investments originating in these regions. This FDI link might be deepened further with the Silk Road economic belt project, since an increased Chinese investment in infrastructure in these regions, as well as greater trade integration, have the potential of increasing Chinese FDI outflows to them.

Source: Kennedy and Parker (2015), "Building China's 'One Belt, One Road'", <http://csis.org/publication/building-chinas-one-belt-one-road>.

The largest infrastructure investments in Latin America have taken place in Brazil and Peru. A number of Chinese companies have contracts in infrastructure, which is not computed as FDI, and are generally linked to Chinese bank financing. The CDB, for instance, loaned Argentina USD 2.1 billion to build a rail project to support agriculture activities. Likewise, the Pacific Ocean initiative, which is currently under discussion, involves a 3 500 kilometre-long rail network to connect both seas.

Chinese participation in telecommunications in Latin America has taken place since the early 2000s with progressive entry into local markets. Two main firms, Huawei and ZTE, make up the bulk of the investment in telecommunications, followed by companies such as Shanghai Alcatel Bell and Datang. Brazil has played a pivotal role in deploying telecommunication networks in the region. With a presence in over 14 countries, Huawei has become a core part of the telecommunications infrastructure of the region, with a considerable market share in Central America, mostly focused on marketing and technical assistance (Ellis, 2014). The technical capabilities offered by Chinese telecommunications companies are based on their experience in the Chinese market, where fixed-line networks were less reliable. Initially targeting large markets, like Mexico, Brazil and Argentina, Chinese telecommunications companies now participate in Venezuela, Ecuador, Bolivia, Nicaragua and Cuba. The services provided by Chinese companies range from cell phones and modems to more complex networks for major telecommunications providers.

China also participates in the Latin American electricity market. Chinese companies are active in traditional and alternative energy facilitation services across the region and have gained ground in the renewable energy sector (Ellis, 2014). The acquisition of seven power plants in Brazil and the Brazil Iberdola subsidiary acquisition in 2010 by Chinese firms attests to their interest in the sector. Furthermore, the development of hydroelectric facilities by China is most important in terms of mobilising investment and the labour force. Projects in Argentina, Brazil, Costa Rica, Ecuador and Venezuela involve Chinese firms like State Grid and Sinhydro (Ellis, 2014).

Chinese companies are playing an active role in providing green technologies to Latin America. In recent years, China's role in providing wind and solar energy generation for the region has gained relevance. Argentina, Bolivia and Ecuador have signed contracts with Chinese turbine producers for the implementation of innovative sustainable-energy programmes. Some of these operations, like the one in Brazil, have been sponsored by the CDB. These projects range in investment from USD 50 to USD 500 million per project (Ellis, 2014). Chile has played a role as an entry point for solar energy projects in the region, including a USD 900 million project in the Atacama Desert to produce 300 megawatts (MW) of electricity. The project responded to China's oversupply of photovoltaic panels and Chile's interest to diversify its energy sources. By 2013, Chile had imported about USD 40 million in Chinese panels, about half of their total stock (Borregaard et al., 2015). Smaller-scale initiatives have been signed by China in Mexico (Sinaloa, Durango) and Costa Rica.

In addition to infrastructure and green energy, China's agricultural FDI has focused on land purchases, but also other industries across the agro-industry supply chain. Although the general perception is that China is systematically acquiring land in Latin America, just over 70 000 hectares of land have either been purchased outright or leased by Chinese companies for crop cultivation as of June 2015 (Myers and Jie, 2015). Including large acquisitions, the estimated total of Chinese land acquisition is less than 0.2% of the total arable land of the region.¹⁴ Moreover, guidelines from the Chinese ministry of agriculture have directed investment in production, processing and logistics rather than in land acquisition. For example, COFCO – a Chinese state-owned company with

investment in Chile's wine – is looking to acquire foreign firms to help secure supplies of commodities, including soybeans, wheat and sugar. Finally, Chinese firms involved in land purchasing/leasing in Latin America include both small and private (Pengxin and Zhejiang Fudi) and large and public (COFCO, China Investment Corp) firms.

Chinese financing and investment in perspective: Sectorial and national targeting or diversification

In the period 2005-14, close to 80% of total Chinese financing to Latin America supported infrastructure. Close to 45% of the total financing corresponds to transport infrastructure including roads, railways, trains, subways and airports. In addition, energy projects represented more than 20% of the total financing in the same period. China has financed (partially or wholly) hydroelectric dams, gas networks and/or turbines. Telecommunications represented close to 7% of total financing. The rest of the financing has been for commodities, in particular the Chinalco copper mining in Peru (close to 9% of the total financing), and other sectors, such as corporate and working capital operations (Gallagher and Myers, 2014). Certain loans, however, include clauses for involving Chinese infrastructure firms in the project.

Looking ahead, different scenarios are envisioned regarding China's financing in Latin America. Countries and sectors are at the core of China's finance strategy (Table 5.4). The first scenario reflects the current portfolio of countries and economic sectors, specifically concentrated in a few countries with less access to international capital markets, and most of the investment going to infrastructure. The other scenarios suppose higher diversification either in terms of sectors or geographic coverage.

Table 5.4. Potential scenarios for Chinese financing to Latin America
(sectors and countries)

			Countries				
			Traditional				Diversified
			ARG	BRA	ECU	VEN	ADDITIONAL COUNTRIES
Sectors	Targeted	Infrastructure (transport, energy and telecommunications included)	SCENARIO 1 (TODAY)				SCENARIO 2 (BASELINE)
		Extractive					
	Diversified	Scientific and Technological Innovation	SCENARIO 3 (NEW SECTORS)				SCENARIO 4 (NEW SECTORS AND COUNTRIES)
		Green technologies					
		Information technologies					

Source: OECD/CAF/ECLAC elaboration.

The current scenario (scenario 1) supposes continued lending to specific countries across the same economic sectors covered in current loans. In this scenario finance continues to be directed towards countries that have a high cost of financing from other sources of international credit, have abundant natural resources, and are willing to accrue billions in Chinese debt.

In the first scenario, Chinese financing plays a countercyclical but uncertain role. Chinese financing allows countries perceived as having higher default risk to finance programmes oriented to infrastructure development and natural resources

industries. These loans are welcomed as an alternative financing source and also can be countercyclical compared to other sources. Similar to sovereign bond spreads, bilateral loans from IFIs are positively associated to the country risk classification provided by the OECD's arrangement on officially supported export credits.¹⁵ However, greater resource availability from Chinese sources does not necessarily solve the macroeconomic challenges nor eliminate negative perceptions held by international investors. Indeed, since Chinese lending is not directly linked to improvements in the macroeconomic framework, external resources could exacerbate the effects of non-credible macroeconomic policies for these economies.

Among the alternative scenarios, the most likely is scenario 2 as China has announced more investments in traditional sectors. In that scenario, regional credit lines – announced in 2014 and 2015 during high-level Chinese visits to the region – could target new countries in the region. A key 2014 announcement said that: “China will formally implement USD 10-billion special loans for Chinese-Latin American infrastructure and, on this basis, raise the credit limit for special loans to USD 20 billion. China will also provide USD 10 billion of concessional loans to the region, and comprehensively launch the China-Latin America Cooperation Fund with a commitment to invest USD 5 billion”.¹⁶ This announcement reflects the strategy highlighted by Premier Li Keqiang during his visit to Latin America, where the construction of a Chinese-built cross-Andes rail was proposed (Hornby and Schipani, 2015).

This scenario allows for the presence of Chinese commercial banks, which could help diversify China's portfolio in the region towards other economies. To reduce its financial exposure in some countries in the region, Chinese banks can broaden their geographic portfolio. New lenders, such as Chinese commercial banks (e.g. Industrial Commercial Bank of China and others), are focused primarily on returns, and they can offer finance to countries in the region with lower financing costs. In that context, policy banks look to reduce their exposure to risk by diversifying their investments. Finance continues to focus on traditional sectors, such as energy, transport infrastructure and telecommunications. Under this second scenario, regulatory and transparency issues linked to Chinese investments can emerge. Better principles for foreign investment can be linked to future loan operations in Latin American economies. Owing to improvements in the regulatory and institutional framework for infrastructure in some countries (OECD/CAF/ECLAC, 2013; EIU, 2014), Chinese loans should follow a process with higher transparency and competition standards.

Scenario 3, more diversified by sectors but focused on the same pool of countries, is the least likely, as Chinese investments tied to natural resources and extractive operations in these countries will continue.

Coupled with higher country diversification, investments in other sectors could arise (scenario 4). Less likely than the second scenario, recent announcements suggest some interest in bringing higher sector diversification in Chinese investments. The so-called “3x3” policy proposes co-operation in logistics, power generation and information technology with the interaction among three actors: firms, society and government. This co-operation would be backed up with a USD 30 billion special fund to develop production capacity in these industries. In addition, Chinese banks (commercial and policy) look to diversify their investments across the board. Lines of credit could support finance in new countries and sectors.

The baseline scenario of financing loans (scenario 2) differs from the baseline scenario for FDI in sector coverage. As some recent official pronouncements indicate, FDI should be directed to countries that currently receive finance from China, as well as new ones (Chile, Peru). In addition, FDI will be focused not only on infrastructure

but also on agriculture, manufacturing, scientific and technological innovation and information technologies, according to 2015 policy pronouncements of the China-Latin America forum, such as the “1+3+6 co-operation framework”.¹⁷

China's new role in global governance

China's Zouchuqu (“走出去战略”) or “going-out policy” is one of the pillars of the country's current transformation, embedding active participation in numerous political and economic platforms, and pursuing an openness strategy. In contrast to previous decades, Latin America is positioned as one of the priority regions for the Asian economy, which poses opportunities but also challenges for the region. This section studies the trade and financial ties that China and Latin America have put in place in recent years as well as their growing importance in the global economy. It looks at the evolution of bilateral and multilateral agreements with the region, and the role that China is currently playing in the global agenda.

Trade and investment ties between Latin America and China

Bilateral free trade agreements (FTAs) and bilateral investment treaties (BITs) have had prominence as policy instruments in the relationship between China and Latin America. As described in Chapter 4, China has used FTAs and BITs as key tools to deepen trade and investment integration. At the same time, as illustrated before, China's global presence has increased. Its participation in multilateral (World Trade Organization since 2001) and plurilateral platforms (the Southern Common Market [Mercosur] since 2012, Pacific Alliance since 2013 and TISA [Trade in services Agreement] since 2014) attest to China's willingness to strengthen links with other regions.

China's participation in new platforms for trade and investment development poses a number of challenges for Latin America. China's willingness to pursue collaboration in the region calls for a co-ordination mechanism to aid negotiations. Bilateral negotiations have proven beneficial for some countries or markets, to the detriment of other countries without these mechanisms. Existent regional platforms can play a role in building this co-ordination mechanism, but a regional strategy is currently lacking. To respond to this challenge, Latin America should make the most of both regional blocs and broaden regional co-ordination. If building a fully inclusive regional integration agenda is the ultimate goal, regional blocs such as Mercosur, ALADI (Latin American Integration Association) and the Pacific Alliance can play an important role in setting the agenda in different policy areas, including regulatory coherence. The prospects of a co-ordinating body common to all countries in the region should move forward, but in the meantime, to gain bargaining power in coming negotiations with China, the region will have to find common ground and provide a more collective response.

China's global financial presence

Since the financial crisis, China has aimed to restructure its global financial reach through major financial initiatives in aid and investment and through the Yuan renminbi's internationalisation (Gao and Yu, 2011). The latter remains to be adopted, as the Chinese government is not willing yet to give up financial flows controls, and full convertibility (a requisite for currency internationalisation) is not likely to happen in the short term. However, China achieved some tangible results towards financial regional integration, built on the basis of the Chiang Mai Initiative (CMI).¹⁸

Along with an upsurge in bilateral loans, China has entered the arena of multilateral development banks.¹⁹ In 1986, China joined the Asian Development Bank and the Inter-

American Development Bank in 2009 to deepen links with these regions. Another major initiative was the creation of the Asian Infrastructure Investment Bank (AIIB) in 2014, when 21 Asian nations – led by China – signed an agreement to establish a bank for regional infrastructure financing. Nine months later in July 2015, China joined Brazil, Russia, India and South Africa (the other BRICS countries) to launch the New Bank of Development, with headquarters in Shanghai. These examples reflect China's effort at global integration with the world. In Latin America, China announced the establishment of the first settlement bank (*banco de liquidación*) in Yuan renminbi in the region, which will be based in Chile with an initial capital of USD 189 million, to promote the use of the Chinese currency. China's active participation in multiple financial platforms indicates its willingness to develop a long-term link with emerging economies, including Latin America (see Box 5.3).

Box 5.3. China and CELAC and future co-operation

In 2014 China and the Community of Latin American and Caribbean States (CELAC) jointly announced the establishment of the China-Latin America comprehensive co-operative partnership and the formal establishment of the China-CELAC. The Communist Party of China (CPC) mentioned several priority areas of co-operation.

- Trade and Investment: increase trade between China and CELAC up to USD 500 billion and raise the stock of reciprocal investment to at least USD 250 billion in ten years.
- SMEs: Encourage further co-operation between small-and medium-size enterprises (SMEs) with the view of integrating SMEs in global value chains.
- Make good use of the China-LAC Cooperation Fund: Includes the China-LAC Special Loan for Infrastructure, concessional loans offered by China as well as other financial resources to support key co-operation projects between China and CELAC countries.
- Infrastructure: Promote infrastructure development in areas such as transportation (including ports, roads and warehouse facilities), business logistics; information and communications technologies (including broadband, radio and television); agriculture, energy and power; and housing and urban development.
- Energy and Natural Resources: Foster closer co-operation in energy between China and Latin American and Caribbean countries and explore the possibility of inaugurating the China-LAC Energy and Mineral Resources Forum in due time.
- Industry, Science and Technology, Aviation and Aerospace: Explore initiatives for the joint construction of industrial parks, science and technology parks, special economic zones and high-tech industrial parks.
- Education and Human Resources Training: Promote exchanges, research mobility programmes and co-operation between education departments and institutions. China will provide CELAC countries with 6 000 governmental scholarships, 6 000 training opportunities and 400 opportunities for on-the-job master degree programmes in China between 2015 and 2019.

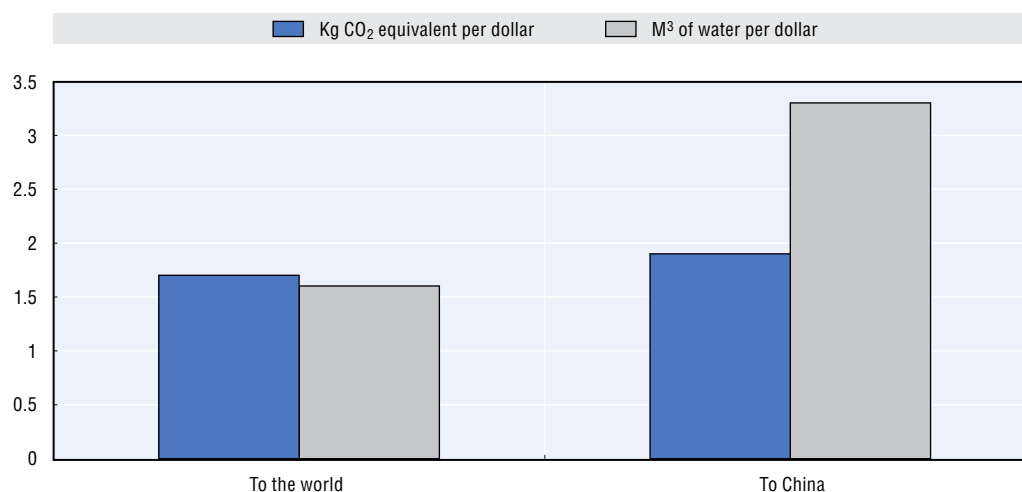
This unprecedented partnership presents an opportunity for Latin America to generate links with China as an integrated region. It provides time and a platform to create and co-ordinate regional strategies (rather than single country initiatives) in infrastructure, energy and natural resources, productive capacities and education and skills policies. It may also lead to improving synergies both with China and within the region. China takes CELAC as its preferred vehicle for engaging with Latin America. Therefore, a pro-active and co-operative attitude is needed from each of the CELAC members in order to work with China as a united entity.

Source: CELAC (2015), *América Latina y el Caribe y China: Hacia una Nueva Era de Cooperación Económica*, http://repositorio.cepal.org/bitstream/handle/11362/38196/S1500389_es.pdf, and Cui Shoujun (Center for Latin America Studies, Renmin University of China).

Environmental challenges in Latin America: A key for future agreements

Environmental degradation is an overarching threat, and the commercial relations between China and Latin America are not exempt. Latin America's exports to China are generally mineral extractions and agricultural products, which are environmental-intensive sectors. These create relatively fewer jobs and generate a greater environmental impact than the average exports from the region to the rest of the world. Between 2009 and 2012, the region's exports to China generated between 44 and 47 direct jobs per USD 1 million in export value (at 2002 prices), whereas the same value of exports to the world at large created between 54 and 56 direct jobs in that period. Sales to China generate larger greenhouse gas emissions and consume more water per dollar exported than the region's exports worldwide (see Figure 5.15) (Ray et al., 2015). In addition, the environmental degradation often leads to social unrest in the affected local communities (Ray et al., 2015).

Figure 5.15. Environmental impact of Latin American exports to China and the world, 2004



Source: Ray et al., (2015), *China in Latin America: Lessons for South-South Cooperation and Sustainable Development*, www.bu.edu/pardeeschool/files/2015/04/Working-Group-Final-Report-Pages1.pdf.
 StatLink <http://dx.doi.org/10.1787/888933292079>

As a response to the environmental degradation, both Latin America and China have enforced environmental standards for incoming investment. Some Latin American countries have enacted environmental standards and civil society has been active in holding governments and companies accountable (Ray et al., 2015). Also, China, through the Ministry of Commerce, published the “Guidelines for Environmental Protection in Foreign Investment and Cooperation” for private and public investors. All in all, two out of the three FTAs signed between China and Latin America include sustainable development and environmental protection and follow the new guidelines developed by China for their outbound investors, which emphasise environmental safeguards.

Policy responses for the long term: China and Latin America's development path

Latin America's response to the changing context brought by China's transformation and the second phase of shifting wealth should be built around three main objectives: diversification, upgrading and integration.

To achieve these objectives, the following three main lines of action for Latin America's policy package should be undertaken:

1. Setting the conditions for using China's financing role to strengthen infrastructure and close the infrastructure gap in the Latin American region.
2. Implementing sustainable productive development policies that promote advantages brought on by China's new normal (e.g. rebalancing and changing consumption patterns and human capital investments in education and skills).
3. Targeting a truly regional strategy towards China that deepens the region's integration via traditional factors, not only by reducing tariffs barriers and transport costs, but also by strengthening regulatory aspects hindering integration, including areas like competition, intellectual property rights and recognition of qualifications.

For Latin America to achieve these objectives, and for China to make the most of its increasing involvement with Latin America, both areas need to build the pillars for a solid, durable and resilient partnership which can only bring benefits for both.

Closing the gap in infrastructure

To make Chinese financing in infrastructure more effective, Latin American governments need to continue improving their regulatory framework. China's financing in Latin America has considerably increased in the past decade and has focused on extractive sectors and infrastructure. Although the latter has contributed to reducing the infrastructure gap, the region must do more. As noted previously, to meet the infrastructure needs that will arise until 2020, Latin America should invest every year more than 5.2% of GDP to keep up with basic infrastructure needs (Perrotti and Sánchez, 2011). With a level of less than 3.5% of GDP, investment in infrastructure is well below these requirements (CAF, 2015; ECLAC, 2014).

Increasing infrastructure investment is key to diversifying the region's financing sources in areas where China is already investing, such as transport, energy and telecommunications. In the period 2005-14, close to 80% of the total financing to Latin America supported infrastructure sectors in the region. Nearly 45% of the total financing corresponds to transport infrastructure, and energy represented more than 20% of the total financing in the same period. The examples of Argentina and Ecuador are illustrative. In these countries, Chinese institutions lent more than USD 2 million and USD 80 million, respectively, to enhance the railway systems.

Latin American governments need to improve their regulatory framework for hosting further Chinese investment. Principles to regulate foreign investment exist but are nascent in some countries; however, they can be linked to future Chinese operations in the region. Indeed, thanks to recent improvements in the regulatory infrastructure frameworks in some countries (OECD/CAF/ECLAC, 2013), Chinese future loans and investments should follow a process with higher information transparency and competition with other actors. China's willingness to comply is evident, as China recently enacted several guidelines for overseas investments, guaranteeing compliance with host regulations, particularly on environmental protection (MOFCOM, 2013).

Implementing productive development policies

Sectoral policies

Policies to bolster the productive capacity of countries have a long-standing history in the development agenda. Recently, several countries have implemented productive

development policies (PDPs) to respond to modest growth, which cover both a scope dimension (horizontal or vertical) and intervention type (public inputs or markets intervention). The current set of PDPs involves policies that are cluster based, to foster innovation, upgrade skills and mobilise financial resources, among others (Crespi, Fernández-Arias and Stein, 2014; OECD, 2013). Many PDPs are for the primary sector to enable growth through the channels noted above, and to promote scaling up in the value chain (product design, logistics and commercialisation).

Mining companies need to upgrade in the value chain and develop other industries.

To enhance value added, mining firms in the region need a more pro-active strategy to participate in activities associated to the sector, including logistics, infrastructure and services. Throughout the past 30 years, Chinese firms have pursued acquisitions in the oil and mining sector, paving the route for a long-lasting presence in the region. This may hinder the ability of Latin American firms to move upstream in the value chain. Chinese companies are investing not only in mining projects but also in related services and industries. For example, the Mirador copper mine in Ecuador (a USD 1.4 billion investment over five years), developed by the Chinese firm Tongling, also contemplates the construction of a port facility in Puerto Bolívar. In Brazil, the Chinese firm Honbridge Holdings is building a 260 mile-long pipeline to ship ore from one of the acquired mining sites in Minas Gerais to the Atlantic coast, with construction work to be given to Chinese contractors (Ellis, 2014). This last example illustrates the loss of multiplier effects through local job creation and provides evidence that the region may be losing opportunities to adopt other activities along the value chain and thus be cornered into a position as a mere raw-material supplier.

There are positive ongoing experiences, however. In Chile, privately owned BHP Billiton and the state-owned company CODELCO, with support from the public productive development agency, CORFO, are promoting the technological capabilities of local industries within the mining cluster through its World Class Suppliers to the Mining Industry programme. This programme aims to upgrade local suppliers of mining solutions and knowledge-intensive services and technology and promote their exports (Gana and Meller, 2015).

The mining sector would benefit from strategic PDPs. Horizontal policies are more consensual as policy makers can focus on a sector rather than particular industry within it. If Latin American countries facing significant FDI inflows want to promote linkages with local companies to upgrade their activities, a horizontal policy is desirable. The use of tax breaks or subsidies to projects involving alliances between the foreign and local firms would also be beneficial.

Agriculture and food manufacturing is a promising industry with a growing Chinese demand, but value chains are essential.

To benefit from the growing food consumption trends – and mitigate the price volatility of commodities – Latin American agro-industries should be more pro-active and position themselves in parts of the value chain with higher added value through the incorporation of different types of services. The changing food consumption trends in China discussed previously present a market opportunity to expand productions into more added-value exports from Latin America. Some countries are already moving in this direction. For example, in Uruguay, the government and meat producers have successfully implemented beef cattle electronic traceability. The platform became an important source for potential product differentiation and a tool to retain more value added within food global value chains. Chile has become an important exporter of different types of berries using a streamlined and integrated production and distribution

network to deliver its produce within days to faraway destinations such as Japan and the United States. In Colombia, a group of 500 000 small-scale coffee producers has expanded their presence in the up- and downstream segments of the value chain (including R&D, marketing, branding and distribution) creating a market-premium for their coffee. Also, in Colombia, flower producers are vertically integrated to deliver products with more quality. Given the hurdles of transport and distribution in the United States, producers established a joint company (Transcold) responsible for loading, unloading and keeping flowers in refrigerated rooms (Crespi, Fernández-Arias and Stein, 2014). In Argentina, Pan American Energy (PAE) (CNOOC's joint entity with BP) developed, the "SMEs of Golfo San Jorge" programme to build capacity amongst local small businesses and incorporate them into PAE's supply chain (Ray et al., 2015) with the participation of sub-national governments and local organisations. These examples stress that Latin American firms and governments must think creatively about how to give their products more value added if they want to thrive in the largest and more competitive markets, such as China. PDPs that support similar initiatives are needed to aid national growth goals.

Value is not only concentrated at the start of the value chain, but is created through activities such as R&D and product design, and then expanded in upstream activities like marketing and logistics (OECD, 2014). If Latin American agricultural firms want to reach the Chinese consumer with final products, they need to create awareness, country and brand recognition. The Chilean winemaker *Viña Concha Toro*, is a noteworthy example. Since 2001, the firm has invested heavily in advertisement to create brand awareness, penetrating the Chinese market and investing in a strong distribution network with a local distributor, Summergate. Another example highlights Argentina's CIDETER, a cluster of SMEs in agricultural machinery, which is, grouping firms, universities, technological institutes and local governments. To access foreign markets, CIDETER created experimental fields in South Africa to display the machinery and adapt to local agro-ecological conditions (Crespi, Fernández-Arias and Stein, 2014). Policy makers can provide public inputs to help firms further boost their marketing strategies in export markets. The strengthening of export promoting agencies are an example of such a policy input.

Policies could encourage Chinese firms to invest in the development of certain parts of Latin American manufacturing regional production networks. For example, an increase in the FDI of Chinese manufacturing enterprises in industries, such as the automotive and electronics sectors in the region, in co-operation with local suppliers, could strengthen regional value chains. This could enhance productive linkages and intra-regional trade.

Policies that promote tertiary-sector firms' abilities to promote and expand their range of services in response to new opportunities created by the structural transformation of the Chinese economy and ageing of its population could create a significant multiplier effect. These include back-office and offshore services for the global networks of Chinese multinational companies, ensuring 24-hour service provision. Services oriented to the needs of an ageing population in China have significant market potential. While many services need to be local (in China), others such as tourism packages especially created for the needs of seniors are not. Other examples are entertainment, architecture, urban planning, environmental management, medical and other services for older adults and more traditional types of services such as tourism, transport and logistics services. Tourism, in particular has significant potential for further development. The number of visitors from Latin America to China (251 000) and from China to Latin America (334 000) has increased in recent years (WTO, 2015), although it still represents less than 1% of China's tourism. Latin America's visa restrictions and complex migratory procedures could be revisited to allow for more fluid regional and global exchange.

China's transformation will bring business opportunities for Latin American exporters of higher-value-added products and services. The nature of these products requires local presence of the regional exporters in China through FDI. Greater proximity to the final consumer allows a faster response to consumer demands, and a pending task for governments in the region. The early experience from pioneer trans-Latins that have first ventured into China could prove useful. The Shanghai Free Trade Zone, opened in 2013, may be an example of the alternatives for Latin Americans firms to relocate in China (ECLAC, 2015b).

The creation of a Latin American and Caribbean Centre for Trade and Investment Facilitation in China, following the examples of the European Union Chamber of Commerce in China and the American Chamber of Commerce in China, could play a central role in the diversification of regional exports to China. This may allow identifying potential barriers to trade and investment and working more closely with China's Ministry of Commerce and the China Council for the Promotion of International Trade (ECLAC, 2015b).

Policies to support investment in education and training specifically geared toward employment in trade industries should be encouraged. Along with policies to create value-added production entities for trade in commodities and services. Existing evidence suggests that job creation associated with exports to China is reduced as trade has been mainly concentrated in primary sectors. The average number of jobs created per US dollar of exports from Latin America to China is lower than those directed to the United States and the European Union (and only similar to regional trade) (Ray et al., 2015). Even more important, 72% of all jobs generated by Latin American exports to China are low-skilled, versus 33% in the case of trade within Mercosur (Kupfer et al., 2013). Therefore, PDPs should incorporate the goal to increase the medium- and high-skill jobs elasticity to trade with China.

Skills

To respond to China's transformation, Latin America's pool of skills needs to be improved.

As discussed, skill development is a crucial factor to sustain Latin America's future development. Enhancing skills and education by increasing access and enrolment to vocational and tertiary education systems remain one of the central elements of the Chinese rebalancing process, which will have an impact, through different channels, in Latin America. Skills-based policies should focus on three areas.

Vocational education and training, as well as the ties between higher education institutions and the private sector, need to be strengthened. As the available pool of skills expands and upgrades in China, the quality of skills becomes more important for the Latin American region. By 2030, the size of China's skilled workforce will largely exceed that of Latin America. For the region to compete and tap emerging opportunities skills need to be upgraded and the quality of education and training systems needs to be improved. This includes not only the more traditional education paths, but also training throughout the work-life cycle and mechanisms to provide workplace training to update and renew workers' skills. Car and machinery industries may be particularly affected by skills shortages (OECD/CAF/ECLAC, 2014), although in some cases, such as Volkswagen's training institute in Mexico, companies are developing training programmes to respond to this challenge. Skills shortages are prevalent in some prominent firms: Pemex, Mexico's state oil and gas company, recently said that it will have to replace a third of its workforce – roughly 50 000 workers – for workers with a broader range of skills profiles,

such as engineers, geologists and regulatory experts, during the next decade. Improving education and skills can raise labour productivity, create high-quality jobs and reduce the size of the informal economy.

Investments in tertiary education along with incentives for enrolment in the fields of science, technology, engineering and mathematics (STEM) will help to prepare Latin American economies for future demands. The composition of skills in Latin America is concentrated in fields less connected and applicable to the productive sphere of the economy. Focusing resources on the most relevant and pertinent skills required by the economy should be a priority in the region. Moreover, education policies need to emphasise fields and sectors where future employability is most likely. While in China around half of tertiary education students are enrolled in STEM fields, only one out of five in Latin America are enrolled in these fields. Programmes and policies that increase awareness on the employment potential in STEM fields of study should be linked with policies to enhance tertiary institutions' programme offerings and incentivise enrolment. Examples of systems to provide information on the returns to skills in these fields of study already exist, such as the programmes *Mi Futuro* in Chile and *Ponte en Carrera* in Peru. In addition, setting up mechanisms for skills matching between industry's demand and supply are needed, providing information on career paths through qualification frameworks and anticipating future demands. In Chile, the Council for Skills in Mining has developed projections for future skills demand and defined qualification frameworks for the industry. These mechanisms are particularly relevant for industries to adapt and respond to China's rebalancing process.

The creation of new and the strengthening of existing programmes and institutions that specialise or focus on information and computer sciences including technical and computer engineering, to create a pole of workers ready for the high-tech knowledge economy. Technology will be an increasingly important driver of productivity; a labour pool with commensurate skills will be crucial to produce, operate and manage technological advancements. China is gradually incorporating more technology into its production processes, mainly through robotisation, while Latin America is lagging behind in this respect. This process may support large productivity gains. It will also bring job destruction, particularly of low- and mid-skilled jobs, but at the same time, it will create employment for those with high-tech skills. The region's capacity to provide people with the right skills to adapt to this technological change and participate in it will very much determine the balance of the process of labour recomposition. All this underscores the importance of improving and mainstreaming digital skills in the curricula, as well as soft skills that are particularly scarce in the region and cannot be replaced by machines.

A host of linked policies within these three main policy areas are needed to address labour needs throughout the productive sphere of Latin America, including ones that address access to education and training, such as geographical limitations, work-life cycles, gender dynamics and household configuration. One such example illustrates both a geographic and a work-life cycle need whereby workers were retrained to adapt to technological change in the work environment. The *Renovacao* project in Brazil retrained cane cutters in the state of Sao Paulo, many of whom were displaced – or at risk of losing their jobs – by the introduction of mechanised harvesting. This programme trained more than 4 500 workers, many of them to interact better with new technologies and increase their productivity, and many others were retrained in skills in high demand in the region or in those needed for new and emerging jobs.

Advancing Latin America's integration agenda

Developing greater regional integration in Latin America, both from intra-regional and extra-regional perspectives, is crucial given the changing nature of China's relationship with the region. As China's increasing participation in new platforms for trade and investment develop, it is essential that Latin American countries develop stronger linkages and enhanced engagement with multiple trade partners.

The development of the intra-regional market could be an effective strategy to facilitate productive diversification. Unilateral and multilateral trade liberalisation, Latin American sub-regional integration schemes and more recently the growing number of free trade agreements have enabled a significant increase in trade openness, mostly from trade flows outside the region (trade openness in Latin America increased from 33% in 1990 to 48% in 2011 [OECD, 2013]). Also, intra-regional trade has pointed to a latent complementarity between different blocs (i.e. Mercosur and the Andean Community) and greater value added associated to intra-regional trade when compared to trade with the rest of the world (Baumann, 2008). In addition, intra-regional trade is intensive in manufactures and shows higher rates of export survival, providing increased opportunities for learning by doing before facing global competition. This can be particularly important for fostering diversification at the regional level. Regional integration can also be important for increasing integration in manufacturing sectors, which tend to be more sensitive to distance when sourcing intermediate inputs (Kowalski et al., 2015). Furthermore, deepening intra-regional flows can improve the asymmetrical distribution of regional GDP, highly concentrated in the seven largest economies.

Latin America should also pursue more strategic integration efforts to enhance and diversify its services exports. While China remains an important destination for traditional services, deeper integration with other regions such as the European Union and other Asian countries can provide greater opportunities for exports of more knowledge-intensive services sectors such as ICTs and R&D services. Furthermore, as services value chains are less sensitive to distance than manufacturing chains and more sensitive to FDI openness, Latin America could better leverage its policies and human capital to take advantage of growing opportunities in service chains (López, Niembro and Ramos, 2014).

Beyond intra-regional factors, a truly regional agenda given the context is essential. China's willingness to strengthen ties with Latin America calls for a co-ordination mechanism for successful dialogue. Experience shows that bilateral agreements, while positive for some countries or markets, incur negative effects on others. To gain bargaining power in coming negotiations, the region needs to find common ground and provide a collective response. Some existing platforms, such as Mercosur and the Pacific Alliance, can contribute to building a co-ordination mechanism and designing a strategy *vis-à-vis* China, yet region-wide co-ordinated strategies and responses can improve bargaining positions. While integration schemes in the region have focused on trade barriers, including transport costs and tariffs, the current stage of negotiations with China requires a broader agenda, where governments deal as a bloc pro-actively with some of the issues that will define the relationship in the future. For example, initiatives to define a convergence agenda between the Pacific Alliance and the Southern Common Market (Mercosur) could include co-operation in several of the aforementioned areas (ECLAC, 2015b).

Latin America must develop cohesive, rigorous regulatory frameworks. The coherence of regulatory frameworks in Latin America needs to be addressed for two reasons: to reduce regulatory barriers that undermine regional integration and to

strengthen Latin America's response to China's strategy. To act as a negotiations bloc towards China and establish a dialogue, Latin America needs to forge modern, behind-the-border disciplines in regional trade agreements in areas such as services, investment, government procurement, intellectual property rights, competition policy and regulatory transparency. This will not only contribute to harmonise regulations within the region, but also introduce sector reforms in areas like telecommunications and financial services. A holistic approach, where the movements of goods, services, capital, people and knowledge is considered, is important for countries to integrate into global value chains (Armony, 2012). By pursuing regulatory integration through regional platforms, Latin American countries are more likely to become part of these production-sharing schemes. This is particularly important for greater integration in services sector value chains, where regulatory barriers make up the bulk of trade impediments in these sectors.

Strong regulatory frameworks are particularly important in the environmental domain. Latin America needs to protect lands, communities, livelihoods and industries where China's focus on the primary extractive industries leads to environmental degradation. Creating or strengthening regulatory frameworks include those that:

- reinforce evaluation and monitoring mechanisms;
- improve ministries' capacity to enforce standards and laws in extractive projects;
- establish a clear consultation processes to address local civil society concerns (including ILO 169, the Indigenous and Tribal Peoples Convention, of which 15 Latin American countries are signatories);
- promote internal and external transparency, oversight and accountability.

Each of these regulatory frameworks will aid in negotiation and collaboration with the Chinese government as an objective embodied within each is to make public and private investors accountable for the compliance of local environmental guidelines. It then is imperative to create and maintain data portals and other information-sharing instruments that inform Chinese (and other) investors about current regulations (Ray et al., 2015).

The need for regulatory frameworks also extends to the domain of international standards. China's increasing demand for goods, and the potential surge of Chinese instruments (i.e. FDI, special economic zones) in Latin America calls for revising existing standards and certifications in exports (ISO, European CE Marking Guidance, China Compulsory Certification).

When creating or strengthening regulatory frameworks, Latin American governments must also balance between restrictive and preventive regulations. Preventing environmental degradation is essential to sustainable development, particularly in primary extractive industries, but restrictive regulations can deter or restrain needed investment. For example, the degree of regulatory restrictiveness, particularly in services, can affect the competitiveness of the sector. Whereas Colombia has one of the most unrestricted regulatory profiles in services, with nearly all sectors included in the OECD Services Trade Restrictiveness Index (STRI) below the average, other countries, such as Brazil, have greater levels of restrictions in place across sectors, exceeding the average.²⁰ Countries in the region could prioritise reforms that enhance competition in services markets, particularly in sectors that are essential to value chains such as postal and courier services and telecommunications. These services, critical for improving logistics performance and decreasing trade costs, could play a key role in enhancing regional integration and increasing competitiveness in logistics-intensive food and commodity production, as well as more time-sensitive manufacturing industries. For services value

chains in particular, the relatively low investment barriers and restrictions on foreign entry across most sectors can be important for attracting further services value chain activities. Enhancing mobility and market integration in professional services – such as legal services, accounting and engineering – involves countries moving towards mutual recognition of foreign qualifications and freeing up the licensing regimes that constrain the right to practice.

Strengthening integration within the region could also be facilitated by better performance in trade facilitation and customs procedures. The speed and efficiency with which goods can move across borders is critical for competitiveness and minimising trade costs. The OECD Trade Facilitation Indicators reveal that the region performs on par with the global average, but shows relatively weak performance in areas of advance rulings, internal co-operation (co-operation between various border agencies of the country, control delegation to customs authorities) and external co-operation (co-operation with neighbouring and third countries), as well as governance and impartiality (customs structures and functions, accountability, ethics policy).²¹ Actions to streamline border procedures and enhance connectivity within the region can play an important role in fostering regional competitiveness.

Latin America and China can mutually benefit from a strong partnership for development

Change has begun. China's transformation introduces a number of new challenges and opportunities for the region, and they need to be incorporated in its development strategies to achieve economic growth through the broader objectives of upgrading, diversification and integration. A deeper and closer inter-regional and extra-regional co-operation could facilitate the realisation of these objectives and build the pillars for a solid, durable and resilient partnership. For this, it is particularly relevant that China understands Latin America's development challenges. The willingness to establish channels of co-operation should go beyond bilateral forms of dialogue and rather be accompanied by a structured dialogue with the region as a whole. Finally, this partnership should go beyond the current agenda to include sustainability goals – mainly environmental considerations and those related to the sustainability of the development model with the use regulatory mechanisms as main elements in the co-operation between both parts.

Notes

1. Results also show that China's effect is not only channelled through volume of exports but also via prices (Drummond and Liu, 2013). The economic complexity index (ECI) has a negative and significant correlation with exports, which suggests that the region's basket of exports of the last 20 years is highly concentrated in low technology-content products.
2. Data for China are based on the scenario analysis for China 2030 (World Bank-DRC, 2013).
3. For each scenario, export index (base 100 in 2013) is computed to calculate average growth in exports.
4. Each of the products was matched with those of the Standard International Trade Classification (SITC). For each country the weighted average of this index is computed, based on the 2013 share of total exports of the corresponding product. Figure 5.4 depicts the value of the index for 18 Latin American countries, based on their 2013 exports.
5. By considering a counterfactual, where China's demand for commodities grows at the same pace as the rest of the world, an estimate of China's effect on prices can be provided for different goods. Clearly, the different global elasticities of supply for each exported commodity in Latin America need to be considered when estimating a China effect via prices.
6. This figure shows two scenarios with estimates of the expected number of individuals aged 25 or more with tertiary education for Latin America and China, for the period 2013-30. The estimates for the two different scenarios take as a basis the number of tertiary-educated students in 2010 (or the most recent year favailable) (stock), calculated using data from UNESCO Institute for Statistics, and then assuming two different paths for the annual number of tertiary graduates (flow): i) The baseline scenario assumes a linear growth of annual flows until 2030 (i.e. assume the flow each year until 2030 is equivalent to the number of graduates from tertiary education in 2013); ii) The high graduation scenario assumes that each country's flow until 2030 will grow at a decreasing rate: in period $t=1$, it grows at the Annual Average Growth Rate (AAGR) from the last five years available, and then at a growth rate $(AAGR)^{1/t}$, where t is the number of the year ahead of the reference year (2013) (i.e. in 2013, $t=1$, in 2014, $t=2$, ..., in 2030 = 17).
7. China's commitment to increase its investments in the region is framed in different trade and co-operation agreements, which include the Corredor Ferroviario Bioceánico Central in Brazil, the port of Ilo in Peru, the construction of the Nicaragua Channel with Hong Kong Nicaragua Canal Development Group (HKND), and the establishment of a Special Fund for Industrial Cooperation.
8. This section has been drafted in collaboration with Margaret Myers (Inter-American Dialogue). The dataset on Chinese loans is based on Gallagher and Myers (2014) "China-Latin America Finance Database," Washington: Inter-American Dialogue. Information on other financial lenders from annual reports and Dealogic (2015).
9. The comparability between Chinese lending and other financial sources is not straightforward, and data quality regarding it has a large variability. Data on capital markets come from different sources (Datastream, World Bank, IFS IMF, BIS, Dealogic), including information on the amount issued, primary and secondary bond spreads, underwriting fees and maturity. Loan characteristics from international financial institutions are available from annual reports, as are some bilateral loans from national public banks (i.e. US Ex-Im Bank). Regarding Chinese loans in the region, research has been devoted to ascertain more accurate and comparable information (Gallagher and Myers, 2014), providing useful information on the amount, issuer, purpose of the loan and borrower. This information allows the comparison with other sources of financing in Latin America.
10. In contrast, in 2012, Chinese banks issued only USD 3.5 billion in new finance, the lowest amount since 2005 when China began lending in earnest to the region.
11. In 2014, China Ex-Im Bank provided 48.2% of Chinese loans to the region, while CDB financed 30.7% and the rest were granted by commercial banks such as the Bank of China and the Industrial and Commercial Bank of China (ICBC). A loan came from China's central bank, the People's Bank of China (PBoC), for the first time in 2013, aiming to establish a joint fund with the Inter-American Development Bank.
12. For more information, see China-LAC Finance Database, www.thedialogue.org/map_list/.
13. This is the average investment for Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Peru and Uruguay.
14. Authors calculations based on Myers and Jie (2015)
15. See www.oecd.org/tad/xcred/ for more details.
16. See www.fmprc.gov.cn/mfa_eng/topics_665678/xjpzxcxjzjldrdlchwdxbxagtwnrlgbjxgswbcxzlldrhwt1176650.shtml

17. The “1” stands for one plan for the entire Latin American and Caribbean region with one goal: inclusive and sustainable development. The “3” refers to the three engines of regional co-operation: trade, investment and financial co-operation. The “6” means the six priority fields defined by China: energy and natural resources, infrastructure construction, agriculture, industry, scientific and technological innovation and information technologies.
18. This currency swap programme between Southeast Asian economies, China, Japan and South Korea allowed these countries to successfully manage regional short-term liquidity problems and facilitate the work of other international financial arrangements.
19. Less relevant for Latin America, China's international aid architecture has focused on official development aid (ODA) and export credits, with most of the funds coming from this last instrument.
20. At the sector level, the greatest level of restrictiveness in the information available for the region for Brazil, Chile, Colombia and Mexico indicates that restrictions tend to be relatively higher in broadcasting, courier and air transport services. In Chile and Mexico, restrictions in investment in telecommunications and transport are still higher than the OECD average. See a description of the STRI index and country notes for all participating countries in www.oecd.org/trade/stri.
21. See www.oecd.org/trade/facilitation.

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Annex 5.A1. China's rebalancing and impact on Latin American exports

Empirical strategy

This section describes and analyses the empirical approach to assessing the impact of the structural rebalancing of China from an investment- to a consumption-driven economy on Latin American countries' exports. There are three steps to this process: First, an analysis of Latin America's countries in clusters, based on export composition and exposure to China; second, using a fixed-effect model for 18 Latin American countries over the period 1994-2013, an assessment of the correlation of China's level of investment in exports of Latin America's countries, distinguishing different impacts by cluster; and, finally, a projection of two scenarios for the pattern of Latin American total exports based, among others, on China's own growth scenarios up to 2030. The first of these scenarios assumes steady reforms and no major shocks, while the second is based on a more rapid and pronounced slowdown in China's investment rates (World Bank-DRC, 2013).

Cluster analysis

The objective of a cluster analysis is to group either data units or variables in clusters, such that elements within a cluster are "similar" to each other, while the clusters are "relatively distinct" from one another. Five variables are defined to describe each country's exports: the share in total exports of i) agricultural, raw materials and food; ii) fossil fuels; iii) metals and ores; iv) manufactures; and v) commercial services. The share of exports to China in total exports is added as an indicator of trade dependence.¹ Table 5.A1.1 illustrates each one of these variables for the 18 Latin American countries and each country's export for year 2013:

Table 5.A1.1. Composition of 2013 exports of Latin American countries

Country	Total exports (current USD million)	Food and raw agricultural (%)	Fuels/ lubricants (%)	Ores and metals (%)	Manufactures (%)	Commercial services (%)	China's weight in exports (%)*
Argentina	91 040	46.1	3.9	2.7	27.1	15.8	6.9
Bolivia	13 342	15.1	50.1	18.8	3.5	8.5	2.9
Brazil	279 637	32.4	6.4	14.6	30.5	13.4	17.8
Chile	89 471	23.2	0.8	49.0	11.2	14.3	23.6
Colombia	65 594	10.2	59.9	1.0	15.2	10.3	5.9
Costa Rica	19 695	21.3	0.0	0.9	35.9	41.8	2.8
Dominican Republic	14 155	12.8	1.1	2.2	31.4	43.8	4.3
Ecuador	26 869	32.1	52.5	0.8	5.6	7.1	1.6
El Salvador	7 491	16.7	1.7	1.0	53.5	26.7	0.1
Guatemala	12 474	38.6	3.7	4.6	33.3	19.3	0.8
Honduras	6 916	37.7	2.7	2.3	20.5	32.1	2.6
Mexico	400 076	6.3	12.2	2.9	71.3	5.0	1.7
Nicaragua	5 382	38.6	0.4	0.7	37.5	14.6	0.4
Panama	10 534	5.3	0.0	0.9	1.1	92.0	0.8
Paraguay	10 198	61.8	22.1	0.8	7.5	7.5	0.5
Peru	46 888	15.3	11.6	34.8	10.5	10.7	16.6
Uruguay	12 319	55.2	0.4	0.2	17.1	26.4	10.2
Venezuela	96 597	0.0	96.9	0.0	1.2	1.9	0.3

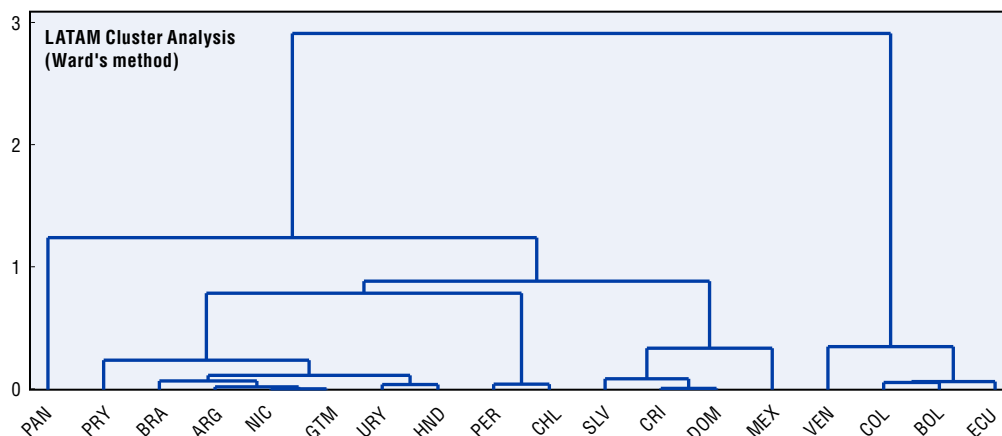
Note: All data correspond to 2013 with exception of Venezuela and Honduras (2012).

Source: United Nations (2015), United Nations Commodity Trade Statistics Database (Comtrade), <http://comtrade.un.org/>.

* Average of 2011-13 exports.

In cluster analysis, there are several grouping methods and definitions of similarity/heterogeneity. The typical types of clustering involve disjointed, hierarchical, overlapping and fuzzy methods. The hierarchical method is used for the purpose of this analysis to define clusters with no overlapping, so that each country is assigned exclusively to one cluster. Likewise, Ward's method is used to measure the level of similarity (distance) between clusters, in which the error-sum-of-squares is minimised at each level of clustering. Figure 5.A1.1 depicts the dendrogram for the clustering process of the 18 Latin American countries used for the analysis.

Figure 5.A1.1. Cluster dendrogram



Source: OECD/CAF/ECLAC calculations based on Avendano, Obach and Perea (forthcoming).

The optimal number of clusters is defined with the simple step-size stopping rule, resulting in five clusters. This rather simple criterion involves examining the difference in fusion values between hierarchy levels. A large difference would suggest that the data were “over clustered” in the last merger (Milligan and Cooper, 1985).

The resulting five clusters are aligned with the current export composition of Latin American countries and relative exposure to China. Argentina, Brazil, Guatemala, Honduras, Nicaragua, Paraguay and Uruguay, whose exports are concentrated in agriculture, make up the first cluster. Venezuela, Colombia, Bolivia and Ecuador emerge as the second group with an export composition concentrated in fossil fuels. The third group is composed of Peru and Chile, that are highly dependent on metal and ore exports, which are natural inputs for China's investment. The fourth group is composed of Mexico and three Central American countries (Dominican Republic, Costa Rica and El Salvador), whose exports are focused in manufactures and only slightly exposed to China. Finally, Panama stands out as an outlier with a single country cluster. This obeys mainly to the impressive concentration of the country's exports in commercial services, with the highest share of the region (93% of 2013 exports).

Effect of China's investment in Latin American countries' exports

The 18 countries from the region are included in a fixed-effect panel regression to assess the relationship between China's rebalancing from investment to a consumption-driven economy and Latin American countries' export performance from 1995 to 2013.

China's level of investment is an explanatory variable for Latin American countries' exports, as China's import demand has been driven by investment. To take into account the heterogeneity of Latin America, the differentiated impact of China's level of investment is assessed for each one of the clusters.

The model's specification is the following:

$$\ln(exports_{it}) = \alpha + \beta_1 \ln(Inv_{China_t}) + \beta_2 Export_index_{it} + \sum_{k=1} \beta_k (\ln(Inv_{China_t}) \cdot D_k) + \beta_8 ECI + \beta_9 \Delta\%GDP_{China_t} + \beta_{10} \Delta\%GDP_{OECD_t} + \varepsilon_{it}$$

$\ln(exports_{it})$	Log of the total annual exports of goods and services of each country, in USD. The focus is on the nominal value to capture both the volume and price effect that China's economy has on each country's export.
$\ln(Inv_{China_t})$	Log of the average of the three previous periods of China's investment. Investment is measured as Gross Fixed Capital Formation, which is the total tangible assets formation and total intangible assets formation. The time lag of three periods tries to capture the delay of China's investment impact on Latin American countries' exports.
$Export_index_{it}$	The export value index captures the current value of export for each country, expressed as a percentage of the average for the base period (2000).
$\ln(Inv_{China_t}) \cdot D_k$	Interactive set of five dummies consisting in the product of the cluster dummy with the average level of China's investment of the last three periods. The aim of these variables is to differentiate the effect of China's investment by cluster.
ECI	The Economic Complexity Index is a holistic measure of production characteristics of each country. It captures the accumulated knowledge or capabilities embedded in the produced goods of each economy, in terms of sophistication and diversification.
$\Delta\%GDP_{China_t}$	Annual real GDP growth of China's economy.
$\Delta\%GDP_{OECD_t}$	Annual real GDP growth of OECD countries. It is used as a proxy for growth in the advanced economies and as a time trend of the global economy (Drummond and Liu, 2013).

Data on countries' total exports and export index are from the World Development Indicators database; data and on GDP growth are from the International Monetary Fund's World Economic Outlook; data on China's investment are from the National Bureau of Statistics of China (NBS); and data on the Economic Complexity Index is from the Atlas of Economic Complexity (Bahar, Hausmann and Hidalgo, 2014).

Estimation: In-sample results

Table 5.A1.2 summarises the main results of the model's estimation. The results suggest a positive and significant correlation of China's investment with Latin American countries' exports. On average, an increase of 1% in China's average level of investment over the last t3 years is associated with an increase of 0.59% in countries' export of the Agriculture cluster.² This impact is 0.17 pp greater in countries of cluster 3 (Chile and Peru), 0.13 pp greater in countries of cluster 2 (Bolivia, Ecuador, Colombia, Venezuela) and 0.16 pp smaller in countries of cluster 4 (Mexico, Dominican Republic, El Salvador, Costa Rica).

As expected, the association of China's investment on Latin American countries' exports is dissimilar across the region. The cluster composed of Chile and Peru is the most affected by China's level of investment. The second highest correlation of China's investment is on the cluster including the exporters of fossil fuels: Bolivia, Colombia, Ecuador and Venezuela. Third, in both Panama and the cluster made up of Argentina, Brazil, Guatemala, Honduras, Nicaragua, Paraguay and Uruguay, China's investment has an intermediate effect. Finally, exports of the Central American countries of Costa Rica, El Salvador, Dominican Republic, along with Mexico (cluster 4) are the least affected by China's investment levels.

A positive shock on the export index leads to higher levels of nominal exports and decreases the value of the impact of China's investment (important, but still significant). This suggests that the effect of China's investment is not only channelled through volume of exports but also via prices (Drummond and Liu, 2013). China's GDP growth co-efficient is positive and highly significant whereas the OECD, despite being positive, is smaller and less significant. This indicates that Latin American countries' exports are more sensitive to China's economic performance than they are to developments in the major developed economies. Finally, once export prices are controlled for, the economic complexity index (ECI) has a negative and significant correlation with exports, which suggests that the region's basket of exports over the last 20 years is highly concentrated in low value-added products such as commodities.

Table 5.A1.2. Results of the panel fixed-effects model

VARIABLES	-1 Exports ₣	-2 Exports ₣
Chinese level of investment (average 3 last years) ₣	0.590***	0.497***
	-0.0299	-0.0424
Export Index		0.000480*
		-0.000271
Investment * Dummy G3	0.172**	0.167**
	-0.0696	-0.063
Investment * Dummy G4	-0.160***	-0.077
	-0.0483	-0.0525
Investment * Dummy G5	0.133**	0.136**
	-0.0588	-0.0529
Economic Complexity Index	-0.0981	-0.236**
	-0.0855	-0.0861
China's growth rate	0.0291***	0.0275***
	-0.00695	-0.00679
OECD member's growth rate	0.00474	0.00526*
	-0.00348	-0.00293
Constant	16.50***	17.17***
	-0.251	-0.313
Observations	342	342
R-squared (within)	0.894	0.907
Number of countries	18	18

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Investment and exports in Log

Projecting two scenarios for China in 2030

Both scenarios reflect the structurally declining rates of growth and investment, but one of them models this shift with a higher pace. It is important to mention that these scenarios do not assume any major economic crises or specific external/internal shocks to China's economy. They are merely modelling the transition of China from a middle-income and high investment-driven economy towards a high-income and consumption-based economy. Table 5.A1.3 illustrates China's predicted growth and investment rates for the years 2016-30. The normal-pace transition scenario is called "Baseline" and the high-pace transition scenario, "Low-investment".

Table 5.A1.3. Two scenarios for China's growth and investment (2016-30)

Indicator	Time period	Baseline scenario		Low-Investment scenario
		Initial estimates	Latest projections	
GDP growth (per cent per year)	2016-20	6.8	6.6	6.3
	2021-25	5.9	5.6	4.8
	2026-30	5.1		3.2
Investment/GDP ratio	2016-20	38.0	42.4	35.0
	2021-25	36.0	38.0	32.0
	2026-30	34.0		30.0

Source: The baseline scenario is based on projected growth patterns, assuming steady reforms and no major shocks (World Bank-DRC, 2013, p. 9). The low-investment scenario is based on the authors' calculations assuming a slowdown in China's GDP growth (World Bank-DRC, 2013, p. 369) and a decrease in the investment/GDP ratio of 4 percentage points. Initial estimates of the Baseline scenario used for the econometric analysis. Final version will incorporate latest projections according to availability of period 2026-30.

Table 5.A1.4. List of Latin American countries by cluster

Cluster*	Country	Code
1	Argentina	ARG
1	Brazil	BRA
1	Guatemala	GUA
1	Honduras	HND
1	Nicaragua	NIC
1	Paraguay	PRY
1	Uruguay	URY
2	Panama	PAN
3	Chile	CHL
3	Peru	PER
4	Costa Rica	CRI
4	Dominican Republic	DOM
4	El Salvador	SLV
4	Mexico	MEX
5	Bolivia	BOL
5	Colombia	COL
5	Ecuador	ECU
5	Venezuela	VEN

Note: * Clustering using Ward's method.

Figure 5.A1.2. Exports projections by country – Results of sample

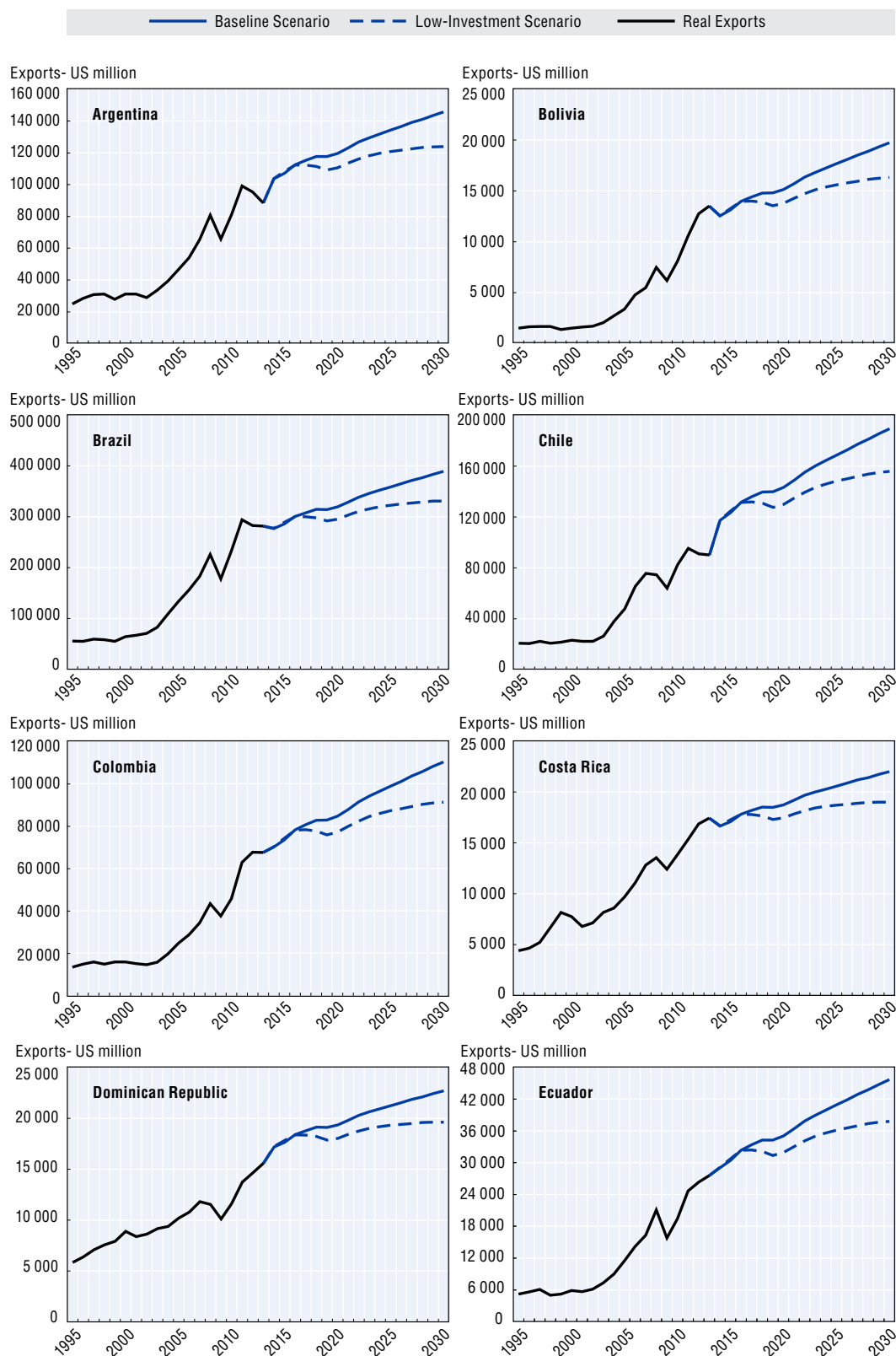


Figure 5.A1.2 Exports projections by country – Results off sample (cont.)

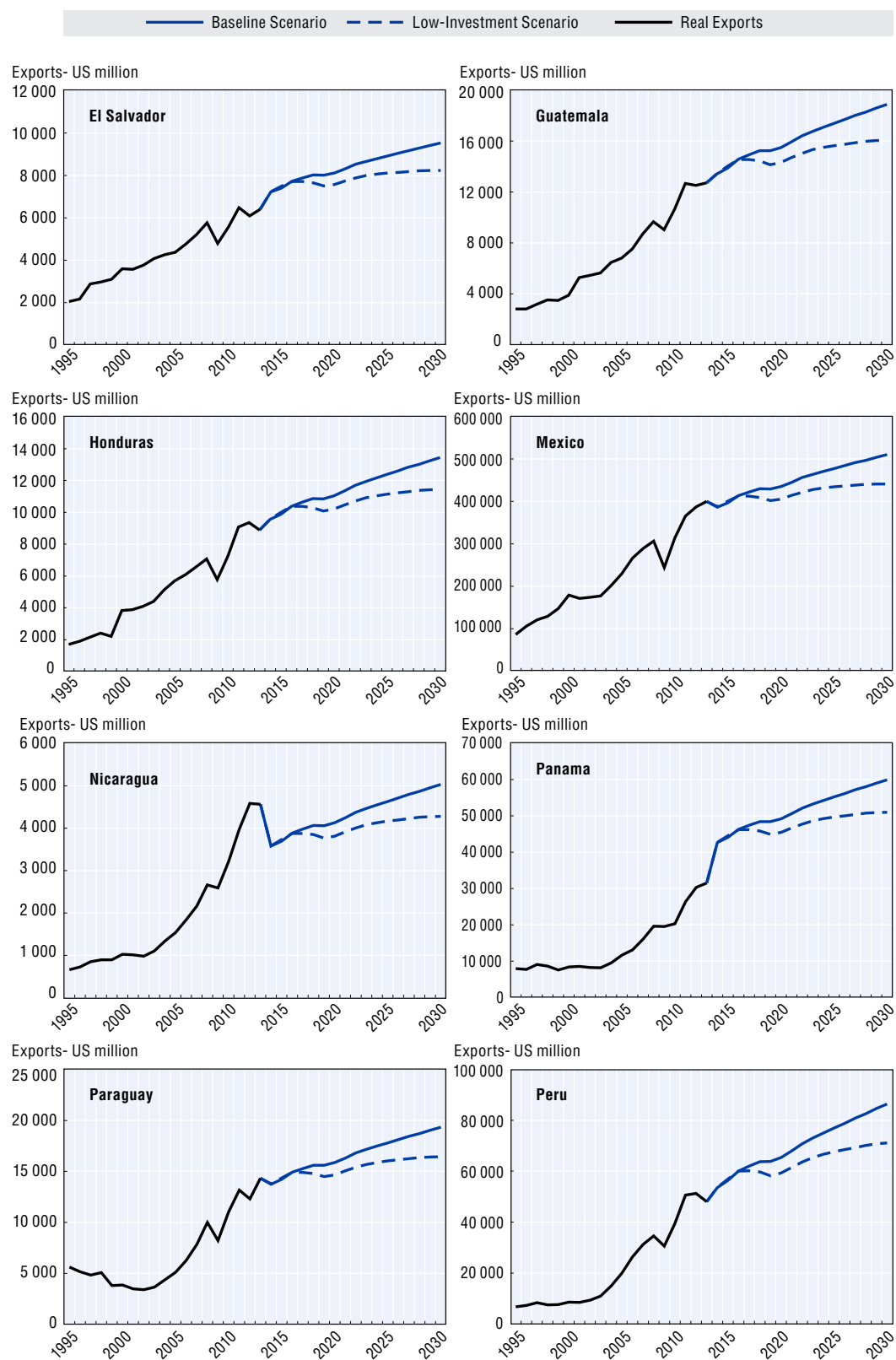
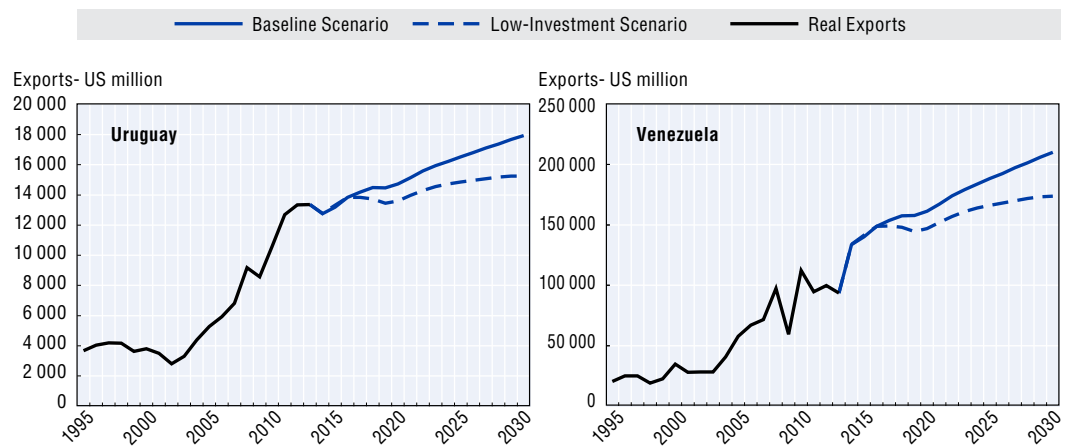


Figure 5.A1.2 Exports projections by country – Results off sample (cont.)



Source: OECD/CAF/ECLAC calculations based on Avendano, Obach and Perea (forthcoming).

Notes

1. The first four variables and the share of exports to China are created using the Standard International Trade Classification (SITC) (Rev. 3) and the Comtrade database. The SITC codes are the following: Agricultural, Raw Materials and Food (SITC 2-22-27-28 +0+1+22+4), Mineral Fuel (SITC 3), Ores and Metals (SITC 27+28+68), Manufactures (SITC 6). The share of Commercial Services in total exports is computed with data of the World Development Indicators database (WDI).
2. Agriculture Cluster is the base unit of analysis.

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Country notes

Argentina

Recent trends

China is Argentina's second trading partner after Brazil, with the export basket mainly concentrated in commodity products. In 2014, 7% of Argentina's exports were destined to China, and 16% of the country's total imports came from China. Argentina's value-added exports to China are concentrated in the agricultural sector (57%), with a smaller participation of mining (6%), low- to high-tech products (20%) and services (17%). In contrast, the majority of value-added imports from China (67%) are from medium-high and high-tech industries.

Argentina's participation in global value chains (GVCs) is below the Latin American average and considerably lower than that of the European Union. It has a low level of backward linkages (14%) a characteristic common in economies that are more specialised in agriculture, mining and services as they source fewer intermediate inputs from abroad. In Argentina, 47% of the forward linkages with China are concentrated in the agricultural and mining sectors with services also playing a key role (34%), while backward linkages are concentrated in medium-high and high-technology industries (42%).

The financial links between Argentina and China have evolved. In recent years, China has gained prominence as a bilateral lender, and since 2005 16% of the loans given to the region have been allocated in Argentina (3% of the country's gross domestic product [GDP]). The majority of loans provided by China have been destined to infrastructure (74% of total loans from China) or energy projects (26%).

In terms of skills composition, a relatively low rate of tertiary education attainment coupled with underperforming PISA scores could help explain why more than half of the firms surveyed reported difficulties in recruiting adequately skilled labour. Indeed, 57% of firms stated they had problems finding employees with an adequate set of skills; this level is above China (2%), Latin America (36%) and the OECD (17%). Only 14% of the population has tertiary education, which is higher than China at 9%, but lower than the OECD countries (28%). China has a higher concentration of tertiary graduates in science, technology, engineering and mathematics (STEM) at 48% than Argentina (13%). Moreover, Argentina's 15-year-old students' mean mathematics score in PISA at 388 points (2012 results) lags behind China (550) and OECD economies (494).

Recent developments in China-Argentina relations

Argentina and China have been economic partners for more than two decades. In 1992, they signed a Bilateral Investment Treaty. However, their strong ties were inaugurated in 2004 when China provided Argentina with a USD 20 billion funding package (Arnson, Heine and Zaino, 2014). This marked the beginning of an era of trade and co-operation that has grown significantly.

The two countries have engaged in numerous trade agreements and co-operation memorandums to further develop bilateral trade and investment in infrastructure, oil, gas, mining, nuclear energy, transportation, finance, agriculture and forestry. In 2014, they declared a Comprehensive Strategic Partnership and signed more than 15 agreements, which included Chinese investments in two new hydroelectric power dams, railway, shipbuilding and petrochemicals ventures, as well as an arrangement to help Argentina build its fourth nuclear plant (Presidency of Argentina, 2014 and Ministry of Federal Planning, Public Investment and Services of Argentina, 2014). As part of these agreements, China committed to provide Argentina with USD 4.7 billion towards the construction of the two hydroelectric dams in the province of Santa Cruz; USD 423 million for the acquisition of 11 ships; and a USD 2.1 billion loan to modernise one of Argentina's cargo train lines (Presidency of Argentina, 2014).

China's oil companies have shown interest in investing in Argentina's oil, especially in Vaca Muerta, a shale oil and gas field (Arnson, Heine and Zaino, 2014). In 2015, Argentina's national oil company YPF signed a Memorandum of Understanding with China's Sinopec to establish a strategic partnership for developing oil and gas projects and received financial assistance from China Development Bank as part of the 2014 trade and co-operation agreements (YPF, 2015).

Co-operation incentives between Argentina and China include science and technology. Among other initiatives, in 2008, they signed a protocol to establish the Argentine-Chinese Centre of Science and Food Technology. The main purpose of this centre is to promote co-operation in food science and technology, especially in agri-food, biotechnology, nanotechnology, energy, sustainable food processing, preservation, packaging and transport (Ministry of Science, Technology and Innovation of Argentina, 2015).

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Key indicators: Argentina

TRADE ⁱ	2001	2005	2007	2012	2013	2014
Share of exports to China (% of total exports)	4%	8%	9%	6%	7%	7%
Share of imports from China (% of total imports)	5%	5%	11%	15%	15%	16%
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Soybeans (58%)	Crude petroleum oils (13%)	Soybean oil and its fractions (10%)	Unprocessed tobacco (2%)	Raw hides and skins of bovine animals (2%)	

Value-added decomposition by sector ⁱⁱ	Agriculture	Mining	Low & medium- low tech	Medium-high & high tech	Services
Exports to China by sector, 2011	57%	6%	17%	3%	17%
Imports from China by sector, 2011	0%	0%	19%	58%	23%
Service Exports by sector, 2011	Traditional (84%)	Computer-R&D (5%)	Financial (0%)	Other (10%)	

	Argentina		LAC6		EU(27)	
GVC PARTICIPATION ⁱⁱⁱ	2000	2011	2000	2011	2000	2011
Total GVC participation	25%	30%	39%	41%	45%	51%
Forward GVC participation	19%	16%	14%	21%	20%	22%
Backward GVC participation	6%	14%	25%	20%	24%	29%
GVC participation to China ⁱⁱ	2000	2011				
Forward GVC participation to China (% of total GVC participation)	6%	12%				
Backward GVC participation (% of total GVC participation)	1%	6%				
Decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium- low tech	Medium-high & high tech	Services
Forward linkages with China, 2011	33%		14%	14%	4%	34%
Backward linkages with China, 2011	8%		2%	34%	42%	14%

HUMAN CAPITAL AND SKILLS*	Argentina			China			OECD			LAC		
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	14%			9%			28%			14%		
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	28%			14%			35%			23%		
Average years of total schooling ⁱⁱⁱ	9.78			7.30			11.39			8.29		
	STEM			STEM			STEM			STEM		
Share of students by area of study (% of tertiary enrolment) ^{iv}	13% 61%			48% 24%			22% 56%			17% 63%		
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.
Employment by occupation % of total, latest year available ^v	1%	2%	75%	35%	30%	36%	5%	23%	71%	16%	21%	63%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	57%			2%			17%			36%		
PISA mathematics scores, 2012 ^{**vii}	388			550			494			397		

FINANCE AND FDI	Bilateral loans			Bonds			Bank loans			Multilateral loans		
Sources of financing in international markets (stock, %), latest year available ^{viii}	9%			63%			0%			28%		
% of Chinese loans in LAC addressed to Argentina between 2005-14 ^{ix}	16%											
Estimated FDI from China, 2010-12 average (millions of dollars) ^x	2050											

Sources: i) Based on United Nations Commodity Trade Statistics Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market; vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).

* For Argentina, data are from 2003. For OECD, China and other Latin American countries, circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Brazil

Recent trends

China is Brazil's main trading partner. In 2014, 18% of Brazil's total exports were destined to China, while 16% of Brazil's total imports came from China. Almost two-thirds of the Brazilian value-added exports to China are mining and agricultural products, with a smaller percentage of low- to high-tech products (20%) and services (21%). In contrast, more than half of value-added imports from China (55%) are medium-high and high-tech products.

Brazil's participation in global value chains (GVCs) is below the Latin American average, mainly because of lower backward linkages. Countries like Brazil, with a large domestic market and a specialisation in agriculture, mining and services, tend to have fewer backward linkages (11%) – as they source fewer intermediate inputs from abroad – and more forward linkages (24%), indicating upstream positions in global value chains. Forward linkages with China are concentrated in services (46% of total forward linkages with China in 2011), while backward linkages are concentrated in medium-high and high-technology industries (39%).

Financial links between Brazil and China are growing. In recent years, China has gained prominence as a bilateral lender, allocating 19% of its loans in the region to Brazil (1% of Brazil's gross domestic product [GDP]). The majority of these loans were concentrated in the energy sector (56%), followed by mining (6%) and infrastructure (4%). Moreover, in 2013, Brazil and China signed a local currency swap agreement worth up to BRL 60 billion (Brazilian real) / CNY 190 billion (Yuan renminbi) (Ministry of Finance of Brazil, 2013). Financial deepening between China and Brazil is not exclusive to federal government projects as several Brazilian states have received Chinese financing. Investments in the states have focused on agriculture, energy and transport infrastructure. For example, in 2009, Mato Grosso do Sul and the Chinese company Jiangxi Sanhe International Investment signed the first major Chinese investment in Brazilian agriculture that committed both parties to develop various farming ventures (Horta, 2015). Additionally, within the framework of the association of Brazil, Russia, India, China and South Africa (collectively known as the BRICS), the creation of the New Development Bank (NDB) and of the Contingent Reserve Arrangement (CRA) is strengthening financial links between Brazil and China. Moreover, China invited Brazil to join the Asian Infrastructure Investment Bank as a founding member in 2015.

In terms of skills composition, Brazil has a higher share of population with tertiary education than China; but a lower concentration in science, technology, engineering, and mathematics (STEM) programmes. Nearly 12% of Brazil's total population has completed tertiary studies, matching the average for the rest of LAC, over performing that of China (9%), but below that of OECD countries (28%). Only 12% of the tertiary graduates concentrate in STEM compared to almost half of the Chinese tertiary graduates. Another education indicator is the OECD Programme for International Student Assessment (PISA) for 15-year-olds in mathematics, science and reading. Brazil's PISA average mathematics performance (391 points in PISA 2012) lags behind China (550) and the OECD average (494).

Recent developments in China-Brazil relations

During the 2000s, Brazil and China have strengthened their international policy co-ordination, taking joint positions in several World Trade Organization and climate change negotiations (Whalley and Medianu, 2013). Yet, no Preferential Trade Agreements or Bilateral Investment Treaties have been signed between the two countries, partly owing to the need for Brazil to maintain its collective agreement with the Common Market of the South (Mercosur) bloc.

China has a growing interest in investing in energy and transport infrastructure in Brazil, and has several projects in the pipeline. In May 2015, the Ministry of Planning, Budget and Management of Brazil and China's National Commission for Development and Reform signed a Framework Agreement for the Development of Investment and Productive Capacity, which will establish a bilateral fund worth up to USD 20 billion (Ministry of Planning, Budget and Management of Brazil, 2014). That same year, Brazil's state-run oil firm Petrobras signed agreements with the China Development Bank (that included USD 5 billion in funding for 2015), China Ex-Imbank and the Industrial and Commercial Bank of China (ICBC) (Petrobras, 2015). Caixa Econômica Federal (CEF) and the ICBC also signed a Memorandum of Understanding focused on financial co-operation with resources from the Green Financing Programme for Latin America and the Caribbean established by the ICBC.

Overall, China's foreign direct investment to Brazil has focused on commodity sectors, with some concentration in manufacturing. Brazil and China are negotiating a "second generation" of investments, which aim to reorient investments from raw materials to heavy industry and infrastructure.

Brazil-China co-operation is deepening. In 2010, China and Brazil signed a Joint Action Plan 2010-14 that included co-operation programmes in several areas: politics, trade, energy, mining, finance, agriculture and technology (Ministry of Foreign Affairs of Brazil, 2012). The document was updated in 2015, when the two countries signed the Joint Action Plan 2015-21. China and Brazil have also signed a Ten-Year Co-operation Plan (2012-21), establishing a Global Strategic Partnership, as well as a Global Strategic Dialogue among their foreign ministers (Ministry of Foreign Affairs of Brazil, 2012). This mechanism complements the China-Brazil High-Level Co-ordination and Co-operation Committee (COSBAN), which since 2004 oversees bilateral co-operation in areas like trade, investment, finance, energy, agriculture, culture and education, as well as the implementation of the Joint Action Plan and the Ten-Year Co-operation Plan. Since 1984, with the first science, technology and innovation bilateral co-operation agreement, China and Brazil have signed 53 research and development co-operation memoranda. The latest, signed in June 2015, included an agreement to work together on technology parks to promote progress in areas of strategic mutual interest such as agricultural science and technology, industrial technology, value-added technology, biotechnology and nanotechnology (MCTI, 2015).

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Key indicators: Brazil

TRADE ⁱ	2001	2005	2007	2012	2013	2014
Share of exports to China (% of total exports)	3%	6%	7%	17%	19%	18%
Share of imports from China (% of total imports)	2%	7%	10%	15%	16%	16%
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Soybeans (37%)	Iron ores and concentrates (35%)	Petroleum oils (9%)	Cane or beet sugar (3%)	Chemical wood pulp (3%)	

Value-added decomposition by sector ⁱⁱ	Agriculture	Mining	Low & medium- low tech	Medium-high & high tech	Services
Exports to China by sector, 2011	14%	44%	15%	5%	21%
Imports from China by sector, 2011	0%	0%	22%	55%	22%
Service Exports by sector, 2011	Traditional (89%)	Computer-R&D (3%)	Financial (4%)	Other (4%)	

	Brazil		LAC6		EU(27)	
GVC PARTICIPATION ⁱⁱⁱ	2000	2011	2000	2011	2000	2011
Total GVC participation	29%	35%	39%	41%	45%	51%
Forward GVC participation	17%	24%	14%	21%	20%	22%
Backward GVC participation	11%	11%	25%	20%	24%	29%
GVC participation to China ⁱⁱ	2000	2011				
Forward GVC participation to China (% of total GVC participation)	5%	19%				
Backward GVC participation (% of total GVC participation)	1%	8%				

Decomposition by sector ⁱⁱ	Agriculture	Mining	Low & medium- low tech	Medium-high & high tech	Services
Forward linkages with China, 2011	10%	27%	12%	4%	46%
Backward linkages with China, 2011	5%	16%	28%	39%	12%

HUMAN CAPITAL AND SKILLS*	Brazil			China			OECD			LAC		
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	12%			9%			28%			14%		
Share of population with secondary education (% of population 25+), ⁱⁱⁱ	29%			14%			36%			23%		
Average years of total schooling ⁱⁱⁱ	6.99			7.30			11.39			8.29		
	STEM		HSLE	STEM		HSLE	STEM		HSLE	STEM		HSLE
Share of students by area of study (% of tertiary enrolment) ^{iv}	12%		64%	48%		24%	22%		56%	17%		63%
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.
Employment by occupation % of total, latest year available ^v	15%	22%	63%	35%	30%	36%	55%	23%	71%	16%	21%	63%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	75%			2%			17%			36%		
PISA mathematics scores, 2012 ^{vii**}	391			550			494			397		

FINANCE AND FDI	Bilateral loans	Bonds	Bank loans	Multilateral loans
Sources of financing in international markets (stock, %), latest year available ^{viii}	9%	41%	28%	23%
% of Chinese loans in LAC addressed to Brazil between 2005-14 ^x	19%			
Estimated FDI from China, 2010-12 average (millions of dollars) ^x	7101.9			

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market, vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).
* Circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Chile

Recent trends

China is Chile's main trading partner, with an export basket concentrated mainly in copper products. In 2014, 25% of Chile's exports were destined to China, making it Chile's main export destination. Similarly, 21% of Chile's total imports came from China, making China Chile's second import source. Almost 80% of the Chilean value-added exports destined to China are concentrated in the mining and low and medium-low tech sector (mostly related to refined copper, copper ores and unrefined copper), with a smaller participation of services (18%). In contrast, the majority of value-added imports from China are from the service sector (47%) or the medium-high and high-tech industries (31%).

Chile's participation in global value chains (GVCs) is higher than the Latin American average and the European Union, mainly owing to higher forward linkages. Chile has moderately low levels of backward linkages (20%) and moderately high forward linkages (32%). Chile's backward participation in GVCs is largely consistent with the size of its economy, economic specialisation and distance from leading manufacturing countries. Yet, its trade and investment openness partially compensate for these structural factors (OECD, 2015). Similarly, Chile's forward linkages are explained by its total export concentration in minerals and basic metals. In fact, the majority of forward and backward linkages with China are concentrated in the mining and low and medium-low tech industries (around 72% of forward linkages and 78% of backward linkages).

The financial links between Chile and China remain minor. In recent years, China has gained prominence as a bilateral lender in the region, nevertheless only 0.1% (USD 150 million) of Chinese loans have been directed to Chile. These loans have been directed mainly for infrastructure purposes such as the improvement of the communications network. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%).

In terms of skills composition, Chile has a higher share of population with tertiary education than China; but a lower concentration in science, technology, engineering and mathematics (STEM) programmes. Slightly higher than the average for Latin America of 14%, nearly 16% of Chile's total population has tertiary education, a relatively higher share than China (9%), but lower than OECD countries (28%). However, China has a higher concentration of tertiary graduates in STEM programmes (48%) than Chile (19%). The mean mathematics score in the OECD Programme for International Student Assessment (PISA) (423 in the 2012 PISA) is lower than that of China (550) and OECD economies (494).

Recent developments in China-Chile relations

Chile signed a Free Trade Agreement (FTA) with China in 2006, becoming the first Latin American country to do so. Trade negotiations continued. The two countries signed a supplementary agreement on trade services in 2008 – in force since 2010 – and a supplemental investment agreement in 2012 – in force since 2014. As from January 2015, 97% of Chilean goods in 7 336 product categories can enter the Chinese market free of tariff. Since then negotiations have focused on broadening the existing agreement.

Chile is working on a new investment agreement with Hong Kong, China. Early in 2015, the first round of negotiations took place. The terms of reference for the launch of these negotiations were agreed during the negotiations of the 2006 FTA. The agreement seeks to non-discriminate among investors, sets conditions and requirements for expropriation, and establishes compensation schemes for losses as well as granting a Minimum Standard of Treatment in accordance with customary international law (CIEChile, 2015). Chile and China have a long history of financial relations and signed the first Bilateral Investment Promotion and Protection Agreements in March 1994 (CIEChile, 2015).

Foreign direct investment from China is significantly lower than bilateral trade. Chinese investment in Chile totalled USD 103 million, compared to the more than USD 33 billion in bilateral trade in 2014. Thus, Chile's Committee for Foreign Investment (Comité de Inversiones Extranjeras) actively works to attract Chinese capital (CIEChile, 2014).

Chile and China have deep mutual science and technology ties and will continue to do so in the near future through a vast number of training and research co-operation agreements. In December 2013, Chile's National Commission for Scientific and Technological Research (CONICYT) and the Chinese Ministry of Science and Technology established a joint science and technology co-operation plan for 2014 to 2016. This plan serves as the blue print for numerous activities focused in promoting basic and applied research through innovation and human capital formation, especially in seismology, astronomy, renewable energy, materials science and food engineering (CONICYT, 2015).

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Key indicators: Chile

TRADE ⁱ	2001	2005	2007	2012	2013	2014
Share of exports to China (% of total exports)	6%	12%	15%	23%	25%	25%
Share of imports from China (% of total imports)	6%	10%	13%	18%	20%	21%
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Refined copper (38%)	Copper ores (35%)	Unrefined copper (9%)	Chemical wood pulp (3%)	Iron ores (5%)	
Value-added decomposition by sectorⁱⁱ	Agriculture	Mining	Low & medium-low tech	Medium-high & high tech	Services	
Exports to China by sector, 2011	2%	19%	60%	1%	18%	
Imports from China by sector, 2011	0%	8%	14%	31%	47%	
Service Exports by sector, 2011	Traditional (84%)	Computer-R&D (1%)	Financial (5%)	Other (10%)		
	Chile		LAC6		EU(27)	
GVC PARTICIPATIONⁱⁱⁱ	2000	2011	2000	2011	2000	2011
Total GVC participation	44%	52%	39%	41%	45%	51%
Forward GVC participation	23%	32%	14%	21%	20%	22%
Backward GVC participation	22%	20%	25%	20%	24%	29%
GVC participation to Chinaⁱⁱ	2000	2011				
Forward GVC participation to China (% of total GVC participation)	12%	29%				
Backward GVC participation (% of total GVC participation)	1%	6%				
Decomposition by sectorⁱⁱ	Agriculture	Mining	Low & medium-low tech	Medium-high & high tech	Services	
Forward linkages with China, 2011	1%	14%	58%	1%	24%	
Backward linkages with China, 2011	3%	7%	71%	6%	12%	
HUMAN CAPITAL AND SKILLS*	Chile	China	OECD	LAC		
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	16%	9%	28%	14%		
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	35%	14%	35%	23%		
Average years of total schooling ⁱⁱⁱ	9.78	7.30	11.39	8.29		
	STEM	HSLE	STEM	HSLE	STEM	HSLE
Share of students by area of study (% of tertiary enrolment) ^{iv}	19%	49%	48%	24%	22%	56%
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.
Employment by occupation % of total, latest year available ^v	10%	23%	66%	35%	30%	36%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	41%		2%	17%		36%
PISA mathematics scores, 2012 ^{vii**}	423		550	494		397
FINANCE AND FDI						
% of Chinese loans in LAC addressed to Chile between 2005-14 ^x	0.1%					
Estimated FDI from China, 2010-12 average (millions of dollars) *	40.5					

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market, vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).

* Circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Colombia

Recent trends

China is Colombia's second trade partner after the United States. In 2014, 11% of Colombia's exports were destined for China. The majority of value-added exports to China were concentrated in mining (57%) and low- and medium- tech products (26%). In contrast, services accounted for 17% of total value-added exports; mainly concentrated in traditional ones. Colombia imported 19% of its goods and services from China in 2014, with more than three-quarters of their value added concentrated in medium-high (30%) and high-tech industries (52%).

Colombia's participation in global value chains (GVCs) is lower than the Latin American average and considerably lower than that of the European Union. Its backward linkages (8% of gross exports) are the lowest among the six Latin American countries for which data are available (Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico). In general, countries specialised in mining, such as Colombia, tend to have lower levels of backward linkages as this sector sources fewer intermediate inputs. Yet, Colombia's level is below that of other countries specialised in mining such as Chile. Its backward linkages with China are concentrated in medium-high and high-technology industries (69% of the total backward linkages with China in 2011). Conversely, Colombia's forward linkages (30% of total of gross exports) are higher than that of the other five Latin American and Caribbean countries considered, indicating upstream positions in global value chains. Colombia's forward linkages with China are concentrated in mining (61% of the total forward linkages with China in 2011).

Foreign direct investment (FDI) ties and financial links could be improved between Colombia and China. In recent years, China has gained prominence as a bilateral lender in the region. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%). Less than 1% of the loans destined to the region are allocated to Colombia. Similarly, FDI inflows from China (USD 996 million in 2012) are lower than those to other economies in the region.

In terms of skills composition, Colombia has a higher share of population with tertiary education than China; yet 45% of Colombian firms noted difficulties finding a workforce with the skills required. Approximately 22% of Colombia's total population have completed some form of tertiary studies, a relatively higher share than that of China (9%) and Latin America (14%) and slightly lower than the OECD countries (28%). Another education indicator is the OECD Programme for International Student Assessment (PISA) for 15-year-olds in mathematics, science and reading. Colombia's mean PISA performance in mathematics (376 points in PISA 2012) lags behind China (550) and the OECD average (494). Additionally, Colombian's rate of firms reporting difficulties to hire workers with adequate skills is considerably higher than the Latin American regional mean (36%) as well as above the reported rates of Chinese (2%) and OECD enterprises (14%).

Recent developments in China-Colombia relations

Economic and trade relations between China and Colombia have grown steadily since the 2000s. Over the last 15 years, bilateral trade has grown at an annual average of 28.9%. In 2014, total bilateral trade value reached USD 17.5 billion. While China is Colombia's second largest trading partner in the world, Colombia is China's fifth largest trading partner in Latin America. In 2013, the Bilateral Investment Treaty signed in 2008 entered into force. Relations further deepened in 2015 when China and Colombia signed a Memorandum of Understanding to work on a joint study on the feasibility of a bilateral free trade agreement (Presidency of Colombia, 2015a).

China's investment in Colombia's infrastructure is expected to increase over the next years. In 2015, both countries signed a co-operation agreement that included two important infrastructure projects. The first is in the port city of Buenaventura – which concentrates USD 17 billion in annual trade between the two countries – where China is planning to finance a USD 3 billion industrial complex. The second is in Orinoquia region, where China will invest in building a road connecting the region with the Pacific coast as well as in exploring new farming opportunities. This project also intends to make the Meta River – along which the road will run – navigable to incentivise agricultural development (Presidency of Colombia, 2015b).

Co-operation in key economic areas is expanding. China and Colombia signed nine deals in 2012 to boost co-operation in agriculture, energy, mining, quality inspection, trade and water conservancy. In May 2015, the two countries signed deals providing scholarships for 200 Colombians to study in China and mapping a development plan for Buenaventura.

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Key indicators: Colombia

TRADE ⁱ	2001	2005	2007	2012	2013	2014						
Share of exports to China (% of total exports)	0%	1%	3%	6%	9%	11%						
Share of imports from China (% of total imports)	4%	8%	10%	17%	18%	19%						
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Crude petroleum oils (84%)	Ferro-alloys (6%)	Copper waste and scrap (5%)	Coal; briquettes (1%)	Aluminium waste (1%)							
Value-added decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium-low tech	Medium-high & high tech	Services						
Exports to China by sector, 2011	0%		57%	26%	1%	17%						
Imports from China by sector, 2011	0%		0%	30%	52%	18%						
Service Exports by sector, 2011	Traditional (87%)		Computer-R&D (1%)	Financial (4%)	Other (9%)							
GVC PARTICIPATION ⁱⁱⁱ	Colombia		LAC6		EU(27)							
	2000	2011	2000	2011	2000	2011						
Total GVC participation	30%		38%	39%	41%	45%	51%					
Forward GVC participation	20%		30%	14%	21%	20%	22%					
Backward GVC participation	9%		8%	25%	20%	24%	29%					
GVC participation to China ⁱⁱ	2000		2011									
Forward GVC participation to China (% of total GVC participation)	2%		9%									
Backward GVC participation (% of total GVC participation)	1%		9%									
Decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium-low tech	Medium-high & high tech	Services						
Forward linkages with China, 2011	1%		61%	14%	1%	22%						
Backward linkages with China, 2011	5%		9%	39%	30%	17%						
HUMAN CAPITAL AND SKILLS*	Colombia		China	OECD	LAC							
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	22%		9%	28%	14%							
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	22%		14%	35%	23%							
Average years of total schooling ⁱⁱⁱ	7.06		7.30	11.39	8.29							
Share of students by area of study (% of tertiary enrolment) ^{iv}	STEM		HSLE	STEM	HSLE	STEM	HSLE					
	21%		63%	48%	24%	22%	56%	17%	63%			
Employment by occupation % of total, latest year available ^v	Agr.		Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.		
	17%		21%	62%	35%	30%	36%	5%	23%	71%	14%	21%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	45%		2%		17%		36%					
PISA mathematics scores, 2012 ^{viii**}	376		550		494		397					
FINANCE AND FDI	Bilateral loans		Bonds		Bank loans		Multilateral loans					
Sources of financing in international markets (stock, %), latest year available ^{viii}	8%		52%		7%		33%					
% of Chinese loans in LAC addressed to Colombia between 2005-14 ^{ix}	0.1%											
Estimated FDI from China, 2010-12 average (millions of dollars) ^x	431.7											

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market; vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).

* Circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Costa Rica

Recent trends

China is Costa Rica's second trade partner with an export basket concentrated mainly in electronic microcircuits. In 2013, 3% of Costa Rica's exports were destined to China and 10% of Costa Rica's total imports came from China, making China Costa Rica's second source of imports. More than 85% of Costa Rica's value-added exports to China are concentrated in the medium-high and high-tech industries sector (mainly integrated circuits), with a smaller participation of services (14%). Likewise, the majority of value-added imports from China (53%) are from medium-high and high-tech industries.

Costa Rica's participation in global value chains (GVCs) is higher than the Latin American average but lower than that of the European Union. Countries with low commodity exports, small domestic markets and higher integration in manufacturing activities, such as Costa Rica, tend to have higher levels of backward linkages (28%) and lower forward linkages (17%), indicating downstream positions in GVCs. The majority of forward linkages with China are concentrated in services (55% of total forward linkages) and medium-high and high-tech industries (33%); similarly, backward linkages are concentrated in medium-high and high-technology industries (76%) and services (10%). This is a consequence of Costa Rica's strength in high technology manufacturing sectors and its associated services, such as computer research and development services, reflected in the composition of its gross exports.

The financial links between Costa Rica and China remain modest. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%). Less than 1% of Chinese loans in Latin America are destined to Costa Rica. The majority of loans provided by China have been concentrated in government bonds (75%) and new public transportation vehicles (25%).

In terms of skills composition, Costa Rica has a higher share of population with tertiary education than China; but a lower concentration in science, technology, engineering, and mathematics (STEM) programmes. While lower than the average of OECD economies (28%), nearly 21% of Costa Rica's population has tertiary education, a relatively higher share than China (9%) and the Latin American average (14%). However, China has a higher concentration of tertiary graduates in STEM (48%) than Costa Rica (12%). Costa Rica's mean PISA mathematics score (407 points in the 2012 PISA edition), lags behind China (550) and other OECD economies (494).

Recent developments in China-Costa Rica relations

Costa Rica's diplomatic and trade relationship with China has strengthened in the past decade so that China has become an important economic and commercial partner. In June 2007, Costa Rica established diplomatic relations with China and gave impulse to the negotiations that resulted in a Bilateral Investment Treaty, signed later in 2007, and a Free Trade Agreement, signed in 2010.

Costa Rica and China continue to strengthen their trade linkages. As from mid-2011, around 99% of Costa Rica's total exports to China enter the country duty free (Minister of Foreign Trade, 2011). Since then both countries have signed several phytosanitary trade protocols for banana, leather, coffee and fish among other products. The latest agreement, signed in 2015, opened the way for pineapple and tuna exports from Costa Rica to China.

Both Chinese and Costa Rican officials have expressed their intention of fostering strong and long-lasting trade, economic and diplomatic ties. Costa Rica's current national development plan has a strong focus on attracting investment, creating new businesses, generating new jobs, improving infrastructure and reducing regional asymmetries. World trade in general, and trade with China in particular, are referenced as one of the sources to achieve such goals. Consequently, in January 2015, the governments of China and Costa Rica signed a Memorandum of Understanding to develop a joint feasibility study for the creation of a Special Economic Zone in Costa Rica (Minister of Foreign Trade, 2015). The study will be prepared by the Department of

Foreign Investment, Economic Co-operation of China (Ministry of Commerce) and the Directorate of Investment and Co-operation of Costa Rica (Ministry of Foreign Trade) with close co-ordination and collaboration from the Ministry of National Planning and Economic Policy (MIDEPLAN) and a team of international experts appointed to this end. Its findings will provide guidance on geographical location and operations, as well as include market, environmental viability, economic and financial policy analysis (IDB, 2015).

China has also been a strategic partner for the funding of infrastructure in recent years. In 2014, the Congress of Costa Rica approved an infrastructure loan from the Inter-American Development Bank (IDB, 2014) of USD 450 million, from which USD 50 million correspond to the China Co-financing Fund for Latin America and the Caribbean that is managed by the Inter-American Development Bank (IDB, 2014). Likewise, in 2015 the Congress approved a USD 485 million loan from China to expand a main road that connects the Central Valley with the Caribbean coast (Asamblea Legislativa, 2015).

Additionally, officials of each country's science and technology ministry recently renovated their commitment to co-operate in science and technology training and research by renewing an agreement signed in 2007. The new accord establishes human capital development as the main element of co-operation and commits both countries to expand their exchange programmes for university students and scientists. As a result, academic and research institutions of both countries have signed more than 20 exchange agreements (MICITT, 2012).

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Key indicators: Costa Rica

TRADE ⁱ	2001	2005	2007	2012	2013	2014	
Share of exports to China (% of total exports)	0%	3%	9%	3%	3%	n.a.	
Share of imports from China (% of total imports)	2%	4%	6%	8%	10%	n.a.	
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Integrated circuits (80%)	Electrical apparatus (4%)	Bovine or equine raw hides and skins (3%)	Copper waste and scrap (2%)	Cane or beet sugar (1%)		
Value-added decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium- low tech	Medium-high & high tech	Services	
Exports to China by sector, 2011	0%		0%	1%	85%	14%	
Imports from China by sector, 2011	1%		0%	25%	53%	20%	
Service Exports by sector, 2011	Traditional (61%)		Computer-R&D (5%)	Financial (3%)	Other (31%)		
GVC PARTICIPATION ⁱⁱⁱ	Costa Rica		LAC6		EU(27)		
	2000	2011	2000	2011	2000	2011	
Total GVC participation	40%		39%		45%		
Forward GVC participation	13%		14%		20%		
Backward GVC participation	26%		25%		24%		
GVC participation to China ⁱⁱ	2000		2011				
Forward GVC participation to China (% of total GVC participation)	2%		23%				
Backward GVC participation (% of total GVC participation)	1%		6%				
Decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium- low tech	Medium-high & high tech	Services	
Forward linkages with China, 2011	1%		0%	8%	33%	55%	
Backward linkages with China, 2011	5%		0%	9%	76%	10%	
HUMAN CAPITAL AND SKILLS*	Costa Rica		China		OECD		LAC
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	21%		9%		28%		14%
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	16%		14%		35%		23%
Average years of total schooling ⁱⁱⁱ	8.36		7.30		11.39		8.29
Share of students by area of study (% of tertiary enrolment) ^{iv}	STEM		STEM		STEM		STEM
	HSLE		HSLE		HSLE		HSLE
Employment by occupation % of total, latest year available ^v	12%		48%		22%		17%
	69%		24%		56%		63%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	Agr.		Agr.		Agr.		Agr.
	Ind.		Ind.		Ind.		Ind.
PISA mathematics scores, 2012 ^{vii**}	Serv.		Serv.		Serv.		Serv.
	13%		35%		5%		14%
% of Chinese loans in LAC addressed to Costa Rica between 2005-14 ^{ix}	20%		30%		23%		21%
	67%		36%		71%		65%
FINANCE AND FDI	38%		2%		17%		36%
	407		550		494		397
Sources of financing in international markets (stock, %), latest year available ^{viii}	Bilateral loans		Bonds		Bank loans		Multilateral loans
	4%		70%		4%		22%
% of Chinese loans in LAC addressed to Costa Rica between 2005-14 ^{ix}	0.3%						

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market; vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).

* Circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Dominican Republic

Recent trends

Trade ties among the Dominican Republic and China are new but flourishing. In 2014, sales to China represented 2% of total exports of goods, which were concentrated mainly in commodity products. Copper ores represented 32% of total exports followed by ferro-alloys (25%), copper waste (12%), instruments used in medical sciences (7%) and ferrous waste (4%). Imports from China in 2014 totalled 12%, making China the second import source after the United States.

Unlike some Latin American countries, Dominican Republic has not received significant investments from China. Although China has gained prominence as a bilateral lender in the region, the Dominican Republic has not benefited from the increase in financing from China. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%).

In terms of skills and workforce composition, Dominican Republic has a higher share of population with tertiary education than China and a workforce that is concentrated in the service sector. Nearly 11% of Dominican Republic's total population has attained tertiary education, a slightly higher share than that of China (9%) but lower than Latin American (14%) and the OECD countries (28%). The average number of years of schooling in the Dominican Republic (7.5) is similar to China's average (7.3) and the LAC average (8.9), but below the average for OECD economies (11.). More than 68% of the Dominican Republic's workforce is concentrated in the services sector, a share marginally higher than that in Latin America (65%) and China (36%), but lower than that in the OECD countries (71%).

Recent developments in China-Dominican Republic relations

Trade and co-operation relations between China and the Dominican Republic are nascent. Although they initiated commercial and diplomatic ties in the 1990s, developments in this relationship were delayed owing to Dominican Republic's ties to Chinese Taipei. Yet, in the 2010s, the relationship has improved. The creation of the Office of Business Development of the Dominican Republic in Beijing and China's Trade Development Office in Santo Domingo facilitated commercial relations, fostered cultural exchange, and strengthened diplomatic ties as the volumes of trade and foreign direct investment between the two countries increased. Recently, Dominican Republic and China have shared proposals in World Trade Organization negotiations, in particular regarding Trade in Services in Mode 4 of supply (presence of natural persons).

Trade between Dominican Republic and China is increasing despite complex diplomatic ties. Although there have been no advances in establishing Free Trade Agreements or Investment Treaties between them, the list of trade products has expanded. China has expressed interest to incorporate tobacco, avocado and cacao to the export basket, as well as interest in further investments, particularly in the fish and energy sectors. Both of these highlight future growth possibilities.

The Office of Trade Development of the People's Republic of China in Santo Domingo manages the few existing co-operation arrangements between Dominican Republic and China. One example of co-operation that falls under the auspices of this office is a programme with the Technological Institute of Santo Domingo (Instituto Tecnológico de Santo Domingo [INTEC]), which as of 2008, has a scholarship agreement that allows graduate students from INTEC to peruse postgraduate studies in China (INTEC, 2015). Although co-operation is, to date, minimal, there are positive perspectives for growth.

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Key indicators: Dominican Republic

TRADE ⁱ	2001			2005			2007			2012			2013			2014																				
Share of exports to China (% of total exports)	0%			1%			4%			5%			3%			2%																				
Share of imports from China (% of total imports)	1%			5%			9%			10%			10%			12%																				
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Copper ores (32%)			Ferro-alloys (25%)			Copper waste (12%)			Instruments used in medical sciences (7%)			Ferrous waste (4%)																							
Decomposition by sector ⁱⁱ	Agriculture			Mining			Low & medium- low tech			Medium-high & high tech			Services																							
Exports to China by sector, 2011	1%			62%			2%			35%			1%																							
Imports from China by sector, 2011	3%			8%			34%			27%			28%																							
HUMAN CAPITAL AND SKILLS*	Dominican Republic						China						OECD						LAC																	
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	11%						9%						28%						14%																	
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	23%						14%						35%						23%																	
Average years of total schooling ⁱⁱⁱ	7.46						7.30						11.39						8.29																	
	Agr.			Ind.			Agr.			Ind.			Agr.			Ind.			Agr.			Ind.			Agr.			Ind.			Serv.					
Employment by occupation % of total, latest year available ^{iv}	15%			18%			68%			35%			30%			36%			5%			23%			71%			14%			21%			65%		
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^v	36%						2%						17%						36%																	
FINANCE AND FDI	Bilateral loans						Bonds						Bank loans						Multilateral loans																	
Sources of financing in international markets (stock, %), latest year available ^{vi}	9%						63%						0%						28%																	
% of Chinese loans in LAC addressed to Dominican Republic between 2005-14 ^{vii}	0%																																			

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) ILO Key Indicators of the Labour Market, v) World Bank, Enterprise Surveys (World Bank, 2015a); vi) World Bank International Debt Statistics (World Bank, 2015b); vii) The Inter-American Dialogue.

* Circa 2011. See methodological note.

Mexico

Recent trends

China is Mexico's fourth trading partner; although because of its strong trade ties within the North American Free Trade Agreement (NAFTA), the full trade potential with China has yet to be developed. In 2014, approximately 2% of Mexico's exports were destined for China and 17% of Mexico's total imports came from China. The majority of Mexican value-added exports to China are concentrated in medium-high and high-tech industries (40%) and mining (30%). The majority of value-added imports from China are from medium-high and high tech industries (67%). Notably, 74% of Mexico's imports from China were intermediate inputs, while 11% were capital goods.

Mexico's participation in global value chains is higher than the Latin American average but lower than the European Union. Mexico has a low level of forward linkages (15%) mainly explained by its high integration in manufacturing activities, as shown by its export composition. Yet, Mexico has a high level of backward linkages (32%). Its forward linkages with China are diversified among mining (35%), low- and medium-low tech industries (14%), medium-high and high-tech industries (14%) and services (34%), while backward linkages are mainly concentrated in medium-high and high-technology industries (89%).

The financial links between Mexico and China have evolved. Although China has gained prominence as a bilateral lender in the region, Mexico only receives 2% of the total loans to the region. Approximately 58% of Chinese loans are for infrastructure projects. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%).

In terms of human capital skills composition, Mexico has a higher share of population with tertiary education than China; but a lower concentration in science, technology, engineering and mathematics (STEM) programmes. While 15% of the total population has a tertiary education, a slightly higher share than China's (9%) and Latin America's (14%), it is much lower than that of the OECD countries (28%). However, China has a higher concentration of tertiary graduates in STEM (48%) than Mexico (27%). Mexico's average mathematics performance in the OECD Programme for International Student Assessment (PISA) (413 points in the 2012 edition), still lags behind China (550) and other OECD economies (494).

Recent developments in China-Mexico relations

China and Mexico have experienced different stages in their economic linkages during the past 15 years. From the beginning, their relationship was shaped by trade competition due to similar export structures, particularly in sectors such as electronics, auto parts, electrical parts and components, vehicles and mineral fuels. In December 2011, trade relations between Mexico and China entered a new phase when the countervailing duties imposed by Mexico in 2001 on a large number of Chinese products expired (Hernandez, 2012). This encouraged both countries to increase bilateral efforts and improve commercial ties.

Since 2013, China and Mexico have strengthened their financial linkages. That year, the two countries established a Comprehensive Strategic Partnership, which serves as an institutional framework to address bilateral economic interests and improve co-operation (Ministry of Foreign Affairs of Mexico, 2014). Since then, various negotiations have been conducted to ensure the access of Mexican products such as tequila, pork, beef, blackberries, raspberries, avocado, white corn and dairy products to the Chinese market. Moreover, in 2014, China and Mexico signed 14 bilateral agreements which totalled USD 7.4 billion. These agreements included the creation of a USD 2.4 billion binational fund, which will be used by companies from both countries to invest in energy, mining, infrastructure, high-tech manufacturing, tourism, agricultural exports to China (beef, blackberries and raspberries) and joint scientific research. Additionally, they created the Sino-Mex Energy Fund between Petr leos Mexicanos (Pemex), the Mexican state-owned

oil producer, and three Chinese state companies to invest in projects in energy infrastructural facilities, exploration and production of oil and natural gas (Ministry of Economy of Mexico, 2014). As from 2015, with Mexico's energy reform, the country will allow direct foreign investment in the energy sector for the first time since the nationalisation of the sector in 1938, which could open the door to the participation of China's infrastructure firms in the near future.

Although foreign direct investment inflows from China are lower in Mexico than they are to other economies in the region, they have expanded to the manufacturing sector. Several Chinese firms have invested in home appliance, electronics, automotive component and industrial applications companies in Mexico. In 2013, the Chinese company Minth increased its investment in the auto parts industry in Aguascalientes. Likewise, in 2015, Hisense announced it would acquire Sharp's TV factory asset in Mexico, and Johnson Electric that it would open a second plant in Zacatecas.

Mexico and China have developed an institutional framework by establishing permanent bilateral mechanisms of dialogue to address key economic issues. These mechanisms hold annual meetings since 2013 and include the Bilateral High Level Working Group (GAN) that oversees trade and investment promotion, industrial cooperation, and mining; the High Level Business Group (GANE), which provides a dialogue platform for promoting trade and investment and involves the private sector; and the High Level Group of Investment (GANI), to implement bilateral investment instruments.

China and Mexico are members of the Asia-Pacific Economic Co-operation (APEC), established in 1989 and composed of 21 economies. Co-operation in APEC is operated under three pillars: trade and investment liberalisation, business facilitation and economic and technical co-operation (APEC, 2015). This has benefited Mexico by reducing barriers and impediments to trade with the largest economies in the world, including China.

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Key indicators: Mexico

TRADE ⁱ	2001	2005	2007	2012	2013	2014		
Share of exports to China (% of total exports)	0%	1%	1%	2%	2%	2%		
Share of imports from China (% of total imports)	2%	8%	11%	15%	16%	17%		
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Motor vehicles (21%)	Copper ores (18%)	Petroleum oils (10%)	Electrical apparatus (8%)	Copper waste (6%)			
Value-added decomposition by sector ⁱⁱ	Agriculture		Mining	Low & medium-low tech	Medium-high & high tech	Services		
Exports to China by sector, 2011	1%		30%	12%	40%	17%		
Imports from China by sector, 2011	0%		0%	19%	67%	14%		
Service Exports by sector, 2011	Traditional (83%)		Computer-R&D (0%)	Financial (10%)	Other (7%)			
	Mexico		LAC6		EU(27)			
GVC PARTICIPATION ⁱⁱⁱ	2000	2011	2000	2011	2000	2011		
Total GVC participation	45%	47%	39%	41%	45%	51%		
Forward GVC participation	10%	15%	14%	21%	20%	22%		
Backward GVC participation	34%	32%	25%	20%	24%	29%		
GVC participation to China ⁱⁱ	2000	2011						
Forward GVC participation to China (% of total GVC participation)	2%	8%						
Backward GVC participation (% of total GVC participation)	1%	13%						
Decomposition by sector ⁱⁱⁱ	Agriculture		Mining	Low & medium-low tech	Medium-high & high tech	Services		
Forward linkages with China, 2011	1%		35%	14%	14%	34%		
Backward linkages with China, 2011	0%		1%	9%	89%	1%		
HUMAN CAPITAL AND SKILLS [*]	Mexico		China		OECD		LAC	
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	15%		9%		28%		14%	
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	17%		14%		35%		23%	
Average years of total schooling ⁱⁱⁱ	8.47		7.30		11.39		8.29	
	STEM HSLE		STEM HSLE		STEM HSLE		STEM HSLE	
Share of students by area of study (% of tertiary enrolment) ^{iv}	27% 62%		48% 24%		22% 56%		17% 63%	
	Agr.	Ind. Serv.	Agr.	Ind. Serv.	Agr.	Ind. Serv.	Agr.	Ind. Serv.
Employment by occupation % of total, latest year available ^v	13%	24% 62%	35%	30% 36%	5%	23% 71%	14%	21% 65%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	31%		2%		17%		36%	
PISA mathematics scores, 2012 ^{vii**}	413		550		494		397	
FINANCE AND FDI	Bilateral loans		Bonds		Bank loans		Multilateral loans	
Sources of financing in international markets (stock, %), latest year available ^{viii}	2%		74%		12%		12%	
% of Chinese loans in LAC addressed to Mexico between 2005-14 ^x	2%							
Estimated FDI from China, 2010-12 average (millions of dollars) ^x	28.3							

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market, vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) World Bank International Debt Statistics (World Bank, 2015c); ix) The Inter-American Dialogue; x) ECLAC (2013).

*The data for China are from 2009. See methodological note.

Panama

Recent trends

In recent years, China has become one of Panama's main trading partners, with the export basket mainly concentrated in commodity products. In 2014, 9% of Panama's exports were destined for China, making it its third export destination. Similarly, China became Panama's fourth import source with 8% of Panama's total imports coming from the Asian economy. Panama's exports are mainly concentrated in agricultural and mining products, especially copper waste (42% of total exports to China), flours, meals and pellets (24%) and aluminium waste (14%).

The financial links between Panama and China remain unexplored but foreign direct investment flows are increasing. In recent years, Panama has sourced more than 69% of its financial needs through the bond market. Only 2% of Panama's finance needs are bilateral loans and despite the fact that China has gained prominence as a bilateral lender in the region, the financial ties between China and Panama remain to be developed. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%). In 2013, FDI flows from China touched a new high, reaching more than USD 27.5 million.

In terms of skills composition, Panama has a higher share of population with tertiary education than China; but a lower concentration in science, technology, engineering and mathematics (STEM) programmes. Approximately 21% of Panama's total population has attained tertiary education, a relatively higher share than China's (9%) and Latin America (14%), but lower than OECD countries (28%). However, China has a higher concentration of tertiary graduates in STEM fields (48%) than Panama (22%) or the Latin American average (17%).

Recent developments in China-Panama relations

China and Panama hold strong commercial ties owing to Panama's strategic geographic location and its relevance for cargo transport and the food industry. China, as of 2014, is the second-biggest user of the Panama Canal, after the United States, accounting for 23.5% of the cargo transported through the canal. China Ocean Shipping Company, one of the main users of the Canal, participates in the Advisory Board of the Panama Canal Authority (Panama Canal, 2003). Moreover, since 2000, Panama Ports Company, a subsidiary of the Hong Kong company Hutchison Whampoa, operates the Port of Balboa and the Port of Cristobal – both ends of the Canal. Panama's Colon Free Trade Zone serves as springboard for Chinese exports to reach Latin American countries. In 2014, the Colon FTZ exported USD 3.7 billion in Chinese merchandise (30.1% of the zone's total exports).

China's FDI to Panama has averaged USD 106 million over the last five years, and focused on ports, shipping, banking and commerce (INEC, 2013). Over the next few years, the Beijing-based China Harbour Engineering Company, will set up its regional headquarters in Panama, and is currently exploring its participation in diverse canal projects, especially in the design, construction and financing of a fourth set of locks which would allow post-Panamax Plus category ships to transit the canal (*Miami Herald*, 2014).

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Key indicators: Panama

TRADE ⁱ	2001	2005	2007	2012	2013	2014						
Share of exports to China (% of total exports)	0%	1%	6%	4%	6%	9%						
Share of imports from China (% of total imports)	1%	2%	20%	8%	10%	8%						
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Copper waste (42%)	Flours, meals and pellets (24%)	Aluminium waste (14%)	Wood sawn (5%)	Bovine or equine raw hides and skins (4%)							
Decomposition by sector ⁱⁱ	Primary products	Natural resource-based manufactures		Low-tech manufactures	Medium-tech manufactures	High-tech manufactures						
Exports to China by sector, 2011	25%	70%		4%	0%	0%						
Imports from China by sector, 2011	2%	11%		43%	29%	15%						
HUMAN CAPITAL AND SKILLS*	Panama		China		OECD		LAC					
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	21%		9%		28%		14%					
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	20%		14%		35%		23%					
Average years of total schooling ⁱⁱⁱ	9.35		7.30		11.39		8.29					
	STEM		HSLE	STEM		HSLE	STEM		HSLE			
Share of students by area of study (% of tertiary enrolment) ^{iv}	22%		66%	48%		24%	22%		56%	17%		63%
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.
Employment by occupation % of total, latest year available ^v	17%	18%	65%	35%	30%	36%	5%	23%	71%	14%	21%	65%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	19%			2%			17%			36%		
FINANCE AND FDI	Bilateral loans			Bonds			Bank loans			Multilateral loans		
Sources of financing in international markets (stock, %), latest year available ^{viii}	2%			69%			4%			24%		
% of Chinese loans in LAC addressed to Panama between 2005-14 ^{viii}	0%											

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market; vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) World Bank International Debt Statistics (World Bank, 2015c); viii) The Inter-American Dialogue.

* Circa 2011. See methodological note.

Peru

Recent trends

During the past few decades, China has become one of Peru's most important economic partners, mainly focused in the trade of commodity products such as copper and gold. Peru has shown a significant increase in exports to China, especially between 2000 and 2007 with growth rates between 35% and 50%. Throughout 2014, 18% of Peruvian exports were destined to China, placing this market as Peru's main export destination. In terms of economic sectors, 30% of exports to China were concentrated in primary productions and 70% in natural resource-based manufactures. In addition, 21% of Peru's imports during 2014 came from China, placing this market as its main import source. Within these imports to China, 92% were non-natural resource-based manufactures.

Peru and China have strong financial links. During the last decade, China has become an important bilateral lender to Peru, allocating 2% of its private total loans for the region to this country (USD 2.3 billion). Most of these loans are concentrated in the mining sector (USD 2 billion); infrastructure (USD 100 million), including transportation, environment and energy; and other types of loans, such as trade financing (USD 150 million). During 2014, the Industrial and Commercial Bank of China Ltd. (ICBC Ltd.) – China's largest commercial bank and the first Chinese bank entering the Peruvian financial system – began its operations offering several financial products and services that include deposits, transfers, foreign trade, finance, bonds, cards and loans.

In terms of skills composition, Peru has a higher share of population with tertiary education than China. The percentage of the population with a tertiary education (21%) is higher than the average for LAC countries (14%) and the average of China (9%), and only a few percentage points lower than the average for OECD countries (28%). However, Peru showed a relatively poor performance in 15-year-olds' mean score in the mathematics testing in the OECD Programme for International Student Assessment (368 in PISA 2012), far from China's results (550) and those of the OECD economies (494 points).

Recent developments in China-Peru relations

During the past decade, Peru has improved its ties with most Asian countries especially through trade negotiations with its main commerce partners. As part of this process, in 2009, Peru signed a Free Trade Agreement with China that came into effect on 1 March 2010. The purpose of this agreement was not only to get preferential treatment to enter the Chinese market for a wide range of Peruvian products; but to build tighter trade relations with one of the world's leading industrial input suppliers, integrate Peru into the Asian supply chains and to become a "business centre" in South America (MINCETUR, 2015). As a result, after three years, Peru exported 312 new products – 97% non-traditional ones – to China, created 468 new exporting companies and doubled trade between the two countries (Ministry of Foreign Trade and Tourism of Peru, 2015).

In addition, China and Peru are members of the Asia-Pacific Economic Cooperation (APEC), established in 1989 and composed of 21 economies. Co-operation within APEC is operated under three pillars: trade and investment liberalisation, business facilitation and economic and technical co-operation. This has benefited Peru by reducing barriers and impediments to trade with the largest economies in the world, including China (Ministry of Foreign Affairs of Peru, 2015a).

Chinese participation has represented, on average, 0.9% of Peruvian foreign direct investments (FDI) between 1980 and 2014. In 2015, Chinese, Brazilian and Peruvian authorities announced a

USD 10 billion investment for the construction of the next Pacific-Atlantic transoceanic train, which is expected to increase connectivity between South American markets and the countries bordering the Pacific Ocean, open new lines of business on both sides and foster a new type of industrialisation in South America.

Peru and China signed several co-operation agreements in 2015. These agreements included co-operation in energy and water resource management. The Peruvian Energy and Mines Ministry and China's Three Gorges Corporation agreed to sign a Memorandum of Understanding and established a co-operation mechanism to develop the Peruvian energy sector. Additionally, the Peruvian National Water Authority and the Chinese Institute of Statistics, Planning, Design and Research signed a co-operation agreement for the evaluation, planning and integrated management of water resources in southern Peru.

Co-operation with China began in 1988 with the Basic Agreement on Scientific and Technological Co-operation designed to encourage economic, scientific and technological development. Correspondingly, in 2005, Peru's National Science, Technology and Innovation agency, CONCYTEC, and China's Science Academy signed the Academic Exchange and Co-operation Agreement designed to encourage the exchange of experts and promote scholarship programmes for masters and doctoral students (Ministry of Foreign Affairs of Peru, 2015b).

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Key indicators: Peru

TRADE ⁱ	2001	2005	2007	2012	2013	2014						
Share of exports to China (% of total exports)	6%	11%	11%	18%	17%	18%						
Share of imports from China (% of total imports)	5%	8%	12%	18%	19%	21%						
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Copper and concentrates (48%)	Refined copper cathodes (14%)	Flours, meals and pellets of fish or meat (12%)	Iron ores and concentrates (12%)	Zinc ores and concentrates (3%)							
Decomposition by sectorⁱⁱ	Primary products		Natural resource-based manufactures	Low-tech manufactures	Medium-tech manufactures	High-tech manufactures						
Exports to China by sector, 2011	30%		70%	0%	0%	0%						
Imports from China by sector, 2011	1%		7%	31%	31%	30%						
HUMAN CAPITAL AND SKILLS*	Peru			China			OECD			LAC		
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	21%			9%			28%			14%		
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	34%			14%			35%			23%		
Average years of total schooling ⁱⁱⁱ	9.01			7.30			11.39			8.29		
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.
Employment by occupation % of total, latest year available ^{iv}	26%	17%	57%	35%	30%	36%	5%	23%	71%	14%	21%	65%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^v	28%			2%			17%			36%		
PISA mathematics scores, 2012 ^{vi**}	368			550			494			397		
FINANCE AND FDI	Bilateral loans			Bonds			Bank loans			Multilateral loans		
Sources of financing in international markets (stock, %), latest year available ^{vii}	11%			56%			0%			33%		
% of Chinese loans in LAC addressed to Peru between 2005-14 ^{viii}	2%											
Estimated FDI from China, 2010-12 average (millions of dollars) ^{ix}	739.9											

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) ILO Key Indicators of the Labour Market; v) World Bank, Enterprise Surveys (World Bank, 2015a); vi) OECD PISA 2012 for Latin American countries and PISA 2009 for China; vii) World Bank International Debt Statistics (World Bank, 2015b); viii) The Inter-American Dialogue; ix) ECLAC (2013).

* Circa 2011. See methodological note.

** The data for China are from 2009. See methodological note.

Uruguay

Recent trends

China is Uruguay's second trading partner. Exports to China represented 17% of total exports (including soy exports from Nueva Palmira Free Trade Zone) in 2014, most of which were concentrated in commodity products. Soy represented 52% of total exports to China, followed by meat (18%), pulp mill (17%), wool and fabrics (6%), products from meat (3%), leather (1%) and wood (1%). Imports from China were 22% of the Uruguayan total imports in 2014, concentrated in technological products, such as mobile phones and computers.

Unlike some Latin American countries, Uruguay has not received significant investments from China. The majority of the loans from China to the region are concentrated in Argentina, Brazil, Ecuador and Venezuela (91%). China's investments in Uruguay are mainly private, and in the form of foreign direct investment, especially in the industry and service sectors. In 2014, many Chinese companies operated in Uruguay, across diverse economic sectors, including services (especially, telecommunications and logistical services), energy and manufacturing, mostly in the automobile industry.

In terms of skills composition, Uruguay has a higher share of population with tertiary education than China. Nearly 12% of Uruguay's total population has attained tertiary education, a higher share than China's (9%) but lower than the average for Latin American (14%) and OECD countries (28%). Uruguay's mean score of 15-year-olds participating in the mathematics testing in the OECD Programme for International Student Assessment (PISA) (409 points in 2012 edition) lags behind China (550) and other OECD economies (494).

Recent developments in China-Uruguay relations

Uruguay and China established diplomatic relations in 1988 and signed a Bilateral Investment Treaty in 1993 that came into effect in 1997. Trade relations between the two countries have deepened during the 2000s. In fact, in 2002 they signed a sanitary requirement agreement to export dairy products from Uruguay to China and in 2005 a protocol that permitted Uruguay to export livestock to China (WTO, 2012). However, preferential trade agreements do not exist between the two countries, partly owing to the need for Uruguay to maintain common agreement with the Southern Common Market (Mercosur).

Co-operation schemes between the two countries have expanded in the last few years. In 2009, China and Uruguay signed nine agreements that included co-operation in several economic areas, including trade, development and finance. In 2011, they signed a bilateral agreement for USD 528 million for the export of soy, milk, wood and wool products, among others; it also included financial, touristic and scientific co-operation. In addition, in 2013, the countries signed a co-operation agreement that included banking supervision, communication, education, geoscience and mining. Finally, in 2015 China contributed USD 8 million for economic and technical co-operation in financial projects of common interest.

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Key indicators: Uruguay

TRADE ⁱ	2001	2005	2007	2012	2013	2014						
Share of exports to China (% of total exports)	5%	4%	4%	12%	16%	17%						
Share of imports from China (% of total imports)	4%	8%	12%	19%	20%	22%						
Top 5 products exported to China, 2014 (% of total exports measured in USD)	Soy (52%)	Meat (18%)	Pulpmill (17%)	Wool and fabrics (6%)	Products from meat (3%)							
Value-added decomposition by sector ⁱⁱ	Primary products		Natural resource-based manufactures	Low-tech manufactures	Medium-tech manufactures	High-tech manufactures						
Exports to China by sector, 2011	91%		4%	5%	0%	0%						
Import from China by sector, 2011	1%		10%	27%	39%	23%						
HUMAN CAPITAL AND SKILLS*	Uruguay		China		OECD		LAC					
Share of population with tertiary education (% of population 25+) ⁱⁱⁱ	12%		9%		28%		14%					
Share of population with secondary education (% of population 25+) ⁱⁱⁱ	16%		14%		35%		23%					
Average years of total schooling ⁱⁱⁱ	8.45		7.30		11.39		8.29					
	STEM		HSLE	STEM	HSLE	STEM	HSLE	STEM	HSLE			
STEMS % of the total, latest year available ^{iv}	15%		49%	48%	24%	22%	56%	17%	63%			
	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.	Agr.	Ind.	Serv.			
Employment by occupation % of total, latest year available ^v	11%	21%	28%	35%	30%	36%	5%	23%	71%	14%	21%	65%
Percentage of firms reporting difficulties recruiting adequately skilled labour, latest year available ^{vi}	30%			2%			17%			36%		
PISA mathematics scores, 2012 ^{vii**}	409			550			494			397		
FINANCE AND FDI												
% of Chinese loans in LAC addressed to Uruquay between 2005-14 ^{viii}	0%											

Sources: i) Based on United Nations Commodity Trade Database (Comtrade); ii) OECD/WTO TiVA data; iii) UNESCO Institute for Statistics; iv) World Bank Edstats (Education Statistics) (World Bank, 2015a); v) ILO Key Indicators of the Labour Market; vi) World Bank, Enterprise Surveys (World Bank, 2015b); vii) OECD PISA 2012 for Latin American countries and PISA 2009 for China; viii) The Inter-American Dialogue.

* Circa 2011. See methodological note.

**The data for China are from 2009. See methodological note.

Methodological note: Definitions and variables used

Global Value Chains (GVC) participation: an index of the country's integration in international production networks, defined as the sum of backward and forward participation. Data for GVC participation are from 2011 (latest data available). The data are available for Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico.

Backward participation: in the terminology of GVCs, “backward linkages” refers to the share of foreign value added embedded in a country's exports (backward participation) through the use of foreign inputs in their production. More precisely, they are defined as the percentage of gross exports that correspond to foreign value added incorporated in them. Value chain participation is defined in terms of the origin of the value added embodied in exports from a reference country. Broadly, the backward participation index captures the extent to which domestic firms use foreign intermediate value added for exporting activities in a given country.

Forward participation: in the terminology of GVCs, “forward linkages” refers to the share of domestic intermediates in value added incorporated in third country exports. More precisely, it is the percentage of a country's gross exports that correspond to value added incorporated in other countries' gross exports. The forward GVC participation index captures the extent to which a given country's exports are used by firms in partner countries as inputs into their own exports.

Classification of economic sectors: the encoding used in this report is based on OECD – WTO Trade in Value-Added (TiVA). The classification includes categories and sub categories as shown in the table below. The classification is used for the economies available in TiVA: Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico.

Industry classification		
Category	Sub Category	TiVa Code
Agriculture		C01T05: Agriculture, hunting, forestry and fishing
Mining		C10T14: Mining and quarrying
Utilities		C40T41: Electricity, gas and water supply
Low & medium-low technology industries	Low-tech industries	C15T16: Food products, beverages and tobacco
		C17T19: Textiles, textile products, leather and footwear
		C20: Wood and products of wood and cork
		C21T22: Pulp, paper, paper products, printing and publishing
		C36T37: Manufacturing nec; recycling
	Medium low-tech industries	C23: Coke, refined petroleum products and nuclear fuel
		C25: Rubber and plastics products
		C26: Other non-metallic mineral products
		C27: Basic metals
		C28: Fabricated metal products
Medium-high & high-technology industries	Medium high-tech industries	C24: Chemicals and chemical products
		C29: Machinery and equipment, nec
		C31: Electrical machinery and apparatus, nec
		C34: Motor vehicles, trailers and semi-trailers
	High-tech industries	C35: Other transport equipment
		C30T33X: Computer, electronic and optical equipment
Services	Traditional services	C50T52: Wholesale and retail trade; repairs
		C55: Hotels and restaurants
		C60T63: Transport and storage
	Computer and R&D services	C72: Computer and related activities
		C73T74: R&D and other business activities
	Financial intermediation	C65T67: Financial intermediation
		C45: Construction
	Other services	C64: Post and telecommunications
		C70: Real estate activities
		C71: Renting of machinery and equipment
		C75: Public administration and defence; compulsory social security
		C80: Education
		C85: Health and social work
		C90T93: Other community, social and personal services
		C95: Private households with employed persons

Classification of economic sectors for economies not in TiVA: for Dominican Republic, Panama, Peru and Uruguay the definition of the five product categories is based on their technology content (see Lall, 2000).

Classification of levels of education: the encoding used in this report is based on the International Standard Classification of Education (ISCED) of UNESCO. ISCED, updated in 2011, is an instrument for compiling statistics on education that distinguishes six levels of education, from pre-primary to tertiary education. The classification for secondary and tertiary education follows the criteria in the table below.

Level	Nomenclature
Secondary Education	
Upper-secondary education	ISCED 3
Greater specialisation than lower secondary, with more highly qualified teachers. Students have 9 years of prior learning up to and including the lower-secondary level.	
Tertiary Education	
Type-A tertiary education	ISCED 5A
Extensive theoretical basis to provide skills for entry into advanced research programmes and professions with high skill requirements. Duration: 3 or 4 years	
Type-B tertiary education	ISCED 5B
Typically shorter than Type A, with a focus on technical, practical and occupational skills for entry into labour markets. Minimum duration: 2 years	
Advanced research programmes	ISCED 5C
Leading to an advanced qualification such as a PhD. Theoretically lasting 3 years, but enrolment lasts longer in most countries. A focus on original, advanced research.	

Source: OECD (2013); UNESCO (2013).

Programme for International Student Assessment (PISA): the country's average score in mathematics in the PISA 2012 tests is used as an indicator of the secondary education performance. PISA scores are between 0 and 1000, with 41 points equal to one year of schooling. For China, 2009 data are used, as they include a much broader sample of 21 003 students from 621 schools in 11 provinces and municipalities (Fangshan District in Beijing and Tianjin Municipality, Hainan, Hebei, Hubei, Jiangsu, Jilin, Ningxia, Sichuan, Yunnan and Zhejiang provinces).

Percentage of students who graduate from STEM or HSLE diplomas: STEM refers to the share of students who graduate from fields of education more directly related to science, technology, engineering and mathematics. HSLE refers to the share of those who graduate from humanities, social sciences, law and education.

Estimated foreign direct investment from China: country figures were estimated by the Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of official data from the countries, company reports, Bloomberg, FDI Markets and The Heritage Foundation information.

Countries included in the LAC and OECD averages: the countries included in the Latin America and the Caribbean (LAC) and OECD averages depend on the database used and the data used are for the latest year available. LAC averages for GVCs are calculated from data for six countries: Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico. For the UNESCO database, the OECD region comprises 30 countries on average, and the LAC region is 25 countries. The STEM average includes 12 Latin American countries and the 34 OECD economies. The data for the proportions of firms that find an inadequately educated workforce to be a major restriction are calculated from 24 Latin American and 14 OECD economies. To calculate the employment distribution, data from 18 Latin American and Caribbean economies and the 34 OECD economies are used. Lastly, in the PISA 2012 database, the OECD average comprises all 34 member countries and the LAC average comprises 8 countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay.

Groups of Countries: the document makes reference to the following groups of countries:

LAC (6): Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico.

EU (27): All EU member countries with the exception of Malta.

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Latin American Economic Outlook 2016

TOWARDS A NEW PARTNERSHIP WITH CHINA

The 2016 edition of the *Latin American Economic Outlook* explores the evolving ties between Latin America and China. During the past decade, China has become one of the region's most important trading partners. This relationship is now taking on new dimensions and offering Latin America an opportunity to build a mutually beneficial partnership. As China transitions from an export and investment-based economy to a consumption and services model, Latin America has much to gain through participating as more than simply a supplier of commodities. Based on the analysis of different channels through which China's new model will affect the region, including trade, finance, and skills, the *Outlook* identifies potential strategies and policy responses to help Latin America strengthen its partnership with China. The report highlights valuable experiences and best practices in these fields and proposes strategies to allow Latin America to consolidate long-term growth while assuring continuity in the social agenda.

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