

Chapter 3

Competitiveness and economic diversification in Peru

Most of the gap in GDP per capita between Peru and the OECD economies can be explained by Peru's low labour productivity. The few economic sectors in Peru with high labour productivity, such as mining, create only a small number of jobs. Improving total factor productivity will be key for promoting inclusive growth. A national strategy needs to be implemented to take advantage of Peru's natural resources to capture further value-added. Upping the levels and quality of investment in research and development, innovation, transport infrastructure and logistics will boost competitiveness and increase efficiency. Continuing to improve the business environment, including contract and competition enforcement and support to small businesses will all help boost confidence and promote sustainable development.

Peru's productivity and competitiveness remain poor despite recent efforts to diversify and increase value-added across the economy. Several ambitious reforms to boost productivity and competitiveness are being rolled out – their successful implementation, together with a sound macroeconomic framework, should lead to further inclusive growth.

Peru's low level of labour productivity is explained by a variety of structural factors which are holding back the performance of human capital and total factor productivity. This chapter analyses the Peru's productivity and competitiveness gaps. In addition to education and skills, and the mismatches between labour and demand in the labour market (Chapter 2), other aspects can affect productivity. This chapter identifies the structural factors which need strengthening and outlines broad-based policies to improve its productive capacity, such as the quality of its infrastructure and logistics, innovation, and product market regulation as well as competition.

Improving productivity is fundamental to sustainable growth

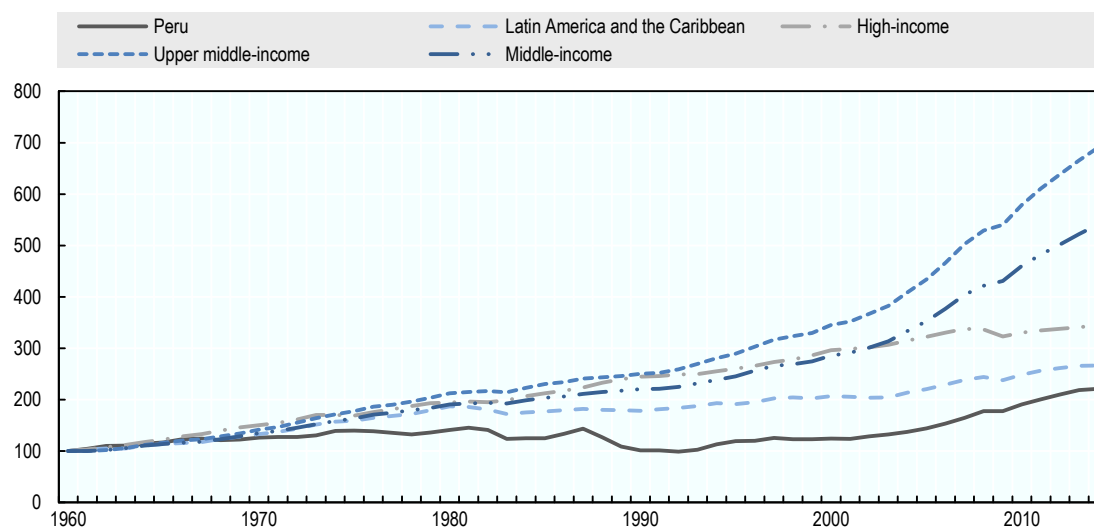
Recent growth has not been enough for Peru to catch up with its peers

Over the last 50 years, Peru's GDP per capita growth has been modest (Figure 3.1). In the 1960s, Peru's GDP per capita was close to Hong Kong, China and Portugal and higher than Brazil, Korea, Malaysia, Singapore and Turkey. Between 1960 and 2014, Peru's GDP per capita annual growth was only 1.6% on average. This was well below the average growth rates in upper middle-income (3.7%) and middle-income (3.2%) countries, and also was lower than the GDP per capita growth in OECD (2.2%), high-income (2.3%) and Latin American (1.9%) countries in the same period.


Despite an impressive surge in GDP per capita performance over the last decade, Peru has not been able to close the gap with other emerging markets. GDP per capita growth in the past ten years has been close to 5.0% annually, much higher than in previous decades, but below the aggregate growth of 5.4% a year for upper middle-income countries in the same period.

Figure 3.1. GDP per capita in Peru, 1960-2014

Constant prices, base 100 = 1960



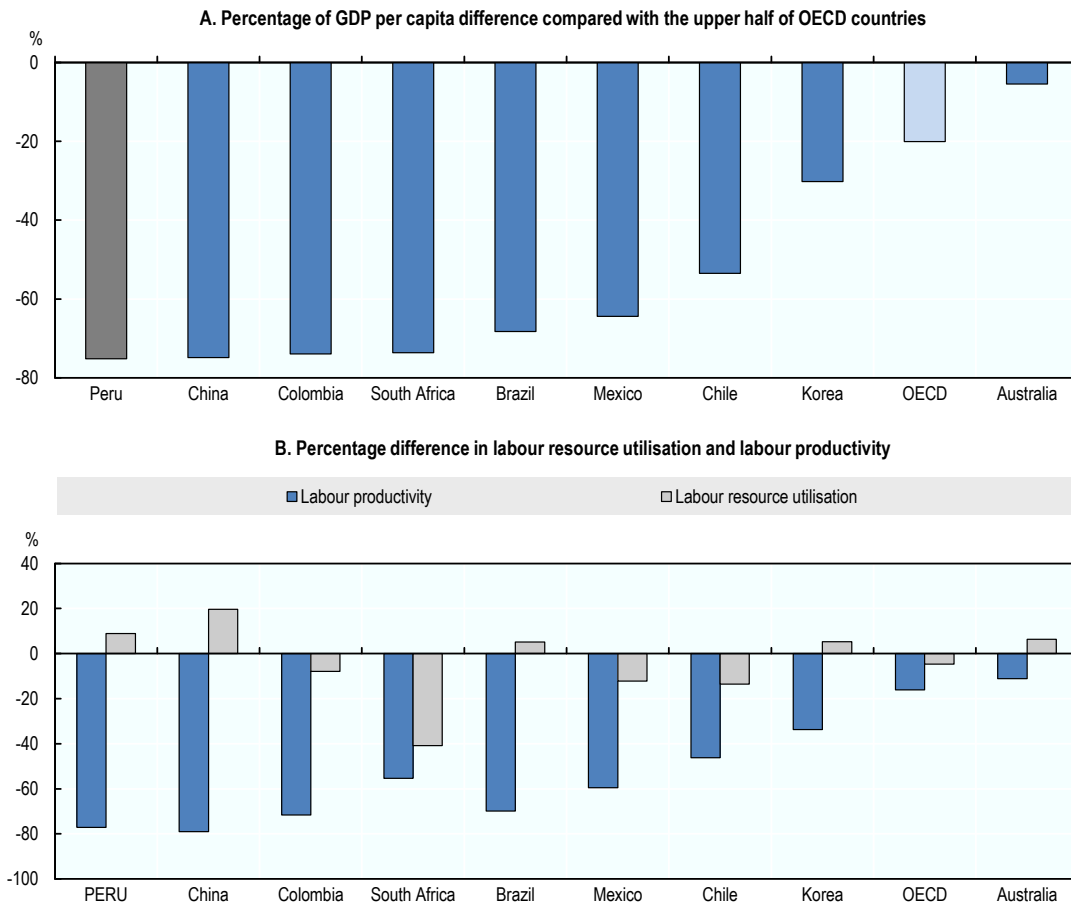
Source: World Bank (2015), *World Development Indicators* (database), Washington, DC, <http://data.worldbank.org>.

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Productivity performance has been poor in Peru


Low labour productivity largely explains the significant GDP per capita gap between Peru and the most advanced OECD countries (Figure 3.2). Despite growing more than seven times the OECD rate over the past decade, the GDP per capita gap remains around 75% compared to the 17 OECD countries with the highest GDP per capita – a bigger difference than for other Latin American countries such as Brazil, Chile, Colombia, and Mexico (Figure 3.2, Panel A). This difference in income per capita can be broken down into gaps in labour productivity and gaps in labour utilisation. Peru, like Brazil, People’s Republic of China (China) and Korea, features relatively high labour utilisation, which means that the key culprit stifling GDP per capita is labour productivity (Figure 3.2, Panel B). In fact, Peru’s labour productivity shortfall compared to the average of the richest 17 OECD countries was close to 80 percentage points in 2013 (Figure 3.2, Panel B).

Figure 3.2. Sources of GDP per capita differences



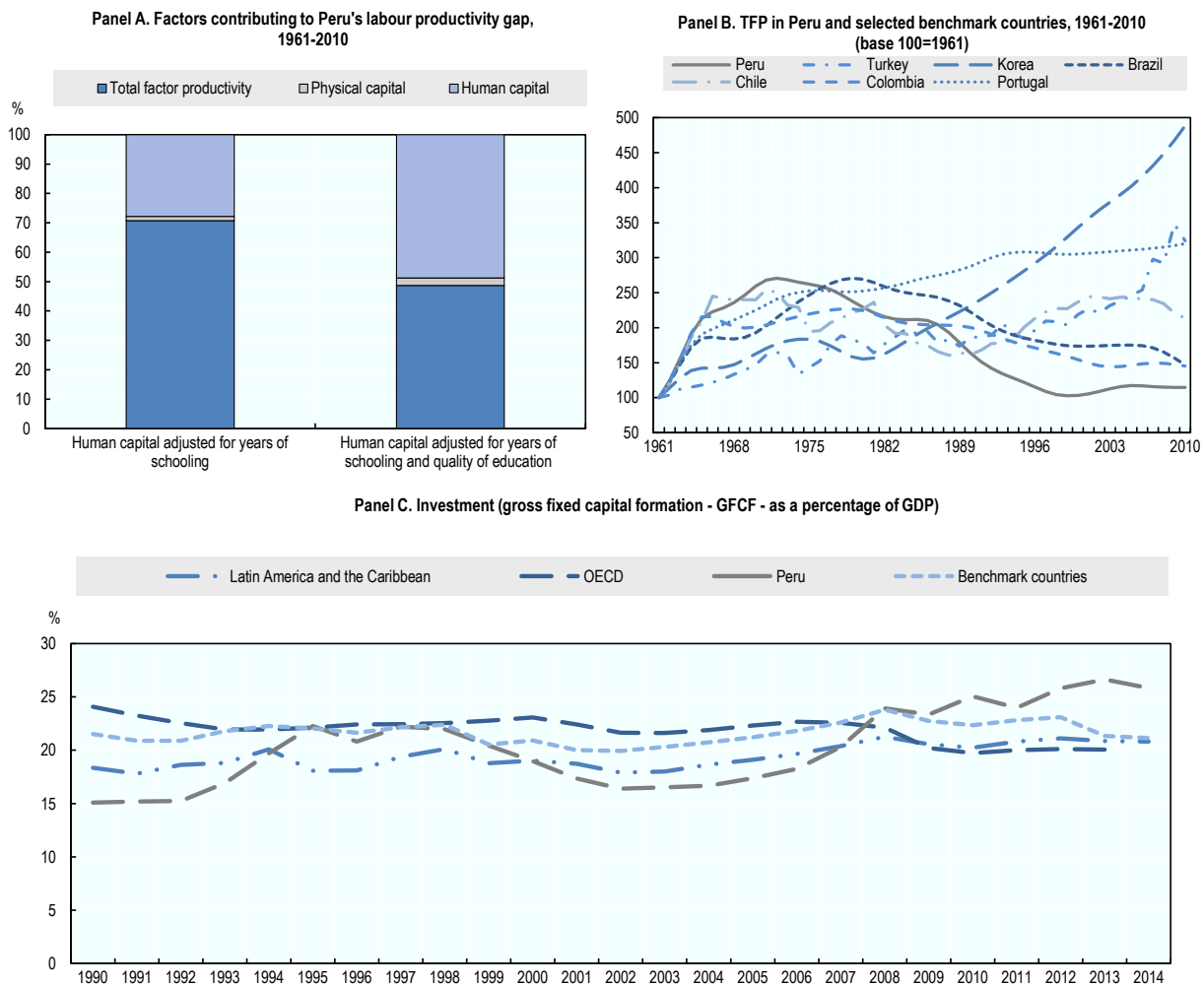
Notes: Compared to the simple average of the 17 OECD countries with the highest GDP per capita in 2013 based on 2013 purchasing power parities (PPPs). The sum of the percentage difference in labour resource utilisation and labour productivity does not add up exactly to the GDP per capita difference since the decomposition is multiplicative. Labour productivity is measured as GDP per employee. Labour resource utilisation is measured as employment as a share of population.

Source: OECD National Accounts Database, http://www.oecd-ilibrary.org/fr/economics/data/oecd-national-accounts-statistics_na-data-en; World Bank (2015), World Development Indicators (database), Washington, DC, <http://data.worldbank.org>; ILO (International Labour Organization), Key Indicators of the Labour Market (KILM) Database for employment data on Peru http://www.ilo.org/empelm/what/WCMS_114240/lang-en/index.htm.

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Labour productivity, calculated as the output per worker, can be broken down into human capital, physical capital, and total factor productivity (TFP).¹ The differences in output per worker between Peru and the United States can be accounted for mainly by human capital and TFP (Figure 3.3, Panel A). TFP alone explains 49% of the labour productivity gap, while years of schooling and quality of education account for 27% and 22% of the labour productivity gap, respectively (Figure 3.3, Panel A). Peru’s TFP has grown at an annual rate of less than 2% over the last two decades, not enough to close the gap with OECD economies and most of the benchmark countries (see Annex 1.A1 of Chapter 1 for a description of benchmark countries). This performance is also disappointing when compared to some of the benchmark countries (Figure 3.3, Panel B; Céspedes and Ramirez-Rondán, 2014).

Figure 3.3. Decomposition of the labour productivity gap in Peru



Note: Total factor productivity and the sources of GDP per worker are estimated by using a Cobb-Douglas function. Human capital is adjusted first for the years of schooling, and second for both years of schooling and quality of education. The capital-share production function parameter is set equal to one-third, as is standard in the literature. The gap refers to the difference in PPP-adjusted GDP per worker with respect to the United States.

Sources: Panels A and B: OECD calculations based on Penn World Table (<http://datacentre.chass.utoronto.ca/pwt/alphacountries.html>), Barro and Lee database (<http://www.barrolee.com/>), Hanushek and Woessmann (2012) and OECD PISA 2012 database (<http://www.oecd.org/pisa/keyfindings/pisa-2012-results.htm>). Panel C: World Bank (2015), World Development Indicators (database), Washington, DC, <http://data.worldbank.org>.

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These results suggest that in addition to education and skills (covered in Chapter 2), broad-based policies affecting TFP should be considered to improve Peru's poor GDP per capita performance. These include factors associated with transport costs, such as quality of the investment in infrastructure and logistics, and better business environment, such as the rule of law, and innovation.

On the positive side, investment has been buoyant in recent years. Improvements in the security situation, a better macroeconomic framework and modest gains in TFP have provided the impetus for increasing investment. In recent years, Peru's level of investment as a share of GDP has been higher than the average of Latin American, OECD and benchmark countries (Figure 3.3, Panel C).²

Employment is highly concentrated in the least productive sectors

Labour productivity varies widely across economic sectors in Peru. The recent expansion of labour productivity is a result of both increases in labour productivity within sectors, and the reallocation of labour from less productive sectors into more productive ones (Kaldewei and Weller, 2013). Mining, finance, energy and water, and telecommunications have high labour productivity, while retail and restaurants, and agriculture are particularly low (Figure 3.4). This trend is consistent with the average productivity observed over the past decade. Mining is the most productive sector, with a level of labour productivity of more than 7 times the average for Peru, and more than 40 times the level for agriculture. Similarly, at the sub-national level, departments with high labour productivity are characterised as being dependent on commodities (Chapter 5).

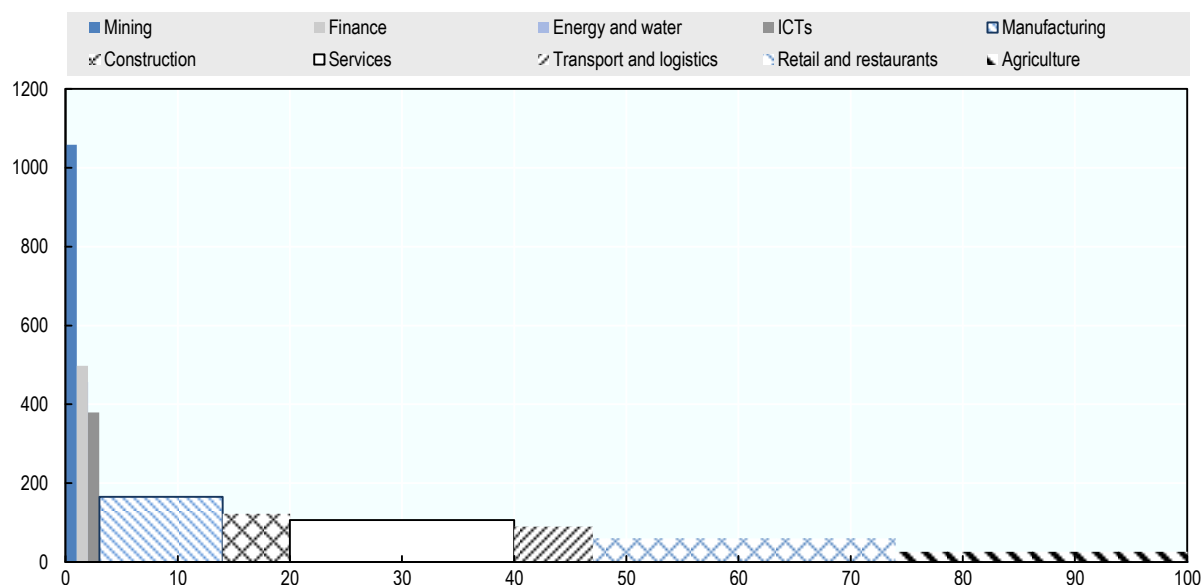
In common with other Latin American countries, labour productivity varies widely depending on the size of the firm (Céspedes et al., 2014a). Large and medium-sized firms have a labour productivity of 8 and 3.5 times the productivity of small firms, respectively (Távora et al., 2014). Small and medium-sized firms are concentrated in sectors with low productivity, such as agriculture and retail, while only large firms are involved in the mining sector and in other high productivity service sectors, such as finance, electricity and water supply.³

Most of Peru's jobs are concentrated in the most unproductive sectors. More than half of all workers were in Peru's two most unproductive sectors: retail and restaurants, and agriculture (Figure 3.4). In contrast, the manufacturing sector accounts for more than twice the average labour productivity in Peru, yet provides only 10.6% of total employment – a share that has decreased from 12% since the start of the century. This picture is even more striking for the most productive sectors. Together, mining, finance, energy and water, and telecommunications represent less than 4% of total employment. The mining sector alone accounts for less than 1.5% of total employment. While these findings seem to imply a misallocation of labour, they also present enormous potential for growth-enhancing structural transformation.

High labour productivity in a few sectors also translates into high wages for only a few workers, creating income inequalities (Chapter 2). However, the size of this disparity is not as significant as the difference in labour productivity. The average wage is more than six times higher in the four sectors with the highest labour productivity than in the two sectors with the lowest. The average wage in the mining sector is 12.5 times higher than the average wage in agriculture (Távora et al., 2014), which is less than the 40-fold difference in productivity between those sectors.


Figure 3.4. Labour productivity in Peru's economic sectors, 2013

Relative value-added as a percentage of workers and employment by economic sectors
(y axis: 100 = total labour productivity and x-axis: % of employment)



Note: Number of workers is based on Peru's National Households Survey (INEI). "Energy and water" is the item with the lowest employment contribution, representing less than 0.5% of total employment.

Source: OECD calculations based on data provided by INEI (National Institute of Statistics).

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Peru has a challenging agenda of broad-based policies to boost productivity and competitiveness, to be implemented during the period 2014-18. The overall objective of the Agenda de Competitividad 2014-2018 is to increase competitiveness, and to foster formal employment and the well-being of the population. Its targets are to increase labour productivity by 15%, to formalise 5% of current informal workers and to reduce logistics costs from 32% to 23% of product value. To achieve these targets, specific policies will need to be implemented in a number of areas. Chapter 2 considers the area of education and human capital and Chapter 5 aspects of governance. The rest of this chapter will cover the current situation and policies in the areas of international trade, sustainable management of natural resources, Peru's position in global value chains, innovation and use of technology, infrastructure and logistics, and the overall business environment.

Commodities dominate Peru's international trade and foreign investment profile

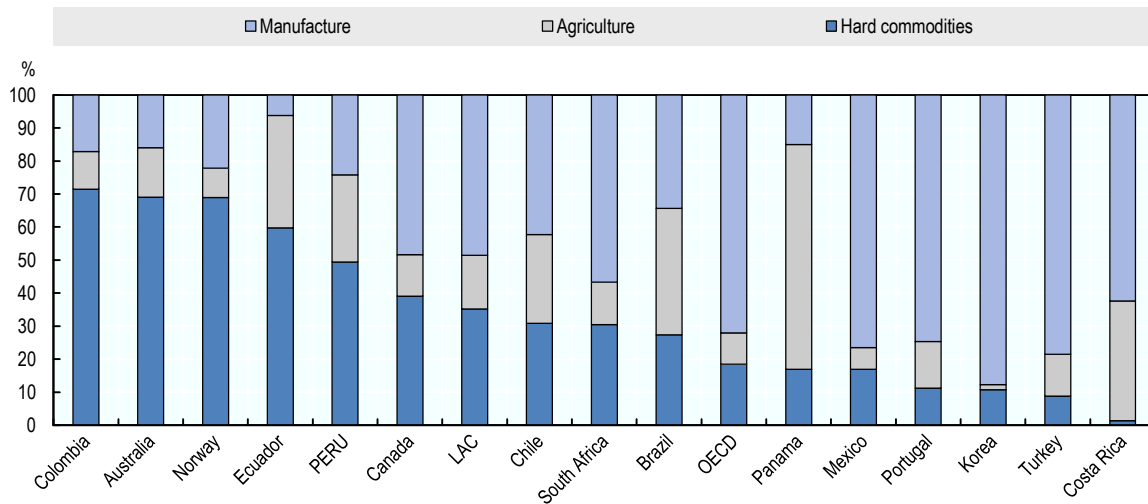
The mining sector, characterised by high labour productivity yet little job creation (see above), plays a crucial role in Peru's balance of payments. First, commodities are a key component of Peru's export trade balance. Second, the contribution of raw materials to the capital account has been increasing in recent years through foreign direct investment. This section studies these two aspects of the Peruvian economy and compares it with OECD and benchmark countries.

Peru remains reliant on its diverse natural resources

Despite a recent decline in their significance, commodities accounted for close to 50% of total export revenues in 2014, notably higher than their share of GDP (close to


12%). The trade balance has benefitted from rising commodity prices, increased production of key mineral resources and widespread promotion of trade openness and bilateral trade agreements. Although Peru exports a diverse range of commodities, copper and gold accounted for more than 60% of its natural resources exports in 2014. Copper and gold represented 17% and 14% of total exports, respectively.⁴ In contrast, the manufacturing and agriculture sectors represented 24% and 26% of the total exports in the same year, respectively (Figure 3.5; BCRP, 2015). Over the past decade, the mining industry has grown faster than other industries, at 21% annual growth at nominal prices versus 19% for other industries combined. While Peru's share of commodities is higher than the OECD and Latin American averages, other countries remain more reliant on natural resources (Figure 3.5). These include OECD countries such as Australia and Norway; and Latin American countries, such as Colombia and Ecuador.

Figure 3.5. Composition of exports in Peru and benchmark countries, 2014



Note: 2013 data for Australia, Colombia, Ecuador, Korea, and Mexico.

Source: WITS / UN Comtrade, Trade Indicators (database) and Central Bank of Peru (Banco de la Reserva del Perú), <http://www.bcrp.gob.pe/estadisticas.html>

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With its abundant and diverse supplies of natural resources, Peru stands among the top global producers of minerals such as copper, lead, silver, tin and zinc (Table 3.1). Furthermore, Peru contains a significant share of the world's reserves for certain commodities, such as silver, tellurium, cadmium, selenium and copper (Figure 3.6). Peru's primary mineral production is competitive due to the quality of its resources (e.g. good mineral grades and its wealth of multiple metals) and the low cost of production inputs. Labour and energy costs account for 15-25% of the total costs of production (McKinsey, 2013).

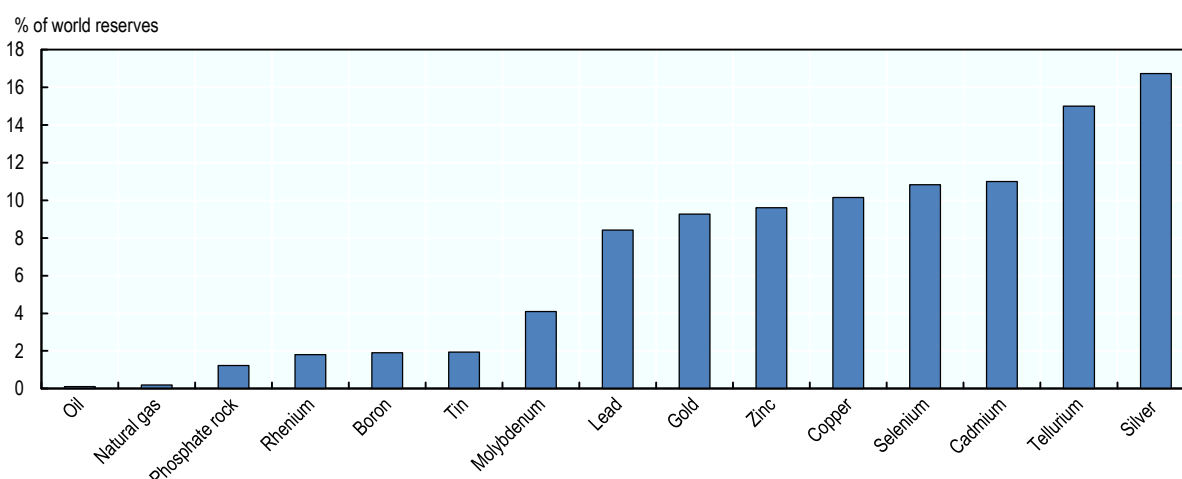
International experience shows that countries which have managed their raw material resources appropriately have seen positive benefits. The experience of OECD countries in particular shows that commodities can be a crucial source of resources for increasing the productivity and competitiveness of their economies (OECD, 2009). Proper management of the extraction process and the revenues raised from commodities can add value for the country's productivity and total revenues. In particular, to take advantage of abundant natural resources, it is fundamental to address social and environmental challenges in Peru's mining industry (Box 3.1).

Table 3.1. Peru's position in mineral production, 2013-14


Mineral	2013		2014	
	World	Latin America	World	Latin America
Tin	3	1	3	1
Zinc	3	1	3	1
Copper	3	2	3	2
Silver	3	2	3	2
Lead	4	1	4	1
Molybdenum	4	2	4	2
Gold	5	1	7	1

Source: Ministry of Energy and Mining (*Ministerio de Energía y Minas*), Dirección General de Minería.

Figure 3.6. Peru's natural resource reserves, 2013



Source: USGS (2014), *Mineral Commodity Summaries 2014*, USGS (U.S. Geological Survey), <http://minerals.usgs.gov/minerals/pubs/mcs/2014/mcs2014.pdf>; BP (2014), *BP Statistical Review of World Energy June 2014*, 63rd Edition, BP, www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf

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In recent years the share of commodities in Peru's total exports has declined. On average, commodities made up close to 55% of all exports over the past decade, while agriculture made up close to 20%, lower than the 26% share registered in 2014. While agriculture exports have increased in real terms by more than 60% in the past decade, commodities and manufacturing exports have increased by only 25% and 12%, respectively. In particular, the shift towards the agriculture sector has increased in the past five years.

Peru's dependence on exports is relatively low and declining. In 2014, total exports accounted for close to 25% of GDP, down from 30.5% in 2007. This is below the OECD average (53.7%) as well as benchmark countries with similar export compositions, such as Norway (38.9%) and Ecuador (29.2%).

Box 3.1. Social and environmental challenges in Peru's mining industry

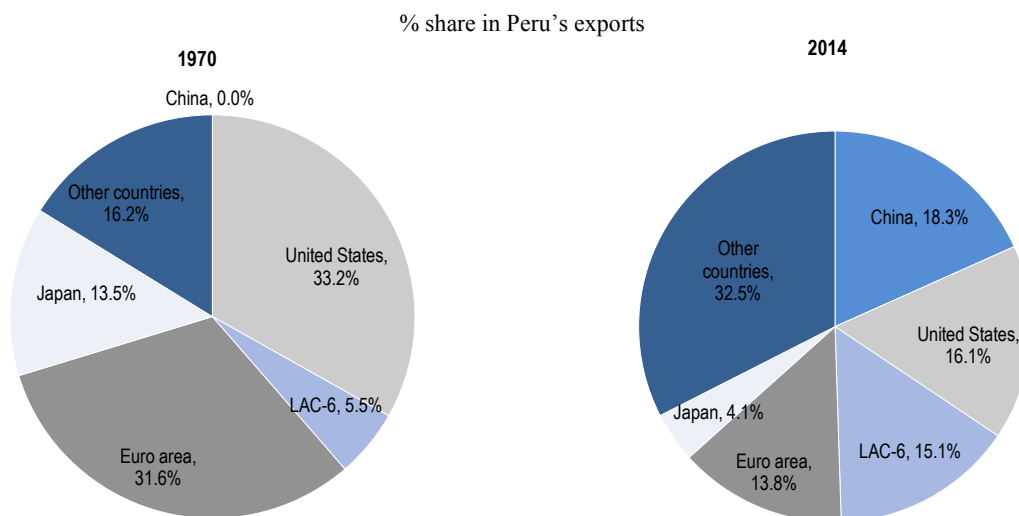
Peru is the world's seventh largest mining producer, and the mining industry has become one of the primary generators of national wealth (PwC, 2013). As discussed in Chapter 5, aside from its greater vulnerability to fluctuating commodity prices, concentrated production in this sector also presents severe challenges to sustainability. These include long-term environmental impacts, lack of job creation capacity, weak links to local economic sectors and rising social conflicts (SECO, 2013). Overcoming growing opposition to mining will require a continuous relationship between communities and mining, with the industry making greater contributions at local, regional and national levels. This may be achieved by establishing and advancing environmental standards as well as adopting technological improvements to production to monitor and reduce adverse effects while offering the greatest opportunity for development progress. The Operational Framework on Public-Private Collaboration for Resource-based Value Creation being developed as part of the OECD Policy Dialogue on Natural Resource-Based Development (included in the OECD Country Programme with Peru) is a reference to help Peru address these challenges.

Furthermore, social conflicts and escalating opposition to mining in the region threaten to delay Peru's announced investment portfolio (see Chapter 5). Among the most widely publicised and controversial of these projects are Conga (a USD 4.8 billion investment), halted in 2011 following widespread protest; Tia Maria (USD 930 million investment), stalled after protests in 2011 turned violent over fears of pollution in nearby agricultural valleys; and the Santa Ana Project (USD 71 million investment), delayed by communities fighting to protect local water supplies from pollution. Depending on the outcome, project suspensions and cancellations could delay close to 40% of the mining investment announced over the coming years (McKinsey, 2013). Long delays could undermine Peru's potential to benefit from its abundant natural resources.

The change in the structure of Peruvian exports and the increasing role of China in the global economy has changed Peru's export destinations dramatically (Figure 3.7). In 2014, more than 18% of Peru's total exports went to China (about 4% of GDP), of which 81% were metals. China takes more than one-third of Peru's copper exports, 64% of its gold exports and 22% of its other mineral commodities. However, China's increasing role in Peruvian exports poses challenges and opportunities for economic diversification. In the future, a commodity-based model will not necessarily be beneficial or sustainable given the changes of China's import composition induced by its rebalancing process. Peru will need to anticipate these changes and adapt its commodity-concentrated export profile (OECD/CAF/ECLAC, 2015). The picture has also changed for imports. In 2004 the United States accounted for more than 50% of Peruvian imports and China less than 6%. A decade later both countries provide nearly 30% of Peru's total imports.⁵

Mineral exports have also been one of the key sources of recent growth in total Foreign Direct Investment (FDI) inflows to Peru. FDI averaged more than 5% of GDP over the period 2010-13, and averaged close to 3.5% of GDP over the last decade (Figure 3.8, Panel A). From 2000 to 2013, the share of total FDI to the mining and petroleum industry combined increased by more than 12 percentage points, reaching 27% in 2013, the largest share of FDI for any sector (Figure 3.8, Panel B). Peru's efforts to boost production and its continual announcements of large-scale mining projects have fuelled expectations and lead to greater levels of investment in recent years. Many of Peru's largest investors, such as the United Kingdom and the United States, invest primarily in mining and petroleum. However Spain, Peru's primary investor, concentrates its investment in communications, while the Netherlands and Chile invest more in Peru's financial industry.

Figure 3.7. Peru’s main export destination, 2014 vs. 1970



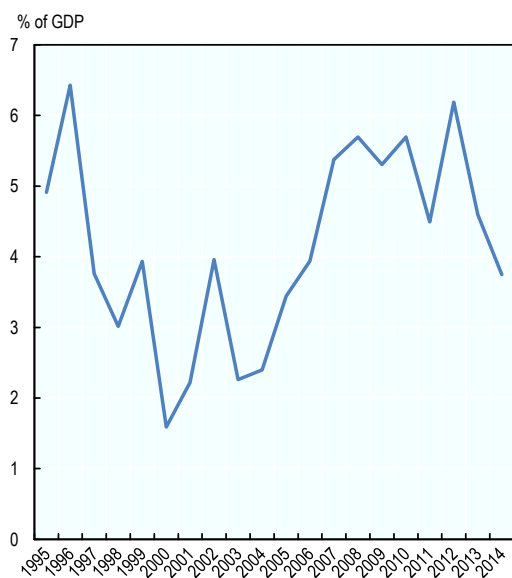
Note: LAC-6 comprises Argentina, Brazil, Chile, Colombia, Mexico and Venezuela.

Source: Direction of Trade Statistics (International Monetary Fund – IMF), accessed on 15 June 2015. <http://data.imf.org/?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85>

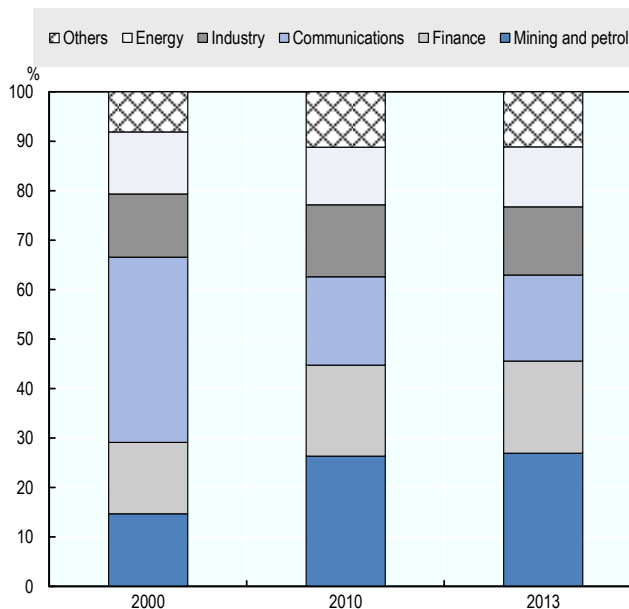
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Figure 3.8. Foreign direct investment in Peru

Panel A. Net FDI inflows (% of GDP)



Panel B. FDI inflows and sectoral composition (2000, 2010 and 2013)



Note: The classification “Others” in Panel B includes retail, services, tourism, construction, agriculture, transport, and housing sectors.

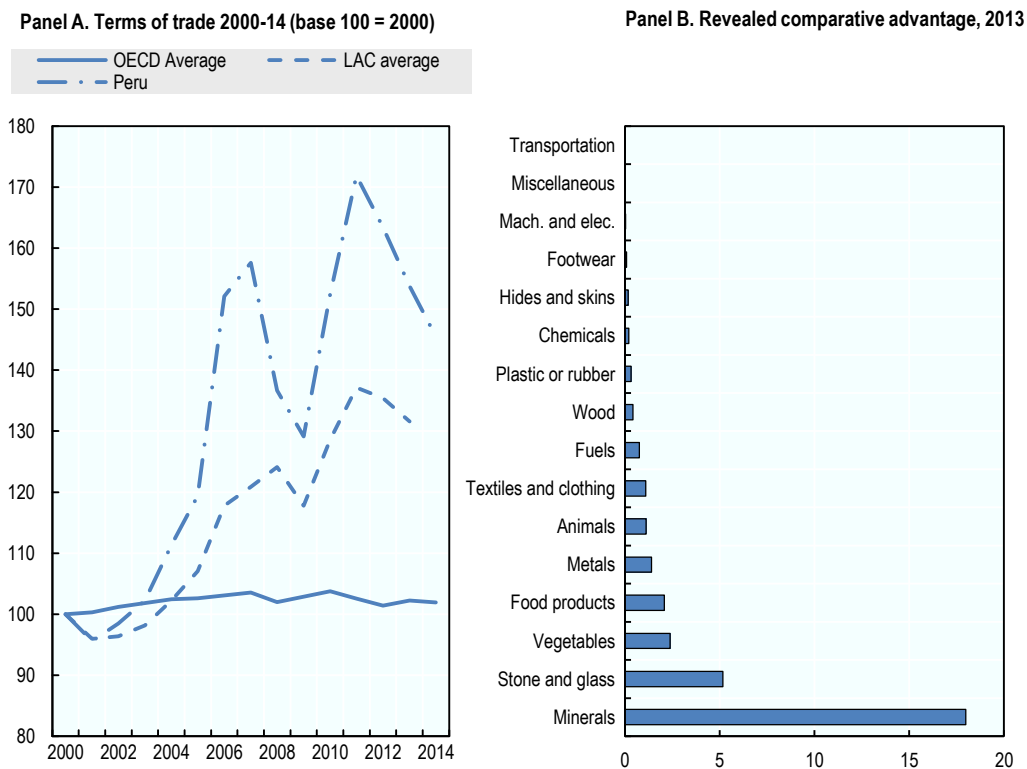
Source: ProInversión (2015), *Estadísticas Generales (database)*, ProInversión (Agencia de Promoción Privada – Perú), Accessed on 1 August 2015, www.proinversion.gob.pe.

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Dependence on primary exports leaves Peru vulnerable to external shocks


The economic cycle has long been closely linked to the export sector. Its narrow export base means earnings are prone to fluctuate with international price fluctuations and demand. Such fluctuations, especially in the case of commodities, can be very large. In the case of metals, the difference between the maximum and minimum annual average prices was more than 300% in the period 2000-14. Macroeconomic instability and negative exogenous shocks from international prices in Peru's primary export sectors triggered an economic collapse from the beginning of the 1980s to the mid-1990s. This left Peru in a period of stagnation until the macroeconomic framework improved and international prices in mining and fuels increased in the early 1990s (Hausmann and Klinger, 2008). However, Peru underwent very little structural transformation in response to this export collapse.

Figure 3.9. Trade prices and revealed comparative advantages in Peru



Notes: Panel B: Revealed comparative advantage (RCA) is an index based on Balassa (1977) that measures the ratio between the contribution a product makes to the exports of a country and the same product's contribution to world trade. See OECD/CAF/ECLAC (2013), *Latin American Economic Outlook 2014, Logistics and Competitiveness for Development*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/leo-2014-en> for more details of this indicator.

Source: Panel A: OECD Terms of Trade Indicators (database) <https://data.oecd.org/trade/terms-of-trade.htm>; BCRP (2015), *Annual Series* database, BCRP (Banco Central de Reserva del Peru), <https://estadisticas.bcrp.gob.pe/estadisticas/series/anales>; and UNCTAD (database). Panel B: OECD calculations based on export data from WITS / UN Comtrade.

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With favourable terms of trade, complemented by increases in mineral production, Peru achieved persistent trade surpluses from 2002 to 2012. In particular, Peru's favourable terms of trade in recent years can be largely attributed to the boom in commodity prices. Peru's terms of trade are above the average for OECD economies and Latin America and Caribbean (LAC) countries (Figure 3.9, Panel A). However, benchmark countries such as Australia, Chile and Norway enjoy more favourable terms of trade.

Peru continues to specialise in commodity production because of its comparative advantage in these sectors. A country is considered to have a “revealed comparative advantage” in exporting a product if that product's share in the country's exports is higher than the product's overall share in world trade. During a period of favourable commodity prices, growing trade relations and robust international demand, Peru experienced gains from increased production and concentration in sectors where its comparative advantage persisted. In particular, Peru increased its share of world trade in high-growth sectors such as minerals, stone and glass, food, animal and vegetable products, metals, and textiles and clothing (Figure 3.9, Panel B).

The recent downturn in Peru's terms of trade performance may be attributed to the latest decline in commodity prices (Figure 3.9, Panel A). Peru has experienced declining terms of trade since 2012 and trade deficits since 2013. This has been due, in part, to a decrease in the demand for commodities from China, reinforcing the vulnerability of Peru's dependence on raw materials. In 2014, 95% of Peru's products exported to China were classified as minerals, metals or food products. From 2011 to 2014, the prices of metals fell by more than 25%. Copper, Peru's main source of export income, fell by 22% over the same period (see Chapter 4). Chinese demand for copper, which constitutes 40% of global consumption, has plummeted in the recent years and, in 2014, Chinese demand for gold also fell by 25%.

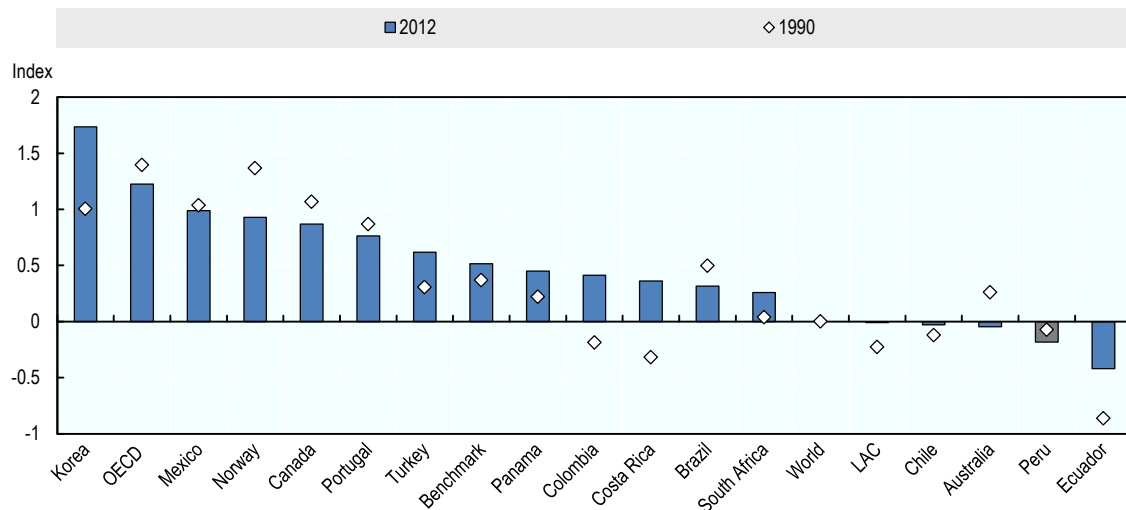
Peru's exports can be diversified by moving up global value chains

Peru's concentration on commodities has not contributed to a shift toward more sophisticated products involving manufacturing and other knowledge-intensive sectors. Over the past decade, Peru's technology exports have remained very low in comparison with most of the benchmark countries. In particular, in 2013, only 3% of Peru's exports were medium-technology products and 9% low-technology ones. While Peru has achieved considerable growth in production volumes of non-traditional exports (agriculture, fishing, chemical, manufacturing and textile goods⁶) – 2.6 times greater today than ten years ago – the majority of this increase is accounted for by products with low levels of sophistication (Ministerio de la Producción, 2015). On the other hand, Peru's imports include industrial machinery and equipment, crude and refined oil, and transportation and construction vehicles. This suggests that Peru is dependent on imports for manufactured goods and high-technology products.

The sophistication of a country's exports and the complexity of its production structure are both important determinants of long-term growth (Hausmann, Hwang and Rodrik, 2007; Hidalgo et al., 2007; Rodrik, 2008; Felipe et al., 2012). Yet the complexity of Peru's production structure is lower than most benchmark countries. The economic


complexity indicator (ECI) ranks how diversified and complex a country's export basket is. It combines measures of a country's diversity (how many products a country produces) and the ubiquity of those products (the number of countries able to produce those products). In 2012, Peru ranked 80th out of 144 countries for economic complexity and, in contrast to most of the Latin American economies, its ECI has worsened over the past two decades (Figure 3.10).

Figure 3.10. **Economic complexity indicator (ECI), 1990-2012**



Note: ECI ranks how diversified and complex a country's export basket is. The most complex products are sophisticated chemicals and machinery, whereas the world's least complex products are raw materials or simple agricultural products.

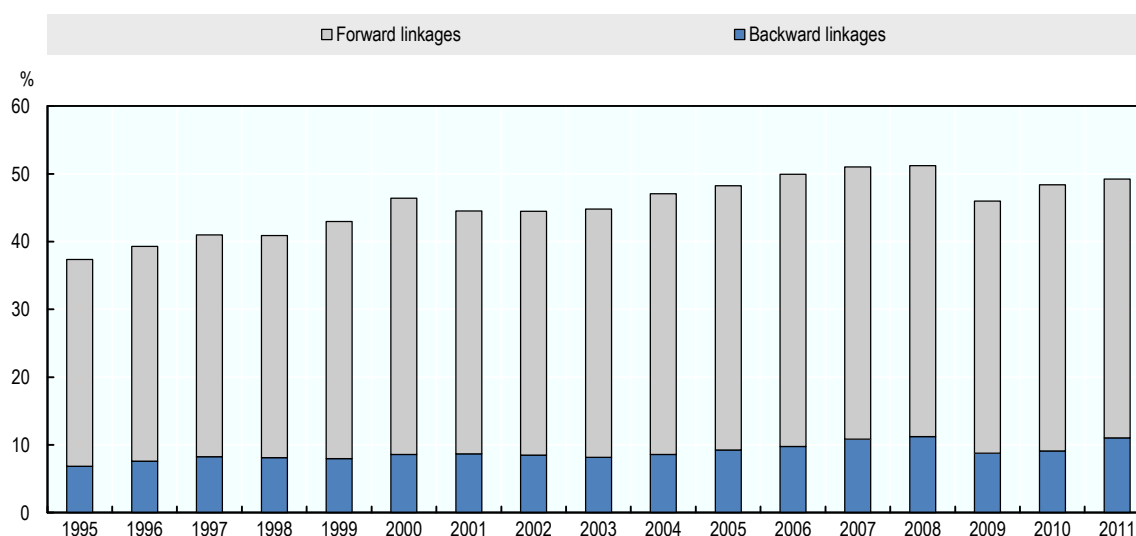
Source: Hausmann, R. et al. (2012), *The Atlas of Economic Complexity*, Puritan Press, Cambridge, MA; Simoes, A.J.G. and C.A. Hidalgo (2012), "The Economic Complexity Observatory: An analytical tool for understanding the dynamics of economic development", Workshop at the Twenty-Fifth AAAI Conference on Artificial Intelligence, August, 2011, Cambridge, MA.

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A key challenge to enhance value-added production in a country's existing comparative advantage is to identify segments that have not yet been exploited within these industries. Because Peru specialises in primary products, it largely participates in the lower end of supply chains, providing inputs to other countries' production processes (forward linkages), rather than receiving production inputs from abroad (backward linkages). Consequently, Peru participates more in global supply chains as a provider of value-added than as a recipient, and is among the top providers of domestic value-added used in foreign exports among LAC countries (Figure 3.11; Blyde, 2014).


In the context of the OECD Country Programme with Peru, the inclusion of Peru in the OECD–WTO Trade in Value-Added (TiVA) is fundamental to providing further analysis and insights into Peru's commercial relations. The OECD Initiative on Global Value Chains, Production Transformation and Development is another OECD platform that could help Peru to promote development through greater participation in and upgrading of global value chains.

Figure 3.11. Share of foreign value-added and forward linkages in total exports, 1995-2011



Notes: Computed shares of forward linkages (i.e. domestic value-added exports of a country which goes into exports of other countries) and backward linkages (foreign value added to gross exports of a country) by dividing over total value of real exports.

Source: EORA (database), <http://worldmrio.com/>.

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Peru's growing market openness offers an opportunity to diversify the economy. Over the last decade, Peru has expanded the use of policy instruments in the areas of unilateral tariff liberalisation, international trade negotiations, and internal competitiveness and development policies related to foreign trade. This openness of the economy, bolstered by a number of free trade agreements (FTAs), has contributed to increasing both labour productivity and total factor productivity among firms involved in international trade (Céspedes et al., 2014b). Peru holds free trade agreements with nearly all major trading partners including the United States, China, European Union and European Free Trade Association (EFTA), MERCOSUR (the Southern Common Market) and, more recently, the Pacific Alliance. Today, nearly 95% of Peru's exports are covered by free trade agreements. These agreements and improved market openness allow Peru to increase the number of exported products and exporting companies, especially of non-traditional products (agriculture, fishing, chemical, manufacturing, and textile goods). Though traditional products still account for 78% of total exports, Peru benefits from the ability to diversify its range of non-traditional goods. For instance, within the first three years of establishing an FTA with the United States, Peru produced and shipped an additional 488 non-traditional products to the United States, and within two years of the established FTA with China, Peru exported 204 new non-traditional products to China (EY, 2015). As highlighted below, however, high transport costs and low investment in innovation are key barriers to taking greater advantage of these FTAs.

Peru has long-term strategies to diversify exports and promote value-added through the National Strategic Export Plan (PENX). The plan was first implemented from 2003-13 as an instrument to co-ordinate public and private-sector efforts to ensure the expansion and sustainability of Peru's exports. It focused on advancing and diversifying non-traditional sectors that generate greater added value and employment. Ten priority productive sectors were identified: agriculture, crafts, leathers, forestry-timber, jewellery,

metalwork, fisheries and aquaculture, chemicals, textiles, and services (MINCETUR, 2015). During this time Peru increased non-traditional exports by 18% annually, above the national average.

Peru recently announced a revised ten-year export plan to diversify exports, promote private and public sector co-ordination, and develop its position as a regional exporter of products and services. The renewed plan, PENX 2025, was announced by the Ministry of Foreign Trade and Tourism in March 2015. It proposes actions towards sustainable medium and long-term progress through enhancing productive capacity in the coming years. This will need to address concerns over aggregate productivity by moving to specialise in sectors that produce more value-added and reduce productivity gaps across regions, sectors and companies within the same industry (Ministerio de la Producción, 2015). The plan focuses on the development of technology-driven service sectors such as software, electronics, engineering consultancy and franchises to enhance sophistication and productivity. It also emphasises the need to promote greater internationalisation of Peruvian companies to better integrate with the global economy and adapt to changing market dynamics. Successful implementation over the next decade may see Peru's export industries become a sustainable driver for greater inclusive growth. This revised plan places further emphasis on aligning Peruvian companies and production goals with medium and long-term government objectives necessary for Peru's social and economic progress. To do so, key agenda items, such as the advancement of skills and education (Chapter 2), innovation, and infrastructure (see below), must be complemented by promoting knowledge-intensive sectors and diversifying production across all regions in Peru.

Limited innovation outcomes are holding Peru back

Government and businesses are investing little in research and development

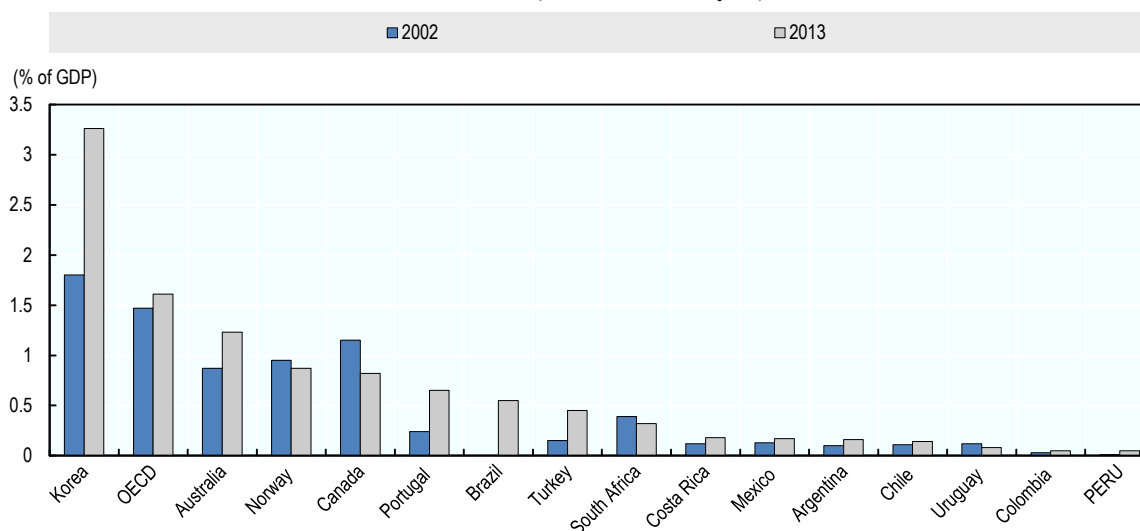
Investment in human capital and knowledge lags well behind most Latin American countries. While Peru's total budget for science and technology was USD 17.4 million in 2013, Colombia's was USD 210 million and Chile's was USD 546 million (World Bank, 2014b). In 2014, Peru ranked 117th out of 144 countries for the quality of its scientific research institutions, 109th for university-industry collaboration in research and development, 119th for company spending on research and development, and 100th for total capacity for innovation. These rankings mark Peru as one of the countries with the greatest challenges for innovation in Latin America (World Economic Forum, 2014). Peru's business expenditure on research and development remains significantly below the average for OECD countries and many other countries in Latin America (Figure 3.12). Greenfield foreign investment in research and development, engineering and design in Peru makes up less than 0.5% of total greenfield foreign investment. By comparison, in OECD and Latin America these ratios are, on average, close to 4% and 2%, respectively (OECD/CAF/ECLAC, 2014). Attracting further investment in activities linked to innovation remains a significant challenge for Peru.

Low levels of investment in research and development are hindering innovation in Peru. A key measure of the output of innovation is the number of patents. Peru's patent applications per million inhabitants are below all of the benchmark countries, as well as the Latin America and Caribbean (LAC) average (Figure 3.13). While the patent applications have increased in recent years, from 0.23 per million inhabitants in 2008-09 to 0.28 per million inhabitants in 2010-11, this number remains well below OECD

average. OECD countries receive, on average, more than 100 patent applications per million members of the population.

Figure 3.12. **Business expenditure on research and development**

2002 and 2013 (or latest available year)



Note: Latin American economies (excluding Argentina, Brazil, Chile, and Mexico): 2012. Argentina and Chile: 2013. South Africa: 2012. Australia and Mexico: 2011. Brazil: 2010.

Source: OECD (2015), *Main Science and Technology Indicators*, (Database), www.oecd.org/sti/msti; and OECD calculations based on Red de Indicadores de Ciencia y Tecnología -Iberoamericana e Interamericana- (RICYT), accessed on 1 August 2015.


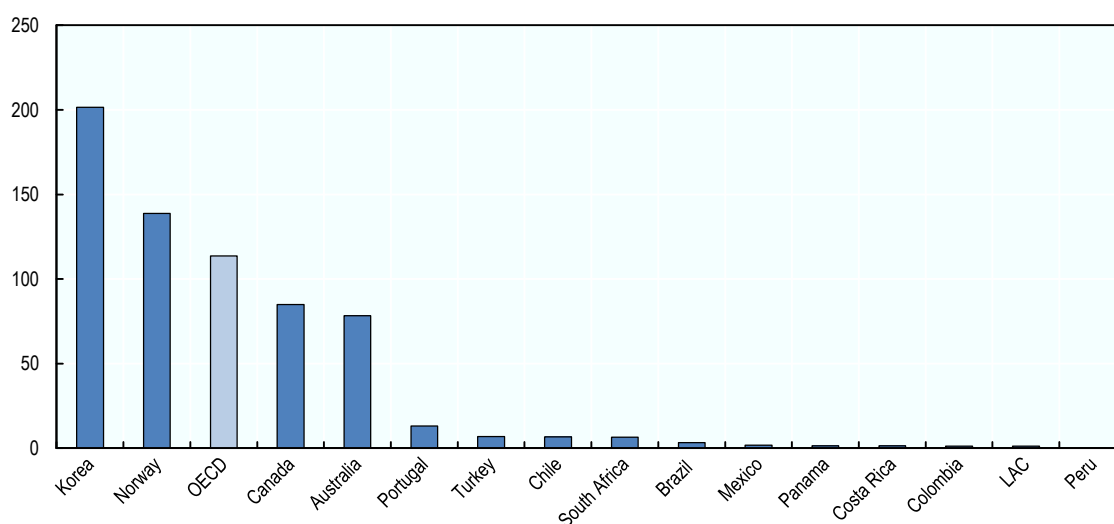
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Figure 3.13. **Patent applications per million people**

Patent Cooperation Treaty, 2010-11 average



Note: Data based on 2010-11 averages. No values available for Ecuador from given source thus excluded from LAC and benchmark countries.

Source: OECD Indicators on Patents (database), OECD, www.oecd.org/sti/inno/oecdpatentdatabases.htm.

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Furthermore, in comparison with benchmark and OECD countries, Peru remains well below average for intellectual property imports and exports, revealing low levels of use of and contribution to global activity in research and development. Intellectual property exports measure the amount paid by foreigners to use intellectual property owned by domestic residents. Peru's exports of intellectual property have increased in recent years, most notably from USD 1.5 million in 2009 to USD 11.5 million in 2012. However, exports of intellectual property are much higher from other LAC countries – such as Chile (USD 75.4 million), Colombia (USD 89.8 million), and Mexico (USD 95.6 million) – suggesting more advanced activity in research and development (IMF, 2012). Peru is also a relatively small importer of intellectual property. Though these imports have increased, from USD 152 million in 2009 to USD 229 million in 2012, other Latin American countries are again much more active users of intellectual property. Low levels of intellectual property imports are a likely result of both Peru's export composition (see above) and limited returns on usage within the country's current productive capacities and business climate.

Similar to other Latin American countries, this significant innovation gap is largely explained by the country's framework conditions, which do not make innovation a profitable form of business investment. There are persistent deterrents to innovation, including the market structure to which firms are exposed, firms' position in the value chain, the scarcity of qualified human resources, and the long-term inability of firms to accumulate in-house innovation capabilities (OECD/CAF/ECLAC, 2014).

Peru has established institutions for the purpose of attracting private investment in research and development and innovation and to develop science, technology and innovation policies. For instance, the National Science and Technology Council (CONCYTEC) has introduced a series of instruments to reduce bottlenecks in the innovation system and increase business research and development. These include a 30% tax deduction on activities and projects related to science, technology and innovation since 2013, and a fund to finance credit guarantees or risk-sharing mechanisms for businesses through the financial system. CONCYTEC has increased its budget from USD 5 million in 2012 to approximately USD 43 million in 2014. In addition, the Ministry of Production (PRODUCE) promotes industrial development and business innovation. PRODUCE manages two key policy instruments: the Research and Development Fund for Competitiveness (FIDECOM/*Innovate Perú*), a competitive fund to co-finance projects aimed at promoting research and development for innovation; and Technological Innovation Centres. Furthermore, the Ministry of Education is responsible for generating resources to develop the advanced human capital necessary for research and development and innovation activities. Finally, the Presidency of the Council of Ministers is in charge of some innovation projects and instruments, including the National Institute for the Defence of Competition and Protection of Intellectual Property (INDECOPI), and the Fund for Innovation, Science and Technology (FINCyT) (OECD, 2013a).

Policy institutes provide a means to prioritise start-ups and adapt national and regional business environments to foster innovation projects. As with many other countries in the region, start-ups are gaining momentum in Peru and provide fresh opportunity for the country to exploit newly productive sectors. As part of a renewed interest in innovation, the Peruvian government is seeking to develop greater support for start-ups, cultivate a more competitive economy, diversify production and unlock future growth potential. Both PRODUCE and the Ministry of Labour and Employment Promotion have revised their policy mix to promote start-ups (OECD, 2013a).

A number of programmes supporting start-ups have been launched in recent years. Startup Peru, introduced by PRODUCE in late 2012, seeks to offer integrated support to new entrepreneurs, issuing calls for technology start-ups to apply for seed capital and business training. In addition, the Ministry of Labour and Employment Promotion promotes the programme *Vamos Perú*, which provides resources to cover the training costs of high-school graduates who are either temporarily employed or at risk of unemployment. These programmes are often partnered with private initiatives such as capacity building through universities and training institutes. Firms that have already been in business for at least one year can obtain support from two programmes: FINCyT's Innovative Projects in Individual Enterprises (*Proyectos de Innovación en Empresas Individuales*); and Small Productive Innovation Projects (*Proyectos Menores de Innovación Productiva*) run by FIDECOM/Innovate Perú.

In order to consolidate these different programmes and policies, the government increased in recent years its funds for investing in research and development and new, innovative firms. The *Fondo Marco para la Innovación, Ciencia y Tecnología* (FOMITEC) was created in 2013 to bring fresh resources to Startup Peru and CONCYTEC. In particular, FOMITEC contributes to the creation of new technological and innovative firms (in co-ordination with FINCyT), and innovation mechanisms in the areas of health, agriculture and environment. In addition, this fund promotes the financing of new researchers in information and communication technology (ICT), and the creation of new research centres helping to boost productivity in Peru.

Consolidating existing initiatives and expanding these programmes are direct methods to provide integrated support for start-ups and innovation systems. One of the main objectives of FOMITEC is precisely to facilitate capital for new firms. Furthermore, the government recognises the need to target policy tools further to improve financing, business services, and entrepreneurial training to encourage start-ups.

A crucial challenge for Peru will be to adopt a more proactive role in fostering innovation to develop new comparative advantages. In addition to expanding scientific and technological capacity, government intervention must bolster demand for innovation, particularly among the business sector, to enhance productive dynamism in Peru (Rodrik, 2004; OECD, 2011). Developed countries such as Australia, Canada and Norway and emerging economies such as Brazil and Chile possess natural resource endowments comparable to Peru and have higher levels of public and private investment in science, technology and innovation to boost competitiveness through diversification. Peru has made progress to increase non-traditional exports in recent years thanks to the PENX. However, future plans must continue to promote institutional and policy reforms to make better use of new sources of growth.

Peru recognises the need to promote knowledge and innovation as a tool for future productivity gains, resource management, and inclusive growth. One of the primary objectives of Peru's 2002 National Accord (*Acuerdo Nacional*) is the development of science and technology as a means to use advanced knowledge, develop human resources, improve the management of natural resources and increase the competitiveness of Peruvian companies.⁷ The current government has established a number of national strategies aligned with the National Accord, which Peru will target until 2016. These priorities include improving the quality and accessibility of higher education, the greater use of value and production chains to exploit comparative advantages, and more persistent development of technical assistance, market information, and production infrastructure. A number of wide-reaching national programmes have been recently

introduced to complement this effort, including the National Plan for Productive Diversification, developed by the Ministry of Production.

Peru has shown notable ambition to promote science, technology and innovation in recent years. The effectiveness of any plan to increase science, technology and innovation will depend on the development of political, scientific, technological and financial subsystems, and their capacity to collaborate so as to create, distribute and use scientific and technical knowledge (UNCTAD, 2013). Innovation and greater productive competitiveness can be promoted both through developing human capacity within individual companies and creating and maintaining favourable environments for innovation. Peru's ability to advance innovation within the business sector will be a key determinant of its level of productivity and competitiveness in the coming years.

Infrastructure gaps are a barrier to inclusive growth

Greater and more strategic investment in infrastructure is another key priority for the Peruvian authorities. The development of infrastructure is one of the six strategic axes in Peru's development plan "*Plan Bicentenario: El Perú Hacia el 2021*". This plan, defined by the central planning agency, CEPLAN, sets out the roadmap and goals for 2021, when Peru will celebrate the bicentenary of its independence. Improved infrastructure is identified as a key element in reducing inequality in resources and capabilities between Lima and the regions and among the regions themselves. Such inequality leads to structural difficulties in reducing poverty, achieving adequate living standards, attracting investment and developing high-tech driven productive activities (CEPLAN, 2011).

Bringing Peru's infrastructure up to international levels requires more investment

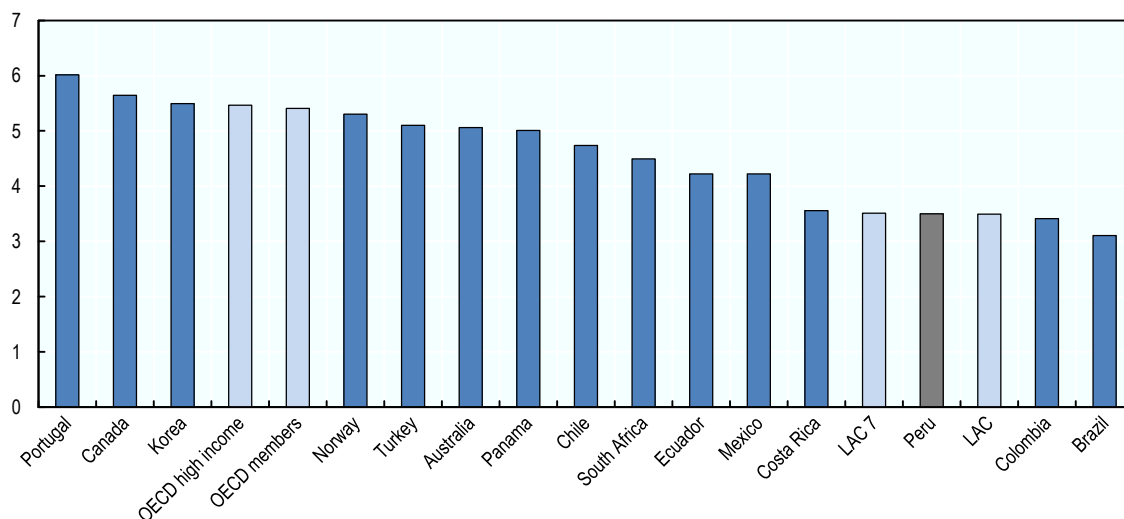
As with most countries in the region, Peru's public service infrastructure is poor compared to other emerging and developed economies. The investment required between 2012 and 2021 to close Peru's infrastructure gap has been assessed at USD 87 975 million, 33% of the country's projected GDP over the same period (AFIN, 2012). The energy sector has the highest investment needs, accounting for 37.5% of the total infrastructure gap. This is explained by a higher-than-expected increase in the demand for electricity. The second biggest investment need is for transport infrastructure (23.8% of the gap) with the main deficit being in roads and railways, requiring investment of about 6% and 3% of current GDP, respectively. Growing transport investment needs are hindering the country's structural development by increasing transport costs and reducing the environmental competitiveness of Peru's firms.

Current investment in infrastructure falls short of the levels needed to ensure Peru's prosperity. Total investment in energy, transport, telecoms and water, including private investment, reached approximately USD 3.7 billion in 2012, almost 2% of GDP. At least half of this was in energy infrastructure. Estimates show that public-private partnership projects accounted for nearly USD 11 billion of investment (around 5% of current GDP) between in 2011 and 2014.⁸

Although improving, the quality of Peru's infrastructure remains well below OECD standards. Between 2006 and 2014, Peru improved its score for infrastructure overall by 36% in the Global Competitiveness Rankings (WEF, 2014). While this was better than the 22% average improvement among Latin American countries, it is similar to the average improvement for upper middle-income economies overall. Despite this progress,


Peru remains low in the Global Competitiveness rankings for infrastructure, moving from 93rd out of 125 countries in 2006 to 105th out of 144 in 2014. The perceived quality of Peru's overall infrastructure in 2014 was similar to other Latin American countries, but considerably below OECD economies (Figure 3.14).

Figure 3.14. Perceived quality of overall infrastructure, 2014



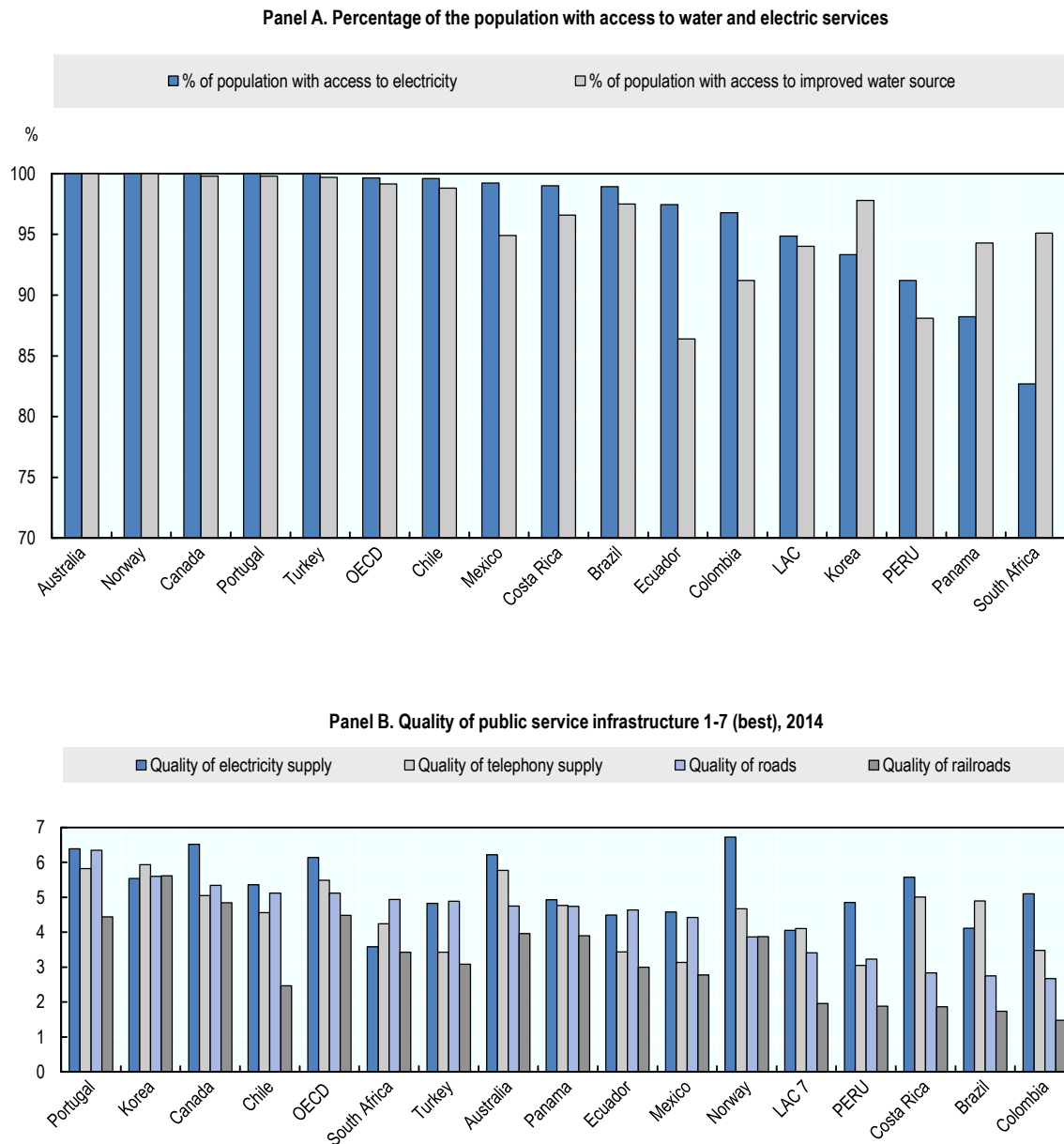
Note: This indicator uses a scale from 1 to 7 where a higher score means a better quality of infrastructure. Latest available data for Ecuador is for 2013

Source: WEF (2014), *The Global Competitiveness Report 2014-2015*, WEF (World Economic Forum), Geneva, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf

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Examining Peru's infrastructure needs in more detail reveals a range of challenges and opportunities. Peru is below OECD and regional standards for access to improved water sources and electricity. Approximately 88% of the population has access to improved water sources, and 91% to electricity (Figure 3.15, Panel A). In terms of quality, Peru lags far behind OECD economies in the quality of its transport, telephony and electrical infrastructure. Apart from the quality of its electricity supply, the country remains inferior to its Latin American peers in all other indicators. Although advances have been made, its capital stock of infrastructure and access to basic services remain deficient (Figure 3.15, Panel B). While greater investment in infrastructure is essential, equal priority should be given to designing policies and mechanisms to remove obstacles to private investment, and to improve the quality of public investment (OECD, 2014). Improving the quantity and quality of investment in infrastructure would have a large range of benefits for the country, including enhancing well-being (Box 3.2).

Figure 3.15. Access to public services and infrastructure quality



Note: In Panel A the data correspond to the latest information available, 2012 for access to electricity and 2010 for access to water. Peru's data are for 2012 in both indicators. In Panel B the indicator for quality of telephony supply corresponds to the weight on the *Electricity and Telephony Infrastructure* component corresponding to mobile telephone subscriptions and fixed telephone lines. This indicator uses a scale from 1 to 7 where a higher score means a better quality. LAC7 refers to the seven largest economies as measured by GDP: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. Both panels contain selected benchmark countries and Peru.

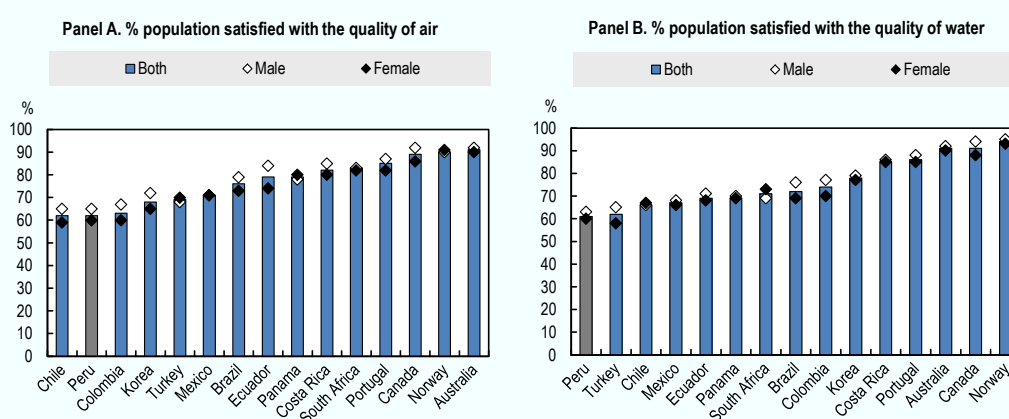
Source: Panel A – World Bank, *World Development Indicators Database* and *Instituto Nacional de Estadística e Informática (INEI)* for Peru's data. Panel B – WEF (2014), *The Global Competitiveness Report 2014-2015*, WEF (World Economic Forum), Geneva, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf.

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Box 3.2. The links between infrastructure, well-being and the environment

A key pillar in the OECD well-being framework is satisfaction with the environment (Chapter 1). Poor infrastructure can leave people feeling dissatisfied with the state of their environment. This is particularly evident in Peru, where only 62% of individuals report that they are satisfied with the quality of the air, and 61% with the quality of the water (Figure 3.16). This places Peru at the bottom of the 15 benchmark countries (along with Chile in terms of air quality). Poor infrastructure and water quality contribute to environmental degradation, becoming a negative externality for Peruvians and a threat to future access to other non-renewable natural resources in the coming years.

Figure 3.16. Satisfaction with the environment, 2014



Source: Gallup Organisation (2015), *Gallup World Monitor* (database).

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Reducing transport costs is key to Peru's competitiveness

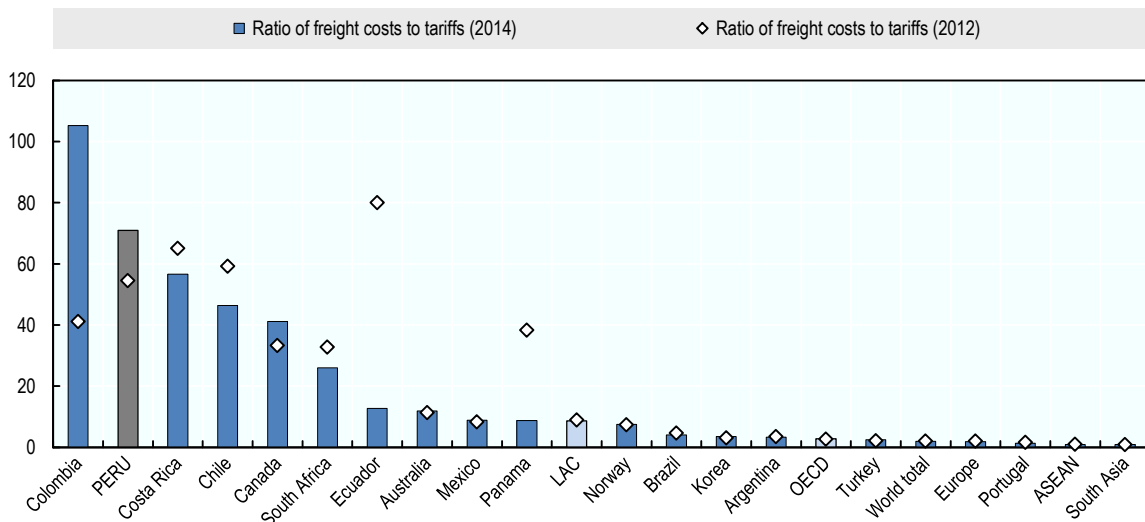
The poor quality of transport infrastructure is a key factor in Peru's high transport costs; bringing down transport costs is key to boosting Peru's competitiveness. Good transport infrastructure can make the economy more efficient and ensure sustainable and high economic growth. The quality of Peru's roads and railroads are low in comparison with OECD economies and even Latin American ones (Figure 3.15, Panel B). In 2014, fewer than 15% of Peru's roads were paved.⁹ In addition, the quality of Peru's port and air transport infrastructure is well below OECD standards (WEF, 2014). Peru does not just need to invest in new transport infrastructure – it must also improve its existing infrastructure. Getting the balance right between investing in new construction and in maintaining existing infrastructure is fundamental, since the overall cost of preservation for a road that is poorly maintained is three to seven times more than for a road that is perfectly maintained (OECD/ECLAC, 2012). In that sense, the national public investment system in Peru contributes to a better assessment of how infrastructure projects are chosen (Carranza et al., 2011).

Peru has traditionally concentrated on road transportation, and the use of other transport modes is low. While the country's rail network stagnated at around 2 000 km between 1999 and 2012, the roads networks increased by nearly 80% over the same period, from 78 127 km to 140 672 km.¹⁰ Despite recent growth, shipping in Peru is largely concentrated in a just a few ports, meaning that high port costs keep the country's

container traffic below its closest competitors, Colombia and Chile (AFIN, 2013). Greater use of rail and water transport could reduce transport costs and environmental degradation while promoting greater international integration.


The progress Peru has made in advancing trade agreements has not been accompanied by a reduction in transportation costs. The ratio of freight costs to tariffs for trade is higher than OECD and benchmark countries, based on costs of trade with the United States (Figure 3.17). In 2014, the ratio for Peru was about 25 times the OECD average. The cost of exporting a standard container of goods from Peru is approximately USD 890, much higher than in Singapore (USD 460) or China (USD 620) (World Bank, 2014a). Reducing transport costs would allow Peru to diversify its economy, as it would significantly lower prices and thus promote the competitiveness of many of its tradable goods.

Figure 3.17. **Ratio of freight costs to tariffs, 2012 and 2014**



Note: Calculations based on imports from the US market. This figure shows the ratio of freight cost to tariffs on imports to the United States (Units). ASEAN is the Association of Southeast Asian Nations. Latin America and the Caribbean (LAC) consists of 20 countries.

Source: Based on data from the US Census Bureau. FT920: U.S. Merchandise Trade.

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High transport costs also in Peru remain an obstacle to promoting regional integration with other countries in the region. Regional trade integration in Latin America is weaker than in other regions. For instance, in 2014, 61% of Europe's exports remained in its region, while only 17% of Latin America's total exports do the same (OECD/CAF/ECLAC, 2015). A 10% reduction in freight costs and tariffs would increase the LAC countries' bilateral imports by 45% and would increase regional imports by 60% (Rodrigue, 2012). The Pacific Alliance offers an excellent opportunity to boost intra-regional trade among LAC countries, but only if accompanied by strategies to significantly reduce transport and logistics costs.

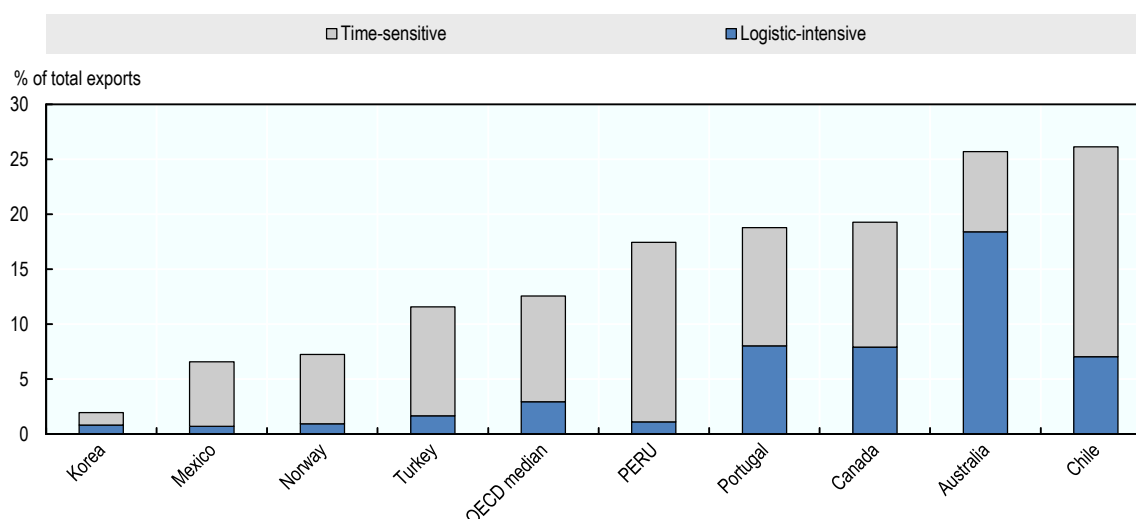
Increasing the efficiency of logistics will boost productivity and trade

Along with hard components such as transport infrastructure, the “soft” components of a country's customs and logistics performance can also create a bottleneck. After

controlling for other variables affecting economic growth, there is a significant link between improved logistics performance on the one hand, and productivity gains and sophistication of exports on the other (OECD/CAF/ECLAC, 2014).


Due to the composition of Peruvian exports, high transport costs have a negative impact on its competitiveness in regional and global markets. “Logistics intensity” refers to the dependence of an economic sector on its logistics performance. Based on logistics costs or time, one can measure the impact of logistics performance on each sector (OECD/CAF/ECLAC, 2013). Peru has a relative high share of logistics-intensive and time-sensitive exports, which account for 17% of all exports, 1.38 times higher than the OECD median (Figure 3.18). If transport costs were reduced, these economic sectors (being highly affected by the efficiency and quality of goods processing) could make a much greater contribution to the economy.

Figure 3.18. **Time-sensitive and logistics-intensive exports, 2012**



Note: Logistic-intensive sectors include mining, forestry and logging, wood manufacturing, paper publishing and printing. Time-sensitive sectors include agriculture, fisheries, food and drink manufacturing and horticulture.

Source: UN COMTRADE Database (accessed on 15 July 2015), <http://comtrade.un.org/db/default.aspx>.

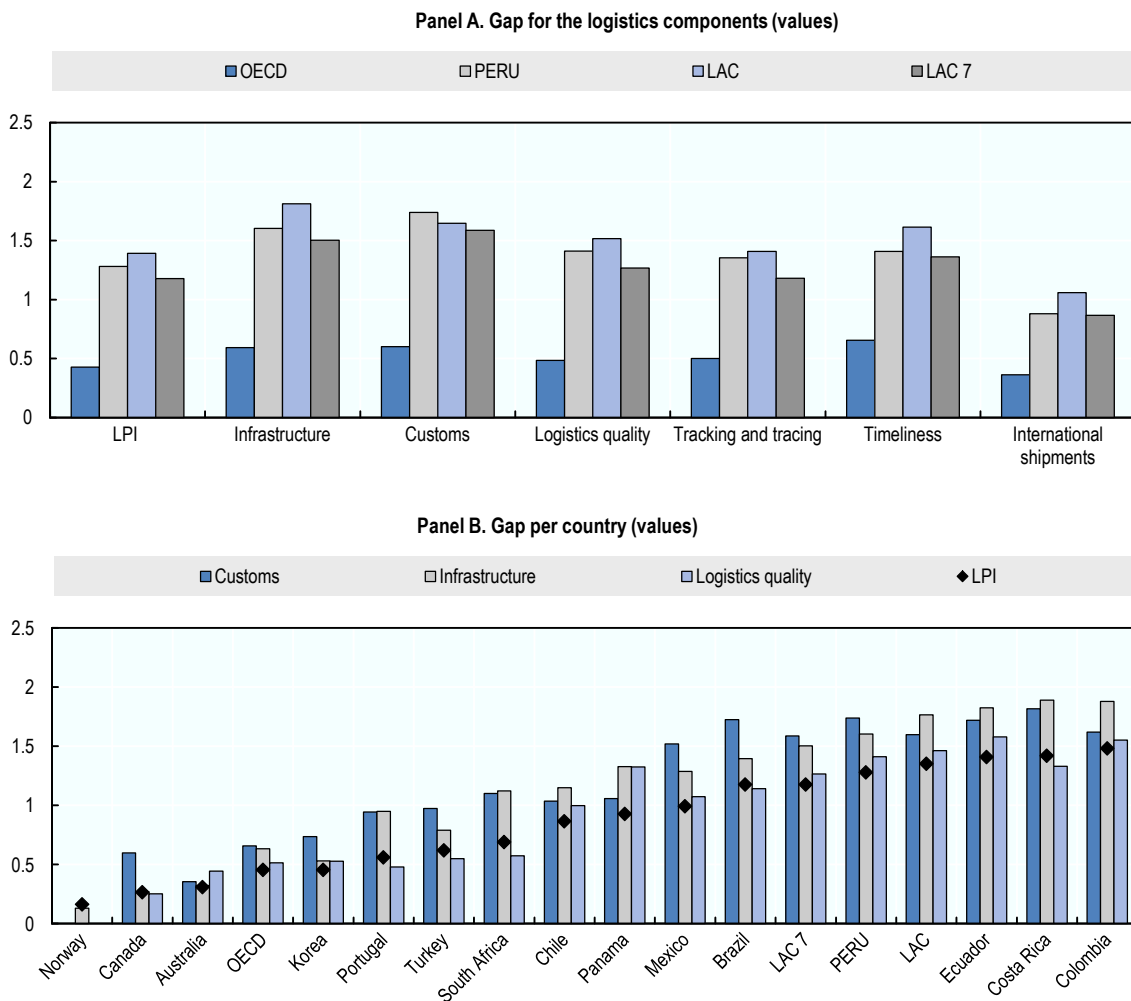
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Logistics costs in Peru account for 29% of GDP, while the average in Latin America is 24% and close to 9% in OECD countries (AFIN, 2013). More efficient logistics performance could therefore considerably improve Peru’s competitiveness. The World Bank’s Logistics Performance Index (LPI) measures logistics across six components, divided into two groups (Arvis et al., 2014). First, the regulatory and institutional components on which public policy has a direct effect: customs, infrastructure and logistics services. Second, the components that measure the performance of the logistics chain: timeliness of shipments, cost of shipments and traceability of consignments. Countries which improve their score by 1 in the LPI (which scores countries between 1 and 5) improve their labour productivity by about 35% on average. This would be the productivity gain Peru would enjoy if it were to achieve the same level of logistics performance as Canada.

Poor logistics performance remains a key challenge in Peru. Figure 3.19, Panel A shows the differences for each of the six LPI categories between the best-performing

OECD country and Peru, Latin America and OECD average. In the case of Peru, the largest gap is in customs, infrastructure and logistics services (Figure 19, Panel A). These are the components in which public policy plays a vital role. Peru performs worse than the OECD average and the seven biggest Latin American economies for all three of these indicators, and in customs its gap is worse than Latin American countries overall. Furthermore, Peru’s overall logistics performance is worse than most of the benchmark countries (Figure 3.19, Panel B). In particular, Peru’s gap is 48% larger than Chile’s, the region’s leading country. The Peruvian gap is also equivalent to three times the gap for OECD countries.

Figure 3.19. Logistics performance gap to the best-performing OECD country, 2014



Note: The Logistics Performance Index (LPI) has a scale of 1 to 5, where 5 represents the best logistics performance. The gap refers to the difference for each logistics component with the best-performing OECD country, which is Germany for the overall LPI, infrastructure and tracking and tracing; Norway for customs and logistics quality; and Luxembourg for international shipments and timeliness. LAC7 refers to the seven largest economies in Latin America and the Caribbean as measured by GDP: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

Source: Based on World Bank data (Logistics Performance Index) 2014, <http://lpi.worldbank.org/>.

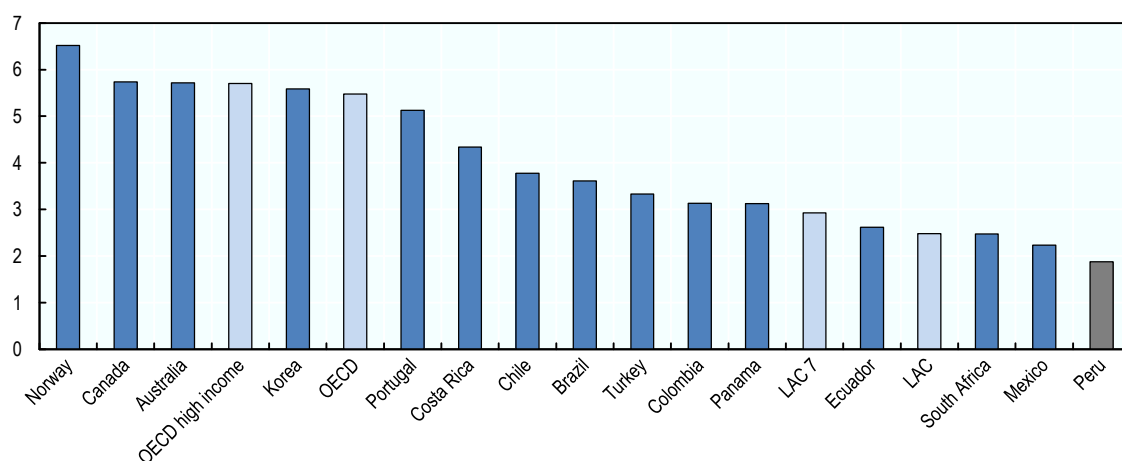
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Trade facilitation – measured as port efficiency, the customs and regulatory environment, and electronic business usage – has a significant impact on trade flows. Evidence suggests that customs clearance delays in Latin America increase transport costs by 4-12% (Guasch and Schwartz, 2008). Peru operates single-window facilities for foreign trade (*Ventanillas Únicas de Comercio Exterior*) as a policy tool to boost trade. In recent years it has streamlined border procedures and improved co-operation with neighbouring and third countries, according to the 2015 OECD Trade Facilitation Indicators which cover the full spectrum of border procedures (Elorza, 2012; OECD, 2015a).

Further efforts to address the bottlenecks in border processes would reduce trade costs and help Peru capitalise on its existing transport infrastructure. Areas where Peru lags behind other Latin American economies include external and internal co-operation among the country's various border agencies, and the simplification and harmonisation of documents (OECD, 2015a). Improving these would boost both trade and productivity in Peru and the country should take advantage of the Trade Facilitation Indicators to guide policy making.


Effective and available ICT can reduce transaction and logistics costs by lowering the cost of accessing information and encouraging efficient use of existing infrastructure. For instance, port gate management using ICT systems to schedule pick-up and delivery could reduce congestion at port terminals. There is a positive correlation between access to ICT and logistics performance after controlling for GDP per capita (OECD/CAF/ECLAC, 2013). As with other Latin American economies, in Peru the availability of the latest technologies and technology absorption by companies are lower than in OECD countries. The use of ICT remains well below the benchmark countries too (Figure 3.20).

Figure 3.20. Use of information and communication technology, 2014



Note: The ICT use component is calculated based on Internet users, fixed broadband Internet subscription, Internet bandwidth and active mobile broadband subscriptions. This indicator uses a scale from 1 to 7 where a higher average score supposes a higher degree of usage. Latest available data for Ecuador is for 2013.

Source: WEF (2014), *The Global Competitiveness Report 2014-2015*, WEF (World Economic Forum), Geneva, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf

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Peru's business environment is improving but challenges remain

Peru has taken action to simplify its business regulations and strengthen legal institutions over the last decade in order to promote formal and transparent business practices, and boost entry and competition in domestic markets. In 2014, Peru ranked 35th out of 189 countries globally for overall ease of doing business, making it the second most highly ranked among all LAC economies (just after Colombia). Peru outperforms Mexico and Chile, as well as OECD countries such as Belgium and Turkey (Figure 3.21, Panel A). Furthermore, since 2004, Peru has reduced the number of procedures required to start a business from 10 to 6, the number of days required from 98 to 26, the overall cost from 39.4% to 9.2% of income per capita, while continuing to require zero minimum capital. All these indicate a better performance than the LAC average (Figure 3.21). Peru still has a way to go to reach OECD standards, however, where the average figures for setting up a business are 4.8 procedures lasting 9.2 days, and costing only 3.4% of income per capita. In recent years, Peru has improved public access to credit (ranked 12th out of 189 countries), with strong legal rights, accessible credit information and high credit bureau coverage. The country also offers simple procedures for registering property (26th out of 189 countries) and protecting minority business investors (40th out of 189 countries).

Figure 3.21. Peru's business environment compared to OECD, Latin America and benchmark countries

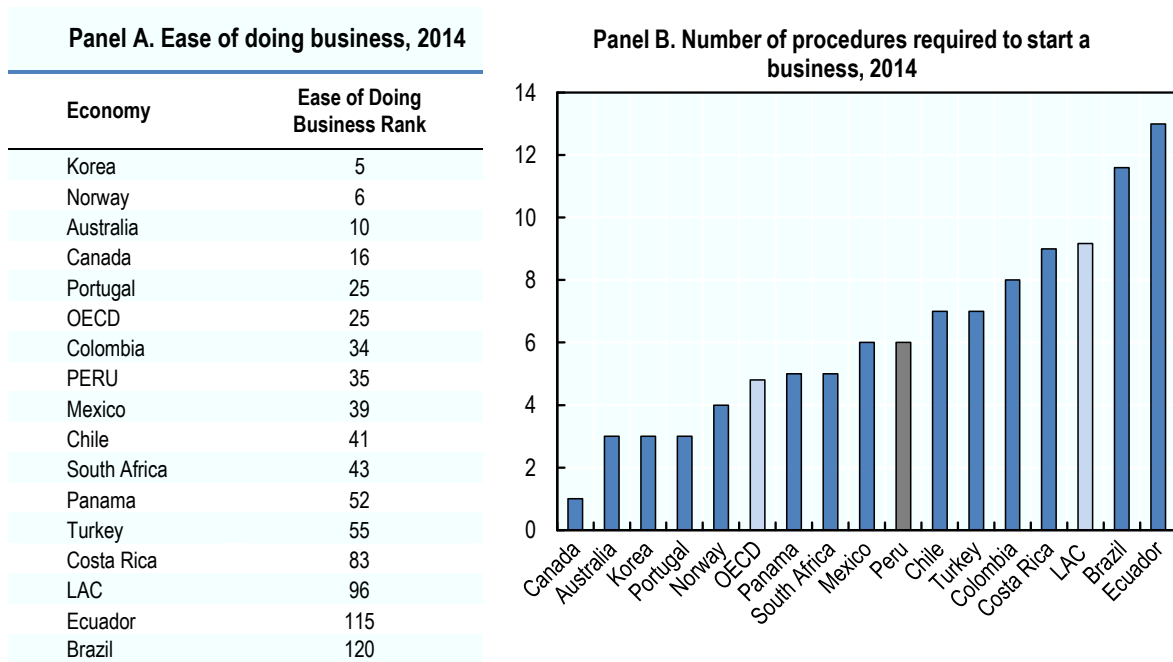
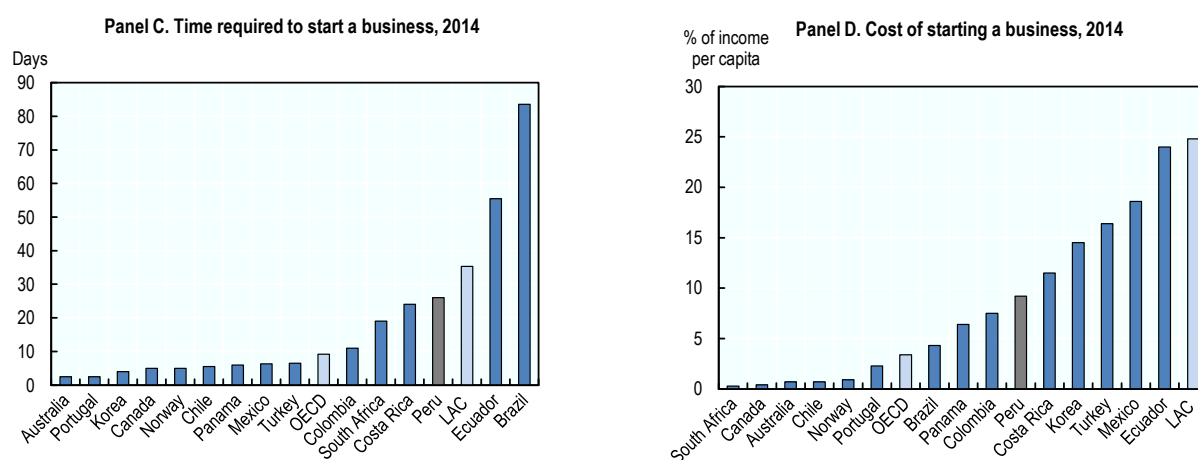



Figure 3.21. Peru's business environment compared to OECD, Latin America and benchmark countries (*cont.*)

Note: OECD and LAC averages, and selected benchmark economies included. Panel A: Economies are ranked on their ease of doing business, from 1-189. A high ease of doing business ranking means the regulatory environment is more conducive to the starting and operation of a local firm.

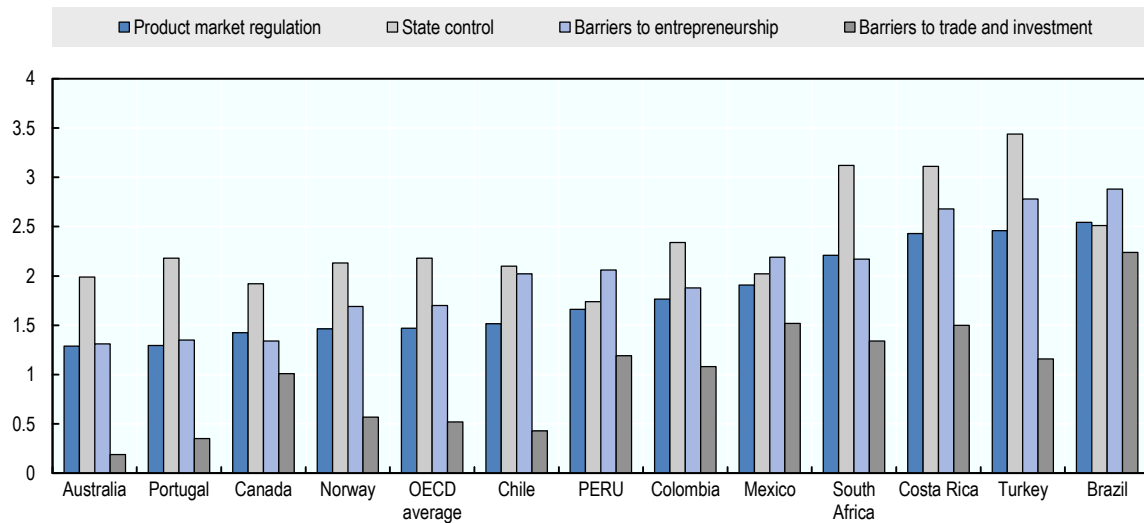
Source: World Bank (2015), “Peru”, *Doing Business – Measuring Business Regulations* (database), <http://www.doingbusiness.org/data/exploreeconomies/peru>.

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Some procedural bottlenecks remain


Peru's Product Market Regulation is less restrictive than most non-OECD and LAC countries, but more restrictive than OECD countries on average (Figure 3.22). The OECD's indicators of product market regulation are a set of comprehensive and internationally comparable indicators that measure the degree to which policies promote or inhibit competition in many areas of the product market. These indicators measure the economy-wide regulatory and market environments in 34 OECD countries and in another 22 non-OECD countries (OECD, 2013b). Peru's product market regulation indicator was specifically developed in collaboration with the World Bank. Barriers to entrepreneurship and barriers to trade and investment in Peru are above OECD averages, driven largely by persistent and inefficient government bureaucracy. In comparison with OECD countries, businesses operating in Peru face more complex regulatory procedures – both for licensing and permit systems and for general communication of rules and procedures. Sole proprietor start-up firms encounter significantly larger administrative burdens. Peru does provide fewer legal barriers to entry than OECD countries on average, yet antitrust exemptions and barriers in network sectors still exceed many high-income and other economies with a comparable GDP (OECD, 2013b). Although Peru is considered a relatively open economy for trade and investment compared with its LAC counterparts, barriers to FDI, remaining trade facilitation barriers and differential treatment of foreign suppliers still exceed OECD averages – leaving ample opportunity for Peru to improve its investment climate and trade prospects.

Figure 3.22. Components of product market regulation, 2013



Note: The scale of the indicator is from least to most restrictive (from 0 to 6). The chart includes OECD countries and selected benchmark economies. Barriers to trade and investment, state control, and barriers to entrepreneurship are the three components of the Product Market Regulation indicator. The Product Market Regulation indicator for Peru was developed in collaboration with the World Bank.

Source: OECD, (2013b), *OECD Product Market Regulation 2013* (database), <https://stats.oecd.org/index.aspx?DataSetCode=PMR>.

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Specific procedural requirements perpetuate bottlenecks for entrepreneurship in Peru. Though Peru has improved the business licensing process through federal and municipal regulatory reforms, there are still a number of costly and complicated compulsory procedures involved in establishing and operating a fully licensed business in Peru. The amount of time and number of procedures required for obtaining a construction permit and fulfilling tax obligations are above OECD averages, while those required for establishing an electricity supply are above both OECD and LAC averages (World Bank, 2014a).

Businesses in Peru also face a lack of transparency and functionality in the legal system, which hinders their ability to resolve business-related disputes. In order to address commercial sales disputes, Peru's judicial system must review and enforce contracts, a process which on average requires more than 40 procedures, 426 days, and costs up to 35% of the original claim (World Bank, 2015). Failure to provide timely trials and legal rulings significantly reduces the value of courts as a source of legal protection for small enterprises with limited resources to stay in operation. In addition, Peru's current bankruptcy law possesses a number of procedural and administrative bottlenecks. For instance, Peru's current solvency regime takes more than three years to process. In that context, improvements in institutions are essential for providing effective legal and financial protection to entrepreneurs, keeping viable businesses in operation, and providing greater incentives to participate in the formal business sector.

Stronger competition authorities are needed to promote market access

Competition between firms leads to increased productivity and economic growth. Policies promoting competition, access to markets and entry of new firms are linked

particularly to improving total factor productivity. Experiences across different industries in emerging and developed markets show this positive relationship (Lewis, 2004; Cole et al., 2004). Furthermore, policies that lead to markets operating more competitively, such as enforcing competition law and removing regulations that hinder competition, result in faster economic growth (OECD, 2013c).

Peru has two competition authorities: the Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual (INDECOPI) and the Organismo Supervisor de Inversión Privada en Telecomunicaciones (OSIPTEL). INDECOPI enforces competition law and intellectual property law and protects consumers across the economy. It plays an important advocacy role by recommending the implementation of pro-competition measures to the legislative, political and administrative authorities (OECD/IDB, 2012). OSIPTEL enforces competition law only in the telecommunications sector.

OSIPTEL, created in 1991, is a decentralised public body attached to the Presidency of the Council of Ministers. OSIPTEL had 261 employees and a budget of USD 27.2 million at the end of 2014. 32 employees work on competition issues, with a budget of USD 1.81 million. OSIPTEL carries out market studies and adopts and enforces regulatory measures involving competitive business practice in the telecommunications sector, acting both as a competition authority and a sector regulator (OECD, 2015b).

INDECOPI, created in 1992, is a specialised public body attached to the Presidency of the Council of Ministers. It promotes the free and efficient development of markets, protects consumer rights, safeguards intellectual property rights, and fosters a culture of free and fair competition in the Peruvian economy (OECD, 2015b). INDECOPI had 1 315 employees and a budget of USD 53.54 million in 2014. Human resources and budget constraints limit the number both of preliminary investigations that can be conducted and of cases that are resolved. Furthermore, improvements to the funding system are under consideration to make it independent of the amount of fines imposed, given the perverse incentives that this involves (OECD/IDB, 2012).

INDECOPI should improve the regulatory framework of cartels and other horizontal agreements as well as mergers. Peru's legislature is already discussing these two aspects as ways to improve the efficiency and effectiveness of investigations. First, clarifying the legal standards applicable to cartels and other horizontal agreements is needed. This is particularly relevant in Peru given that from 2008 to 2013 more than 90% of the cases initiated by INDECOPI were linked to cartel –lie agreements and 70% of the fines levied corresponded to those cases.¹¹ Second, merger control should be improved through the introduction of a compulsory pre-merger notification, with special emphasis placed on thresholds to be used for merger operations. The growing number of mergers and acquisitions in recent years calls for a better institutional framework for these operations. In the period 1995-2000, only 3 mergers and acquisitions were present in Peru, while the amount increased to 62 cases in the period 2010-14.¹²

INDECOPI's economic investigations department has developed a methodology to identify sectors most susceptible to anti-competitive practices (OECD/IDB, 2012). Any sector authority or business association can ask INDECOPI to prepare a market study, but these are prioritised according to the size and importance of the market, as well as the level of potential harm. While such market studies generally lead to recommendations to the government for legal and policy reform, there is no commitment on the part of the government to respond to these recommendations to explain if they will be implemented.

This change would give more strength to INDECOPI's role as competition advocate and would allow a more transparent debate on public policies can help or hinder competition.

Peru's competition authorities have used market studies as a tool for promoting competition. INDECOPI has conducted several market studies in the past five years (OECD, 2015b), including on competition in public procurement at the regional level, the domestic market for commercial airlines, the health system, the notary service market, the mobile market and the distribution of natural gas. In these last two sectors, Peru moved to reduce unnecessary regulatory constraints in both markets following these studies to promote greater competition. Similarly, OSIPTEL has increased the competition in the mobile market by forcing mobile operators to sell "unlocked" cell phones (i.e. cell phones that accept SIM cards from any operator).

The future challenge will be to further improve the effectiveness of INDECOPI and OSIPTEL in fostering competition in Peru. First, investing in more financial and human resources would allow them to undertake more investigations. Second, more independence from the political cycle and government ministries, particularly from the Ministry of Economy and Finance in INDECOPI's case, would increase credibility of competition agencies. Third, implementing a clearer legal framework for cartels, as well as introducing a compulsory notification procedure for mergers and acquisitions is needed to make competition enforcement stronger (OECD, 2015b; OECD/IDB, 2012). Third, developing stronger and more transparent relationships with stakeholders by publishing guidelines and greater information on the launch, results and outcomes of the market studies conducted would render market studies a more powerful tool.

A complete set of recommendations on how to foster competition in Peru could be achieved through a Peer Review of Competition Law and Policy. The OECD country reviews of national competition laws and policies assess how each country handles competition and regulatory issues, from the soundness of its competition law to the structure and effectiveness of its competition institutions. A competition law and policy peer review in Peru was carried out in 2004; in 2012, the OECD and the Inter-American Development Bank conducted a follow-up to it along with eight other Latin American countries (OECD/IDB, 2012). In addition, in 2014 the OECD published a report focusing on market studies (OECD, 2015b). A comprehensive and updated review on competition in Peru would be useful to improve the competition policy regime, thus helping to boost productivity and economic growth.

Greater attention is needed to encourage small businesses

Further reducing administrative barriers and formally targeting predatory business practices may provide opportunities to minimise Peru's informal business sector and increase total productivity. In 2010, small and micro enterprises made up approximately 95% of all enterprises in Peru, and employed more than 9.5 million people (Torres, 2010). As they are a primary source of employment, the government must continue to promote their proper growth and aid them in resolving factors that may hinder expansion. Poor regulatory practices tend to have the greatest negative impact on small businesses, where opting for informality may save significant opportunity costs in the face of complicated administrative procedures. Informal businesses are most often associated with low productivity as they offer limited opportunity for growth and lack protective social and labour regulations such as social security and working conditions (Haggarty et al., 2004). With the informal sector accounting for more than half of all labour activity (Chapter 2), a key challenge for Peru is to prioritise business ease and

accessibility as a tool to incentivise formalisation, combat corruption and offer businesses opportunities to grow. Peru has improved the business environment for small and micro enterprises by expanding access to financing and reducing the costs and time required to start a business. Yet the country may foster superior economic gains by promoting and enforcing greater regulatory reforms at the national and subnational levels in order to ensure consistent standards, promote equal opportunities and reduce gaps in productivity.

Conclusions

One of the main obstacles to inclusive growth in Peru is its poor levels of productivity and competitiveness. Most of the gap in GDP per capita between Peru and OECD economies is explained by low labour productivity. In addition to skills, education and the match between labour supply and demand (covered in Chapter 2), total factor productivity is a driver of labour productivity. In Peru, the few economic sectors with high labour productivity account for only a small number of jobs. This is particularly evident in the mining sector, which provides less than 1.5% of Peru's jobs despite making up almost 50% of its exports and attracting more than 25% of its foreign direct investment. Peru's revealed comparative advantage is primarily concentrated in raw materials and in exports with low value-added. In addition, the sophistication and complexity of Peru's exports are well below that of OECD and most of the benchmark countries. Finally, the country largely participates in the lower end of global supply chains, providing inputs to other countries' processing activities rather than receiving inputs from abroad. These aspects reinforce the low level of competitiveness in Peru.

A key challenge for Peru is to take advantage of its income from its abundant and diverse natural resources to boost competitiveness. Peru could add value in natural-resource related supply chains in addition to its primary production. The experience of OECD countries such as Australia and Norway highlights the importance of the sustainable management of commodity resources to increase the competitiveness and productivity of their economies by exploiting methods to capture a relatively high value-added. Peru should pursue greater participation in global value chains, and identify segments of production that could contribute to higher value-added exports. This would enhance Peru's opportunities to diversify trade, promote industrialisation, and boost technology and knowledge concentration to advance the competitiveness of its export industry.

Inefficiencies in investment in research and development, and in ICTs, are holding back Peru's pursuit of value-added: innovation remains well below OECD levels. More and better investment in research and development is required to close the innovation gap.

The poor quality of Peru's transport infrastructure and logistics increases transport costs, which are a key source of inefficiencies for Peruvian firms. To reduce transport costs, Peru should increase the diversification of transport modes and improve "soft" components of logistics, such as customs and the use of ICTs in the transport sector.

Finally, despite recent improvements to reduce red tape and increase competition, certain inefficiencies in doing business remain in Peru. While the number and timing of bureaucratic procedures needed to set up a business have eased, there is still room for improvement in some areas such as contract enforcement and the administrative burdens for new businesses. This is in particular relevant for the sustainable development of small and micro enterprises, which represent approximately 95% of all enterprises in Peru. In

addition, as with other Latin American economies, competition agencies need more financial and human resources to allow them to regularly undertake market studies and to take decisions on competition in product markets.

Notes

1. See Daude (2013) for a description of this methodology and an analysis of productivity in Latin America.
2. However, in order to close the GDP per capita gap with OECD economies, Peru needs to achieve investment rates close to 30% of GDP, as well as a change in the economic structure of Peru (Infante et al., 2014).
3. Furthermore, small and micro enterprises represent close to 99.5% of total private firms in Peru, accounting for more than 85% of total employment but generating less than 45% of private production (Díaz, 2014).
4. In 2014, the participation of oil, zinc, and lead ore in total exports was 9%, 3%, and 3%, respectively.
5. Based on data from the Direction of Trade Statistics (International Monetary Fund – IMF).
6. See Banco Central de Reserva del Perú, “Cuadros estadísticos”, www.bcrp.gob.pe/estadisticas/cuadros-de-la-nota-semanal.html for a more specific definition of Peruvian non-traditional export goods.
7. For further information on the National Accord (*Acuerdo Nacional*), see <http://acuerdonacional.pe/>.
8. Based on data from the World Development Indicators and Infrascopes for total investment and public-private partnerships in infrastructure, respectively.
9. Based on the statistics in transport provided by the Ministry of Transport and Telecommunications, <http://www.mtc.gob.pe/estadisticas/transportes.html>.
10. Based on INEI (National Institute of Statistics), transportation statistics, accessed on 15 June 2015. <http://www.inei.gob.pe/estadisticas/indice-tematico/transport-and-communications/>
11. Information provided by INDECOPI.
12. Based on Compemedia (2014).

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