

Annex VI - Case Study - Chile

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VI.1. General description and basic economy

The Republic of Chile in South America occupies a long, narrow strip of land between the Andes Mountains to the east and the Pacific Ocean to the west. It shares land borders with Peru to the north, Bolivia to the northeast, Argentina to the east, and the Drake Passage in the far south. Chile's distinctive shape at 4,300 km long and an average 175 km wide makes it the longest country in the world in terms of length to width ratio, with the fifth lengthiest coastline at over 78 thousand kilometres.¹ Chilean territory also includes, amongst others, Easter Island and a large portion of Antarctica (although all claims are suspended under the Antarctic Treaty).

Chile is one of South America's most stable and prosperous nations, with a market-oriented economy based upon international trade and strong financial institutions. Chile's longstanding commitment to free trade resulted in the signing of a free trade agreement with the USA in 2004, and in May 2010 Chile signed the OECD Convention, becoming the first South American country to join the OECD. Over the past seven years, foreign direct investment inflows have quadrupled to some \$15 billion in 2010.² Chile leads Latin American nations in levels of human development, income per capita, sustainability of the state and economic freedom³. However, it has the highest level of income disparity in the world, according to the Gini index.⁴

Chile has a population of 17.3 million, of which 89% reside in 'urban' areas. Chile has a GDP of USD 248.6 trillion (current USD) and a GDP per capita of USD 14,394.⁵

¹ "Marine Jurisdictions: Coastline length". Earthtrends.wri.org.

² CIA- The World Factbook: <https://www.cia.gov/library/publications/the-world-factbook/geos/ci.html> Accessed 19 October 2012

³ "Human and income poverty: developing countries", Human Development Report 2007/8. UNDP 2009. http://hdr.undp.org/en/media/HDR_20072008_Table_3.pdf

⁴ Society At A Glance 2011: OECD Social Indicators. OECD 2011. <http://www.oecd.org/berlin/47570121.pdf> - Accessed 19 October 2012. Gini index relates to economic disparity between the richest and poorest of a nation.

⁵ World Development Indicators 2012, The World Bank. <http://databank.worldbank.org/> Data for 2011; accessed 19 October 2012.

For recent GDP growth see Figure 1. The country's economy is heavily dependent upon international trade, with exports in goods and services making up 38% of GDP and imports of goods and services making up 35%.⁵ Recent trends in imports and exports can be seen in Figure 2. As shown, since 1999 Chile's exports have exceeded imports, although an import peak in 2008 came close. China is Chile's most important trading partner, being the destination of 24.6% of its exports and 17.6% of its imports, with the USA following as second key trading partner, responsible for 11.3% of exports and 20.9% of imports.⁵ Chile has been traditionally dependent upon copper exports, with ores and metal exports making up 65% of merchandise exports.⁵ The most important non-mineral exports are forestry and wood products, wine, fresh fruit, processed food, fishmeal and seafood.⁶ Services make up a significant portion of Chile's economy, with 65.6% of the country employed in services (2009 data).⁵

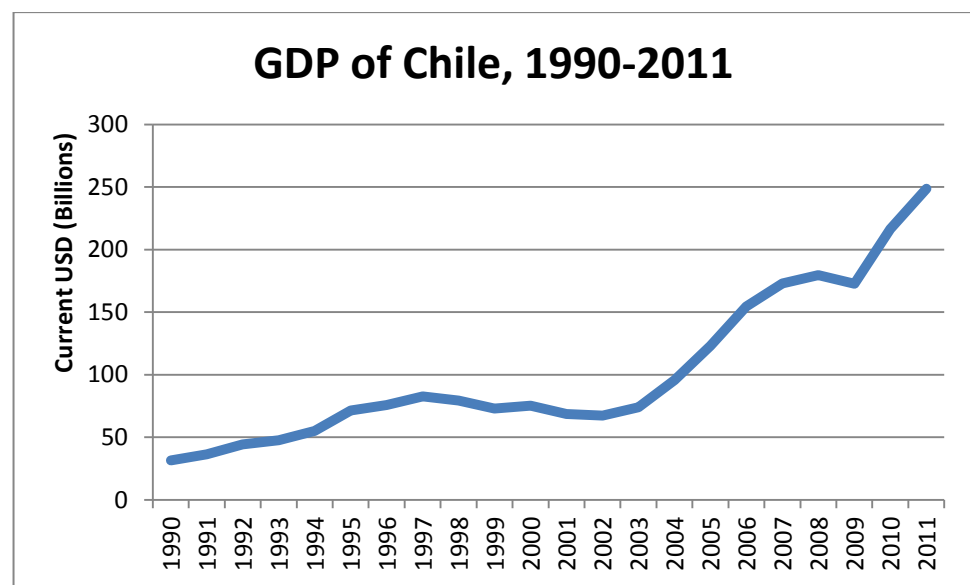


Figure 1 GDP of Chile. Data source: World Development Indicators 2012

⁶ Balance of Trade. Trading Economics, www.Tradingeconomics.com/chile/balanceoftrade. Accessed 19 October 2012.

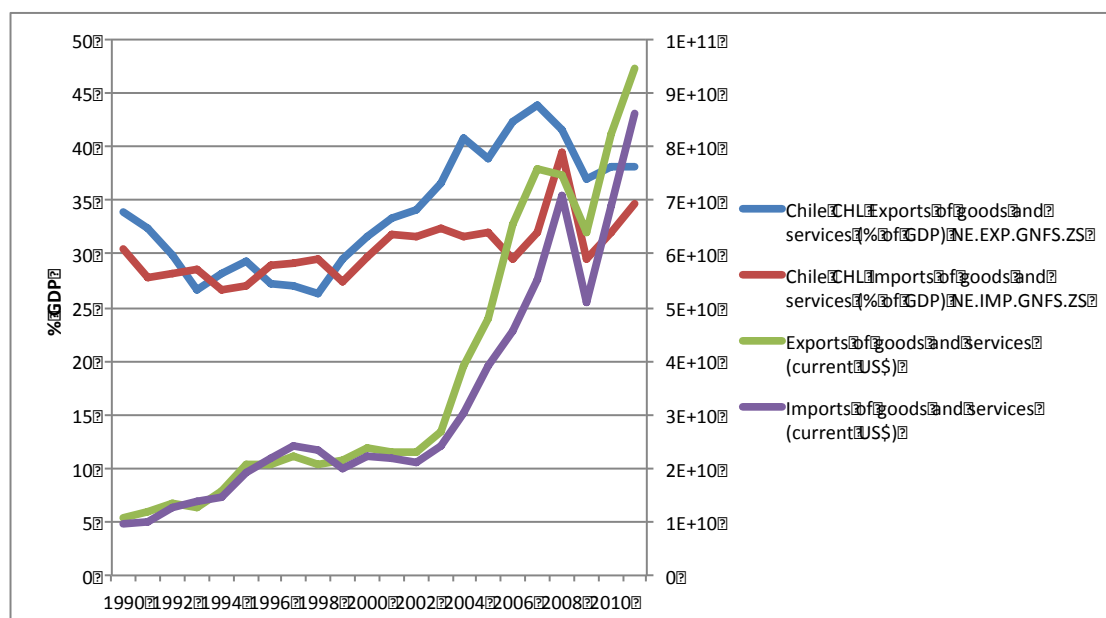


Figure 2 Imports and Exports of Chile. Data from World Development Indicators 2012.

VI.2. Nature of Aviation and Shipping Industries

Given that China is currently Chile’s most important trade partner, in 2011 accounting for 22.8% of exports (accounting for 7.8% of GDP) and 16.9% of imports (4.7% GDP)^{7 8} or more than 12% GDP, with the USA making up a further 11.2 and 20.2% of exports and imports respectively, air and shipping routes are crucial for the Chilean economy. Trade in total accounts for 62% of the nation’s GDP, and of the top five import and export partners, only Brazil, ranked fifth in each, is on the same continent.

VI.2.1 Aviation

Chile contains 476 airports, 88 of which are paved.⁹ Five of these are located in the capital city of Santiago.¹⁰

Chile has 7 national airlines, all operating out of Santiago; 14 have folded since 2000, including four that were renamed or merged with other airlines.¹⁰ The fleet for LAN Airlines is presented in Table 1 below, totalling 104 aircraft; Sky Airlines, Chile’s second biggest airline, have a further 22 aircraft.¹⁰

⁷ WTO Country Profile, http://stat.wto.org/CountryProfiles/CH_e.htm accessed 15 Oct 2012

⁸ UN ComTrade data

⁹ CIA World Factbook, Chile: <https://www.cia.gov/library/publications/the-world-factbook/geos/ci.html> Accessed 24 October 2012.

¹⁰ World Airport Directory, Airline Update: http://www.airlineupdate.com/content_public/airports/south_america/chile.htm. Accessed 13 October 2012.

Table 1: Fleet of LAN Airlines in Chile.

Aircraft	Written off	History	Total
Airbus A320		14	14
Airbus A320-200		14	
Airbus A340		4	4
Airbus A340-300		4	
Boeing 737	1	44	45
Boeing 737-200	1	44	
Boeing 747		1	1
Boeing 747-100		1	
Boeing 757		1	1
Boeing 757-200		1	
Boeing 767		32	32
Boeing 767-200		8	
Boeing 767-300		24	
BAe 146 / Avro RJ	1	2	3
Bae 146	1	2	
McDonnell Douglas DC-10		5	5
Total	2	102	104

In Latin America, air traffic has almost doubled in the last decade, with air traffic in Chile increasing by 80%, and Airbus Global Market Forecast forecasted in March 2012 that Chile would require more than 160 new aircraft over the next 20 years to account for this increase, more than doubling its aircraft fleet.¹¹

Chile's freight-based air transport more than trebled between 1990 and 2010, whilst passenger numbers have increased more than five-fold over the same period¹² (see Figure 1), indicating increasing importance of air transport in the Chilean economy.

¹¹ http://www.airbus.com/no_cache/newsevents/news-events-single/detail/chile-sees-demand-for-more-than-160-aircraft-in-next-20-years/. Accessed 15 Oct 2012

¹² World Development Indicators 2012, The World Bank. <http://databank.worldbank.org/> Data for 2011; accessed 19 October 2012.

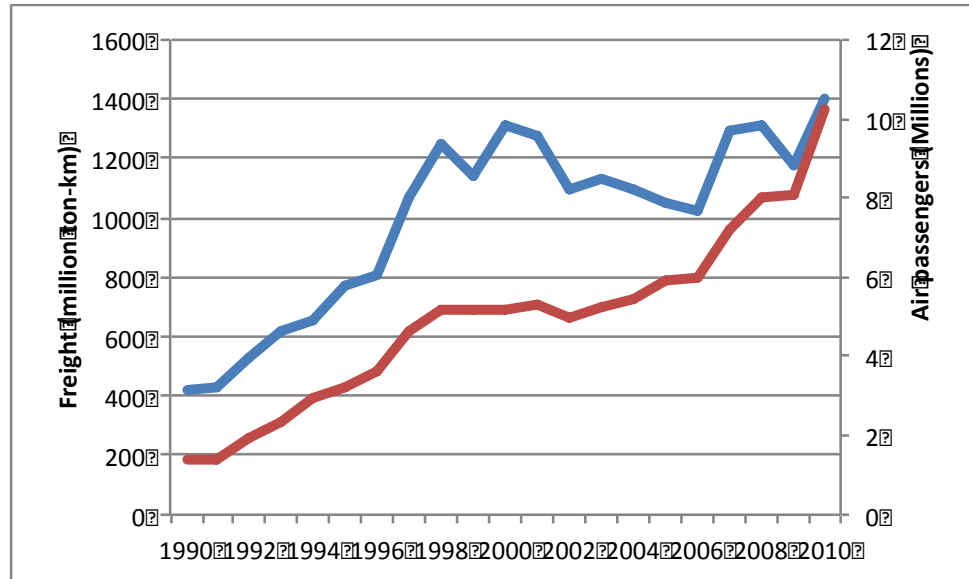


Figure 3 Chile's air transport in terms of freight (blue) and passengers (red), 1990-2010

VI.2.2 Shipping

Chile has 46 ports spanning the entire length of the country, from Arica to Port William 16 of these have Container Liner Service.¹³ According to CIA 2010 data, Chile owns 42 merchant marine ships (commercial vessels), which can be classified into the following types, as recorded in CIA World Factbook¹⁴ (below).

- 13 bulk carrier,
- 5 cargo,
- 7 chemical tanker,
- 2 container,
- 1 liquefied gas,
- 3 passenger,
- 2 passenger/cargo,
- 8 petroleum tanker,
- 1 roll on/roll off.

CIA World Factbook further records that one additional vessel is Norwegian-owned, and an additional 52 are registered in other countries, including 14 in Panama, 9 in Liberia, 9 in the Isle of Man and 6 each in Argentina and Peru.

UNCTADstat¹⁵ (Table 2) records alternative counts of ship numbers from 2012, and Gross Tonnage and Deadweight tons for ships passing through Chile are also displayed.

¹³ World Port Resource: <http://www.worldportsource.com/ports/index/CHL.php>, accessed 15 Oct 2012

¹⁴ CIA World Factbook, Chile: <https://www.cia.gov/library/publications/the-world-factbook/geos/ci.html> Accessed 24 October 2012.

Table 2. Merchant fleet by flag of registration and by type of ship, 2012¹⁵

SHIP TYPE	Number of ships	Gross Tonnage in thousands	Dead weight tons in thousands[1]
Total fleet	389	792.102	1065.757
Oil tankers	13	215.204	362.147
Bulk carriers	12	253.6	418.449
General cargo[2]	18	41.592	46.724
Container ships	2	23.392	29.534
Other types of ships	344	258.314	208.903

[1] Deadweight ton is the weight measure of a vessel's carrying capacity. It includes cargo, fuel and stores.

[2] Including passenger/cargo combined.

VI.3. Trade and tourism

Since 1999, Chile's exports have exceeded imports in terms of % of GDP and current US\$; however, a significant peak in 2008 saw imports come close (see Figure 4)¹⁶.

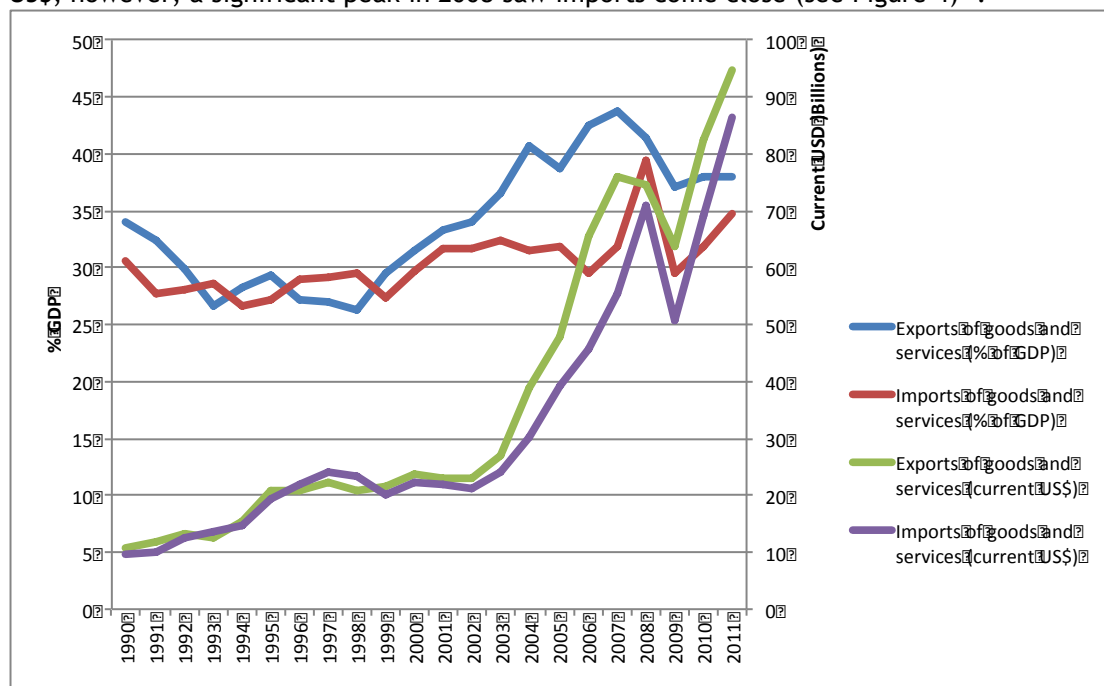


Figure 4 Chile's exports and imports, 1990-2011, in terms of % GDP and current USD

¹⁵ Data from UNCTAD, UNCTADstat, <http://unctadstat.unctad.org/> Accessed 19 Oct 2012

¹⁶ World Development Indicators 2012, The World Bank. <http://databank.worldbank.org/> accessed 19 October 2012.

China is Chile's most important trading partner, being the destination of 22.8% of its exports and 16.9% of its imports in 2011. In 2010, Chile ranked 40 in world trade exports in merchandise, and 46 in imports globally; for commercial services it ranks at 49 and 50 for exports and imports respectively.¹⁷

VI.3.1 Exports

According to The United Nations Conference on Trade and Development (UNCTAD) Trade Analysis Information System (TRAINS) data, the vast majority of Chile's global exports, at over 80%, are in 'Mineral fuels, oils & product of their distillations'. Other important trade items are cereals, and meat and offal.¹⁸ According to the WTO merchandise exports in fuel and mining products make up 64.2% of exports, with agricultural products (21%) and manufactures (10%) second and third most important.

Services are an important part of Chile's economy. Employment in services rose from 55% in 1990 to 66% in 2009.¹⁶ Exports by principal services are more than 60% in transportation, more than 15% in travel, and over 24% in 'other commercial services'.¹⁷ The breakdown is very similar for the Chilean economy's services imports breakdown, at 57%, 16% and 27% respectively.

Income from tourism in Chile has grown sharply since 2000 (see Figure 5). Tourism as a percentage of exports was at a high of 7% in 1998, and currently accounts for just under 3% of national exports, or 1.2% of GDP (2010 data)¹⁶. Over the last 10 years, around one third of this income was through expenditures by international inbound visitors for international transportation services provided by resident carriers; however, receipts from transportation have not risen at the same rate as overall receipts from tourism. Although 2009 saw a drop in receipts from tourism, data for 2010 shows a partial recovery. Numbers of international tourist arrivals did not fall, although the annual increase did around the same time and has not shown a similar recovery.

¹⁷ WTO Country Profile, http://stat.wto.org/CountryProfiles/CH_e.htm. accessed 15 Oct 2012

¹⁸ UNCTAD TRAINS data, accessed via WB Databank, 2010 data. <http://unctadstat.unctad.org/> Accessed 19 Oct 2012

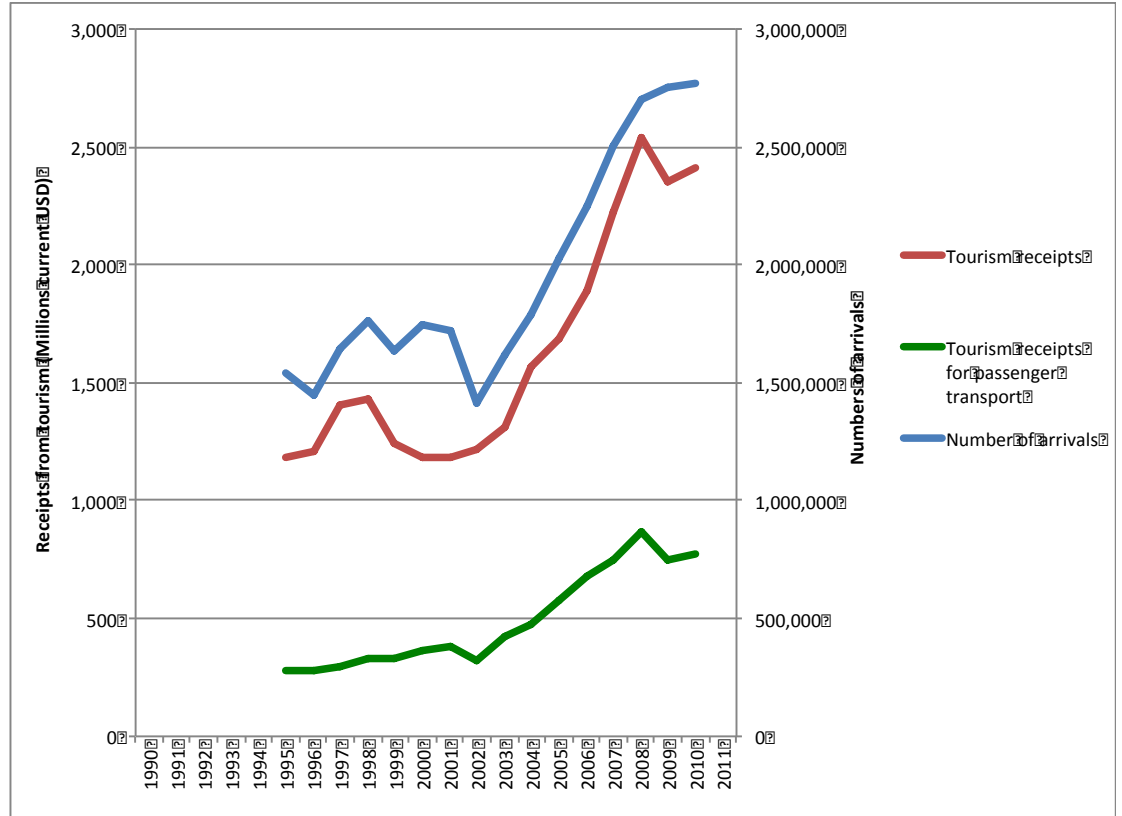


Figure 5 Chile National Income from Tourism, and Annual International Arrivals, 1995-2010. Data from WDI 2012

VI.4. Key Demographics

Chile has a population of 17,067,369 (July 2012 estimate)¹⁴ and the age structure is broken down as follows:

- 0-14 years: 21.4%
- 15-64 years: 69.2%
- 65 years and over: 9.4% (2012 estimate)¹⁴

The full breakdown is shown in Figure 6 below.

The urban population in 2010 was estimated at 89%, with a rate of urbanisation estimated at 1.1% between 2010 and 2015. The major cities are Santiago, with 5.833 million or around 34% of the population, and Valparaiso with 865,000 (2009).¹⁴ The majority of inhabitants (95.4%) were classed as ‘white or white-Amerindian’ in the 2002 census. The remaining 4.6% were recorded as indigenous. The Mapuche people are the country’s most populous indigenous group making up 4% of the population in the 2002 census with 0.6% made up of ‘other indigenous’, but only those that still practiced a native culture or spoke a native language were counted.¹⁹ The Mapuche

¹⁹ Censo 2002: Síntesis de Resultados. Santiago de Chile, Marzo de 2003. <http://www.ine.cl/cd2002/sintesisencensal.pdf>. Translation by author.

mostly reside in the south-central area of the country, whereas the Aymara, Atacameno, and Diaguita groups reside mostly in Chile's northern desert regions. Easter Island (Rapa Nui) is home to the Rapa Nui indigenous population.

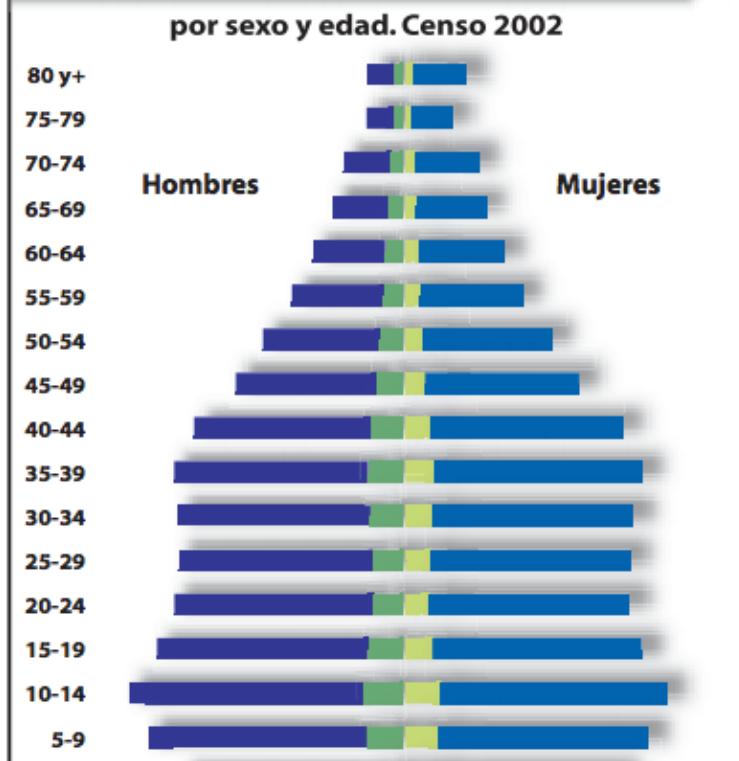


Figure 6 Rural and urban population of Chile by age and sex (Hombre U = Male urban, Hombre R = male rural; Mujer R = Female rural, Mujer U = Female urban.) From the 2002 Census Synthesis Report (2003)¹²

In terms of religion, 70% of the population is listed as Roman Catholic, with 15.1% Evangelical, Jehovah's Witnesses at 1.1%, other Christian at 1%, other at 4.6% and 8.3% registered as none. Literacy was at 95.7% in 2002,¹⁹ and school life expectancy in 2008 was at 15 years for males and females.¹⁴ Unemployment for youths between 15-24 was at 22.6%, with females at a higher percentage of 24.4% (2009 data).¹⁴ Nationally, unemployment stayed between 8-10 per cent around the economic slowdown in 1999, rising from the 7 per cent average for the 1990s, before dropping to 7.8 per cent in 2006. It has continued to fall, averaging 6.8 per cent monthly.²⁰ In terms of sectors of employment, between the 1992 and 2002 census, employment in the third sector grew by 43.2%, with employment in the first sector dropping by 20.5% and the secondary sectors seeing 1.1% change.¹⁹ According to the 2002 census, these increases in tertiary employment were mostly in economic real estate, renting and business, financial intermediation, teaching and restaurants and hotels. Employment in real estate alone grew by 140% over this decade.¹⁹ Amongst the employed population, the most common form of employment for men falls into the group 'Officers, Operators and Artisans' (15.5%) followed by 'Machine Operators' (11.5%), and 'Technicians' (11.2%), whereas for women it is 'Service Workers' (16.5%), 'Technicians' (16.5%) and 'Professionals' (13.0%), with a further 11.5% of women employed as office workers.¹⁹ According to WDI indicators, employment in services across the total population rose from 55% in 1990 to 66% in 2009.¹⁶

In terms of income, the average person earns 8,618 USD per year, much less than the OECD average of 22,387 USD. Further, there is a considerable gap between the

²⁰ "Tasas de desocupación, nacional y por región - Base de Datos Estadísticos". Si2.bcentral.cl..

richest and poorest with the top 20% of the population earn 12 times as much as the bottom 20%.²¹

VI.5. Impacts on Tourism and Trade

The Chilean economy's dependence upon tourism is important but relatively low. At 1.2%, the contribution of tourism to its GDP is lower than all countries it shares land borders with, although this is a larger share than other Latin American countries such as Brazil, Colombia or Venezuela, and around equal to that of Mexico.⁵ Around one third of Chile's income from tourism is through receipts of passenger carriers through international travel (see Section VI.3). It could be predicted that an increase in aviation costs would reduce the numbers of international visitors to Chile, reducing receipts from international travel and to services. Whilst the direct decrease in income from international travel might not significantly impact the national economy. Yet impacts on services, a large sector in the Chilean economy, if visitor numbers were to experience a relatively large drop below their current 2.8 million,⁵ could be important, and potentially more so for lower income groups predicted to be more dependent upon employment in services. Further, Chile's dependence upon international trade, making up a significant percentage of the country's economy (62% of GDP)⁵ could impact across the economy. Impacts on the lower income groups will be disproportionate given Chile's high level of income disparity.⁴

VI.6. Planned Port Expansions

Expansions are planned for two of Chile's busiest ports - Valparaiso port,²² and San Antonio Port, the country's largest freight hub and the busiest and closest port to the country's capital, Santiago.²³ The San Antonio expansion project will improve roads to and from the port and facilitate access to San Antonio city, and involve construction infrastructure within the port, and according to the project's Manager Claudio Hernandez, "The completed project will improve efficiency of container movement in and out of the port."²³

VI.7. Modelling Results

The Global Emissions Trading for international aviation and shipping (MBM1a) scenario predicts a medium impact on Chile's GDP, at -0.102%, placing it in the middle in terms of impact of all the CSEs considered. The majority of this impact (-0.10%) is from the maritime sector, contrary to most cases considered, with aviation, normally the sector impacted more significantly, contributing just -0.002%. The Chilean maritime sector is the second most impacted through the MBM1a scenario after Trinidad and Tobago. This reflects the significance of the maritime sector in trade for the Chilean economy, and the limited reliance upon tourism, which makes up just 1.2% of GDP.

²¹ OECD Better Life Index: <http://www.oecdbetterlifeindex.org/countries/chile/> Accessed 27 October 2012.

²² Plan de Desarrollo Puerto Valparaíso - www.puertovalparaiso.cl , accessed 19 October 2012.

²³ San Antonio port expansion: <http://www.ghd.com/global/services/maritime-and-coastal/san-antonio-port-expansion/> accessed 27 October 2012.

When the MBMs auctioning or tax revenues are used to reduce employers' social security contributions then in case of the Global Emissions Trading for international aviation and shipping (MBM1a) the expected impacts on maritime are expected to decrease to -0.069%, and impacts on aviation are expected to be positive, at 0.005%, leaving a net -0.064% impact on GDP in 2025.

VI.8. Similar Countries

In terms of geographic location combined with trade intensity, both Bolivia and Costa Rica could be considered similar, although these two countries have a significantly lower GDP, whilst Chile's export value is an order of magnitude greater. Mexico and Chile can be linked given their similar reliance upon trade with the USA, HDI rating, extensive coastline, trade intensity and reliance upon tourism, yet Mexico's import and export value is significantly higher.