OXFORD ECONOMICS

Innovative cities:

Key challenges for Latin American and Caribbean cities

A report for the
Organization of American States

OXFORD ECONOMICS

Table of Contents

1 An ever more competitive world 1

1.1 Megacities are overtaking traditional cities 1
1.2 The world is becoming increasingly urbanised..... 3
1.3 Latin American cities are growing more prosperous 4

2 Innovation will determine success 6

3 Meeting the innovation challenge 8

3.1 Finding creative people..... 8
3.2 Deploying innovative governance 9
3.3 Encouraging innovative companies 9
3.4 Fostering innovation in firms 10
3.5 Supporting innovation hubs and hotbeds..... 10

4 The rewards of innovation 11

Annex A 13

1 An ever more competitive world

1.1 Megacities[1] are overtaking traditional cities

Cities are merging together, creating massive urban settlements that can take the form of mega-regions, urban corridors and city-regions. In nations such as Brazil, two in every five people live in an urban cluster with a population exceeding one million.[2] The rapid expansion of new urban centres across the developing world has significantly altered the ranks of the world's largest cities. As a result, many relatively unknown places are now prominent on a global scale:

- Chongqing in China has a population more than twice that of Seattle;
- Hyderabad in India has a population almost twice that of Berlin; and
- Fortaleza in Brazil has a greater population than Rome.

In 1950, New York ranked as the largest city in the world with 12.34 million people. Today, a city of that population would not qualify to be in the top ten.[3] In 1950, four of world's five largest cities were found in advanced economies, while today, four of the top five are in the developing world. Many of the cities projected to be the fastest growing are emerging metropolises like Lagos, Kinshasa, Dhaka, and Karachi. In the developing world, the five Asian cities projected to experience the largest expansion by 2025 are all megacities today and are expected to continue to grow rapidly in the future.

The scale of urban expansion is dramatic. In 2000, there were 16 megacities across the globe, and just four of these were in the developed world. By 2025, it is forecast that there will be 29 megacities, and only five of these will be located in the developed world.

By 2025, as these megacities experience explosive growth, they are predicted to create many more urban jobs. The 26 cities in Latin America and the Caribbean for which Oxford Economics provides economic forecasts, will account for the majority of jobs created in their respective countries.

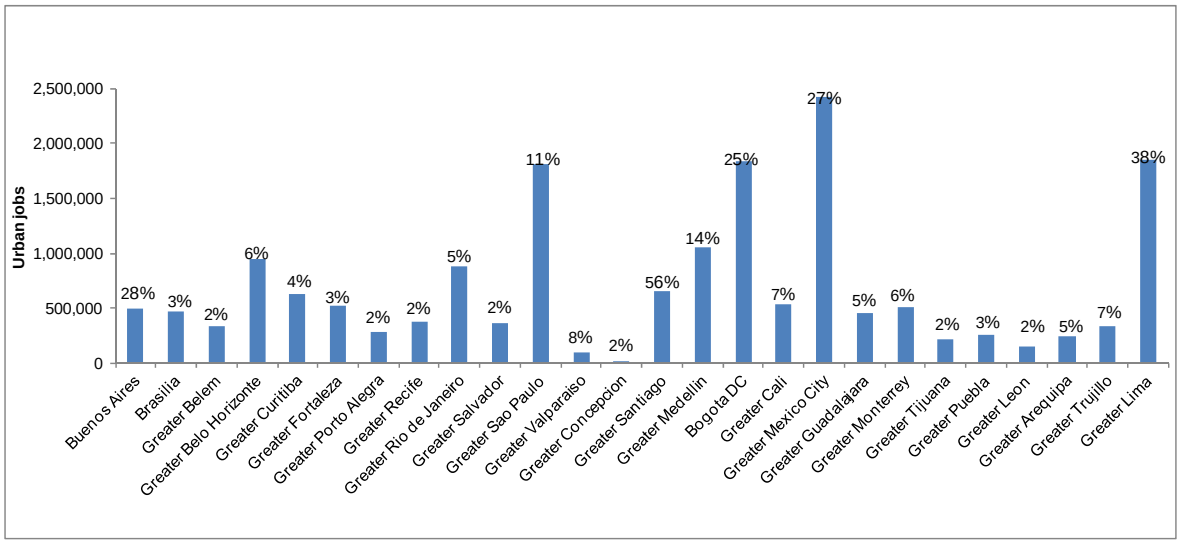
---

[1] Defined as a city with a population greater than 10 million

[2] Oxford Economics, *Cities of opportunity: global urbanonomics*

[3] Ibid.

Chart 1.1: Urban jobs created and share of total country job creation by Latin American and Caribbean cities, 2010 to 2025



Source: Oxford Economics

As can be seen in Chart 1.1, Greater Santiago will account for 56% of the jobs created in Chile through 2025. Similarly, Greater Lima will account for 38% of Peru's job creation through 2025 and Greater Mexico City for 27% of Mexico's additional jobs through 2025. The effect on a country's job creation when all urban areas in a nation are added together is even more pronounced.

Table 1.1: Urban job creation as a share of total country job creation, 2010 to 2025

Country	Total urban job creation	Share of total country job creation
Argentina	493,588	28%
Brazil	6,638,309	40%
Chile	762,006	66%
Colombia	3,430,987	47%
Mexico	4,016,866	44%
Peru	2,439,344	50%

Note: Urban job creation is measured using the subset of 26 cities for which Oxford Economics provides forecasts.

Source: Oxford Economics

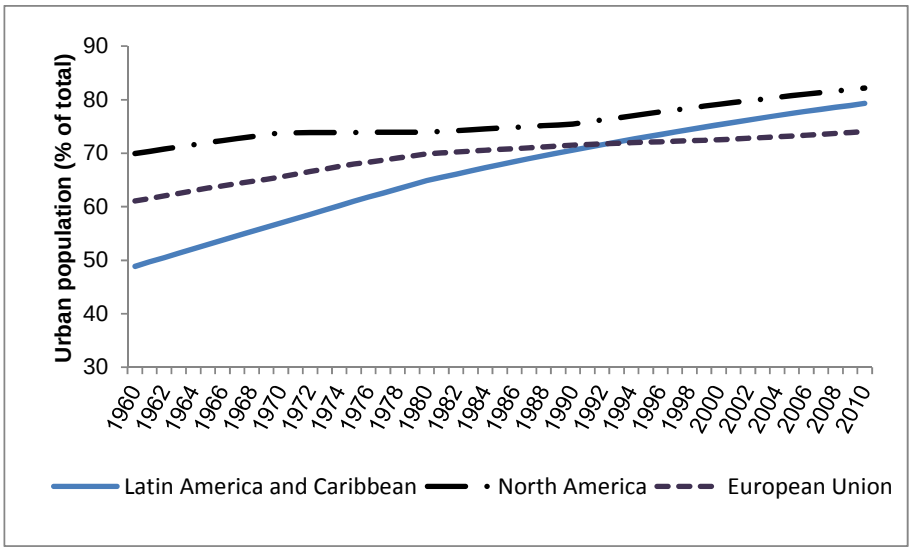
As table 1.1 shows, cities will generate an enormous share of job creation for their countries. Mexico's six large cities will account for 44% of job creation between 2010 and 2025. Similarly, Buenos Aires will produce 28% of Argentina's additional jobs between 2010 and 2025. These cities are drivers of economic growth in their countries and they will compete against each other to attract businesses, tourists, and residents.

As megacities worldwide continue to grow rapidly, and as fast-growing countries achieve increased economic development, innovation will increasingly determine success. In a highly competitive and dynamic urban environment, cities must innovate to remain competitive.

1.2 The world is becoming increasingly urbanised

The world's urban population is 3.6 billion today—accounting for more than half of the global population—and is rising. Over the past 30 years, the urban population has doubled in size.[4] As we move towards an ever more urbanised world, many more large cities will be located in the global South. Already, the Latin American and Caribbean region is nearly as urbanised as North America, with 79% of its population living in urban areas, compared with 82% of North America's population. In addition, the region is more urbanised than Europe. In the last 50 years, the number of Latin American and Caribbean cities has increased by a factor of six.[5] Half of the Latin American and Caribbean urban population resides in cities with fewer than 500,000 inhabitants, and 14% live in megacities.[6]

Chart 1.2: Urban population trends



Source: World Bank, *World Development Indicators, April 2012*

[4] Oxford Economics, *Cities of opportunity: Global urbanonomics*

[5] ONU Habitat, *Estado de las ciudades de América Latina y el Caribe 2012: rumbo a una nueva transición urbana*

[6] Ibid.

High levels of urbanisation correlate with high levels of economic development, and cities are critical players in their nation's economies. The world's cities account for approximately 70% of global GDP.[7] Greater Sao Paulo accounts for 21% of Brazil's GDP, and Greater Lima accounts for 54% of Peru's GDP. As developing countries grow, they will become more urbanised and the competition between global cities will intensify. While economies in the fast growing BRIC countries (Brazil, Russia, India, and China) will continue to develop, growth will also occur in new emerging markets such as Indonesia, Mexico, and rapidly growing African markets.

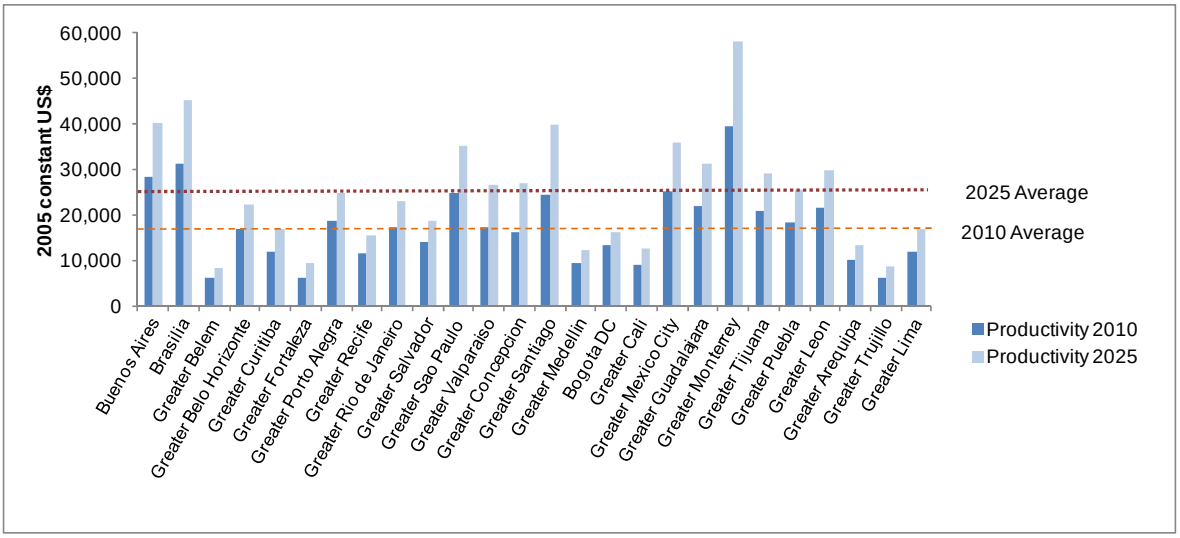
1.3 Latin American cities are growing more prosperous

For the subset of 26 Latin American cities, Oxford Economics has produced a summary of population, density, employment and GDP in 2010 and a forecast for 2025 in Table A.1 in Annex A. Three of these cities (Rio de Janeiro, Sao Paulo, and Mexico City) are megacities, and all 26 have populations above one million. Among the cities analyzed, some key facts emerge:

- Greater Mexico City, with a population of 23.9 million in 2010, is the most populous city. It is predicted to remain the most populous city in 2025.
- Puebla, in Mexico, is predicted to have the largest increase in population, from 2,054,000 in 2010 to 2,684,000 in 2025, an increase of approximately 31%.
- The capital area of Chile, Greater Santiago, is projected to have the highest increase in per capita GDP, from $10,823 in 2010 to $19,148 in 2025.
- The total number of jobs created from 2010 to 2025 across all 26 cities is predicted to be 17.8 million.
- Total GDP per capita growth from 2010 to 2025 across the 26 cities is forecasted at 55%.
- Total population growth from 2010 to 2025 across the 26 cities is estimated at 15%.
- Across all cities, per worker productivity is projected to increase. Average productivity for the 26 cities is set to increase from $17,369 per year in 2010 to $24,677 in 2025. The three cities we cover in Chile are predicted to have the highest productivity increases, at 54% for Greater Valparaiso, 62% for Greater Santiago, and 66% for Greater Concepción.

[7] Oxford Economics, *Cities of opportunity: global urbanonomics*

Chart 1.3: Productivity in 2010 and 2025



Source: Oxford Economics

2 Innovation will determine success

While job creation and per-worker productivity are increasing among the subset of 26 Latin American cities, city governments cannot rest on their laurels. Given increasing global urbanisation and the rise of numerous emerging megacities in Asia, the competition to attract businesses, visitors, and residents is growing fiercer. In addition, standards of living in developing countries' cities remain low. For example, GDP per capita in Buenos Aires and Greater Mexico City is less than one-third that of New York.[8] Moreover, residents of many of Latin American and Caribbean cities routinely complain about crime, and the dearth of public transport, public spaces, and other services. For example, a 2008 survey of Sao Paulo showed that residents were most worried about health services, safety and crime rates, and public transport.[9] Thus, in Latin America and the Caribbean, there is scope for advances in standards of living. To accomplish these improvements, cities must innovate.

Traditionally, innovation has been measured by the number of patents per capita and the concentration of workers in research and development. Using these measures as proxies for innovation shows that GDP tends to rise as with increasing innovation. The World Economic Forum's Global Competitiveness Report ranks countries on a number of factors relating to competitiveness, one of which is innovation. Table A.2 in Annex A displays innovation rankings and scores for Latin American and Caribbean countries. The five best performers (in order of success) according to this ranking are Costa Rica, Barbados, Chile, Panama, and Brazil. The innovation score was calculated by considering seven factors (1) capacity for innovation, (2) quality of scientific research institutions, (3) company spending on research and development, (4) university-industry collaboration in research and development, (5) government procurement of advanced technology products, (6) availability of scientists and engineers, and (7) Patent Cooperation Treaty (PCT) patent applications.

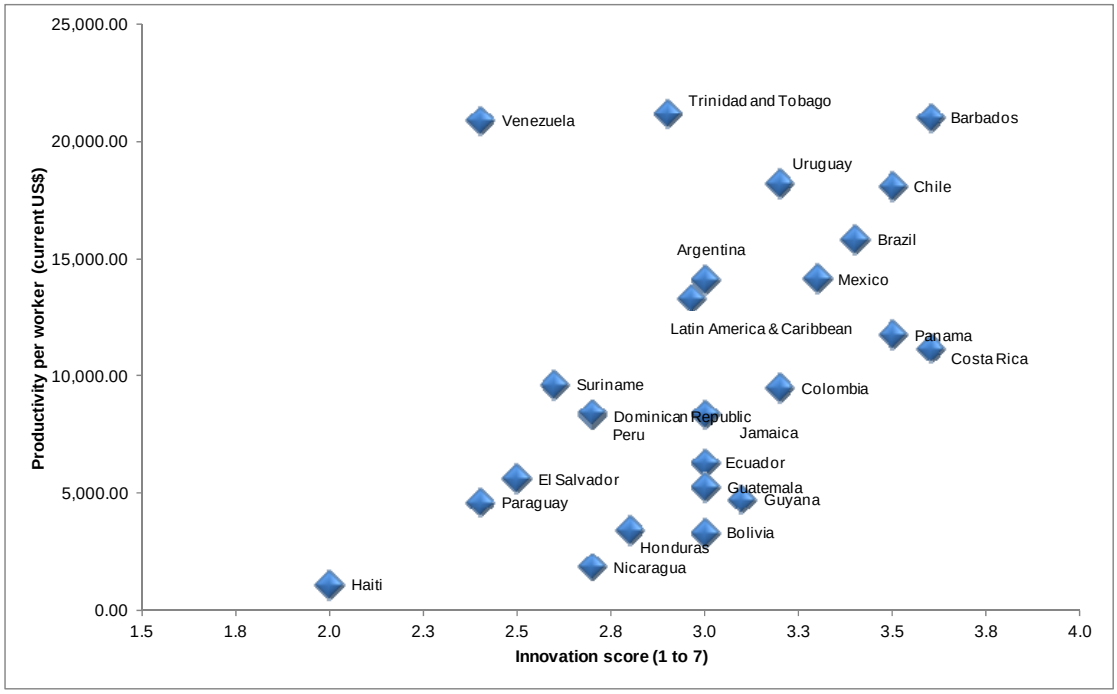
Innovation, however, encompasses attributes beyond the seven measures employed by the World Economic Forum. Generally, innovation encourages the creation of new ideas, and is associated with economic growth through the spillover effects of clustering. When clusters of firms develop, companies that locate near their competitors benefit from a larger and higher quality labour pool, a more competitive supply chain, and learn to perform at a higher level as they strive against counterparts. Individual firms profit from higher quality employees

[8] Oxford Economics, *Cities of opportunity: Global urbanonomics*

[9] Urban Age, *South American cities: Securing an urban future*, 2008

and technologies that allow for higher levels of productivity.[10] Chart 2.1 shows the positive relationship between innovation and productivity per worker.

Chart 2.1: Productivity and innovation in Latin America and the Caribbean



Source: World Bank, *World Development Indicators, April 2012*, and World Economic Forum, *Global Competitiveness Report 2012-2013*

These attributes of innovation do not apply solely at the country level. Given the high degree of urbanisation in Latin America and the Caribbean (as shown in Chart 1.2), cities are, in effect, drivers of innovation in their respective countries because they house significant proportions of the population and represent large clusters. This is why the majority of predicted job creation between 2010 and 2025 (as shown in Table 1.1) will accrue to cities.

[10] For a complete explanation, see Audretsch, David B., *Agglomeration and the Location of Innovative Activity,* Oxford Review of Economic Policy, Vol. 14, No. 2

3 Meeting the innovation challenge

To enable modern cities to compete effectively and efficiently, innovation and creativity must be at the heart of urban development. An Australian innovation agency, 2thinknow, releases an annual ranking of the 100 most innovative cities. In 2011, the first five spots were awarded to Boston, the San Francisco Bay Area, Paris, New York, and Vienna. Although Latin American and Caribbean cities are on a positive growth trend, it will be some time before they reach the standards of living equal to the most creative and innovative world-class cities.

A McKinsey Global Institute study evaluated 198 Latin American cities and concluded that none of them could compete globally on the innovation front. It found that while Buenos Aires has the highest number of high-tech patents (6 annually) in the region, New York has 850 per year.[11] As they strive to become world-class centres of innovation, the five immediate challenges facing Latin American and Caribbean cities are (1) finding creative people, (2) deploying innovative governance, (3) encouraging innovative companies, (4) fostering innovation in firms, and (5) supporting innovation hubs and hotbeds.

3.1 Finding creative people

Creative people are not just artists and designers. Also included are entrepreneurs, people who can create new markets, and those who can seize new opportunities. These people generate innovative ideas and are active participants in the innovative economy. One measure of creative people (but not the only measure) is the level of education of city residents. According to Glaeser and Saiz (2003), "for more than a century, in both the United States and Great Britain, cities with more educated residents have grown faster than comparable cities[12]…" In Latin America and the Caribbean, the city of Santiago has been a regional pioneer in reforming its education sector and as a result has the highest PISA[13] test results among peer cities. Improvements can be linked to extended school days, an innovative teaching certification programme, and performance-linked teacher compensation.[14] Improvements such as these increase the supply of talented and creative people in the economy.

---

[11] McKinsey Global Institute, *Building globally competitive cities: The Key to Latin American growth,* August 2011

[12] Glaeser, Edward L. and Saiz, Albert, *The Rise of the Skilled City*, Harvard Institute of Economic Research, Discussion Paper 2025, 2003

[13] Programme for International Student Assessment

[14] McKinsey Global Institute, *Building globally competitive cities: The Key to Latin American growth,* August 2011

3.2 Deploying innovative governance

Good governance and planning is crucial to building a successful city. City governments must not only respond to citizens' concerns, but they must also be forward-looking and plan for the next 20 years. Not all Latin American and Caribbean cities have urban planning departments with long-term horizons. Santiago and Buenos Aires, with 20-year planning horizons, are good examples, but Bogota and Monterrey lag with only 2-year planning horizons.[15]

City governments need to plan and implement policy in innovative ways to foster and encourage entrepreneurship and innovation. This includes how they tax and incentivise behaviour, physically plan the city, treat leading entrepreneurs and plan education. City governments must not only be forward-thinking, but they must also make cities efficient by cutting red tape and bureaucracy. For example, it takes 74 days to register a property in Rio de Janeiro and Mexico City. Opening a new business can take only 27 days in Lima but 152 days in Sao Paulo.[16] These barriers to innovation must be conquered. City governments must collaborate with other municipal, state, and national governments to achieve their goals.

3.3 Encouraging innovative companies

Cities should actively work to persuade innovative companies to invest there. Foreign direct investment (FDI) is an important aspect of this. Large, innovative companies can bring new skills to a city by attracting a certain type of skilled worker. Moreover, a study done for the United States shows that for every innovation job in a city, five additional non-innovation jobs are created. This multiplier effect for innovation jobs is about three times as large as that of traditional manufacturing.[17]

A well-known example of successful recruitment was Intel's decision in 1995 to locate a plant in Costa Rica. Several factors persuaded Intel to locate in Costa Rica rather than Mexico, Chile, or Brazil. Costa Rica had:

- The highest per capita GDP in Latin America;
- A history of democracy and respect for the rule of law;
- Good infrastructure in communications, transportation, education, and other services;

[15] Ibid.

[16] Ibid.

[17] Moretti, Enrico, *The new geography of jobs*, Houghton Mifflin Harcourt, 2012

- A central shipping location; and
- A free-trade zone launched by its government.[18]

Often, negotiation with companies of Intel's size and stature is carried out at the national, or even at the Presidential level. City governments, however, have an important role to play in partnership with national governments.

3.4 Fostering innovation in firms

Cities should ensure that they have created an environment in which local and small firms can thrive. This includes making certain these businesses have access to finance, business advice, and incubators. This step is especially important for smaller cities that may not be able to attract as much FDI as larger ones. Improvements in the business environment are very important for smaller firms.

3.5 Supporting innovation hubs and hotbeds

Innovative cities distinguish themselves by differentiating themselves from other cities. Not every city can be a combination of Hollywood, Silicon Valley, Milan and Shenzhen. Cities must create strategies to develop certain clusters and build expertise in specific areas. In Latin America and the Caribbean, Monterrey's technological cluster is a leading example. Since 2006, the Tecnológico de Monterrey education cluster has been the top patent applicant among Mexican universities.[19]

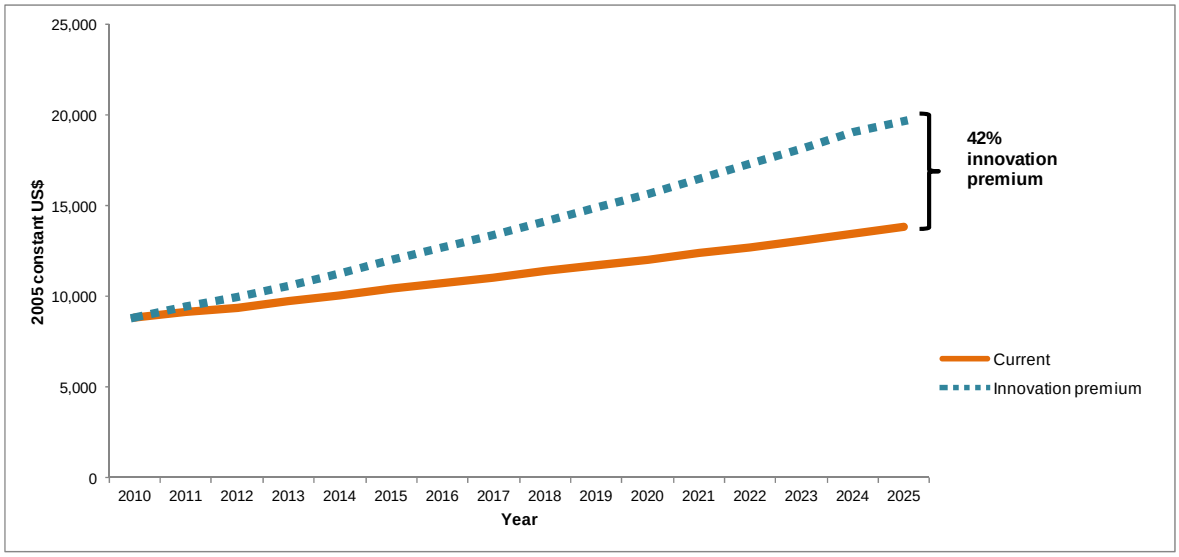
[18] Dulfano, Isabel (2003) *Intel and Costa Rica: A model for global expansion, economic development and sustainability*, Global Business Languages: Vol. 8, Article 3, available at: http://docs.lib.purdue.edu/gbl/vol8/iss1/3

[19] McKinsey Global Institute, *Building globally competitive cities: The Key to Latin American growth,* August 2011

4 The rewards of innovation

Cities that sow the seeds of innovation can reap rewards in terms of enhanced economic performance and job creation. Oxford Economics calculations roughly estimate the innovation premium—the additional economic dividend cities can reap by enacting innovative policies and attracting innovative firms—for cities to be 42%. Therefore, the subset of 26 Latin American and Caribbean cities could move from an average GDP per capita of US$8,825 in 2010 to US$19,651 in 2025 by implementing innovative policies.

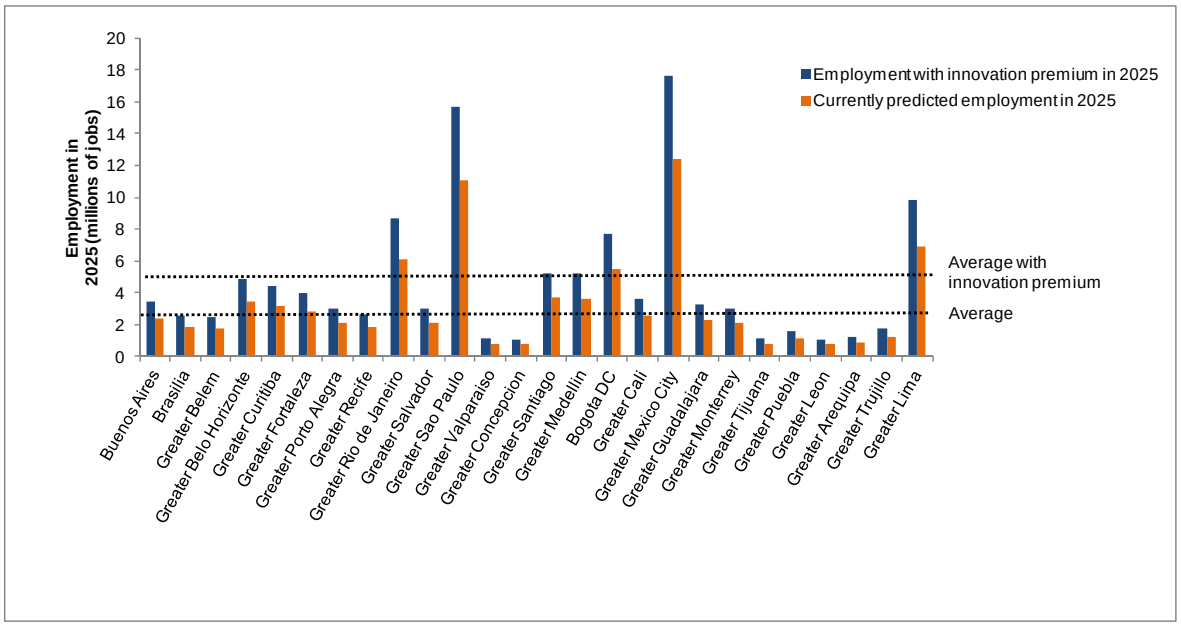
Chart 4.1: The innovation premium is linked to a 42% increase of GDP per capita



Source: Oxford Economics

Moreover, this innovation premium also affects employment across the 26 cities. An innovation premium of 42% raises the average employment in 2025 from 3.2 to 4.6 million jobs across the cities. Chart 4.2 shows the effect by city.

Chart 4.2: The innovation premium is linked to a significant increase in employment



Source: Oxford Economics

Annex A

Table A.1: Population, density, employment, and GDP, 2010 and 2025

		2010					2025				
Country	City	Population (thousands of persons)	Population density (thousands of persons/square km)	Employment (percent of working-age population)	GDP per capita (thousands of 2005 USD)	GDP (millions of 2005 USD)	Population (thousands of persons)	Population density (thousands of persons/square km)	Employment (percent of working-age population)	GDP per capita (thousands of 2005 USD)	GDP (millions of 2005 USD)
Argentina	Buenos Aires	2,993	14,744	95.3%	18.111	54,205	3,148	15,505	115.1%	30.866	97,152
Argentina	***Argentina***	***40,456***	***15***	***26.6%***	***6.272***	***253,746***	***45,427***	***16***	***29.4%***	***9.467***	***430,067***
Brazil	Brasilia	2,594	447	74.0%	16.167	41,941	3,186	549	78.9%	25.786	82,157
Brazil	Greater Belem	2,468	--	80.3%	3.411	8,419	2,800	--	85.9%	5.231	14,646
Brazil	Greater Belo Horizonte	4,885	516	71.2%	8.512	41,580	5,486	580	86.4%	13.898	76,242
Brazil	Greater Curitiba	3,108	202	113.8%	9.493	29,507	3,515	228	123.7%	15.026	52,822
Brazil	Greater Fortaleza	3,589	--	91.9%	3.977	14,274	4,304	--	92.1%	6.047	26,031
Brazil	Greater Porto Alegra	3,852	--	68.1%	8.995	34,650	4,039	--	74.3%	12.987	52,453
Brazil	Greater Recife	3,512	1,268	60.3%	4.825	16,948	3,766	1,360	69.6%	7.680	28,922
Brazil	Greater Rio de Janeiro	11,671	2,561	64.1%	7.682	89,660	12,403	2,722	70.2%	11.323	140,433
Brazil	Greater Salvador	3,576	--	66.4%	6.730	24,066	4,048	--	70.0%	9.730	39,387
Brazil	Greater Sao Paulo	19,996	2,517	65.3%	11.552	230,993	21,425	2,697	71.9%	18.086	387,493
Brazil	***Brazil***	***193,253***	***23***	***76.6%***	***5.672***	***1,100,000***	***214,227***	***25***	***78.7%***	***8.786***	***1,882,266***
Chile	Greater Valparaiso	1,763	108	60.7%	7.103	12,525	2,008	122	62.5%	10.810	21,708
Chile	Greater Concepcion	2,041	55	52.5%	5.846	11,933	2,200	59	51.3%	9.217	20,279
Chile	Greater Santiago	6,899	448	63.6%	10.823	74,675	7,662	497	71.8%	19.148	146,715
Chile	***Chile***	***17,134***	***23***	***60.6%***	***8.666***	***148,487***	***19,114***	***25***	***65.1%***	***14.132***	***270,114***
Colombia	Greater Medellin	6,171	97	62.4%	4.002	24,697	7,372	116	73.1%	6.095	44,934
Colombia	Bogota DC	7,491	4,720	68.9%	6.352	47,583	9,039	5,696	87.1%	9.835	88,902
Colombia	Greater Cali	4,459	201	67.0%	4.204	18,744	5,203	235	72.3%	6.245	32,490
Colombia	***Colombia***	***46,295***	***41***	***63.2%***	***3.953***	***183,003***	***54,693***	***48***	***72.5%***	***6.096***	***333,427***
Mexico	Greater Mexico City	23,879	6,630	62.2%	24.394	252,239	28,077	6,963	63.5%	39.248	446,544
Mexico	Greater Guadalajara	4,061	1,485	67.9%	9.749	39,585	5,090	1,862	65.1%	13.897	70,740
Mexico	Greater Monterrey	3,604	674	67.0%	17.594	63,412	4,292	803	71.3%	28.582	122,679
Mexico	Greater Tijuana	1,448	2,273	62.1%	8.579	12,423	1,804	2,832	64.9%	13.283	23,959
Mexico	Greater Puebla	2,054	3,844	62.3%	7.657	15,727	2,684	5,023	59.5%	10.501	28,186
Mexico	Greater Leon	1,380	1,132	67.2%	9.344	12,896	1,657	1,359	67.0%	13.460	22,302
Mexico	***Mexico***	***108,397***	***55***	***63.1%***	***8.533***	***924,986***	***125,153***	***63***	***63.3%***	***13.006***	***1,630,000***
Peru	Greater Arequipa	1,202	19	76.3%	5.114	6,149	1,400	22	89.0%	8.156	11,416
Peru	Greater Trujillo	1,724	68	81.8%	3.173	5,470	2,058	81	90.4%	5.166	10,632
Peru	Greater Lima	9,924	284	74.9%	6.066	60,192	12,252	351	79.9%	9.510	116,512
Peru	***Peru***	***29,077***	***23***	***81.2%***	***3.866***	***112,413***	***34,057***	***26***	***87.4%***	***6.164***	***209,936***

Source: Oxford Economics

Table A.2: 2012-2013 Global competitiveness report innovation rankings: Latin America and the Caribbean

Country	Innovation rank (out of 144)	Score (1 to 7)
Argentina	91	3.0
Barbados	40	3.6
Bolivia	83	3.0
Brazil	49	3.4
Chile	44	3.5
Colombia	70	3.2
Costa Rica	38	3.6
Dominican Republic	118	2.7
Ecuador	96	3.0
El Salvador	128	2.5
Guatemala	90	3.0
Guyana	76	3.1
Haiti	143	2.0
Honduras	112	2.8
Jamaica	86	3.0
Mexico	56	3.3
Nicaragua	116	2.7
Panama	45	3.5
Paraguay	132	2.4
Peru	117	2.7
Suriname	124	2.6
Trinidad and Tobago	104	2.9
Uruguay	69	3.2
Venezuela	131	2.4

Notes: A higher score denotes more successful innovation infrastructure and policies. Countries are ranked from highest (#1) to lowest (#144).

Source: World Economic Forum, *Global Competitiveness Report 2012-2013*

OXFORD
Abbey House, 121 St Aldates
Oxford, OX1 1HB, UK
Tel: +44 1865 268900

LONDON
Broadwall House, 21 Broadwall
London, SE1 9PL, UK
Tel: +44 207 803 1400

BELFAST
Lagan House, Sackville Street
Lisburn, BT27 4AB, UK
Tel: +44 28 9266 0669

NEW YORK
5 Hanover Square, 19th floor
New York, NY 10004, USA
Tel: +1 646 503 3050

PHILADELPHIA
303 Lancaster Avenue, Suite 2E
Wayne PA 19087, USA
Tel: +1 610 995 9600

SINGAPORE
No.1 North Bridge Road
High Street Centre #22-07
Singapore 179094
Tel: +65 6338 1235

PARIS
9 rue Huysmans
75006 Paris, France
Tel: + 33 6 79 900 846

email: mailbox@oxfordeconomics.com

www.oxfordeconomics.com

OXFORD ECONOMICS

OXFORD ECONOMICS