

ADRIENNE ARSHT LATIN AMERICA CENTER

AN INNOVATOR'S JOURNEY

The Makings of Mexico's Knowledge Economy

By Arturo Franco



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Atlantic Council 1030 15th Street NW, 12th Floor Washington, DC 20005

ISBN: 978-1-61977-941-9

April 2016

Acknowledgements

This report was produced with the invaluable help of a number of Atlantic Council colleagues. In the Adrienne Arsht Latin America Center, María Fernanda Pérez Argüello, Program Assistant, has driven the Center's initiative on innovation, playing a critical role in the launch of this project. Rachel DeLevie-Orey, Assistant Director, helped conceptualize and produce this report. Thanks also to Susan Cavan, Editor, and Romain Warnault, Assistant Director of Publications, in the Atlantic Council communications department for their hard work and endless flexibility putting this together. Our consultant, Donald Partyka, designed yet another excellent report for the Arsht Center. We would also like to thank Deloitte Mexico, whose generous funding made this report possible.

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Foreword

exico is at a critical moment in its history, and in its relationship with the United States. Over a billion dollars crosses the border every day. The sweeping reform agenda implemented by President Peña Nieto has opened the Mexican economy to new growth opportunities, and newly-competitive markets are making Mexico a serious global player.

The innovation industry is contributing to the expansion of a knowledge-based economy in Mexico. Mexican innovators are being unleashed with private and publicsector policies helping the industry to grow.

Yet this is rarely the story told about Mexico, particularly in the United States these days. Election year politics around our Mexican neighbors has devolved into ugly, divisive rhetoric. Headlines cover only the worst news to come out of Mexico. There is no doubt that the country faces difficulties tackling crime, violence, and impunity; but it is not the only story to be told.

Mexico is on the rise.

It is for this reason that the Latin America Center is spearheading an initiative on the innovation industry in Mexico. The creative minds of Mexico are fast becoming entrepreneurs. Federal and local governments are proactively creating policies to help expand the growth of the knowledge economy. A lack of funding remains a serious obstacle but hope is on the horizon.

This report—informed by a series of Atlantic Council Google Hangouts—takes a first-hand look at the innovation story in Mexico and offers recommendations for how Mexican companies, innovators, and the government can create a more robust innovation sector.

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Why Mexico?

The time is long overdue to focus on a side of Mexico that we rarely hear about: the creative, inventive, and globalized Mexico. en years ago, the cover of *Wired* magazine featured the story of four undocumented high-school students from Mexico who beat the world's best engineering school—Massachusetts Institute of Technology—in a robotics competition. In 2013, the same magazine ran the headline "The Next Steve Jobs?" with a story that involved a Mexican primary school teacher whose innovative teaching methods led his students to the country's highest standardized testing scores.

These stories showcase the talent and creative prowess of the Mexican people. Most importantly, they remind us that Mexico is more than meets the eye: It is a nation bustling with entrepreneurial and innovative spirit. With a territory large enough to fit thirty-five European nations, Mexico is adapting to massive technological changes and new global opportunities. To thrive, the country is working to move beyond commodities, natural resources, and exclusively low-skilled manufacturing.

It is a challenge, but one in which progress is being made. The public and private sectors are in the midst of a comprehensive approach to move into a knowledge-based economy. Research and partnerships are being fostered to accelerate innovation, support entrepreneurs, and create highimpact businesses. In the end, a prosperous Mexico is not only good for Mexicans but also for the United States and North America as a whole.

The time is long overdue to focus on a side of Mexico that we rarely hear about: the creative, inventive, and globalized Mexico. The following pages—in telling the story of some of Mexico's most exciting, high-impact innovators and entrepreneurs—highlight the country's journey to become an innovation nation and provide recommendations of how to reach the next frontier.

The Peña Nieto administration has pursued efforts to foster a more innovation-friendly ecosystem. Here, President Peña Nieto speaks at the anniversary of the Mexican Constitution.



AN INNOVATOR'S JOURNEY: THE MAKINGS OF MEXICO'S KNOWLEDGE ECONOMY

Mexico's Turning Point

exico is quickly changing, and not only because of its innovation industry: The country is on track to become one of the ten largest economies in the world within a decade. It already makes up nearly 25 percent of Latin America's market and is the secondlargest trading partner of the United States. With a young and growing middle class and an average 2.5 percent real growth rate over the last four years, Mexico is quickly taking the title of the most popular investment destination in the region.¹

From 2012-14 Mexico embarked on one of the most ambitious structural reform programs in its history, strengthened by an unprecedented political pact between its three major parties. In the last three years, it successfully opened the energy and telecommunication sectors to increase competition and foreign investment, reduced bureaucracy and regulatory obstacles, strengthened its financial and banking sectors, and launched an aggressive education system overhaul. This litany of changes has helped Mexico secure a spot on the global stage.



Marcus Dantus, a serial Mexican entrepreneur, gives a presentation on the links between entrepreneurship and innovation at a Campus Party in Jalisco (July 2015).

Hanging Out with Mexican Innovators

n a series of Google Hangouts conducted to inform this publication, hundreds of people tuned in to hear innovators, investors, and entrepreneurs discuss Mexico's experience fostering innovation-friendly policies, as well as their personal journeys.

PABLO SALAZAR ROJO is Managing Partner of NXTP Labs in Mexico. Prior to joining NXTP labs he co-founded Naranya Ventures, a new investment fund for mobile and digital solutions. He believes that Mexico's entrepreneurial culture is exploding and is now working to connect funders, mentors, corporations, universities, and government agencies to foster innovation. MARCUS DANTUS is the Founder of StartUp Mexico—the first super-campus for entrepreneurship in Mexico. He has applied his experience educating entrepreneurs on how to create products and services that can solve world problems, while building companies that are capable of sustained growth.

HUGO MORENO is the Founder of Ver de Verdad, the first chain of inexpensive optical products in Mexico. It has twenty-five branches and 112 employees across five cities. In 2013, the company was awarded the National Quality Award, the highest recognition given by the President of the Republic to an organization for its innovation and competitiveness. He represents a vivid example of the enormous opportunity that Mexico offers to those who understand the population's needs and are finding innovative ways to address them. LINDA FRANCO is the Co-Founder and CEO of Machina, a wearable technology company that creates clothes that are fashionable yet designed to incorporate the latest gadgets. She believes that Mexico's innovation ecosystem has all of the necessary ingredients: talent, inspiration, and opportunities. However, more funds need to be pushed into the highimpact start-up world.

CARLOS GÓMEZ ANDONAEGUI is

Co-Founder of Nebia, a company revolutionizing the shower by decreasing water usage. Working between Mexico and San Francisco, Carlos has shown the benefits of a two-country approach, involving designs from Mexico, funding from the United States, and the potential of crossborder manufacturing.



Campus Parties --which usually last a weekend-are some of the biggest gatherings for young entrepreneurs seeking to share their stories and find start-up capital (July 2015).

But Mexico still faces severe economic and social challenges. According to the National Council for the Evaluation of Social Development Policy, about half of the population lives in poverty with unequal access to basic services. A recent surge in drugrelated violence and crime has stained the country's international reputation and damaged tourism. Low productivity growth, particularly in small business and the nontradable sectors, is one of the primary barriers to competitiveness.

Still, Mexico seems to have reached a long-awaited turning point. Much has been done recently to improve the business environment, while maintaining macroeconomic stability. Investors and analysts alike consistently applaud Mexico's fiscal and monetary discipline. According to the World Bank's "Doing Business" report, which measures business regulations and enforcement in economies across the world, Mexico ranked thirty-eighth globally in 2016, up four spots from the previous year.²

Even during a time of economic volatility, the Mexican Central Bank has managed to keep prices stable. Last year's 2.2 percent inflation rate was the lowest in history. While public debt is mounting, reaching 46.9 percent of gross domestic product (GDP) in 2015, it still compares favorably with Latin America's average of 55.6 percent.³ So what can be expected from a country that combines macroeconomic stability, a dynamic business environment, new competition in key sectors, and a young and talented population? A lot.

Latin America's Start-up Nation

arcus Dantus, CEO of Start-up Mexico is a serial entrepreneur who brings decades of experience creating, managing, and mentoring start-ups both in Mexico and the United States. Start-up Mexico is the country's first entrepreneurial super hub designed to foster collaboration and innovation for newly created companies: "Mexico has a larger percentage of new businesses as a proportion of existing business when compared to the most developed nations," Dantus told an Atlantic Council Google Hangout audience on December 4, 2015. Indeed, according to the Organisation for Economic Co-operation and Development's (OECD) latest Entrepreneurship at a Glance, compared to developed economies, Mexico registers double the average enterprise birth rate, comprising 21 percent of the country's economy.4

The reason for this is simple: Starting a business in Mexico is becoming easier. Historically, the country's entrepreneurs have faced three major barriers: high administrative burdens, restricted access to financing, and limited opportunities in certain sectors. But while some issues persist, the progress is outstanding.

A recently approved Corporations Act will make it possible to register a company in just one day. This new law also eliminates the costly requirement of public notary involvement in opening a business. On par with improved legislation, the government's ongoing initiatives to digitize and modernize regulatory burdens have helped to address some of the concerns around startup costs.

On the credit side, the number of Mexico-focused private equity and venture capital funds tripled between 2010 and 2014, while the capital stock has more than doubled.⁵ The Financial Reform of 2014 will continue to raise capital availability for small- and medium-sized enterprises (SMEs), as it makes available new tools and services aimed at supporting productive businesses.

By lowering the cost of electricity tariffs and making gasoline more affordable, energy reforms have boosted national competitiveness in the last two years.

Jalisco: Ahead of the Curve

hrough a combination of government action, corporate involvement, academic excellence, and vibrant technological communities, Jalisco has positioned itself as a center of investment in technology and innovation.

Almost two decades ago, electronics companies including Motorola, Kodak, Intel, and IBM began to settle in Jalisco, creating the basis for the region's technological development. The state is also home to some of the country's most advanced research centers, particularly in the fields of electronics, biotechnology, and genetics.

Every year, six thousand new engineers, designers, and developers join the labor force. Jalisco's top twenty universities attract an enormous pool of talent—including seven thousand international students—making it one of Mexico's top educational destinations.

With more than two hundred investors, eight innovation centers, and several technology and software parks, more than two thousand startups have been launched in the last decade. The state government's Ministry of Innovation, Science, and Technology—so far, the only one in Mexico—has adopted an "ecosystem" approach, laying the groundwork for a knowledge economy.

In 2015 alone, Jalisco hosted a series of high-profile entrepreneurship and innovation events, including Campus Party Mexico, a hackathon supported by the Inter-American Development Bank, the Start-up Weekend World meeting, and the government-led Digital Creative City series.⁶



Mexicans already have the 'chip' for creating new companies, but institutions such as the National Autonomous University of Mexico (pictured) should keep playing their part (February 2015).

How can Mexico transition from its entrepreneurshipdriven economy to an innovationdriven economy of scale?

Likewise, telecommunications reforms that lowered fixed and mobile phone service prices and improved service quality and coverage have helped create a more permissive business environment. Even more crucial for entrepreneurial activity was the opening of these sectors to private—and foreign—investment.

"Mexico produces more engineers per capita than anyone in the world, our creative class is growing, and the entrepreneurial culture is exploding," noted Marcus Dantus.⁷ Reports by the OECD show that, compared to other developed nations, Mexicans display an aboveaverage propensity for entrepreneurship. Why? Perhaps due to confidence in their knowledge and skills with little fear of failure. "Mexicans already have the 'chip' for creating new companies," says Dantus. "The problem is that they seldom become big companies."

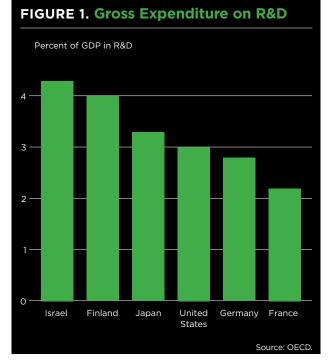
Jorge Soto, who was selected as one of the top-ten Mexican innovators by *Time* magazine, believes that Mexico still has a long way to go in building a business ecosystem that promotes innovation and growth. "Almost 90 percent of Mexico's 500 largest companies were founded at least fifty years ago. In the US, 45 percent of the top New York Stock Exchange companies did not exist 30 years ago," he noted in a 2013 presentation. Soto, who is currently "developing a simple, non-invasive, open-source test for early detection of multiple forms of cancer," has called for a deep reconceptualization of the country's entrepreneurial capabilities. "In Mexico, scalability of new ventures is almost nonexistent," he said.⁸

Indeed, while Mexicans have made strides in *starting* companies, *growing* them seems to be far more difficult. As the data show, after almost a decade of fast-paced entrepreneurial activity, Mexico has yet to generate a greater number of medium-sized companies, capable of reaching other markets. How can Mexico transition from its entrepreneurshipdriven economy—where SMEs account for two-thirds of all employment⁹—to an innovation-driven economy of scale?

Beyond Entrepreneurship

o move beyond mere entrepreneurship, Mexico can learn a lesson from across the ocean. Israel, a country with less than 10 percent of Mexico's population manages to attract more than \$2 billion in venture capital annually and produces 600 percent more patents than Latin America's second biggest economy. *Start-up Nation*, by Dan Senor and Saul Singer, chronicles Israel's impressive entrepreneurial success—the country with the most start-ups worldwide as well as one of the most vibrant tech start-up clusters.

But Israel is not only successful in entrepreneurial ventures—with the largest number of companies listed on the NASDAQ outside of North America and the highest level of venture capital as a share of GDP globally¹⁰—it is also a leader in innovation. It boasts the world's highest gross expenditure on research and development (R&D)



at 4.3 percent according to the OECD (see figure 1). The country produces the highest number of patents—about 14,000 in 2014 compared to 2,700 in Mexico. The 2015 *Bloomberg Global Innovation Index* placed Israel among the five most innovative countries in the world.

What Israel, Finland, South Korea, and other leading economies seem to understand is that the only driver of long-term economic growth is not entrepreneurship, but innovation—the creation of new products and services that the rest of the world needs and wants. Every country claims to be fostering a culture of innovation, but very few countries succeed in launching their own clusters, start-ups, or revolutionary technologies.

"The process of translating an idea into something that customers will actually pay for," says Pablo Salazar, Managing Partner at Nxtp.Labs (the most active acceleration and early stage fund in Latin America), "this is how we define innovation from the funding side." He believes that for innovation to create value it requires different types of support in various stages. "We have investments in many industries, from agriculture to satellites, and have seen innovators in almost every field you can imagine: finance, human resources, advertising."¹¹

So, how can Mexico improve its chances for this kind of innovation? What is the recipe for transitioning from a start-up nation to an innovation nation? According to Senor and Singer, Israel's formula is rather simple: tight proximity of research universities, large firms, and enterprises; a talent pool drawn from around the world; an ecosystem of venture capital; and government-led R&D funding.

Thus, the real drivers behind Israel's innovation success go beyond pure entrepreneurship. Collaboration among the government, the private sector, and education institutions is critical. Also, as researchers have found, once enough start-ups, investors and researchers are concentrated in one place, it becomes a magnet for innovation.¹² In other words, what Mexico should learn from Israel is that high-growth start-ups require a nurturing, systemic, and cluster-type approach to reach critical mass. The state of Jalisco is perhaps Mexico's best example of this approach (see box, p. 5).

Building an Innovation Ecosystem

The process of translating an idea into something that customers will actually pay for—that is how we define innovation from the funder's side," says Pablo Salazar.¹³ He believes that for innovation to flourish it requires different types of support, in various stages, and stemming from different sources.

With the creation of an Under Ministry of Small and Medium Enterprises in 2001, Mexico began to promote and coordinate innovation policies, with the objective of catalyzing business creation, generating new jobs, and accelerating economic growth. This policy was quickly bolstered by the establishment of a Small and Medium Enterprise Fund, and the launch of several programs focused on access to finance for innovation. The establishment of a number of public and privately managed business incubators and the introduction of one-stop shops for entrepreneurs were trademarks of former President Felipe Calderón's administration (2006-12).

The Enrique Peña Nieto administration, which took office in 2012, has strengthened these efforts, and introduced changes in innovation policy governance. The Office of Coordination of Science, Technology and Innovation (STI) was created in April 2013. Located within the Office of the President, its role is to improve the coordination of STI policies. Working with Mexico's General Council for Scientific Research, Technological Development and Innovation, and the Council for Science and Technology (CONACYT), the office has successfully implemented sweeping changes to Mexico's innovation system.



Carlos Gomez Andonaegui is the founder of Nebia, a start-up that is redefining showers in an effort to limit water consumption. He believes that the efforts of the Mexican government are starting to show. "Every day, more and more bright graduates of Mexico's top schools want to build their own companies. In the past, they would look to work for established companies. This is shifting the pace of innovation in the country," he said.¹⁴

Pablo Salazar shares this view. "Entrepreneurs, and others who innovate, finally have access to resources that were not there before," he said. "Mentorship, capital, markets, corporations are opening their doors, universities are finally aligning, and government has been very active by creating programs and platforms." But fostering an innovation ecosystem is no easy task.

Andrés Oppenheimer's book, *Create* or *Diel*, emphasizes the importance of a confluence of factors. It is not the spark of genius alone that leads to new ventures. An innovation ecosystem requires a critical mass of creative minds feeding off each other in places ballooning with creative energy. Such environments also need entrepreneurs with an interest in new technologies, private funders with an appetite for risk, government grants, and a business-friendly policy environment.

The government is trying to do its part. Over the past two years, the federal government's funding for innovation programs reached half-a-billion dollars, according to CONACYT, which manages around 40 percent of the public budget for science and technology. In the last five years, it doubled. The government is also trying to encourage business R&D using several incentive programs to allocate resources and grants to small and large firms. In recent years, through the work of the National Entrepreneur Institute (INADEM) and the Mexico-United States Entrepreneurship and Innovation Council (MUSEIC), the policy focus has emphasized the role of high-potential start-ups.

So, has any of this paid off? The short answer is yes. Mexico has seen a recent surge in high-impact entrepreneurs, and innovative new products and services. And while many reports have focused on the software, technology, and e-commerce industries, entrepreneurial creativity goes far beyond applications and software development. The Atlantic Council's series of Google Hangouts with Mexican innovators featured high-growth startups in manufacturing, apparel, hospitality, and eyewear (see box, p. 3).

The health-related industry provides further evidence that this "innovationdriven" entrepreneurial thinking is alive and well in Mexico. Examples abound, but some notable entrepreneurs deserve mention. Ana Paula Azuela founded *Voy al Doc*, Mexico's first online medical care scheduling service. An innovation ecosystem requires a critical mass of creative minds feeding off each other in places ballooning with creative energy.

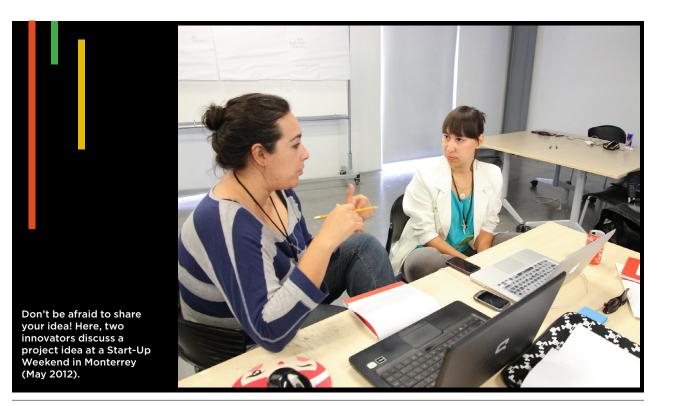
Ten Tips for Your Own Journey

ou have a great idea. You want to turn it into reality. Where do you start? What challenges will you face?

Here are some recommendations from our Mexican innovators:

- L Come up with an early prototype.
- 2. Iterate quickly and cheaply.
- 5. Don't be afraid to share your idea.
- Remember: the secret is execution.

- Find good partners that complement your weaknesses.
- 6. Work toward a patent.
- 7. Launch a crowdfunding campaign.
- 8. Apply for innovation grants and credits.
- 9. Join an incubator or an entrepreneurship hub.
- **10.** Look beyond Mexico's borders for talent, capital, and customers.



Marco Trujillo is creating a smart bracelet that serves as a guide for the blind. Ernesto Rodriguez founded Wearobot, a small business focused on the development of exoskeletons that can be used for rehabilitation.

The opportunity space for these highgrowth and innovative start-ups is huge. Take the story of Hugo Moreno, Founder and CEO of Ver de Verdad, a company that sells prescription glasses to lowincome communities in Mexico. "A few years ago, I figured out that if we got some machines to scan frames and cut lenses, we could have a complete set of eyeglasses for under \$2," says Moreno, who recently opened his twenty-sixth shop in less than five years.¹⁵ "We are the second largest provider of prescription glasses in Mexico today." The question is: How can Mexico create more of these success stories?

a wearable technology company that creates clothes that are fashionable yet highly functional. She shares the same excitement and sense of opportunity as the other innovators. In her words, the "inspiration is there, the talent is there, the opportunities are there, but a lot more funds need to be pushed into the start-up world." She warns, however, that funding and other types of support are not fully up to speed.¹⁶

Together with Carlos Gómez, Linda represents the expansion of Mexico's innovative start-ups that move beyond digital and into manufacturing consumer products. "I think that the talent in Mexico is there, and the manufacturing capabilities are present. There is an increased opportunity for high quality manufacturing in Mexico," says Gómez, who in spite of having moved his business to San Francisco, is searching for manufacturing partners back home.¹⁷

EDITH VALLE/CEDIM/FLICKR

The Journey Ahead

exico clearly is building a growing innovation track record. But to harness fully the benefits of a knowledge-based economy, the country's innovators, universities, corporations, and government must embrace a more cohesive and collaborative approach. The following recommendations outline an ambitious, well-coordinated, and more equitable set of policies and practices that would propel Mexico's inventive prowess into genuine and impactful innovations.

Public research is essential but it must have a purpose and be better aligned with business needs. To build an effective, compelling public research system Mexico needs to increase investment and improve the governance of research institutions. In recent years, public funding to strengthen the country's scientific and technological infrastructure has grown significantly, reaching \$140 million in 2013. Still, despite being the fourteenth largest economy in the world, Mexico produces less than 1 percent of global scientific research.¹⁸ The country must find ways to enhance the relationship between public research and business, increasing scientific productivity and impact.

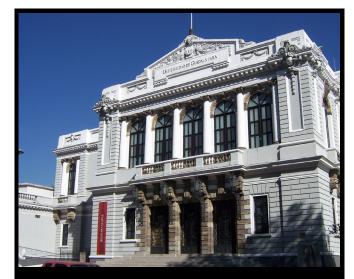
A 2014 reform in Mexico's Science and Technology Law is a step in the right direction. It helps by aligning incentives for research, allowing researchers themselves to benefit from the innovations that stem from their work. Publicly funded research institutions must continue to enhance the quantity and quality of their scientific publications, and broaden their scope to applied research.



Coordination must be improved among different sources of R&D funding. The aim is not just to increase the gross domestic

expenditure on R&D as a percentage of GDP—which should aim for a minimum of 1.5 percent—but also to better catalyze and combine the existing investments.

Mexico's universities, private businesses, and government need to continue developing simple and effective incentive systems that stimulate research, entrepreneurship, and investment in knowledge-based industries. As discussed before, new research and technological



Public research is essential but it must have a purpose and be better aligned with business needs. The University of Guadalajara (pictured) has developed a number of research programs.

> Mexico clearly is building a growing innovation track record.

Both the private sector and investors must find new ways to mobilize private funding for innovation and to increase patenting. development grants are slowly starting to flow from government to innovators, start-ups, corporations, and private universities. The state of Jalisco serves as a prime example of this "ecosystem-driven" approach, which should be emulated by other regions and cities in the country.

Indeed, much more coordination is required. A coalition of university deans and executives from corporations should be formed and meet regularly to discuss the educational demands of the private sector and structure programs accordingly.

Education and training systems must better teach and emphasize the range of skills needed for various types of innovation. Students should be equipped with the tools to "upgrade skills and adapt to changing market conditions."¹⁹ Universities and higher-education centers are crucial partners in the innovation ecosystem.

Moreover, the education and social sectors should move beyond pure entrepreneurship and foster an innovation culture "by instilling the skills and attitudes needed for creative enterprise."²⁰ As Marcus Dantus rightly pointed, "we need to instill in our future entrepreneurs the techniques and methodologies for innovation."²¹

Mexico's Tecnológico de Monterrey, a leading private university, has launched *Semana i*—an annual innovation week. Here, almost seventy thousand students, professors, and administrators are teamed up to collaborate—outside of the classroom environment—in solving concrete challenges. As global success cases show, it is vital for Mexico to arrive at a critical mass of creative minds, scientists, engineers, and entrepreneurs, backed by excellent education systems.

Both the private sector and investors must find new ways to mobilize private funding for innovation and to increase patenting. Much has been done to foster well-functioning financial markets, and to ease access to capital for the SME sector. But high-growth start-ups, in particular those in the early stages of innovation, require special treatment. It is not just the government's job to do all the heavy lifting.

Business and the investment sector need to play an important role in strengthening Mexico's innovation capabilities. In countries like South Korea, research-intensive companies—such as Samsung and LG—have modernized the whole economy.

It is equally imperative that Mexico's more established business sector, particularly the large companies and multinationals, foster an innovative workplace and ensure that employment policies facilitate organizational learning, development, and creativity. Ideally, large corporations would instill a culture of healthy risk-taking, becoming more open to engaging with high-growth and innovative start-ups.

A more efficient technology transfer model must be developed to exploit more efficiently the business opportunities that arise from scientific research and local technological developments. As public and private funding for science and technology continues to rise, Mexico needs to build "modern and reliable knowledge infrastructure that supports innovation."²²

Creating a "suitable policy and regulatory environment that allows for the responsible development of technologies and their convergence"²³ is imperative for competitiveness in knowledge-based sectors. The innovation system needs greater integration. This also means working to "foster innovation in the public sector, at all levels of government, to enhance the delivery of public services."²⁴

Finally, strong partnerships, particularly between business and universities, together with the right mix of public policies and incentives for investment, will help make innovation a key enabler for productivity and economic development in Mexico.

Resources and Endnotes

- I. Innovation Incentives Program (CONACYT), http:// www.conacyt.mx/index.php/fondos-y-apoyos/ programa-de-estimulos-a-la-innovacion (Spanish).
- II. National Council for the Evaluation of Social Development Policy-CONEVAL, http://www. coneval.gob.mx.
- III. National Institute of the Entrepreneur–INADEM, https://www.inadem.gob.mx/.
- IV. OECD Main Science and Technology Indicators (MSTI) Database, www.oecd.org/sti/msti.
- V. Science and Technology Advisory Forum-FCCYT, http://www.foroconsultivo.org.mx/home_ing/.
- VI. Sistema Nacional de Investigadores-SNI (CONACYT) http://www.conacyt.gob.mx/index. php/el-conacyt/sistema-nacional-deinvestigadores.
- 1 "Top 10 things to know about the Mexican Economy," World Economic Forum, May 5, 2015, http://www.weforum.org/agenda/2015/05/top-10-things-toknow-about-the-mexican-economy.
- 2 Doing Business, The World Bank, http://www. doingbusiness.org.
- 3 Author's own calculations, using Trading Economics, Bloomberg, February 10, 2016, http://www. tradingeconomics.com.
- 4 *Entrepreneurship at a Glance 2014* (Paris: OECD Publishing, 2014), http://dx.doi.org/10.1787/ entrepreneur_aag-2014-en.
- 5 Author's calculations with data released by the Latin American Private Equity and Venture Capital Association (LAVCA), February 10, 2016, http:// lavca.org/mexico-venture-capital/.
- 6 Jaime Reyes, "Innovation & entrepreneurship ecosystem in Jalisco," Presentation at the World Congress on Information Technology (WCIT) 2014, bit.ly/1L6kGS2.
- 7 "Innovators in Mexico: Mapping the Journey to Success," Atlantic Council (webcast), December 4, 2015, http://www.atlanticcouncil.org/events/ webcasts/innovators-in-mexico-mapping-thejourney-to-success.

- 8 *Un México de Emprendedores*, Instituto Mexicano de Ejecutivos de Finanzas (IMEF), 2013, http://imef. org.mx/PONENCIAIMEF2013/.
- 9 Author's calculations using data from INEGI, Censos Económicos, 2014.
- 10 Dan Senor and Saul Singer, *Start-up Nation: The Story of Israel's Economic Miracle*, (New York: Twelve, 2011).
- 11 "Innovators in Mexico: Mapping the Journey to Success," Atlantic Council (webcast), op. cit.
- 12 Entrepreneurial Ecosystems and Growth-Oriented Entrepreneurship, Organization of Economic Co-operation and Development, January 2014, http://www.oecd.org/cfe/leed/entrepreneurialecosystems.pdf.
- 13 "Innovators in Mexico: Mapping the Journey to Success," Atlantic Council (webcast), op. cit.
- 14 "Google Hangout: Manufacturing Innovators in Mexico," Atlantic Council (webcast), January 29, 2016, http://www.atlanticcouncil.org/events/ webcasts/google-hangout-manufacturinginnovators-in-mexico.
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.
- 18 OECD Science, Technology and Industry Outlook 2014 (Paris: OECD Publishing, 2014), http://dx.doi. org/10.1787/sti_outlook-2014-en.
- 19 OECD Innovation Strategy 2015: An Agenda for Policy Action (Paris: OECD Publishing, 2015), http:// www.oecd.org/sti/OECD-Innovation-Strategy-2015-CMIN2015-7.pdf.
- 20 Ibid.
- 21 "Innovators in Mexico: Mapping the Journey to Success," Atlantic Council (webcast), op. cit.
- 22 OECD Innovation Strategy 2015, op. cit.
- 23 Ibid.
- 24 Ibid.

About the Author

Arturo Franco is Nonresident Senior Fellow with the Atlantic Council's Adrienne Arsht Latin America Center. His career combines high-level positions in Fortune 500 corporations and global organizations, with public policy and international development experience, spanning from building materials giant CEMEX and the World Bank, to social enterprises and two successful business start-ups.

In 2008, Arturo became Global Leadership Fellow at the World Economic Forum and regional manager for Latin America. In 2011 he was Resident Fellow of the Center for International Development at Harvard University, focusing on economic growth and industrial policy.

Holder of an MPA in International Development from Harvard, a Masters in Constitutional Law and Governance from Mexico's Autonomous University, and an Executive MBA in Global Leadership, Arturo has also been a research associate at Colombia's Fedesarrollo, and Visiting Professor at Tec de Monterrey, his alma mater.

Arturo has founded and advised several social enterprises and NGOs, including Causas.org, the largest interactive platform for civil society in Mexico. He is the Vice Chair of Harvard Kennedy School's Alumni Board of Directors, member of the Executive Board of Teach for Mexico, and a trustee for the United Kingdom's Fatherhood Institute.

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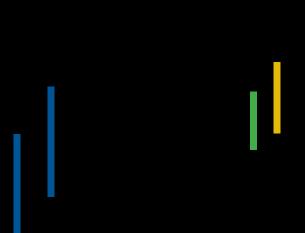
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