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# The Argentina App Economy: 2018

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## INTRODUCTION

Apple's introduction of the iPhone in 2007 initiated a profound and transformative new economic innovation. While central bankers and national leaders struggled with a deep financial crisis and stagnation, the fervent demand for iPhones – and the wave of smartphones that followed – was a rare force for growth.

Today, there are five billion mobile broadband subscriptions, an unprecedented rate of adoption for a new technology.<sup>1</sup> Use of mobile data is rising at 65 percent per year, a stunning number that shows its revolutionary impact.<sup>2</sup>

More than just hardware, the smartphone also inaugurated a new era for software developers around the world. Apple's opening of the App Store in 2008, followed by Android Market (now Google Play) and other app stores, created a way for iOS and Android developers to write mobile applications that could run on smartphones anywhere.

The iPhone and the App Store were the beginning of a global App Economy: an army of app developers writing mobile applications for billions of users.<sup>3</sup> For the most part, these developers are not hobbyists writing games in their basements. Instead, as more and more people are linked to the Internet through their smartphone and mobile data connections, mobile apps have become an essential way for businesses, nonprofits, and governments to

interact with their customers, members, and citizens. (Indeed, data shows that people spend most of their Internet time interacting with apps).

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Moreover, the long-term growth prospects of the App Economy are still strong. Yes, the great surge of new game, media, and e-commerce apps is probably close to its peak. However, the rise of the Internet of Things (IoT) means more objects and physical processes will be connected to the Internet.

Increasingly, individuals will be using mobile apps to interface with their homes, their travel, their entertainment, their cars, their schools, their health providers, and their state and local governments. Employees in many enterprises are using mobile apps to monitor or control work processes. These apps will be highly functional and sophisticated, serving an essential role in interacting with our environment.

### **THIS PAPER**

This paper builds on our 2016 report on the Argentine App Economy.<sup>4</sup> We show how the App Economy has the potential to play an important contributing role to Argentina's economic development. As of February 2018, we estimate that the Argentine App Economy totals roughly 40150 jobs, ranging across industries such as tech, finance, and apparel. By comparison, in our previous work we estimated Argentine App Economy employment to equal roughly 33,250 in March 2016.

We provide an overall breakdown of App Economy employment by operating system, comparing the number of jobs in the iOS ecosystem with the number of jobs in the Android ecosystem. Moreover, we show how App Economy employment is distributed geographically across the country.

### **CONTEXT**

In this paper we focus on App Economy employment in Argentina. However, this paper is part of a larger research project examining App Economy employment in different countries and regions, including the United States, the European Union, Japan, Australia, Mexico, Brazil, Colombia, Thailand, Vietnam, and Indonesia.

There are several reasons we have focused on App Economy jobs. First, the invention of the smartphone was one of the two most important technological innovations over the past decade, in terms of economic impact, so it's natural to want to know how many jobs it is creating.

Second, the App Economy is one of the main forces propelling the global boom in tech-related jobs. Recent research shows that the 10 leading U.S. tech/telecom companies employ 1.6 million workers, up 82 percent from 10 years earlier. Many of these new jobs are connected with the mobile broadband and smartphones.<sup>5</sup> The same is true in Europe as well.

**The App Economy is one of the main forces propelling the global boom in tech-related jobs**

Third, we focus on the App Economy because it can be a potent force driving export-oriented growth. Mobile apps can be easily developed in a country such as Argentina, and then shipped around the world.

## MEASURING THE APP ECONOMY

We have chosen to use employment as our preferred metric for measuring the economic impact of the App Economy. Our methodology (described in the Methodology section) is based on analyzing databases of online job postings. These job postings typically contain information about the skills required for the job and the location of the job. We are then able to search for jobs that require App Economy-related skills, such as knowledge of iOS or Android. In this way we can develop an estimate of App Economy jobs by country and region.

Our methodology for using online job postings to estimate the size of the App Economy was originally introduced in 2012, in a widely-quoted paper that reported the first estimate of U.S. App Economy jobs.<sup>6</sup> In December 2015 we extended and standardized the original methodology so it could be applied to a wide variety of countries, languages, and economic environments. Our goal was to produce a set of globally-consistent

and credible estimates for App Economy employment by individual countries, broad geographical regions, and, where possible, by the largest cities.

For this study, a worker is in the App Economy if he or she is in:

- An IT-related job that uses App Economy skills – the ability to develop, maintain, or support mobile applications. We will call this a **“core” App Economy job**. Core App Economy jobs include app developers; software engineers whose work requires knowledge of mobile applications; security engineers who help keep mobile apps safe from being hacked; and help desk workers who support use of mobile apps.
- A non-IT job (such as sales, marketing, finance, human resources, or administrative staff) that supports core App Economy jobs in the same enterprise. We will call this an **“indirect” App Economy job**.
- A job in the local economy that is supported either by the goods and services purchased by the enterprise, or by the income flowing to core and indirect App Economy workers. These **“spillover” jobs** include local professional services such as bank tellers, law offices, and building managers; telecom, electric, and cable installers and maintainers; education, recreation, lodging, and restaurant jobs; and all the other necessary services. We use a conservative estimate of the indirect and spillover effects, as discussed in the Methodology.

**RESULTS**

Table 1 provides the number of App Economy jobs in Argentina. As of February 2018, we estimate the Argentine App Economy includes

40,150 jobs. This includes core App Economy jobs, indirect App Economy jobs, and a conservative estimate of spillover jobs.

TABLE 1: Argentine App Economy Employment

	THOUSANDS OF JOBS (FEBRUARY 2018)
<b>Argentina</b>	40
<b>Buenos Aires</b>	35
<b>Córdoba</b>	2
<b>Other areas</b>	3

Data: Progressive Policy Institute, Indeed

Obviously, Argentina’s App Economy employment falls far short of Brazil, which had 312,000 App Economy jobs in January 2017.<sup>7</sup> However, Argentina’s App Economy compares favorably to smaller European countries such as Belgium (25,000 App Economy jobs in January 2017) and Ireland (15,000 App Economy jobs).<sup>8</sup>

**Operating System**

The two major smartphone operating systems today are iOS and Android. Employers looking for

app developers often specify in which operating system or systems they want their hires to have expertise. This enables us to assign jobs to either the iOS ecosystem or the Android ecosystem – or both.

Table 2 shows the distribution of App Economy jobs in Argentina by mobile operating system. The numbers sum to more than 100 percent because some jobs specify more than one operating system – say, both iOS and Android skills.

TABLE 2: Argentine App Economy Jobs by Operating System

	THOUSANDS OF JOBS	SHARE OF ALL APP ECONOMY JOBS
<b>iOS ecosystem</b>	26	64%
<b>Android ecosystem</b>	34	84%

Data: Progressive Policy Institute, Indeed

## EXAMPLES

The Argentine App Economy is diverse, spanning several sectors. It is mostly concentrated in Buenos Aires, but is found in other parts of the country as well. For example, Argentina is home to a nascent tech sector, including mobile app development. As of February 2018, IT firm RH + Technology was hiring a senior iOS developer in Buenos Aires. Digital content production company 4r Soluciones was looking for a mobile application developer with experience in iOS development in Santa Fe. Software development company GlobalLogic had an opening for an iOS technical leader in Buenos Aires, while mobile games studio Pixowl was hiring a senior quality assurance tester with iOS and Android experience in Buenos Aires.

Also in Buenos Aires, digital company Valtech was hiring a mobile developer, while software development company Belatrix was looking for iOS and Android developers. Digital production company Aerolab was hiring UI/UX designers to design apps for iOS and Android in Buenos Aires, while Cordoba Software was hiring an Android developer in Córdoba.

Argentina's App Economy has begun to spread into other sectors too, such as finance. In Córdoba, credit card company Tarjeta Naranja SA was looking for a senior analyst of information security with knowledge of iOS and Android mobile security as of March 2018. As of February 2018, Scotiabank Digital Factory was hiring a technology director with experience in iOS and Android in Buenos Aires. Bull Market Brokers SA was searching for a mobile developer with iOS experience in Buenos Aires.

Companies in sectors such as apparel, food, marketing, e-commerce, and energy are also hiring App Economy workers. As of March 2018, apparel company White Label MFG was hiring a senior PHP developer with knowledge of iOS and Android development in Sante Fe. As of February 2018, dining reservation company OpenTable had an opening for an iOS engineer in Córdoba. AppDevices, which designs apps for connected devices, was hiring a senior full stack developer with iOS experience in Buenos Aires. Mobile marketing firm AppsFlyer was searching for a support engineer with iOS and Android development experience in Buenos Aires. Online marketing agency Ideatum SRL was hiring a mobile application developer with experience in iOS and Android in Buenos Aires.

E-commerce company Mercado Libre was advertising for a mobile software engineer with iOS knowledge in San Luis. Classifieds service OLX Group was hiring an iOS software engineer in Buenos Aires. Energy technology firm Power Solution SA was hiring a senior mobile developer in Buenos Aires, while customer service technology firm Interaxa was hiring an Android developer.

## LONG-TERM POTENTIAL AND OBSTACLES

Mauricio Macri was elected President of Argentina in 2015 on promises to introduce more pro-business policies, reduce inflation, and open up Argentina's economy. In 2017, as part of his plan, Argentina passed the Entrepreneurs' Law, which aims to reduce registration times and costs for entrepreneurs by allowing them to set up their businesses via the Internet in one day.<sup>9</sup> At the time of the reform, opening a new business took an average of 45 to 60 days.

**In 2017, as part of his plan, Argentina passed the Entrepreneurs' Law, which aims to reduce registration times and costs for entrepreneurs by allowing them to set up their businesses via the Internet in one day.**

The law also creates tax incentives for investors to invest in Argentine startups and venture capital funds. Investors will be able to deduct up to 75 percent of their total investment from their income tax contributions, while those who invest in less developed areas or with lower access to capital will be able to deduct up to 85 percent. Finally, the Entrepreneurs' Law creates 13 accelerators (to promote high-impact projects) as well as 10 funds, with public investment accounting for 40 percent for the first time.

The Entrepreneurs' Law is a commendable step forward in reducing bureaucracy and increasing investment in Argentina. However, the government can do even more to catalyze growth. For example, while Argentina ranked 27th globally in digital skills according to the International Telecommunication Union, the country ranked 52nd and 64th in terms of access and use, respectively.<sup>10</sup> That can be improved by good policy.

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Moreover, the government can address rules and regulations that potentially hold back developers. One important example is the new set of rules, passed in December 2017,

imposing the 21 percent value-added tax on digital services provided by nonresidents.<sup>11</sup> This measure is sure to raise revenue, since cross-border digital services are increasingly important. However, it will also have the effect of impeding cross-border data flows, potentially discouraging investment and growth, and slowing the development of Argentina's tech sector.

Another example: In early 2017, Argentina eliminated the protective tariffs for tablets and computers. One year later, the cost of those products has dropped significantly.<sup>12</sup> However, the smartphone market is still covered by protective tariffs. Reducing or eliminating these tariffs should make higher end models available at a lower price, giving a boost to developers.

## CONCLUSION

Since its invention in 2007, the iPhone has supplied an important source of jobs and economic growth for Argentina. We estimate Argentina's App Economy employment to total 40,150 as of February 2018. This includes core App Economy jobs, indirect App Economy jobs, and a conservative estimate of spillover jobs. App Economy jobs span sectors across the economy, ranging from tech and education to finance and others.

Argentina has made significant strides in embracing tech and growing its digital economy. For example, the Entrepreneurs' Law passed last year streamlines the process for establishing a business and creates tax incentives for investors and accelerators and funds for entrepreneurs.

However, more steps can be taken to enable the next generation of app development, such as increasing access to and use of ICT technology and lowering barriers to entry such as taxation for foreign companies.

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# Appendix

## METHODOLOGY

Our methodology consists of six distinct steps:

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### 1. Identification of App Economy job postings

Using summary statistics generated by searches on indeed.com, we identified job postings for App Economy jobs containing one of the following keywords: iOS, Android, and Spanish equivalents for related phrases such as “mobile.”

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### 2. Validation

Invariably, some job postings identified in Step 1 will not fit the criteria of an App Economy worker (e.g., a job posting for a truck driver using an app). We therefore validated the sample by manually examining a sample of the job postings from Step 1 to eliminate those that do not fit our criteria of an App Economy worker. This allows us to estimate a validation ratio we applied to the results of Step 1.

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### 3. Identification of IT job postings in Argentina, and estimation of the ratio of job postings to employment for overall IT occupations

We constructed a keyword list to identify job postings for IT occupations in Argentina. This included a core list of Spanish and English words and phrases commonly found in job postings for IT occupations.

We then validated the outcome using the same methodology as Step 2, manually examining a sample of job postings to assess which actually correspond to IT occupations. Then the resulting number was used to estimate the ratio of job postings to employment for overall IT occupations.



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#### 4. Estimation of App Economy core jobs for Argentina

We multiplied the ratio generated in Step 3 and the validated number of App Economy job postings generated in Step 2. The result gave us the estimate of core App Economy jobs for Argentina in February 2018.

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#### 5. Estimation of total App Economy employment for Argentina

Using the same multipliers as in our previous work, we estimated the total number of App Economy jobs in Argentina. We assumed that each core App Economy job is supported by one job-equivalent at the same company (e.g., managers, human resources, accounting). Then we assume that each company job generates one job in the rest of the economy. This is a very conservative assumption for spillovers.

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#### 6. Estimation of the total employment in the iOS and Android ecosystems in Argentina

Out of the set of job postings containing the terms “iOS” or “Android,” we identified the share that contain terms belonging to the iOS ecosystem (Apple, iPad, iPhone, iOS) and the share belonging to the Android ecosystem (Android, Google). Then those shares were applied to all Argentine App Economy employment.

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## About the Authors

Dr. Michael Mandel is the Chief Economic Strategist at the Progressive Policy Institute and a senior fellow at Wharton’s Mack Institute for Innovation Management.

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# References

- 1 "Ericsson Mobility Report," November 2017, <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-november-2017.pdf>.
- 2 Ibid.
- 3 The term "App Economy" was being used as early as 2009, in a BusinessWeek cover story "Inside the App Economy," (October 22, 2009). <http://www.bloomberg.com/news/articles/2009-10-22/inside-the-app-economy>
- 4 Michelle Di Ionno and Michael Mandel, "Argentina: The Road to the App Economy," Progressive Policy Institute. <http://www.progressivepolicy.org/issues/economy/argentina-road-app-economy/>
- 5 <http://www.progressivepolicy.org/blog/tech-telecom-employment-2017/> These figures update the analysis in Michael Mandel, "An Analysis of Job and Wage Growth in the Tech/Telecom Sector," September 2017.
- 6 Michael Mandel, "The App Economy: Where the Jobs Are," February 2012, South Mountain Economics LLC.
- 7 Dr. Michael Mandel and Elliott Long, "Brazil's App Economy," Progressive Policy Institute, February 2017. <http://www.progressivepolicy.org/publications/policy-memo/brazils-app-economy/>
- 8 Michael Mandel and Elliott Long, "The App Economy in Europe: Leading Countries and Cities, 2017," Progressive Policy Institute, October 2017.
- 9 Marta Cruz, "Argentina's government is wooing entrepreneurs with a new law," TechCrunch, June 21, 2017. <https://techcrunch.com/2017/06/21/argentinas-government-is-wooing-entrepreneurs-with-a-new-law/>
- 10 "ICT Development Index 2017," International Telecommunication Union.
- 11 "Argentina starts to tax digital services supplied by non-residents," Taxamo, January 31, 2018. <https://www.taxamo.com/insights/argentina-digital-services-tax/>
- 12 <https://www.cronista.com> <https://www.cronista.com/economiapolitica/Despues-de-un-ano-sin-aranceles-ya-son-24-mas-baratas-las-computadoras-20180402-0029.html>.



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