

Emerging Market Growth via the Mobile Revolution



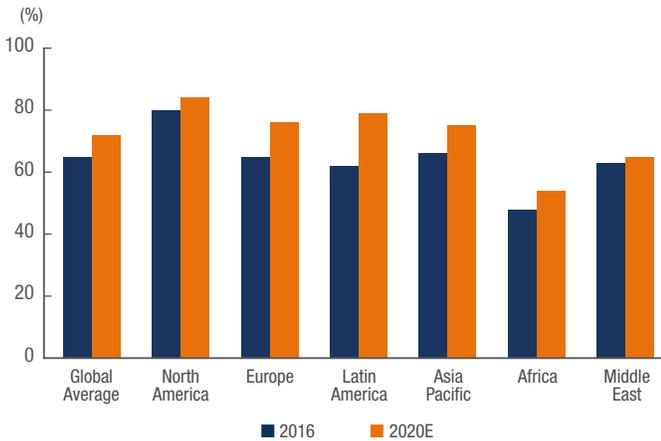
By Malcolm Dorson, Portfolio Manager and Paul Dmitriev, Investment Analyst



The advent of the internet and e-commerce is a well-known story across developed markets and Asia, but the mobile revolution takes it a step further, as improved connectivity in Latin America (LatAm), Emerging Europe, the Middle East, and Africa (EEMEA) has made and continues to make a substantial impact on both corporate and country levels. From a bottom-up perspective, the mobile revolution is allowing companies to reach new customers, improve efficiencies, cut costs, and grow earnings. From a top-down perspective, social media and chat platforms are connecting citizens and real-time news flow more than ever before. With this strong dissemination of information, citizens are empowered to communicate, congregate, and garner momentum for change. In effect, we believe that the mobile revolution is democratizing these regions from both a commercial and political perspective.

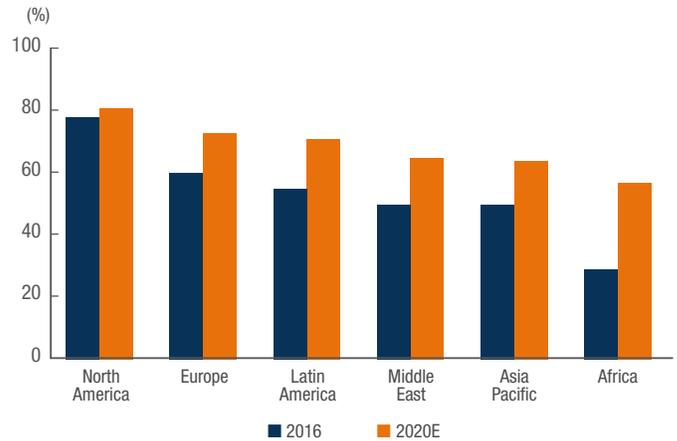
Smartphone and mobile penetration rates vary across the world, but emerging markets (EM) are forecast to experience faster growth than developed markets (DM) through 2020. As mobile penetration increases, EM economies benefit from higher levels of employment, investment, and productivity, which should lead to GDP growth. A World Bank study found that a 10% increase in mobile penetration corresponds with a 1.35% increase in GDP for developing countries.¹ By 2020, mobile penetration is expected to increase by 17% in Latin America (vs 16% smartphone penetration), 11% in Europe (vs 13% smartphone penetration), 9% in the Asian Pacific (vs 14% smartphone penetration), 6% in Africa (vs 28% smartphone penetration), and 2% in the Middle East and North Africa region (vs 15% smartphone penetration).² EM will also likely see faster growth relative to DM in total unique mobile subscribers through 2020.

Mobile Penetration by Region



Source: GSMA Intelligence, 2017. E=estimate

Smartphone Penetration by Region



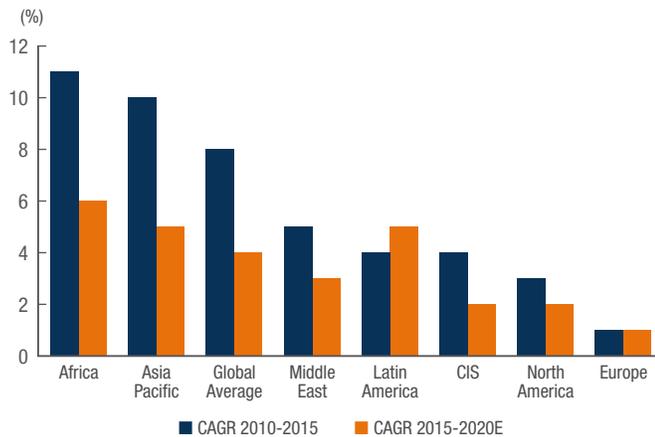
Source: GSMA Intelligence, 2017. E=estimate

Estimates and forecasts are only projections and not guarantees.

¹Economic impacts of Broadband” in Information and Communications for Development: Extending reach and increasing Impact, Qiang and Rossotto (with Kimura), 2009.

²GSMA Intelligence, 2017.

Unique Mobile Subscriber Growth by Region



Source: GSMA Intelligence, 2017. E=estimate

The mobile economy is becoming increasingly important as the contribution to total GDP grows nearly 50 basis points on average from 4.8% to 5.3%. For EM regions such as Africa, Latin America, and the Middle East, the mobile economy already contributes more to GDP than DM regions such as North America. The combination of increasing mobile penetration and more time spent on devices is driving growth in data consumption as well as annual revenue per user. Capital expenditures for 4G and eventually 5G adoption will pick-up and expedite these trends further, especially with the growth of new technology such as virtual reality and augmented reality, which will lead to increased video traffic growth. In addition, improvements in artificial intelligence (AI) will help drive further operational efficiencies within customer relationship management (CRM) systems given better learning of customer behavior and allowing for improved business-to-consumer and business-to-business services and experiences in these regions.

Contribution of Mobile Ecosystem to GDP (2016 GDP, \$bn)

MAJOR AREA OR COUNTRY	Direct	Indirect	Productivity Gains	Total Impact 2016A	Total Impact by 2020E	Growth	Number of People Employed
North America	256	163	371	790	1,024	29.6%	2.50m
<i>% of GDP</i>	1.3	0.8	1.8	3.9	4.7	80bps	
Europe	161	94	286	541	674	24.6%	2.60m
<i>% of GDP</i>	1.0	0.6	1.8	3.4	3.9	50bps	
Asia Pacific	411	142	766	1,319	1,600	21.3%	16.10m
<i>% of GDP</i>	1.6	0.6	3.0	5.2	5.4	20bps	
Africa	48	12	92	152	215	41.4%	3.76m
<i>% of GDP</i>	2.1	0.6	4.1	6.8	7.6	80bps	
Latin America	70	20	170	260	320	23.1%	1.72m
<i>% of GDP</i>	1.4	0.4	3.2	5.0	5.6	60bps	
Middle East & NA	53	14	98	165	193	17.0%	1.13m
<i>% of GDP</i>	1.4	0.3	2.5	4.2	4.3	10bps	

Source: GSMA Intelligence, 2017. A=actual, E=estimate

The growing mobile economy presents unique opportunities to capture growth and see disruption in EM as the world becomes more accessible. Everything from payment systems and e-commerce, to travel and dining apps is being adopted at increasing rates due to a combination of decreasing costs,³ growing security, and ease of use and familiarity. As adoption and penetration rates increase, EM also stands to benefit from greater taxable collection which can then be reinvested into expanding spectrum, creating a virtuous cycle that can result in more sustainable growth, or help economies' fiscal balances.

Changing the Corporate Landscape

This massive growth in connectivity across LatAm and EEMEA is creating new platforms and increased efficiency levels for different business segments across the regions we monitor. These new channels are changing the way populations are banking, shopping, learning, traveling, and even eating. On account of the mobile revolution, citizens in remote regions of Brazil can now receive the same education as students in Sao Paulo, a family in Siberia has access to the same banking options as someone in Moscow, and worshipers across the world can plan pilgrimages to Mecca with a few clicks on their phones. We see the increase of mobility having profound impacts on shopping, travel, education, banking, and dining.

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³GSMA Intelligence, The Mobile Economy Africa 2016.

As the cost of mobile phones has decreased, new mobile payment solutions have sprung up providing many users access to financing for the first time, allowing cross-border payments, all while building up credit profiles of new users.

As connectivity increases and users continue to migrate online, companies have begun building out their e-commerce platforms to better serve their customers' unique needs. The best e-commerce platforms in EM are easy to use, accessible, and offer reasonable logistic solutions, as last-mile delivery in many EM countries remains prohibitive.

E-commerce: MercadoLibre, which has been an e-commerce leader across LatAm, has found success by providing easy solutions for both buyers and sellers in their marketplaces via their own payment solution, MercadoPago (an integrated online payments solution designed to facilitate transactions both within and outside the MercadoLibre ecosystem) and their own unique delivery solution, MercadoEnvíos (a cost-efficient integrated platform that uses existing logistics and shipping carriers), which has resulted in a seamless and preferable user experience. In Poland, the shoe retailer CCC has seen a rapid increase in its e-commerce business driven by growth in logistics operations in the country, as e-commerce now represents around 60% of the warehousing space used by retail chains and logistics operators. As companies like MercadoLibre and CCC continue to grow and implement best practices in new regions, we expect e-commerce penetration rates in LatAm and EEMEA to converge with the US and China at 9% and 13%, respectively.⁴ In Brazil, we are already seeing the positive impact of increasing mobile penetration rates and broadband coverage as total e-commerce sales are forecast to represent approximately 4.3% of total retail sales in Brazil for 2017, up from 3.8% in 2016.

Banking: Traditional banking services have also been disrupted by the digital and mobile ecosystem in many EM markets. As the cost of mobile phones has decreased, new mobile payment solutions have sprung up providing many users access to financing for the first time, allowing cross-border payments, all while building up credit profiles of new users. In Brazil, PagSeguro's Minizinha point of sale (POS) machine is a smaller and cheaper entry-level mobile POS device than that of established banking peers. The Minizinha can use a merchant's cell phone to function and accept payments by connecting to a merchant's cell phone network via Bluetooth. Despite being a small player in the market, PagSeguro has been able to achieve success due to their strong value proposition for small and very-small merchants. According to PagSeguro, 75% of customers who currently own the Minizinha device did not accept card payments prior to signing up with PagSeguro, and 53% of merchants also cited their desire to receive money in a timelier manner as another key decision in using the device.

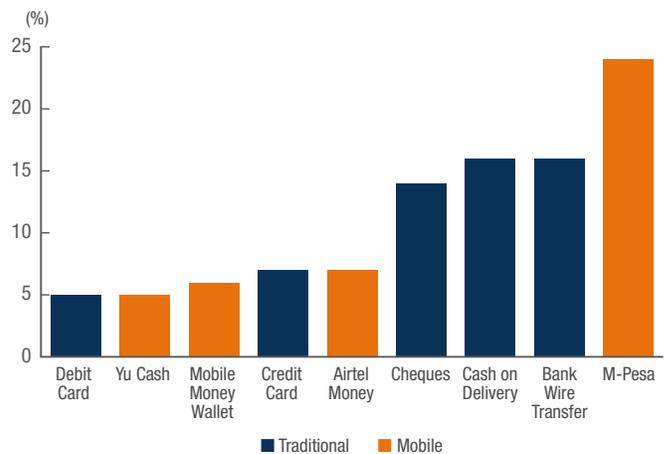
⁴Statista, 2017.

⁵The Economist, data as of 2015.

⁶Innovations for Poverty Action.

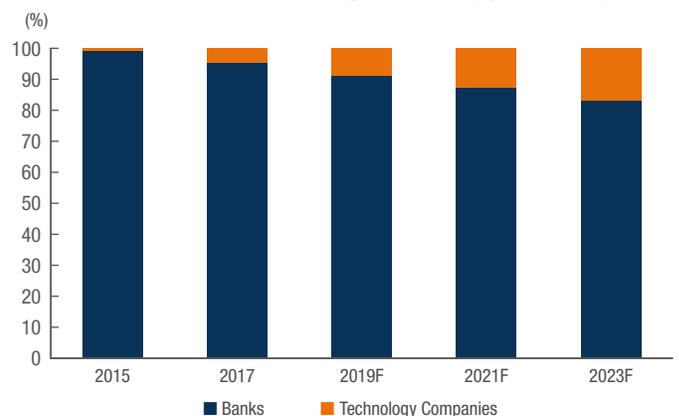
Mobile money and digital commerce are also having a profound impact across Africa, particularly in areas where considerable proportions of the population lack access to financial services and products (such as savings, payments, credit and insurance), by allowing non-bank players such as mobile operators to use digital technologies to offer financial services in areas with underdeveloped infrastructure. In Kenya, 90% of internet subscribers (approximately 16 million people) access the internet via mobile devices. M-Pesa, a mobile payment app launched by Safaricom in 2007, has brought millions of people into the formal banking system by helping users save money and get access to credit. Around 25% of Kenya's GDP flows through the mobile payment app,⁵ and it has helped increase per capita consumption levels, while lifting approximately 2% of Kenyan households out of poverty since being launched.⁶

Payment Methods Accepted by Kenyan Startups



Source: GSMA Intelligence Kenya ICT & Mobile Entrepreneur Survey

Russian Market Share of Banking Services (by Revenue)



Source: Sberbank Strategy Day Presentation, 2017. F=forecast

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Traditional banks are also responding to technological changes. Sberbank, for example, is pivoting from a traditional banking model to its goal of becoming the #1 Fintech Company in Russia as they see banks losing market share of banking services to technology companies through 2023. With the growth of “big data,” Sberbank hopes to increase their use of AI and ML (machine learning) by embedding as much possible client data using their digital ecosystem into as many banking processes as possible to reduce manual labor, while being faster, more efficient, and more precise. The company aims to provide real-time credit scoring for 90% of their customer base by 2020. The transition towards a digital ecosystem will also help reduce costs with Sberbank estimating a minimum 25% cut in branches in the next three years, with a slightly smaller reduction in employee count (20%).

Sberbank AI Example: Real-time Decision Making

RETAIL	Yesterday	Today	Tomorrow
Application Number of Fields	152	11	0
Time to Decision	2 days	4 hours	Real-time

CORPORATE	Yesterday	Today	Tomorrow
Application Number of Fields	50	23	0
Time to Decision	30 days	<15 days	<1 hour

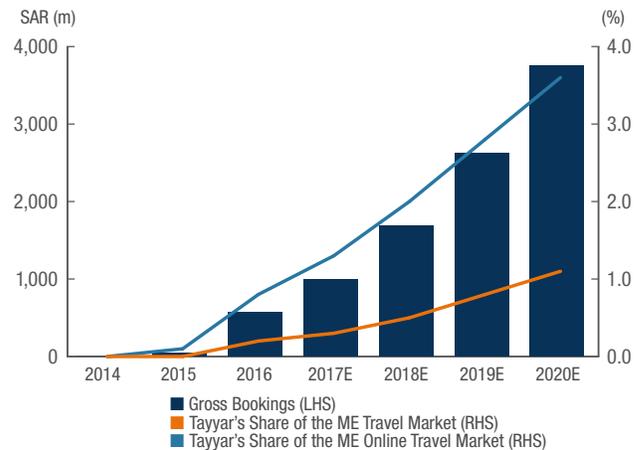
Source: Sberbank Strategy Day Presentation, 2017.

Travel: Travel in EM is also being disrupted by the growing internet and mobile penetration. Whether simplifying the search process for an individual portion of a trip, or providing itineraries for the entire trip, companies need to have an online presence to compete. Despegar, a leading online travel agency (OTA) in LatAm has seen mobile transactions as a percent of total

transactions continue to grow in importance. In 2016, Despegar had 50% of traffic coming from mobile devices, up from 15% in 2014. Despite the rapid growth, the region remains underpenetrated as only 34% of travel is booked online in LatAm, which is below the EU and US levels of 51% and 48%, respectively.⁷

Al-Tayyar Travel Group (ATG) is another company that is quickly diversifying into the fast growing online travel market in the Middle East and North Africa (MENA) region and religious tourism in Saudi Arabia via its hospitality assets. ATG has favorable tailwinds from the increasing number of pilgrims for the Hajj and Umrah as religious tourism is an important focus area for the Saudi Arabian government as they look to increase their non-oil based revenues. The government targets 2.5 million pilgrims by 2020 (a 34% increase from 1.86 million in 2016).

ATG Gross Bookings and Share of Middle East Travel Market



Source: HSBC Research, 2017. E=estimate

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⁷City Research, October 2017.

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Dining: The way consumers eat in EM is also being impacted by the changing digital ecosystem. Delivery Hero, an online food ordering and delivery platform across EM, aims to unlock the underpenetrated out-of-home dining segment (i.e. food not made or cooked at home including delivery), which is being driven by three key trends: (1) online and mobile engagement, (2) on-demand and last-mile logistics, and (3) life-style urbanization and convenience. Mobile technology creates the platform for the emergence of fast growing companies like Delivery Hero and the opportunity for the restaurants themselves to improve efficiencies and grow earnings.

according to company data. Online orders at Domino's Pizza are not only larger on average, but are ordered more frequently by repeat customers. For example, Turkey's 2.8 million active online customers generally order more frequently compared to other channels resulting in online system sales like-for-like (LFL) growth of 18.8% versus system sales LFL growth of 7%.⁹ In Russia, which has greater on-line ordering penetration compared to Turkey, online system sales LFL growth reached 141% versus system sales LFL growth of 41.6%.¹⁰ In general, Domino's Pizza operates with a mobile first strategy given that most of their online traffic comes from mobile platforms. The company also

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Alsea, a Mexican-based food operator with the master franchise agreement rights to numerous well-known brands such as Starbucks and Domino's Pizza, recently launched a new app-based loyalty program called "WoW" that would allow users to earn points by dining at their restaurants, which could then be used at all of the other Alsea operated restaurants in the region. The goal is to grow ticket sizes and frequencies, while keeping consumers within the Alsea ecosystem from breakfast through dinner. Despite WoW only being available in Mexico currently, the program already has over 1 million users, and represents about 17% of total transactions for Alsea. The WoW loyalty program drives a 30-35% increase in average ticket size,⁹ which can double for those that pay with credit cards. The loyalty program also leads to more frequent dining. As adoption of the mobile app continues to grow, Alsea will also likely benefit from better CRM and customer data, which they hope to use to provide tailored offers to customers.

DP Eurasia, the master franchise agreement holder for the Domino's Pizza brand in Turkey, Russia, and several other former Soviet-bloc countries, believes that the out-of-home dining segment is underpenetrated in both Turkey and Russia. They hope that the increasing availability and convenience of the delivery channel will support penetration. In fact, from 2010 to 2015 daily online food orders increased from 26,000 to 110,000,

follows a "Domino's Anywhere" strategy where they aim to create new methods for customers to place orders through online platforms (e.g. ordering your favorite pizza using an emoji). Dominos further enhances the customer experience with their unique Pizza Delivery GPS Tracker that monitors deliveries in real time.

Democratizing EM

For all that can be said about the mobile revolution and its substantial impact on commerce, the most important effect we've seen across the LatAm and EEMEA regions has been the ability for connectivity to bring citizens behind a political movement that can impact their respective countries and economies. This has come in the form of elections, impeachments, and reforms. People are connected across the globe, which brings a growing understanding of transparency and standards for governance. News channels, business leaders, and even politicians have taken to Instagram, Facebook, and Twitter. The dissemination of information is no longer contained to political and economic capitals. With broad levels of connectivity, all citizens now have the power to make their own decisions and empower leaders to act with their best interests at hand.

⁹Alsea Management, 2017.

⁹DP Eurasia, based on 2016 data.

¹⁰DP Eurasia, based on 2016 data.

Saudi Arabia: Crown Prince Mohammad Bin Salman's (MBS) comprehensive social reforms, the fact that 70% of Saudi citizens are less than 30 years old, and that the country boasts over 160%¹¹ mobile penetration is not a mere coincidence. We believe that MBS understands that his recent consolidation of power and dramatic economic reforms cannot move ahead without the support of his citizens. Saudi's neighbors in the Gulf Cooperation Council (GCC) have the highest penetration of Twitter users in the world along with the highest consumption of YouTube per capita in the world. The number of Saudis using smart phones to access the internet is growing almost 20% a year. Over 64% of the population is online, where Facebook and Twitter dominate social media market share.¹² The majority of the young Saudi population has access to global social media, news, and streaming platforms.

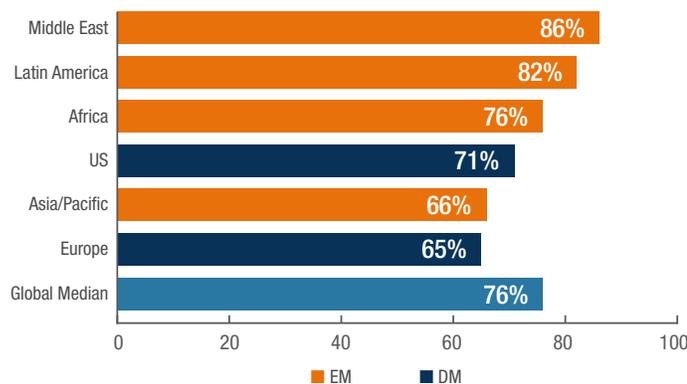
Saudis can see the optionality and freedom of citizens in other countries, though much of their day-to-day life is still run on conservative social regulations. MBS' understanding of this tension has led to impactful social changes such as allowing women to drive, restraining the powers of the religious police, opening movie theatres across the Kingdom, and plans to build an economic tourist zone along the coast.

Social change also empowers MBS to move forward with economic reforms, which should help open Saudi up to foreign investment, reduce the Kingdom's dependence on oil, and create forthcoming sustainable growth.

Brazil: In Brazil, recent reforms didn't come from a proactive government, but from a population that would simply no longer stand for corruption. Brazil is seeing roughly 33% unique subscriber growth. The average Brazilian spends 3.8 hours a day on social media compared to 2.7 hours for Americans and 0.7 hours for the average person in Japan.¹³ In 2016, after fourteen years of rule under the PT (Worker's Party), leading to twin deficits, double digit unemployment rates, high inflation, and negative growth, the population's patience was pushed to its limit. Soon into President Dilma Rousseff's second term, the executive branch was charged for criminal administrative misconduct and disregard for the federal budget in violation of article 85 of the Constitution of Brazil. This also came on the heels of corruption charges against Petrobras, Brazil's state oil company, during the time when Ms. Rousseff was the president of the board. This was the last straw. In a country where officials historically looked the other way from favors and discrepancies, the population took a stand. Social media and messaging sites began spreading news, rumors, and information about community gatherings and protests. Millions of demonstrators across dozens of cities gathered to march and protest for change. The combination of hard evidence and an emphatic voice from Brazilians across the country gave the government no choice but to impeach the president.

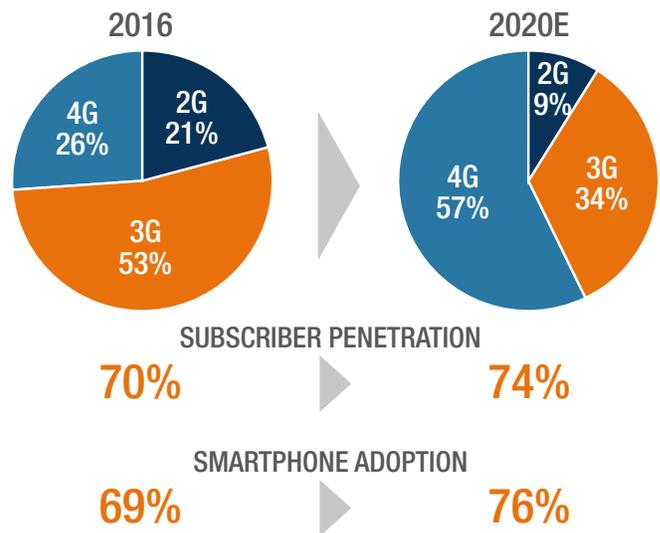
Impeachment meant more to Brazil than improved governance. It also signaled a change to foreign investors. The change in government led market players to look a Brazil with a new, fiscally responsible lens. With this change came more foreign flows, leading to a stronger currency, which has reduced inflation and provided the central bank room to cut rates and induce growth.

Internet Users by Region



Note: Regional medians of adult internet users or reported smartphone owners who use social networking sites. Russia and Ukraine not included in Europe median. Source: PEW Research Center, 2016.

Brazil Technology Mix



Source: GSMA Intelligence.

¹¹Accounts for users having multiple devices.
¹²Global Media Insight, "Saudi Arabia Social Media Statics 2018."
¹³GSMA Intelligence.

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South Africa and Argentina: South Africa and Argentina are two other countries in the midst of impactful political reforms. Argentina boasts the 3rd largest mobile market in Latin America with 61 million mobile connections (142% penetration). On a unique subscriber base (human user), the country has a 90% penetration rate, which is higher than Europe's 85% figure.¹⁴ More than 40% of Argentina's population communicates on Whatsapp.¹⁵ In 2015, Maricio Macri, the underdog candidate from the Cambiemos coalition, became the first non-Perronist president of Argentina in 14 years. His campaign was focused on change, transparency, and fiscal responsibility. We believe that Macri won due to the combination of exhaustion of prevailing policies and the disruption of social media from voters under 30 years old. The new leadership has already removed currency controls, reduced subsidies, published inflation rates, and opened the country up to foreign debt markets.

In South Africa, Cyril Ramaphosa won a close race to become the 13th president of the African National Congress (ANC). Ramaphosa won on a campaign based on fighting corruption and improving the county's fiscal challenges, but it was symbolized via a simple hashtag, #CR17, which reached millions of

unique users on Twitter. Ramaphosa's victory brought a new level of confidence to South Africa, as shown through the 10% rally of the rand from the week before ANC elections through December 29, 2017, and the 5-year South Africa sovereign credit default swaps tightening by 12% over the same period.¹⁶

The mobile revolution continues to bring citizens of LatAm and EEMEA a wealth of newfound optionality in terms of both commerce and political leadership. At Mirae Asset, we continue to focus on the growing EM consumer as a key investment theme based on rising income levels, urbanization, and technology. Mobility and connectivity is a large part of this theme, as it allows businesses to find new growth opportunities anywhere from shopping, to dining, to education. At the same time, this mobile revolution is also bringing us higher levels of conviction in emerging markets as an asset class. As the citizens of EM countries become more connected, their voices grow louder, and they hold their leaders more accountable. With this movement, countries across our regions are seeing significant levels of political and economic reform, which we believe de-risks the EM asset class and could bring more inflows and re-ratings into the next decade.

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¹⁴GSMA Intelligence.

¹⁵GSMA Intelligence.

¹⁶ANC elections were held on 12/18/17. For the period 12/12/17-12/29/17.

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