

## CREATING MOBILE TELECOM MARKETS IN AFRICA

*Mobile telecommunications has many benefits, from linking communities and citizens to mobile applications that bring financial services to the unbanked and help farmers improve crop yields. Yet at one time it looked as though Africa's mobile sector might fare as poorly as its fixed line system did. Instead, an appropriate mix of regulation and competition, investment, and affordability allowed mobile phones and broadband access to flourish.*

Just two decades ago only one person in a hundred owned a telephone in Sub-Saharan Africa. It was this state of affairs in the region and other developing economies that gave the oft-repeated 1995 statement that “half the world’s population has never made a phone call” such galvanizing power.<sup>1</sup>

Historically the region had performed poorly in the provision of public infrastructure in general, and that was particularly the case with regard to telecommunications infrastructure, with demand far outstripping supply. Many fixed operators were slow to expand service and households and businesses were often forced to join waiting lists to receive service; many had to wait for several years to be connected. The waiting list in 1995 was about 1.5 million, or about a quarter of the six million lines in service.

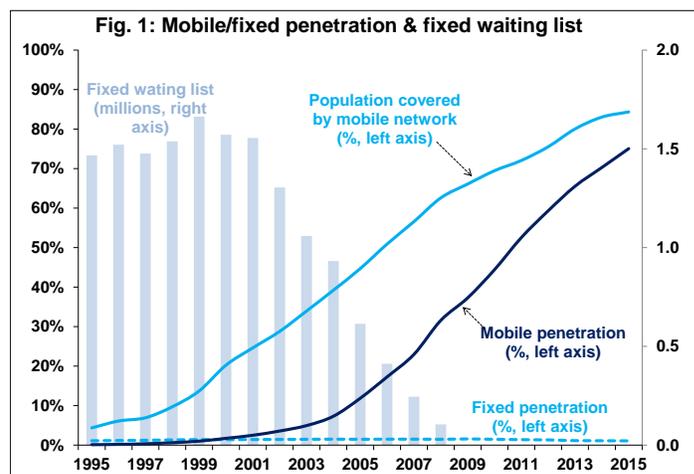
Mobile telephony, then burgeoning in advanced economies, could have taken the same sluggish path in Africa as had fixed telephony. In 1990 only two countries in Sub-Saharan Africa had introduced mobile cellular service, with fewer than ten thousand subscribers between them.

Instead, a very different story unfolded. By 1995 half the countries in the region had introduced mobile service, with a total of about half a million subscribers. By 2000, virtually all countries in Sub-Saharan Africa had mobile service, with total subscribers surpassing ten million. Within five years subscribers had increased to 90 million, expanding to almost 400 million subscribers by 2010 and about 750 million by 2015.

Coverage and penetration statistics are equally impressive. The percentage of the population covered by mobile networks climbed from almost zero in 1995 to more than 80 percent in 2015. Mobile penetration has tracked mobile coverage—as networks expanded

and populations gained network access, the majority of the newly-covered became subscribers. Mobile broadband penetration has grown to about 20 percent in 2015.

Figure 1 shows that the difference in the evolution of fixed and mobile penetration rates in the region has been dramatic: While fixed penetration has remained relatively stable at around 1 percent, mobile penetration surpassed fixed penetration by 2000 and reached 75 percent in 2015.<sup>2</sup> ***For most people in the region, the first phone they ever used was a mobile phone.***



### Liberalization, Competition, and Regulation

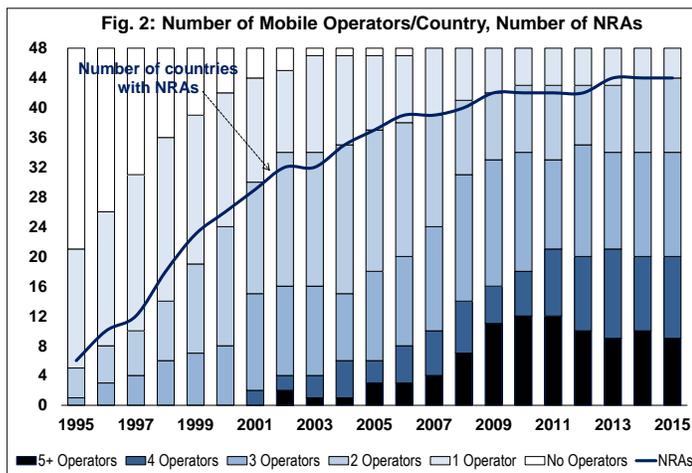
The initial liberalization process in Africa’s mobile sector was relatively more straightforward than reform efforts in the fixed sector. Mobile service was new, so initial reform efforts generally were not constrained by the need to deal with competition and

privatization issues relative to existing, state-owned fixed operators. Furthermore, the demonstration effect was important—by the mid-1990s mobile competition was the norm in advanced economies.

While there was significant variation across the region relative to the timing and sequencing of the liberalization process, as well as important differences between the initial phases of the process (for example, the licensing of the first and second mobile operators) and later phases (when third and subsequent mobile operators were licensed), there were typically a number of common elements in each process.

First, liberalization generally takes place in the presence of enabling telecommunications legislation. Appropriate legislation is required to provide certainty to the government and investors that the liberalization process is legally sound. The development of the corresponding regulatory framework is generally an ongoing process that is developed over time; it is often relatively “thin” in the initial phases while more developed in the later phases.

Key among these measures is the establishment of a separate national regulatory agency, or NRA, which tends to promote confidence that the competitive process will be administered in a fair and transparent manner. The first such institutions had been established in the region in the early 1990’s, but by 1995 only a handful were operating. By the early 2000’s, however, more than half the countries in the region had established NRAs, and by 2015 all but a few countries had established them.



Second, governments decide to license one or more new mobile operators. One of the first steps in this process is the government preparing and issuing a bid or tender document for the process. Based on strategic considerations and legal, economic, and other research, this document establishes the rules and procedures, the selection criteria, and the operating environment, including the

allocated spectrum, tariffs and interconnection matters, and roll-out obligations. Based on an evaluation of the submitted bids, the government agency awards the license to the selected bidder. This process is repeated every time a new mobile operator is licensed.

And third, government establishes mechanisms to finance the expansion of access and infrastructure. In spite of impressive coverage gains by the mobile industry, many governments in Sub-Saharan Africa established universal service funds and promoted public-private partnerships to finance the expansion of access to unserved and underserved locations and to provide for other forms of infrastructure.

### Improving Mobile Coverage in Madagascar

With the objective of providing service in remote geographic areas of Madagascar that had remained unserved or under-served, the World Bank provided technical and financial assistance over the 2007-2015 period. It has provided more than two million Malagasy in 660 rural communities with access to new technologies. In the covered regions, Internet service penetration has improved from near zero in 2007, to 13.4 percent in 2015. This project is an example of the World Bank assisting the Government of Madagascar to finance a specific mechanism to expand access to close the digital divide.

Via this assistance a total of 68 telecommunication towers were installed by private sector independent tower operators selected via a competitive selection process that allocated subsidy financing. The project fostered economic activity in these often difficult-to-reach regions and facilitated commercial activity by improving access to information and creating new opportunities.

Figure 2 shows the evolution of the mobile competitive landscape in the region. In 1995, only half the countries had any mobile service; most that did had one operator, with only a handful having some competition with two or three operators. By 2000, almost all Sub-Saharan Africa countries had introduced mobile service, and fully half had established a competitive market with two or more operators. By 2005, about three-quarters of the countries in the region had two or more operators, and a handful of countries had introduced four or more operators. By 2010 the vast majority of countries had three or four operators. Figure 2 also shows that the growth in the region of separate NRAs closely coincided with the introduction of mobile (two or more operators) competition.

While some of the first mobile operators in countries were subsidiaries of the existing state-owned fixed operators, most

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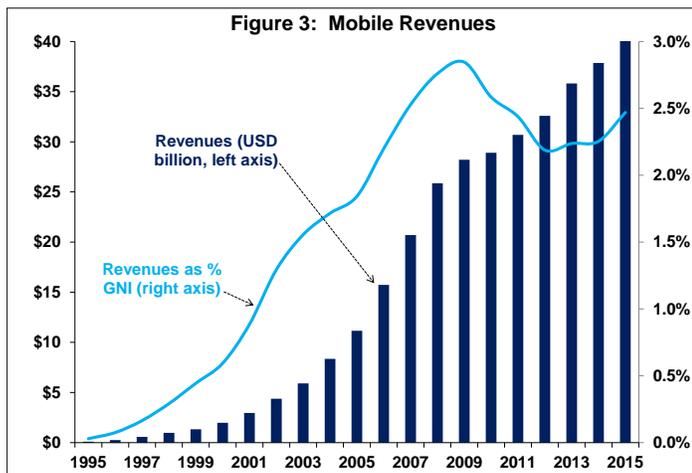
were private sector operators. Virtually all second and subsequent mobile operators were private sector. This ownership pattern reflects the prevailing trend around the world. Africa is also similar to other regions in that most mobile operators are subsidiaries or otherwise related to a large regional mobile group.

### Affordable, Pre-Paid Phones

Two other innovations made mobile service more accessible. First, certain device manufacturers focused their attention on making basic affordable mobile handsets for the African market. And second, mobile service was offered under “pre-paid” terms (as well as the traditional “contract” terms). As a result, in Sub-Saharan Africa pre-paid service has accounted for 85 percent to 95 percent of all mobile subscriptions.

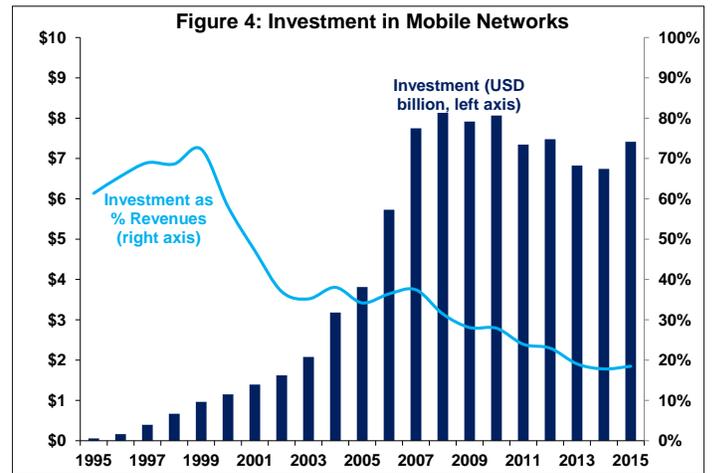
### Mobile Revenues and Investment

Mobile service revenues have increased along with subscriptions. Revenues in the region totaled \$100 million in 1995, accounting for only about 0.02 percent of gross national income for the region (Figure 3). Revenues continued to grow much faster than national economies, so that relative to GNI, they peaked in 2009 at 2.8 percent. Mobile revenues continued to increase, reaching \$40 billion in 2015, with the voice/data ratio approximately 85 percent to 15 percent.



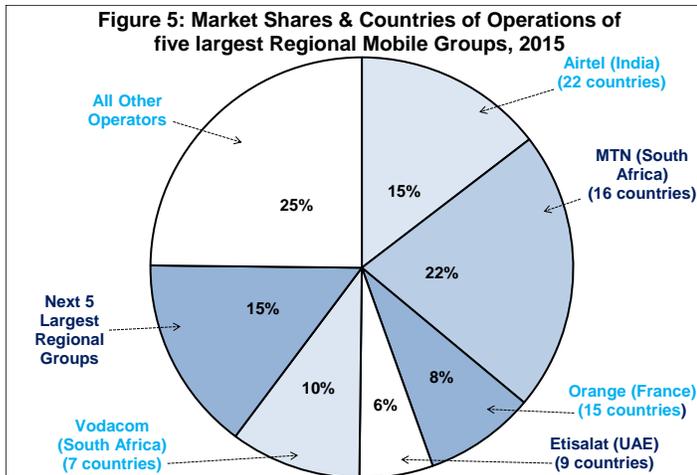
Mobile revenues are only one component of the direct and indirect contribution that the mobile “ecosystem” makes to the region’s economies. Other direct contributions include content/apps,<sup>3</sup> distribution and retailers, infrastructure providers, and handset manufacturers. Indirect contributions result from the “multipliers” associated with the effect that the direct expenditures have on related industries. And the use of mobile technology results in increased efficiency for workers and firms. In 2014 it was estimated that the direct, indirect and efficiency effects accounted

for about 5.7 percent of regional GDP,<sup>4</sup> or about 2.5 times greater than mobile revenues.



Investment in mobile networks has increased commensurately. Figure 4 shows that investment reached \$1 billion in 2000, jumped to \$4 billion by 2005, and plateaued at the \$7-\$9 billion range during the 2007-2015 period. Relative to mobile revenues, investment was highest in the 1995-2000 period, as first and second mobile operators entered the market and built networks. Relative to revenues, investment in the 2001-2006 period declined, as operators “filled their networks” and increased their revenues. For 2007-2015 investment relative to revenues declined to the 20 percent to 30 percent range, consistent with mature networks in other parts of the world. Most of the investment over this period has come from outside the respective countries, often in the form of foreign direct investment sponsored by one of the large Pan-African mobile groups.<sup>5</sup> Indeed, Figure 5 shows that the five largest of such groups accounted for 60 percent of all subscriptions in the region, the next five largest groups accounted for 15 percent, and the smaller groups and independent operators accounting for the remaining 25 percent. Figure 5 also shows the diversified geographical provenance of these groups, from within and outside the region.

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### World Bank and IFC Roles

The World Bank has provided extensive financing and technical assistance to the telecommunications sector in the region. Via its financing instruments,<sup>6</sup> the Bank has approved over two dozen telecommunications-related projects in thirty countries since 1995 with total financing of \$1.2 billion.<sup>7</sup>

Broadly speaking, these lending projects included both regulatory and infrastructure components.<sup>8</sup> About 20 percent of total financing went toward strengthening telecommunications regulatory frameworks. In seven specific projects this regulatory strengthening included assistance in the licensing of mobile operators. Most of the remaining 80 percent of the financing was

<sup>1</sup> Frances Cairncross. "The death of distance, a survey of telecommunications." *The Economist*, September 30, 1995.

<sup>2</sup> Sources Figure 1: International Telecommunication Union (ITU) and author's calculations; Figure 2,3,4: ITU, GSM Association (GSMA), World Bank and author's calculations; Figure 5: GSMA and author's calculations.

<sup>3</sup> These include mobile money transfer system, because much of the population remains outside of the formal financial system, as well as mobile apps that allows farmers to access information about the weather, real-time market prices, etc.

<sup>4</sup> See: <http://gsmamobileeconomy.com/safrica/>

<sup>5</sup> See "Africa's ICT Infrastructure: Building on the Mobile Revolution" by Mark D. J. Williams et al. World Bank (2011).

<sup>6</sup> The WB offers three types of financing instruments, 1) Investment Project Financing ("IPF") provides IBRD loan, IDA credit/grant and guarantee financing to governments for activities that create the physical/social infrastructure necessary to reduce poverty and create sustainable development; 2) Development Policy Financing ("DPF") provides IBRD loan, IDA credit/grant and guarantee budget support to governments for a program of policy and institutional actions to help achieve sustainable, shared growth and poverty reduction; 3) Program-for-Results links disbursement of funds directly to the delivery of defined results.

infrastructure related, including subsidies and other types of financing to increase coverage and improve access.

IFC has provided more than \$1.4 billion in financing to companies in the technology, media, and telecommunications (TMT) industries in the region since 1995. The bulk of these operations (44 of 58) were to mobile telecommunications operators and independent tower operators.<sup>9</sup> Across its entire portfolio, IFC provides financing under four broad categories: loans, equity, guarantees and risk-management products. Over 90 percent of the financing to mobile telecom operators was in the form of loans. However, for independent tower operators, which have been a more recent financing segment, the portfolio is approximately balanced between loans and equity. IFC has provided financing to mobile telecommunications operators during the launch, expansion and rollout of new technologies.

### Conclusion

Fixed line telephony never quite took off in Sub-Saharan Africa. Mobile telephony could have gone the same way. Instead, because of the right mix of regulation and competition, investment and affordability—and assistance from development institutions like the World Bank and IFC—over three quarters of the region's inhabitants now have direct access to telecommunications and all the benefits it can bring. ■

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For more information: <http://www.worldbank.org/en/projects-operations/products-and-services#2>

<sup>7</sup> The WB also provides financing projects related to the broader ICT portfolio, beyond the telecommunications sector, including the development of the IT industry, eGovernment, content promotion, etc.

<sup>8</sup> WB has mechanisms other than "lending projects" by which it provides regulatory assistance in the region. A first set of mechanisms are financed "internally" by the WB through various "Bank Budget" projects, including those funded by one of the six Geographic Regions in the WB or directly by the Country Management Unit ("CMU"). A second set of mechanism are funded "externally". For example, over the 2003-2010 period, the WB executed 23 projects totaling \$5.6 million via the Public-Private Infrastructure Advisory Facility ("PIAF") (see <http://www.ppiaf.org/>), and 6 projects totaling \$1.3 million via the ICT for Development ("IC4D") Korea Trust Fund ("KTF") (see <http://www.worldbank.org/content/dam/Worldbank/document/EAP/Korea/KTF%20Booklet-web.pdf>)

<sup>9</sup> The establishment of independent tower operators is a worldwide trend; many mobile operators sell off tower assets with the objective of focusing on providing mobile service and leasing the necessary tower space. This also promotes infrastructure sharing in that multiple mobile operators are more likely to lease tower space from an independent tower operator.

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