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Benefits of regulation vs. competition where inequality is high: The case of mobile telephony in South Africa

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South Africa is the most unequal country in the world, with a Gini coefficient of 0.63 in 2015 according to World Bank statistics. This is a consequence of apartheid-era racial discrimination policies (Leibbrandt et al., 2010). The top 10% of income-earners earn thirty times more than the bottom 10%. As a result of these high levels of inequality, policymakers are under pressure to find means of reducing inequality. One such policy lever is reducing the prices of consumer services through greater competition and the regulation of firms with market power.

One such policy lever is reducing the prices of consumer services through greater competition and the regulation of firms with market power. The mobile telecommunications sector is a prime example of an industry in which the number of competitors, and thus to some extent competition, is under state control. In particular, the State assigns radio frequency spectrum licenses.¹ Despite competition between four network operators in South Africa, the prices of mobile services are high compared to other African and developing economies (Calandro and Chair, 2016).² Moreover, the regulation of termination rates, which are the prices mobile operators charge one another for inbound calls to their networks, has proved to be an effective way of reducing retail prices (see, for example, Genakos and Valletti, 2015). Recently, mobile termination rates (MTRs) have been reduced in many African countries, including in Botswana, Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania and Zambia (Mothobi, 2017).

Competition policy and sector-specific regulation of industries such as telecommunications may help to reduce income inequality. This is because mobile telecommunications services account for up to 5% of the bottom income quartile's expenditure in South Africa, for example. But there are limits to the impact of competition and regulation. For example, mobile operators enter the most attractive local markets first, which are in general urban areas with higher average income levels. At the same time, since spectrum licenses typically impose coverage obligations on firms, competition should eventually also spread to rural and other areas with lower income levels. These coverage obligations should guarantee that the majority of the population benefits from competition between mobile networks, but the reality may be different. Furthermore, regulators in general do not control how operators set their prices with respect to different market segments. In countries with a relatively small share of wealthy consumers and large numbers of poor consumers, firms may not be willing to lower prices enough to attract less profitable consumers.

In this paper, we use six waves of a South African survey of about 134,000 individuals collected between 2009 and 2014 to estimate the distribution of benefits across different segments of society resulting from the entry of new market players and the regulation of mobile termination rates.³ South African society is multi-racial, multi-lingual and highly segmented with respect to income, which results in differences in the affordability of mobile telecommunications services.

¹ Typically, regulators make radio frequency spectrum available to licensees, via auctions or beauty contests, and therefore establish the market structure for the sector.

² This is reflected in recent political debates in South Africa which led to market inquiries into the cost of data services, launched by the South African Competition Commission in 2017 and the Independent Communications Authority of South Africa in 2018.

³ We use data from the All Media Product Survey (AMPS) survey produced by the South African Audience Research Foundation (SAARF).

We estimate a discrete-choice model allowing for individual-specific price-responsiveness and preferences for network operators. Overall, we find that the price sensitivity of subscriptions to mobile networks is impacted by income directly and by factors which indirectly determine individual wealth and social group, such as race and language. We use the estimates of demand parameters and individual price-responsiveness to conduct counterfactual simulations. First, we simulate market outcomes in the absence of a new entrant, Telkom Mobile, which launched mobile services late in 2010, and in addition without Cell C, which launched services in around 2002. Second, we simulate a counterfactual situation without the regulation of termination rates which took place between 2010 and 2014.

Based on our equilibrium model, without the entry of Telkom Mobile and Cell C, we find that the adoption of mobile phones in South Africa would be lower by about two percentage points on average over the period 2011-2014. Thus, entry led to a relatively small increase in the total number of adopters, though this effect is higher for low-income consumers. Without entry, mobile penetration among high-income consumers would have been two percentage points lower, while the reduction in penetration among low-income consumers would have been four percentage points. We also use the model to simulate changes in consumer welfare for different income groups and segments of society. In this way, we test whether poor or rich consumers benefit more from competition and regulation of firms with market power. We find that rich people benefited more from entry and regulation in terms of changes in consumer surplus. Thus, we find that entry does not reduce inequality but has the opposite effect. We also find that entry has a limited impact on consumer surplus. Furthermore, we find that regulation of MTRs results in significantly lower prices. Similarly, high-income consumers benefit from a larger increase in consumer surplus. In addition, we find that regulation has a greater effect than competition does on mobile penetration. In particular, absent regulation over the period between 2011 and 2014, mobile penetration would have been eight percentage points lower among low-income consumers compared to four percentage points among high-income consumers.

Our results provide important evidence on the distributional effects of competition and regulation, which can be of use to policy makers in South Africa and other countries.⁴ We show that a ‘rising tide lifts all boats’, in that bringing about lower prices through competition and regulation benefits all consumers. However, the distribution of these benefits, measured by changes in consumer surplus, is skewed towards higher-income consumers and residents in towns and cities. Policymakers need to consider means by which new entrants could be encouraged to focus on low-income consumers and on rural areas.

⁴ Gruber and Koutroumpis (2011) show that higher penetration of mobile phones has a positive impact on economic growth. Other papers on the impact of mobile phones on market outcomes include Jensen (2007), Aker and Mbiti (2010), and Muto and Yamano (2009).