

**Report on the competitive situation  
of the Colombian mobile telecommunication market**

by

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We have been requested by Telefónica Móviles Colombia to provide, as independent experts, an evaluation of the competitive situation of the mobile sector in Colombia and to assess potential threats to competition that this situation may involve. For this purpose we used public information from international consulting firms and official documents published by the Commission for Regulation of Communications. Our opinion is based on this material.

This document is organized as follows: in a first part, we point out some important features of the Colombian mobile market while in a second part, we discuss issues related to competition policy in this market.

Short Summary

The Colombian mobile market appears to be very concentrated compared to other countries in the world, with one operator dominant for a long time. Beyond general concerns that such dominance may create, it is our view that the main issue is due to a relatively large differentiation between on-net and off-net tariffs. Such differentiation is a source of network effects that impede normal functioning of competition and limit the ability of small networks to develop.

## Colombian mobile market features

The Colombian mobile market has developed significantly between 2002 (date where our data start) and 2009, where it seems to stabilize around 85% penetration rate. This represents a relatively low level of stabilization according to our experience of other countries with stabilized markets.

| Year                      | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|
| <b>Market Penetration</b> | 13,9% | 22,9% | 47,6% | 62,9% | 70,5% | 84,2% | 82,6% |

Table 1: Market Penetration (sources: Merrill-Lynch)

The high level of concentration is the most striking feature that characterizes the market. Among the three operators, Comcel has reached consistently a market share above 60% as shown by Figure 1, representing the evolution of market shares in subscriptions and in volume of traffic. This tendency seems to reinforce over time.

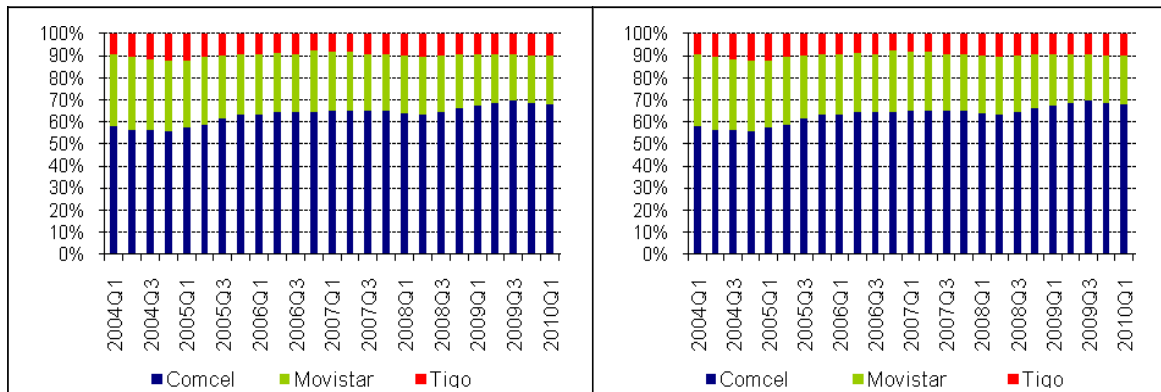


Figure 1: Market shares expressed in number of users (left) and in traffic (right).

(Source: Comisión de Regulación de Comunicaciones. Diagnóstico del Mercado de Voz Saliente Móvil. Agosto de 2010)

Data published in the Merrill-Lynch study reveal that the Colombian mobile market is one of the most concentrated in the world. The Herfindal- Hirschman index<sup>1</sup> in 2009 (in shares of subscribers) is 5280, which is a very high level by any standard, and ranks the Colombian mobile market as one of the three most concentrated mobile market among the 50 countries surveyed, along with China and Mexico.

The market relies too a large extent on pre-paid contracts, rather than post-paid subscriptions (with more than 80% pre-paid).

| <b>Year</b>     | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> |
|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Comcel</b>   | 31,6%       | 24,6%       | 15,4%       | 14,8%       | 14,5%       | 13,3%       |
| <b>Movistar</b> | 0,0%        | 28,9%       | 22,8%       | 23,2%       | 21,0%       | 16,4%       |
| <b>Tigo</b>     | 20,9%       | 21,0%       | 21,0%       | 15,0%       | 12,0%       | 12,0%       |

**Table 2: Share of post-paid subscribers (source: Merrill-Lynch)**

Notice that as the market expands, the share of post-paid declines which suggests that the expansion takes place at the low end margin of the market. This intuition seems corroborated by the examination of revenues. Indeed, as shown by the next table, ARPUs of all operators have declined steadily during the period.

| <b>Monthly ARPU (COP)</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Comcel</b>             | 29231       | 28524       | 24672       | 19326       | 19484       | 17695       | 16522       |
| <b>Movistar</b>           | 48016       | 46855       | 40527       | 26284       | 25127       | 19634       | 17611       |
| <b>Tigo</b>               | 37714       | 38753       | 30067       | 22605       | 27173       | 22938       | 20833       |
| <b>Average</b>            | 36282       | 35603       | 29555       | 21400       | 21531       | 18598       | 17161       |

**Table 3: Average Monthly ARPU (Source: Merrill-Lynch)**

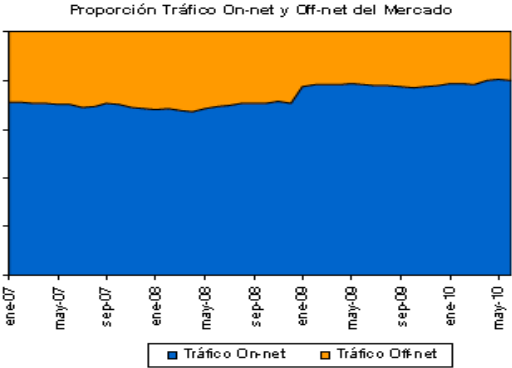
<sup>1</sup> The Herfindal- Hirschman index (HHI) is the sum of the squared market shares. It ranks from 0 to 10000. Three operators of equal shares would generate an HHI of 2700.

The decline of revenue per user is however difficult to interpret as this may reflect a decline of willingness to pay along market expansion but also an increase in the intensity of competition. Overall, the ARPUs at the end of 2008 appear to be low compared to other Latin American countries (in particular Chili, Venezuela, and Mexico) as well as compared to the average ARPUs in emerging countries. Among the three operators, according to EBITDAs, Comcel has the highest profitability.

We examined the offers of the three operators (on their web pages) to understand the structure of tariff proposed to subscribers but they appear to be difficult to interpret. While the smallest operators currently rely on a constant unit price, it is our understanding that tariffs of the dominant operator involve implicit quantity discounts through various combinations of fixed and variable fees. Some references are made to promotions that are not explicit in tariff offers. Tariffs also involve some “friends&family” programs.

A striking aspect of the tariff is the presence of substantial on-net/off-net price differential. Looking at pre-paid tariffs, we see that the two smallest operators offer a uniform price across terminating network structures, while the dominant operator proposes various tariffs discriminating between on-net and off-net calls. The discount for on-net calls in the tariff that we have uncovered ranges from 30% to 40%.

This differentiation between on-net and off-net calls goes along with a substantial level of on-net calls for all operators, as it can be observed in the following figure.



(Source: Comisión de Regulación de Comunicaciones. Diagnóstico del Mercado de Voz Saliente Móvil. Agosto de 2010)

Notice that unlike other dimensions of the retail tariffs, the on-net/off-net price differential is regulated for the dominant operator. This differential is capped by the regulated access tariff, although we should notice that this regulation does not apply to promotions.<sup>2</sup> As mentioned above, the use of promotions makes retail tariffs difficult to evaluate, and as a consequence difficult to regulate.

<sup>2</sup> On this, see the opinion [201051936 of 2010](#) emitted by the Commission.

### Assessing the potential risk for competition

As it appears from above, we can describe the Colombian mobile market as one with one large operator and two other operators with smaller market shares. Clearly, with more than 60% market share, Comcel by any standard in competition policy should be viewed as a dominant firm. Without presuming on the source of this position, such a level of dominance raises concerns about the future of the market and the ability to sustain competition in the long run. This concern is reinforced by the current trend of market shares that appears in Merrill Lynch data, which seems to indicate a decline in the position of Comcel's competitors.<sup>3</sup>

It is our view that the rapid expansion of the market should have created opportunities for a new efficient operator to impose itself as a main actor. However, a striking feature of the data is that Comcel's competitors have not been able to leverage this expansion into an improvement in their relative position. Indeed, Comcel has maintained more than 50% market share since the beginning of the period.

Finally, the differential in ARPUs as well as in the pre-paid and post-paid composition of the customer base of each operator suggests to us that some strategies of differentiation were chosen by operators. If this is the case, this may have reduced the competitive pressure exerted on the dominant operator.

From a competition policy perspective, the presence of a large dominant operator raises both general concerns and particular issues related to the specificity of the activity of mobile telephony.

At the general level, the presence of a dominant operator may result in poor market performance in terms of consumers' benefits. Lack of competition first may induce relatively high prices as the dominant firm faces little discipline, which may limit market expansion. While the levels of ARPUs are not suggestive of such a phenomenon until now, one should be vigilant in maintaining a viable competition faced to the dominant firm. This is particularly true at a period where the market seems to reach its maturity level. As we shall discuss later on, this concern about the dynamics of the competitive pressure exerted on the main operator is reinforced in the presence of network effects. From a dynamic perspective, the risk is that, faced to a large dominant firm and absent any perspective of becoming a large player, competitors choose "niche" strategies and accommodate with dominance. One may then fear a lack of innovation in services and low quality as a result of little "competition for the market".

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<sup>3</sup> This conclusion should be taken with caution as the trend is small and may not be significant.

From an conventional anti-trust perspective, one should also be concerned by exclusionary practices akin to predatory behavior. We discuss the role of network effects below, but before let us briefly discuss the risk of more conventional predation. Predation refers to strategic behaviors by dominant firms that rely on aggressive commercial practices. It aims at hurting competitors to induce them to exit the market or at least to downsize their investment. Traditional theories of predation by dominant firms rely on three types of argument. The first line relies on building a reputation for aggressive behavior by the dominant operator. A second line is related to a lack of information by some market participants on the market or their competitors' characteristics. A third type of predation is rooted in the superior access to capital by the dominant firm, because it benefits from internal capital or better credit conditions. In most sectors, predation is scrutinized *ex-post* by national anti-trust authorities. We do not see in the Colombian mobile sector specific factors suggesting that the risk of the second and the third types of predation is more acute than in other concentrated sectors. In particular, we may assume that operators are all sophisticated and well informed. However we do not see element to rule out the reputation dimension.

We should point out however that a very recent academic contribution<sup>4</sup> has highlighted the existence of a specific risk of inefficient exclusion of small competitors by a large firm in situations involving scale economies and consumers inertia, due for example to switching costs. As the mobile sector presents both characteristics, one may be concerned about this possibility. The main issue here is that a large operator benefiting from scale economies may prevent a potentially more efficient operator from reaching the level of demand that would generate sufficient scale economies to compete on equal footing. This is achieved by the dominant firm's aggressive strategies that allow building market shares and leveraging the captive customer base in the subsequent periods. Indeed an operator that has already achieved an efficient scale of operation is willing to spend more resources (to forego profits) to prevent a competitor to reach such a scale than the competitor has to gain in doing so. As a result the large operator will be willing to sustain lower prices than its small competitors. Thus the mobile sector may call for special scrutiny once a network becomes dominant.

Let us now turn to more specific issues related to the telecommunication networks. The main specificity that has called substantial attention is the necessity to interconnect the networks. Since consumers use the service to call each other, the value and the cost of the services of each network are affected by the conditions of interconnection. There has been considerable debate and contributions motivated by this issue. Among the questions raised, we view the issue of network externalities as the most relevant here.

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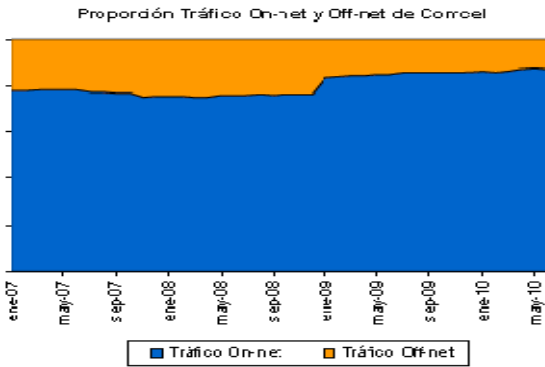
<sup>4</sup> See Chiara Fumagalli and Massimo Motta, "A Simple Theory of Predation", mimeo Universitat Pompeu-Fabra, Barcelona, 2010.

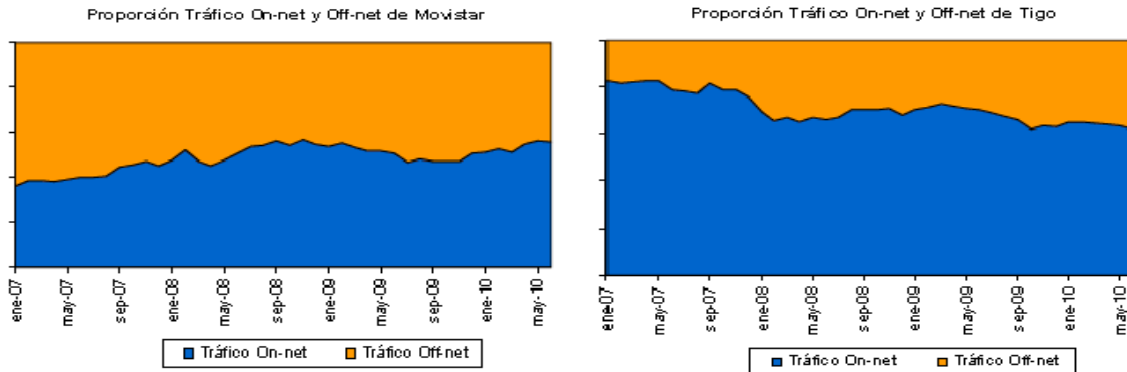
Network effects can be due to some extent to club effects, as friends or family coordinating to choosing the same network. But network effects are mostly the consequence of the prevalence of on-net/off-net pricing differential in the tariff structure. This is referred to as tariff-mediated network externality. While prices uniform across destinations are neutral for the calling pattern, differences in prices between on-net and off-net calls result in different incentives for a client to call other mobile users in various networks.

The notion of tariff-mediated network effects relates to the fact that when off-net calls are more expensive than on-net calls, consumers benefit from being in the same network. Therefore users favor larger networks as they can benefit from the on-net discount on more calls.

To sum-up, the on-net/off-net differentials influence the patterns of calls and the relative attractiveness of networks, with an advantage to large networks. This has a direct effect on competition and the profitability of small and large networks.

From our analysis, a fundamental characteristic of the Colombian market is the presence of such network effects. Indeed termination based price-discrimination is common in the tariffs proposed by the major operators in Colombia. This is corroborated by the importance of on-net calls in the market’s calling pattern. On top of the global distribution of on-net/off-net calls shown in the first part of the report, the distribution for each operator exhibited below illustrates how network effects seem prevalent, even for the smallest operator (Tigo).





(Source: Comisión de Regulación de Comunicaciones. Diagnóstico del Mercado de Voz Saliente Móvil. Agosto de 2010)

Termination based price-discrimination could be at the source of the main potential risk for the competitiveness of the market. This issue has been clearly recognized to be the case in the context of European markets. Indeed, in a Common Position adopted in February 2008, the European regulators expressed the concern that “an on-net/off-net retail price differential, together with significantly above-cost mobile termination rates, can, in certain circumstances, tone down competition to the benefit of larger networks”. Notice that European markets for this respect seem to be the right reference as they involve no receiver charge and termination rates are above costs, as the Colombian market.<sup>5</sup> There are two issues induced by the on-net/off-net differential that may result in market failure in the telecommunication market.

The first and to our view the main issue relates to the size effect described above and is extensively studied for instance by A.L. Lopez and P. Rey<sup>6</sup>. The on-net/off-net price differential reflects the level of termination rates as firms’ prices for calls reflect the perceived marginal costs. Thus a high termination rate results in high on-net/off-net differential. As Lopez and Rey show, when this rate is high enough, the network effects are strong. As discussed above, network effects favor the large network since it is by joining this network that a customer can benefit from the telephony services on-net. This deters new customers from joining a small network and as a result, the market exhibits tipping: all consumers eventually join the dominant network. The large operator may then favor a large off-net surcharge leading to a monopolization of the market.

The phenomenon disappears when the off-net/on-net price differential is at a low level so that network effects are not sufficient to generate tipping, and in particular when

<sup>5</sup> By contrast the US market is based on bill and keep, and operators charge a reception fee. All that we discuss is relevant only for markets without reception fees.

<sup>6</sup> Angel Luiz Lopez and Patrick Rey, « Foreclosing Competition Through Access Charges and Price Discrimination », IESE Business School Working Paper 801, 2009.



termination rates are small. Then no operator benefits from the presence of these network effects.

A second issue arises when one takes into account call externalities, *i.e.* the satisfaction gain by customer from receiving calls. Then the larger operator has incentives to further increase the off-net price. Indeed, increasing the off-net price reduces the minutes of calls received by the customers subscribing to the other networks. In return, this reduces the gains from subscribing to those networks reinforcing the dominant position of the larger operator.<sup>7</sup>

To sum-up, the choice of on-net and off-net prices by the firms, and more specifically by the dominant operator, is of primary importance as it may limit the effectiveness of competition. The presence of resulting network effects in the context of a market with one large dominant firm raises serious concerns of increasing dominance and impediment of competition.

To conclude this report, we have identified some specific sources of concern for the sustainability of competition in the Colombian mobile market. As for most mobile markets in the world and to some extent more than in many other countries, this may call for some form of regulatory intervention. It is our view, that given the difficulties in interfering with the retail tariffs, wholesale market regulation should be favored whenever it is applicable.

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<sup>7</sup> This is developed by Steffen Hoernig, « On-Net and Off-Net Pricing on Asymmetric Telecommunication Networks », *Information Economics and Policy*, vol 19, pp 171-188, 2007.