

# Ploughs, Mobile Networks and Sustainable Cash Flows

Bruno Duarte and Guillaume Scottez

While European mobile phone operators enjoy record levels of cash flow, their prices are increasingly under scrutiny from public opinion and telecom regulators. Their cash flow, however, is not under immediate threat. This is one of the conclusions suggested by this year's edition of Arthur D. Little's annual survey of mobile operators. Duarte and Scottez explore the present state of the industry in Europe and take a closer look at how the leading operators can sustain their level of cash flow in the future.

Mobile operators represent one of the best cash-generating businesses in the world. In 2004, European Union mobile operators collectively generated operating free cash flows¹ equivalent to a staggering €100 per capita, with some countries, such as Ireland, reaching up to €160 per capita.

However, mobile operators are now confronted with the first signs of maturation in their business. Growth opportunities still exist, including growing under-penetrated segments, boosting fixed-to-mobile substitution and developing mobile multimedia usage, but growth is no longer a given and much more effort is required from operators to make it happen. More worryingly, threats are multiplying. Competition among operators is likely to stiffen. New wireless technologies and new potentially disruptive players are likely to emerge. Last but not least, public opinion is increasingly questioning existing price levels, leading telecom regulators to adopt an increasingly tough stance.

In this context, the key issue for mobile operators is how sustainable the current levels of cash flow are. In other words, what are the options available to mobile operators in order to secure their long-term profitability?

In this article, we will draw a parallel between Ricardo's economic theory and mobile telephony in Europe as a way of understanding why and how the economic rent of leading mobile operators has been decreasing over the past few years. We will then argue that leading operators may be in a position to sustain and even increase their economic rent, and should be able in the process to secure high levels of cash flow in the long term.

# Land and Grain: Back to the Groundwork of Economic Theory

David Ricardo (1772-1823) was one of the founders of the

 $<sup>^{\</sup>mbox{\tiny 1}}\mbox{Operating Free Cash Flows (OpFCF): EBITDA -Capex.}$ 

# Arthur D. Little's Annual Study of European Mobile Telephony

Each year Arthur D. Little carries out an in-depth analysis of the challenges and opportunities to be addressed by European mobile operators. This year's study was conducted in collaboration with the leading French broker Exane BNP Paribas. Exane and Arthur D. Little's analysis is backed by more than 40 face-to-face interviews with mobile operators, equipment vendors and service providers. The previous surveys, "Slowly but surely" (2001), "Back on the road...but who's got the map?" (2002) and "Leaders hit back" (2004), emphasised Arthur D. Little's expectations of slow development in mobile multimedia services and a quick recovery among mobile operators from the internet/telecom "crisis". This year's edition, "More effort required", focuses on the sustainability of mobile operators' levels of cash flow in a context of lower growth perspectives and rising competitive and regulatory pressures.

Classical school of economics and one of his best-known concepts is that of economic rent. Ricardo's definition of the economic rent is both simple and powerful: it is the value of the difference in productivity between a given piece of land and the most costly piece of land producing the same goods (e.g. grain) under the same conditions (of labour, technology, etc.).

To illustrate Ricardo's concept, let's consider a closed market defined by a given population which consumes some simple commodity such as grain, and by a given number of pieces of land that can produce this commodity.

In the initial stage of market development - which corresponds to the "emerging" phase of the classical product life-cycle - the level of population and therefore the level of demand is quite low. To meet this demand, only the most productive land (i.e. with the lowest cost of production) is put under cultivation.

As the population grows, the market enters the "growth" phase of the product life-cycle. As demand increases, the land already cultivated cannot produce enough grain to meet this demand. Consequently new but inferior or

Assuming that "controllable" factors such as technology or wages are equal for all farmers, "natural" factors such as land fertility or distance to town, which cannot be altered, determine the economic rent. Economic rent is thus the materialisation of the natural competitive advantage that differentiates some pieces of land from others.

"marginal" land is forced into cultivation. This land is less fertile, more difficult to work and further from the customer and therefore involves higher production and transportation costs.

In the final phase, corresponding to the "maturity" phase of the product life cycle, demand reaches a ceiling and the production level tends to stabilise. Yet production has been extended to even more cost-intensive pieces of land. The final or "equilibrium" market price for grain will thus equal the cost of producing the last bushel of grain needed to feed the now larger population on the last piece of land forced into production, as nobody is going to produce grain for very long at a cost higher than the market price. At the same time, any farmer able to produce grain at a cost lower than the prevailing price will do it. Interaction between the level of demand and the cost level of production sets the market price of grain.

As a consequence, on the last piece of land put under cultivation, total sales revenues equal total costs, with no surplus or "profit". The farmer earns just enough to keep him in production. But on the other lands - the more productive and lower-cost lands that were put under cultivation earlier - total sales revenues exceed total costs. The differential produces a surplus, which is called *economic rent*.

Economic rent thus corresponds to a "natural" profit. Assuming that "controllable" factors such as technology or wages are equal for all farmers, "natural" factors such as land fertility or distance to town, which cannot be altered, determine the economic rent. Economic rent is thus the materialisation of the natural competitive advantage that differentiates some pieces of land from others.

### Land and Grain of the 21st Century

Although at first sight land productivity and the grain market may seem quite far from mobile telephony, an analogy can be made with the original Ricardian theory. Some operators are more productive than others. Since mobile telephony is a fixed-cost business, there is indeed a clear cost advantage for the larger operators. In most

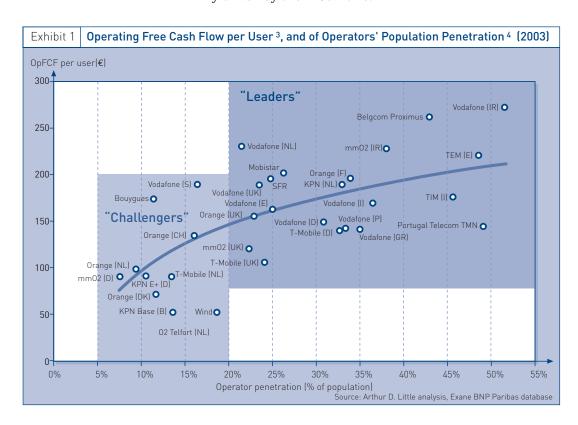
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countries, the first operators to have entered the market have been able to conquer a significantly higher market share than the later entrants. Consequently, the first operators - like the first pieces of land put under cultivation in Ricardo's original case - have a cost per output (minutes sold or clients) lower than the second, and a fortiori, third or fourth operators. As in any given market all operators are confronted with equivalent market conditions and prices, it is not surprising that the leaders enjoy higher profitability than their challengers. Indeed, previous Arthur D. Little work² has demonstrated that, no matter if they were incumbents or new entrants, and no matter if they are independent or belong to a larger group, European mobile operators' profitability is overwhelmingly driven by their local size.



<sup>&</sup>lt;sup>2</sup>B. Duarte, J.L. Cyrot, K. Taga, J. Portal 2004. "Mobile Telephony in Europe: The Leaders Hit Back." Prism, First Semester: 56-75.

In the long run, market conditions and price levels should normally tend to align themselves on the production cost levels of the least efficient operator, i.e. the smallest operator - which we would call the challenger. Regulators are likely to act so as to confirm or even accelerate such a trend. Though not explicitly, regulatory action such as pressure on retail prices (voice or SMS) or regulation of interconnection costs, may virtually result in the setting of a profitability threshold, namely an "acceptable profitability level" of OpFCF/client. Continuing our analogy with Ricardo's theory, this threshold would eventually play the role of the market price level, with the difference that, in Ricardo's case, the threshold is endogenous to the market.

Yet pressure on prices and on profitability, due to competition and/or regulatory action, is unlikely to lead to the bankruptcy of the least competitive operator. In the case of increased competition, leaders may, in theory, be tempted to drive one challenger out of business. Indeed, as with any regulated utility business, mobile telephony may be seen as a natural monopoly where competition should eventually drive all challengers out of business. However, leaders should not hope for a challenger to default on its debt. As in any fixed-cost activity, competitors do not go away that easily. The most likely outcome would be the restructuring of the challenger's balance sheet, which would then enable it to start afresh. This is exactly what happened with Telfort in the Netherlands and tele.ring in Austria, two challenger mobile operators once in financial trouble. After their takeover on the cheap<sup>5</sup>, they returned as strong forces in the competitive playing field thanks to their renewed financial flexibility. Therefore a sound strategy for any leader should not be based on aiming to bankrupt its challengers.

In the case of offensive regulatory actions, regulators have no interest in putting on pressure to the point where it leads to a decrease in the number of players in the market, limiting the dynamics of the competitive playing

<sup>&</sup>lt;sup>3</sup> Pre-SARC OpFCF: EBITDA-Capex before subscriber acquisition and retention costs <sup>4</sup> Operator's country penetration = operator's number of mobile subscribers divided by the country population.

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<sup>&</sup>lt;sup>5</sup>Tele.ring was acquired in 2001 by Western Wireless from Vodafone for a nominal consideration. In the process, Vodafone also agreed to provide tele.ring with a €250 million term loan. Telfort was acquired debt-free in 2003 by a private equity fund from British Telecom for a modest €25 million.

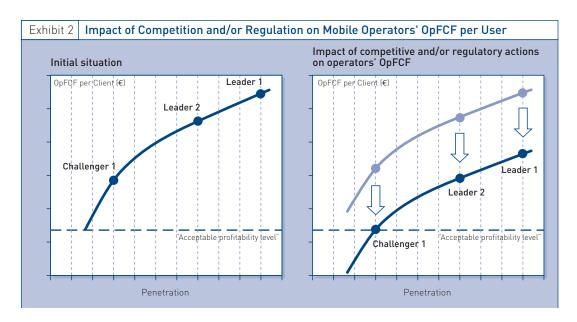
Maintaining and possibly developing their economic rent is a key issue for any leading mobile operator. By doing so, a leader will secure a level of cash flow capable of withstanding future increases in levels of competition and regulation.

field. In theory, expelling the least profitable operator from the market would allow an even bigger decrease in price levels, but the reduction in the level of competition would imply dramatic drawbacks in quality of service, innovation and productivity, which would by far offset the potential price decrease.

Thus, in any case, the "acceptable profitability level" would be set at a slightly higher level than the cost of capital of the challenger, so that it can "breathe", financially speaking. Yet the profitability level could - in the most extreme case - be equivalent to price levels not much higher than the challenger's production costs.

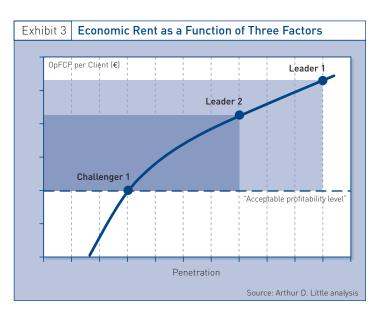
However, even though the challenger's profitability has been pushed down, either by competitors or regulators, to the "acceptable level", leaders still enjoy a high "natural" profitability thanks to their higher OpFCF per client. This differential is what we call, in Ricardo's terminology, the leader's economic rent.

Therefore maintaining and possibly developing their economic rent is a key issue for any leading mobile operator. By doing so, a leader will secure a level of cash flow capable of withstanding future increases in levels of competition and regulation.



# European Mobile Operators' Economic Rent: more than €50 per Capita in 2004

As illustrated in Exhibit 1, in any given country an operator's OpFCF per client and its penetration are closely correlated. Naturally, the higher its customer base, the higher its profitability. Increase in competition and/or regulation, assuming symmetric regulation, leads to a general decrease of OpFCF per client for each operator. This decrease will continue until the profitability of the least productive operator (challenger 1 in Exhibit 2) reaches a threshold level - which we have called the "acceptable profitability level".



The economic rent of a leader can be defined as the differential in OpFCF per client with the smallest viable challenger<sup>6</sup> times its penetration. The multiplication of these two factors equals a level of OpFCF per capita. In exhibit 3, the economic rent of the leader 1 is represented by the yellow area and the economic rent of the leader 2 by the grey shaded area.

By definition, challenger 1's economic rent is nil, as an operator's economic rent is a function of the differential of OpFCF/client between this operator and challenger 1.

 $<sup>^{\</sup>rm 6} {\rm For}$  the sake of the analysis, Hutchison European subsidiaries have not been taken into account.

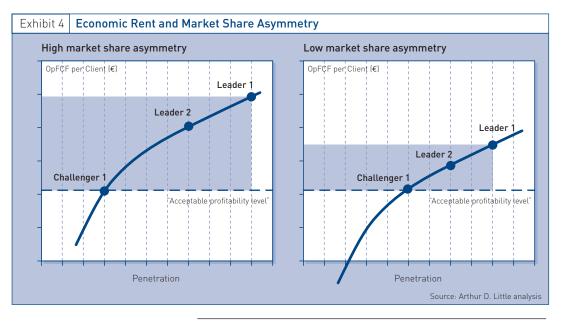
In 2004, in the five largest European countries (France, Germany, Italy, Spain, and the UK) the average economic rent by operator was €56 per capita.

# A Shrinking Economic Rent

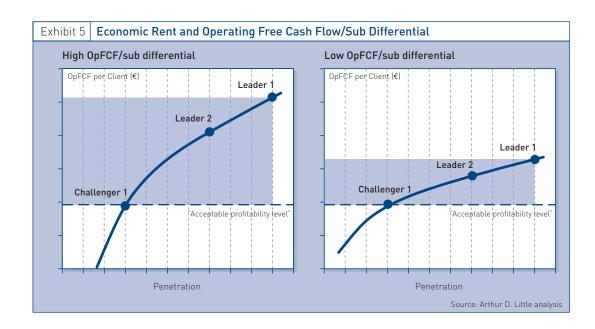
For the past few years the level of economic rent in most European countries has been steadily decreasing. In Europe 5 (the five largest European countries), the average economic rent has decreased by 54 percent since 2001, from €122 per capita. While the economic rent used to represent the bulk of mobile operators' free cash flows<sup>7</sup>, it is now reduced to 56 percent of these cash flows.

The economic rent decrease over 2001 - 2004 can be explained by challengers' progress in reducing two components of the economic rent:

The differential in terms of relative size between leaders and the challengers, i.e. the market share asymmetry, which accounted for less than 10 percent of the economic rent decrease;



<sup>7</sup>In 2001, all challengers, and even some leaders, were still OpFCF negative. Consequently the economic rent was then greater than the total level of OpFCF per capita collectively generated by operators.



 The differential of OpFCF/client between leaders and the challengers, which accounted for more than 90% of the decrease.

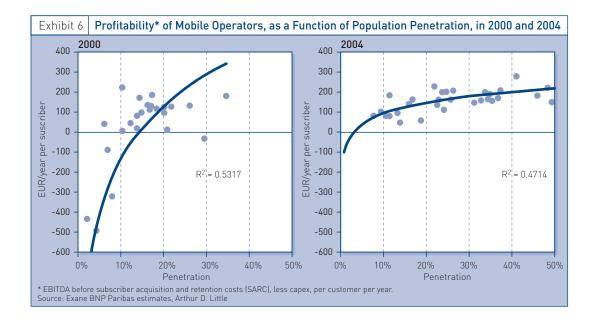
#### Market share asymmetry

The asymmetry of market share (hence of penetration) between the leaders and their challengers is one of the two components of the economic rent in mobile telephony. A low asymmetry leads to a lesser economic rent, as illustrated in exhibit 4.

Challengers have seen their service revenues grow at a higher rate than those of leaders. Challengers grew 18 percent pa on average over 2000 - 2004 versus 10 percent for the leaders, hence contributing to a slight reduction of market share asymmetry.

### Differential of OpFCF/client

The OpFCF/client differential between the leaders and their challengers is the other key component of the economic rent in mobile telephony. A low differential leads to a lesser economic rent, as illustrated in exhibit 5.



The profitability differential between leaders and challengers has also decreased sharply. Between 2000 and 2004, mobile operators have moved from a phase of rapid growth, with uncertain profitability for many of them, to a phase of relative maturity, with strong free cash flow generation. Exhibit 6 compares the situations in 2000 and 2004.

With the rapid development of subscriber bases, operators as a group have naturally shifted to the right on these charts. Given the significant leverage in terms of size in this business, this has raised profitability significantly. However, operators have not settled for merely moving to the right of the curve. The curve itself has risen significantly, reflecting the efforts of operators to improve their profitability - through cost-cutting and capex reduction - particularly the challengers still below the 15 percent penetration barrier. This has resulted in a sharp decrease in the OpFCF/client differential between leaders and challengers.

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# Long-term Sustainability of the Economic Rent

Despite the pressure on economic rents, we argue that leaders have the means to preserve and even increase their economic rents. To do so, they must focus on maintaining market share asymmetry with challengers and on increasing their intrinsic profitability level.

# Maintaining market share asymmetry: focus on status quo forces

A number of forces which may destabilise the competitive status quo exist. These forces are well known. They include UMTS new entrants (Hutchison 3G in the UK, Italy, Sweden, Denmark and Austria), mobile virtual network operators (MVNOs) already established in a number of countries, possible MBWA<sup>8</sup> new entrants and, of course, regulation.

Competition in the European mobile market appears indeed to have increased in the last few quarters. Against the backdrop of strong revenue growth, progress in cashflow generation was slower in 2004 than in 2003: in Q3 04, the EBITDA margin dropped by almost two percentage points compared to Q3 03. This increase in competitive intensity can be traced to two main factors:

- As expected, the roll-out of Hutchison 3G has had a marked impact on competition in several countries, in particular the UK and Italy. H3G had reached almost 2 million customers in the UK at year-end 2004, and more than 2.6 million in Italy;
- The acceleration of handset sales across the board and higher handset subsidy expenses which have negatively impacted operators' margins.

Nevertheless, we think that asymmetry in most European markets will persist, as numerous status quo forces are at play:

 Events appear to confirm the conclusions presented in our January 2004 report with 3G making it possible for leaders to win back their marketing lead over challengers. Vodafone aims at winning market share

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 $<sup>^{\</sup>rm 8}$  MBWA: Mobile Broadband Wireless Access technologies, sometimes referred to as WiMax technologies.

The differential between the level of OpFCF generated by leaders and their smallest viable challenger has decreased significantly, down 279 percent from €217 per client in 2001 to €78 in 2004.

thanks to 3G, but it will take a very measured approach in order not to destabilise its markets;

- Controlled distribution networks, which are increasingly important for operators, constitute a major stabilising factor especially for the leaders' market shares;
- The implementation of new technologies such as MBWA poses a real competitive risk in the long term, with the possible entry of new competitors using these technologies. The most powerful mobile operators should, however, be able to withstand the pressure. As is currently the case with WiFi, leaders should move quickly into the new technologies in order to enrich their offers and reduce costs, leaving little room for new entrants.

# Increasing leaders' intrinsic profitability: cost-cutting and capex control

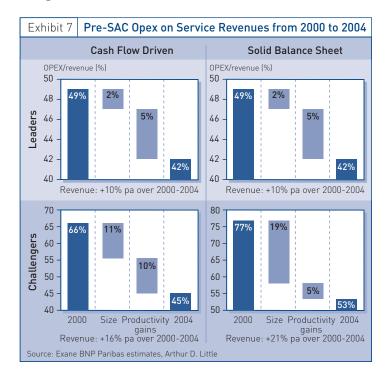
The differential between the level of OpFCF generated by leaders and their smallest viable challenger has decreased significantly, down 279 percent from €217 per client in 2001 to €78 in 2004. Such a decrease can be explained essentially by challengers' cost-reduction programmes as well as by their control of capital expenditures.

## **Cost-reduction programmes**

Between 2000 and 2004, the overall EBITDA margin before subscriber acquisition and retention costs rose by six percentage points in Europe. Part of this margin increase stems from the size effect, as mobile operators' 12 percent revenue CAGR over this period has made it possible to better amortise fixed costs. According to our calculations, this effect contributed three percentage points to the margin, i.e. half the margin expansion over the period. The rest of the margin expansion stems implicitly from improved productivity.

However, these gains were made primarily by a small number of operators, mainly challengers. European mobile operators may be divided into four sub-categories according to two distinctions:

- Leaders vs challengers. The first group has been profitable for the past few years, while the second group, some of which had not reached critical size in 2000 (thus generating negative FCF), realised more quickly the need to improve operating efficiency;
- "Cash-flow driven" vs "solid balance sheet": the first label applies to subsidiaries of incumbent operators facing considerable debt problems during the 2000 -2004 period in question, typically France Telecom and Deutsche Telekom; the second label applies to all other operators.

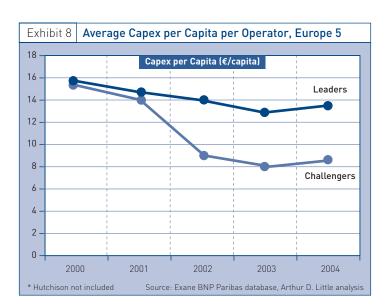


#### Exhibit 7 shows that:

 Challengers clearly benefited more from the size effect than the leaders. As we have seen, challengers grew 18 percent pa on average over 2000 - 2004 versus 10 percent for the leaders. They also put a much greater emphasis on cost reduction thus generating greater productivity gains than the leaders, equivalent to 5 percentage points.

 "Cash-flow driven" operators, whose management set cash-flow generation rather than growth as a priority in recent years, managed to boost productivity sharply. Productivity gains therefore had a noticeably greater effect among "cash-flow driven" operators than among "solid balance sheet" operators: five percentage points vs zero among the leaders, and 10 percentage points vs five percentage points among the challengers.

Operators who are both in the "solid balance sheet" and the leader categories, such as Vodafone affiliates and Telecom Italia, benefit from greater leeway to reduce costs. On average they have only recently started to concentrate on cost efficiencies. Our analysis further suggests that they will generate cost savings equivalent to at least 3 percent of their revenues in the coming few years. As these operators accounted for almost 60 percent of total European mobile operator revenues in 2004, such productivity gains would result in an extra €5 per capita to the European mobile operators' economic rents. This is equivalent of €16bn in Europe 5 mobile operators' value<sup>9</sup>.



<sup>&</sup>lt;sup>9</sup> Valuation assumes a discount rate of 8.5 percent and an OpFCF perpetuity growth rate of 2.5 percent p.a.

While challengers in the UK, Germany, Italy, Spain and Austria are abreast of or slightly lagging behind the leaders on 3G, challengers in France, Belgium or the Netherlands are hesitating and are seeking strategies that will allow them to avoid investing in 3G.

Capex control. Rolling-out a 3G<sup>10</sup> infrastructure requires large capital expenditures. For example, for a challenger like Bouygues Telecom in France, the necessary investment would be greater than its cumulated OpFCF over four years.

Challengers have two broad choices: to either follow the leaders and invest in 3G or seek other ways to differentiate, e.g. by investing in EDGE<sup>11</sup> and/or alternative MBWA technologies instead of 3G. While challengers in the UK, Germany, Italy, Spain and Austria are abreast of or slightly lagging behind the leaders on 3G, challengers in France, Belgium or the Netherlands are hesitating and are seeking strategies that will allow them to avoid investing in 3G. Consequently, over 2000 - 04 challengers' capex levels have been drastically reduced compared to those of leaders, contributing to a reduction in the economic rent for each leader by an average of €6 per capita.

### Regulators' room for manoeuvre

As a result of regulatory actions, the overall profitability of mobile operators may decrease to a threshold level that we have called the "acceptable profitability level". We have stated that once the smallest viable challenger reaches this threshold, leaders still enjoy an economic rent thanks to the efficiencies they derive from their greater size. This reasoning is based on two key assumptions regarding the intrinsically limited room for manoeuvre of telecom regulators because of:

- Their difficulty in enforcing asymmetric regulation, i.e. forcing upon leaders such constraints that would level the competitive playing field to the advantage of challengers;
- Their imperative to keep challengers alive, i.e.; not to push the profitability level of the smallest viable challengers below a threshold level.

If either one of these two assumptions does not hold true, neither does the concept of economic rent.

<sup>&</sup>lt;sup>10</sup> Also referred to as third generation or UMTS, this corresponds to the next generation of mobile telephony networks which are expected to enable high-speed data traffic.

<sup>&</sup>quot;Upgrade of existing mobile telephony networks, which increase data traffic speed at a fraction of the capex required to roll-out 3G networks.

Will regulators enforce asymmetric regulation? There are three ways for regulators to influence the competitive dynamics of mobile telephony markets: regulating retail prices, regulating wholesale prices, and taxation. At this stage, we do not see any of these tools representing a credible threat to mobile operators' economic rents.

### Regulating retail prices

Imposing low prices on leaders - as long as they are above costs - would not in any event give any advantage to the challengers, while high prices would be counterproductive, at least from a customer standpoint.

### Regulating wholesale (or interconnect) prices

- Outbound calls. As with retail prices, imposing low prices on leaders in favour of resellers or MVNOs (Mobile Virtual Network Operators) they may host on their networks would not level the competitive playing field as challengers would have to match such prices if they wished to remain competitive. On the other hand, enforcing high prices would indeed help challengers but would clearly worsen the economics of MVNOs and therefore limit their impact on the competitive dynamics of the industry.
- Inbound calls. Most European regulators have already enforced differentiated levels of mobile call termination rates, i.e. a telecom operator is charged more when one of his customers calls a challenger's customer compared to a leader's customer. For example, in France, Bouygues Telecom (the challenger) charges €17.9 cents/min for any call to one of his customers, compared to €14.9 cents/min charged by Orange or SFR (the two leaders). This is a classic example of asymmetric regulation which indeed offsets the economic rent of either Orange or SFR by over €2 per capita. However, in their attempt to decrease mobile telephony prices, regulators have pushed call termination rates significantly down in the past few years and are expected to keep on doing so. From a European average of €15.1 cents/min in 2003, we anticipate that the average call termination rate will go down 40 percent to €9.1

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cents/min by 2007. Consequently, such tariff erosion proportionally decreases the economic advantage for the challengers. For example, in the case of France, the call termination rate differential between Bouygues Telecom and the two leaders is expected to fall from €3 cents/min to €1.2 cents/min. This will in turn mechanically increase the economic rent of each leader by more than €1.3 per capita.

#### **Taxation**

A windfall tax on operators' profits would definitely erode leaders' economic rent. The idea of charging a "mobile tax" proportional to mobile operators' revenues has been considered by several European governments. However, at this stage it is difficult to imagine on what grounds such a tax would be based.

Are regulators ready to sacrifice challengers? We believe that regulators will try to ensure that challengers are not forced out of business. As stated before, a reduction in the level of competition would imply important drawbacks in terms of quality of service, innovation and productivity. A number of regulators are indeed primarily concerned about ensuring that a satisfactory level of competition is sustained among telecom infrastructure operators. Furthermore, it is difficult (to say the least) to imagine that regulators would have the political leeway to drive out of business €2bn+ turnover companies such as Amena (Spain), O2 (Germany), Wind (Italy) or Bouygues Telecom (France)¹².

# Insights for the Executive - How should Leaders Secure their Economic Rent

The collective economic rent of Europe 5 mobile operators was €56 per capita out of OpFCF of €100 per capita in 2004. This average figure hides strong discrepancies among countries. For example, in France the economic rent was €26 per capita, representing only 27 percent of OpFCF, while in Italy it was €94 per capita or as much as

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<sup>&</sup>lt;sup>12</sup> 2004 revenues: €2.9bn for Amena, €2.4bn for O2 Germany, €2.5bn for Wind and €3.3bn for Bouygues Telecom.

To realise such high stakes, leaders will need to stop the erosion of their OpFCF/client differential with challengers, and even increase the gap once again. Arthur D. Little believe that they may do so by putting much more emphasis on productivity-gain generation while also finding new growth areas. However, the key value-creation lever for leaders may lie in maintaining or even increasing the current level of market share asymmetry. This may sound straightforward but is actually counterintuitive for some leaders. In their quest for an elusive differentiation, we see many leaders focusing on their "alter ego" - the other number one or two in their national market - and paying much less attention to the small players.

#### **Acknowledgement**

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