

Berne, Michel; Vialle, Pierre; Whalley, Jason

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Is competition just a question of numbers? An analysis of the impact of the entry of Free Mobile into the French mobile telecommunications market

Michel Berne¹, Pierre Vialle^{2*} and Jason Whalley³

1 – Telecom Ecole de Management, Institut Mines & Telecom, Evry, France

2 – Telecom Ecole de Management, Institut Mines & Telecom, Evry, France

3 – Newcastle Business School, Northumbria University, Newcastle, UK

**Corresponding author*

E: pierre.vialle@telecom-em.eu

Abstract

In recent years across Europe, mobile operators have made a number of attempts to consolidate. Consolidation, whether it is successful or not, inevitably focuses on the number of mobile network operators present in a market. Largely overlooked in the discussion of how many mobile network operators should be permitted in a market is the strategy(s) adopted by these operators. An operator may have a disruptive impact on the market, necessitated by its late entrance, that takes the form of price, handset or bundling based competition. In this paper we explore the impact that one such disruptive mobile operator, Free Mobile, has had on the French mobile telecommunications market. Drawing on a wide range of secondary sources, our analysis finds that the growth of Free has come at the expense of the incumbent mobile operators. Its innovative approach to selling its products and providing customer support have been copied by its rivals, as has its low cost strategy. While consolidation has often been rumoured, it has not occurred with the consequence that Bouygues Telecom finds itself in a particularly precarious situation as it is squeezed between larger rivals like Orange and price focused competitors like Free Mobile.

Keywords: competition, mobile telecommunications, Free Mobile, France, entry

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1. Introduction

Across Europe the structure of mobile telecommunication markets is once again being discussed. Mobile network operators in several markets have sought to merge with one another, encouraged by the need to 'bulk up' to become more competitive or the desire to exit geographically or economically peripheral markets (Curwen and Whalley, 2016). In some countries, such as The Netherlands or Germany, consolidation has occurred and the number of networks operators has consequently declined. In other countries, such as the Denmark and the UK, consolidation has not occurred, due to either the regulator blocking the merger or imposing such stringent conditions on it that the companies decide not to go ahead (Curwen and Whalley, 2016). A key consideration for regulators is the negative impact that the merger would have on consumers.

That the European Union has switched from, in essence, approving to declining all merger requests raises the question as to what is the 'right' number of mobile operators within any given country. Regulators have, in the past, used the licensing process to expand the number of mobile operators within the market (Curwen and Whalley, 2015; Gruber, 2007). While this has occurred on several occasions as mobile technologies switch from one generation to the next, it is particularly associated with the licensing of third-generation (3G) technologies; the 3G licensing process across Europe allowed 46 new entrants in 33 countries to enter mobile telecommunication markets for the first time (Curwen and Whalley, 2015).

Not all of these new entrants have managed to launch their services. Of the 46 new entrants identified by Curwen and Whalley (2015) at the end of 2014, 18 had not launched their services and for many of those that had, they had managed to attract relatively few subscribers. This is perhaps unsurprising when the significant first mover advantages and barriers to entry are taken into account (Curwen and Whalley, 2006 & 2015; Park, 2009). Hutchison Whampoa is unusual as a new entrant, not only has it entered six different European markets but it has around 20 million subscribers across these markets. This 'success', however, has taken more than a decade to achieve and has only been possible due to the patience of the parent company in Hong Kong and its massive financial support (Whalley and Curwen, 2012).

Not only does Hutchison Whampoa illustrate the scale of the challenge that any new entrant faces (Curwen and Whalley, 2006 & 2015; Whalley and Curwen, 2012), but it also demonstrates the impact that the company has on the wider market. In those markets where it is present it sought to attract subscribers by competing on price, a strategy that ultimately forced its rivals in these markets to respond (Ofcom, 2016). More generally, OECD (2014) found that more operators in a market was associated with enhanced innovative activity that results in all companies in a market improving their services with regards to price, quality etc. Hutchison Whampoa is arguably an example of a 'disruptive' company whose presence is, according to Ofcom (2016), welcomed by regulators due to their positive impact on the market. Interestingly, in addition to observing that the presence of a disruptive mobile operator reduces prices, Ofcom (2016) also demonstrated that their impact was magnified when there were more operators in the market. In other words, more operators combined with the presence of a disruptive operator maximises consumer welfare.

Ofcom (2016) argues that while there is no precise definition of ‘disruption’ it is possible to identify three broad categories of behaviour that a company may display. It may introduce a product or service that supersedes existing ones, or produce an existing product or services differently using new technologies (Ofcom, 2016: 4). The company can also show ‘aggressive behaviour’, such as competing aggressively and prioritising gains in market share over profitability.

While Hutchison Whampoa is a disruptive operator, who else may fall into this category? Ofcom (2016) identifies several other disruptive operators across Europe – DNA in Finland, Play in Poland, Yoigo in Spain and Free Mobile in France. Given the potential impact that these mobile operators may have on their respective national markets, surprisingly little research has sought to understand their strategies. To address this oversight in the literature, this paper focuses on one of these disruptive companies: Free Mobile. When Free Mobile is discussed in the literature, it is usually in the context of a quantitative study (Elixmann, Godlovitch, Henseler-Unger, Schwab & Stumpf, 2015; Hounghonon, 2015). As such, a detailed understanding of the strategies that it has adopted does not emerge as the focus is on the outcome and not the strategic choices made by the operator. Moreover, the analysis often focuses on specific issues like pricing (Hounghonon, 2015) or investment (Elixmann, Godlovitch, Henseler-Unger, Schwab & Stumpf, 2015).

With this in mind, the remainder of this paper focuses on understanding the disruptive impact of Free Mobile on the French mobile telecommunications market. As such, a broader approach than is typical is taken that charts the strategy(s) adopted by Free Mobile and the impact that they have had with respect to, among other things, prices, employment and investment. To do so, the rest of the paper is divided into five sections. In Section 2, an overview of the mobile telecommunications market in France, including the entry of Free Mobile, is provided. This is then followed in Section 3 by a description of the business model adopted by Free Mobile, which is subsequently analysed in Section 4. The impact of this business model on the wider French mobile telecommunications market is then discussed in Section 5, and conclusions drawn in Section 6.

2. Overview of the period preceding the launch of services

2.1 Before 3G

The first analogue cellular mobile service was introduced in France in 1986 by “Direction Générale des Télécommunications” monopoly (which subsequently become France Télécom in 1988), under the name Radiocom 2000. The opening of the market to competition quickly followed in 1987 when a second mobile operator, “Société Française du Radiotéléphone” (SFR), was awarded a license to also offer analogue mobile services. Until the launch of digital services, the penetration rate was low and services were expensive, limited to business customers and to affluent customers. Following the adoption of GSM by the European Community in 1987, the two operators France Télécom and SFR obtained licenses in 1991 in the 900 MHz range, and started to offer digital services from 1992. However, the market was not very competitive and the mobile penetration rate was low compared to the EU average. Therefore, a third licence was awarded to Bouygues Telecom in 1996 in the 1800 MHz range. This new competitor mimicked the strategy of Orange in the UK by introducing cheap and easily understandable mobile plans (“forfaits”) including an allowance of minutes and free voicemail, and targeted primarily young customers. This strategy was quickly imitated by the

other two mobile operators and such mobile plans became very popular in France. Prices declined and the diffusion of mobile services extended to new markets segments such as the aforementioned young customers. The period of time until the beginning of the 2000s also gave rise to a struggle for market share, characterised by promotions for new customers such as an allowance of free months or heavily subsidised handsets. The introduction of a third operator also spurred innovation. For example, Bouygues Telecom was the first operator to introduce prepaid cards (1997), plans with free calls on weekend (1999), pricing per second and i-mode (2002), as well as connected PCs (2003).

In the early 2000s French mobile operators tended to forego their focus on gaining market share and sought to stabilise competition in order to ‘harvest’ their respective customer base. In 2005, after an investigation carried out following a decision to begin proceedings ex officio on 28 August 2001, and a referral was handed down by the consumer association “UFC Que Choisir” on 22 February 2002, the French competition authority - Conseil de la Concurrence - fined the three operators for engaging in two kinds of anticompetitive agreements that distorted market competition. The fines amounted to €534 million (Orange France paid €256 million, SFR €220 million and Bouygues Télécom €58 million).¹ The first agreement was about organising a monthly exchange of information on subscriptions and cancellations between 1997 and 2003, while the second was an agreement between the three operators from 2000 to 2002 to stabilize their market shares based on jointly-defined targets, a kind of “Yalta of Market Share”. While the three incumbents were engaged in “peaceful” competition, the regulation authority (ART) had a rather negative view towards MVNOs, as shown in the ruling on a dispute between Télé2 and Orange.²

2.2 The award of 3G and 4G licences

At the time of the call for tender in August 2000 the French government initially intended to award four UMTS licences, but the price was very high, at €4.95 billion. Unsurprisingly only two operators, France Télécom and SFR, maintained their application and obtained a licence on 7 September 2000, following a “beauty contest” or comparative tender.³ It was obviously not a satisfactory situation, particularly as European regulation mandated that the number of 3G licences should be higher than the number of GSM operators. Therefore, an additional call for tender was made for a third UMTS licence on 29 December 2001 under much better conditions: the price was reduced to €619 million, with an annual charge of 1% on 3G revenues and the duration of the licence extended from 15 to 20 years. Despite these more advantageous conditions, only Bouygues Telecom submitted an application, probably because of the financial pressure caused by the burst of the Internet bubble. The licence was awarded on 12 December 2002. Shortly before, on 3 December, the same conditions had been granted to France Télécom and SFR so that no discrimination occurred between the three operators. France Télécom and SFR were initially obliged to launch 3G services by June 2002 and Bouygues by December 2004. Due to technical, financial and operational concerns, the ART

¹ http://www.autoritedelaconcurrence.fr/user/standard.php?id_rub=160&id_article=502

²

http://www.arcep.fr/index.php?id=8571&no_cache=1&tx_gsactualite_pi1%5Buid%5D=239&tx_gsactualite_pi1%5Bannee%5D=2002&tx_gsactualite_pi1%5Btheme%5D=0&tx_gsactualite_pi1%5Bmotscle%5D=&tx_gsactualite_pi1%5BbackID%5D=2122&cHash=9af8ab3b0e852a70b2b3838ff43bbb7a&L=1

³ http://fr.jurispedia.org/index.php/L'attribution_des_licences_UMTS

allowed France Télécom and SFR to delay UMTS launch until 31 December 2004,⁴ and Bouygues Telecom until 30 April 2007.

On 8 March 2007 a new request for proposal was launched by ARCEP (the new regulatory authority replacing ART) for a fourth UMTS licence. Free Mobile, a subsidiary of Iliad S.A., which was already well-known in France for triple-play services under the brand “Free”, was the only company to have responded by the deadline of July 31st, 2007. However, Arcep rejected this proposal largely because they felt that Iliad/Free Mobile had failed to provide sufficient evidence of its financial resources, especially with regards to paying the fixed licence fee of €619 million (Decision 2007-0862⁵). Consequently, the award of a fourth UMTS licence was put on hold. The topic came reappeared when Prime Minister François Fillon, in a press release,⁶ asked ARCEP to start a process leading to the award of a fourth 3G licence. The remaining 15 MHz frequencies in the 2.1 GHz band must be divided in three blocks of 5 MHz each, at an initial price of €206 million (one third of €619 million), one block being reserved for a new operator. Following complaints from incumbent operators, the price was later increased to €240 million, as it also included the award of additional frequencies in the 900 MHz (GSM) band. A request for proposal was subsequently issued by ARCEP on 1 August 2009.

Despite expected applications from firms such as Virgin Mobile or Numericable, Free Mobile was the only company to make a proposal before the deadline of 29 October 2009. After reviewing the application, ARCEP announced its decision to award Free Mobile the fourth UMTS licence on 17 December (Decision 2009-1067⁷). The frequency licence was subsequently issued on 12 January 2010. The terms of the licence also include the commitments made by Free Mobile in its application, and, in particular: to offer consumers clear and innovative services at competitive prices, to host MVNO operators (including full MVNOs), to launch its services within two years (that is, by January 2012), and to cover at least 90% of the population with its 3G network within eight years.

The award of 4G (TD-LTE) licences started before Free Mobile actually launched its services in January 2012. On 22 September 2011, ARCEP awarded four licences for duplex frequency blocks in the 2.6 GHz band (Decision 2011-1080⁸), for a total of €936,129,513 – see the table below. Only SFR did not make commitment to host MVNOs on its network.

Operator	Bouygues Telecom	Orange France	Free Mobile	SFR
allocation	15 MHz	20 MHz	20 MHz	15 MHz
Price, €	228,011,012	287,118,501	271,000,000	150,000,000

On 22 December 2011, ARCEP further awarded three licences for duplex frequency blocks in the 800 MHz band (Decision 2011-1510) for a total of €2,639,087,005 (see the table below). Free Mobile offered less than the other operators and, therefore, did not obtain a licence. However, as the company was deemed eligible and qualified, it got the right to apply for

⁴ SFR launched 3G services earlier, in June 2004

⁵ http://www.arcep.fr/uploads/tx_gsavis/07-0862.pdf

⁶ <http://www.arcep.fr/fileadmin/reprise/communiqués/communiqués/2009/com-pm-4G.pdf>

⁷ http://www.arcep.fr/uploads/tx_gsavis/09-1067.pdf

⁸ http://www.arcep.fr/uploads/tx_gsavis/11-1080.pdf

roaming rights from SFR whose licence included two blocks of spectrum in the 800 MHz band.

Operator	Bouygues Telecom	Orange France	Free Mobile	SFR
allocation	10 MHz (A)	10 MHz (D)	None	10 MHz (B+C)
Price, €	683,087,000	891,000,005	-	1,065,000,000

On 24 November 2015, ARCEP finally awarded four licences for duplex frequency blocks in the 700 MHz band (Decision 2015-1454), for a total of €2,798,976,324.

Operator	Bouygues Telecom	Orange France	Free Mobile	SFR
allocation	5 MHz	10 MHz	10 MHz	5 MHz
Price, €	467 164 000	933 078 323	932 734 001	466 000 000

ARCEP also made several decisions concerning the refarming for 4G of 1800 MHz bands initially used for GSM, with the general objective of establishing a balance between the four operators. Bouygues Telecom was the first to receive authorization to use these frequency band for 4G on 23 March 2013, from 1 October 2013 (Decision 2013-0514). On 16 December 2014, ARCEP also awarded 5MHz to Free Mobile from 1 January 2015 (Decision 2014-1542). This frequency band will be returned by Bouygues Telecom in exchange for the authorization to use its 1800 MHz frequencies for 4G. Finally, on the same principle, Orange and SFR were authorized on 30 July 2015 to use this frequency band for 4G while they must handover frequencies to Free Mobile from 25 May 25 2016 (Decisions 2015-975 and 2015-976). After this date, SFR, Orange and Bouygues Telecom will be able to use each a block of 20MHz, and Free Mobile a block of 15 MHz.

2.3 History of Iliad/Free

Iliad was founded in 1993 after his owner, Xavier Niel, bought a Videotex service provider specialising in the “pink Minitel”. In 1999 the company obtained telecommunications licences (called L. 33-1 et L. 34-1) to operate a telecommunications network and market telecommunications services to the general public. It started operations under the brand “Free”, and it is by this name that the company is usually known by the public. It launched an attractive Internet access service without subscription and commitment, with the pricing being by minute without any additional charges. The service was quite innovative at that time and extensively marketed under the slogan “freedom is priceless”. In 2000, following an investment of €15 million by Goldman Sachs, Free started deploying its network and interconnecting it with France Télécom’s network. In 2001, Free extended its scope by buying One.tel from Centrica and acquiring its licence for 10 years.

In 2002, Free launched its unlimited broadband ADSL Internet access priced at €29.90, which was transformed in a triple-play offer in 2003 at the same price. The triple-play offer, which evolved quickly to ADSL2 in 2004, included several IPTV channels, and free telephone calls to fixed subscribers (in up to 96 countries in 2009). This was a development that provided strong impetus to the French broadband market (Daidj and Vialle, 2011). The high level of competition and innovation resulted in strong growth, leading to a penetration rate exceeding 50% of TV households in 2006. The French market also became the largest IPTV market in

Europe (NPA CONSEIL, 2006, 2008). It is important to note that the successful entry of Free has been made possible by the French regulation, which mandated the incumbent operator to offer attractive interconnection, unbundling, and wholesale solutions to competitors.

In 2004 the company was launched on the French stock market. An important acquisition was made in 2008, when Iliad acquired Liberty Surf S.A., the Internet access subsidiary of Telecom Italia in France, which was operating under the brand Alice. Alice brought around 850,000 subscribers to Iliad, allowing the company to reach a market share of 25.5% of the broadband Internet installed base that totalled around 4 million subscribers.⁹ In 2009, the year it gained its 3G licence, Iliad achieved total revenues of €1,954.5 million and a net income of €175.9 million, and 4.452 million ADSL subscribers.

It is important to stress the general characteristics of Iliad's business model for broadband Internet, as they may allow a better understanding of its business model for mobile business. The business model of Free can be characterised by a mix of low-cost and innovation strategies, and an ability to seize opportunities. As we have briefly explained, the market success of Free was based on cheap, integrated and innovative offers as exemplified by its triple-play service. In order to keep costs low, Free operated exclusively on-line without physical shops, and with a minimal level of customer service. Other marketing expenses such as advertising were also limited, with the company relying initially more on noteworthy events and slogans, and on word-of-mouth through its very active "community". It progressively developed or acquired its infrastructure, in particular by taking advantage of cheap prices after the bursting of the Internet bubble.¹⁰ More recently, it has also progressively invested in FFTH/FTTB connections.

For technical innovation, Free relied on a mix of its own development and open innovation. It designed itself its DSLAM and also its box called "Freebox". This allowed Free to provide a multi-service box including the newest technologies, and to often introduce significant innovation before competitors. The Freebox became a platform for various services: IP telephony, IPTV, VoD, personal TV, Games, applications, etc. While it designed its own products, Free relied heavily on open source software such as the Linux operating system. It also relied on its community of users via different forums, such as Freenews, ADUF, Freeplayer.org, or UniversFreebox.com. This allowed not only for the creation of a communicative effect around its services, but also to compensate for its minimal level of customer service. It was often initially quicker (if not the only way) to find an answer in a forum, than trying to obtain help from customer service. More generally, by relying on open innovation and communities, Free was seen as a fashionable company in accordance with the "free Internet" way.

During its history Iliad/Free has been able to seize opportunities to develop its business: regulatory opportunities offered by the liberalisation of the French telecommunications market, economic opportunities resulting from the rise of the Internet (and also the burst of the Internet bubble), technical opportunities, but also societal opportunities, such as the rise of

⁹ http://www.iliad.fr/finances/2008/CP_260808.pdf

¹⁰ In 2011, it made use of 64000 km of fiber optics, including 31800 km of dark fiber via indefeasible right of use contracts. Source: https://fr.wikipedia.org/wiki/Maillage_de_l%27infrastructure_Internet_en_France#Iliad.2FFree

the “free Internet” mindset and open innovation. Its entry in the cellular market further illustrates its ability to seize opportunities.

2.4 The pro and cons of introducing a fourth licence and award it to Free Mobile

The introduction of a fourth licence and its award to Free Mobile was a significant development within France. It opposed two different types of rationale. One rationale, which was shared by ARCEP, the European Commission and the prime minister at the time of granting the licence, was that more competition would provide more benefits to consumers, in particular in term of price. The other rationale, supported by the incumbent operators and the then president Sarkozy, was focused on industrial policy.

For the proponents of granting a fourth 3G licence, the French cellular market was suffering from a lack of competition. Unlike most European countries that had four or more mobile network operators, France was one of the few mature markets with only three mobile network operators with an incumbent controlling a large portion of the market. It was dominated by three incumbents following a policy of market share stabilisation since the beginning of the 2000s: France Télécom (now Orange), SFR and Bouygues Telecom, with 46.5%, 35.4% and 18.1% market share respectively at the end of 2008 (ARCEP, 2008). MVNOs had not been successful and were not in a position to challenge the incumbents. In 2007, they only represented 5% of the market, compared to 35% in Germany and 16% in the UK (Quantifica, 2008).

As a result of this low level of competition, the cellular market was insufficiently developed and prices excessive. According to a report of the European Commission (EC, 2009), the penetration rate of mobile services in France, at 88.4% as of October 2008, was well below the EU-27 average of 118.9%. According to the European Commission, the introduction of a fourth mobile operator would not only increase competition and choice for consumers, but also allow MVNOs to benefit from increased negotiation opportunities. For ARCEP, the comparison with the fixed broadband market was enlightening: as at 2009 broadband penetration rate in France stood at 27.7% ahead of the EU-27 average of 22.9%. Prices were also higher in France than in other countries (OECD, 2009).

	Voice Call Minutes	Volume of SMS and MMS	Price in Euros (France)	Price in Euros (OECD Average)
Low Usage	360	404	12.70	9.60
Medium Usage	780	608	22.22	18.67
High Usage	1680	672	35.50	28.75

Table: Mobile Services price comparison between France and other OECD countries. (OECD Communications Outlook 2009)

So for ARCEP and the French government, issuing a fourth licence would place France in an average position in terms of number of mobile operators, leading to lower prices and triggering the development of the market. However, the three operators tried to place pressure on the public authorities and public opinion, as they had much to fear from Free Mobile. They even received unexpected support from Nicolas Sarkozy, the French President, who stated that he was “sceptical and reserved on the choice of a fourth mobile operator because the

lowest price is not necessarily the best” (Les Echos, 2009). It was believed that Mr. Sarkozy held this position because of his close ties with Martin Bouygues, owner of Bouygues Telecom (HuffingtonPost, 2009).¹¹ Another argument was related to industrial policy as Martin Bouygues asked: “What guarantees do we have that this license will not primarily benefit the Asian manufacturers who receive massive aid from their governments?”. Martin Bouygues also announced a “social slaughter”, estimating that between 10,000 and 30,000 jobs would be destroyed by the introduction of a competitor who would place pressure on prices. The chairman of Vivendi, the parent company of SFR, even declared that a price war already existed in France and that the French are already benefitting from prices that were among the lowest in Europe ¹².

The three incumbents also complained about unfair discrimination, as Free Mobile only paid €240 million, while they paid their licence €619 million. They filed complaints to the European Commission with claims of unfair pricing and also accused the authorities of indirectly granting state aid to the potential new entrant. The European Commission rejected the accusation, stating that it has been a transparent and open procedure in accordance with European Union regulations and resulted in a competitive outcome (European Commission, 2011). It was also estimated that the price of €619 million paid by the incumbents for 15MHz band was commensurate to the price of €240 million for the 5MHz only allocated to Free Mobile.

3. The design of the business model and the launch of services

3.1. The launch of Free Mobile's services

According to its newly granted license, Free Mobile agreed to publish an offer for accessing its 3G network as soon as it covered a quarter of the population. In order to cover the remaining 75%, Free Mobile signed an agreement with Orange France on 2 March 2011, including voice and data. The contract was implemented on 23 December 2011. The revenue to be generated by this contract has been estimated to around €1 billion over six years, including a fixed part and a variable part according to the volume used.

On 10 January 2012, Free Mobile's owner Xavier Niel presented its offering during a live show streamed from Iliad's headquarter. During this presentation, he described customers of incumbent operators as suckers (“pigeons”) and demonstrated that Free Mobile's offering was twice as cheap than the current incumbent's offering.¹³ The offering was cheap, simple and integrative, following the tradition of Free for broadband services, with only two packages. The first package included unlimited calls to 40 countries, unlimited SMS and MMS, and 3 GB of data, was proposed costing just €19.99 per month. Another “social” package including 60 minutes of calls and 60 SMS for only €2 per month (that was later extended to 120 minutes of calls and unlimited SMS) was also launched. Free mobile also demonstrated its strategy of harvesting its installed base of ADSL customers with special prices: €15.99 for the first package and €0 for the social package. The offerings were also “SIM only” without a handset subsidy, and there was neither contract duration obligation nor termination penalty. That was

¹¹ According to a newspaper article, François Fillon, his Prime Minister who was in favour, as ARCEP, of a significant price decrease had answered later: “Mr President, the three operators you talked about, there are the same ones you told three months ago that they making pigs of themselves?” (Liberation, 2009)

¹² <http://www.numerama.com/magazine/13931-sarkozy-se-dit-reserve-sur-l-arrivee-d-un-4eme-operateur-mobile.html>

¹³ http://www.dailymotion.com/video/xnkz0q_free-lancement-de-l-offre-mobile_news

in accordance with the slogan of “freedom” used by the company; some customers felt constrained by handsets customized by operators and by contractual obligations. As in the case of Free for broadband access, there were no shops and all transactions were made online.

This announcement generated substantial demand that raised several problems that appeared to be detrimental to Free Mobile. Firstly, the website of Free Mobile was quickly overloaded and customers could not place their orders, there were delays in sending SIM cards to customers and there were long delays when contacting customer services. Secondly, the organization managing number portability, GIE EGP, crashed under massive demand and Free Mobile had to limit the number of number portability requests to 40,000 a day. Thirdly, the network of Orange has been saturated by the rising voice and SMS traffic of Free Mobile’s customer, affecting the quality for customers of both operators. According to some estimates, the number of subscriptions reached 2 million just a month after its launch.¹⁴

Only three days after the launch of Free Mobile’s services, the incumbent mobile operators and MVNOs reacted with new service offerings. The incumbent operators have created sub-brands offering similar unlimited packages, but with specific constraints in order to avoid cannibalization of their traditional plans. The constraints are similar to those imposed by Free Mobile, such as on-line transactions only and no handset subsidy. Orange (Shosh), and SFR (Red) propose packages with unlimited calls, SMS and MMS, but only 1 GB of data (against 3 GB for Free Mobile). Only Bouygues Telecom (B&You), the operator with the lowest market share, and Virgin Mobile, a major MVNO, launched a package that was exactly the same as Free Mobile.

Free Mobile’s offering has not significantly changed since the first year of its launch, except, that is, for the launch of 4G services. The other incumbent operators invested heavily in their 4G networks and were hoping that this would allow them to differentiate themselves and to improve their margin with a premium price. However, Free Mobile decided to launch on 3 December 2013 a 4G version of its package at the same price as 3G. Moreover, the “fair use” data allowance was extended to 20 GB (compared to 3 GB for 3G). It should be mentioned that at this time, there were significant uncertainties as to what its 4G coverage really was. On 1 September 2015 Free Mobile even extended the 4G data allowance from 20 to 50 GB.

3.2. Analysis of the disruptive Business Model of Free Mobile

The business model of Free Mobile is in line with the business model previously applied by Free to broadband Internet access. Firstly, this also offered low-priced plain integrative packages with “unlimited” features. These packages are attractive and easy to understand for consumers. They are also easy to communicate, to manage and bill, which, from the supplier’s perspective, is cost effective. Secondly, as in the case of Free, transactions are made nearly exclusively online, and the customer service is limited to and often delegated to users through various forums. This also helps keep costs low. It also illustrates the concept of “freedom” as customers are not bound by contractual limitations and/or handset subsidies. Finally, in both cases, Iliad took advantage of using another operator’s network during the launch phase, before switching progressively to its own infrastructure.

¹⁴http://www.frenchweb.fr/free-mobile-aurait-deja-seducit-pres-de-2-millions-de-clients-60692/47416#disqus_thread

However, convergence adds a new dimension: the exploitation of economies of scope. Free Mobile would probably not have been able to offer such low prices and to market its services so easily without synergies with Free's broadband business. Firstly, while the mobile part of the network represents an additional investment for Iliad, Free Mobile's traffic uses the same core network, as well as the same interconnection facilities with other operators. Secondly, a significant share of customers are subscribers of both broadband and voice services which allows traffic substitution between the two services. Both broadband and mobile packages offer unlimited calls, but calls from home are substitutable - it is most likely that users place mobile calls instead of fixed calls at home. It is also quite likely that a significant share of users switch from 3G/4G to WiFi when at home. Thirdly, marketing expenses are significantly reduced by focusing on Free's installed base of broadband subscribers.

According to Christensen (1997), a disruptive innovation initially has a lower performance on dimensions valued by the main market segments, but higher on other dimensions. It can eventually displace established technologies under certain conditions: the current technology outperforms expectations, the performance of innovation increase more than the established technology, and/or the preference of the main market segments change and value other dimensions. Christensen further distinguishes between two types of disruption: "low end disruption" and "new market disruption". In the case of Free Mobile, there is no technology innovation involved, only offering (service) innovation. However, some of the patterns described by Christensen can be observed. Free Mobile's offering did not perform significantly lower on the main dimension - telecommunications service quality - except during the first months. The lower performance dimensions were distribution (no shops) and customer service. On the other hand, it was performing better on "freedom" (SIM-only, no contractual limitations). So there were some elements of "low-end disruption". With the "social" packages at €2 and €0 there were also some features of "new market disruption", as these packages have been often used for children or by poor segments of the population.

Free Mobile's offering and strategy share some characteristics that define disruptive innovation, and the idea of disruption was at the heart of Xavier Niel's strategy. In the next section, we provide a detailed analysis of the impact of the entry of Free Mobile on the French market.

4. The impacts of the entry of Free Mobile

As shown in the previous section, the entry of Free into the French market sent a real shock wave to the tightly knit world of mobile operators. The price/quality ratio of the Free Telecom offers appeared extremely good¹⁵ and Xavier Niel announced the company was aiming for a 25% market share "in a few years"¹⁶. So an immediate and strong response was absolutely needed by the incumbents.

¹⁵ Even if the quality of the Free network was questionable initially. There were three main problems: (1) the initial coverage of the Free mobile network was limited (27 % of the total French population – as required by the license. This percentage was to increase to 75% on Jan. 1st, 2015 and 90% in 2018). ARCEP monitored the situation and the progress made by Free. (2) The entity in charge of number portability was completely overwhelmed by customer requests at first. And (3) The very large number of Free subscribers saturated its network and even sometimes created problems for Orange customers. Two months after the Free network launch, it was reported that one third of calls failed in Paris and Lyon. See: Marc Lomazzi, "Free: un appel sur deux ne passe pas en heure de pointe", *Le Parisien*, 31 March 2012.

¹⁶ Sarah Belouezzane & Cécile Ducourtieux, "L'entrée fracassante de Free dans le mobile", *Le Monde*, January 11, 2012, p. 13.

This section will discuss the medium and long term response from two different points of view: first the strategic choices made by the competitors of Free, and then the macroeconomic impacts in France in terms of prices, employment and investment.

4.1 Choices open to the competitors of Free

The three competitors of Free (Orange, SFR and Bouygues Telecom) had several options, but none of them was obvious and optimal.

The first option was to fight Free head to head, trying to engage in a low price strategy. But in a saturated market with a significant level of churn, the expected gain of customers was limited and the loss of revenues certain. The only way to maintain profits at an acceptable level was to reduce costs. Two possibilities exist here: the first one is to engage in cost reduction¹⁷ and the second is to try to share costs (network, shops, etc.) or even merge with another operator or sell out to exit this complicated and challenging industry. The history of French mobile operators is full of price decreases and of tentative mergers. Only one player, however, has succeeded in existing the market: the French media giant Vivendi sold SFR to Altice in 2014 (see later for details).

The second strategy is to attempt to escape the price war launched by Free. Moving upmarket to try to attract the more affluent and demanding customers is one possibility. The introduction of 4G in 2013 seemed to offer a way forward. Unfortunately, the price war soon extended to 4G which was offered at the same price as 3G. Another possibility is to try to lure customers with services from outside the mobile world. The four French mobile operators are convergent operators, so it is possible to imagine strategies resting on the development of fixed broadband (“quadruple play”) or content distribution¹⁸. This strategy has also been tried with mixed results.

The last strategy is to try to balance poor commercial and financial results in France with expansion in other countries or industries. All three mobile incumbents have parent companies with extensive assets outside the mobile industry, but the sheer size of their domestic mobile operations means that they could not just sit and wait for better times.

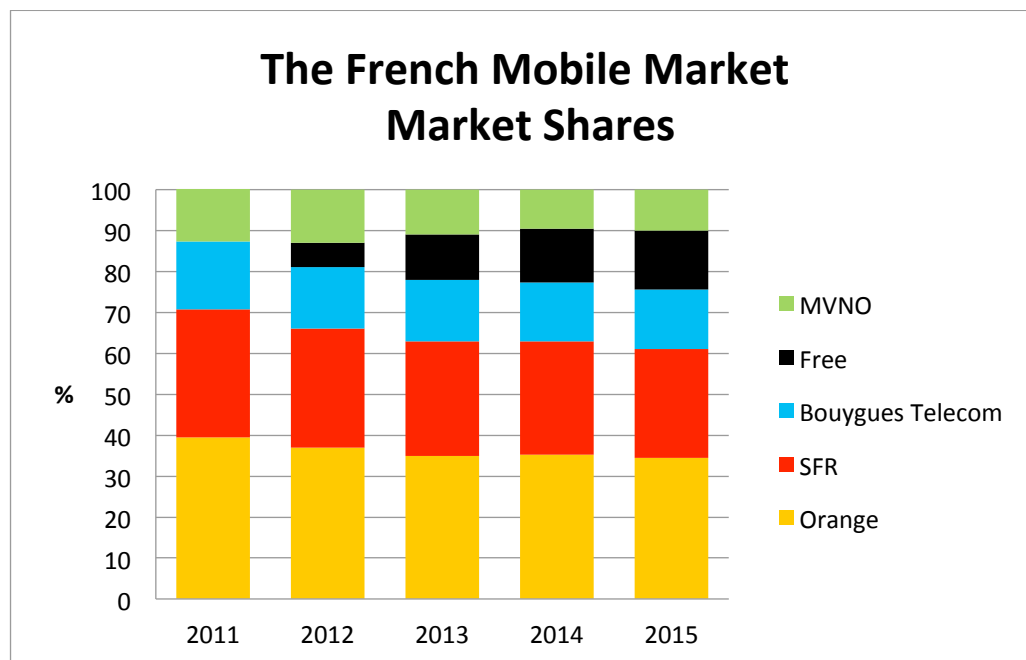
4.2 The impact on customers and profitability

Free was able to grab a large market share very rapidly. After nearly one year it had 5 million customers and after three years 10 million. The growth rate of the Free customer base then slowed markedly. Free’s competitors lost some customers in the first quarter of 2012 but they then managed to more or less to stabilize the number of SIM cards through price cuts and later the development of M2M offers. However, looking at market shares, it is obvious that Free took a little bit from each of its competitors – MVNOs included. MVNOs had a particularly hard time trying to fight Free. The competitive advantage of most of them was low prices and they were squeezed between the (low) Free prices and the wholesale prices they paid to the

¹⁷ For example, the total savings of Bouygues Telecom amounted to 599 M€ from 2012 to 2013 while its sales decreased to 4.7 billion € (-11%). After SFR was bought by Altice in 2014, a drastic savings plan was also implemented. See: Sarah Belouezzane, Sandrine Cassini, “Numericable, un an de régime Drahi”, *Le Monde*, 27 Nov. 2015, p. 4. The number of customers decreased but the profits shot up.

¹⁸ “I declare war in fixed broadband” declares Martin Bouygues, the CEO of Bouygues Telecom. *Le Figaro*, 20 Dec. 2013, p. 20.

operator hosting their traffic. Indeed, the largest MVNO, Virgin Mobile, was sold to Altice in 2014¹⁹.



Source: Operators and ARCEP

The profitability of French mobile operations is not easy to ascertain as their financial results are not published in the same way. All four major operators have at least two main lines of business and do not always provide the necessary details to make the assessment. However, it seems clear that:

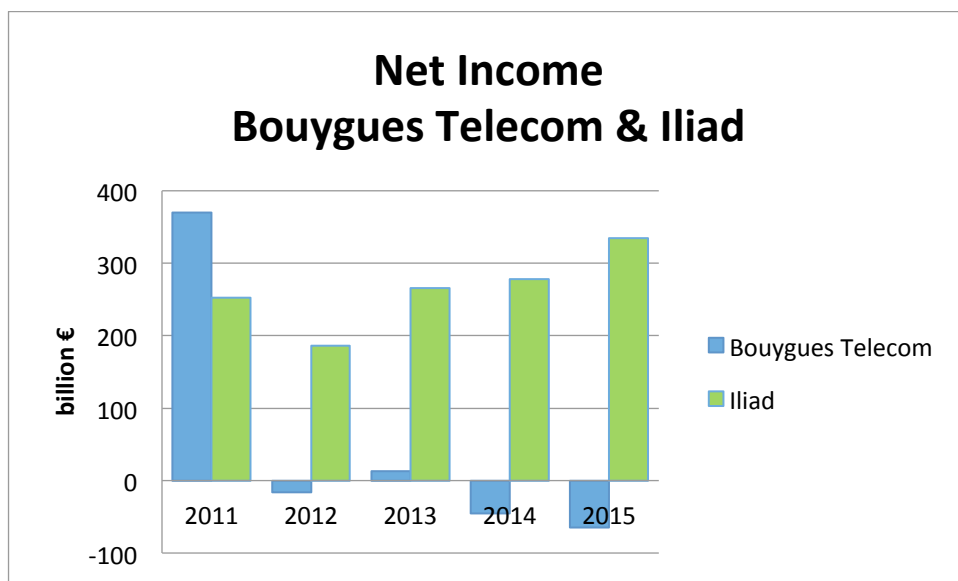
- Despite its very low prices, Free has managed to keep a fairly high profit level – with the exception of the launch year, 2012 when its net income went down by 26% compared to 2011. Free clearly benefited from the possibility to spread its capital expenditures over time due to its roaming agreement with Orange (see later for details) and from increased revenues;
- Orange, SFR and Bouygues have suffered profit reduction or losses. Bouygues Telecom lost sizable amounts of money since 2012²⁰.

Globally we can say that:

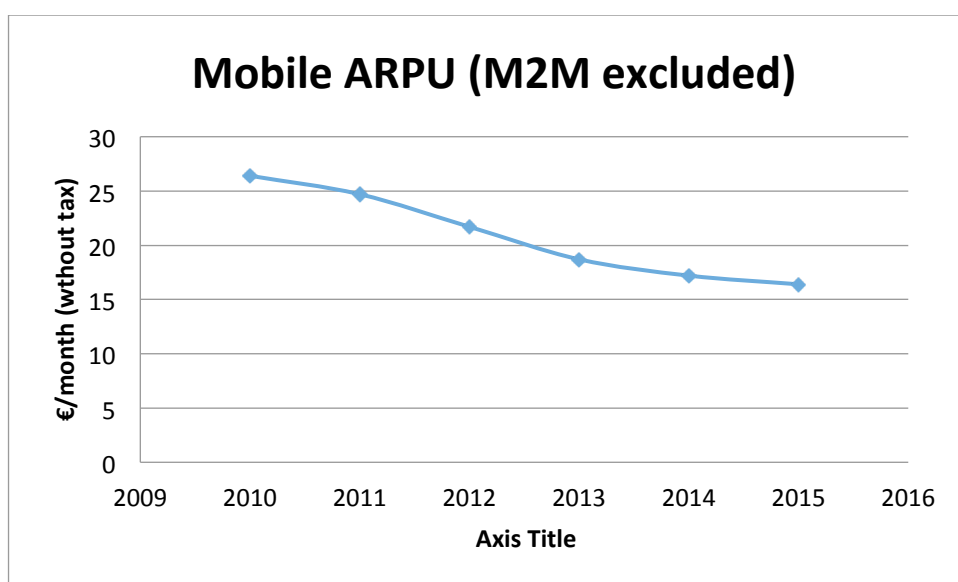
- The mobile ARPU has consistently declined between 2012 and 2016 (inclusively);
- And the total revenues of the mobile industry have also gone down every quarter over the same period but at a decreasing rate. As the revenues of Free Telecom have increased, the sales of the other operators have substantially declined.

¹⁹ Solveig Godeluck, “Numericable va avaler Virgin Mobile pour 325 millions d’euros”, *Les Echos*, 19 May 2014, p. 23.

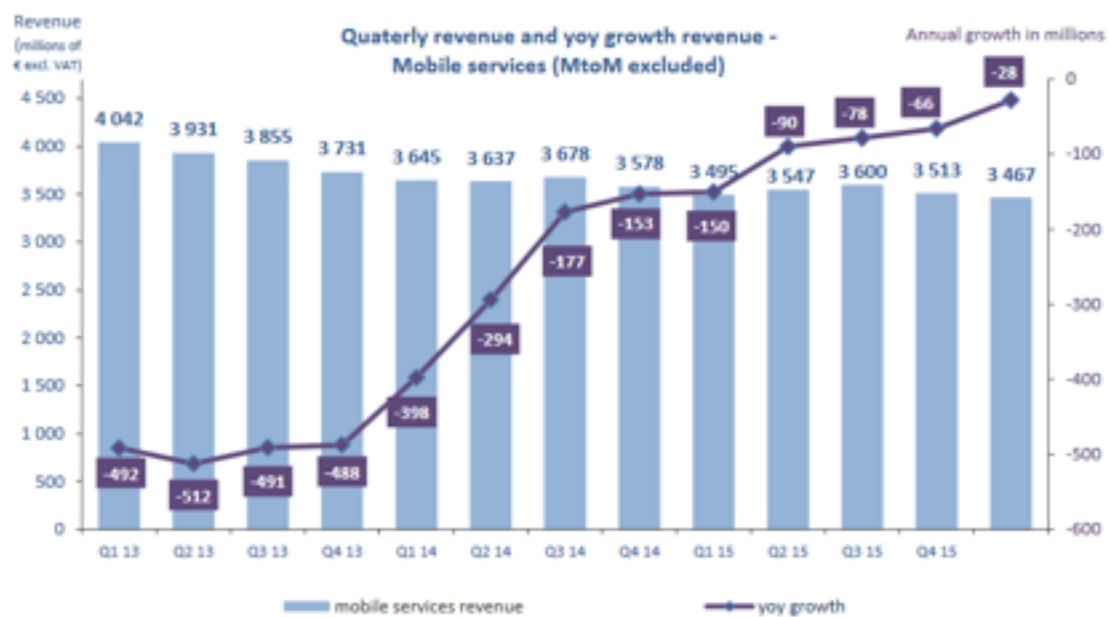
²⁰ Due to a change of shareholder, the financial results of SFR are inconsistent over the period. After large losses in 2014 (-188 million €), the net income of SFR shoots to 682 € in 2015. Orange publishes the total Orange France EBITDA only. It decreases from 8600 M€ in 2011 to about 7000 M€ in 2014 and 2015



Source: Company reports. For Bouygues Telecom, net profit attributable to the group.



Source: ARCEP Observatory, various issues



Source: ARCEP (2016)

As regards the share price of operators, the Iliad Group (symbol: ILD) exhibits arguably a good performance over the period, consistent with its economic situation and outlook. The share price increases steeply between 2012 and 2014 after the launch of the Free network. Large swings in prices are the seen, for example, when the Orange-Bouygues Telecom merger failed early 2016 (see later for details). As the three mobile incumbents are subsidiaries of large groups, the value of their shares do not necessarily reflect the situation of their mobile business.



Source: Yahoo Finance

4.3 When (nearly) everybody tries to deal and (possibly) merge with (nearly) everybody

With only four major operators, the possibilities for mergers or acquisitions are not extensive. In 2011-2012, Orange was the market leader and ostensibly a very powerful company, out of the reach of its French competitors. Free had an aggressive strategy but it needed a national network immediately to launch its mobile services. SFR was the traditional challenger to Orange, but its parent company Vivendi was unsure about its future strategy. Finally, Bouygues Telecom was the smallest of the rival operators, and probably too small to remain independent forever, but it was a subsidiary of a powerful construction and media group.

Free Telecom signed in 2011 a roaming agreement with Orange so that it was able to offer nation-wide services in the period when it would be building out its own network. This move was highly criticized by SFR and Bouygues but it had received the approval of ARCEP. The Orange network was large enough to accept the traffic of a few millions extra customers for a while, and Orange reportedly charged Free around €500 million in 2012 and €700 million in 2013 and 2014²¹. Orange, SFR and Bouygues Telecom were bound to suffer because of the very low prices offered by Free, but Orange at least benefited from this roaming agreement. ARCEP insisted that this agreement was only temporary in order to have infrastructure-based competition in the future. The initial term of the agreement was until 2016 for 3G and 2018 for 4G. In June 2016, Orange and Free have decided to terminate the agreement in 2020 for 2G/3G, albeit gradually.

In a second move, SFR and Bouygues decided to share part of their networks in 2013 to reduce operational costs by 20 to 25%²² at a time when Vivendi was already contemplating the sale of SFR. Bouygues made an offer to buy SFR as well, but contrary to expectations, Vivendi sold SFR to Altice and not to Bouygues. Bouygues was extremely angry at this move but the network-sharing agreement between Bouygues Telecom and SFR remained and was progressively implemented.²³

Altice was the parent company of the cable operator Numericable. The sale of SFR to Altice reportedly brought about improved financial conditions²⁴ for cash-strapped Vivendi while presenting no risk of competition policy issues emerging as there would still be four mobile operators. Moreover, Altice promised not to cut jobs before 2017 and the track record of Patrick Drahi, the head of Altice, showed a real talent for business recovery²⁵. From an operational point of view, the merger offered synergies between the cable and the mobile network. The then Minister of Industry Arnaud Montebourg had publicly backed a three-operator mobile market, as being the most protective regarding employment and investment in France²⁶.

²¹ Romain Geugneau, Solveig Godeluck, "Bouygues hausse le ton face au contrat Free-Orange", *Les Echos*, 14 Jan. 2014, p. 21

²² It covered 57 % of the French territory and 80 % of the population excluding the largest cities and the least densely populated areas according to the two firms.

²³ In May 2015 the four mobile operators have also signed an agreement to cover the least densely populated areas (around 40 million € per year in total; Orange finances 40% of the total)

²⁴ Initially 11.7 billion euros, partly financed by a 8.5 billion bank loan. The total price paid for SFR was more than 15.5 billion euros

²⁵ Numericable had a long and troubled history and P. Drahi had managed to transform it into the pivot of the French cable industry.

²⁶ Sarah Belouezzane, "Télécoms: Bouygues écarte la consolidation de M. Montebourg", *Le Monde*, 15 May 2014, p. 4.

The last important episode happened at the end of 2015 and the beginning of 2016 when Orange announced it has started merger talks with Bouygues Telecom. This strategic move involved at least seven partners with different goals and corporate cultures, so it is not a surprise it failed.

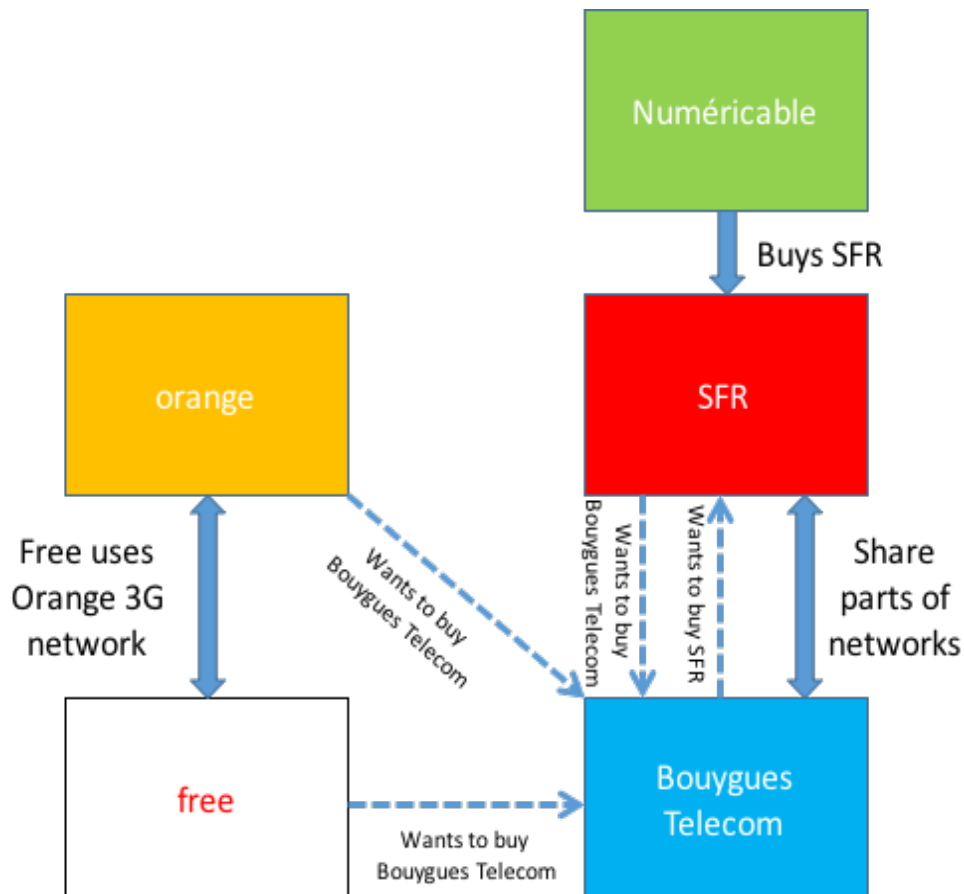
While it was not presented officially in this way, the idea was to dismember Bouygues Telecom, with each of the remaining three operators buying part of its assets. Bouygues expected to get a good price and a presence on the Orange board. Orange, as market leader, could not add all the Bouygues Telecom customers without reaching a market share that the Competition Authority would find unacceptable. So Orange was supposed to keep only some of them, while SFR was interested in the low-cost customers of Bouygues Telecom. Free would buy part of the stores and the mobile network of Bouygues Telecom – a complicated issue as Bouygues Telecom and SFR share a large part of their networks. The total expected cost synergies were expected at around €5 to 10 billion per year to be shared between the three remaining operators while the total value of Bouygues Telecom was estimated around €10 billion.

The other three partners in the discussion were the Competition Authority, ARCEP and the Minister of the Economy and Industry. As the French Government was a significant shareholder of Orange, the minister insisted that the entry of Bouygues onto the board of Orange would not dilute his own power and cost Orange too much. The Competition Authority had made it clear that it did not want the market power of Orange to increase, while ARCEP wanted to maintain momentum regarding investment but was neutral as regards the number of operators on the tariff issue²⁷.

After a last round of negotiations the deal collapsed in April 2016²⁸ with very large losses on the Paris stock exchange. As a result, Bouygues Telecom, the smallest and least profitable incumbent remained independent in 2016. In the end, all operators have in some way imitated Free, with less employees and stores and online only offers.

²⁷ Interview of the president of ARCEP: “Soriano: C’est la fin de la regulation pro-low-cost”, *Le Figaro*, 7 Apr. 2016, p. 23.

²⁸ Elsa Bembaron, “Orange et Bouygues douchent les espoirs de consolidation des télécoms français”, *Le Figaro*, 4 Apr. 2016, p. 22-23.

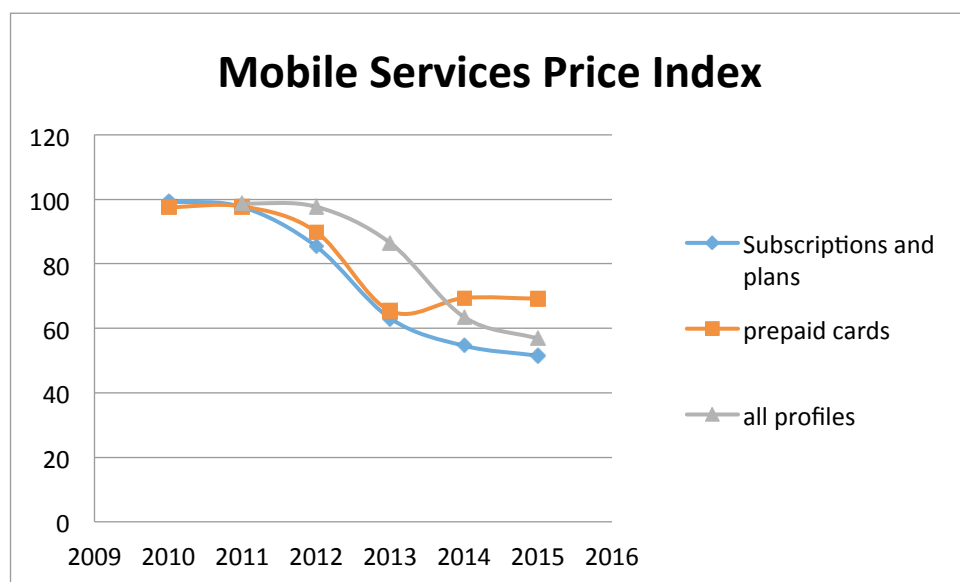


Date	Proposed merger	Pros and cons	Outcome
Oct. 2012	Free could buy SFR (not confirmed)	Lots of synergies, very large merged company Brings no cash to Vivendi	Fails.
Feb. 2014	Bouygues proposes to merge with SFR	Bouygues and SFR share their network; no competition policy issue	Fails
March 2014	Numericable proposes to buy SFR	Excellent exit for Vivendi Numericable becomes a convergent operator Maintains 4 operators	Vivendi sells SFR to Numericable
Apr. 2014	Free could buy Bouygues Telecom		Fails
May 2014	Orange could buy Bouygues Telecom	Competition policies issues The price asked by Bouygues is too high	Fails
Nov. 2014 & June 2015	Numericable could buy Bouygues Telecom	Bouygues Telecom believes it can survive alone	Fails
Jan. 2016	Orange ready to buy Bouygues Telecom and dismember it	Lots of competition policy issues as Orange is market leader Long and complex negotiations	Fails

4.4 Impact on prices

The national statistical office INSEE has calculate that the arrival of Free has lowered the consumer price index in France by 0.3% (resulting in inflation of 1.4 % between November 2011 to November 2012).²⁹ The first results provided by ARCEP for 2012 show a 11.4% drop in the price index for mobile services. Indeed, Free had declared in 2008 it would halve the price of mobile services in France – which is more or less what happened between 2012 and 2015 according to the ARCEP price index.³⁰

The weight of mobile services in the French consumer price index peaked at 1.58 % in 2010; it then decreased regularly: 1.38% in 2012 and 1.1% in 2016, meaning that the decline in prices is stronger than the increase in use³¹.



Source: ARCEP Observatory

<http://www.arcep.fr/?id=12614>

4.5 Impact on employment

Low-cost strategies usually mean employing less people. The three incumbents had a fairly large number of employees: in 2012, the total (fixed and mobile) number of employees amounted to around 100,000 at Orange France, 10,000 at SFR, 9,000 at Bouygues Telecom and 5,000 at Free. Free has reported the creation of 2000 jobs due to the launch of its mobile offers. Due to the specific age pyramid of its workforce, Orange France expected the

²⁹ <http://www.latribune.fr/actualites/economie/france/20121221trib000738903/free-fait-baisser-l-indice-des-prix-c-est-l-insee-qui-le-dit.html>

³⁰ Interview of Maxime Lombardini, President of Free: *Le Figaro*, 4 Dec. 2008, p. 21.

³¹ See the evolution of communication volumes provided by ARCEP: <http://www.arcep.fr/fileadmin/reprise/observatoire/1-2016/obs-marches-services-Q1-2016-ENG.pdf>

retirement of around 30,000 employees between 2014 and 2020, so it could rely on natural attrition to decrease its payroll. This was not the case of SFR and Bouygues Telecom with their younger workforces.

A controversy erupted in 2012 concerning the employment impact of the arrival of Free on the mobile market in France. The economist Bruno Deffains³² argued that Free, destabilizing the incumbents, would destroy around 55,000 jobs - there were about 129,000 jobs in French telecom operators in 2012. In contrast, two other French economists Augustin Landier and David Thesmar explained that lower mobile tariffs had "given back" € 1.7 billion to mobile telephony users, and overall this was going to generate growth and therefore create between 16,000 and 30,000 jobs in other sectors that are benefiting from this unexpected windfall.³³

According to ARCEP, the telecom services industry lost around 10,000 jobs between 2012 to 2015 – but the final job reduction could much higher as it continuing. When Altice bought SFR in 2014 it promised not to cut jobs before 2017, but the economic situation of the company is such in 2016 that it has decided to reduce its headcount. Out of the existing 14,300 jobs, 1000 jobs could disappear in the stores network (not covered, so it seems, by the 2014 promise) and 4000 in the core of SFR.

Major job cuts announcements

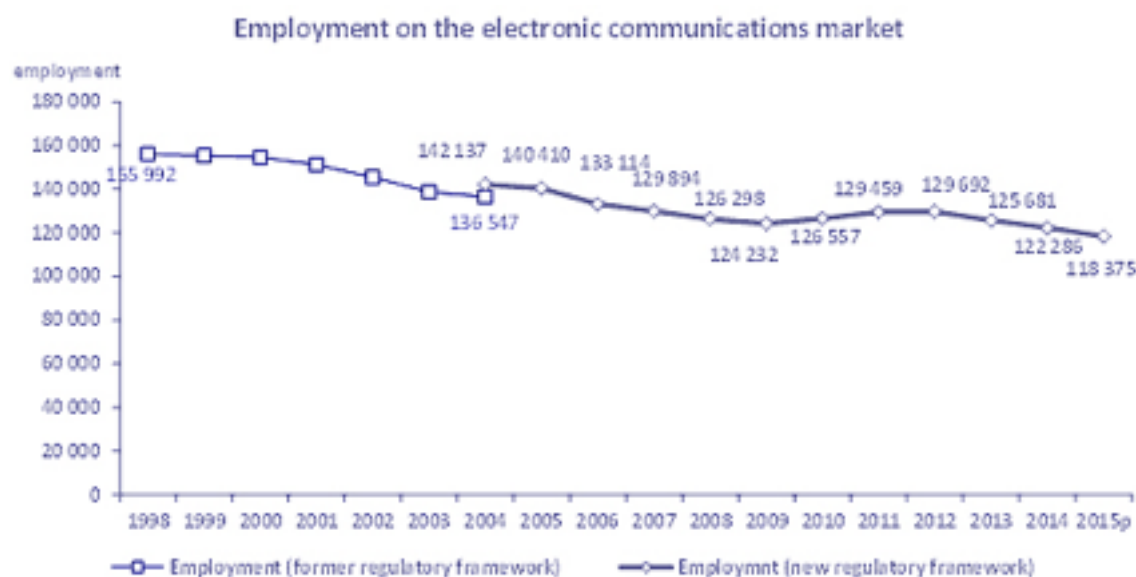
Operator	Date	Jobs
Bouygues Telecom	Sept. 2012	556 (voluntary departures)
SFR	Nov. 2012	850 (voluntary departures)
Orange	2012-2015	5000 jobs (no replacement of retiring employees)
French call centers	2012-2014	8000 jobs (part of them moved offshore)
The Phone House	2013-2014	1200 (redundancies)
Bouygues Telecom	Sept. 2014	1400 jobs (voluntary departures)
SFR	2016-2018	5000 jobs (most of them voluntary departures)

Beyond the three mobile incumbents, job losses have been widespread in smaller firms like MVNOs, call centers and in the mobile distribution network in France. The largest firm to close down was The Phone House which closed 230 stores in 2013. The three incumbents had used The Phone House as an additional distribution channel. When they restructured their offers, their own stores were sufficient for the higher end of the market and the remaining customers went online so they discontinued their agreement with The Phone House.

³² Bruno Deffains, *Pourquoi Free Mobile met l'emploi en danger*, Les Echos, 18 décembre 2012, p. 13

³³ Augustin Landier, David Thesmar, *L'impact macroéconomique de l'attribution de la quatrième licence mobile*, 2012, 63 p.

https://studies2.hec.fr/jahia/webdav/site/hec/shared/sites/thesmar/acces_anonyme/home/non%20academic%20articles/FreeComplete5.pdf



Source: ARCEP Observatory

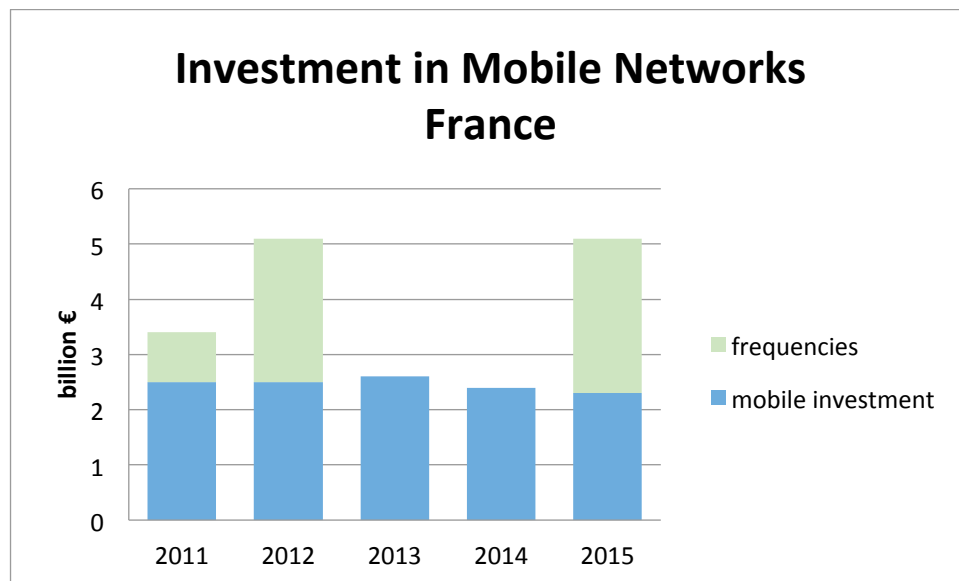
<http://www.arcep.fr/index.php?id=11693&L=1>

4.6 Impact on investment

The general notion is that infrastructure-based competition requires investing in networks. Free had invested around €1.5 billion before launching its services in 2012 and continued spending as it needed to enlarge its coverage and capacity³⁴. For all operators, the second cause of investment in infrastructure is the development of 4G. But for the mobile incumbents, it was a difficult feat as they had to spend cash at a time when their revenues were decreasing. For example, Orange has presented a €5 billion investment plan for its mobile network covering the period 2015 to 2018. Finally, with the development of quadruple plays offers, the development of fibre networks is also a key ingredient to attract mobile customers.

In total, ARCEP says that the telecom industry (all included, fixed and mobile) has spent around €6 billion per year, which is about 2.5 % of Gross Fixed Capital Formation (GFCF) of France (€250 billion). If one includes the cost of spectrum, the total climbs to €10 billion, that is, 4 % of France's GFCF. Investment in mobile networks averages €2.5 billion per year, that is, 1% of total French GFCF.

³⁴ Data traffic is exploding due to the development of video on mobiles.



Source: 2015 ARCEP Annual Report, p. 133.

5. Conclusion

In this paper we have sought to understand the impact that entry of Free Mobile on the French mobile telecommunications market. Our analysis shows that the impact of Free has been widespread, resulting in the other incumbent mobile operators responding and sometimes copying its strategies. As a consequence, the broader impact of Free has been to popularise new distribution channels and innovative ways of packaging services. Prices have fallen, and the bundle of services that many customers now enjoy enhanced.

The entry of Free into the French mobile market was facilitated by France's regulatory regime. This regulatory regime enabled Free to sign an initial roaming agreement that provided it with a significantly larger coverage footprint than would have otherwise have been the case. This had not been the case when Bouygues Telecom entered the market in 1996 – it had to slowly and painstakingly build its own network to add customers, but the market was still expanding at that time. In addition, Free also benefited from number portability as well.

While Free has benefited from reduced barriers to entry, its highly disruptive nature has arguably also contributed to the raising of exit barriers. Vivendi was able to sell SFR, but, despite numerous attempts, the Bouygues Group has been unable to find a solution for its mobile subsidiary, except for a network-sharing agreement with SFR. Not only would this seemingly discourage any new entrants into the French mobile telecommunications market, but it also impinges on the strategies that existing operators could implement as well. It is, however, unclear what strategies are no longer possible now that exit through consolidation is no longer possible. Further research is required to clarify the strategic consequences of the inability to consolidate.

Our analysis confirms a well-known point, namely, that there is a huge difference between the formal conditions of competition (in our case, determined by the number of competitors and the regulatory framework) and the actual rivalry experienced in the market. The most

important factors impacting market behaviour are the goals and constraints of the market players. In the case of the French mobile industry, the aggressive behaviour of Free was the main driver. Without this behaviour, it is, for example, highly unlikely that prices within France would have fallen by as much as they did.

Related to this, is the conclusion that there was a significant ‘culture clash’ between four CEOs of the mobile operators.³⁵ Orange and SFR (when it belonged to Vivendi) were run by members of the French administrative elite³⁶ who are usually more interested in global strategies than disruptive endeavours. Martin Bouygues, the owner of Bouygues Telecom, created the operator drawing on the vast resources of the Bouygues Group. He has a patrimonial view of entrepreneurship and is well connected with conservative politicians. In contrast, Free has been created by Xavier Niel, a self-made man and entrepreneur with an anti-establishment attitude and a public scorn for the traditional French elites.³⁷ Finally, Patrick Drahi, CEO of Altice who bought SFR from Vivendi, is a graduate of Ecole Polytechnique but also a self-made man with a background in international finance. Of course, there has to be a match between the CEO and the firm she/he manages, but beyond the actual features of each firm (its market share, its historical positioning) we can say that the strategies of the four mobile operators can be partly explained by the profile of their CEOs.

Our analysis represents an initial attempt to investigate the impact of a late entrant on the dynamics of the French mobile telecommunications market. The analysis can be built on in several ways. Firstly, the interaction between Free Mobile and the other operators with regards to the products and services launched could be explored. Exactly how and when did the other operators respond to Free? Secondly, under what circumstances would consolidation occur in France? If Free Mobile does not participate in the consolidation process, would it still be able to have a disruptive impact in a three mobile market where the other two are significantly larger than it is? Thirdly, while our analysis has noted that France’s largest MVNO was sold to Altice, it is not clear what role MVNO will have in the future? If Free Mobile continues to be disruptive, one of the main roles of MVNO – price competition – and the use of SIM only contracts and online customer support is effectively mainstream.

³⁵ Sarah Belouezzane, “Trois hommes et la 4G”, *Le Monde*, 27 Feb. 2014, p. 19.

³⁶ Alumni of the prestigious Ecole Polytechnique (X) or Ecole Nationale d’Administration (ENA). Stéphane Richard, CEO of Orange is an ENA alumni and has worked in the cabinet of the Minister of Economy; Jean-Bernard Levy, then head of Vivendi, is an X graduate and had also worked in government cabinets.

³⁶ For an example of the positions publicly taken by Xavier Niel, see the interview he gave in 2013: “J’ai beaucoup de peine pour mes concurrents”, *Journal du Dimanche*, 15 Dec. 2013, p. 24. Besides, Xavier Niel has personally created the 42 school (no lectures, no degrees granted and no tuition fees) and invested in the development of numerous start-ups. He is also co-owner of the center-left newspaper *Le Monde*.

³⁷ For an example of the positions publicly taken by Xavier Niel, see the interview he gave in 2013: “J’ai beaucoup de peine pour mes concurrents”, *Journal du Dimanche*, 15 Dec. 2013, p. 24. Besides, Xavier Niel has personally created the 42 school (no lectures, no degrees granted and no tuition fees) and invested in the development of numerous start-ups. He is also co-owner of the center-left newspaper *Le Monde*.

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