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European mobile markets and the doctrine of “4 networks good, 3 networks bad”

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Abstract

Purpose – *In light of the recent European Commission decisions that clearly favour the maintenance of a four-network structure in European mobile markets, the purpose is to provide an empirical examination of the case for and against such a structure.*

Design/methodology/approach – *A table of concentration ratios in 35 sample European markets is constructed and is followed by a detailed analysis of all relevant merger/takeover cases since 2012. These are then used to provide a general analysis of the desirability of further consolidation in the European mobile sector.*

Findings – *Although the relevant investigatory bodies claim to have made out a watertight case for the maintenance of existing structures, the paper explains why these claims should be met with some scepticism, especially in light of the development of “quad-play” in all markets.*

Research limitations/implications – *When a decision is made on a market structure, it is pointless to pursue the “but what if?” alternatives any further. However, it should be possible in a few years' time to assess whether the Commission's predictions have come to pass.*

Originality/value – *As the UK decision has only just been delivered, the only commentary so far has had a narrow focus, whereas this paper seeks to provide useful and relevant background data about the structure of markets and technological developments.*

Keywords *Competitive strategy, European Commission, Mobile networks, Concentration ratios*

Paper type *Research paper*

Introduction

In mid-May 2016, the European Commission, having concluded a long investigation under the terms of the European Union (EU) Merger Regulation, rejected an attempt by CK Hutchison (acting via subsidiary 3G UK – better known simply as “3”) to take over a rival mobile network in the form of Telefónica subsidiary O_2.

The key feature of this proposed takeover was that the number of networks in the UK would be reduced from four to three with alleged harmful consequences for all users of mobile services. For reasons discussed below, the decision was entirely predictable if highly questionable, but it is important not to treat it in isolation as the issue of “4 networks good, 3 networks bad” when applied to the number of mobile networks in a European country has been a contentious issue for several years. The purpose of this paper is to examine how the European mobile sector is currently structured, to place the UK decision within the context of other recent merger and acquisition (M&A) activity within Europe and to combine this information to assess the alleged rights and wrongs of the recent decisions made by the European Commission (hereafter Commission).

The sample

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One issue that must be immediately addressed is the manner in which Europe is being treated for the purposes of this paper. In Curwen and Whalley's (2008) study, there

were 51 countries listed under the heading of Europe, which increased to 60 in Curwen and Whalley's (2014) study. However, the public discussion underpinning the issue of the appropriate number of mobile networks in a given European country has, for the most part, been concentrated more narrowly on the member states of the EU of which there are 28. The smallest of these such as Cyprus and Malta are peripheral to this discussion and have therefore been omitted in the analysis that follows, while certain larger countries that border the EU and are potential member states at some future point have been included. This yields the sample of 35 countries that appears in Tables I and II.

Concentration ratios

Historic background

It must be acknowledged that data on subscribers are always subject to a degree of disagreement although that tends to be relatively modest in Europe. The main issue is whether to rely upon the networks' own figures or those issued by regulators. However, Table II, which sets out concentration ratios – the proportion of the total market controlled by a given number of networks – is concerned with relative rather than absolute subscriber numbers and the ratios can be treated as sufficiently accurate for analytical purposes. Concentration ratios do not normally vary much on an annual basis where there are long-standing incumbents, but can change quite sharply when they reflect the consequences of M&A activity such as that described in the footnotes to Table II.

It is useful to begin with a short historical perspective, albeit one based originally on a larger sample that has been adjusted to equate to the sample used for end of 2015. The first point to note is that at the end of 2007 (Curwen and Whalley, 2008: Table 5.3) – excluding those countries with fewer than three networks – the largest network very commonly had a market share of between 40 and 50 per cent. The exceptions were the UK (below 30 per cent) and Germany, Greece, Montenegro and Poland (between 30 and 40 per cent). The second point is that only in Germany and the UK did the fourth-largest network control more than 10 per cent of the market. Furthermore, in roughly half of the sample, the largest two networks controlled at least 80 per cent of the market – a reasonable definition of a duopoly from a real-world perspective – and only in Poland (narrowly) and the UK (by a considerable margin) was the ratio below 70 per cent. It follows that where three or more networks had been licensed, a considerable gap often existed between the number of subscribers controlled by the second-largest network and the number controlled by the third-largest network. The really unusual case was the UK where there were four almost equal-sized networks together with the new entrant "3". In the majority of cases, the most recent network to launch was the one with the fewest subscribers.

The list of countries used in Curwen and Whalley (2014: 7.3) can also be adjusted to improve its relevance via a pruning of the sample to equate it with Table II. As was to be expected given the five-year period under examination – the clear majority of

Table I The mobile market in Europe, 31 December 2015

Total subscriber range (m)	*Total countries*	*No. of countries 2 networks*	*No. of countries 3 networks*	*No. of countries 4 networks*	*No. of countries 5 networks*
1 to 5	9	1	8	0	0
5 to 10	6	0	4	2	0
10 to 25	11	0	8	3	0
25 to 50	1	0	0	1	0
50 to 75	5	0	1	3	1
75 to 100	2	0	0	2	0
>100	1	0	1	0	0
Total	35	1	22	11	1

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Table II Mobile market concentration in Europe[a], 31 December 2015

Country	*Population (in million)*[b]	*Networks*[c]	*Total subscribers (000s)*[t]	*% share largest network*	*% share largest 2 networks*	*% share largest 3 networks*
Austria	8.6	3[d]	13,600	40.2	72.1	100
Belarus	9.5	3	11,500	46.5	89.5	100
Belgium	11.4	3	12,700	47.4	78.0	100
Bosnia/Herzegovina	3.8	3	3,400	45.1	86.0	100
Bulgaria	7.1	4[e]	11,200	37.9	70.0	97.1
Croatia	4.2	3	4,700	47.0	83.5	100
Czech Republic	10.5	3	14,300	42.0	74.1	100
Denmark	5.7	4[f]	8,000	41.1	66.1	86.7
Estonia	1.3	3	2,000	42.8	76.0	100
Finland	5.5	3	10,000	40.8	73.9	100
France	64.7	4[g]	71,900	39.8	67.0	83.6
Germany	80.7	3[h]	113,800	37.8	73.3	100
Greece	11.1	3	–[u]	48.0	82.0	100
Hungary	9.8	3[i]	10,900	45.3	71.0	100
Ireland	4.7	3[j]	5,800	46.8	81.4	100
Italy	59.8	4	85,400	35.1	63.7	88.5
Latvia	2.0	3	2,600	42.9	79.6	100
Lithuania	2.9	3	4,200	41.5	73.1	100
Macedonia	2.1	2[k]	2,300	53.3	100	–
Moldova	4.1	3[l]	4,300	58.1	92.6	100
Montenegro	0.6	3	1,000	38.8	71.5	100
The Netherlands	17.0	4[m]	17,300	44.7	73.9	95.1
Norway	5.2	3[n]	5,800	54.3	93.9	100
Poland	38.6	5	54,000	29.4	55.6	77.9
Portugal	10.3	3	15,300	40.0	73.0	100
Romania	19.4	4[o]	26,600	38.3	70.1	92.7
Serbia	8.8	3	8,700	40.2	75.6	100
Slovakia	5.4	4[p]	6,900	42.2	74.8	98.8
Slovenia	2.1	3[q]	2.400	53.6	83.7	100
Spain	46.1	4	50,100	34.4	64.8	93.3
Sweden	9.8	4	14,300	42.3	68.4	86.2

(*continued*)

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Country	Population (in million)[b]	Networks[c]	Total subscribers (000s)[t]	% share largest network	% share largest 2 networks	% share largest 3 networks
Switzerland	8.4	3	11,200	59.1	80.6	100
Turkey	79.6	3	74,900	47.7	76.9	100
UK	65.1	4[r]	82,400	34.2	64.6	86.9
Ukraine	42.7	4[s]	57,500	44.2	79.7	98.2

Notes: [a]Broadly defined to include the countries most likely to be cited in comparative studies; [b]to the nearest 0.1 million; [c]in addition to GSM/UMTS licensees, the table includes long term evolution (LTE) networks that have been licensed and have launched; [d]in January 2013, Hutchison (fourth-largest) took over Orange (third-largest); [e]three further licences, in addition to those held by the three incumbents, were awarded in January 2013 but only one had launched by end-December 2015; [f]in December 2014, TeliaSonera (now Telia Company) and Telenor announced a 50/50 merger subject to regulatory authorisation; this was withheld and the merger proposal was eventually abandoned as uneconomic; [g]the fourth network, Iliad (Free Mobile) entered the market in 2012; third-placed Bouygues Télécom was unsuccessful in its bid to buy second-placed SFR which agreed to be taken over by new entrant Altice Group in 2014; [h]KPN (third-largest) received a takeover bid from Telefónica (fourth-largest) in 2013; the Commission authorised the deal subject to stringent conditions with implications for new entry in July 2014; [i]a fourth licence was awarded in January 2012 to MPVI Mobil but annulled in September; in September 2014, RCS&RDS (via subsidiary DiGi Telecommunications) acquired spectrum in the 1,800 MHz band suitable for LTE use but has yet to launch; [j]Hutchison (fourth-largest) made an agreed bid for Telefónica (second-largest) in 2013. It received regulatory clearance in May 2014 and the assets were transferred in July; [k]in October 2014, Telekom Austria (second-largest) announced its intention to merge with Telekom Slovenije (third-largest); the merged entity, One.Vip, came into existence in October although the two networks initially operated independently; [l]a fourth network, Eventis Mobile, had its licence revoked in August 2013; [m]in addition to the three established incumbents, Tele2 and Ziggo4 (subsequently acquired by Liberty Global) launched LTE networks using the 2.6 GHz band in 2012. Tele2 also obtained spectrum in the 800 MHz band in October 2012 and hence has a much better claim to be regarded as a fourth incumbent; [n]in July 2014, TeliaSonera (second-largest) agreed to buy Tele2 (third-largest) subject to regulatory approval which was granted in February 2015 subject to Tele2 selling Network Norway to new entrant Ice.net; [o]in addition to four established incumbents, 2K Telecom launched an LTE network in 2015 using the 2.6 GHz band. This is not regarded as sufficient to warrant its inclusion as an incumbent; [p]in addition to three established incumbents, 4ka Telecom (the former SWAN Telecom) launched an LTE network in 2015 using spectrum acquired in the 1,800 MHz band; it is accordingly included as an incumbent; [q]in October 2014, Telekom Austria (second-largest) expressed an interest in acquiring Tušmobil, a much smaller network, but it was subsequently bought by Telemach; the fourth network, T-2, entered receivership yet again in March 2016; its operational status is in doubt and is therefore disregarded for the purposes of this table; [r]Hutchison (3 UK) was in exclusive negotiations to acquire TelefÓnica UK; [s]Ukraine also has CDMA networks; [t]sources can differ, particularly depending upon whether machine-to-machine (M2M) connections are included; however, the concern of this paper is with relative rather than absolute size; [u]OTE and Vodafone appear to cite gross subscriber numbers, on the basis of which there were roughly 15.5 million subscribers; however, because of the parlous state of the economy, the activity rate was very low and only some 12.5 million subscribers appeared to be active; the situation was not helped by Wind citing only a figure for its fixed-wire plus mobile subscribers; market shares are accordingly an approximation

countries still had a network with a market share lying between 40 and 50 per cent. However, it would be misleading to infer that the hallmark of the period was that of stability.

The countries of any size where the largest network had a market share of less than 40 per cent at the end of 2012 were Czech Republic, Germany, Italy, Lithuania, Poland, Romania, Spain and the UK. This list is longer than that for end of 2007 even though Greece and Montenegro had disappeared. In the case of Greece, the overall market has collapsed since 2009, when it peaked at roughly 20 million, due to the financial crisis in parts of the EU. The reduction in subscriber numbers was roughly 30 per cent at Wind which went into administration in early 2010.

The situation at end of 2015

The boundaries between subscriber ranges are inevitably somewhat arbitrary, but a number of conclusions can initially be drawn from Table I:

- There are no monopolies.
- Only Macedonia, a relatively small country which is not part of the EU, has fewer than three networks. It is worth noting in this case that Telekom Austria, trading as "Vip Network", agreed to merge with Telekom Slovenije, trading as "ONE", in October 2014, and the merged entity ("One.Vip") was launched in October 2015.
- Poland, the only country listed with five networks, is exceptional because two of the networks have a common major shareholder.

In summary, the norm in Europe as defined for the purposes of this paper is to have either three or four mobile networks but three is twice as common as four, although the situation is clouded somewhat by the recent awards of LTE licences to non-incumbents – see footnotes to Table II. There is surprisingly little reference to this preponderance of three-network countries in the often heated debate about whether four networks should be maintained, but this may perhaps be partly justified by the fact that 10/11 of the four-network countries in the sample are EU member states, whereas only 14/22 of the three-network countries are EU member states, so the balance is more even if attention is restricted to the EU as it currently exists.

Table II yields information on the relationship between the number of countries and concentration ratios as follows.

If we start with the market share of the largest network expressed as a percentage, then we find that 3 lie below 35 per cent, 6 lie in the 35-40 per cent range, 13 lie in the 40-45 per cent range, 8 lie in the 45-50 per cent range, 3 lie in the 50-55 per cent range and 2 lie in the 55-60 per cent range. At the lower end, we have Poland, which is indeed exceptional, in that it has four networks all with market shares in the 20-30 per cent range and can therefore best be disregarded as a one-off exception. More interesting is Spain – historically the EU's fifth-largest market – with three large networks and a struggling fourth network (branded Yoigo) that was put up for sale by Telia Company (formerly TeliaSonera) some time ago without success. At the upper end are Moldova and Switzerland which again tell us very little about how European markets normally evolve. In summary, then, a "normal" European market has its largest network controlling between one-third and one-half of the market. For obvious reasons, this is generally the original fixed-wire incumbent with a brand that was already well-known when mobile licences were first issued, but newer entrants have been able to take advantage of the progression from 2G to 3G to 4G to build market share (see below).

If we continue with the market share of the two largest networks expressed as a percentage then we find that 1 country lies below 60 per cent (the exceptional Poland), 7 lie in the 60-70 per cent range, 17 lie in the 70-80 per cent range, 7 lie in the 80-90 per cent range and 2 lie in the 90-100 per cent range. One of these is Norway which is discussed in detail below.

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Another way of formulating this is to say that 15 lie in the 65-75 per cent range and 11 in the 75-85 per cent range. However, the key point is probably the frequency with which the second-largest network in a three-network market has a market share in the vicinity of 35 per cent. Clearly, these networks are able to hold their own against the market leader. However, in four-network markets, the pattern is more erratic. In the large markets – Italy and Spain – the second-largest networks have modest market shares of around 30 per cent but the largest networks have commensurately small market shares and Denmark (discussed below) is quite similar.

If we continue with the market share of the three largest networks, then it follows that the majority of cases show this as 100 per cent. Also following on from above, the third-largest network typically has a market share of 15-25 per cent. Because the majority of markets have fewer than 10 million subscribers, this equates to rather small numbers of customers for networks in this position. The four-network markets tend to be larger and hence the third-largest will typically have more subscribers. This definitely does not lend support for the view that there is room for a fourth network in existing three-network markets – which is probably why regulators have not tried to introduce one via LTE licensing (see below) – nor does it suggest that life will typically be comfortable for the smallest network in a four-network market.

Takeovers and mergers

The purpose of this section is to provide an analysis of the countries where there has recently been some kind of an investigation into the optimal structure for a European mobile market. It is important to understand that three possibilities exist. In the first place, the matter is eventually resolved internally without any alteration to the structure of the market and without any official ruling either from the Commission or the national regulator being triggered. In the second case, the Commission leaves the national regulatory bodies to make the decision and in the third case the Commission takes over the investigation – its ruling can then run contrary to the wishes of national regulators – although the individual networks involved have a right of appeal. The cases are addressed in historical sequence.

It should be noted that this sequence begins in 2012 because the paper's intention is to concentrate upon recent rulings by the Commission. However, readers may also wish to look at European Commission (2006 and 2010) which involved a predecessor to the current Commissioner responsible for competition in the EU. The earlier case is particularly interesting because it is related to Austria which is also the first case study below. In 2006, T-Mobile (second-largest) made a takeover bid for tele.ring (fourth-largest) in a five-network market. The case was examined by both the national regulator and the Commission and was approved subject to the networks selling spectrum and mobile sites to competitors. In the latter case, involving The Netherlands market, T-Mobile made a successful takeover bid for Orange at a time when they were the third-largest and fourth-largest in a four-network market. The market already had a high two-network concentration ratio, but the takeover was allowed to proceed without conditions mainly on the grounds that the two networks did not seem to be interested in competing with one another and there was strong growth in the mobile virtual network operator (MVNO) sector (Aguzzoni *et al.*, 2015). It is significant that T-Mobile offered its now enlarged network for sale in November 2015 but withdrew it in February 2016 as offers were too low.

Austria: the Commission authorises a reduction to three networks with stringent conditions

The process began when France Télécom (branded as Orange) sought to exit Austria where its 35 per cent minority stake in a network with no growth (branded as ONE) provided fewer than 800,000 proportionate (to its equity share) subscribers. The network in its entirety was owned by Styrol Holding, itself owned by Mid Europa Partners and France

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Télécom. The proposed buyer was the even smaller network, branded as “3”, wholly owned by Hutchison.

The Commission was notified of the proposed takeover in March 2012 and published its favourable report in December (European Commission, 2012). To secure agreement to the takeover from the Commission, Hutchison initially agreed to enter into an upfront agreement with one MVNO – in practice UPC – which would have to be approved by the Commission, while offering privileged access to 30 per cent of the enlarged network to 16 independent MVNOs over a 10-year period. It also agreed to divest some base stations and 10 MHz paired spectrum in the 2.6 GHz band – to be transferred to the new entrant that won a reserved licence in the forthcoming auction of 800 MHz band spectrum. However, Hutchison would be able to retain the licence if no new entrant was willing to bid – the outcome in practice – and provided it made it available for a further three months. These concessions – for full (much more complicated) details see European Commission (2012, pp. 113-117) – were in addition to the transfer of its MVNO subsidiary Yesss! to Telekom Austria which was part of a separate investigation by the Austrian Cartel Court. This deal was completed in January 2013.

Norway: the national regulator says “3 networks good, 2 networks bad”

Norway is not a member state of the EU but is subject to a great many of its regulations. In December 2013, there took place in Norway a sealed-bid, first-price auction of spectrum in the 800, 900 and 1,800 MHz bands. To general surprise, it was a new entrant, Telco Data – backed by the owner of Access Industries (and its subsidiary Ice Communications trading as Ice.net) – which bought the spectrum expected to end up in the hands of Tele2. Tele2 responded by claiming that it would introduce LTE using its existing 900 MHz and 2.1 GHz spectrum, although it would also seek to buy any available spectrum in the 1,800 MHz band. However, in January 2014, it announced that it was about to halt investment in its network while it considered how best to proceed. In February, Tele2 stated that it was in discussions with Access Industries with a view to bringing about one of a number of possible scenarios including either buying the other, Tele2 buying Ice.net’s spectrum and Tele2 acting as an MVNO.

In April, Tele2 announced that it would be launching an initial service as from 1 May, although no other details were provided. It would appear that this was achieved in conjunction with Telenor with which Tele2 signed a national roaming deal covering 2G, 3G and LTE in May 2014, operational from 1 July. In the event, however, Tele2 agreed in July 2014 to sell its network to TeliaSonera (now Telia Company), the second-placed network acting via subsidiary NetCom GSM which has recently been rebranded as “Telia Norway”. As this would leave only two networks in the market – at least until (if) Telco Data came on stream – it was thought that it would prove difficult in practice to achieve the necessary regulatory approvals.

The solution, announced on 1 October 2014, was for Tele2 and Ice.net to collaborate during any period that might exist between the date of regulatory approval for the takeover and 1 April 2015 – when Tele2’s customers would be switched to the TeliaSonera network. This would ensure that three networks remained available as would also be the case after April 2015 with Ice.net taking control of part of the former Tele2 network. Predictably, in December 2014, the Norwegian Competition Authority made a formal objection to the takeover despite the fact that TeliaSonera pledged to accelerate its LTE network deployment and reach 98 per cent population coverage by 2016, two years ahead of schedule. However, the regulator subsequently withdrew its objection and the takeover was duly authorised in February 2015 subject to the transfer of Network Norway and its infrastructure to Access Industries which was duly completed in March. Tele2 was delisted in November. The market currently looks very much like a duopoly.

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Ireland: the Commission authorises a reduction to three networks with stringent conditions

Hutchison entered Ireland in 2005 and behaved initially (as elsewhere) as a disruptive influence but without achieving much market share.

In June 2013, Hutchison Whampoa made an offer of up to €850m ($1.15bn) for Telefónica's O_2 network – a somewhat unusual move in that Telefónica was the second-largest and Hutchison the smallest of the four networks. Not surprisingly, even given the fact that a country the size of Ireland had no obvious need for four networks, the Commission intervened in November to set up a full inquiry into the takeover with a view to presenting its report in March 2014 – a date that it would fail to meet. It was reasonable to assume that the Commission's opinion about competition in Ireland would have to be compatible with that on competition in Germany (see below), although it could be argued that in the former case (unlike in Germany), the third-placed network would have a much smaller market share (at roughly 20 per cent) than its two larger competitors.

Meanwhile, Hutchison tried to influence the decision by announcing at the end of March that it was willing to assist with the setting up of a new MVNO – rumoured to be the largest cable network UPC – which would be bequeathed 3UK youth-oriented MVNO branded as "48" with at least 50,000 subscribers. This new network would then be given some of the combined entity's spectrum – comprising one block in the 900 MHz band, two blocks in the 1,800 MHz band and two blocks in the 2.1 GHz band made available over a 10-year period, commencing 1 January 2016 – permitting it to evolve into a nationwide network via roaming rights with Hutchison (TeleGeography, 2014a). This and a second MVNO would be given access to 30 per cent of the new entity's network capacity. In addition, Eircom would be permitted to continue its network-sharing agreement with Hutchison on improved terms (European Commission, 2014a; Lennighan, 2014). The takeover was duly authorised in May. The assets were transferred in July, leaving Hutchison with a market share of over 40 per cent.

Germany: the Commission authorises a reduction to three networks with stringent conditions

It had been apparent since 2010, and arguably even earlier, that Telefónica had developed into a somewhat unruly organisation with, at the end of 2009, roughly the same number of proportionate subscribers in Latin America as elsewhere in the world. Although Europe was clearly its second most important region, it contained only three countries, each majority or wholly controlled, that produced significant numbers of revenue-generating subscribers. Clearly, therefore, there was a strong case to be made out for rationalisation via the disposal of the non-core networks. This was underlined by the need to pay down €7-8bn a year of its massive debt mountain to protect its debt rating.

Telefónica's strategy in Germany was somewhat unusual. Until 2011, it was the sole owner of O_2, the smallest of the four incumbents – not a particularly comfortable position but, with 18 million subscribers at the end of 2011, it was operating on a perfectly adequate scale. However, in June 2012, it made an offer for rival E-Plus, a network of broadly similar size owned by KPN, only to suffer rejection on the grounds of under-valuation despite the fact that KPN was highly anxious to discourage the attentions of América Móvil which had begun to acquire a stake in KPN. After due consideration, Telefónica evidently decided that if it could not scale up, it might as well reduce its overall commitment by selling off part of its stake in its own network – while maintaining majority control – via an initial public offer (IPO). This took place in October 2012, raising €1.45bn, and served to reduce Telefónica's stake to 76.8 per cent – equivalent, at the end of 2012, to a loss of four and a half million subscribers.

However, the case for merging the third and fourth largest networks continued to make economic sense. As a result, in July 2013, Telefónica made an offer to KPN for E-Plus worth

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€8.1bn – although, in practice, it comprised €5 in cash plus a 17.6 per cent stake in the enlarged Telefónica Deutschland (Van Daalen, 2013). The shares given to KPN would be newly issued so Telefónica's own stake would fall from 76.8 per cent to less than 65 per cent. If it was approved by regulators, the deal would create the market leader in Germany with over 40 million subscribers. In effect, this would be equivalent to a market share of roughly 37 per cent with the remaining two networks not all that far behind. This bid took place in a complicated context which also involved an attempt by América Móvil, already a significant shareholder, to take over the whole of KPN, and it was to secure the approval of the former that the bid was sweetened in October to provide KPN with 20.5 per cent of post-merger Telefónica Deutschland.

The deal was inevitably subjected to detailed scrutiny by the Commission, commencing in December 2013. Although the market would be reduced to three players by the deal, all three would be of roughly equivalent size and each would be owned by a major international network – arguably an ideal structure for a mobile market in Europe. Nevertheless, the fact remained that this was by far the largest market and regulators would be well aware that if a three-firm structure was deemed to be appropriate for Germany, then there would be limited justification for a market with more than three firms elsewhere in Europe.

The initial response of the Commission was published in February 2014. This claimed that the average price of a mobile plan would rise by roughly one-third for many pre-paid customers but only by roughly 10 per cent for those with contracts. This was shrugged off by Telefónica as simply the traditional first salvo in merger negotiations with the Commission. However, in April, Telefónica predictably offered *inter alia* to sell spectrum to a new entrant – equivalent to roughly 40 MHz in bands above 1 GHz across a fair spread of urban areas – and provide it with national roaming. Provision would also be made for up to three MVNOs, probably Liberty Global subsidiary Unitymedia KabelBW, freenet and Drillisch, each being provided with up to 10 per cent of the network's capacity for up to 10 years. The offer would be open until the year end.

Initial feedback suggested that the Commission would demand more far-reaching concessions if the deal was to get the go-ahead, and in May, the Commission proposed that a new entrant, acting as an MVNO on the Telefónica network, would be granted mast locations, roughly 200 shops and a customer call centre. However, even these remedies failed to satisfy the German Federal Cartel Office which claimed that similar remedies in Austria when Hutchison had bought Orange had nevertheless led to price increases.

The incumbents all reacted negatively, insisting that the issue should be dealt with by the national regulator. In June, Telefónica announced that negotiations with United Internet (1&1) had broken down because 1&1 had demanded concessions that Telefónica was not willing to make. It then signed an agreement with Drillisch, whereby if the takeover was approved – in addition to any existing arrangements – Telefónica would transfer to Drillisch, over a five-year period (extendable by up to a further 10 years), 20 per cent of the capacity of all mobile networks controlled by Telefónica in Germany. Drillisch – acting as MS Mobile – would also have the right to acquire a further 10 per cent (Telecom.paper, 2014b).

In July, the Commission approved the deal subject to the conditions detailed above (European Commission, 2014b; Telecom.paper, 2014a), together with some further stipulations requiring Telefónica to charge an upfront fee for capacity rather than the existing pay-per-use model and to extend all existing Telefónica and E-Plus wholesale agreements until 2025 with an inbuilt provision for LTE. The terms of the deal were finalised on 1 October. It may be noted that in mid-November, Drillisch signed a non-binding agreement with E-Plus to acquire its budget brand "yourfone" in January 2015, although only 240,000 customers were involved. The deal was duly completed on 5 January 2015.

France: the market stays at four but not as a direct result of regulation

There have been particularly interesting developments in France even though the Commission never became directly involved. In March 2014, Bouygues Group – at the time the third-largest network just ahead of Iliad – made a bid worth $20bn for second-placed SFR. SFR's owner Vivendi had previously bought out its co-owner Vodafone. In the event, Bouygues was not the only bidder, but its rivals for SFR's affections were not other mobile networks. The consequence of a successful bid by Bouygues would have been to create an entity comparable to Orange with a market share above 40 per cent and a third-placed network with a market share below 15 per cent – a potential situation that was most unlikely to commend itself to the regulatory bodies in France as Bouygues knew perfectly well. Partly to forestall this, Bouygues Télécom arranged to sell its network of 15,000 base stations to Iliad for €1.8bn in addition to the disposal of some spectrum. In response, the Industry Minister declared that there were virtues in this arrangement, as it would greatly strengthen the third player, whereas the takeover of SFR by Altice Group subsidiary Numericable – the obvious alternative – would leave the market in a state of destructive competition.

However, it was the latter's offer that was provisionally accepted only for it to run into difficulties not in mainland France but in La Réunion and Mayotte off the coast of Africa where Altice Group was the majority owner of Outremer, a rival of SFR subsidiary SRR. This was subsequently dealt with via an offer by Altice in early 2015 to sell the island networks to the Hiridjee Group subject to regulatory approval which was granted in June 2015. Meanwhile, Bouygues Group raised the cash element of its offer for SFR to €15.5bn, but Altice sealed the deal by raising its own bid to €13.5bn (plus a possible further €750m at a later date) together with a 20 per cent stake in the merged entity (The Economist, 2014). Conditional approval (covering a five-year period, renewable once) was forthcoming from the French competition authority in October subject to the disposal of the networks in La Réunion and Mayotte, the sale of Numericable's DSL network to Completel and the provision of a temporary access to Numericable's cable networks to enable internet service providers to replicate its retail offerings while they developed their own high-speed networks (TeleGeography, 2014c).

The deal was completed in late November 2014. However, in February 2015, Altice – which had a right of first refusal on the stake – agreed to buy the 20 per cent stake in the merged entity acquired by Vivendi under the terms of the deal, initially by way of a 10 per cent share buy-back costing €1.95bn ($2.18bn) (TeleGeography, 2015a).

It therefore appeared to be the case that France would retain its four incumbents with Altice holding a 60 per cent stake in the new merged entity irrespective of the outcome in Germany. However, the most interesting aspect was that it was indicative of a preference for fixed-mobile convergence over consolidation and that the decision ran contrary to the wishes of the French establishment which had been used to getting its own way on matters of industrial structure. It also meant that the market remained unstable because both Bouygues Télécom and Iliad remained weak in relation to Orange and Numericable-SFR – Altice had also made an agreed bid for MVNO Virgin Mobile (owned by Omea Telecom) in May 2014 worth €325m for a struggling company with 1.7 million subscribers.

This had the potential to lead to an attempt to merge Bouygues Télécom and Iliad, with the larger Iliad effectively executing a takeover, although this was unlikely to be well-received in many quarters notwithstanding that the economy minister went on record in April 2014 to reiterate the desire of the government to reduce the number of incumbents to three. For the moment, however, the two parties placed wholly incompatible views on the value of the Bouygues network – Iliad was alleged to have made an informal offer of €4bn, whereas Bouygues Télécom valued itself at no less than €7bn – and Iliad was distracted for a period in mid-2014 by its attempt to buy a majority stake in T-Mobile USA. If Iliad's latest pronouncement was to be believed, it had given up on any ambitions to be involved in M&A

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activity in France. In contrast, it was claimed in June 2015 that Altice had made a bid for Bouygues Télécom valued at €10bn ($11.4bn) – consisting of €9bn in cash up-front and a further €1bn after three years or the equivalent in Numericable-SFR equity after three years – slightly below the €11+ billion set on itself by Bouygues Télécom (Cellular-news, 2015). Altice was alleged to have already agreed a deal to sell some assets to Iliad to placate the regulators. However, Bouygues Group – valued in its entirety prior to the Altice bid at €11.3bn – immediately rejected the bid on the grounds that the regulatory risk was excessive, it would complicate the forthcoming 700 MHz band auction and there would be job losses.

The saga remains unresolved. Indeed, in January 2016, it was revealed that Orange had initiated discussions with both Numericable-SFR and Iliad with a view to a disposal of certain assets were Orange in its turn to make a takeover bid for Bouygues Télécom. Orange had already initiated this proposal despite the potential regulatory pitfalls inevitably associated with the creation of a network with a 60 per cent market share – the offer was thought to be worth €10bn with Bouygues ending up, in part, with a 15 per cent stake in Orange worth €8bn. Overall, there did seem to be increasing evidence that the relevant parties had lost faith in the four-incumbent model as this had introduced (via Iliad's disruptive tactics) price wars (Ferguson, 2013, Majithia, 2016), consolidation and job losses. However, there was also an argument put forward for the Commission to implement a consistent anti-trust policy across the EU irrespective of its consequences specifically for the French market.

In the event, the talks were terminated in April, allegedly because Bouygues wanted too large a stake in the combined entity. However, a number of other issues were unresolved, including:

- the valuation placed on Bouygues;
- the fate of Bouygues employees;
- the execution risk;
- the selling-on of assets to Iliad and Numericable-SFR; and
- the role of the state as a major shareholder (with a 23 per cent stake) in Orange.

The government had expressed its reluctance to fund redundancies arising from the deal, and it was reluctant to dilute its role as "shareholder of reference" (Telecom.paper, 2016e).

It would accordingly appear to be the case that the French market will not be restructured within the foreseeable future although, as demonstrated, that is not necessarily the same thing as a vote by regulators in favour of "4 networks good, 3 networks bad".

Denmark: the Commission says "4 networks good, 3 networks bad"

In December 2014, Telenor announced a 50/50 joint venture with TeliaSonera in Denmark, subject to regulatory authorisation. This would create the largest of three remaining networks – albeit on a par with TDC – which would not seem an unreasonable number for a market of eight million mobile subscribers. Nevertheless, the Commission opened an investigation in April 2015. In September, the Commission rejected the concessions made in August which included an offer to sell two blocks of spectrum in the 2.1 GHz band to a new entrant as well as the provision of up to 15 per cent of the new entity's combined network capacity to the same company for its use as a MVNO. An additional offer was accordingly forthcoming that involved the sale of additional spectrum to the smallest network, Hutchison. Subsequently, in the face of ongoing scepticism from the Commission, the offer was upgraded to a 40 per cent stake in the new venture's infrastructure and the transfer of Telenor's pre-paid BiBob network (with 150,000 customers). Despite this, the Commission was not satisfied and the merger proposal was withdrawn, as it no longer

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appeared to be economically viable to make further concessions (European Commission, 2015; Thomas, 2015).

It is of interest that Danish member of the European parliaments (MEPs) claimed that TDC and TeliaSonera/Telenor would represent a duopoly with a combined 80 per cent market share. This suggested a belief that a third-placed network could not compete with a less than 20 per cent market share.

The UK: the Commission says "4 networks good, 3 networks bad"

The position in the UK was different insofar that T-Mobile and Orange had operated jointly as Everything Everywhere then EE since July 2010. At the end of 2007, the UK was unusual in boasting four networks of a fairly similar size but EE, by combining two of these, thereby became the market leader with a market share up from 25 per cent to around 35 per cent at end of 2012. The reason this was no larger was due partly to a gradual loss of customers to all other networks and in particular to the relative success of Hutchison (trading as 3UK) which continued to prop up the market but had noticeably closed the distance between itself and its larger competitors via its disruptive policies (Curwen and Whalley, 2012a, 2012b; Whalley and Curwen, 2016).

As one of the largest and most competitive markets in Europe, any restructuring in the UK has significance for the whole of Europe. Particular attention has accordingly been paid to the two potential takeover bids that rumbled on during much of 2015 and in one case into 2016.

In November 2014, fixed-wire incumbent BT – at the time operating as a (weak) MVNO – decided that quadruple-play was the order of the day and shook up the market by announcing that it was in preliminary discussions to buy Telefónica UK (trading as O_2) and another network which proved to be EE. This followed on from a statement by Orange that it did not intend to continue with EE's existing 50/50 joint ownership structure with T-Mobile beyond the near future. It was initially suggested that Telefónica could be paid via a 20 per cent stake in BT, but it was subsequently alleged that cash worth up to an additional €6bn could be involved. However, the value of the Telefónica UK network had been put at only €9bn in October, and it remained unclear just what figure BT had in mind let alone how it would seek to pay.

After due deliberation, BT decided to pursue EE and tabled a takeover bid in December 2014 (Bicheno, 2014). Given that BT was not a mobile network owner, the case was sent for investigation to the UK's Competition and Markets Authority (CMA) rather than annexed in the usual manner by the Commission, and when it reported back in early January 2016, it gave the takeover a clean bill of health (Competition and Markets Authority, 2016; Telecom.paper, 2016a; Wood, 2016a). Deutsche Telekom emerged with a 12 per cent stake in "new" BT, while Orange acquired 4 per cent.

Meanwhile Hutchison, owner of 3UK, had also been considering a bid for either Telefónica UK or EE but was thwarted by BT's bid for EE. Telefónica UK was rumoured to be in talks with Hutchison as was Sky – although in the latter case, an MVNO deal was thought to be much more likely and, indeed, was signed between Sky and Telefónica UK in January 2015 – not to mention Liberty Global (parent of Virgin Media) and TalkTalk.

In January 2015, Hutchison entered into exclusive negotiations to buy Telefónica UK – ironically, O_2 had started life as the mobile subsidiary of BT – and thereby inherited, in principle, the deal with Sky. A final deal was hammered out in March 2015 whereby Hutchison would pay an initial £9.25bn for O_2 with an additional deferred payment of £1bn once the cumulative cash flow of the combined entity reached an agreed threshold. The deal was submitted for approval to the Commission in September 2015, immediately after the withdrawal of the proposed merger between TeliaSonera and Telenor in Denmark, and it was not thought that it would benefit from the provisional approval of BT's bid for EE because the latter did not affect the number of players in the market. In the event, the deal

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was subjected to an in-depth investigation commencing in November 2015 with a deadline of March 2016 (TeleGeography, 2015b).

Naturally, the BT/EE decision had implications for the other bid on the table, the consequence of which would be to elevate 3UK into the market leader in mobile but one without a fixed-wire business. Furthermore, 3UK had not – at least in public – announced any moves to deal with this which suggested strongly that, if successful with its bid, it would then have to move quickly to acquire fixed-wire assets. If so, the candidates were, in essence, TalkTalk, Sky and Virgin Media, yet none of these was a potential takeover target as they were all trying, with some success, to convert themselves into quad-play networks via (in part) MVNO arrangements in the mobile market. Hence, some arrangement other than a takeover bid was to be expected. It must also be borne in mind that Vodafone had for some time been engaged in on-off attempts to link up with Virgin Media's controlling shareholder, Liberty Global.

To expedite the takeover, Hutchison offered three guarantees (Telecom.paper, 2016c):

- That prices would not be raised for five years after merger.
- That the new entity would invest £5bn during those first five years.
- That provision would be made for "other meaningful competitors" to enter the market as MVNOs.

Hutchison would offer for sale "fractional shared ownership interests in our network capacity", a promise that was sufficient to elicit a favourable response from Virgin Media. However, the UK regulator, Ofcom, urged the Commission to reject the takeover on the grounds that it would cause prices to rise, impact rival high-street traders and upset existing network arrangements (see below and TeleGeography 2016a). According to Ofcom, its research in 25 countries had established that where the number of incumbents in a market was four as against three, average prices were up to one-fifth lower.

In early April, Hutchison announced that it had struck deals with Sky and Virgin Media whereby, over a period of at least 10 years, they would acquire, respectively, 20 and 10 per cent of the capacity of the merged network. As it happened, Sky had previously signed up as an MVNO with O_2 but the new arrangement would lower its cost structure (Wood, 2016c). The two deals would be worth roughly £3bn. In addition, London-based fixed-wire network UK Broadband was in talks to acquire a share of the merged network. Hutchison added that it would honour its existing network-sharing arrangement with Vodafone until the end of 2017.

The CMA remained unimpressed, writing to the competition Commissioner to warn that the remedies were "materially deficient" because they did not guarantee the entry of a new competitive network and asking the Commission either to force Hutchison to sell off one or other of the networks or to offer enough spectrum and network assets to a commercially viable new entrant. This elicited a critical response (Wood, 2016d) to the effect that the takeover would foster long-term investment in infrastructure and prevent BT from acquiring an insurmountable advantage. Furthermore, excessive regulation would hold back Europe in the development of 5G.

The EC published its decision in May 2016 (European Commission, 2016). As predicted, it blocked the takeover, claiming that "UK mobile customers would have had less choice and paid higher prices as a result [. . .] and that the deal would have harmed innovation in the mobile sector". In addition, investment in infrastructure would have been reduced because the new entity would have become party to two infrastructure agreements, one involving Telefónica and the other 3UK, and would have been forced to withdraw from one of them. Finally, life would have been made more difficult for MVNOs with one fewer network with which to negotiate.

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In the aftermath of the EC decision, it was argued that there would be no offers forthcoming for either 3UK or O_2 as there was too little potential for profitability in such a mature market as the UK. This may or may not turn out to be the case. Telefónica has made no moves to build up a quad-play capability and hence remains a potential seller albeit not as a matter of urgency. Sky is not interested other than as a minority shareholder, which leaves Liberty Global (via subsidiary Virgin Media) as a possibility (TeleGeography, 2016b). As for Hutchison, it does not appear to want to continue to be thought of as merely a market disruptor and is concerned that it needs to scale up to become more like its rivals, not to mention the need to acquire the assets needed to become a quad-play provider. Hence, a bid for fixed-wire broadband network TalkTalk may be forthcoming, as it has a nationwide network and only a modest mobile presence as a MVNO – as may an appeal against the Commission's decision (McCaskill, 2016).

Italy: the Commission has yet to decide but . . .

In July 2013, it was announced that a proposed merger between the Italian networks of Telecom Italia and Hutchison was no longer on the cards because of a dispute over the valuation placed on the country's (much the) smallest network. This was essentially a continuation of a process initiated in 2010, but it proved impossible to secure agreement on the appropriate value to be placed on 3 Italia's accumulated losses if used to offset taxation. It may be added that once again the proposed merger would have left a "big four" European member state with only three networks and no "disruptive" network and hence would have been expected to stimulate a strong regulatory response both within Italy and the Commission's decision.

In early 2014, Hutchison decided to try again, but this time, it engaged in talks with VimpelCom with a view to merging their respective Italian networks (3 Italia and Wind Telecomunicazioni). The supposedly final version of this tie-up envisaged the much smaller 3 Italia effectively taking over its rival with VimpelCom retaining a small equity interest, but in October 2014, VimpelCom opted to proceed only provided it could take a 50 per cent stake in the new entity. This was officially agreed in August 2015 (VimpelCom, 2015).

The merger would create a third network similar in size to Telecom Italia and Vodafone but was unlikely to prove popular with the regulatory authorities despite the superficial improvement in the relative strength of the networks post-merger which had clearly not been a feature of the proposed merger between 3 Italia and Telecom Italia. It was suggested that, after merger, there would be a disposal of Wind's fixed-wire business Infostrada. If so, both Telecom Italia and Vodafone would doubtless wish to acquire it.

In February 2016, the Commission was officially informed about the proposed 50/50 merger to be known as Hutchison 3G Italy Investments and duly launched a full investigation with a decision pencilled in for August (Telecom.paper, 2016d). Given the decision in respect of the UK, there is every expectation that the EC will rule in a similar fashion in another large member state. However, it seems unlikely that Hutchison will wish to retain its status as market disruptor if the merger is rejected.

Faced by the probability that the EC would insist on the continued existence of four networks, Hutchison and Vimpelcom considered the disposal of mobile towers and spectrum to a third party, whereupon Fastweb expressed an interest in playing that role (TeleGeography, 2016c). In late May, they were alleged to be in talks with France's Iliad and Sky about the possibility of a transfer of spare spectrum which would facilitate the emergence of a new network operator (TeleGeography, 2016d).

The role of new entry

It is useful at this point to consider what effect new entry has actually had in terms of leading to any restructuring of European mobile markets given that the Commission now places

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such emphasis upon a new infrastructure-based competitor emerging if a takeover is to be authorised, thereby maintaining the number of networks.

Curwen and Whalley (2015) examined in great detail the consequences of new entry for the state of competition in the European mobile sector and concluded that they had been modest at best. The award of an operating licence for a data network is a necessary condition to get things started – it can of course be transferred from one network to another pre- or post-merger. However, over a period of roughly 15 years, the award of 3G licences in a broad range of European countries achieved very little by way of increased competition. The only company to have had any broad-based success was Hutchison Whampoa, yet until very recently as a stand-alone network, it only managed to establish itself as the smallest network in its markets and the losses that it incurred in so doing would be unsustainable for virtually any other potential entrant. For their part, Iliad in France and P4 in Poland have grown rapidly at the expense of the incumbents but Iliad has found it difficult to thrive as a disruptive force in a competitive four-network market.

That new entrants' typical struggle to gain more than a 15 per cent market share vividly illustrates the scale of the challenges and difficulties that they face when competing against their larger and well-established rivals. That the well-funded and doggedly persistent CK Hutchison has only recently breached this threshold in two markets, even with the assistance of acquisitions, raises the question as to whether other new entrants will ever gain sufficient scale in mobile markets to be effective competitors. Sooner or later, new entrants have sought to succeed through adopting a policy of being disruptive (Baritault, 2009). This is, however, a double-edged sword – while a strategy of undercutting incumbent prices and offering better data allowances may have contributed to their growth, it is hardly the optimum route to achieving a decent return on capital. Without either the necessary scale or return on capital, new entrants are unlikely to remain in the market.

Most of the LTE licences in Europe have now been issued and predictably mopped up by incumbents, but it is notable how little effort national regulators have put in across the board to reserve spectrum for new entrants. In effect, this constitutes an admission by regulators that they are more interested in rolling out high-speed data networks – a policy best left in the hands of incumbents to execute if speed and reach are of the essence – than in fostering potential new entry that they anyway suspect will not emerge in practice, at least not on a scale to provide effective competition for incumbents.

Do disruptors succeed?

The "great disruptor" of the past decade, CK Hutchison, has, as noted above, managed to keep going only by virtue of its willingness to cross-subsidise its telecoms activities using profits from other activities and the sale of Orange at the turn of the millennium. But it is no longer keen to pursue this strategy which is why it has moved to take over its rivals in several countries to increase its scale relative to its much larger rivals. There is some evidence that Hutchison has become much less disruptive in Austria since it completed its takeover.

France is an interesting recent case study for disruption because it is home to two disruptive networks – neither of which is Hutchison. On the one hand, Altice – which had acquired Numericable (cable) and SFR (fixed-wire and mobile telecommunications) and joined them into a single-entity Numericable-SFR – suffered losses both of subscribers and revenues during 2015, but by virtue of aggressive cost cutting, managed to boost profitability. However, it was evident that Altice's strategy, which necessitated a squeeze upon its suppliers, had succeeded only at the cost of damage to its reputation (Gabriel, 2016). In comparison, Iliad – a broadband and mobile provider – continued to increase both subscriber numbers and market share.

So is disruption a sensible strategy? The answer appears to be that if you adopt it as a stand-alone mobile operation, you cannot expect to be profitable during the initial years of

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operation, and it seems unlikely that this strategy will be favoured in the future. The story may well be different for incumbents in other sectors such as fixed-wire broadband or Pay-TV with other revenue streams to fall back on, but that is not something that the Commission has taken much account of in its recent decisions.

Is consolidation beneficial or detrimental?

According to the recently appointed Commissioner in charge of competition matters, Margrethe Vestager, the European Commission does not favour a set number of competitors in a national market. Her remarks followed on from the collapse of the proposed merger between Telenor and TeliaSonera in Denmark which would have reduced the number of networks to three. As noted above, the merger proposal in this case was withdrawn when TeliaSonera was unable to get the Commission to accept that the concessions intended to maintain competition would have the desired effect and where TeliaSonera believed that further concessions would render the merger economically non-viable. It is of interest to quote the Commissioner, Margrethe Vestager, as follows (European Commission, 2015):

> Every case has to be assessed on its own facts and merits. In this specific case, based on the Commission's in-depth analysis and evidence gathered, we are convinced that the significant competition concerns required an equally significant remedy. This means the creation of a fourth mobile operator.

Interestingly, the concessions initially included a willingness to make available a limited amount of spectrum for an independent network and, when this failed to satisfy the Commission, the offer of a limited ownership stake in the merged network with the use of a corresponding share of its capacity (Mobile World Live, 2015). The Commission also took the view that investment was positively related to the degree of competition rather than the reverse as argued by the networks. It claimed that there was no direct link between increased investment and consumer welfare – rather, the benefit was indirect, acting via improved quality and lower prices.

A somewhat curious aspect of the decision in this particular case was that TeliaSonera and Telenor had completed a common RAN for 3G in April 2014 with 2G to follow. Hence, it could be argued that there were already effectively only three networks in operation and that the healthy MVNO sector made up for this in terms of competition. The decision drew heavy criticism from analysts who held that the Commission was merely counting networks and that Denmark was one of the cheapest data markets in the EU.

It may also be noted from Table I that only 5 out of the 26 smallest countries in terms of subscribers had more than three networks so it could be inferred that the Commission now took the view that there were major structural problems in many, if not most of these countries.

To explain why the previous competition Commissioner had authorised the prior network mergers in Germany – where Telefónica had acquired KPN subsidiary E-Plus in July 2013 – and Ireland – where Hutchison had acquired Telefónica O_2 in June 2014. Its response was to cite the enhanced role of MVNOs in those cases, an ostensibly weaker form of structural remedy. It could be concluded from this that the new Commissioner was likely to emphasise structural remedies much more emphatically in forthcoming cases, but was this perchance anything to do with the fact that she wanted to prove that she was tougher than her predecessor, Joaquin Almunia, who had signed off on the prior authorised cases?

Does consolidation lead to higher prices? . . .

This has become a highly disputatious topic in recent years. According to reports published by the Austrian Federal Competition Authority (BWB) and the Austrian telecoms regulator (RTR) in March 2016 (BWB, 2016), the merger between Hutchison and Orange – which both regulatory bodies had opposed – had led to significant price rises ranging

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between 50 and 90 per cent for smartphone users and between 22 and 31 per cent for other users during the two-year period after merger but prior to the entry of MVNOs as specified in the merger commitments. This held true even after factoring in the need to recover some of the costs incurred by the networks in buying spectrum in the October 2013 auction (Telecom.paper, 2016b). The BWB report concentrated upon existing customers while that of the RTR concentrated upon new customers. However, it may be noted that the reports acknowledged that prices had begun to fall in 2015 because of a combination of MVNO entry, publicity about prices and number portability and that most prices were now back to the pre-merger levels.

Not everyone was convinced by the above initial assessments of the RTR methodology were published by Frontier Economics (2015) and HSBC (2015) which argued that because subscriber price indices were typically based only on monthly bills incurred by new subscribers, confusion was arising between bills and prices. In practice, because the amount of allowable use (bundles) as measured in megabytes was growing, subscribers were paying slightly more in Austria after takeover, whereas the unit price was actually falling. This view was, in turn, claimed to be compatible with the RTR methodology (WIK-Consult, 2016, p. 82).

In March 2016, the ex-head of the Austrian telecoms regulator, Georg Serentschy, refuted the above claims about the Austrian market. He agreed that the debate had focused on the size of the monthly bill which was misrepresented as the price of the service. He accepted that the regulator's mobile price index did indeed show an upward trend, but noted that this took no account of usage. In his view, unit prices such as the cost in euros per minute of calls or per megabyte of data had fallen continuously and that at the end of 2015, they were below the levels ruling in 2011 because of MVNO entry. He added that network coverage and capacity had improved since the merger had been finalised (Wood, 2016b).

For his part, Nichols (2016) also took issue with the methodology used by the RTR and complained that no account had been taken of usage despite the fact that it had "exploded". He also noted that prices were based on what a new customer would pay, whereas an existing subscriber would be able to bargain over his bill by threatening to terminate the account. Furthermore, incumbents were concentrating upon the provision of high-quality services at high prices leaving the cheaper, lower-quality end of the market to MVNOs. This led him to argue that additional provision for MVNOs should be required if approval is to be granted for a merger but also that the merger should be permitted on that basis. It should be noted that Nichols' conclusions have themselves been subject to criticism.

It is also worthy of note that, according to an annual "Connect" test carried out by German consultancy P3, Austria's poorest-performing network in 2015 was comparable to the best-performing German network in respect of coverage. It is also of interest that the most recent Telecompaper EU Benchmark report reveals that the cheapest three markets in 2016Q1 were Denmark, Finland and Norway (Telecom.paper, 2016f) – all, note, Scandinavian countries – even though Norway has the highest two-network concentration ratio (excluding Macedonia) in the entire sample.

According to Ofcom in its report on the Hutchison/Telefónica case (Ofcom, 2016), its research into mobile prices in 25 countries during the period 2010 to 2015 indicated that prices were between 17.2 and 20.5 per cent lower in markets where at least four networks were present – including a "disruptive" brand such as Hutchison which would account for roughly one-half of the overall impact – compared to markets with only three well-established players. While this could possibly be dealt with in the UK case by licensing a fourth network, it would take both a lengthy period of time and a good deal of investment to accomplish.

There is a small amount of evidence from the period pre-2012 that is worth noting. As set out by Aguzzoni *et al.* (2015) which conducted a retrospective – as against a predictive –

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study of two takeovers – there were no subsequent price increases in the Austrian case, whereas in The Netherlands case, the general trend of falling prices was present but less significant, although this was not necessarily a consequence of the merger.

. . . or higher investment?

The claim that a reduction in the number of networks from four to three would neither stimulate innovation nor improve investment in facilities was argued at great length in WIK-Consult (2016) which claimed that there was no historic link between consolidation and an increase in investment.

An alternative version of events was presented in Frontier Economics (2014, p. 5) which argued that dynamic efficiencies from investments in mobile markets played a large role in determining outputs, including prices. It claimed that:

> [. . .] most of the reduction in unit prices in Europe between 2004 and 2014 is explained by investments in new technologies rather than from reductions in margins that result directly from competition.

Furthermore, "mergers can significantly increase the incentives of the merging parties to invest under some circumstances".

Frontier were also sceptical about the benefits of network sharing which the Commission has sometimes argued would yield much the same benefits as mergers (Frontier Economics, 2014, p. 6). Frontier argued that the benefits of network sharing were more modest that was claimed and could not be relied upon to deliver the same level of benefits as investment in infrastructure stimulated by mergers. Much the same ground is covered in Frontier Economics (2015).

Support for Frontier can be found in HSBC (2015) which stated that "we believe that telecoms consolidation will have the effect of boosting network investment, which will in turn drive prices lower". HSBC claimed that there was no evidence in the Austrian case to support a contrary view particularly as prices were falling at the time of writing. It argued strongly that mergers should be approved, as they would benefit customers, operators and the broader community alike. It was scathing about the role of MVNOs in fostering competition – much favoured by the Commission – which it claimed could not lead to increased investment in the absence of their own networks but would instead reduce profitability for incumbents which would respond by investing less.

As noted below, retrospective analysis may not shed as much light on this issue as might be hoped in a sector that is rapidly moving away from pure mobile M&A activity.

Quad-play

It is of interest that the Commission has shown what might be termed an old-fashioned view of the telecoms market in that fixed-wire and mobile are treated separately. Hence, there was no real interest in investigating the takeover of EE in the UK by BT – the dominant fixed-wire network – whereas the takeover of Telefónica by Hutchison – neither with any strength outside the mobile market – was investigated and rejected. What is odd about this is that the major mobile networks such as Vodafone have clearly switched their takeover ambitions from mobile networks to companies that can enhance their ability to provide quad-play.

As the switch to quad-play is likely to become an increasingly important aspect of any future investigations – should any take place (see conclusion) – it is worth a brief examination of the proposed takeover of EE by BT tabled in December 2014 – BT had long since sold off its mobile subsidiary now operating as Telefónica O_2 – which was left in the hands of the UK's CMA advised by the telecoms regulator Ofcom. A particular line of enquiry was into whether BT would be likely to continue to provide wholesale services to other companies, but the overall decision was – slightly surprisingly given BT's ownership

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of fixed-wire provider Openreach – that there would be no significant lessening of competition in any relevant market (Advanced Television, 2015).

The CMA took the view that the retail mobile market – with four incumbents – was competitive, that the changed role of BT (from MVNO to incumbent) would make little difference and that the retail broadband market would be little affected as EE was a minor player. The CMA added that in a dynamic and evolving sector, BT would have neither the ability nor the incentive to disadvantage competitors that it supplied with backhaul, wholesale mobile or wholesale broadband services (Competition and Markets Authority, 2016).

As noted above, Ofcom took a very different view in the case of Hutchison's proposed takeover of Telefónica O_2 which would reduce the mobile market to three players (TeleGeography, 2016a). Bundling is, however, well established in the UK – more than 60 per cent of consumers bought two or more of their communication services from the same company in 2015 (Ofcom, 2016). As such, adding mobile to the BT's existing fixed voice, broadband and sports-related content services will undoubtedly enhance its competitiveness in the marketplace. While BT faces significant competition in some parts of the UK market, such as content, its scope and size are arguably unrivalled when the market is considered in its entirety. This makes the focus solely on mobile, such as in the case of Hutchison's proposed takeover of Telefónica O_2 noted above, all the more surprising.

Conclusions

Driven by its new competition Commissioner, the Commission appears to have changed track somewhat in recent times and come out strongly in favour of fierce competition as the route to customer welfare via maintenance of the number of networks. It may be argued that this is better than market dominance by a duopoly, but that is hardly a fair comparison. At first sight, the UK did not look like a country where the erosion of competition was a serious threat – there were four networks backed by strong international companies, a strong MVNO (Virgin Mobile) and many other well-established rivals such as Tesco Mobile plus an interest expressed by fixed-wire broadband and TV networks to develop into quad-play networks. On top of which Hutchison promised to support the development of these competitors. Given that most other European countries in the above sample are happy with three networks, the suspicion must exist that one of the triggers behind the opposition by the Commission, supported by Ofcom, was the flexing of muscles by two new leaders eager to establish their authority.

In the USA, a much smaller market than the EU let alone a Europe more broadly defined, there are only four nationwide networks. On the face of it, therefore, it makes little sense for the Commission to insist whenever it can that an individual member state should have the same number. The way the Commission gets around this is to argue that there are in total 80 to 90 networks in the USA, whereas in the EU, the four largest operators serve roughly 60 per cent of customers overall – the rest are effectively regional in a pan-EU sense of the term. So it follows that the structures are not really all that different between the EU and the USA. However, this is disingenuous because a presence in even 12 EU member states (the current maximum for a single operator) hardly represents a "nationwide" EU operator comparable to the US "big four".

Once it has been determined by the Commission that four networks should remain in existence, the only way in which this number can be reduced is for one of the networks to close shop because it is continuously losing money. Ironically, Hutchison was in precisely that situation until very recently (Whalley and Curwen, 2016), but having traded through those losses and seen its performance improve significantly, it would be surprising if it now threw in the towel in either the UK or Italy where the Commission seems unlikely to change tack once again.

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Assuming that its plans for Italy fall through, an inevitable question to ask is what Hutchison will do next. Hutchison could conceivably continue on as a disruptor, although perhaps less aggressively than in the past, or it could bolster its position in the marketplace through acquiring, say, a fixed-wire operator. Alternatively, it could float one or both of its Italian and UK operations. However, the competitive nature of both of these markets, when combined with the regulatory environment that is emerging, is likely to mean that this option will not raise as much money as Hutchison would ideally like. Nevertheless, listing one or both of these subsidiaries would provide Hutchison with an exit route through the sale of shares on the open market.

By and large there is always going to be some interest in buying the unprofitable smallest operators. However, this interest is going to come either from the likes of broadband or Pay-TV operators seeking to add infrastructure-based mobile to their service provision or from financial intermediaries (which may turn out to be as keen on asset-stripping as building up the business). Predictably, the potential buyers tend to place very low values on the networks for sale which is why, for example, Yoigo is still available. But it follows that the unwilling owners of these networks will be unenthused about pumping in more investment – VimpelCom, for example, was very late in launching LTE in Italy which caused its situation to deteriorate even further and render it in urgent need of the merger which the Commission will probably reject.

For their part, the financial markets have expressed considerable misgivings about the decisions in Denmark and the UK. In May 2016, for example, Moody's Investor Service stated that the UK decision was credit-negative both for the companies involved and the European telecoms sector in general, arguing that justifiable in-market mobile consolidation would slow down as a consequence (Cellular-news, 2016). Even before the UK decision reiterated the preference for a four-network market structure, the machinations in France highlighted the difficulties of valuing companies in markets where several possible combinations exist and the market is competitive. Sellers naturally place a higher valuation on the assets they wish to dispose of than prospective buyers. When combined with the unfavourable regulatory environment that is emerging, the outlook for prospective sellers is arguably quite bleak.

It can be concluded from all of the above that the situation is at best unsatisfactory. The Commission has dramatically changed tack from basically authorising all M&A activity involving mobile incumbents to rejecting all such activity, while proclaiming at every opportunity that it is not prejudiced as all cases are judged exclusively on their own merits. The Commission has produced massive reports justifying its recent decisions which employ methodologies that are called into question by analysts without the matter being conclusively resolved. The Commission's reports are necessarily predictive and there is no way of knowing what would have happened if the decisions had been different. Limited evidence from past cases is ambiguous and it will be years before the results of the Commission's recent decisions can be subjected to retrospective analysis.

For those who, like the authors, remain sceptical about the Commission's change of tack, there is one curious saving grace. If one eliminates countries in Table II that are not (yet) member states, countries that have already been subject to a Commission investigation and countries where the fourth operator has too small a market share to be worth investigating if a bid is forthcoming from an incumbent, the only remaining country with four networks is Sweden (and arguably Spain). But in Sweden, the fourth network is Hutchison which, in the aftermath of the UK and Italy decisions, is unlikely to make a further move on a larger rival. As noted, where marginal networks are put up for sale, the bidders will not be other mobile operators, which is why Spain, for example, will continue to elude the clutches of the Commission. So, in essence, post Italy, the Commission will have run out of countries where its services will be needed.

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