

Does share of spectrum confer market power in mobile mergers?

- Consolidation in mobile sector means merged entities have more spectrum
- Share of natural resources may be a source of market power and increase incentives to collude
- How should competition authorities take share of spectrum into account and what should they do?

Consolidation is the primary characteristic of mobile telecoms markets in Europe and elsewhere. In 2013 the Austrian subsidiaries of Hutchison and Orange merged. Last year saw the mergers of Three and Telefonica in Ireland and of Telefonica and ePlus in Germany. The proposed merger between Three and Telefonica in the UK has been referred to the European Commission. This edition of Hexagon considers whether the share of spectrum is a source of market power.

The starting point for assessment of market power, or dominance, is the market share of a single firm in a non-merger case, or the merging firms in a merger case. This is normally the market share of revenues or customers.

However, in some markets, where capacity is constrained by firms' access to a crucial input, such as spectrum, their share of that resource may be more informative than market shareⁱ. Academic research shows that symmetric and asymmetric capacity constraints may increase firms' incentives to colludeⁱⁱ

Should competition authorities take into account the amount of spectrum licensed to a Mobile Network Operator (MNO) post-merger

as a potential source of market power? If so, what are the important considerations?

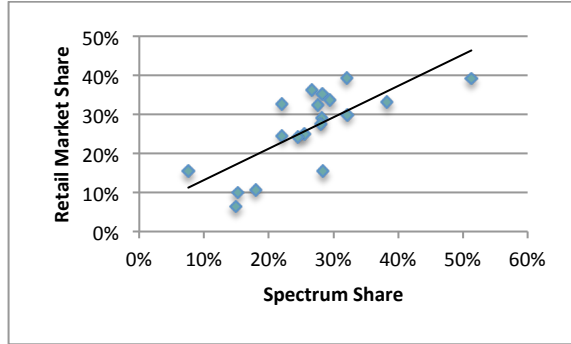
Retail market share is strongly correlated with share of spectrum.

As a rough rule of thumb, the more spectrum a MNO has, the more customers it can support. Looking across Europe, we can see a strong correlation between the share of spectrum and the share of customers. For the Big 5 EU countries, the correlation across all operators is 74%, as illustrated in Figure 1.

However, efficiency enhancing technologies can allow more customers to use the same amount of spectrum, although such technologies are not costless.

Correlation does not, of course, indicate cause and effect. However, given that more spectrum means more capacity, then there certainly seems to be an advantage in having more spectrum as, *ceteris paribus*, more capacity allows more customers.

Figure 1: Correlation between retail and spectrum share in EU5



Source: Ovum, Spectrummonitoring.com, SPC Network.

On this basis, it would seem that competition authorities would be sensible to consider the post merger share of spectrum, as it may both confer market power and increase incentives to collude.

Unused spectrum may confer more market power than the absolute amount of spectrum of the merged firms.

The picture is more complex, however, for two reasons. First, the absolute level of spectrum may be less important than the amount of spare or unused spectrum. If the two merging companies have no spare spectrum then their

market power may not increase as they are in no position to respond to the competitive moves of another firm. Share of spectrum provides no more information to the authority than market share. Capacity constraints may soften competition as they reduce firms' incentives to deviate from collusive pricesⁱⁱⁱ

However, if one party has spare spectrum then the merged entity's power may increase as it now has the ability to increase its position in the market beyond the retail market shares of the two merging firms individually and respond to rivals. The new whole can become greater than the sum of the parts.

Secondly, not all spectrum is equal. Broadly speaking, lower frequency spectrum, say below 1 GHz, is better at giving in-building coverage, travels over a longer distance and requires fewer cells to cover the same area than higher frequency spectrum. Spectrum above 1GHz, however, is generally preferable for high capacity data services such as LTE.

In this case, the authority would need to examine the share of spare spectrum in individual bands. Figure 2 shows the share of spectrum licensed to the four mobile operators in the UK pre- and post-merger (assuming the

O2/3 merger is approved) in each of the four spectrum bands. How much unused capacity operators have in each band is unknown.

Figure 2: Share of UK Spectrum pre and post O2/3 Merger

Pre-merger	800	900	1800	2100
O2	33%	50%	8%	17%
Vodafone	33%	50%	8%	25%
EE	17%	0%	70%	34%
Three	17%	0%	14%	25%
Post-merger	800	900	1800	2100
O2/3	50%	50%	22%	42%
Vodafone	33%	50%	8%	25%
EE	17%	0%	70%	34%

Source: Spectrummonitoring.com, SPC Network

The figure shows that after the proposed merger, O2/3 would have 50% of the two sub-1GHz spectrum bands, with EE having just 17% of the 800MHz band. By contrast, in the two higher frequency bands O2/3 of course gains a stronger position, but EE remains by far the largest in the 1800MHz band. Overall, EE would still have the largest share of spectrum by one percentage point.

The test for a competition authority considering a merger is whether there is likely to be a Substantial Lessening of Competition (SLC). If the European Commission were to consider that share of spare spectrum is important in assessing whether there is a SLC in the O2/3 case, then the table above presents it with a dilemma.

In the 800MHz band the new merged entity moves ahead of the competition, whereas in 1800MHz it gains some capacity that may allow it to compete more effectively with EE. Rather than lessening competition in this band, the merger may increase competition as the new entity has more resources available to it. However, as we pointed above, the absolute share of spectrum may have less of an effect on competition than the spare spectrum.

Merging mobile operators have committed to release spectrum to allow new entry in Ireland and Germany.

What remedies would be available to competition authority concerned that an increased share of spectrum would result in a SLC?

The most obvious remedy is to require the merged firm to release some of its spectrum. In the Irish mobile merger last year, H3G gave a voluntary undertaking to do just that and to divest five blocks of spectrum in the 900 MHz, 1800 MHz and 2100 MHz bands. The spectrum will be available for ten years, starting from 1 January 2016. Similarly, in Germany Telefonica committed to make a spectrum offer consisting of the lease of 2x10 MHz in the 2100 MHz band and of 2x10 MHz in the 2600 MHz band to facilitate the entry of a fourth mobile operator. This would reduce its share in the 2100MHz from 58% to 41%.

In these two cases, the concern of the Commission appeared to be less to do with market power arising from the holding of spectrum and more with the number of operators in the market. Thus even after Telefonica releases 2x10MHz of 2100MHz spectrum, it will still have 46% of the total mobile spectrum in Germany.

Complexities of the issue mean competition authorities should treat share of spectrum on the merits.

Our purpose here has not been to argue that the Commission was right or wrong in the remedies it agreed in Ireland or Germany, or that the merger between O2 and Three in the UK will or will not result in a SLC as a result of the merged entity holding more spectrum. Indeed, after the merger it will still have slightly less spectrum than EE. Rather, we have simply sought to raise the question as to whether the amount of spectrum held by an operator should be considered in the assessment of market power. The answer is not simple as technology means there is not a clear-cut relationship between capacity licensed and number of customers and, anyway, spare spectrum is more important than total spectrum.

Overall, our view is that firms' share of spectrum should be considered but there can be no *per se* rule and each case should be taken on its merits.

ⁱ Motta, M. (2004) *Competition Policy: Theory and Practice* Cambridge University Press. Page 119.

ⁱⁱ Compte, O, Jenny, F, and Rey, P "Capacity constraints, mergers and collusion." *European Economic Review* 46.1 (2002): 1-29.

ⁱⁱⁱ *ibid*

