Differences in costs in the Dutch mobile market and their regulatory implications

Report prepared for T-Mobile Netherlands

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Summary

1. This report assesses two key issues in relation to the future regulation of mobile termination charges in the Netherlands. First, the report analyses what principles should govern regulatory price setting when there are significant differences in the positions of mobile operators active in the same market. Second, the report examines whether the evidence shows that there are, in fact, significant relevant differences between the Dutch mobile operators that need to be reflected in mobile termination regulation.

2. Where exogenous cost differences exist, the objectives of the European Access Directive can best be met by varying the levels of termination charges between operators by the extent of the exogenous cost differences. Operators that face higher costs because of factors outside their control need to be able to earn revenues to cover their costs as otherwise they would not be able to earn a reasonable rate of return with the longer term risk of weakening their ability to compete.

3. OPTA is proposing to regulate the termination charges of all three Dutch mobile operators at a single level. In doing so, OPTA is effectively assuming that there are no exogenous cost differences between the Dutch operators. However, whether or not such exogenous cost differences exist is an empirical matter which must ultimately be decided on the basis of the market evidence. In this report, we examine the evidence in relation to three sources of cost differences:

    a. differences in market share due to different dates on which spectrum licences were made available;

    b. the benefits that KPN's mobile business has gained from being part of the Dutch fixed incumbent's group; and

c. the enduring effect of uneven initial spectrum assignments between the mobile operators.

Differences in market share

4. One of the crucial assumptions in OPTA's cost model is that all three MNOs have a market share of 33%. This 33% is well above TMNL's actual market share of 21.7% of minutes.[1] The 33% benchmark is also well below KPN's market share of 48.9% of minutes. The actual differences in market shares can be expected to result in significant differences in costs. A critical issue is thus whether the differences in market shares reflect factors outside the control of TMNL or whether the lower market share should be regarded as being due to (inefficient) decisions that TMNL has made in the past.

5. In recent years different authors have empirically studied the long-term impact of late entry in the market. All of these studies find strong first mover advantages in mobile markets and that these advantages do not disappear with time. Based on the evidence presented in these studies, we find that TMNL's current market share is in line with that to be expected of an efficient operator. As such, TMNL's higher costs arising from its smaller scale are attributable to exogenous cost factors.

KPN's advantages from being part of the Dutch fixed incumbent's group

6. We have also reviewed the fixed incumbent effect KPN has enjoyed and continues to enjoy. In particular, in being part of the Dutch fixed incumbent's group, KPN's mobile business is likely to enjoy a range of financial, commercial and technical advantages. These advantages ultimately derive from the fixed incumbent's dominant position arising from the prolonged period of statutory monopoly. Empirical evidence

[1] As we discuss later, market shares expressed as shares of total minutes is most relevant to understanding cost differences between operators as the volume of minutes carried is a key cost driver.

indicates that the fixed incumbent effect is substantial and explains on average an additional 10% market share, independent of the fact that typically the state monopolist has also been longer on the market

Differences in initial spectrum assignments

7. The initial uneven spectrum assignments of the Dutch operators can be expected to continue to lead to cost disadvantages for TMNL as a result of its network design not being optimized for 900 MHz spectrum. OPTA's arguments that such differences have been offset by recent payments for spectrum by KPN and Vodafone is fundamentally flawed as the approach applied to determine the size of the payments does not show the size of the cost differences between the three operators nor was it ever intended to do so.

Policy conclusions

8. The European regulatory framework leads to the conclusion that termination charges should be set in line with objective cost differences. In the case of the Netherlands, this is likely to require:

   - KPN having the lowest level of termination charges reflecting its objective cost advantages including early entry, the benefits of being part of the Dutch fixed incumbent's group and its initial assignment of 900 MHz spectrum;

   - Vodafone's termination charges being set in line with its estimated costs ; and

   - TMNL being allowed a higher level of charges than the other two operators to reflect its significant cost disadvantage resulting from its later licensing and less cost-efficient initial spectrum assignment.

Pricing principles in relation to cost differences between operators

9. The Access Directive of the European Regulatory Framework sets out the general economic objectives that govern the imposition of price controls. In particular, Article 13(2) requires that any pricing methodology "*serves to promote efficiency and sustainable competition and maximise consumer benefits*." Article 13(1) requires that national regulators take into account the investment made by the operator and allow a reasonable rate of return on adequate capital employed taking into account the risks involved.

10. A central principle of regulatory price-setting, which is consistent with the Access Directive, is that regulators should not deny firms the opportunity to recover their efficiently incurred costs. In particular, firms should be allowed to earn sufficient revenues from a service to recover the costs that are necessarily incurred in the supply of that service.

11. Reflecting the principle of allowing efficient cost recovery, different levels of mobile termination charges between operators are likely to only be justified where there are objective cost differences between operators, i.e. cost differences that are due to factors outside the control of operators. Setting differences in termination charges based on objective cost differences delivers the lowest level of termination charges that is sustainable in the long-run, i.e. without threatening any operator's financial viability or without impeding investments by operators.

12. A further implication is that operators that enjoy lower costs as a result of more favourable exogenous conditions should have their charges set at their lower cost level. Doing so, ensures that callers to mobiles do not pay more than necessary for the service to be provided.

13. Recognising exogenous cost differences, also promotes competition. If, in the alternative, an operator were allowed to recover more than its cost of termination that operator would earn greater margins on

termination than its competitors. The additional termination margins would provide the operator with the ability and incentive to undercut the retail prices of its competitors so as to grow its market share at their expense. The other operators, without the excess termination margins created by regulation, would not be able to reduce their retail prices to the same extent without incurring losses.

14. A policy of varying termination charges in line with unavoidable differences in the cost of termination between operators would also effectively treat operators neutrally and leave operators to compete for mobile subscribers on the basis of their abilities and costs in supplying services to subscribers. In essence, setting charges in line with objective cost factors would allow an operator higher charges only to the extent that it is necessary to enable that operator to compete effectively in the longer term.

15. Many European regulators have recognised objective cost differences by allowing for difference levels of termination charges for different operators in regulation to date. The European Commission has also recognised the principle of recognizing objective cost differences between operators. For example, the Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU ('the EC Recommendation') states that "*In setting termination rates, any deviation from a single efficient cost level should be based on objective cost differences outside the control of operators*."[2] The Recommendation notes that uneven spectrum assignments and different dates of entry may lead to objective cost differences. The Recommendation also includes proposals as to how these should be taken into account. That said, whether or not an objective cost difference exists in a particular market is an empirical question that requires an analysis of market evidence.

[2] The EC Recommendation, Paragraph 16.

16. The principle of efficient cost recovery can be distinguished from an approach that would allow firms to recover any level of costs that they incur. For example, a regulator should not protect firms from the consequences of carrying inefficiently high costs or of making poor decisions. While supporting this principle, we believe it is of limited relevance in the case of mobile termination. In particular, mobile termination uses virtually the same network costs as the supply of other mobile services such as outgoing calls. As accepted by regulators including OPTA, these other mobile services are competitively supplied and hence the discipline of competition can be relied upon to ensure that operators' network costs are kept at efficient levels. Analysys has made a similar conclusion:

> "The Dutch operators seem generally active in competitive retail markets, which includes both the competitive supply of services to end users, and the competitive supply of infrastructure and services to those operators. Therefore, the *a priori* expectation of inefficiencies in the market may be limited."[3]

17. In summary, OPTA is required to determine regulation in accordance with the general principles set out in the Access Directive. Under these principles, it has been recognised that objective cost differences can warrant different levels of regulated termination charges for operators in the same market. Whether objective cost differences will continue to characterize the Dutch mobile market over the years of the next regulatory period is an empirical question which should best be addressed by examining the evidence. We turn to that next.

[3] Analysys, *Conceptual approach for the fixed and mobile BULRIC models*, 11 January 2010, p.10.

Evidence on exogenous cost differences

18. In this Section, we examine the main arguments and empirical evidence in relation to three sources of exogeneous cost differences: (i) the impact of late entry; (ii) KPN's advantages from belonging to the Dutch fixed incumbent's group; and (iii) the impact of uneven initial spectrum assignments.

<u>The impact of late entry</u>

19. TMNL and Orange were only able to commence supplying services in 1999 – around half a decade after the Dutch Government licensed the first two GSM operators, KPN Mobile ("KPN") and Vodafone-Libertel ("Vodafone"). TMNL's relatively late licensing date leads to significant disadvantages in terms of: site acquisition (i.e. not being able to access the best sites while facing higher costs); customer acquisition (the highest value consumers and most importantly business customers have already been acquired and are able to be retained by the earlier entrants through targeted marketing based on knowledge of their usage profiles); and scale disadvantages both currently and over time. The cost model should ensure that operators are able to earn a reasonable return over the lifetime of their investments and this implies that TMNL, which was only able to enter years after KPN and Vodafone, will need to be allowed a higher charge level for forthcoming years in respect of its higher ongoing costs and its higher proportion of its investments that are still to be recovered. The 1998 date of 2G licensing places TMNL in a similar position to a number of new 3G entrants around Europe who were licensed in 2000 and have received lighter regulation in view of their positions.

20. A number of well-regarded studies have addressed the topic of first-mover advantage specifically in the mobile telecoms sector. While acknowledging that there are other contributory factors, these papers conclude - identically - that the first-mover advantage in mobile telecoms markets is significant. We will review the different evidence in turn.

21. Bijwaard et al. (2008) analyze the development of market shares across 16 countries in the European Union. They use a data set with monthly data from 1998 until May 2006 (and yearly data from 1990 – 1998) on number of subscribers of all MNOs in the different countries. In this way they are able to determine penetration rates (the number of mobile subscriptions as a percentage of the population) and market shares of existing operators. They also have data on the month in which different operators entered their respective markets. The study then traces the normal development of market shares conditional at the moment of entry, back to the market concentration at the moment of entry (measured by the commonly used Herfindahl-Hirschman index), a country variable capturing specific country differences and the penetration rate at entry.[4]

22. The study makes a distinction between a long-run attainable market share and the path towards that long-run market share. In this way the authors are able to investigate whether there is indeed a long-run effect associated with late entry. Here, we concentrate on this long-run effect.

23. The paper shows that all explaining variables have a significant long-run effect as follows: (*i*) the higher the penetration rate of mobile telephony at the moment of entry, the smaller the long-run market share, (*ii*) the more concentrated the market at the moment of entry, the larger the long-run market share and (*iii*) there are country specific differences, with the Netherlands taking an average position in Europe with respect to the question how easy it is for entrants to gain market share.

[4] One aspect of this study to be aware of is that it does not use price data. Prices are obviously important to explain market share. The use of price data is, however, complicated for two important reasons. First, most operators have a large variety of different price menus and it is difficult to extract one price figure from this menu that should be taken as an explanatory variable. Second, prices do not only explain market shares, they may also well be a function of markets shares (with the smaller operators having lower margins and lower prices to attract clients). This makes prices an endogeneous variable the introduction of which creates technical complications.

24. Depending on the specific conditions of entry, the study shows that the first entrant in a country may still gain a reasonable large market share, but that subsequent entrants have much more difficulty in gaining share. There is strong evidence for an early mover advantage, where this advantage is mainly caused by the influence of the penetration rate: it pays to enter when still few people have acquired a mobile telephone.

25. An interesting aspect of Bijwaard et al. (2008) is that it can be applied to see what a normal ("expected") long-run market share of a particular operator would be, given the market conditions at the time of entry. That is, this is what an average operator would achieve in that market context. We then can compare this "expected" market share with the real market share to see how effective that company has been since it entered the market. If the actual market share is much higher, the operator has been more successful than could be expected, and this operator should then be classified as an efficient operator.

26. TMNL and Orange both commenced services in the Dutch mobile market in 1999 at a time where the penetration rate was already rising from 30% and the HHI index had a value of approximately 0.45. The estimation results of Table 1 presented on page 255 of Bijwaard et al. (2009) applied to the equation of the dynamic model presented on pages 251-252 then shows that for the case of TMNL and Orange their expected long-run market share given the specific conditions surrounding their market entry are around 10.5% for the estimated model B. This is significantly below the market share of TMNL before it acquired Orange. If we just add the two market shares of the companies, the present day market share of 21.7% is also above the estimated combined market share of 21.0%.

27. We draw two important conclusions from the application of the European-wide study of Bijwaard et al. (2008) to the market position of

TMNL. First, one cannot expect that a company that enters the mobile market later than its competitors will catch up with and attain an identical market share in the long run. First movers have a significant long-run advantage. Second, TMNL has been more successful in attaining market share than what could have been expected on the basis of this pan-European study. Therefore, the actual market share of TMNL is very much what could have been expected from an efficient entrant.

28. A second, study entitled "The Determinants of Market Share for Mobile Telecommunications Operators" for the International Telecommunications Society uses data on 94 operators in 27 OECD countries. The study confirms the results presented above that, in addition to a number of other factors, a mobile operator's market share is significantly affected by having been active for more years in the market.

29. A third study carried out for the Swiss Budesamt für Kommunikation (Das BAKOM) (The Federal Office of Communication) assessed the development of the Swiss telecoms market in comparison to that of other markets. The study finds that the sequential award of mobile licences negatively impacts competition dynamics because later entrants are disadvantaged due to network coverage and switching costs: "From a competition policy perspective, GSM licensing in Switzerland was problematic largely because the Swiss mobile market was liberalised so much later than in other countries and the entry of Swisscom’s would-be competitors was therefore significantly delayed. Later entrants suffer yet further disadvantage because those MNOs launching earlier have greater ownership of the business subscriber segment. The likelihood of these long-standing subscribers to churn is

limited by the ‘switching costs’ that are the subject of market- and competition-based studies".[5]

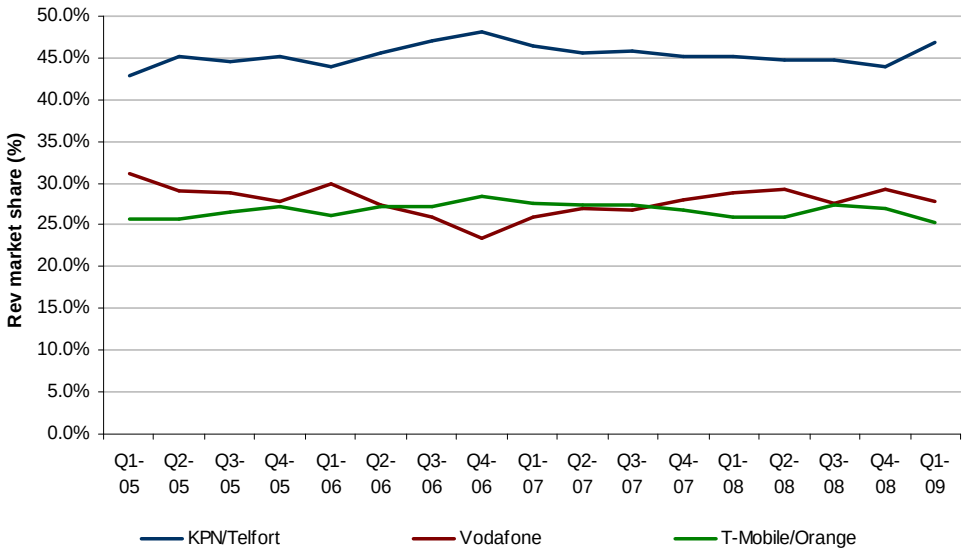
30. Yet another paper entitled "The 'curse of the later entrants': the case of the European mobile markets" states categorically that "Analyses of mobile markets in Europe show a major gap between operators' performances, and more precisely between first entrants and later entrants".[6]

31. The current Dutch mobile market situation provides clear evidence of the impact of exogenous factors creating significant cost differences between the Dutch operators. A key driver of scale economies is an operator’s number of call minutes. In 2009, KPN had a 48.9% share of minutes, compared with a 29.4% share for Vodafone and a 21.7% share for TMNL. Moreover, KPN’s share of minutes has been rising while TMNL has been falling. The substantially greater scale of KPN’s mobile arm can be expected to translate into much lower unit costs as a result of KPN’s ability to realize greater scale economies. Figure 1 (below) also shows that KPN receives almost twice as much revenue as TMNL. KPN also enjoys substantially higher revenues than Vodafone.

[5] BAKOM: Stand des Schweizer Telekommunikationsmarktes im internationalen Vergleich - Zusammenfassung (An international comparison of the state of the Swiss telecoms market - summary), February 2003, paragraph 47, page 16: "*Im Zusammenhang mit der GSM Lizenzvergabe in der Schweiz ist aus wettbewerbspolitischer Sicht vor allem problematisch, dass der Mobilfunkmarkt im internationalen Vergleich so spät liberalisiert wurde und der Markteintritt der Wettberber von Swisscom mit großer Verzögerung stattgefunden hat ... Weitere Nachteile entstehen später lizenzierten Mobilfunknetzbetreibern dadurch, dass früher gestartete Netzbetreiber über den größeren teil der Geschäftskunden verfügen. Die Wechselbereitschaft dieser Altkunden wird durch die in der Markt- und Wettbewerbsanalyse erläuterten Wechselkosten eingeschränkt*".

[6] Benzoni (2007, page 1).

Figure 1: Revenue market share in the Netherlands, Q1-2005 to Q1-2009



Source: Merrill Lynch, European Wireless Matrix Q2 2009, Table 38.

32. It should also be noted that the impact of the exogenous cost differences on the Dutch operators is highly likely to continue going forward. KPN's current scale and other advantages (see the next section) provide it with enduring benefits to maintain and even grow its market share. This is confirmed by independent forecasts for market shares for the Dutch operators. Merrill Lynch expects KPN to be able to grow their market share at the expense of TMNL.[7]

<u>KPN's advantages from being part of the Dutch fixed incumbent's group</u>

33. In addition to TMNL suffering from a relatively low market share, KPN is likely to enjoy significant cost advantages from its relatively high market share. KPN's extremely high market share (which is much higher than even Vodafone's share despite their similar entry dates) is likely to reflect certain key advantages gained from KPN being part of the Dutch fixed incumbent's group.

[7] Merrill Lynch, European Wireless Matrix Q2 2009 (based on forecasts to 2012).

34. KPN can be expected to enjoy significant advantages which ultimately derive from KPN's earlier statutory monopoly in fixed services. These advantages include KPN's very large fixed traffic volumes which means that any cost that can be spread across fixed and mobile volumes can be predominantly recovered from fixed services with the contribution required from mobile services being very limited. Such costs include the use of shared distribution channels as well as shared network costs such as for transmission (in turn reflecting the widespread geographic reach of KPN's network developed over its long monopoly). KPN is also able to bundle fixed and mobile services and other telecommunication services and cross subsidise the mobile services through another (fixed) service. It is noteworthy that in the vast majority of mobile markets across Europe, the incumbent operator's mobile subsidiaries are the market leaders even when they have entered in a similar timeframe as, or later than, other operators.[8]

35. A court judgement overturning the Belgian regulator's decision on mobile termination regulation is relevant. A judgement by the Brussels Commercial Court decided to annul the regulator's decision because the regulator had failed to take into account the cost advantages that the Belgian fixed incumbent's mobile subsidiary gained from being part of the incumbent's group. In particular, the Court stated:

> "Here, the Belgacom group [the Belgian fixed incumbent] is likely to provide to Proximus [the incumbent's mobile operator subsidiary] technical and commercial deployment facilities which are not enjoyed by its competitors...Proximus has also benefited from Belgacom's facilities for the deployment of its GSM network … [its] retailer and distribution network, which was already strongly established...The fact that Base and Mobistar [the Claimants] belong to international groups of companies…does

[8] The fixed incumbent's mobile subsidiary was the market leader in 22 of 27 EU member states in the first quarter of 2010. In some of the other member states (such as the UK), the fixed incumbent was not in the mobile market.

not have any consequence on Proximus' privileged position on the Belgian market, and contrary to Belgacom, these international groups of companies have no business in Belgium... It is specifically the backing of an incumbent on the national market that constitutes a significant competitive advantage."[9]

36. The study "The Determinants of Market Share for Mobile Telecommunications Operators" investigates among other factors whether there is a significant advantage to being the incumbent operator –which in the European context- is almost identical to being the former state monopolist providing fixed telephony services. The study finds that these advantages are substantial and explain on average an additional 10% market share, independent of the fact that typically the state monopolist has also been longer on the market.

37. The empirical evidence shows that KPN's extremely high market share (and hence lower unit costs) is highly likely to reflect the impact of it belonging to the former statutory fixed monopoly. OPTA can best promote the interests of Dutch consumers by ensuring that they, rather than KPN, are able to gain the benefit of this exogenous cost factor by requiring KPN to pass-through its lower costs to lower termination charges.

38. One could entertain a philosophical discussion whether late entry and the fixed incumbent effect are really outside the control of TMNL. Going back in history one could try to see whether at some point in time TMNL could have been in the position to enter at an earlier moment (for example by trying to convince the Dutch government to auction the GSM licenses earlier or by lobbying with the government to get the 900 MHz license Vodafone obtained for free in the mid nineties of the previous century). One could also argue that it was always an option

[9] Brussels Commercial Court, 29 May 2007, Base/Mobistar vs. Belgacom Mobile (Proximus), from page 39 point J.

for TMNL to buy out KPN and to benefit from its market position. In this way one could question what is exogenous and what not.

39. Such a discussion is, however, pointless for the following two reasons. First, if this position is taken then any difference between operators disappears and there is no need to treat different operators differently at any point in time. As OPTA, and all other regulators, have taken differences between incumbents and entrants and large and small operators in different markets seriously, this position is not tenable. Second, this position would seriously reduce the value of licences for newcomers to the market, including those GSM licenses auctioned in 1998 (by which TMNL entered the market) and one could seriously argue that it is not in the interest of any newcomer to enter the market under such a regulatory point of view. It was also the case then when the licences were auctioned, a single bidder could only buy one licence and it is highly doubtful that the Dutch Government would have allowed the licences to be re-assigned to a single operator immediately after the auction.

40. For the current discussion on the mobile termination regulation in 2010, it is appropriate to take the different date on which the different operators have entered the market, including the conditions under which they received a licence at that time, as given (or exogeneous) and ask the question whether differences in market share that we see today are able to be traced back to these exogeneous factors. On the basis of empirical, advanced econometric studies that were mentioned before, we conclude that the current market positions of the Dutch operators show the significant persisting impact of these exogenous cost differences.

The enduring impact of uneven initial spectrum differences

41. In its submissions to OPTA, TMNL identified several sources of cost differences arising from the initial spectrum assignments in the Netherlands. These differences include:

- TMNL was the only Dutch operator that did not have 900 MHz frequencies when rolling out its network (OPTA has previously recognised that the absence of 900 MHz spectrum creates significant cost and commercial disadvantages for an operator);

- TMNL consequently incurred years of higher costs that it still needs to recover;

- TMNL's inferior spectrum constrained its ability to compete and grow its customer base;

- Even today, TMNL has a network grid designed for its initial 1800 MHz spectrum which creates ongoing higher costs for TMNL compared with the other operators with their network optimised for 900 MHz spectrum; and

- KPN and Vodafone initially acquired 900 MHz spectrum for free, whereas the three operators entering the market through an auction in 1998, including TMNL and Orange, had to participate in a government organized auction competition, forcing them to pay considerable sums of money. Up to today, TMNL has the interest payments over this sum of money in its books.

42. In its decision on termination rates, OPTA has rejected taking into account the cost differences arising from the history by which spectrum was assigned in the Netherlands. OPTA's decision is based on the argument that KPN and Vodafone have subsequently paid an amount for spectrum which OPTA considers to offset TMNL's spectrum-related

cost disadvantages. In this Section, we consider the merits of OPTA's argument.

43. In 2006, an attempt was made to equalize this severe inequality between operators. To see how much KPN and Vodafone had to pay the Dutch Ministry of Economic Affairs asked SEO Amsterdam to estimate how much KPN and Vodafone had to pay for these licenses in case the licenses were sold in a competitive process like an auction were this auction to be held in 2007. The result of this exercise (see SEO, 2006) was an estimated amount between € 46 mln and € 155 mln (in 2007-euros) as a once-and-for all compensation for a block of 10 MHz with a duration of 15 years. These amounts correspond with a yearly nominal compensation from 2010 to 2024 of € 7,03 mln or € 23,86 mln, respectively.

44. As no real auction was held, SEO had to make a considerable number of assumptions concerning future demand and cost related to these licences. Even though one could question the validity of these assumptions, our point here is not so much the detailed assumptions that form the basis of the SEO exercise. We rather argue that the SEO exercise is an answer to an irrelevant question and that this answer cannot form the basis for the position of OPTA that now that KPN and Vodafone have made some payment for the 900 and 1800 spectrum, the inequality arising from the initial spectrum assignments has disappeared.

45. The basis of the SEO exercise is that if an auction for the 900 and 1800 spectrum of KPN and Vodafone were held in 2007, then these two operators only had to outbid a party that wanted to enter in the market in 2007. The other two active MNO operators in the market in 2007, TMNL and Orange, still had enough spectrum according to SEO and would not be interested in acquiring additional spectrum. The estimated amount between € 46 mln and € 155 mln therefore estimates the maximum value an entrant to the market in 2007 would be willing to

pay for this spectrum as in a competitive process like an auction KPN and Vodafone only had to outbid an entrant to the market.

46. We will argue here that the compensation KPN and Vodafone have paid is far from sufficient to compensate for the cost TMNL has incurred to obtain the 1800 MHz spectrum in 1998. Therefore, there remains an exogenous cost difference between KPN and Vodafone on one hand and TMNL on the other hand concerning the price paid for spectrum.

47. The highly theoretical approach adopted by the Dutch government of assessing the value of spectrum by hypothetically simulating the outcome of an auction if it were held in 2007 ignores the reality that the Dutch spectrum licences were only available under the allocation processes of the Dutch government and that the conditions under which the spectrum licences were held in 1998 were very different from those if an auction were held in 2007.

48. The main differences and their impact on spectrum valuation can be easily understood. At the time, in 1998, the market was very concentrated with just two incumbent operators. Moreover, the market for mobile telephony was at its infancy with a market penetration roughly at 40%. In contrast, at the time of the SEO study, market penetration was at 100% or more and there were four active MNO operators, together with several MVNOs.

49. Due to presence of switching cost it is much easier to enter the market when the penetration rate is still low (see, also Bijwaard et al. 2008). In 2007 the only way an entrant could gain market share was by making consumers switch away from an incumbent operator. Instead, in 1999 there were still 60% of the Dutch population without mobile phones. As current users are only willing to switch operators if the price/quality that is offered by an entrant is sufficiently below that of their current operator and as entrants typically cannot offer an optimal quality in the

first years of their operation due to the fact that the network is not yet fully developed, new entrants in 2007 would not be able to make significant profits, if at all.

50. An identical argument applies to the impact of a concentrated market. Bijwaard et al. (2008) show that if an entrant has to enter in a mobile telephony market that is already highly competitive, it cannot be expected to gain significant market shares. As the Dutch market has been very competitive since the three operators entered in 1998, and it was not nearly so competitive in 2007, it is no wonder that a potential entrant in the market in 2007 would not be willing to pay as much as it would be willing to pay in 1998.

51. The beauty of the study of Bijwaard et al. (2008) is again that one can compute the expected long-term market share of a potential entrant in the Dutch mobile telephony market when it enters at the time when market penetration is at 100%, the concentration index HHI is at 35% (roughly what it was in 2007) and there were four active MNOs. The model predicts that a normal entrant entering in such market conditions, could expect to get a market share of 1.5%, which is seven times smaller than the market share entrants in the 1999 could be expected to obtain in the long run.

52. It is therefore not surprising that the SEO study comes to such a low level of compensation. They have estimated what an entrant would be willing to pay if it entered the market in 2007, whereas the real question should be what KPN and Vodafone had to pay if they would have to outbid entrants in the market in 1998. The annual payments TMNL still makes for the GSM spectrum it acquired at that time, are a much better approximation of the compensation KPN and Vodafone have to pay than the number that comes out of the SEO exercise. OPTA therefore should take this cost difference into account in its new regulation.

Policy implications

53. We have argued that where exogenous cost differences exist, the objectives of the European Access Directive can best be met by varying the levels of termination charges between operators by the extent of the exogenous cost differences. Operators that face higher costs because of factors outside their control need to be able to earn revenues to cover their costs as otherwise they would not be able to earn a reasonable rate of return with the longer term risk of weakening their ability to compete.

54. We have examined theoretical arguments together with market evidence which together shows strong evidence that:

- TMNL has suffered and continues to suffer significantly lower market share and higher unit costs as a result of its relatively late licensing by the Dutch Government and its initial spectrum assignment;

- KPN enjoys an extremely high market share and significantly lower unit costs as a result of its relatively early licensing, its connection with the Dutch fixed incumbent and its favourable initial spectrum assignment; and

- Vodafone is a middle position having benefitted from early licensing and a favourable initial spectrum assignment but not having access to the benefits of belonging to the Dutch fixed incumbent's group.

55. The evidence of the continuing impact of significant exogenous cost differences calls for the termination charges of each of the Dutch operators to be set at the level of each operator's efficient costs. To instead impose a uniform 'average' charge level as proposed by OPTA would risk TMNL being unable to recover its costs (harming its ability to invest and compete) while also allowing KPN to recover charges in

excess of its costs (implying unnecessary high prices for Dutch callers and at the same time distorting competition between the operators in favour of KPN).

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