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Session III: Triple/Quadruple Play in Telecoms

Background Note by Portugal

13-14 Septembre 2011, Bogotá (Colombia)

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Session III: Triple/Quadruple Play

Background Note by Portugal *

1. Introduction

1. In recent years, the telecommunications sector has undergone a process of fast technological change that allowed the emergence of bundles of services, namely of triple-play, which include fixed telephony, fixed broadband access to the internet, and subscription television.

2. In addition, there was also a change in consumers' behavior, which have shown a growing interest in buying these services jointly from one supplier, instead of buying them separately from different suppliers. As a consequence, triple-play offers are starting to have a substantial weight in the telecommunications sector.

3. These changes have brought about a new paradigm to the industry. Most of the competition between firms now involves bundles of services. Competition authorities and sectoral regulators have started to take steps to address the issues raised by the new circumstances.

4. This article intends to be a selective introduction to the more relevant policy issues raised by these bundles of telecommunication services, rather than a detailed and comprehensive survey about these issues.

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5. Triple-play bundles raise several challenges for the definition of relevant product markets in the telecommunications industry. However, these issues can be overcome by a careful product definition. After this is done, the standard methodology of the small but significant price increase test can be applied.

6. Bundling may be used for various economic reasons. Some of these involve the pursuit of quality improvements or cost reductions, while others involve attempts to limit or foreclose competition. In addition, often, a given bundling strategy may simultaneously involve these positive and negative effects on welfare. Hence, an evaluation of the welfare impact of a given bundling strategy requires a detailed knowledge of the facts of the market, and requires balancing these opposing effects.

7. Perhaps as a reflection of the rising awareness of these complications, there seems to be a movement from a *per se* illegality approach towards a rule of reason approach in the evaluation of bundling and tying practices, particularly in the US. In any case, bundling and tying continue to be very controversial issues.

8. Supplying triple-play products requires two important production factors: **(i)** wholesale fixed telecommunication network services, and **(ii)** television content. In some circumstances markets for these wholesale services may emerge naturally. If policy makers consider that these wholesale markets are natural monopolies, where competition is unlikely or even undesirable, and that promoting entry in the retail market is beneficial, the simultaneous imposition of open access obligations in these wholesale markets might be called for.

9. In many countries, one or even both of these types of open access obligations are already in place. In this sense, triple-play bundles do not seem to be associated with any new market failure requiring particular attention from competition authorities and sectoral regulators. The novelty posed by triple-play bundles is the possible simultaneous imposition of these two types of open access obligations, when necessary. As technological progress unfolds, access to wholesale mobile telecommunication network services might have to be subject to a similar evaluation.

10. The remainder of this paper is organized as follows. Section 2 introduces some basic concepts. Section 3 describes the rising importance of triple-play bundles. Section 4 explains how to conduct market delineation in the presence of bundles. Section 5 overviews some of the reasons for firms to engage in bundling. Section 6 discusses the implications of bundling for competition policy. Finally, section 7 discusses the implications of bundling for sectoral regulation. Sections 2, 4 and 5 have a more theoretical or methodological nature and are intended to introduce some of the basic concepts that are used in sections 3, 6 and 7, which have a more applied nature.

11. The main points of this paper are:

- With technological progress, bundles will assume an increasing importance in the telecommunications sector. It is likely that in the near future more complex bundles than the current triple-play products may emerge, including also mobile services, such as telephony or broadband.
- The currently available techniques of market delineation can be extended to bundles, with an appropriate product definition.
- By themselves, bundling strategies are neither pro-competitive nor anticompetitive; their welfare impact depends on the context. Furthermore, a bundling strategy may simultaneously have positive and negative effects.

- The evaluation of the welfare impact of a bundling strategy should be done case-by-case, on the basis of a detailed knowledge of the facts of the market and the balance of its potential positive and negative effects.
- Supplying triple-play products requires two important production factors: **(i)** wholesale fixed telecommunication network services, and **(ii)** television content. If policy makers consider that these wholesale markets are natural monopolies, and that promoting entry in the retail market is beneficial, the simultaneous imposition of open access obligations in these markets might be required.

2. Basic Concepts

12. Next we introduce some basic concepts, such as those of: **(i)** a bundle, **(ii)** a tie, and **(iii)** a multi-play bundle in telecommunications.

2.1 *Bundle*

13. A *bundle* consists of a set of two or more products sold together. The products may be offered only as a bundle, or may also be offered separately. If the individual products are available separately, the set of products is offered at a discount relative to the prices of the individual products.¹

14. A bundle is *pure* if the products are only sold together, i.e., the products are not available for individual purchase. A bundle is *mixed* if the products are sold jointly, in addition to being sold individually.

15. In the case of telecommunications bundles there has also been a discussion on whether a set of products being sold through a single invoice, or the existence of a specific tariff plan for the bundle, are requirements for it to qualify as a bundle.

2.2 *Tie*

16. A *tie* consists of the requirement that the purchase of a product involves also the purchase of another product. E.g., to buy product *A* one must also buy product *B*, while one can buy product *B* without buying product *A*. The *tying product* is the good that the buyer wants to purchase. The *tied product* is the good that the buyer is required to purchase to get the product the buyer actually wants.² In the example above, product *A* is the tying product, and product *B* is the tied product.

2.3 *N-Play Bundles of Telecommunications Services*

17. A *double-play bundle* is a product that includes two of the following basic services: **(i)** subscription television, **(ii)** fixed telephony, and **(iii)** fixed broadband access to the internet. From now on we will refer to “broadband access to the internet” services simply as “broadband” services.

¹ If the price of the set of products sold jointly equals the sum of the individual prices of the two products, then this is not classified as a bundle.

² A tie is *positive* if the buyer of a product is required to also purchase a different product from the same supplier. A tie is *negative* if the buyer is required to at least not purchase the tied product from any other supplier.

18. Some cable television firms only sell broadband services to consumers that also buy subscription television services, i.e., they tie the purchase of broadband services to the purchase of subscription television services. Some fixed telecommunication firms offer fixed telephony and broadband services separately and in a bundle, i.e., they practice mixed bundling. Normally, mobile telecommunication firms offer mobile voice and SMS services only in a bundle, i.e., they practice pure bundling.

19. A *triple-play bundle* is a product that includes the three basic services: (i) subscription television, (ii) fixed telephony, and (iii) fixed broadband.

20. There is currently no universally accepted definition of a *quadruple-play bundle*. Some of the commonly used definitions include: triple-play plus mobile telephony, triple-play plus mobile broadband access to the internet, or triple-play plus video-on-demand.

21. As technology evolves even larger bundles of telecommunication services may emerge. Depending on the nature of the additional services, these other bundles may either raise similar or new challenges than those raised by triple-play products.

2.4 Other Useful Concepts

22. Consumer valuations for products *A* and *B* are *positively correlated* if a consumer that likes *A* is also likely to value *B*. Hence, a consumer is likely to either buy both *A* and *B*, or buy neither. Consumer valuations for products *A* and *B* are *negatively correlated* if a consumer that likes *A* is also likely to dislike *B*. Hence, a consumer is likely to either buy *A* or buy *B*, but not both. Consumer valuations for products *A* and *B* are *uncorrelated* if a consumer's valuation for *A* is unrelated to its valuation of *B*.

23. Products *A* and *B* are *substitutes*, if an increase in the price of product *B* increases the demand for product *A*. Products *A* and *B* are *complements*, if an increase in the price of product *B* decreases the demand for product *A*. Products *A* and *B* are *independent*, if an increase in the price of product *B* does not affect the demand for product *A*.

3. Relevance of Triple-play Bundles

24. Next we give some evidence of the rising importance of triple-play bundles in the telecommunications industry.³

25. Initially, bundles of telecommunication services included related services, such as local telephony and long distance telephony. Lately, bundle offers of telecommunication services include, also, seemingly unrelated services, such as fixed telephony, broadband, subscription television, and mobile services. This tendency started with the digitalization of telecommunication networks and is being reinforced with the current shift towards an all internet protocol (IP) environment, which enables firms to provide a variety of retail services over a single platform. E.g., fixed telephony is now provided mainly via IP networks. This implies that firms selling fixed telephony services increasingly face incentives to bundle this service with broadband services, and potentially other services.

26. Moreover, an increasing number of mobile telecommunication firms started offering mobile and fixed broadband services, as well as fixed telephony, since they have much of the required infrastructure. These firms are well-placed to offer bundles that add mobile telephony and broadband services to the existing dual- and triple play offers.

³ See OECD (2011) for a large survey of bundle offers across OECD countries.

27. Table 1 illustrates the increasing importance of bundle offers in the telecommunications sector. For instance, in Europe, the penetration rate by households of this type of offers grew from less than 20% in 2005 to more than the double in 2009, i.e., in 2009, 2 in every 5 households bought a bundle of telecommunication services.

Table 1: Penetration of bundle offers in EU27 as a percentage of households

	2009	2007	2005
TV+FT+MT+BB	1.5	1	1
Total quadruple-play	1.5	1	1
TV+FT+MT	0.5	0	0
TV+FT+ BB	8	4	2
TV+MT+ BB	0.5	0	0
FT+MT+ BB	2	2	1
Total triple-play	11	6	3
TV+FT	2.5	3	3
TV+MT	1	1	1
TV+ BB	4	3	2
FT+MT	1	1	1
FT+ BB	15	13	6
MT+ BB	2	1	1
Total double-play	25.5	22	14
Total	38	29	18

TV: Television subscription; FT: Fixed telephony, MT: Mobile telephony, BB: Broadband services

Source: European Commission (2006, 2008, 2010)

28. Regarding the relative importance of the different types of bundles, double-play bundles of fixed telephony and broadband services are the most common, with a 15% penetration rate. However, the penetration rate of triple-play bundles has quadrupled in the last 4 years and, in 2009, 8% of the households bought this product. As an additional sign of the growing importance of bundles in the industry, in 2009, 57% of broadband services in Europe were bought in a bundle. Similarly, 47% of subscription television services and 42% fixed telephony services were also bought in bundles.

29. Due to this trend, regulators and competition authorities are become increasingly concerned about the implications of these bundling strategies.⁴ The issue of whether triple-play bundles are a relevant product market, in the sense of competition policy, has been raised in several proceedings. This issue will be discussed in more detail in section 4. In addition, some sectoral regulators in Europe now require that firms with significant market power (SMP) subject their bundle offers to prior approval.⁵ In the US, there have been several intense regulatory battles over triple-play services. For instance, cable television firms want to have the right to compete with telecommunications firms for local fixed voice services, but want to stop these firms from competing with them for subscription television services. Similarly, telecommunication incumbents want to have the right to compete with cable television firms for subscription television services, but want to stop cable firms from competing for fixed voice service services.⁶

⁴ In its annual report, BEREC (2010a), BEREC recognizes that issues related with bundled offers constitute one of the emerging challenges for the telecommunications industry.

⁵ *Significant market power* is a concept introduced by the European Commission and corresponds to the ability of a firm to act independently of competitors and customers. See Official Journal of the European Communities, 2002/C 165/03.

⁶ Regulators in some States have been allowing local telecommunication operators to block Time Warner Cable from offering local phone service. On the other hand, the Federal Communications Commission (FCC)

4. Market Delineation

30. Next we discuss the challenges posed by triple-play bundles to product market definition in the telecommunications industry, and argue that the “small but significant and non-transitory increase in prices” (SSNIP) test, or the hypothetical monopolist test, can be extended to these bundles if products are carefully defined.

31. Given the increasing importance of triple-play bundles, the issue of whether triple-play products constitute a relevant product market has been raised in various competition policy and regulatory proceedings. More specifically, the issue is whether these new products should be analyzed within the context of the already defined markets for single products, or within new markets, specifically defined for these new products. In spite of the recent increase of popularity of these new products, bundles and single products of telecommunications are likely to co-exist in the foreseeable future.

32. The definition of the relevant product market and the analysis of market power, are typically a fundamental component of regulatory and competition analysis. Often, to determine whether a firm’s conduct is anticompetitive, it is necessary to establish first that the firm has, or could obtain, significant market power.⁷ The notion of market power, in turn, is defined in reference to a particular relevant market.

33. The relevant market, in the sense of competition policy, is the smallest set of products with respect to which a hypothetical monopolist can raise prices or sustain high prices.⁸ Alternatively, a relevant product market is the smallest set of products for which a hypothetical monopolist has market power.

34. For abuse of dominance cases, market definition helps to determine whether a firm has enough market power to engage in anticompetitive behavior, and whether that behavior increases or maintains its market power. For merger cases, market definition helps to identify the firms that could constrain possible price increases by the merging parties, and thereby helps to determine whether the merging parties will increase their market power.

35. The common practice in the US and EU is to regulate only wholesale markets, when necessary, and leave retail markets unregulated. However, when regulating a wholesale market, the analysis by regulators is always made with reference to the associated retail market, since the demand for wholesale services is derived from the demand for retail services that require them as production factors.

36. Both economic analysis and case law indicate the SSNIP test as the appropriate method to delineate markets.⁹

limited the powers of municipalities and states over telecommunication operators that want to compete with cable TV operators.

⁷ *Market power* is the ability to raise prices above marginal cost. Note that ‘market power’ is an economic concept whereas ‘significant market power’ is a legal concept.

⁸ A product is defined by the list of its attributes, including physical characteristics and the place and date where it is available. See Debreu (1959), pg. 32. Hence, although from a legal perspective product market and the geographic market are different concepts, with a careful product specification, these markets can be defined using the same procedure.

⁹ See Werden (1993) for a description of the SSNIP test and how to implement it. See also European Commission (1997), and the 2010 Merger Guidelines of the U.S. Department of Justice. For examples of the implementation of the SSNIP test see Adams, Brevoort, and Kiser (2007), Björnerstedt and Verboven (2009), Brenkers and Verboven (2006), Capps, Dranove, and Satterthwaite (2003), Davis (2006), Ivaldi and Lörincz (2009), and Van Reenen (2004).

37. When applied to a set of simple products, say *A*, *B* and *C*, the SSNIP test involves determining the substitutability between these products. This can be done by estimating a demand system for these products, from which one can glean the own- and cross-prices elasticities of demand. With bundles, say *A-B*, *A-C*, and *B-C*, the complexity of the problem increases. Now one was to determine the substitutability between: **(i)** simple products: *A*, *B* and *C*; **(ii)** bundles: *A-B*, *A-C*, and *B-C*; and **(iii)** bundles and simple products; *A-B* versus *A* and *B*, etc.

38. Pereira et al. (2011a, 2011b) show that solving the problem of determining the substitutability between these different types of products amounts to estimating the demand for bundles and isolated products in a consistent way. The first step involves a careful product definition.¹⁰ Once this is done, the demand estimation can be framed in the standard discrete choice framework. Afterwards the SSNIP test can be applied in the usual way. Whether or not triple-play products are a relevant product market will depend on the facts of the case under analysis.

39. Two comments are in order. The first comment is that a product market may consist of a set of products of the same nature, or of a set of products of different nature. As an example of the former case, the product market may consist of the subset of the triple-play products available. This would occur if consumers view those products are sufficiently substitutable among themselves, but sufficiently differentiated from the remaining triple-play products available. As an example of the latter case, the product market may consist of triple-play products plus double-play and even single products. This would occur if consumers view some triple-play products as substitutes of some double-play products, or as substitutes of some combinations of double-play plus single products. The second comment is that the substitutability between different types of products, say triple-play and double-play products may be highly asymmetric.¹¹ This implies that one type of products may exert a strong competitive pressure over another type of products, while the opposite may not be true. For example, consumers may be willing to switch from a double-play product to a triple-play product for a small decrease in the price of triple-play products, but will only switch from a triple-play product to a double-play product for a large decrease in the price of double-play products. The same applies if one considers the substitution between triple-play products and combinations of double-play plus single products.

5. Reasons to Bundle

40. Bundling is used for many economic reasons. Some of them are legitimate and even promote social welfare, while others may raise antitrust or regulatory concerns. More specifically, depending on the context, a given bundling strategy may be pursued to attain quality improvements or cost reductions, or to limit or foreclose competition.

41. Next, we provide an illustrative, rather than exhaustive list of motives to bundle.¹² We separate the motives to bundle into two groups: **(i)** non-strategic reasons and **(ii)** strategic reasons. The reason for this terminology will be explained below.

¹⁰ Pereira et al. (2011a) perform a SSNIP test for triple-play using consumer level invoice based data, and Pereira et al. (2011b) perform a SSNIP test for triple-play using aggregate level public data.

¹¹ I.e., the cross-price elasticities of demand may be highly asymmetric.

¹² See, e.g., O'Donoghue and Padilla (2006) and Nalebuff (2003a, 2003b) for comprehensive surveys on bundling and tying.

5.1 *Non-Strategic Reasons*

42. Non-strategic reasons typically involve creating, or taking advantage of, some type of efficiency, and may be present even in the absence of any competitive interaction with rivals. Hence, even a monopolist would be willing to bundle for these reasons.

5.1.1 *Quality Improvement and Cost Reduction*

43. A firm can increase its profit by reducing costs and increasing quality.

44. If the quality of bundle *A-B* is larger, or perceived by consumers as being larger, than the sum of the qualities of products *A* and *B* when offered separately, then a firm has incentives to offer the bundle *A-B*.

45. For example, buying several telecommunication services in a bundle instead of separately, possibly from different firms, or at least from different departments of the same firm, involves the convenience of receiving only one invoice, having to call only one consumer call center in case of repairs, etc.¹³

46. There are *economies of bundling* between products *A* and *B*, if the cost of selling them jointly in a bundle *A-B* is smaller than the sum of the costs of selling products *A* and *B* separately. Clearly, the existence of economies of bundling gives firms incentives to offer the bundle *A-B*. Economies of bundling are most profitable if consumer valuations are positively correlated.

47. In the telecommunications industry, economies of bundling may emerge for several reasons, which typically involve avoiding the duplication of resources. Some examples follow. Marketing a bundle of fixed telephony and broadband services may be cheaper than marketing these two products separately. Billing a bundle of these services may be cheaper than billing these two services separately. Finally, having a customer service line for a bundle of these services may be cheaper than having two separate customer lines for each service.¹⁴

48. The concept of economies of bundling is related, but different, from the concept of economies of scope.¹⁵ Benefiting from economies of scope does not require bundling, unless the economies associated with joint production refer specifically to retailing or related activities, such as marketing or billing.

49. The increase in quality enabled by bundling can lead to an increase in demand, by either attracting new consumers to the market, or by causing existing consumers to buy more. Similarly, cost reductions enabled by bundling may lead to price reductions and thereby to an increase in the quantity demanded. In either case, the increase in production may, in turn, enable scale and scope economies. However, these additional efficiencies associated to scale and scope economies follow directly from the increase in production, and are only indirectly related to bundling.

¹³ Another example from the software industry is a software suite, like Microsoft Office, which bundles together Word, Excel, PowerPoint, Outlook, etc, allowing the coordination of the interfaces and the commands, thereby improving functionality and simplicity.

¹⁴ Another straightforward example is that it is cheaper to sell set of software programs on a single CD than to sell each of the individual program in separate CDs.

¹⁵ There are *economies of scope* in the production of products *A* and *B* if the cost of producing *A* and *B* jointly is smaller than the sum of the costs of producing *A* and *B* separately.

5.1.2 Price Discrimination

50. If consumers have different valuations for a good, a monopolist would prefer to charge different consumers different prices, according to their valuation, instead of charging all consumers the same price.¹⁶ In other words, if consumers have different valuations for a good, a monopolist would like to price discriminate.¹⁷

51. Price discrimination requires that the firm: **(i)** has information about the consumers' individual valuations, and **(ii)** can prevent arbitrage.¹⁸ Hence, price discrimination might be hard to put to practice. However, if the monopolist sells two or more goods, bundling can have an effect similar to price discrimination.

52. A firm benefits from price discrimination when consumers have a heterogeneous valuation for a good. If the firm sells two or more goods, say *A* and *B*, and if the consumers' valuations for these goods are negatively correlated, then the consumers' valuation for the bundle *A-B* is less heterogeneous than the valuation of either *A* or *B*. In turn, if all consumers have about the same valuation for bundle *A-B*, charging only one price will involve neither the loss of sales to low valuation consumers, nor the loss of a large share of the surplus of high valuation consumers. Hence, by reducing customer heterogeneity, bundling makes price discrimination less necessary. Bundling works as a price-discrimination device, in the sense that it enables a firm to capture a greater share of consumer surplus, while charging a single price.

53. Bundling as a price discrimination tool works best when consumers' valuations for the bundled goods are negatively correlated. Interestingly, however, bundling still works if the consumers' valuations are independent.¹⁹ The gain from bundling disappears with perfect positive correlation of the consumers' valuations.

5.1.3 Elimination of Double Marginalization

54. It is sometimes argued that bundling can be used to eliminate double-marginalization. Consider two monopolists of perfect complements, products *A* and *B*, e.g., computer software and hardware. Since the products are perfect complements, a decrease in the price of one of them, say product *B*, will increase not only the demand of *B* but also the demand of *A*. Since the monopolists maximize their individual profits, neither of them takes into account the impact of its pricing decision on the other's profit. If the

¹⁶ If the firm charges a low price it sells both to consumers with a high and a low valuation for the good, but at the sacrifice of not extracting as much consumer surplus from consumers with a high valuation as possible. If the firm charges a high price it extracts a larger surplus from consumers with a high valuation for the good, but at the sacrifice of not selling to consumers with a low valuation for the good. Price discrimination, i.e., charging a low price to consumers with a low valuation and a high price to consumers with a high valuation, helps the firm capture a larger share of consumer surplus.

¹⁷ For the analysis of bundling by a multi-product monopolist with the purpose price-discrimination see, e.g., Adams and Yellen (1976), Bakos and Brynjolfsson (2000), McAfee, McMillan, and Whinston (1989), Schmalensee (1982, 1984) and Stigler (1968).

¹⁸ **Arbitrage** consists on buying the product in a market where the price is low and re-selling it in a market where the price is high. Hence, arbitrage is a strategy intended to take advantage of prices differences between markets.

¹⁹ See McAfee, McMillan and Whinston (1989). For any two goods *A* and *B* whose valuations are independent, a monopolist can increase its profits by offering an *A-B* bundle at a discount relative to the optimal monopoly prices of *A* and *B*. The reason is that the bundle discount expands demand more than a single discount. This result depends on: **(i)** the products not being perfectly positively correlated, **(ii)** the firm being a monopolist for both products, and **(iii)** marginal costs being zero.

monopolists merged they would maximize joint profits, and therefore take into account the interaction between their pricing decisions and set lower prices, which would generate a higher joint profit. However, taking into account the interaction between the pricing decisions of the two products does not require bundling. It is enough that the firms merge.

55. It is true that if the products were weakly complementary, i.e., the products were complementary but not always purchased or used together, the joint monopolist would prefer to discount the price only to customers who were purchasing both products. Such a strategy could be pursued through bundling. This means that bundling would be nevertheless useful. However, the incentives to bundle in this context have to do with price discrimination, and not with avoiding double marginalization.

5.2 *Strategic Reasons*

56. Strategic reasons involve attempts to gain or maintain an advantage over a rival. Hence, they will only be pursued in an oligopolistic context.

5.2.1 *The Leverage and One Profit Doctrines*

57. There is an old, ongoing debate on whether bundling and tying can be used to extend market power across markets. One side, known as the Leverage Doctrine, holds that a firm with market power in one market can use bundling to extend market power to another market where it has no market power. Another side, known as the One-Profit Doctrine, and associated with the Chicago school, holds the opposite view. If a firm has monopoly or market power on a product it can earn all its rents on that product. “There is only one monopoly profit to be earned”.²⁰

58. Suppose that: (i) the valuations for products *A* and *B* are uncorrelated, (ii) there are no bundling economies, (iii) the market for product *A* is a monopoly, and (iv) the market for product *B* is perfectly competitive. Denote the monopoly price of *A* by p_A , the competitive price of *B* by p_B , and the price for the bundle *A-B* by p_{AB} . We will show, by contradiction, that a monopolist cannot increase its profits by engaging in pure bundling. Suppose not, i.e., suppose that the monopolist of product *A* could increase its profits by engaging in pure bundling, i.e., by offering bundle *A-B* but not product *A*. Consumers would only buy the bundle if they value *A* more than its incremental cost, i.e., value *A* more than more than $p_{AB} - p_B$. Hence, to sell the bundle the monopolist of product *A* would have to set a price for the bundle no higher than the monopoly price of *A* plus the competitive price of *B*, i.e., would have to set $p_{AB} \leq p_A + p_B$. But then the monopolist would be better off by selling the two products separately at prices p_A and p_B , which contradicts the assumption that the monopolist could increase its profits by engaging in pure bundling.

59. The One-Profit Doctrine is correct under the stated assumptions. However, these assumptions have been criticized for being very restrictive. In particular, the assumption that the market for product *B* is competitive may be questionable. Quite often, the market to which the monopolist wants to extend its market power is oligopolistic. Next we discuss some cases where the failure of this assumption may allow the monopolist of product *A* to use bundling to foreclose entry or to mitigate competition.²¹

²⁰ See Bork (1978), Director and Levi (1956) and Schmalensee (1982).

²¹ The One-Profit Doctrine may also fail in dynamic contexts where bundling allows changing consumer preferences or production costs. See Kaplow (1985).

5.2.2 *Create an Entry Barrier*

60. A firm with market power in several products can offer them as a bundle to make entry more difficult for rivals in individual markets.²²

61. Consider a firm that sells an *A-B* bundle but does not sell product *A* and *B* individually.²³ If an entrant comes into the market with an *A* product, then it is limited to selling its product only to consumers who value *A*, but who do not value *B*. Consumers who value *A* and also value *B* will prefer to buy the bundle. Consumers who do not value *A*, but are unwilling to give up *B* must also buy the bundle.

62. If consumers' valuations for products *A* and *B* are positively correlated, there will be few of these consumers who value product *A* and are willing to forgo product *B*.²⁴ With independent valuations, bundling is still an effective entry deterrent. However, if consumers' valuations are perfectly negatively correlated, bundling loses its effectiveness. If consumers either buy one of the goods or the other, but not both, the markets for *A* and *B* consist of different groups of consumers. Hence, a one-product entrant has everything its consumers want.

63. To be sure, the advantage of the incumbent comes from the exclusive supply of product *A*, not from the bundling itself. The real entry barrier is the entrant's inability to duplicate the incumbent's bundle. What bundling does is to allow the incumbent to defend its products against one-product entrants, even if they are very competitive, without having to lower the price of either of its products. It remains possible for an entrant to compete by offering a rival bundle.

64. In the same vein, bundling can also be used as a commitment device to fight entry. Consider a firm that offers products *A* and *B*, with respect to which it has market power. If the firm commits to only sell *A* and *B* together, through bundle *A-B*, then the survival of the firm may depend on eliminating competition for either product. This makes the firm's threat to fight any attempt of entry in either of the markets credible.²⁵

5.2.3 *Mitigate Competition*

65. If entry occurs, bundling can mitigate the impact of competition on an incumbent.

66. When a rival enters the market, some of its customers are captured from the incumbent, but others are consumers who were previously out of the market. The entrant with product *A* appeals to those consumers who value product *A* but not product *B*, and their desire for *A* was not so strong to justify buying the bundle. This group of customers is attracted to the single product firm and yet does not cause the incumbent any loss in demand. The incumbent loses some customers, namely those who value *A*, but not *B*, and their desire for *A* was strong enough to lead them to buy the bundle. Now they can just buy good

²² In this context the starting point is market power in both *A* and *B* and not just in *A*. Thus, bundling is used to protect market power against entry rather than to extend it to another market.

²³ This argument is further developed in Nalebuff (2000a), where it is extended to include mixed bundling.

²⁴ E.g., Airline tickets provide an example of where bundling seems to be used as an entry barrier. Here the bundle is the round trip. There are two economic reasons for their bundling strategy. The first is that it facilitates price discrimination, and the second is that it facilitates entry deterrence.

²⁵ This argument is developed further in Whinston (1990).

A. But the fact that the entrant only competes for a limited group of customers reduces the scope of competition.²⁶

67. In section 5.2.2 bundling was used as a competitive tool that rivals cannot match. Now, it is used to facilitate implicit coordination by dividing up the market for product A.

68. Bundling may also be used as a way of two competing firms better differentiating themselves, by having one firm selling the bundle A-B and the other selling the individual service.²⁷

5.2.4 Other Reasons

69. Bundling can also be used for various other strategic reasons related to price obfuscation, search costs, and switching costs. We will discuss them briefly in turn.

70. Bundling can be used to help a firm obfuscate its pricing decisions. This may occur if the bundle and the individual components are priced in a way that makes it hard for consumers to understand the relationship between the price of the bundle and the price of each component. However, the disconnection between the price of the individual components and the price of the bundle may occur for legitimate reasons, if, e.g., bundling involves large synergies.

71. Regarding search costs, and somehow related with the previous issue, introducing a bundle means introducing an additional product in the market, and increasing the price inquiries and comparisons a consumer needs to make. Altogether this could mean increasing search cost.²⁸ However, for consumers that already decided to purchase both goods having to inquire about the price of only one product, the bundle, instead of the prices of the various separate products that constitute the bundle, means reducing search costs. This implies that the impact of the introduction of bundles in search costs is potentially ambiguous, and has to be evaluated on a case-by-case basis.

72. Similarly, the impact in switching costs of the introduction of bundles is potentially ambiguous. On the one hand, a customer of a bundle will, probably, not be very sensitive to reductions in the prices of the individual products, since switching of provider for one of the products implies changing the contract for the provision of the remaining products. On the other hand, a customer of a bundle will probably be more sensitive to reductions in the prices of other bundles than a customer of individual products bought from separate suppliers.

²⁶ See Nalebuff (2000).

²⁷ See Carbajo, De Meza, and Seidman (1990) and Chen (1997). In Carbajo et. al., one company sells both A and B, while the rival firm only sells B. If the two goods are sold separately, then the profits in B are competed away and, thus, the first firm simply earns the monopoly profits on A. If, in contrast, the first firm only sells A and B as a bundle, then it can go after the high-value customers and leave the rival firm to pick up the low-value customers who go un-served. Chen's model achieves a similar result through different means. Two companies can each produce products A and B. The two firms are duopolists in the A market, but the B market is competitive. Instead of both firms selling A (and competing away all profits), one sells just A and the other sells just an A-B bundle. In essence, the two firms commit to dividing up the A market. Firm 1 gets the A customers who do not care for B, while firm 2 takes the A customers who also like B.

²⁸ Introducing bundles does not, by itself, increase the marginal cost of searching. It does, however, increase the type of goods consumers have to inquire about.

6. Welfare Impact of Bundling and Policy Implications

73. Bundling may be used for various economic reasons with both positive and negative effects on social welfare. Hence, an evaluation of the impact on social welfare of a given bundling strategy requires a detailed knowledge of the facts of the market, and balancing these opposing effects. The rising awareness of these complications seems to be shifting the evaluation of bundling and tying practices from a *per se* illegality approach towards a rule of reason approach, at least in the US.

74. Next, we weight the impact on social welfare of some of the motives for bundling and discuss some policy implications.²⁹

6.1 Impact of Non-Strategic Reasons

75. When bundling is used to attain quality improvements or cost reductions, the impact on social welfare tends to be positive. Quality improvements increase consumer surplus and may also increase firms' profits, if they are also associated with higher prices. Cost reductions increase profits and may also increase consumer surplus, if they are associated with lower prices. This is particularly true when the share of distribution costs on the total production costs is high.

76. When bundling is used for price discrimination, the impact on social welfare is potentially ambiguous. Price discrimination by a monopolist increases firms' profits at the expense of consumer surplus. The overall impact on social welfare depends on which of these two effects is stronger. If demand is rigid and marginal production costs low, the overall impact on social welfare of price discrimination by a monopolist is likely to be positive.³⁰ If the industry is an oligopoly, price discrimination is likely to have a negative impact on profits, and a positive impact on consumer surplus.³¹ This will occur if firms compete aggressively by offering bundle discounts.

6.2 Impact of Strategic Reasons

77. When bundling is used for strategic reasons the impact on social welfare may be negative. Suppose that a firm engages in bundling with the objective of creating entry barriers or mitigating competition. In the absence of any quality improvements or cost reductions, this will have a negative effect on social welfare. The reason is that fewer or weaker rivals in the market will ultimately lead to higher prices, and may also lead to lower product variety.

78. However, if there are also quality improvements or cost reductions associated with bundling, the impact on social welfare is potentially ambiguous.

6.3 Overall Impact

79. An overall assessment of the impact of bundling is complicated for at least two reasons. First, depending on the context, a given bundling strategy may be pursued to attain efficiencies, or to reduce competition. Hence, depending on the context, a given bundling strategy may have a positive or a negative impact on social welfare. Second, a given bundling strategy may simultaneously generate efficiencies and

²⁹ See also OECD (2008) for a related discussion.

³⁰ See Adams and Yellen (1976) for comparisons of the effects of bundling on social welfare under different market scenarios.

³¹ This is more likely in markets characterized by high fixed costs and low marginal costs.

reduce competition. Hence, a given bundling strategy may simultaneously have a positive and negative impact on social welfare.

80. Altogether this suggests that a correct evaluation of the impact on social welfare of a given bundling strategy requires a detailed knowledge of the facts of the market, and should be done on a case-by-case basis.

6.4 Policy Implications

81. The position of competition authorities towards bundling and tying has changed over the years. In the past bundling and tying were typically treated as *per se* illegal. Hence, in the absence of evidently recognizable and bundle specific cost-savings, competition authorities prohibited bundling.³² More recently there seems to be a movement away from a *per se* illegality approach towards a rule of reason approach, particularly in the US, where bundling strategies are analyzed on the basis of the evidence about potential precompetitive and anticompetitive effects of the case.³³ This approach implies that competition authorities conduct a balance between harm and benefits for every pricing decision by firms, which is an extremely complex exercise, and not always easy of understand by courts. In any case, bundling and tying continue to be very controversial issues.

82. A discussion paper of the European Commission proposes an approach that consists of comparing the implied price of each component of the bundle with its cost. This amounts to conducting an implicit predatory price test, and corresponds to checking if the price charged for each component is so low as to prevent equally efficient competitors from offering a competitive alternative.³⁴

83. Lately, the prevailing approach in the US has been to treat bundling as *per se* legal, unless the price of the bundle is below the total cost. When that happens, a general predatory pricing test should be conducted to evaluate the bundling practice.

84. Regarding remedies, when bundling is considered welfare detrimental, in addition to prohibiting the practice, competition authorities have imposed that the firm charges prices such that the sum of the prices of each individual component of the bundle is no higher than the price of the bundle.³⁵ This is equivalent to limiting the bundle discount that firms can offer.

7. Regulation

85. Next we discuss some implications of triple-play bundles for sectoral regulation.

7.1 Is there a New Market Failure?

86. Supplying triple-play products requires two important production factors: (i) wholesale fixed telecommunication network services, and (ii) television content. Firms can have access to these production

³² This approach was adopted by the European Commission in some “abuse of dominance” cases, for instance, in Coca-Cola undertakings in 2005 or in Tetra Pak II.

³³ This approach has been used, for instance, in the US case “LePage vs. 3M” or in the European Commission case “GE/Amersham”.

³⁴ This approach has been followed, for instance, by the Office of Fair Trading in a case regarding the wholesale supply of TV channels carrying sport events (BSkyB case).

³⁵ Or to the price of the bundle added by a small established percentage.

factors by either integrating themselves vertically, or by using the wholesale services of other vertically integrated firms.

87. In some circumstances markets for these wholesale services may emerge naturally. This is, e.g., the case when the wholesale market is an oligopoly.³⁶ However, in some circumstances the wholesale market is a monopoly, or even when it is an oligopoly, vertically integrated firms may have a conflict of interests with respect to giving access to their wholesale services to retail rivals.

88. Whenever policy makers consider that **(i)** these wholesale markets are natural monopolies, where competition is unlikely or even undesirable, and that **(ii)** promoting entry in the retail market is beneficial, the usual remedy is to impose open access obligations in these wholesale markets.³⁷

89. Vertical disintegration is another remedy. However, it is very controversial and seldom applied, with the notable exception of the divestiture of AT&T in 1984.

90. Firms that own and operate fixed telecommunications networks are usually subject to open access obligations. In addition, in some countries producers and wholesalers of content are also subject to some open access obligations. Hence, open access obligations with respect to these wholesale services are not new. In some countries, one, or even both of these types of open access obligations are already in place. The novelty posed by triple-play bundles is the possible simultaneous imposition of these two types of open access obligations.

91. To be sure, the simultaneous imposition of these two types of open access obligation, when they are not already in place, should be preceded by a careful evaluation of their social desirability. Policy makers should determine clearly whether wholesale markets for fixed telecommunication services and television content are natural monopolies, and promoting entry in the retail market is beneficial. The analysis of the latter issue relates to the relative social desirability of infrastructure- and service-based competition. These are fundamental and very controversial issues, whose thorough discussion is beyond the scope of this background note.³⁸

92. To sum up, triple-play bundles do not seem to be associated with any new market failure requiring particular attention from competition authorities and sectoral regulators. The novelty posed by triple-play bundles is the simultaneous imposition, when necessary, of open access obligations for: **(i)** wholesale fixed telecommunication network services, and **(ii)** television content.

7.2 Access to Broadband and Fixed Voice Wholesale Services

93. Firms that own and operate telecommunications networks are usually subject to open access obligations. This normally means giving access to retail market entrants to the wholesale services required

³⁶ Brito and Pereira (2010, 2009, 2007) and Ordober and Shaffer (2006) for a discussion of the conditions under which vertically integrated oligopolist owners of bottleneck inputs would be willing to give access to its bottleneck input to retail entrants.

³⁷ An industry is a *natural monopoly* if the demand curve intersects the average cost curve at a point where average costs are decreasing, i.e., at a point where there are economies of scale. A straightforward implication of this is that the cost of producing a given level of output, over the relevant demand range, is minimized if production is concentrated on a single firm. See, e.g., OECD (1996) for a discussion of the related legal concept of essential facility.

³⁸ We refer the reader to De Bijl and Peitz (2003).

for the supply of broadband and fixed voice retail services. This is particularly true in Europe.³⁹ Typically, firms that own and operate cable television networks are not subject to such obligations.

94. The price to these wholesale services, usually referred to as access price, is generally regulated, being set according to either: **(i)** a cost-plus rule, or **(ii)** a retail-minus rule. In the former case, the access price equals the marginal cost of the wholesale service plus a mark-up, intended to allow a fair return on investment.⁴⁰ In the latter case, the access price equals the price of incumbent's retail service minus the retail costs that the incumbent avoids by not serving the customer itself.⁴¹ Under the retail-minus rule, a retail entrant can only compete if it is at least as efficient as the vertically integrated incumbent, i.e., if its retail costs are no higher than the vertically integrated incumbent's avoided retail costs.

95. Computing the appropriate retail margin in the presence of bundles poses some problems. First, some of the wholesale services may be regulated, while others are not. E.g., fixed broadband wholesale services are typically regulated, while wholesale television services typically are not. This issue makes it hard to determine the avoidable and non-avoidable costs of an efficient firm. Second, the provision of a bundle may involve cost efficiencies, which should be accounted for.

96. If the bundle discount is only explained by efficiencies at the retail level, no adjustment is necessary in the access price, since the retail entrant ought to be able to replicate them. If the bundle discount is explained by wholesale efficiencies these should feed into the access price determined by the retail-minus rule. Otherwise, the access prices may be too high for a retail entrant to be able to replicate profitably the bundle, allowing the vertically integrated incumbent to leverage its power on the less competitive wholesale market to the more competitive retail markets.

97. This adjustment in the access price must be equal to the wholesale efficiencies achieved with the bundle offer, which correspond to the bundle discount minus the retail efficiencies, corrected by the eventual profits the vertically integrated firm makes in the other services within the bundle. This implies that, if the bundle includes regulated wholesale services and unregulated wholesale services not available to competitors, then revenue and cost information about the non-available services should be removed from the margin calculation to ensure that the costs of the regulated products are recovered.⁴²

7.3 Access to Television Content

98. In the EU, producers and wholesalers of content are not subject to any open access obligations.⁴³ This contrasts sharply with the situation in the US.⁴⁴ Regarding the cable industry, reference can be made to 1992 Cable Television Consumer Protection and Competition Act, which contained several measures

³⁹ These wholesale services include, e.g., unbundled access to the local loop and bitstream access.

⁴⁰ In this context the marginal cost is approximated by either the long-run incremental cost or the backward-looking incremental cost.

⁴¹ The *retail-minus rule*, also known as the *efficient component pricing rule* (ECPR), was proposed by Willig (1979).

⁴² See BEREC (2010b) for a more detailed account of these issues.

⁴³ The cable television industry consists of a three-stage chain of production. The manufacturing stage is occupied by the movie studios and others who create original television programming. The wholesale stage is represented by the cable networks, which acquire the right to air programs and aggregate them into program packages. Integration between the manufacturing and wholesale stage is quite common in the cable television industry. The retail stage of the cable industry consists of local cable operators, who connect individual homes and transmit the television programming into those homes.

⁴⁴ See Yoo (2002).

designed to limit the negative effects of vertical integration in the cable industry, namely those related with ownership limits and structural restrictions. For instance, the channel occupancy provision authorized the Federal Communications Commission, the US telecommunications sectoral regulator, to limit the number of channels that cable operators could dedicate to networks with which they are vertically integrated. Moreover, it comprised must-carry provisions, which requires cable operators to provide free carriage to all full-power stations broadcasting within the operator's service area; a leased access provision, which requires cable systems with more than 35 channels to leave part of their channel capacity for use by unaffiliated programmers; and program access provisions, which prohibit vertically integrated programmers from refusing to deal with unaffiliated operators and from discriminating against them in the terms and conditions of providing programming.

99. There are a few studies for the cable industry about the effects of vertical integration on the content available, e.g., Chipty (2001), Crandall (1990), Klein (1989) and Waterman and Weiss (1996). Chipty (2001) found evidence that vertical integration had both competitive and anti-competitive effects. On the one hand, vertical integration leads to some degree of market foreclosure, as premium operators and certain basic operators are less likely to carry rival content services. On the other hand, there seems to be substantial efficiency gains from vertical integration. Consumers are better off in integrated markets than in un-integrated markets.

100. Related to the issue of access to content, there is an ongoing debate in the US on whether subscription television retailers should be allowed to bundle content freely, namely channels, or whether unbundling should be mandated and content be made available to consumers on an "à-la-carte" basis. There are no definite results on this issue yet, but the latest evidence seems to suggest that, overall, consumers and firms benefit from bundling.⁴⁵

7.4 Access to Mobile Wholesale Services

101. As technological progress unfolds, it is likely that bundles with more than three services may be offered. In fact, there are already available bundles that add mobile telephony and mobile broadband to the current triple-play services.

102. For these quadruple- or quintuple-play products to develop, firms will need to have access to the right to use the radio-electric spectrum. Since spectrum is a scarce resource, it is regulated and its usage is restricted to a small number of licensed firms. This naturally limits the number of firms that can offer mobile services or bundles that include such services.

103. There are at least three ways of overcoming spectrum limitations. The first approach consists on freeing up spectrum for commercial use. The spectrum freed by the switchover to digital terrestrial television will provide an opportunity to increase the number of licensed firms. The spectrum band destined for free WiFi access also provides an opportunity for new firms to enter the market in the near future.

104. The second way to overcome spectrum limitations is through the creation of a market for wholesale mobile services. This would allow firms offering telecommunications bundles to use the spare spectrum of firms already licensed. Such a market could emerge either through the creation of open access obligations with respect to mobile networks or through voluntary agreements between the parties. See the discussion in section 7.1 and the references in footnote 33. In most countries there are currently no mobile

⁴⁵ See, e.g., Crawford (2008), Crawford and Yurukoglu (2009), Yurukoglu (2008), Renhoff and Serfes (2008a, 2008b).

access regulatory obligations.⁴⁶ Nevertheless, agreements among the parties for the supply of these services are quite common.

105. The third way to overcome the spectrum limitations is through the creation of secondary market for spectrum. Although the technology required for these markets to operate is already available, such markets are still on the drawing board.

7.5 Retail Bundling Regulation

106. Nowadays in most countries only wholesale markets are regulated. However, in the EU, sectoral regulators are becoming increasingly concerned with the potential anticompetitive effects of bundling strategies, and started imposing that firms with SMP, which are typically vertically integrated incumbents, subject their bundle offers to prior approval.⁴⁷

107. During the evaluation process the bundle offers are subject to an imputation test by the regulators to determine if a retail entrant, as efficient as the vertically integrated incumbent, is able to replicate the bundle using regulated inputs, i.e., if it is able to offer the retail service without incurring in losses.

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⁴⁶ The European Commission Recommendation of 2007 (Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services) excluded mobile access wholesale services as one of the markets susceptible of ex-ante regulation. The European Commission justified its position with the argument that the degree of competition generally observed in this market at the retail level indicated that ex ante regulatory intervention at the wholesale level was not warranted. See also OECD (2007).

⁴⁷ See BEREC (2010b).

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