Unilateral Conduct Workbook
Chapter 6: Tying and Bundling

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ICN Unilateral Conduct Workbook

I. Introduction

1. Definitions of "tying" and "bundling" in competition law may vary slightly across jurisdictions, and section II provides the definitions used for the purposes of the workbook chapter. Both practices entail selling two (or more) separate products under conditions that deny customers a choice of supplier for one of the products[1].

2. This chapter concerns the use of tying as a potentially exclusionary practice subject to competition laws prohibiting abuse of dominance or monopolization. Tying is condemned as an exclusionary practice by such laws only under the following cumulative conditions: (i) the tying firm is dominant in the tying product market; (ii) the firm uses its power in the tying product market to deny customers a choice of supplier for the tied product; (iii) the tying involves two separate products; and (iv) the tying has actual or likely anticompetitive effects and is not justified. These conditions are explained further in section III.

3. Determining whether things purportedly tied together are separate products, as opposed to parts of one single product, is a threshold inquiry in the antitrust analysis of tying. Section IV.A presents the most common approaches to this determination.

4. For an arrangement to be considered tying, customers of the tying product must be denied the choice of suppliers for the tied product. The means by which a dominant firm can impose and enforce a tie are explained in section IV.C.

5. The market effects of tying depend on the particular facts and circumstances of a given market. Under certain conditions, tying may be anticompetitive. But tying practices may also be neutral for market

[1] When used in this chapter, the term "product" includes services as well as physical products.

competition or procompetitive. Any efficiency or procompetitive rationale for tying should be considered, preferably from an early stage of an investigation.

6. The "leveraging theory," which relates to the possibility of extending a monopoly in one market into a related second market, is the origin of the antitrust concern about tying, and the theory has great importance for the assessment of tying in many jurisdictions. However, advances in economic theory, and specifically the "single monopoly profit theory," show that under certain circumstances there is no gain to the tying firm from leveraging its dominance into the tied product market. Tying in such instances is expected to be competitively neutral or, for instance if the tie lowers costs, even procompetitive. In some well-defined circumstances, however, the single monopoly profit result does not hold. The leveraging theory and the single monopoly profit theory are discussed in section V.A.

7. Anticompetitive foreclosure is the main anticompetitive concern with tying. Anticompetitive foreclosure occurs when the effective market access of actual or potential competitors is hampered or eliminated to an extent that competition is appreciably impaired. Depending on market characteristics, a dominant firm might find it profitable to foreclose competition in the tied product market. Such foreclosure can also protect dominance in the tying market by forestalling entry or expansion in the tying product market. Various factors agencies may explore when assessing the likelihood of foreclosure are discussed in section V.C.

8. The motivation for tying could be to price discriminate, rather than to foreclose competitors and extend market power into the tied market. Price discrimination as an incentive for tying is explored further in section V.D. By allowing firms to price discriminate, tying may have direct exploitative effects; however, this chapter deals only with tying

as exclusionary conduct and provides no guidance on whether or when exploitative effects are a basis for condemning tying.

9. The undertaking concerned may provide justifications and defenses for tying. In many jurisdictions, tying is not an infringement if the party imposing the tie can justify it or show that efficiencies outweigh the anticompetitive effects of the conduct. Section VI explains different efficiencies and justifications that may arise with tying arrangements, as well as factors agencies should consider when assessing such claims.

10. Selling two or more things only together is a common business practice that can have procompetitive, neutral, or anticompetitive effects. Even tying practiced by a dominant firm requires a detailed, fact-based assessment to determine likely competitive effects.

II. Definitions

11. Because the terms "tying" and "bundling" are both used in the literature and jurisprudence of various jurisdictions, this section provides definitions for these terms for clarity and consistency. It should be emphasized that some jurisdictions may prescribe specific legal definitions of tying and bundling that may not be the same as the definitions used in this section.

A. Tying

12. In this chapter, the term "tying" refers to a practice whereby the seller of product A (the "tying" product) requires some or all purchasers of A also to purchase a separate product B (the "tied" product). While purchasers of A must also buy B, B may be offered by the seller separately.

13. A hypothetical example would be a seller of photocopier machines requiring that purchasers of the machines also buy toner for those

machines from the same seller. In this case the photocopier is product A, the tying product, and the toner is product B, the tied product. The same toner may be sold by the seller separately for use with other photocopiers, but those who buy the photocopier from the seller are obligated also to obtain the toner for that photocopier from the seller.

14. This chapter uses the term "tying" only to describe practices meeting the legal criteria that there are two separate products and that customers are denied the choice of supplier for the tied product. These criteria are set out in section III. Usage of the term outside the context of competition law might differ. Tying as defined by competition law is not necessarily anticompetitive.

B. Bundling

(i) Pure Bundling

15. The term "pure bundling" describes a practice whereby a supplier of a product supplies that product only in a bundle with one or more other products and thus will not supply the components of the bundle on a stand-alone basis.

16. An example of a pure bundle would be the sale of the printed version of a journal together with the online version, where neither the printed nor the online version is available for purchase separately from the seller.

17. As is apparent from the foregoing, a distinction between tying and pure bundling is that in a tie, product B might be sold separately by the tying firm. That said, as these terms are defined in this section there is no meaningful analytical distinction between "tying" and "pure bundling." With both, the customer, to get or use product A, must also purchase product B as well. As a result, no further distinction between tying and pure bundling will be made in this chapter.

(ii) Mixed Bundling

18. The term “mixed bundling,” for the purposes of this chapter, has a different meaning than “tying” or “pure bundling.” In the case of mixed bundling, separate products are sold both as part of a package and separately, however, the price is lower, or the terms and conditions are otherwise more favorable, if the components are purchased as a bundle.

19. Mixed bundling is within the scope of this chapter only when the difference between the price of the bundle and the price of its components if purchased separately is so large that, for all practical purposes, the practice is indistinguishable from tying or pure bundling. Between that extreme of the spectrum and the situation of only a modest discount for purchasing the bundle, the potential impact of mixed bundling may vary considerably.

III. Legal Framework for Assessing Tying

A. Legal Basis

20. Three types of competition laws can be used to address tying: (i) laws prohibiting abuse of dominance or monopolization, (ii) laws prohibiting anticompetitive agreements, and (iii) laws either prohibiting “tying” specifically or prohibiting defined categories of conditioned selling. Although much of tying analysis is the same under laws of all three types, this chapter considers only the application of laws prohibiting abuse of dominance or monopolization.

21. Laws prohibiting abuse of dominance or monopolization apply only to firms possessing substantial market power or, equivalently, firms that are dominant. When these laws are applied to tying, it is the tying product market over which the firm must be dominant. Power in the tying product market may enable the firm to force or coerce customers to purchase the tied product as well as the tying product.

22. Tying may be condemned on the basis of the exclusionary effects it may have. Even when no exclusionary effects are present, tying may have direct exploitative effects, for instance by allowing the dominant firm to price discriminate. As used in this chapter, however, the terms "competitive harm" and "anticompetitive effects" refer only to exclusionary effects and do not include any exploitative effects that tying might have. This chapter offers no advice on whether or when exploitative effects are a basis for condemning tying.

23. Tying by a dominant firm infringes laws prohibiting abuse of dominance or monopolization if the tying likely or actually has an appreciable anticompetitive effect and is not justified.

24. Tying is condemned mainly on the basis of anticompetitive effects in the tied product market. Tying also can constitute an infringement on the basis of anticompetitive effects in the tying product market. Jurisdictions may differ as to what sort of anticompetitive effect in either market is necessary for an infringement.

B. Evaluative Criteria

25. When presented with conduct that might constitute unlawful tying, a competition agency should seek to understand the conduct's rationale and impact with a view to determining whether the conduct appreciably harms the competitive process in some relevant market. In formulating potential theories of competitive harm, academic literature and prior cases are very useful. While agencies should not necessarily be limited to theories set out in academic literature or prior cases, they should be cautious when proceeding on a novel theory of competitive harm.

26. Theories of competitive harm for tying all begin with foreclosing sales opportunities in the tied product market. There is no plausible theory of exclusionary competitive harm for tying that does not entail

foreclosure of rivals' actual or potential sales opportunities. Whether tying forecloses sales opportunities is a factual matter that sometimes demands a detailed assessment. For instance, if a dominant manufacturer requires its retailers to carry its full product line, an agency must closely examine both the impact of the tie on the distribution of rivals' substitute products through the affected retailers and the extent to which the rivals' other distribution outlets negate any impact at the affected retailers. The agency could find that rivals' sales opportunities are not foreclosed because the other distribution outlets are entirely satisfactory in reaching customers or because the affected retailers continue to carry the rivals' products.

27. While considering theories of competitive harm, an agency should consider the dominant firm's rationale for the tying. When the efficiency or procompetitive rationale for selling products together is strong, competition law may not treat the practice as tying for reasons discussed in paragraphs 30-32 and section IV.A.

28. While considering theories of competitive harm, an agency also should consider whether the dominant firm's rivals are engaging in similar conduct. When tying particular products together has a legitimate rationale, it is likely to be practiced by other significant, but not necessarily large, competitors. Healthy competition among "systems" of closely related products can exist, with each competitor offering customers a system consisting of several separate products used together.

29. This section sets out evaluative criteria for use in developing a theory of harm. The subsequent sections of the chapter discuss the criteria in more detail. The issues described below need not be addressed in the order presented. An agency should conduct its investigation in a way that efficiently determines whether the potentially unlawful tying constitutes an infringement.

The Separate-Products Requirement

30. Selling two or more things only together is very common, and many instances of the practice are not treated as tying under competition law on the basis that the things sold together actually are not separate products. For example, it appears that no jurisdiction takes the view that tying occurs when shoes are sold only in pairs or when automobiles are sold with wheels and tires. The rationale is that, as a matter of competition law, a pair of shoes is a single product, as is an automobile complete with wheels and tires.

31. As discussed in section IV, several different tests are applied by agencies and courts to determine whether products are separate. A widely used test asks whether there is substantial independent demand for the tied product, that is, demand from customers who are buying the tying product from the dominant firm but who would prefer to buy the tied product from another supplier. Another test examines efficiencies arising from the tying. A third test, which can be sufficient in scenarios like selling shoes in pairs, asks whether the conduct is a well-established practice.

32. Determining whether two products are separate in a tying case is different from defining the relevant market. Standard approaches to defining relevant markets determine whether substitutes are sufficiently close that they should be placed in the same relevant market, but the rationale in a tying case for concluding that two things are not separate products is not that they are close substitutes; indeed, tying cases nearly always involve complements. Applying conventional market delineation criteria, the tied and tying products typically would be found to be separate relevant markets. Shoes and laces may be in distinct relevant markets even though shoes with laces are treated as a single product in a tying case.

The Forcing or Coercion Requirement

33. Competition law treats the sale of two separate products as tying when, at least as a practical matter, a supplier of the tying product denies customers a choice of supplier for the tied product. The words "forcing" and "coercion" are sometimes used to describe this essential feature of tying, and this chapter uses those words interchangeably. There is no forcing when all, or nearly all, customers prefer to obtain the two separate products from the same supplier.

34. When a single transaction is involved, forcing exists if: (i) a seller enforces a policy of selling the tying product only to customers that simultaneously purchase the tied product, (ii) separate products are physically integrated together, or (iii) two products are offered for sale both separately and in a bundle discounted enough that practically no customer could be expected to purchase just the tying product.

35. When a durable product and a consumable complement are involved, forcing exists if: (i) the seller enforces a policy of selling under contracts specifying that customer must purchase all (or most) of the consumable complement from the tying seller, (ii) separate products are designed so that the tying product can be used only with the tied product of the same supplier, or (iii) customers failing to purchase the tied product from the seller of the tying product face a punishment that practically no customer can be expected to accept willingly.

36. Means by which a dominant firm can force a tie are discussed further in section IV.

Market Definition and Market Power

37. An agency cannot condemn tying under laws prohibiting abuse of dominance or monopolization without first determining that the tying firm is dominant. However, an agency investigating a tying allegation might conclude that there has been no infringement without ever

considering market power either on the basis that separate products are not involved or that forcing is not present.

38. Market definition and the assessment of market power are not considered in detail in this chapter because market power and assessing dominance are discussed extensively in Chapter 3 of this Workbook: Assessment of Dominance.

Anticompetitive Effects, Procompetitive Justifications, and Defenses

39. Most jurisdictions treat tying as an abuse of dominance or monopolization only when it is shown to have an actual or likely anticompetitive effect. The assessment of competitive effects is discussed in detail in section V below.

40. As a result of the separate-products requirement, much of the efficient and procompetitive conduct that could possibly be treated as tying is not treated that way under competition law. Moreover, conduct that is treated as tying under competition law can be justified, and agencies should consider justifications and defenses put forward before finding an infringement. Justifications and defenses are discussed in detail in section VI below.

IV. Characteristics of Tying

A. Separate-Products Requirement

41. As explained in section III, the existence of separate tying and tied products is a threshold matter in a tying case. This can be a difficult and contentious inquiry because decisions can rest on everything from operational characteristics to commercial custom and history.

42. Jurisdictions may differ in how they approach the assessment of whether separate products exist. Most agencies consider demand for the tying and tied products. Agencies may also consider whether selling the products together furthers efficiencies. They may also

consider whether there is a widespread practice to sell the products together, and firms' product design decisions.

(i) Customer demand

43. The primary means by which most jurisdictions assess whether separate products exist is through the analysis of demand for the products.

44. The question of whether the products should be regarded as separate is affected by whether there is sufficient demand for the tied product for it to be efficiently offered separately. Agencies use a number of factors to determine the sufficiency of demand.

45. The analysis of whether "sufficient demand" exists for there to be a finding of separate products often begins by considering the number of customers that likely would purchase the tied product from a supplier other than the dominant firm, were they given a choice of doing so. A finding of separate products is proper if the number of buyers that likely would purchase the tied product from a supplier other than the dominant firm is large enough to make the stand-alone supply of the tied product (that is, without also supplying the tying product) a viable business. When the tied product has uses other than with the tying product, that can affect the viability of stand-alone supply of the tied product, but the existence of demand in those distinct uses is not directly relevant to the sufficient demand test for separate products.

46. Some agencies also take indirect evidence of demand into account. The existence of firms supplying the constituent components separately may suggest that there is sufficient separate demand. By contrast, evidence that firms without market power bundle the components may provide indirect evidence of insufficient separate demand, especially where the bundling practice is widespread.

47. In assessing demand, agencies should consider whether customer behavior may already have been altered by existing tying practices, which should be taken into account in the analysis of demand.

(ii) *Efficiencies*

48. In addition to demand, some jurisdictions also consider efficiencies in deciding whether two separate products exist. Sometimes a direct enquiry is made into the efficiencies of producing or distributing the tying and tied products together.

49. Where customers demand a combined product, and it is also more efficient to produce a combined product, the outcome of the analysis of both demand and efficiencies may overlap.

50. Where a new product contains bundled components, there may initially be no separate demand for the constituent components in a new product. Over time, separate demand may emerge for the tied component. The outcome of the analysis of demand and efficiencies may diverge as demand emerges for the constituent components. In deciding whether separate products exist, agencies should consider both the emergent demand for the components contained within the new product, and the efficiencies associated with the combined product.

(iii) Well-established practices

51. In some jurisdictions, agencies may determine that two products are not separate when selling them together is a well-established practice on the basis that it may indicate that it is an efficient way to satisfy customer demand. However, even long-standing practices could potentially be anticompetitive, despite their persistence, and the fact that a selling practice is well-established by a dominant company alone may not be a useful indicator that two products are not separate.

52. Agencies must also consider whether changes in circumstances undermine inferences from past practice. Products long separate could cease to be separate, and vice versa, with changes in technology or tastes. In addition, allegations of tying can arise with new products for which there are no established sales practices.

(iv) Product design decisions

53. Jurisdictions differ on whether, and under what circumstances, a firm's product design decision can constitute tying, and there is little experience in applying the separate-products requirement to product design. Efficiently combining the functions of several separate products in a new product that caters to customer demand should not be viewed as tying. On the other hand merely bolting two plainly separate products together certainly is tying, as is creating technical incompatibilities that serve no purpose other than to force customers to purchase complementary products from the same seller.

54. In sum, in deciding whether separate products exist, agencies should take a context-sensitive approach to efficiencies, demand, as well as other factors.

B. Single and Multiple Transactions

55. Tying can involve either a single transaction or multiple transactions between the supplier and the purchaser(s) of the tying and tied products.

56. With bundling and some ties, the practice is complete in a single transaction between the seller and the purchaser in which the purchaser pays one price for both products.

57. Multiple transaction ties, on the other hand, involve a continuing relationship between the seller and the purchaser. In other words, tying occurs when a firm requires customers to purchase follow-on products

from that firm. Such ties often involve a durable product (e.g. a printer) and a complementary product (e.g. toner) or service (e.g. repair).

58. These complementary, or follow-on, products are typically available on a stand-alone basis. Purchasers of durable goods may be obliged to purchase follow-on products or services from the same supplier. If so, those purchasers will be forced to enter into multiple transactions with the supplier during the life of the durable product.

59. There are two key characteristics of such multiple transaction ties. They generally arise in circumstances where (i) the relationship between the tying and the tied product is complementary, as where the two products are used together, and (ii) the tied product is supplied in variable proportions depending on the buyers' demand. More intensive users of the tying product will purchase more units of the tied product, and thus selling the tied product at an above-market price may represent a form of price discrimination that favors lower-volume purchasers over higher-volume purchasers.

C. Means of Implementing a Tie

60. As discussed in section III, competition law treats the sale of two separate products as tying only when customers of the tying product are denied the choice of supplier for the tied product. There are many ways for a supplier to create and enforce a tie. It may be enforced through explicit contractual terms, technical specifications, or sales practices conditioning the supply of the tying product on the customer's purchase of tied products from a particular supplier.

(i) Contractual tying

61. A seller can implement a tie through contractual conditions. For example, a dominant supplier of photocopying machines might contractually oblige a customer to buy only the dominant firm's toner for use in the machine.

(ii) Technical/Technological tying

62. Alternatively, the seller can employ a technical/technological tie where the tying and the tied product are physically integrated or designed in such a way that the products only work together. For example, a dominant supplier of photocopiers might technically tie consumables by designing the photocopier to work only with its toner cartridges.

(iii) Policy or practice

63. Tying may also be implemented through a policy or practice of a dominant actor that is not implemented through contractual conditions. A dominant company may have a unilateral policy that (i) makes its sale of one product or service conditional upon the purchase of another (tying), or (ii) effectively forces customers to buy only a bundle consisting of two or more products (pure or mixed bundling). The latter may be accomplished by pricing the bundle far below the sum of the separate prices set for the components or by offering clearly inferior commercial terms for the standalone sale.

64. For example, a customer may choose to purchase the tied product to avoid a unilateral refusal to supply the tying product, or a refusal to honor guarantees if competing tied-market products are used. In these circumstances the refusal should amount to more than simply an inducement to purchase the tied product, and customers failing to purchase the tied product must face a punishment that practically no customer would accept.

65. A tie may also arise in cases stopping short of expressly conditioning the purchase of the tying product on the purchase of the tied product. Suppliers may effectively force customers to buy the tied product by applying a sufficiently large discount to a bundle to make the purchase of the separate products uneconomic. In such cases the discount

effectively conditions the purchase of the tying product on the purchase of the tied product.

V. Evaluating Competitive Effects

66. The primary theory used to evaluate the competitive effects of tying is the "leveraging theory" according to which a dominant firm might use its dominant position in a manner that allows it to foreclose competition and thereby to extend its market power to a related market. Foreclosure of sales opportunities in the tied product market is the mechanism of anticompetitive harm associated with tying practices. Anticompetitive foreclosure may occur in the tying product market as well as in the tied product market. The incentive to tie could also be to price discriminate, increasing profits by charging prices closer to customers' willingness to pay for the tying product.

A. Leveraging

67. According to the leveraging theory, a firm with market power in one market could use this market power to extend its power into a second market and thereby increase profits. Under certain conditions, tying separate products and thereby forcing customers to purchase them together may be an effective way to achieve such leveraging.

68. Competition concerns based on the leveraging theory have been tempered by advances in economic theory including the "single monopoly profit theory," which provided the central criticism of the leveraging theory, and later work further refining the applicability of this theory. Put simply, the single monopoly profit theory posits that, under certain market conditions, a firm with monopoly power in the tying market maximizes profit by charging a competitive price in the tied market. This pricing incentive holds even if the firm is the sole seller in the tied market. Consequently, according to this theory, if we

observe tying, then it must be for a reason other than to leverage market power.

69. The single monopoly profit theory is applicable when the tied product is always used with the tying product and in fixed proportion. Under this scenario, customers always use monopoly product A with competitive product B. This joint consumption implies that there is effectively a single monopoly profit associated with their joint sale. Thus, a monopolist of A maximizes its profits by determining the profit-maximizing monopoly price for A + B and pricing A at that price minus the competitive price of B. The A monopolist extracts the entire combined monopoly profit through the pricing of product A, and has nothing to gain from additionally monopolizing the sale of B because it would find it optimal to continue charging the competitive price for B. Consequently, tying under the foregoing circumstances must occur for a reason other than to leverage market power.

70. Although the archetypal form of the single monopoly profit result involves a tied product market that is competitive and does not exhibit economies of scale, the theory can hold in broader circumstances. Even with scale economies and an oligopolistic market structure in the tied market, if the tied product is a complementary product used in fixed proportions with the tying product, and has no other uses beyond that as a complement to the tying product, the single monopoly profit result still holds. The key condition is that the dominant firm's tying product is essential for all uses of the tied product, which implies that the dominant firm always benefits from greater sales of the tied product, even if it is a rival's product. In fact, to the extent that a rival's product is differentiated, it expands sales in the tied product market, which can lead to even greater profits for the dominant firm in the tying market.

71. However, in market circumstances outside of those just described, leveraging can result in an extension of market power. Specifically,

leveraging can occur if the tied product has uses unrelated to the tying product. Similarly, leveraging can occur if the tying product is durable and upgrades are important. In both instances, foreclosing competition in the tied product market can allow a dominant firm to acquire additional market power. A dominant firm's ability to leverage market power into the tied market therefore can depend on conditions in the tied market. These conditions are more formally detailed in section V.C.

72. The ability and incentive of a dominant firm to leverage its market power can be illustrated through a simple scenario. Suppose the only hotel in a given area requires its guests to use its shuttle bus. If local residents also use shuttle buses, and the viability of a rival shuttle bus requires making sales to the hotel guests, the tie could force the rival to scale back its operations. The tie might thereby keep rival suppliers inefficiently small and high-cost, which may even result in their exit from the market. The tie thus could allow the hotel shuttle bus to exercise market power over locals who do not use the hotel but who do use the shuttle bus. The tying firm extracts monopoly rent not only from customers of the tying product, but also from customers of the tied product who do not buy the tying product.

73. A dominant firm's tying adversely affects the demand for rival products in the tied market, which may induce anticompetitive foreclosure if the demand for the rivals' products is reduced below a point at which rivals can profitably compete in that market.

B. Anticompetitive Foreclosure

74. As mentioned in section III, anticompetitive foreclosure is the main antitrust concern with tying. In the competition law context, foreclosure describes a situation in which a firm eliminates or impedes actual or potential competitors' access to a market. Such foreclosure of rivals may lead to anticompetitive foreclosure if it is substantial

enough to make alternative sources of supply or distribution unavailable, more expensive, or less effective. Because foreclosure of a rival need not foreclose competition, agencies should ensure that they examine both possible effects. Anticompetitive foreclosure as a result of tying can occur in the tied market and/or in the tying market.

Anticompetitive Foreclosure in the tied market

75. Foreclosure in the tied market involves a dominant firm using its market power in the tying market to weaken competitors in the tied market (partial foreclosure), drive them from the tied market altogether (full foreclosure), or prevent the successful entry of new competitors in the tied market.

76. The mechanism by which foreclosure occurs in the context of tying is as follows: by forcing customers of the tying product to purchase the tied product, the dominant firm reduces the sales volumes of rivals and the expected sales of potential entrants. Under certain conditions, this reduction in sales can lead to anticompetitive foreclosure.

Anticompetitive Foreclosure in the tying market

77. Anticompetitive foreclosure in the tying market can be a concern when a dominant firm is seeking to protect its leading position in the tying market from new entrants that might otherwise enter and undermine its market power.

78. The scenarios in which anticompetitive foreclosure occurs in the tying market are less straightforward than in the case of anticompetitive foreclosure in the tied market. One scenario is as follows: If the dominant firm is concerned about entry into the tying product market, and entry into the tied product market is a precursor for entry into the tying product market, then the dominant firm may foreclose entry in the tied product market in order to foreclose entry into the tying product market. In another scenario, the dominant firm faces the threat

of entry on both the tied and tying product markets. Tying by the dominant firm makes successful entry in either market dependent on simultaneous successful entry in both markets. The tie therefore increases the risk faced by potential entrants, since successful entry in either market is uncertain and entails some sunk investment.

C. Relevant Factors in Assessing the Likelihood of Foreclosure

79. The main factors affecting the likelihood of foreclosure occurring are discussed below. These factors relate primarily to competitive conditions in the tied market, consumption patterns, and the complementarity between the tying and tied products. They affect both the incentive and ability of a dominant firm to use tying anticompetitively.

Competitive conditions in the tied market

80. The incentives to use tying anticompetitively can depend on the degree of competition in the tied market. Strong competition in the tied market tends to weaken the incentive to tie because it implies low prices in that market, which lead to high demand for the tying product if the products are complements. On the other hand, weak competition conditions in the tied product market can create an incentive for a dominant firm to engage in tying. The effect of tying under these circumstances would be lower tied-product prices for customers subjected to the tie. The dominant firm uses lower tied-market prices to increase its highly profitable sales in the tying product market. The effect of tying under these circumstances likely would be lower prices in the tied market.

High fixed costs and other sources of scale economies

81. If the tied market is characterized by significant economies of scale, tying by the dominant firm may reduce the output of its competitors and thereby increase their average costs. In some cases, competitors'

output can be decreased to such an extent that they are no longer operating at or above the minimum efficient scale, and they may eventually exit the market. Potential competitors, including those that would be as efficient in the tied market as the dominant firm, may not be able to enter profitably if they could not expect to achieve the required economies of scale due to the effects of the tie. Thus, high fixed costs and other sources of economies of scale enhance a dominant firm's ability to use tying anticompetitively.

82. The likelihood of competitors being denied the ability to operate at or above the minimum efficient scale also depends on the proportion of the total sales in the tied market captured by the dominant firm through the tying arrangement. Agencies should consider whether a dominant firm's tying arrangement covers a substantial proportion of tied product sales or covers customers that would be important for the entry or expansion of competitors.

Consumption in variable proportions

83. As discussed in paragraphs 69-70, when the tied product is always used with the tying product and in fixed proportions, and the tied product market is competitive, there is no incentive for the dominant firm to engage in tying because the single monopoly profit result holds. In this case the dominant firm earns the maximum overall profits when price in the tied market is set at the competitive level, as this maximizes profits from the tying product market over which the firm is dominant. Underlying this result is the insight that low prices in the tied product market promote sales of the tying product because the two products are complements.

84. When the tying and tied products are consumed in variable proportions, the dominant firm may have an incentive to tie. If the tying and tied products are not consumed in a fixed one-to-one ratio, the dominant firm in the tying market could possibly increase profits

by dominating the tied product as well and charging supra-competitive prices. In this case the dominant firm can increase its profits either by using tying to price discriminate, as discussed in section V.C, or by extending its dominance into the tied product market.

Tied product uses unrelated to the tying product

85. If the tied product has uses unrelated to the use of the tying product, the dominant firm in the tying product market may have an incentive to tie. Uses of the tied product unrelated to the tying product imply that additional customer demand can be exploited by the dominant firm if it extends its power to the tied product market. Paragraph 72 illustrates and elaborates this insight.

Heterogeneity of demand

86. Heterogeneous demand for the tied product could give rivals in the tied market an opportunity to differentiate their products from the one offered by the dominant firm, thus reducing any foreclosure effect from tying. Rival firms may be able to compete successfully with the tied product if they can produce products that are sufficiently differentiated (although not necessarily superior) such that some customers are willing to buy them. When customers of the tying product receive the tied product at a zero marginal price, in order to successfully differentiate themselves, rivals' products in the tied market must be sufficiently different that customers are willing to pay for them even though they already have the dominant firm's product. Agencies may take into account the effectiveness of the distribution outlets for rival firms' differentiated products when assessing the foreclosure effect from tying.

Other market conditions

87. Other market conditions can also play a role in determining whether a dominant firm in the tying market would have the incentive and ability to foreclose competitors in the tied market.

88. When new entrants to the tied market face entry barriers in the form of an initial sunk investment, tying by the dominant firm can increase the financial risks associated with entry into the tied or tying markets. The effect can be significant, for example, in markets that require significant R&D expenditure in advance of entry. If the sunk costs of entry are high, the dominant firm may have the incentive and ability to tie in order to increase the risk that the sunk costs will not be recovered and thereby deter entry. In addition, when the tied market is characterized by high barriers to entry, even if foreclosure through tying may not be profitable in the short term, it may be profitable over the longer term if tying has the effect of foreclosing rivals and then allowing a recoupment phase once the rivals are foreclosed. As discussed above, a tie can act as a barrier to entry if the tie makes successful entry in the tied market dependent upon simultaneous entry in the tying market or vice versa.

89. In evolving markets characterized by network effects, a dominant firm in one market may have the incentive and ability to extend its market power into an emerging market through tying. If the dominant firm is able to use a tie to establish its position in the newly emerging market, then as the market grows network effects could make the market "tip" towards the tying firm even though rivals may offer a superior alternative product in the tied market.

D. Price Discrimination

90. Price discrimination is a pricing strategy in which different customers are charged different prices for the same product.

91. Often, firms have incentives to engage in price discrimination in order to charge heterogeneous customers prices closer to what they are willing to pay. Designing pricing schemes in order to induce different customers to pay prices closer to their actual willingness to pay can pose difficulties, even for firms with monopoly power. Tying can provide a simple means to achieve that end.

Price discrimination in relation to tying and bundling

92. If the tied product is a complement for the tying product that is used in varying amounts by different customers, a firm may be able to price discriminate between heavy and light users of the tying product by pricing the tied product (usually a consumable such as toner) above the competitive level and lowering the price of the tying product (usually a durable good, such as a printer). This is sometimes called metering. The overall effect of the pricing strategy is that heavy users effectively pay more for the tying product.

93. Tying can also, depending on additional circumstances, permit profitable price discrimination across buyers of two or more products that are not complementary. As a simple example, consider a firm selling products A and B at zero marginal cost. Further, suppose that half of buyers are willing to pay $90 for one unit of good A, and $50 for one unit of good B, while the other half are willing to pay $50 for good A and $90 for good B. If the firm is unable to tie goods A and B together, it would price each at $50, and each consumer would buy one unit of each good. On the other hand, if it is able to tie products A and B together, it would set a price of $140 for the bundle, which all consumers would be willing to pay. The firm earns a higher profit if it is able to price discriminate through bundling.

Exploitative effects of price discrimination and tying

94. The economic effects of price discrimination are ambiguous as a general matter, but when tying is used to price discriminate one likely effect is that some customers will pay higher prices, which could be considered as exploitative. As previously stated, the focus of this chapter is exclusionary anticompetitive harm, and this chapter offers no advice on whether or when exploitative effects are a basis for condemning tying.

Possible exclusionary effects of price discrimination

95. Tying designed to price discriminate can have exclusionary effects. Since all customers of the tying product who accept the offer are bound to buy their purchases of the tied product from the dominant firm, rivals could be foreclosed in the tied market.

E. Evidence of Anticompetitive Effects

96. Most tying cases involve complainants and enforcement agencies claiming likely or actual anticompetitive effects from tying arrangements. An important question is what kind of evidence authorities and courts can rely upon to establish such effects. As a general matter, the importance of any one piece of evidence can be determined only in the context of other evidence.

Evidence of likely anticompetitive effects

97. In certain jurisdictions it is sufficient to demonstrate that a tying arrangement has likely anticompetitive effects when establishing an infringement. The precise standard of proof may vary among jurisdictions.

98. Factors relevant to assessing the likelihood of anticompetitive foreclosure as a result of a tying arrangement are explored above in section V.C. Evidence that does not directly address those factors also may be relied on to establish an infringement.

99. The timing of the introduction of a tying arrangement can be significant in determining its intended and likely effects. An exclusionary motivation may be suggested when the arrangement seems to have been a response to competitive inroads by existing competitors or the appearance of new entry threats. However, tying arrangements adopted under such circumstances could also be reasonable responses to actual or newly threatened free-riding on investments made by a dominant firm.

100. Documents created in the ordinary course of business by the dominant firm in the tying product market that shed light on reasons for a tying arrangement or the competitive situation can inform the likelihood of anticompetitive effects of the tying arrangement. These may include documents that state an anticompetitive intent (as explained in paragraph 101), those that suggest that the only (or main) reason for the tying is to harm competition, and those that recognize elements of the theory of harm. Documents also may contradict and thus negate alternative rationales subsequently offered by the dominant firm. Of course, documents may support justifications for tying as well.

101. The dominant firm's business documents may refer to a desire to prevent entry in the tying or the tied product markets or otherwise harm competition. For example, documents created by a dominant company indicating that the tying arrangement would prevent the entry of new players in the tied product market would be consistent with the tying causing harm.

102. Alternatively, the dominant firm's business documents may suggest that the tying arrangement could not be expected to produce net benefits for it without weakening competition from its rivals. For example, internal documents of the dominant company may indicate that tying two products would require substantial losses in the tied product due to sales below costs but result in no (or insignificant) additional sales of the dominant firm's tying goods in the short term.

Evidence of actual anticompetitive effects

103. Agencies may also consider whether there are observable market outcomes that could directly indicate anticompetitive effects of a tying arrangement. Tying cases, however, have characteristics that may make it difficult to find such evidence. There may be no established market for the tied product, so evidence concerning entry, exit, and prices may be difficult to find.

104. Agencies should consider relevant evidence showing the exit of some or all competing firms or a reduction in the competitive significance or market shares of existing competitors. However, care must be taken in attributing the exit of an existing competitor to the dominant firm's tying arrangement. Inefficient rivals may exit as a result of their own shortcomings or misfortunes.

105. Evidence that new entrants emerged or expanded in the tying or the tied product market (and were able to compete effectively during the period of the alleged abuse) can be a strong indication that the tying arrangements did not foreclose competition or have an anticompetitive effect. Determining if exit is an anticompetitive effect may require determining if overall output in the market fell after exit and prices increased as a result of the exit.

106. Tying can prevent entry by potential competitors and thereby reduce the competitive constraint on the dominant firm in that way.

Determining whether a firm would have entered a market absent the tying arrangement is difficult, especially in cases in which there is no established market for the tied product. Strong evidence includes evidence that a firm had already made substantial sunk investment in a product and its distribution.

107. Actual anticompetitive effects can increase prices with an associated output reduction. However, higher prices may be explained by an increase in overall market demand due to some independent factor such as a decrease in the price of a complementary good, a favorable change in customer preferences, or even new technologies. Agencies should be careful when examining the prices charged in the tied and tying markets.

108. Comparing price levels across time periods or across geographies can occasionally be a fairly straightforward process. Sometimes the parties' own internal analysis of pricing will indicate significant price differences. However, the need to account for other factors that might affect prices may make the comparison difficult. When looking at prices before and after the institution of a tying arrangement one must account for changes in the market over time. For example, in high tech industries where products can change as quickly as every quarter, the effects from tying must be disentangled from effects of new product introductions and changes in customer demand over time, as well as changes in costs over time. When comparing prices across areas, agencies must be able to separate out differing supply and demand characteristics in the different locations.

VI. Justifications and Defenses

109. While assessing the competitive effects of tying, the rationale for tying is something agencies should consider from an early stage of an investigation. Agencies should consider whether the conduct produces efficiencies potentially outweighing any possible anticompetitive

effects. It should also be noted that, as explained in section IV, some jurisdictions may consider efficiencies in determining whether the arrangement amounts to the tying of two separate products.

A. Potential Efficiencies or Other Justifications

110. Tying products together may offer various potential efficiencies. These may appear in the form of savings in production or distribution for the seller, reduced transaction and searching costs for customers who would otherwise buy the products separately, and improved product performance. Possible efficiencies arising from tying are explained further below. The listed efficiencies are not exhaustive. Given different and evolving characteristics of the markets, different forms of efficiencies may be observed throughout the life of the practice.

Reduced costs of manufacturing and distribution

111. Costs associated with manufacturing, packaging, shipping, distributing, and marketing may be reduced when products are combined. Instead of incurring separate marketing, administrative, and distribution expenses for more than one product, the supplier incurs one single expense for the tied products. In addition, less warehouse space, packaging material, and retail shelf-space may be needed when products are offered only as a set in a single package, rather than separately offered. It may also be possible for manufacturers to reduce the cost, size, and complexity of factories through combined production.

Reduced customer transaction and searching costs

112. Cost savings on the customer side may arise primarily from the fact that it is often more convenient and cheaper to purchase a package rather than incur multiple transaction costs. Tying may also reduce the costs of searching for the most appropriate combinations of products

that satisfy complex customer needs. Furthermore, in cases where the products are complementary, the customer is also assured that the tied products will work together correctly.

Improved product performance or convenience

113. Agencies should consider whether the practice under review is associated with improvements to the product in terms of performance and convenience for users, which promote higher customer satisfaction.

114. Improved product performance may result from integrating products or technologies. Complementary products previously offered only on a stand-alone basis can be deeply integrated to enhance product performance and user experience. Similarly, additional features can be added to a device. In addition, bundling several complementary products can make the products ready for use right after the purchase, thus assuring immediate performance.

115. Manufacturers have powerful incentives to make their products appeal to customers, and tying may also allow the manufacturer to achieve a desired look or performance, optimized according to the manufacturer's desired criteria.

Quality or safety assurance

116. Manufacturers have unique expertise with their products and may be able to produce complementary products optimized for the tying product. Tying may therefore provide assurance to the customer regarding tied product quality and safety. Such tying may also help customers avoid difficulties in identifying the actual quality of different products while safeguarding against the manufacturer suffering an undeserved bad reputation. Tying also may assure customers of the quality of a durable tying product used with a consumable complement. By making its profit on the durable product

depend on how much and for how long it is used, a tying manufacturer has an incentive to enhance the quality of the tying product.

117. Similarly, in relation to products requiring assembly, the quality of the product may be adversely affected if customers were to assemble the individual components themselves. For example, this may be relevant in the case of sophisticated electronic equipment.

B. Assessing Efficiencies and Other Justifications

118. The burden of demonstrating the likelihood and magnitude of actual or potential efficiencies generally is placed on an accused infringer. Competition agencies should take into account whether the claimed efficiencies arise from the tying arrangement, whether there are less restrictive means to achieve the claimed efficiencies, and whether the claimed efficiencies outweigh the anticompetitive harm.

Less restrictive means

119. When an undertaking defends a tying arrangement on the basis that it gives rise to efficiencies, agencies must examine whether those claimed efficiencies actually arise from the tying arrangement, and whether there are ways to achieve the claimed efficiencies through less restrictive means. For instance, one question would be whether the efficiencies claimed as a result of the tying arrangement might be achieved as effectively while selling the products separately. The agency may also consider whether there are other ways to make the same savings in production or distribution costs, or to reduce transaction costs.

120. The issue of whether efficiencies could be achieved in a less restrictive way will typically arise after the fact, when a challenger (whether an agency or private plaintiff) claims that the arrangement is anticompetitive and the dominant firm claims efficiencies or other justifications. The effectiveness of any less restrictive means to

achieve the efficiencies or other justifications deserves careful inquiry based on the factual and market realities. Agencies should examine whether potential less restrictive alternatives are practical, realistic, and sufficient for realizing the purpose sought. The existence of clearly less restrictive alternatives may suggest that the asserted efficiencies or procompetitive justifications are, at least to some degree, a pretext for an anticompetitive objective.

Balancing efficiencies against competitive harm

121. Because tying can have procompetitive, neutral, or anticompetitive effects, authorities should take a balancing approach to the treatment of anticompetitive effects and efficiencies. Most jurisdictions require the agency to demonstrate that anticompetitive effects exist, but then give the firm the opportunity to demonstrate that these effects are outweighed by any procompetitive justifications. In many jurisdictions if the party imposing the tie can establish that its claimed efficiencies would outweigh the anticompetitive effects then the conduct would not be deemed an infringement.

122. Given real-world limitations, balancing the benefits and competitive harms of exclusionary conduct is a challenging task. Furthermore, quantification of harm and efficiencies is difficult. As such, the general approach taken is to develop a sense of the importance of efficiencies versus anticompetitive effects.

123. When the harm is likely materially greater than the efficiencies, the practice should be condemned. When the harm and the efficiencies both seem likely to be at the same rough magnitude, the general principle of non-interference in the market place may suggest that the practice not be condemned.