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Nonprice Vertical Restraints

Bake sales, book fairs, and other events are commonly used as fundraising devices at hundreds of elementary and secondary schools throughout North America. The event organizers typically offer beverages at these events, sometimes giving drinks away for free. Yet these well-intentioned citizens may very well be breaching a contract. This is because many schools have exclusive sales agreements with a soft drink company. Under such a contract, the beverages of only one soft drink firm, e.g., Coca-Cola or Pepsi, may be sold by anyone on the school's premises. Most contracts specify that only milk and (at most) a few juices are allowed to be sold at school at all. Other restrictions are also common. The drinks of the permitted company are usually not to be offered at a discount price, let alone for free. School personnel are often required to keep the vending machines stocked, and so on.

Requiring the school to sell no other soft drink is known as an exclusive dealing requirement. Such contracts are common not just between soft drink makers and schools, but also between manufacturers of many products and their dealers. Lafontaine and Slade (2007) estimate that some such sort of exclusive dealing covers one-third of sales by independent retailers in the U.S. Other non-price vertical restraints such as exclusive territories are also common. For the most part these restraints create many of the same issues raised by the vertical price restrictions studied in the previous chapter. They have an obvious potential for weakening competition, yet they can also be useful arrangements that benefit both manufacturers and consumers.

19.1 UPSTREAM COMPETITION AND EXCLUSIVE DEALING

As the soft drink and school example above illustrates, exclusive dealing is a contractual agreement that restricts the behavior of the dealer. Essentially, the dealer is not allowed to buy (and then resell) brands that may compete with that of the manufacturer's. Justifications for exclusive dealing agreements are typically based on the presence of conflicting interests between the manufacturer and the dealer. Unless some vertical restrictions can be imposed, such conflicts may lead to outcomes that hurt consumers as well as manufacturers.

To understand this concern, we should first recognize that manufacturers often expend considerable resources promoting their products. Household products companies such as Procter

& Gamble, cosmetic manufacturers such as Revlon, and appliance firms such as Whirlpool/ Maytag, are just some of the many manufacturers that extensively advertise their products. Such advertisements may well increase demand for the manufacturer's brand. They may also increase demand for the product category in general.

Consider, for example, advertisements for Tylenol, the well-known non-aspirin pain reliever. Undoubtedly, such advertising helps raise the consuming public's awareness of both Tylenol, in particular, and of the benefits of non-aspirin pain relievers in general. Such advertising is expensive. To recover the cost of the advertising, Johnson & Johnson, Tylenol's manufacturer will have to raise Tylenol's price. We can easily imagine the following transaction between a pharmacy owner and a customer searching for Tylenol. When asked why she wants Tylenol, the consumer will say because she needs non-aspirin medication for pain and fever. The pharmacist may say that Tylenol will work fine but that he also can offer a lower-cost, unadvertised brand that is the chemical equivalent of Tylenol. The price of this alternative may not be a lot below the Tylenol price—just enough to persuade the customer to switch to this brand.

It is precisely because the pharmacist can sell the alternative non-aspirin pain reliever at a price relatively close to the price of Tylenol for that the pharmacist has an incentive to inform the consumer of the alternative. From the perspective of Tylenol, however, the pharmacist is free-riding on Tylenol's advertising. Tylenol now makes no sale even though it was the Tylenol advertising that may have induced the customer to ask for a non-aspirin pain reliever in the first place.

An exclusive dealing agreement offers a solution to this problem because it permits the manufacturer to prevent the retailers of its product from making such substitutions.[1] This is particularly important in the case of goods in which the retailer plays a role something similar to that of a doctor whose recommendation acts like an informal guarantee of the product's quality. Many intermediate goods sold between firms, e.g., chemical products, may have this feature. At the retail consumer level, automobile dealers are among retailers who may serve this function.

From an antitrust perspective, however, exclusive dealing can also be a means of suppressing competition. We showed in section 13.3.1 Chapter 13 one way that this can happen. There we discussed the Rasmussen, Ramseyer, and Wiley (1991) model illustrating how exclusive dealing requirements can prevent entry when there are important scale economies in upstream production.[2] However, entry prevention is not the only way that exclusive dealing can limit competition. Such contracts can also be used to limit competition between existing manufacturers. By excluding a rival's product, the remaining manufacturer can enjoy more monopoly power.

The manufacturer will have to share the profit from that power with the retailer. In order to get the exclusive contract in the first place, a manufacturer will have to offer the retailer as much profit as its rival can offer. As Mathewson and Winter (1987) show, this consideration can greatly complicate the analysis of exclusive dealing. In particular, the manufacturer that gets the exclusive contract may only do so by offering to sell to the retailer at a very low wholesale price. In turn, this low wholesale price will translate into a low retail price. One issue is whether the fall in the retail price is sufficient to compensate consumers

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[1]   Marvel (1982) is among those who have stressed this argument.

[2]   Strictly speaking, the long-term contract model of Aghion and Bolton (1987) is not an exclusive dealing contract though, practically speaking, it may have the same effect.

for the loss of the alternative product. In principle welfare could improve despite the fact that the exclusive deal eliminates one product line from the market.[3]

Exclusive dealing can serve to limit competition among retailers and manufactures, simultaneously. For example, suppose that there are two manufacturers selling to two retailers who are spatially separated but still operate within a given territory. Without any exclusive dealing, each retailer may offer both products. As a result, price competition between the two products or interbrand competition, will be quite fierce at each retail location. However, if each manufacturer signs one of the retailers to sell its product by means of an exclusive contract, then interbrand competition can be softened. Effectively, the exclusive dealing injects an element of spatial differentiation between the two goods that did not previously exist.[4]

19.2   EXCLUSIVE SELLING AND TERRITORIAL ARRANGEMENTS

We now turn to a different aspect of exclusive selling that relates to territorial restrictions. These cases differ from our soft drink and school example in two important respects. Whereas the restrictions in that example were aimed at limiting *interbrand* competition between rival soft drink companies, exclusive selling and territorial arrangements are aimed at limiting *intrabrand* competition between downstream dealers. In this case the manufacturer agrees not to sell his product to any other retailer in a defined geographical area. For example, under an exclusive selling agreement, Toyota may sign a contract with a Lexus dealership that prevents Toyota from selling Lexus automobiles to any other Lexus dealership within a certain radius. Similarly, in an exclusive territorial arrangement, Toyota may sign agreements with a number of Lexus dealers that require each dealer to agree that it will not open a new outlet in any region where one of the other dealers already operates. To some extent then, the territorial restraints have a more obvious horizontal element. They can be more easily interpreted as an agreement among dealers not to compete, i.e., an agreement to limit intrabrand competition.

We know that retail competition can help manufacturers in so far as it reduces or even eliminates the double-marginalization problem. We may well wonder then why a manufacturer would ever sign a contract that limits such retail competition. However, the rationale behind such restrictions is relatively intuitive.

Consider a simple case of a single manufacturer that sells to two, downstream retailers. In addition, we assume, not unreasonably that while the manufactured product is the same, the retailers are differentiated at least by location if by no other attribute. In other words, consumers do not view the purchase of the good at each retailer as perfect substitutes so that retail competition is not perfect.

In this context, two externalities emerge. The first of these is a pricing externality. If one retailer lowers its price, it will attract consumers and thereby reduce the profit of the other

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[3]   The foreclosure argument has been a recurrent topic in industrial organization. Bernheim and Whinston (1990) show that when there are two brands produced by two upstream firms and a single retailer, there are no incentives to adopt exclusive dealing. The retailer will always be a common dealer of both products. In the case of several retailers, O'Brien and Schaffer (1994) and Besanko and Perry (1994) find that exclusive dealing is always adopted. However, in the last two models, foreclosure is explicitly ruled out as an option.

[4]   See Besanko and Perry (1994) for a model along these lines.

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retailer. However, in deciding whether or not to lower its price, the retailer will consider only the impact of that decision on her own profit—not on the profit of its rival. Because each retailer fails to account for the impact that her pricing decisions have on her rival's profit, each tends to set its price too low or below the level that would maximize industry profit. This not only reduces retail profit but also lowers the profit that the manufacturer may claim through any two-part tariff or profit-sharing contract.

The second externality that plagues intrabrand competition is the service externality that we encountered in the last chapter. If one retailer incurs the expense of advertising or providing informational services, it benefits the other retailer as well. For example, if one Lexus dealer runs Lexus commercials on local TV, it potentially raises the demand for all Lexus dealers in the area. Similarly, if one camera store provides information to customers on how to get the best pictures with a Canon digital camera, those customers may then make their final camera purchase from a low-price retailer who does not offer such services. In short, there is a temptation for each retailer of a specific brand to free ride on the services provided by other sellers of that brand. As a result, the level of such services will very likely be too low. Moreover, because consumers value such services, this externality not only reduces the profit available to the manufacturer and the retailer, but reduces consumer surplus, as well.[5]

It should be clear how exclusive selling and territorial agreements may remedy the foregoing externality problems. Effectively such contracts limit the number of sellers of the manufacturer's good to just one within any given region. As a result each retailer reaps all the benefits of any price and service decisions that it makes. There is no externality because there is no retailer external to the one in question. Hence, exclusive selling and territorial restrictions can serve to raise both the price and the service level associated with the manufacturer's good. This will definitely increase the profit available to the manufacturer and dealer jointly. The impact on consumers though is ambiguous. The reduction in intrabrand competition and resultant price increase lowers consumer welfare. The increase in the service level, however, benefits consumers.

Exclusive selling and territorial arrangements have two other potentially important effects in addition to those just described. Because these contracts result in a single dealer being the only seller of a specific product in its area, the dealer's willingness to dump its merchandise on the market when demand is weak is reduced. This effect can be important in getting dealers to stock an appropriate amount of the manufacturer's good in the first place.[6] The other effect is that an exclusive selling or territorial agreement creates in each region a monopoly upstream supplier selling to a monopoly downstream retailer. This makes the use of a two-part tariff or franchise fee attractive as a tool to prevent the double marginalization and low service problems. Viewed in this light, it should not be surprising that we usually observe exclusive territories and franchise fees in the same contract.[7]

So far we have only considered exclusive selling and territorial arrangements in the context of a single manufacturer. When there is more than one upstream manufacturer, these contracts can be used to reduce interbrand competition—to the detriment of consumers. Suppose that there are two upstream manufacturers producing products that are imperfect substitutes.

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[5]   This case differs from those considered in section 18.4.3 in Chapter 18 where downstream competition helped solve the double marginalization problem. Here, the retailers are differentiated and so therefore are their products. The prices of such retailers are strategic complements and coordination of their price-setting can raise the profit of each firm.

[6]   See section 18.5 Chapter 18 for an analysis of uncertain demand and its suboptimal effect.

[7]   See section 18.4.2 and Lafontaine (1993).

Imagine as well that the two manufacturers sell to a competitive retail sector. If the two manufacturers have identical costs and symmetric demand, then they will set the same wholesale price w^C, which will also be the retail price because competition eliminates any retail markup. Hence, all downstream retailers will earn zero profit. More importantly, this means that every increase in the wholesale price will be one-for-one translated into an equivalent increase in the retail price.

Now, following Rey and Stiglitz (1995) let us imagine that the market for these products can be divided into regions or territories. Suppose further that each manufacturer grants an exclusive territory to a retailer in each territory giving that retailer the exclusive right to sell its product in that region. As a result, within any given territory each manufacturer's product will be sold by a retail monopoly. We know that selling to a monopoly retailer will give rise to the double-marginalization problem. Why then should the two manufacturers decide to do this? The answer, in part, is that it softens the intensity of the competition between the two brands. It does so because it weakens the link between the wholesale price and the retail price. From the perspective of each retailer, the wholesale price is a cost. Suppose then that one of the manufacturers raises its wholesale price. For the dealer selling this product, costs have risen. The dealer will want to pass on this increase by means of a higher retail price. Competition with the other retailer will limit how much the dealer can do this. However, now under exclusive territories prices are strategic complements. As the rival retailer sees the first dealer's price rising, the rival retailer will see an opportunity to raise price without losing customers even though its wholesale cost has not risen. Thus, when a manufacturer raises its wholesale price it will no longer lose as many customers as it did when there was competition without exclusive territories. Even though the rival manufacturer does not raise its wholesale price, the rival retailer does raise the retail price.

Of course, both manufacturers realize the foregoing logic. By each granting an exclusive territory, they weaken retail competition, which feeds back to weaker wholesale competition. As a result, the granting of exclusive territories will lead to higher prices at both the retail and the wholesale level. Whether the agreement will increase manufacturer profit is another question. It might not because even though wholesale prices are higher, the double-marginalization problem means that the quantity sold is lower than it would be if retailing remained competitive. However, if the double-marginalization problem is not too large (as would be the case if the two goods are fairly close substitutes) the exclusive territorial arrangement will also lead to higher upstream profits. If the manufacturing firms can also adopt a two-part tariff arrangement, the double-marginalization problem can be overcome altogether.[8]

It may even be possible to use exclusive selling arrangements to achieve monopoly profit in what would otherwise be a competitive industry. To see this, suppose that the products of the two manufacturers are perfect substitutes. With a competitive retail sector, neither manufacturers nor retailers will make any profit. However, suppose that the two manufacturers coordinate so that within any territory they give the exclusive rights to their products to the same retailer, each agreeing not to sell to other dealers in that region. The lucky retailer in any region is thereby transformed into a monopolist who can set the monopoly retail price. Since monopolies make extra profit, the lucky downstream retailer in any region will be happy with this scheme.

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[8]   The mechanism by which exclusive territories soften interbrand price competition described in Rey and Stiglitz (1995) is conceptually quite similar to the argument in Bonanno and Vickers (1988).

What about the manufacturers? To some extent, their situation is unchanged. Each still produces a good for which there is a very close substitute. Hence, competition between the two should still be fierce. Of course, if this happens, all the monopoly profit will accrue to the retailer. If competition is less than fierce then the manufacturers can extract some of that profit by means of a two-part tariff. In fact, manufacturers may be able to extract profit even without using two-part tariffs. For instance, manufacturers can offer an exclusive sales contract only if the retailer also agrees to purchase a minimum amount from the manufacturer even if that manufacturer charges a wholesale price higher than the rival's price. This technique—known as a quantity-forcing requirement—again has the effect of softening wholesale price competition. When each manufacturer does this, each can raise wholesale price above cost without fear of losing sales to the rival. As a result manufacturers now earn some

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Reality Checkpoint

Trouble in Toyland: "It's Toys 'R' Us or Them!"

On September 30, 1997, an administrative law judge ruled against the toy retailer, Toys "R" Us, on a charge of anticompetitive exclusive dealing. Three years later, a U.S. Appeals court upheld this decision. The crux of the case was a government charge that Toys "R" Us had made informal agreements with America's leading toy makers, notably, Mattel and Hasbro. The nature of the agreement was that Toys "R" Us agreed to sell these manufacturers' products only if the manufacturers in turn refused to sell their products to large discount firms such as Sam's Club. This exclusive arrangement may have helped both Toys "R" Us and the toy makers by creating downstream profits that could be shared amongst them.

Toys "R" Us did not deny the charges. Indeed, at the time of the decision, it had already settled an earlier suit brought by 44 states by agreeing to stop the practice and paying a settlement fee of $50 million. Mattel and Hasbro also agreed to stop the practice and each had paid a fee of $5 million.

Instead of disputing the allegation, Toys "R" Us argued that the practice was "perfectly lawful" as the firm's lawyer, Michael Feldberg, said. Mr. Feldberg continued that "[We] simply posed a choice to the manufacturers: It's us or them. If you sell an item to the warehouse clubs, we may not buy it." The justification for this policy was that Toys "R" Us screened what toys were in high demand and did the bulk of the promotional work for these items. In this view, the discount stores simply used Toys "R" Us to identify the hottest products and free-rode on its advertising. There may be some merit to this contention as we have seen. However, the case had the additional unusual twist of horizontal collusion. Instead, of just offering an exclusive dealing contract to all toy firms, there was evidence that Toys "R" Us had worked to make the deal go through by coordinating with Mattel and Hasbro. In particular, it brokered a deal whereby Mattel agreed to the restriction of not selling to the discount clubs on condition that Hasbro would do the same (so that Mattel would not be disadvantaged). Likewise, Hasbro agreed to the restraint on condition that Mattel would, as well. As noted in the text, there are sound theoretical reasons to worry that vertical restrictions may facilitate horizontal collusion. The Toys "R" Us case suggests that those theoretical concerns also have some basis in fact.

Source: W. M. Bullkeley and J. R. Wilke, "Toys Loses a Warehouse-Club Ruling with Broad Marketing Implications," *Wall Street* Journal, October 1, 1997, p. B10; and T. Hall, "Toys 'R' Us Loses Ruling," *New York Times*, August 2, 2000. For further details, consult the Federal Trade Commission website at http://www.ftc.gov.

profit.[9] Of course, the higher wholesale prices will translate into higher retail prices. That is, this arrangement does not enhance efficiency. The profit gain of the manufacturers is more than offset by a reduction in retailer profit and a fall in consumer surplus. Thus, while vertical contracts can be socially beneficial there is a downside risk. Recognition of the type of upstream coordination orchestrated by the retailer that we have just described appears to have been an important element in the Toys "R" Us case described in the Reality Checkpoint.

19.3   AFTERMARKETS

The vertical restrictions that we have examined so far primarily reflect constraints on the sale of the same product as it moves through the chain from the upstream producer to the downstream dealer. In recent years, a different kind of vertical restriction has caught the interest of economists—one that is closely related to the tying arrangements that we considered in section 13.3.2, Chapter 13. This restriction effectively involves an excusive selling arrangement in what are known as aftermarkets.

The key legal case in the aftermarkets debate is the *Kodak* case. The specifics of that case are as follows. Kodak was one of a number of manufacturers of micrographic equipment—used for creating, viewing, and printing microfilm and microfiche—and office copiers. This was the primary or foremarket. However, Kodak also provided repair parts and services to these machines through a nationwide network of technicians. Kodak advertised the quality of this network as a means of persuading consumers to buy its machines in the first place. Because no one needs micrographic or copier parts and services if they have not already purchased a micrographic machine or copier, the parts and services market is referred to as the aftermarket.

Just as in the foremarket, Kodak had competition in the aftermarket. There were many independent firms providing parts and services to firms using Kodak's office machines. However, to the extent that these independent firms needed replacement parts, they relied on Kodak to provide them. Kodak was happy enough to do so until it lost a service contract with Computer Service Corporation (CSC) to an independent firm, Image Technical Services (ITS). After that, Kodak announced a new policy of not providing replacement parts to any independent service provider. Effectively, Kodak agreed to an exclusive selling arrangement with its service network. It would only sell its repair parts to that group. As Kodak enforced the new policy more and more strictly, ITS and other independents filed a lawsuit contesting Kodak's action.

In court Kodak asked for a summary dismissal of the plaintiffs' case. Kodak's basic argument ran along the following lines. There were many other producers of photographic office equipment. Kodak faced competition in the foremarket. As a result, Kodak argued it could not possibly exert monopoly power in the aftermarket. Before making a purchase in the foremarket, consumers consider the full cost of, say, a copier—both the price at the initial time of purchase and the price of services later in time. If Kodak were to try to charge a high price in the aftermarket for services, it would only attract foremarket customers if it reduced its machine prices by a corresponding amount. Hence, Kodak argued that it could not impose monopoly pricing in the aftermarket. The Supreme Court rejected Kodak's contention. Later, a jury turned in a verdict against Kodak.

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[9]   Note that in the final equilibrium the quantity constraint does not need to be binding.

The Kodak case has been followed by a number of similar cases (see Reality Checkpoint). Again, the central issue is whether and how a firm can exercise monopoly power in the aftermarket if it does not have such power in the foremarket. It seems clear that this will not happen if buyers find it easy to switch service providers in the aftermarket in the face of any price increase by one such supplier. In other words, there must be some sort of lock-in or switching cost such that once a buyer has a Kodak copier, the buyer cannot easily switch to another copier by selling its Kodak machine in a used-machine market and buying an alternative machine for which no service companies are excluded from obtaining parts. This seems a reasonable assumption in many cases so long as the used machine market is not very well developed.

However, if buyers are forward looking, the presence of lock-in or switching cost effects may not be enough to permit the exercise of pricing power in an aftermarket. If buyers understand that buying a Kodak machine also means later buying expensive Kodak parts and

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Aftermarkets After Kodak

The controversy over the aftermarkets issue raised in the Kodak case has continued to this day. Two cases subsequently decided by different circuit courts amply illustrate the continuing tension.

The case of *Alley-Myland v. IBM* 33 F.3d 194 (3rd Cir. 1994), involved a suit filed by an independent firm, Allen-Myland, that specialized in the maintenance and upgrading of IBM mainframe computers. The upgrade market was a substantial one—in some years as valuable as the mainframe market itself. At one point, Allen-Myland had half the upgrade market. Then IBM introduced a set of new policies. Specifically, IBM began to offer lower installation prices for firms that committed to use only IBM's upgrade services. Subsequently using an independent like Allen-Myland would then involve a financial penalty for breeching this contract. IBM also started to require customers to return used parts to them, thus drying up a potential alternative source of parts. Although the District Court originally ruled for IBM, the Appeals Court overturned the ruling noting that IBM could have substantial power in the upgrade market.

In *PSI v. Honeywell*, 104 F.3d 811 (6th Cir. 1997), the Court considered the case of PSI Repair Services, Inc., an independent firm engaged in the repair of computer systems, PSI filed suit under the Sherman Act against the computer manufacturer Honeywell, Inc. The basis of the suit was the fact that Honeywell forced computer chip makers to refrain from selling parts unique to Honeywell computers to any independent repair services such as PSI and also to any Honeywell customers. PSI contended that this practice was precisely what was found to be illegal in the *Kodak* case.

After losing in the District Court PSI appealed to the Sixth Circuit U.S. Court of Appeals. That court also rejected PSI's claims citing two reasons. First, the court noted that unlike Kodak, Honeywell's refusal to deal was not a change in policy but something that it had always done. Second, the court rejected the assertion of aftermarket power based on "loc-kins." The court instead said that the relevant market was not the aftermarket for Honeywell parts but rather the equipment market shared by Honeywell and its competitors. Consumers were free to purchase computers from other sources with different servicing policies.

Sources: *Antitrust Litigation Reporter*, June 5, 1997; and G. Graham, "IBM Sent Back by Appeals Court to Face Retrial in Anti-Trust Suit," *Financial Times*, August 19, 1994, p. 6.

service, Kodak will only sell its machine by cutting its price below that of its rivals for whose machines cheaper service is available. Thus, Kodak and other companies as well have argued that they have no incentive to raise aftermarket prices because it will simply require that they lower the price in the primary market by an offsetting amount.

We think that there are at least two reasons to suspect that the lock-in effect may translate into the ability to raise price above cost in the aftermarket. The first is simply that buyers may not be so forward looking as to consider the machine and its subsequent service as one integral purchase. To do so would require that they acquire information regarding their future service needs and future service costs over many years in the future, and moreover that they do this across all machine brands. This is both difficult and expensive. Yet if buyers do not do this, then a firm with a lock-in technology can raise its aftermarket price without lowering its primary market price.

The second reason is more subtle. It is that firms such as Kodak may have no credible way to commit to a low service price far into the future because there are always some locked-in customers who have recently bought the machine and who can be exploited. To see this point in a simple context, consider the following scenario.

Imagine that there are two producers of copying machines. Each type of machine lasts potentially for two periods. A machine runs without problems in the first period but has a 50 percent chance of breaking down in the second period. When it breaks down, the buyer can have it repaired but only by using the repair service of the company that manufactured the machine. For simplicity, we will assume that the costs of producing the machine and also of repairing it are each zero.

Buyers are assumed to derive $50 of value from the machine for each period that it runs well. However, once a buyer buys a particular brand and integrates it into their production, the cost of switching to an alternative brand, setting up and reintegrating it into the buyer's operations midway through the machine's expected life is at least $50. In any given period, there are equal numbers of buyers who are in the market for new machines and buyers who have already owned a machine for one period.

If buyers are forward looking, they will be willing to pay $75 for a new machine. This is the expected surplus they will receive over the machine's two-period life. With 50 percent probability, the machine will run fine for two periods and generate $100 worth of value. With an equal probability, it will break down in the second period at which point switching to an alternative machine is not worthwhile given the switching cost.

Of course, the price of a new machine will be far less than $75. Indeed, competition between the two firms will likely lower this price quite close to cost. However, the price for repairs is another story. For those unlucky buyers who have bought a machine that has broken down after one period, they either have to do without a machine and lose $50 of value or get their machine fixed. As long as the cost of fixing the machine is less than $50, these buyers will be willing to pay for the repairs.

There is a time inconsistency in the firm–customer relationship in that buyer behavior changes once a machine is bought. By the second period, whatever price buyers paid for the machine initially becomes an irrelevant sunk cost. As a result, the firm always has some motivation to raise the repair price and extract some surplus from these buyers. Note that even if the repair price rises to close to $50, consumers with a broken machine will still be willing to pay to have it fixed since they get $50 of value from the machine working. In other words, even with that high a repair price, the expected value of a machine when it is first purchased remains at least at $75 so long as the price for repairs is less than $50. However, $50 is well above the cost of repairs. Thus, the equilibrium will be one in which the repair

price exceeds marginal cost and everyone, including consumers, understands that this will be the case.

The model just used is a simple one. However, its basic point can be generalized in a more sophisticated model as Borenstein, Mackie-Mason, and Netz (2000) have shown. Work by Gabaix and Laibson (2006) suggests that the presence of some unsophisticated consumers can interact with the lock-in effects just described to make firms unwilling to announce low aftermarket prices even when they can and even when competition is strong.

Suppose that while most buyers are rational, there are a few unsophisticated ones who, if repairs are needed, do not look at the alternative of buying and integrating a new machine but just purchase the repairs as long as these cost $50 or less. Suppose however that unlike our earlier case the cost of switching to a new machine and integrating it with current operations is only $25. Rational or sophisticated buyers will foresee the possibility of machine failure and the need to switch. Competition may then lead to market entry until all profits are exhausted, implying that the price of machine and repairs *together* would have to be close to cost. This does not mean that the equilibrium prices of both the machine and repairs have to fall to their respective marginal costs, which are here assumed to be zero. Instead, the outcome is likely to be one in which each firm sells its machine below cost but sells repairs well above cost, say at $50. Firms will lose money on rational consumers because these consumers will buy the machine at a price below cost and, if it breaks down, pay $25 in switching costs. However, the firms will recoup these losses from unsophisticated consumers who pay $50 for repairs rather than switching.

What is particularly noteworthy about the above outcome is that each firm has little incentive to announce a low repair price. If it does, it will only lose the demand of forward-looking or sophisticated buyers. These buyers did not pay the high repair price in the first place. When they discover that the firm is lowering its repair fees, sophisticated buyers will recognize that this is only possible if the price for the initial machine is raised. As a result, at least some will switch their initial purchases to other firms. Even worse, the lower repair price will reduce the profits earned from unsophisticated buyers. For example, hotels often charge a low room price but set high fees for use of the phone and the mini-bar. Similarly, rental car firms may set a low rent for the car itself but charge hefty rates for insurance and gasoline. In neither case do the firms try to compete by announcing low prices in these associated aftermarkets. They really have no incentive to do so. Profits may be low overall but that is because the foremarket price is inefficiently too low and the aftermarket price is inefficiently too high.

19.4   PUBLIC POLICY TOWARD VERTICAL RESTRAINTS

Non-price vertical agreements can have both positive and negative effects. Accordingly, a "rule of reason" approach has dominated the legal cases in this area. The outcome in the courts typically reflects the court's balancing of the conflicting pro- and anti-competitive forces. Not all analysts agree on the wisdom of this approach. For some, such as Posner (1981), the potential efficiency gains of exclusive selling and territorial agreements are likely to be sufficiently large that all such vertical restrictions ought to be considered per se legal under the antitrust laws. The argument is essentially that vertical restrictions must at least benefit the upstream and downstream firms that have agreed to such restraints. They may, as we have seen, benefit consumers as well. Attempting to use a rule of reason and judge each situation on a case-by-case method will, in this view, be very difficult and produce a large

number of inconsistent and quite possibly wrong decisions. Accordingly, the wisest course for antitrust policy is simply to let all vertical restrictions alone. The U.S. Justice Department came close to adopting such a view in its Vertical Restraints Guidelines of 1985, and there was little prosecution of vertical arrangements for the next several years. However, those guidelines were rejected in 1993 and the antitrust authorities have since taken a still tolerant but somewhat less generous attitude towards vertical restraints.

A similar fluctuation in policy has been observed in Europe. Up until the late 1990s, the approach taken by the European Union was one of condemnation for any type of non-price vertical restraint in general, coupled with broad exemptions for specific arrangements, especially franchise contracts. However, in 1999 as the economic integration became more complete, the European Union adopted its own Vertical Restraint Guidelines that applied a much more lenient treatment of vertical restraints again based on a rule-of-reason approach.

A good bit of tolerance toward non-price restrictions is probably warranted. While there are many well justified concerns about the potential for these restraints to exert anticompetitive effects, the large bulk of the empirical evidence is that such restraints are usually good for producers and have either positive or at least no negative consequences for consumers.[10] Moreover, when studies do find negative consequences for consumers, it is usually because they find a rise in retail prices. Yet this may occur for benign reasons. Recall the free-riding problem in our earlier Tylenol example. Because the cost of Tylenol's advertising is reflected in its price, the more free-riding is a serious problem, the more we would expect Johnson & Johnson to seek an exclusive dealing contract or other vertical restraint. In other words, it is likely that we will observe vertical restrictions most in precisely those markets where manufacturers have to make serious investments in advertising or quality improvement that need to be protected. Since the expense of those investments will be reflected in the product price, this also means that the use of those restrictions will be associated with higher prices. Yet the restriction is not the cause of the higher price and its use does not necessarily hurt consumers. When the possible endogeneity of vertical restraints is recognized, the accumulated empirical evidence implies even more strongly that the use of such restraints has generally been beneficial.

Sometimes non-price vertical restraints are imposed by the government and sometimes these restraints have a negative effect. For example, in many states, independent opticians have been prohibited from fitting contact lenses. Instead, lens wearers have been required to see an ophthalmologist or optometrist, thereby effectively tying the purchase of lenses to the services of these professionals. Haas-Wilson (1987) found that such policies raised consumer prices without any improvement in quality. They also diminished the variety of consumer choices. Such findings are not unusual in the case of state-imposed vertical restrictions.[11]

The efforts of policy makers to balance anticompetitive effects such as entry deterrence against the efficiency gains that exclusive dealing can generate are illustrated by a U.S. case involving the two principal manufacturers of the water pumps used by fire engines. Hale Products, Inc. and Waterous Company, Inc. were the pump-makers in question. Each manufactured the water pump that is installed on fire trucks in the U.S. Each sold its pumps directly to the makers of such fire trucks through exclusive dealing contracts. Those fire truck manufacturers who bought from Hale agreed not to buy from any other pump-maker and

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[10]   See Lafontaine and Slade (2007).

[11]   Occasionally, state governments also categorically block vertical restraints, as with laws that ban direct ownership of gasoline service stations by oil refineries. Such state intrusion into private organizational choices can also create difficulties. See, e.g., Blass and Carlton (2001).

likewise for those who agreed to purchase their pumps from Waterous. In determining the effect of these agreements, the FTC noted that together the two firms accounted for 90 percent of the U.S. market for water pumps and had done so for nearly fifty years, with the remainder accounted for by a small third firm, W. S. Darley & Company. During that time, no new entrant had come into the market. This was taken as evidence by the FTC that the exclusive dealing agreements had effectively blocked such entry. In addition, the FTC alleged that the agreements also worked to reduce competition between Hale and Waterous. Documents were presented indicating that each firm realized that so long as it dealt only with its half of the engine manufacturers, it did not need to fear competition from the other. Further, the FTC noted that neither pump-maker would wish to cheat on this tacit agreement because such cheating would be quickly detected. Waterous would know immediately if one of its customers ever stopped buying the Waterous pump. The same would be true for Hale. Ultimately, the FTC prevailed and the two firms agreed to cease the exclusive dealing arrangements.[12]

The above procedure illustrates how a rule of reason operates in practice. The threshold issue is the fraction of the market such agreements cover. Unless that fraction is large, the agreements are presumed not to weaken competition in any meaningful way and are therefore deemed legal. Even if the threshold is reached however, that merely sets the stage for subsequent investigation. The question then becomes whether the restrictions are substantially harmful to competition. Here, factors such as the history of entry, the behavior of prices, and the potential for free-riding problems need to be examined. This is a complicated process and the per se presumption of legality suggested by Posner (1981) is understandably tempting. Our view is that there are sufficient grounds for concern that the continued use of a rule of reason approach is warranted despite the difficulties that entails.

19.5   A BRIEF DISCUSSION OF FRANCHISING AND DIVISIONALIZATION

Our discussion of vertical relations has often included references to franchising. In fact, probably the bulk of vertical restrictions arise in the context of franchising agreements since these cover a large fraction of retail sales, roughly over a third. As a result, franchising warrants some individual attention on its own.

There are two basic types of franchising agreements. Under the traditional type observed with soft drinks, gasoline, and car dealerships, the upstream franchisor sells its branded product to the downstream franchisee who then resells this good either to other firms or consumers. More recently, a second type of franchising known as business format franchising has emerged. Here, the franchisee buys the right to a brand name and a complete business plan. Food establishments such as McDonald's and hotel chains such as Marriott are examples of this latter type. Business format franchising has grown rapidly and now accounts for over a quarter of all franchising.[13]

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[12]   See Federal Trade Commission, Decision and Order, In the Matter of Hale Products Inc., Docket No. C-3694, November 22, 1996, and Decision and Order, In the Matter of Waterous Company, Inc., Docket No. C-3694, November 22, 1996.

[13]   See Lafontaine (1993), Lafontaine and Shaw (1999), and Blair and Lafontaine (2005).

The proliferation of franchised outlets reflects in part the scale economies that such outlets can enjoy in terms of advertising and the purchase of supplies. It also reflects the greatly increased mobility of households resulting in a need for recognizable brand names that reduce uncertainty about quality and save on shopping time. However, even after the decision to establish new outlets has been made, a franchisor still has an organizational choice to make. In particular, it has to determine whether it wishes to operate the outlet as a company-owned operation managed by a salaried employee or as an independent franchise run by a profit-maximizing owner.

There are two countervailing forces that affect this choice. On the one hand, a salaried employee running a company-owned outlet may not have strong incentives to put forth effort and maximize profit whereas the franchisee as residual claimant does have incentives much more closely aligned with those of the franchisor. On the other hand, the company-owner outlet can perhaps be more easily monitored and controlled to make sure that it works cooperatively with others in pursuit of the franchisor's goals. In contrast, while an independent franchise owner may have a strong incentive to innovate and earn the maximum profit since that means more for its owner, we need to recognize that maximizing the outlet's profit and maximizing the franchisor's profit can be two different matters. For example, an independent franchisee may not support the promotional and service efforts that maximize the joint profit of all the company's outlets but, instead, free-ride on the efforts of others. Of course, if all outlets do this, promotional and service levels may fall far below the level that maximizes joint profit.

We have seen that vertical restrictions such as exclusive territorial rights may help resolve the incentive conflicts between franchisors and franchisees. Further, by granting a local territorial monopoly, the franchisor may induce franchisee owners to pay a higher initial franchise fee. However, once that fee has been collected, a further potential conflict arises between franchisor and franchisee. The franchising firm may have an incentive to open additional outlets that crowd in on the territory of the initial franchisee.

There are at least three reasons for a franchisor to wish to have a large number of franchisees. From a spatial perspective, operating many outlets means that the franchisor is better able to meet the specific preferences of each individual customer. This enables the franchise operation to extract more surplus by charging each customer an amount much closer to his maximum willingness to pay for the customer's most preferred variety. In short, operating many outlets may enhance the franchisor's ability to price discriminate.

In addition, the operation of a large number of outlets may be a means for firm to overcome asymmetric information and attendant moral hazard problems. With just one outlet, the franchisor cannot tell whether a low-profit outcome is due to bad luck—which could happen to anyone—or to the outlet's poor management. With many outlets, it is less likely that they all will have bad luck at the same time. Hence, the average performance of a large number of outlets may serve as a benchmark against which to measure the performance of each franchise individually.

Both of these are perfectly plausible explanations for why franchising is a popular business model and also for why companies might wish to establish various operating divisions as independent profit centers. A third motivation is also possible, however. It is that, operating a large number of independent franchises (or divisions) may be a way for a firm to commit to a large total output. This is the approach taken by Baye, Crocker, and Ju (1996) who analyze the implications of this motive for franchising or divisionalization using a two-stage model. In the first stage, there are two independent franchisors, each of which chooses

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the number of independent franchises that it wishes to establish. In the second stage, the franchises from both franchisors compete in a Cournot quantity-setting game.[14]

Suppose that the franchises of both firms produce a homogeneous product at a constant marginal cost of c. The inverse demand for the product in the downstream market is described by our usual linear function, $P = A - BQ$, where Q is total market output.

In stage one of the game, let n_1 and n_2 denote the number of franchisees established by franchisors 1 and 2, respectively. A franchisor incurs a sunk cost K in the first stage when it sets up a franchise. In stage two, all of the franchisees act as independent players in a simultaneous-move Cournot game. By that we mean that each franchise acts like an independent profit-maximizer.

To solve this game we begin with the stage-two competition. Let q_{ij} denote the output chosen by the ith franchise of firm j, where i runs from 1 to n_j and j is equal to 1 or 2. Let Q_{-ij} describe the total output of all franchises except the ith franchise of firm j. The profit of this franchise π_{ij} can then be written as

$$\pi_{ij}(q_{ij}, Q_{-ij}) = [A - B(Q_{-ij} + q_{ij})]q_{ij} - cq_{ij} \tag{19.1}$$

where total market output Q is equal to $\displaystyle\sum_{j=1}^{2}\sum_{i=1}^{n_j} q_{ij}$.

The ith franchise of firm j chooses output q_{ij} to maximize its profit. This, of course, requires setting its marginal revenue to its marginal cost. This implies in turn that the optimal output of any franchise q_{ij}^* satisfies

$$A - BQ_{-ij} - 2Bq_{ij}^* = c \tag{19.2}$$

Since all franchises are identical, they must all choose the same optimal output in equilibrium—that is, $q_{ij}^* = q^*$ for all i, j. This greatly simplifies matters. Since there are $n_1 + n_2$ franchises in total, Q_{-ij} must equal $(n_1 + n_2 - 1)q^*$. Substitution into equation (19.2) then yields

$$q^* = \frac{A - c}{(n_1 + n_2 + 1)B} \tag{19.3}$$

from which it follows that the total industry output Q and associated market price P in stage two are

$$Q = \left(\frac{n_1 + n_2}{n_1 + n_2 + 1}\right)\left(\frac{A - c}{B}\right) \text{ and } P = \frac{A + (n_1 + n_2)c}{n_1 + n_2 + 1} \tag{19.4}$$

At this price, each franchise will earn a stage-two profit π_{ij} given by

$$\pi_{ij} = \frac{(A - c)^2}{B(n_1 + n_2 + 1)^2} \tag{19.5}$$

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[14]   Rather than franchises, these could be divisions of the company provided that the divisions are established as independent profit centers.

The two franchisors who anticipate competition among franchises in stage two along the lines just described must decide in stage one how many franchises to set up. Firm 1's profit can be written as $\pi_1 = \sum_{i=1}^{n_1} \pi_{i1} - Kn_1$ where π_{i1} is the stage two profit of the ith franchise of firm 1. Since equation (19.5) shows the profit earned by each of firm 1's n_1 franchises in stage two, we can rewrite firm 1's overall profit as

$$\Pi_1(n_1, n_2) = n_1 \frac{(A - c)^2}{B(n_1 + n_2 + 1)^2} - Kn_1 \tag{19.6}$$

Firm 1 chooses its total number of franchises n_1^* so as to maximize its profit $\Pi_1(n_1, n_2)$ when firm 2 has n_2 franchises of its own. In other words, firm 1 wants to choose a best response n_1^* to the number of franchises, n_2 that firm 2 has. It is straightforward to show that this best response function satisfies[15]

$$\frac{(A - c)^2}{B(1 + n_1^* + n_2)^2}\left(1 - \frac{2n_1^*}{(1 + n_1^* + n_2)}\right) - K = 0 \tag{19.7}$$

Since firm 2 is identical to firm 1, we have a symmetric condition for n_2^*. So, using the notation that $n_1^* = n_2^* = n^*$, and recognizing that this symmetry implies that $n_1^* + n_2^* = 2n^*$, we can solve for n^*. This solution is

$$n^* = \frac{1}{2}\left[\left(\frac{(A - c)^2}{BK}\right)^{1/3} - 1\right] \tag{19.8}$$

Equation (19.8) shows that the greater is $(A - c)$ and/or the smaller is K, the greater is the number of franchises chosen by firm 1 and firm 2 in stage one of the game. Recall that the difference between price and cost is $(A - c)/2$ if the market is monopolized. One implication of this model is that firms will create more franchises the greater the price-cost differential would be under a monopoly. However, having more franchises is tantamount to having more Cournot-type units, and this brings us closer to the competitive equilibrium. Hence, the greater the possible markup under a monopoly, the greater the number of franchises the two firms operate, and the more closely they end up approximating the competitive equilibrium. The firms are locked in a "prisoners' dilemma" in which the best response of each firm acting separately is not optimal from the standpoint of the two firms collectively. The firms independently open up more franchises than they would if they cooperated or colluded.

There are many reasons behind the extensive growth of franchising. These include cost advantages and modern lifestyles in which households change geographic locales frequently and therefore prefer inter-regional brands to facilitate shopping decisions. An additional reason is that operating many franchises may be a natural outcome of competition between

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[15]   The response function in equation (19.7) is derived by taking the derivative of the profit function (19.6) with respect to n_1 and setting it to zero. This technique assumes that we can ignore the constraint that n_1 be an integer.

Reality Checkpoint
Mail Boxes, Etc. Has Some Downs With UPS

In 2001, the shipping giant, United Parcel Service (UPS), acquired the small package delivery firm, Mail Boxes, Etc. Independent franchisees at Mail Boxes were at first ecstatic about the deal. They thought that UPS, widely known by its recognizable large vans and nicknamed "Brown," would bring them a sizable increase in volume and permit offering a wider range of services. UPS had been looking to expand its retail reach for some time and the feeling was that their decision to pursue Mail Boxes must reflect its view that this was an excellent match.

Now, a few years later, many of the former Mail Boxes franchisees have left. Hundreds of these have banded together to file a suit against UPS. What went wrong?

From the franchisees' perspective, the UPS business model imposed far too many vertical restraints. The first sign of this was UPS's decision to convert all the Mail Boxes outlets to UPS Stores. Not only did this take away a hard-won brand identity but it also required costly store makeovers that came largely at the franchisees' expense. By right of their previous contracts, franchisees had the right to keep the Mail Boxes name and look for a few years. However, those that did were told that UPS would stop promoting the Mail Boxes brand. Further, while volume did increase somewhat, extra franchisee profit failed to materialize. In addition to the makeover costs, this was partly due to the fact that UPS imposed a limit on the retail price as a means to limit double marginalization. Moreover, while this limit might have been acceptable in principle, UPS set its maximum retail price on a national basis so that all prices were the same irrespective of regional cost differences. UPS also reduced the compensation franchisees received for handling pre-labeled packages right after it established a website where consumers could prepare their own labels. In addition, UPS imposed exclusive dealing restrictions so that franchisees could no longer deal with rival shippers such as FedEx. The result was that many franchisees felt they were basically being turned into mere drop-off points. Worst of all from the franchisees' perspective, UPS opened up a considerable number of additional UPS Stores, including many close to the original Mail Boxes establishments. This has been the biggest source of friction.

The theme of UPS ads for some years has been, "What can Brown do for you?" A number of former its unhappy franchisees see that ad and reply, "Stop competing with me."

independent franchisors. The result will be that there are many more franchises than the number that would maximize industry profits. Moreover, while expanding the number of franchises may be hard on firm profits, it can be especially hard on the profits earned by each individual franchisee. This again reflects another aspect of the incentive conflicts that beset the franchisor–franchisee relationship.

While we have cast our example in terms of the operation of independent franchisees, it could equally well be cast in terms of operating independent divisions such as the different divisions run by major auto makers such as GM and Ford. Here again, the outcome may be too many divisions from the viewpoint of maximizing industry profits, but with no real way for any one car firm to reduce the number of divisions unilaterally.

Assume two firms confront each other in an industry in which the inverse demand is $P = 100 - Q$. Let marginal cost be constant at $c = 25$, and let the sunk cost of setting up a franchise be $K = 45$.

a. According to equation (19.8), how many franchises will each firm operate?
b. According to equation (19.6), what profit will each firm make if each operates the number of franchises derived in part (a)?
c. According to equations (19.4) and (19.5) what will be the industry price, P, and output, Q?
d. Calculate the industry output, price, and profit earned by a pure monopolist. Compare this with your answers in part (b).

19.6 EMPIRICAL APPLICATION
Exclusive Dealing in the U.S. Beer Industry

The impact of exclusive dealing and exclusive territorial contracts has been the subject of many studies. The emerging consensus from these studies is that such contracts are beneficial, both for firms and for consumers, when they are not mandated by the government but instead, the result of private negotiations. A study by Tim Sass (2005) on exclusive dealing in the U.S. domestic beer market is an example of the kind of analysis that finds support for private vertical contracts.

The U.S. has a three-tiered beer market. At one end of the stream, are the beer producers or breweries, such as Anheuser–Busch (AB), Miller, and Coors. In the case of a foreign beer, the domestic firm importing that beer plays the role of a producer. Besides producing the beer, brewers also engage in a good bit of advertising and product promotion.

The brewers sell to the next tier, which is comprised of distributors. These sales are usually made at a constant price per unit, i.e., they typically do not set franchise fees or use two-part tariffs. The distributors warehouse the product, do local advertising and promotion, and also monitor local beer quality. They sell to the third tier, the retailers from whom consumers make their purchases of beer. Again, sales to retailers usually employ linear pricing.

All of the major breweries have exclusive dealing contracts with at least some of their distributors. They also typically assign exclusive territories. The latter means that there is little *intra*brand competition among distributors. However, there is a fair bit of *inter*brand competition. It is very rare that a single distributor possesses a monopoly in a regional market.

Sass (2005) first tries to determine what factors lead to the use of exclusive contracts in the beer market. Data from a *1996/1997 Distributor Brand-Equity Survey* provides evidence on 381 distributor contracts, 69 of which include an exclusive dealing clause (most of these are AB distributors). If foreclosure is a motivation for such contracts, then they should become less likely as market size grows. This is because foreclosure basically works by denying the rival a sufficiently large sales base to permit exploiting scale economies, and this is harder to do when the market is large. Sass (2005) uses two variables to capture potential market size. One is the population (*POP*) of the distribution region. The other is the state-level market share (*MSD*) of the brewery that is the primary supplier of the distributor.

Another factor has to do with the local market information that the distributor has acquired. A distributor who has a lot of information about local consumer tastes and price responsiveness will likely be less willing to sign an exclusive dealing contract because this

Table 19.1   What explains the use of exclusive dealing in U.S. beer distributor contracts?

Explanatory variable	Estimated coefficient	t-statistic
POP	0.0001	(1.87)
MSD	0.0079	(2.79)
YRS	−0.0017	(−2.10)
AD	−0.0002	(−0.38)
BAN	−0.0955	(−2.12)

limits that distributor's ability to profit from her information. Sass (2005) proxies this information by the number of years (*YRS*) that the distributor has been owned by the same family.

Finally, brewers may want to have exclusive dealing when they have large promotional expenses themselves that raise retail demand for beer in general but which, in the absence of an exclusive arrangement, the distributor might meet by selling an alternative brand. To capture the importance of such non-brand specific advertising, Sass (2005) uses the national advertising of the brewer's primary supplier (*ADS*) and a 1,0 variable indicating whether or not there is a state ban on billboard or sign advertising (*BAN*). If protecting its advertising against free riding is a motivation for the brewer, the first should have a positive effect and the second should have a negative effect.

Since a contract is either classified as an exclusive deal or not, the independent variable in the econometric specification is a 1,0 variable and Sass (2005) estimates this regression using the Probit procedure that we described in the Empirical Application in Chapter 13 regarding the Ellison and Ellison (2006) study of entry into generic drug markets. This means that the estimated coefficients indicate how much a change in the explanatory variable would raise or lower the *probability* of using an exclusive contract. The results are shown in Table 19.1.

Overall, the evidence on the determinants of where exclusive dealing contracts are used in the U.S. beer market implies that these contracts are not used to harm competition. Instead, they appear to be used for the beneficial reason of protecting brewers' investments in their own product promotion. For example, increases in market size as measure by both *POP* and *MSD* raise the likelihood of an excusive dealing clause and the *t*-statistics indicate that both of these effects are statistically significant. This suggests that these contracts are not being used to foreclose markets to rivals. There is some evidence that the real motive is to protect the brewer's generalized advertising efforts against free riding. While *AD* is not statistically significant, the present of a ban against beer advertising on billboards and signs does have a negative effect on exclusive dealing. When there is less promotion, there is less need to protect it with an exclusive dealing contract. Finally, there is also evidence that as distributors gain experience and knowledge of the local market, they are less willing to sign an exclusive dealing contract that might restrict their ability to profit from that information. The coefficient on *YRS* is negative and significant.

Having examined the factors that lead to exclusive dealing, Sass (2005) then turns to examining the market effects that such contracts have. He considers four possible variables that might be affected. These are: (1) the average price paid by the distributor to brewers, *PB*; (2) the price the distributor charges retailers for its primary brand, *PD*; (3) the quantity of the primary brand sold, *QPRIMARY*; and 4) the quantity of all brands sold, *QTOTAL*, each measured in logarithms.

Prices of course, should reflect both supply (i.e. cost) and demand pressures. Assuming that production costs are roughly the same for the brewers, the cost differences in supplying a distributor will reflect shipping costs or the distance from the nearest plant *DIST*; the level of excise taxes *TAX*; and possibly, the presence of a ban on outside advertising *BAN*, which could raise promotional costs. If these variables affect the price paid by the distributor then they should also affect the price paid by the retailer. That price in turn should affect both sales of the primary brand and of all brands. Thus, these three variables belong in all four equations.

To capture demand effects, Sass (2005) uses three variables. These are: 1) per capita income in the distribution territory, *INC*; 2) population in the distribution territory, *POP*; and the percent of the population that is of prime drinking age, *AGESHARE*. Of course, the primary variable of interest is whether or not the distributor in question operated under an exclusive dealing contract, *EXDEAL*. This is a binary variable equal to 1 if there was an exclusive dealing contract and 0 if there was not.

The four regressions suggested by the variables just described are:

$$PB = CONSTANT + a_1 EXDEAL + a_2 DIST + a_3 TAX + a_4 BAN + a_5 INC \\ + a_6 POP + a_7 AGESHARE + \varepsilon_{PB}$$

$$PD = CONSTANT + b_1 EXDEAL + b_2 DIST + b_3 TAX + b_4 BAN + b_5 INC \\ + b_6 POP + b_7 AGESHARE + \varepsilon_{PD}$$

$$QPRIMARY = CONSTANT + c_1 EXDEAL + c_2 DIST + c_3 TAX + c_4 BAN + c_5 INC \\ + c_6 POP + c_7 AGESHARE + \varepsilon_{QPRIMARY}$$

$$QTOTAL = CONSTANT + d_1 EXDEAL + d_2 DIST + d_3 TAX + d_4 BAN + d_5 INC \\ + d_6 POP + d_7 AGESHARE + \varepsilon_{TOTAL}$$

Basically, these are the regressions that Sass (2005) estimates. However, in both the first and the fourth equations, he also includes market share data for three of the major brands to see how the extent of their presence affects the brewer's price to the dealer and final total sales. Sass (2005) also recognizes that the distributor's costs, and therefore price to retailers, may reflect both the distributor's business savvy as captured by the number of years the same family has owned the distributorship, and an additional cost factor based on the average number of retailing stops the distributor must stop at per week. Hence, Sass's final set of regressions are as follows:

$$PB = CONSTANT + a_1 EXDEAL + a_2 DIST + a_3 TAX + a_4 BAN + a_5 INC \\ + a_6 POP + a_7 AGESHARE + MARKET\ SHARE\ EFFECTS + \varepsilon_{PB}$$

$$PD = CONSTANT + b_1 EXDEAL + b_2 DIST + b_3 TAX + b_4 BAN + b_5 INC \\ + b_6 POP + b_7 AGESHARE + OTHER\ COST\ FACTORS + \varepsilon_{PD}$$

$$QPRIMARY = CONSTANT + c_1 EXDEAL + c_2 DIST + c_3 TAX + c_4 BAN + c_5 INC \\ + c_6 POP + c_7 AGESHARE + \varepsilon_{QPRIMARY}$$

$$QTOTAL = CONSTANT + d_1 EXDEAL + d_2 DIST + d_3 TAX + d_4 BAN + d_5 INC \\ + d_6 POP + d_7 AGESHARE + MARKET\ SHARE\ EFFECTS + \varepsilon_{TOTAL}$$

We are mainly interested in the impact of exclusive dealing. Before discussing that effect, however, it is worth noting two features of this system. These are reduced form equations. That is, they are not equations that describe the full supply and demand structure. Instead,

Table 19.2   Effect of exclusive dealing on market outcomes

Dependent variable							
PB		PD		QPRIMARY		QTOTAL	
EXDEAL Coefficient	t-statistic	EXDEAL Coefficient	t-statistic	EXDEAL Coefficient	t-statistic	EXDEAL Coefficient	t-statistic
0.0630	(2.73)	0.0368	(2.13)	0.3241	(3.09)	0.2816	(2.74)

they describe the outcome for the dependent variable in terms of the basic factors that under-lie supply and demand. In each case, the final term represents the influence of random factors that may affect the brewer's price, the distributor's price, primary brand sales, or total brand sales.

In principle, each of these regressions could be run alone using ordinary least squares (OLS). However, it seems likely that the random factors that, say, raise total demand may also affect primary brand demand and, in turn, feed into prices. In other words, while the regressions may seem independent of each other, there is a correlation between the random forces affecting each one, i.e., ε_{PB}, ε_{PD}, $\varepsilon_{QPRIMARY}$, and ε_{TOTAL} may all be correlated. If they are, then information about the nature of this correlation can be used to estimate the regression coefficients more precisely. To do this, Sass (2005) employs a regression technique known as Seemingly Unrelated Regression. This approach estimates the four regressions simultaneously by applying an estimate of the correlation across the error terms to construct generalized least squares (GLS) estimates. The estimated effect of exclusive dealing in each of the four regressions is shown in Table 19.2.

In every case, the effect of an exclusive dealing clause is positive and highly significant. It raises the unit price set by brewers by about 6 percent and the price set by distributors by about 5 percent. Despite these increases, final sales of both the primary producer's brand and of all brands also rise under exclusive dealing. These effects are particularly large. Demand for the brewer's product rises by 32 percent as the result of exclusive dealing. Yet this does not come at the expense of other brands. Instead, their sales rise as well by over 218 percent. In further regressions, Sass (2005) finds that exclusive dealing by one brewer (AB, in particular) does not significantly decrease rival brewers' prices.

The implications of these findings are relatively straightforward. The fact that exclusive dealing rises with the size of the market seems inconsistent with the idea that it is used as an anticompetitive foreclosure device. This inference is strengthened by the finding that such restrictions also do not tend to force rivals to lower their prices. Instead, the fact that exclusive dealing restraints rise with both market size and the presence of restrictions on outdoor advertising is more consistent with the notion that such contracts are used to mitigate conflicts between the brewery and its distributors.

Since the price to the distributor and the distributor's price to the retailer rise and sales volume also rises, there is no doubt that the surplus of brewers and distributors is enhanced by exclusive dealing. What happens to retailers and consumers is less clear. However, the rise in sales volume is sufficiently large that there is a strong supposition that their surplus also goes up. In short, the results of Sass (2005) strongly indicate that exclusive dealing in the U.S. beer industry is welfare enhancing.

Summary

Contracts between manufacturers and the various retailers that sell the manufactured products directly to consumers include a variety of non-price restrictions. These may include an exclusive dealing restriction that prevents the retailer from selling the products of any other manufacturer, or exclusive selling and territorial arrangements that restrain the manufacturer from allowing any other retailer to sell its product. Because these restrictions so clearly have the appearance of a restraint on trade, they fall under suspicion as anticompetitive.

In reality, however, there may be many efficiency gains that lie behind such restrictions. Often they may serve to ensure adequate promotional activities and other consumer services. They may also be useful in creating an environment in which retailers can better handle demand shocks.

A particularly complicated vertical relationship arises in the context of so-called aftermarkets. For a number of technological goods, the firms that supply the initial equipment also compete in an aftermarket to provide repair services to those machines. Frequently, these firms impose vertical restrictions that require the machine owners to buy their repair services from the same firm from which they bought the machine initially. The effects of such lock-in effects are difficult to determine. They may again be a means of insuring quality. Yet there are good reasons to believe that these restrictions give firms an ability to charge supracompetitive prices in the aftermarket even when the primary market has lots of competition. This issue has still to be resolved fully.

For the most part, public policy towards vertical restraints has increasingly recognized their potential benefits. This largely reflects the accumulating empirical evidence that these restrictions generally help producers and may help, or at least not hurt consumers. However, the potential for the abuse of market power seems clear, especially when the restrictions apply to a large fraction of the existing market. For this reason, authorities have continued to take a rule-of-reason approach to nonprice vertical restraints rather than a *per se* legal one.

Before concluding we note that, in many respects, the retailer acts as an agent on behalf of the manufacturer. It learns about consumer tastes, makes promotional and other service decisions, and, of course, sets the final consumer price. Consequently, the vertical relationship between the producer and the retailer is a principal–agent relationship akin to the relationship between a client and his lawyer, or between shareholders and management. The contractual issues that arise between manufacturer and retailer are therefore part of a broader set of questions that arise in connection with contracts that govern all principal–agent relationships. These are important issues in the theory of the firm. For example, what is the difference between a producer connected to its retailer by means of a formal contract and a producer that simply is fully integrated into the retail market; or, for that matter, a producer that operates a retail division? Why do firms choose one form of organization over another? We do not answer these questions here. However, we do want to acknowledge that the issue of vertical relationships is really part of a larger question regarding the boundaries and limits of the firm.

Problems

1. Most beer companies impose an exclusive dealing clause on the supermarkets that sell their products. Discuss whether you think this practice will yield efficient market outcomes.

2. General Motors, Ford and Daimler–Chrysler all operate many divisions of automobile lines, e.g., Chevrolet, Pontiac, Cadillac, and Buick. Discuss the motivation for this practice. Who do you think this practice benefits the most, automakers or consumers?

3. In Europe, automobile dealers have traditionally been granted exclusive territories. Do you think that this practice should be legal?

4. Review the model of Rasmussen, Ramseyer, and Wiley (1991) from Chapter 13. Why are scale economies important for this argument that exclusive dealing can deter entry?

5. Most McDonald's hamburger outlets are owned by individual entrepreneurs who pay franchise fees to McDonald's for the right to

use the McDonald's name and recipes. Recipes for food at least as good as McDonald's are easy to find and cost less than the fees these entrepreneurs pay to McDonald's. Given the lower cost of equally good products, why are franchise holders willing to pay so much money to the franchiser corporation?

6. Who would be willing to pay more for the right to use the McDonald's name—an outlet located in the center of Centerville, or one that would do the same amount of business at the interstate turnpike?

7. What are the incentives for McDonald's to require franchisees to buy hamburger buns, meat, napkins, and other supplies from it rather than from other, possibly lower-cost local suppliers, other than the incentive of removing double marginalization?

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