The Theory and Practice of Mergers

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1. Introduction

Mergers are a very popular topic in industrial organization today. Why do they occur? What are their economic and non-economic consequences? Like a marriage (Steiner, 1975), a merger always involves at least two parties, each party with its own makings. But unlike marriage, the motives for a merger are more complex and generate more controversy. Mergers respond to a variety of private motives: to displace inefficient managers; to enhance market power or monopoly power; to achieve economies of scale and scope in production, distribution, and financing; to exploit tax reduction opportunities; to acquire undervalued targets.[1] This variety of motives explains the large number of mergers since the great merger wave of the late 1960s.

Mergers are quite different from other corporate decisions. The following questions are often raised by mergers: (1) Whether the merger decision is fully consistent with profit maximization; (2) Can the merger generate higher private returns than other types of investment? (3) How do the social returns compare with the private returns? (4) Do mergers transform the industrial landscape? (5) If the merger is approved, will it stimulate more mergers, or will it prevent competition in the market?[2] Because of the complexity of these questions, each merger has to be studied and evaluated in detail.

There were five great merger waves in the past century--one at its beginning, and

[1] Beena, 2001.
[2] Falvey, 1998.

successive waves at the ends of the 1920s, 1960s, 1980s, and 1990s.[3] Much of the earlier merger activities were restricted to the United Kingdom and the United States. The most recent merger wave includes most industrial countries. Since the merger wave in the United Kingdom and the United States at the end of the 19th century, mergers became a topic of public interest. It generated several massive and diverse literatures: economic, theoretical, econometric, legal, and policy oriented. Horizontal mergers predominated in the great merger wave. Their proponents claimed that horizontal integration will generate efficiency gains, but their opponents were worried about the increase in market power. For the merger wave of the late 1960s, what was new was the sudden acceleration in the merger rate and the fact that a large number of these mergers were "conglomerate" mergers (the conglomerate may be defined as a merger involving firms in unrelated markets. Conglomerate mergers are defined in the Department of Justice Guidelines as "mergers that are neither horizontal nor vertical as those terms are defined").[4]

While there are many specific motives for mergers, the common motive is to enhance profits. In certain situations, a merger between two firms will increase profits through reduced costs, with the premise that cost gains from the merger are desirable and to some extent will counteract the potential market power effects. Hence, the problem is whether there are special circumstances under which the cost efficiencies from the merger are most likely to exceed the undesirable market power effects. The potential

[3] Gugler et al., 2003.
[4] Kwoka, 2002.

efficiency gains from the horizontal merger lead to a famous trade-off approach to merger policy which was proposed first by Oliver Williamson (1968). In a simple partial equilibrium welfare economics model, Williamson provided a clear analysis of the potential tradeoffs between increases in market power and efficiencies following a merger. Williamson argued that the effects of a relatively small cost reduction generally exceed these of a relatively large increase in market power (Williamson, 1977). However, in a market involving more than two firms, the efficiencies from the merger will accrue only to those firms involved in the merger, and an equilibrium analysis within an oligopoly model is required.

From a social welfare perspective, there is a difference between the private and the social returns from mergers. Private return refers to the consumer surplus or the producer interests. Social returns refer to the total surplus, which is the sum of consumer and producer surplus. The trade-off between efficiency gains and consumer interests depends on the specific type of efficiency. A merger may sometimes lower prices, to the benefit of consumers. To assess the price effects of a merger, it is therefore crucial to identify the specific types of efficiencies involved. For social returns from mergers, there is a trade-off between the possible efficiency gains and anti-competitive effects. However, the specific types of efficiencies are proved to be very useful in assessing the trade-offs.[5]

In general, enhanced collusion might be a problem only with respect to horizontal mergers. For conglomerate mergers, "strategic diversification" is the primary motive.

[5] Gans, 2000.

Moreover, the strategies have focused on facilitating cooperation and bringing higher prices. Conglomerate mergers can increase the symmetry of diversified competitors' operations. By increasing multi-market contact, they can facilitate oligopolistic consensus, because they increase the likelihood that each firm will independently choose a strategy close to the one maximizing joint profits for the set of interdependent firms. For example, consider two markets, each with only two sellers. In the first market, seller B competes with seller A. In the second market, seller A competes with seller C. If sellers B and C merge, even though they are not competitors, the merger creates a situation in which the tacit cooperation, the communication needed to overcome myopic behavior of a prisoners' dilemma game, is more easily attained (Bischof, 1995). Because of the increased contact, reaching a consensus on price is easier. Additionally, on each market, the strategies of the two sellers will be more symmetric, making tacit agreement easier.[6]

It is not clear whether profitability increases or decreases with mergers, but we can get some results from the United Kingdom and the United States. In the postwar period, the first increases in merger activity on a sizable scale took place in the 1950s in the United Kingdom and in the United States. For example, in the United Kingdom nearly 2000 manufacturing companies were quoted on the stock market in the mid-1950s. Similarly, in the United States at the height of the merger wave of 1966-1968, 462 large manufacturing and mining companies were acquired, accounting for 10 percent of the

[6] Fridolfsson and Stennek, 2001.

total assets of all large companies in 1964.[7] The profitability analysis of mergers in the United Kingdom suggests that profitability declined slightly after the merger.[8] A similar result holds for the United States.[9] Does this imply that most mergers are not profitable? This is one of the questions to be studied in this paper.

The paper is divided into five sections. Section 2 will analyze the motives of mergers. Section 3 will examine the profitability of mergers, including pre-merger and post-merger profitability. In section 4, case studies of mergers' motives and efficiency will be presented. Section 5 presents the summary and conclusions.

[7] Mueller, 2003.
[8] Hughes, 1993.
[9] Fauli-oller, 2002.

2. The motives for mergers

"The primary benefit of mergers to the economy is their efficiency-enhancing potential. If the parties to the merger establish by clear and convincing evidence that a merger will achieve such efficiencies, the Department will consider those efficiencies in deciding whether to challenge the merger....."[10] The merger is a market transaction for corporate control.[11] There is a seller and a buyer, and the merger occurs when the benefits to each of the parties are sufficiently large to exceed the costs and deterrents.

According to Richards,[12] to explain particular mergers, many specific incentives have been adduced:

"1. A desire to limit competition or achieve monopoly profits;

2. A desire to utilize unutilized market power;

3. A response to shrinking opportunities for growth and/or profits in one's own industry due to shrinking demand or excessive competition;

4. A desire to achieve a large enough size to realize an economical scale of production and distribution;

5. A desire to displace an existing management;

6. A desire to utilize tax loopholes not available without merging; and

[10] U.S. Department of Justice Merger Guidelines, June 14, 1984, section 3.5.
[11] Maksimovic and Gordon, 2001.
[12] Richards, 2003.

7. A desire to reap the promotional or speculative gains attendant upon new security issues, or changed price earnings ratios".

2.1 The profits increasing hypothesis

There are too many possible motives to list all of them. However, the most frequently hypothesized causes of mergers are to bring about an increase in profits by increasing market power, or reducing production costs. Market power can be achieved by a merger, by raising barriers to entry, or by reducing the demand elasticity of the firm's products. Through the last two methods, the firm can get higher profits either by selling the products at the current price for a longer time or by increasing the price.[13]

At the same time, mergers can increase a firm's market power in many ways (Pautler, 2003; Richards, 2003). For horizontal mergers, a merger between two firms in the same industry increases the acquiring firm's market share, thereby they can charge a higher price, and if coupled with cost reduction, a horizontal merger can even increase barriers to entry: the potential entrant will be deterred because of the incumbent's lower cost. As for vertical integration, a firm with substantial market power in one market can, "through backward integration, provide a captive outlet for the products of a firm one step back in the production chain" (Mueller, 1980:44), thereby increasing the effective market power of the purchased firm. For conglomerate mergers, a merger between two firms that are each potential purchasers of one another's products, provides markets for one another's

[13] Spector, 2002.

products, thereby increasing each firm's market power.

Each form of merger can also reduce production costs. For a horizontal merger, this can be done through economies of scale in production. Vertical integration can reduce the cost when production processes require closely integrated steps in the production chain. For conglomerate mergers, the cost can be reduced due to the advantage of the strategy diversification, especially the capital-transferring ability of the firm.[14]

2.2 The market for corporate control hypothesis

Manne (1965) invented the term "market for corporate control" and supposed that this market operated efficiently to eliminate managements that either pursued goals that conflicted with shareholder interests, or were simply incompetent. Under this hypothesis, any firm can capture the potential gains from a merger by adjusting the policies of the target firm. This will decrease the share price, and the incompetent management will be replaced. Finally, its market value will increase from the current level to a higher potential level.

Corporate control is used to describe many phenomena ranging from general forces that influence the use of corporate resources (such as legal and regulatory systems and competition in product and input markets) to the control of a majority of seats on a corporation's board of directors. Hence, corporate control is the right to determine the management of corporate resources, that is, the right to hire, fire, or set the compensation

[14] Church and Ware, 2000.

of top-level managers.[15] The market for corporate control is referred to as the takeover market, as a market in which alternative managerial teams compete for the rights to manage corporate resources (Beerworth, 1997). When a bidding firm acquires a target firm, the control rights of the target firm are transferred to the board of directors of the bidding firm. While the bidding firm's control board will retain the top-level control rights, it normally delegates the rights to manage corporate resources to internal managers.

The takeover market complements the internal and external managerial labor markets. Takeovers can occur through mergers, tender offers, or proxy contests. In mergers the bidding firm offers to buy the common stock of the target at a price higher than the target's previous market value. Mergers are negotiated directly with the target's managers and approved by the target's board of directors before going to a vote of target shareholders for approval.[16] In principle, mergers can be horizontal, vertical, or conglomerate: if a firm's management maximizes sales, growth, managerial prerogatives, or any target other than the expected present-discounted value of the income stream of the firm, it becomes profitable for a more efficient management team to mount a takeover bid that will offer shareholders a lump sum equal to the shortfall of the actual from the potential value of the firm.[17] In this perspective, managerial teams compete for the rights to manage resources, which limits divergence from shareholder profit maximization by

[15] Weir, 1996.
[16] Kim, 2003.
[17] Martin, 2002, Chapter 12.

managers and provides a mechanism through which economies of scale or other synergies available from combining or reorganizing control and management of corporate resources are realized.

Numerous studies estimate the effects of mergers on the stock prices of the participating firms. Jensen and Ruback (1983) summarized the wealth effects of takeover activities and found that the target firms in successful takeovers experience statistically significant abnormal stock price changes of 20%. Bidding firms realize statistically significant abnormal gains of zero. For unsuccessful takeovers, both bidders and targets suffer small negative abnormal stock price changes. The contrast between the large stock price increases for successful target firms and the negative stock price changes for unsuccessful targets indicates that the benefits of mergers are realized only when control of the target firm's assets is transferred to a bidding firm.[18] That is, the market for corporate control hypothesis is an important motive for mergers.

2.3 The speculative hypothesis

At any given time, there will be differences in individual expectations about the future profit stream of a firm and thus about the present value of a firm's stock (Das and Sengupta, 2001). Stockholders' opinions differ because of differences in the information they hold, different evaluations of this information, and different degrees of optimism and pessimism about the firm's future. Mergers can be explained via differences in

[18] Bradley and Jarrell, 1988.

expectations, if one assumes that there are significant differences in expectations between the holders and non-holders of the firm's stock who might be induced to buy it.[19]

"Discrepancies in valuation for income-producing assets arise from differences in expectations about future income streams and the risks associated with expected income. When such discrepancies are characterized by a higher value being placed on the assets of a firm by non-owners than by owners, acquisitions become possible" (Gort,1969:630). The existence of two different disturbances of expectations about the firm's future can be rationalized by assuming that the individuals who currently hold the firm's stock have access to different information than those individuals who do not hold the stock, or by assuming that they evaluate the information they hold differently. Under such assumptions for stockholder expectations, Gort's economic disturbance theory of mergers implies that mergers take place during periods of either rapidly rising or rapidly falling market prices.[20]

During a period of rising market prices, mergers will take place when non-holders gather information about the firm's prospects that the present holders do not obtain, if this information leads them to upgrade their evaluation of the firm's prospects significantly or if they become more optimistic about the firm's prospects on the basis of the information they already hold. For a period of falling market prices, the present holders will gather information about the firm's prospects that the non-holders do not have, this information

[19] Abell et al., 1994.
[20] Bajtelsmit and Ligon, 1996.

will lead them to expect a rapid or even more rapid decline in the firm's stock price than the non-holders expect, leading them to sell the firm finally. In either case, we get an asymmetry of expectations leading to merger: non-holders become relatively more optimistic, while present stockholders become relatively more pessimistic.

2.4 The tax incentive hypothesis

Tax incentives are also an important motive for mergers. The most important is the acquisition of unutilized tax-loss carryovers.[21] Corporate tax losses in one year can be carried forward and used to counteract future income. For a firm with large losses and pale future income prospects, or with more accumulated losses than can be offset, there may be an unutilized loss carryover. Merging with a profit-earning corporation is one way of realizing the potential cash value of the past losses. According to the FTC (Federal Trade Commission), operating losses on some of its textile operations were more important sources of tax losses, but most of the tax losses came from its sales of acquired plants, equipment, and in six instances, entire enterprises which had been acquired.

Textron is always cited as the classic example of use of tax-loss carryovers to finance a great diversification. Textron began its diversification program in 1953 with two acquisitions; by 1962, it had completed 37 more mergers. In this period, Textron's annual sales increased from $71 million to $550 million. Textron's tax losses were a major factor in motivating its growth by merger, in building up a glamorous reputation

[21] Iversen, 2002.

for growth of sales and earnings, and in financing many of its mergers.[22]

Tax-loss carryovers are most easily justified in terms of equitable treatment of year to year fluctuations in net income (Easson, 2001; Iversen, 2002). Consider every year's net income of a business venture as a drawing from a probability distribution of rates of return that has a positive mean but sufficient variance so that some portion of the distribution involves losses. A government wishing to be risk neutral will calculate the tax outcomes based on the expected income, and a single corporate tax rate would have this effect in the long run. A tax-loss carryover does almost the same thing. When losses are not eventually deductible, there is a net disincentive to engage in highly risky ventures-a negative subsidy to risk taking. If there is no public benefit from private risk aversion, this disincentive is socially undesirable. Only when large tax losses are salable via merger, this disincentive can be reduced. Under present laws they are salable now only via the merger route, and this clearly creates a net incentive to a merger that may have no other justification.

We also note some evidence regarding the impact of taxation on the pecuniary gains from mergers. Auerbach and Reishus (1988) sampled 322 acquisitions of publicly traded companies, most during 1976-1982, generating direct measures of the sizes of benefits stemming from various tax provisions. The tax-loss carryovers of one company can be used to offset the taxable earnings of the other. They found this in about one-fifth of all mergers, with the average benefit representing 10.5 percent of the value of the acquired

[22] Salinger, 1991.

firm. The influence of tax-loss carryovers was significant in some specifications but not economically important, also no robust influence of write-up opportunities was found. Hence, the tax motives for mergers seem to be quantitatively substantial but not very important among the factors inducing mergers.

2.5 The Hubris hypothesis

Gort (1969) offered the hypothesis that mergers occur because outsiders expect to earn more with a given firm's assets than do its present owners. The historical record further demonstrated that the levels of stock prices at market peaks represent a dramatic over-optimism on the part of investors regarding what future profits and dividends stream will be.[23] This over-optimism affecting all investors during a stock market boom, the Greeks called it "hubris".

Hubris represents a kind of over-optimism or irrationality on the part of the managers of the acquiring firm. It is possible that this over-optimism is relatively greater for smaller acquisitions than for large ones. However, it plays a role in all types of acquisitions. Like the winner's curse, the highest bidder has the highest positive valuation error and therefore wins the auction but it is not worthwhile. The highest bidder bids more than the actual gain, and its shareholders suffer a loss (Mueller and Sirower, 2003). Managers know about the winner's curse, and know that other acquirers have on average lost money, but have the hubris to believe that they are better than other managers in

[23] Bischof, 1995.

spotting attractive merger opportunities. Actually, the hubris is not a motive for mergers, but rather a potential factor affecting the size of the bid in a merger. Hubris on the part of individual decision-makers in bidding firms can better explain why bids are made even when a valuation above the current market price represents a positive valuation error. Thereby, the hubris hypothesis means that decision makers in acquiring firms pay too much for their targets on average.[24]

The hubris hypothesis is consistent with strong-form market efficiency. Financial markets are assumed to be efficient in that asset prices reflect all information about individual firms. Product and labor markets are assumed efficient so that no industrial reorganization can bring gains in an aggregate output at the same cost or reductions in aggregate costs with the same output, and also management talent is employed in its best alternative use.[25]

One may ask why managers continually take the wrong decisions in assessing the potential gains from the merger. Although some firms engage in many acquisitions, the average individual manager has the opportunity to make only a few bids for mergers during his career. He may convince himself that the valuation is right and the market does not reflect the full economic value of the combined firm. This individual hubris makes him believe that the statistical averages do not apply to him, that for some reason he is good enough or lucky enough to get success (Varaiya, 1985). In addition, not all

[24] Richard, 1999.
[25] Waehrer and Perry, 2003.

observers agree that mergers have been on average unprofitable adventures. In fact a large number of academic observers claim that mergers increase efficiency (Abell et al., 1994). In conclusion, the hubris hypothesis is necessary to explain why managers don't abandon mergers, since the information suggests that such mergers are likely to represent positive errors in valuation.

2.6 Other important motives for mergers

The word "synergy" entered the merger lexicon during the 1960s' merger wave (Mueller and Sirower, 2003). If mergers are productive, successful bidding firms will use synergies to increase the productivity of the target's assets to warrant the large premiums to the target's shareholders. These synergies are due to the sharing between activities of lumpy or intangible multi-use assets. Assume that the firm operating in a certain activity must employ some real asset that is efficiently acquired or enlarged only in discrete lumps, and that it cannot be shared between independent firms. Then the firm holding the underutilized asset can employ it fully by adding another activity or producing with another firm that requires the same asset. The opportunity cost for the firm entering this new activity or merging with another firm producing the same product will be less than for a de novo entrant who must recruit a unit of this asset at market cost (Beena, 2001).

For horizontal mergers, when two existing firms that produce similar products are brought under common control, assets can be reorganized into more efficient configurations. Such rearrangement or consolidation of assets between firms to combine,

specialize and lengthen production runs, minimize duplication or otherwise improve quality of a product or service are referred to as operating efficiencies.[26] The resulting reductions in production or distribution costs are often called synergies, which refer to complementarities between merging firms that potentially can make the new firm worth more than the sum of the values of the individual firms (Fulghieri and Hodrick, 1997; Stennek, 2003). Hence, the synergy hypothesis is very important for horizontal mergers, as the opportunities for significant reorganization of assets from horizontal mergers seem to be the greatest. In order to increase the market power and reduce the production cost via horizontal merges, synergies are the most important factor to motivate the mergers.

A vertical relationship is one in which a product or service is supplied from one production activity to another. One of the classical motives of vertical integration is to eliminate double marginalization, whereby each intermediary exercises its market power, resulting in higher final price and reduced total profits. It is obvious that vertical integration will tend to take place when costs are lowered by substituting planning for the price mechanism.[27] Market intermediation can involve significant transactions costs and an extension of the firm can avoid many of these. For instance, bargaining, although privately productive, is socially wasteful. The market for information poses many problems and imposes large screening costs; contracts, although not difficult to arrange in a static world, can become difficult to engineer in a changing world where devices

[26] Chakravarty, 1998.
[27] Fumagalli and Motta, 2001.

introduced to allocate risk may themselves impose monitoring costs (Bhuyan, 2002). Similarly, it may be difficult for independent firms to adapt to stochastic shocks which affect the relationship between them. For these reasons, vertical integration can avoid many unnecessary costs, or lower the transition costs.

A vertical extension of control has a direct effect on market power. It also provides the preconditions for various indirect effects. For example, by controlling the price of some inputs, the vertically controlled enterprise can squeeze out independent private producers by an appropriate pricing policy. Its effectiveness is thus predicated on the existence of barriers to entry to the intermediate goods industry. However, vertical integration can lead to significant gains both to the participants and to society in general (Williamson, 1977). The transaction-costs saving are the most important motives for vertical integration.

Strategic diversification is the most important motive for conglomerate mergers, such as spreading risk and transferring capital. The strategic diversification hypothesis is consistent with the growth-maximization hypothesis.[28]

In order to pursue maximum growth, managers of conglomerate firms will try to diversify their strategy to increase their market power and reduce costs. For risk-pooling, the giant conglomerate has a large annual cash flow and has access to outside funds at the lowest attainable rates. Managers of the acquiring firm choose to invest in the projects with the highest rates of return. Thus, they can effectively spread the risk among more

[28] Tombak, 2002.

investments. For capital-transferring, capital transfer among different projects makes more projects carry through at the same time, even if some of them fail, others will succeed. The risk-pooling effect will ensure growth maximization. Hence, strategic diversification is an important motive for conglomerate mergers.[29]

Having discussed the various motives for mergers, we now turn to their effects.

[29] Richards and Manfredo, 2003.

3.1 Theoretical analysis

3.1.1 Overview

Mergers are the quickest way to grow and the most popular avenue to diversification. Mergers are highly visible, lumpy investment decisions, whose effects on company size, growth, and profitability are very important for industrial development. Evaluating the effects of corporate mergers on market performance is the oldest line of systematic quantitative research on industrial organization.[30] There are three types of mergers, which may have very different consequences: horizontal, vertical, and conglomerate mergers.

There are two possible consequences of horizontal mergers: the impact on market power and on costs. These two consequences can be divided into income changes for the factor owners and welfare gains and losses to customers stemming from price and quality changes (Spector, 2002). First of all, consider a merger that affects neither costs nor market power. Under this situation, the profit maximizing price is unchanged; the output of the merged firm is the sum of the outputs of the two pre-merging firms; profits are the sum of pre-merger profits; and profits as a return on capital or a percent of sales are unchanged. Second, consider a merger that produces an increase in efficiency without changing market power. Under this situation, the profit-maximizing price falls, output expands, and profits as a percent of sales and capital increase, assuming that the capital-labor ratio remains unchanged. In general, this will induce entry and drive down

[30] Braid, 2001.

the price. Last of all, consider a merger that increases market power and leaves costs unchanged. In this situation, the profit-maximizing price increases, the output of the merged firm decreases, and profits as a percent of both sales and capital are higher. Hence, we can distinguish different types of mergers by looking at the change in product price and real output. Table 3-1 summarizes the different cases.

Table 3-1 Comparison of pre and post- merger market performance

(Source: adapted from Mueller, 1980)

	$\Delta(\pi/K)$	ΔS	Conclusion
The first situation	**unchanged**	+	**Both efficiency and market power unchanged**
The second situation	+	+	**Improvement in efficiency; consumers and owners benefit**
The third situation	+	−	**Increase in market power; owners benefit, consumers lose**

S=sales. **K**=capital stock. **π**=profit.

Note that a merger might result in a net increase in market power, and still be deemed socially desirable, if it produces a sufficiently large decrease in costs, as well as a large increase in market power, so that the income gains of the owners outweigh the consumers' surplus triangle loss.[31]

For vertical integration, table 3-1 is also relevant. When a large firm acquires one of its suppliers, the sales of the latter disappear. In the first situation, that merger has no impact on either the costs, market power, price, or output of the acquiring firm.

[31] Werden and Froeb, 1998.

Post-merger profits are equal to the sum of the profits of the two companies, and the return on capital is equal to a weighted average of their returns. In the second situation (row 2 of table 3-1), the merger improves the acquiring firm's efficiency, lowers price and expands output. In the third situation, vertical integration increases the acquiring firm's market power, resulting in higher prices, higher profits and lower outputs (row 3 of table 3-1).[32]

For conglomerate mergers, a merger between two firms in unrelated markets, which affects neither their efficiency nor their market power, will leave each firm's price, quantity, output, and profits unchanged (Davis, 2002). Just as with horizontal and vertical mergers, conglomerate mergers that either increase market power or improve efficiency will lead to the same outcomes described above. The difference is that conglomerate mergers can better lower the firm's risk (see section 2.6), since most of them are cyclic or industry related.

3.1.2 Anti-competitive effects of mergers

A firm is said to have economies of scale when its average cost falls as output increases. Economies of scope generalize the conception of economies of scale to the case of the multi-product firm.[33] Economies of scale and scope are often used to defend a proposed merger. Economies of scale, realized through mergers, apply to a context where the merging firms produce both homogenous and differentiated products. Economies of

[32] Brennan, 2001.
[33] Church and Ware, 2000, p. 148.

scope arise when it is advantageous to produce goods that are related in one way or another within the same plant, especially when multi-product production requires a common input. For example, the production of desks and doors requires the common input wood. With economies of scale and/or scope present, post-merger production costs are lower and sales are higher. Having become the dominant firm in the market, the merged firm will increase its price. Hence, the economies of scale and scope brought by mergers, especially horizontal mergers, may produce anti-competitive effects.[34]

Also, the prime reason why antitrust authorities are concerned with mergers is that they reduce competition (Fisher and Richard, 1993). With intense competition, only firms equipped with the most competitive abilities will survive, and firms produce the product varieties that consumers want at a low cost. Otherwise, even high-cost firms producing inferior products will survive. Price increases due to insufficient competition will result in two consequences: wealth transfers from consumers to producers, and a dead-weight loss.

Mergers can increase prices in two ways. First, a merger between two or more firms may increase the firm's market power. Before the merger, the firms compete and do not take into account the effect of their price decision on the profits of their competitors; after the merger, the firms maximize their joint profits, and take into account the effect of their pricing decisions on the profits and market share of each other. Second, the merger will shift the nature of conduct from competition to collusion at a higher price level. When the

[34] Fauli-Oller, 1996.

number of firms decreases, it will become easier to sustain tacit cartel agreements; the merger will increase the joint market power of the firms in the industry, leading to higher price (Gans, 2000; Fridolfsson and Stennek, 2001).

3.2 Some empirical evidence

3.2.1 Effects of mergers on concentration

Mergers' effects on concentration are their most important consequence. When the first great merger wave took place, people were very interested about this question in the United States. No one questioned that this merger wave would lead to a substantial increase in both overall and industry concentration levels, even though the data do not allow this increase to be quantified.[35] The second great merger wave in the United States occurred during the late 1920s. It also brought a substantial increase in overall concentration. It was "the wave to create oligopoly" and it did so in many industries. Available industry-level data shows substantial increases in concentration.[36] During the war years of the early forties, a slight increase in overall concentration during the merger wave of the late forties is apparent.[37] For the great merger of late sixties, overall concentration increases steeply and the merger activity begins its long ascendance. The 1950s and 1960s were a period of unprecedented economic growth and prosperity in the United States. Thousands of new firms were born and many grew to considerable size

[35] Swenson, 1993.
[36] Thomas, 1998.
[37] Hughes, 1993.

(Spilberg, 1985; Thomas, 1998).

Table 3-2 Change in overall concentration, 1959-1978
(Source: Spilberg, 1985)

	1959 distribution	Percent change due to new entry (a)	Percent change due to internal growth	Percent change due to entry &growth	Percent change due to merger activity	Total percent change	1978 distribution
Variance of logarithms	4.244	n.a.	1.1%	n.a.	n.a.	-2.9%	4.121
Herfindahl index (b)	0.230	-52.8%	8.8%	-44.0%	21.0%	-23.0%	0.177
50 firm concentration ratio	0.238	-31.4%	11.4%	-20.1%	11.2%	-8.8%	0.217
100 firm concentration ratio	0.308	-31.4%	8.8%	-22.6%	14.1%	-8.5%	0.282
200 firm concentration ratio	0.373	-31.4%	9.8%	-21.7%	16.3%	-5.3%	0.353

(a) Assumes an entry firm distribution with a standard deviation twice the size of the mean.
(b) Actual Herfindahl indices have been multiplied by 100.
(c) The Herfindahl index is defined as the sum of squared market shares and it is a common measure of market concentration.
(d) The concentration ratio is a way of measuring the concentration of market share held by particular suppliers in a market. It is the percentage of total sales made by a given number of leading firms. Thus a four-firm concentration ratio is the total market share of the four firms with the largest market shares. (Sometimes this particular statistic is called the CR4.)

Some thought that overall concentration decreased during much of the 1960s, even though merger activity was quite high. They dismiss the importance of merger activity for overall concentration. However, table 3-2 shows that merger activities are very

important for concentration. The fact that overall concentration held steady during much of the 1960s, in spite of the large volume of assets acquired, is itself a revealing fact. Acquiring firms are on average much larger than other firms. From 1960 to 1969, the 200 largest companies acquired a cumulative amount of assets equivalent to 12.2 percent of their size at the time of acquisition.[38] These acquisitions that did not result in a corresponding increase in aggregate concentration can only imply that the internal growth rates of the largest 200 companies were less than the growth in assets for the manufacturing sector.

Table 3-2 analyzes the change of overall concentration between 1959 and 1978. Using a sample of 14,676 companies in manufacturing, mining, transportation, wholesaling and retailing,[39] we can observe a slight decline in overall concentration. This decline can be explained by the entry of new firms, some 864,000, over the twenty year period. Counteracting the new entry of firms are the differences in internal growth rates across firms and mergers in roughly equal proportions. In the absence of mergers, the 200 largest firms in 1978 would have controlled 16% less assets than they actually did. Hence, from table 3-2, we can see that up to 1978, merger activity and overall concentration have increased and the former has had a crucial effect on the latter.

However, "*The effects of the present merger wave on concentration have yet to be determined, but there is little reason to expect their influence will differ substantially from the merger wave of the early 1980s, which produced at most a slight increase in manufacturing concentration. To be sure, recent bank mergers have led to a substantial rise in national concentration measures. Nonetheless, they have had little or no evident*

[38] Swenson, 1993.
[39] Spilberg, 1985.

impact on average concentration measured at the more relevant local market level. This stability of local market concentration owes, in part, to the dynamic nature of American banking, with substantial entry of new firms as well as exit of others. In any event, on balance, while the average number of competitors within local banking markets has not materially changed in recent years, they tend to be the same competitors in an increasing number of markets. Beyond banking, useful studies on the effects of mergers on concentration in other non-manufacturing segments of our economy are regrettably few" (Testimony of Chairman Alan Greenspan. June 16, 1998).

The effects of mergers on concentration are very important for welfare and are a central part of merger analysis. As the effects of mergers on concentration change, the attitudes of antitrust authorities toward mergers are also changing.

Whereas antitrust officials used to disallow mergers that gave the top four firms a market share of less than 40 percent, they now often approve mergers that would give the top four firms a market share of over 70 percent.[40] The merger of tire producers Michelin and Goodrich is one example. Charles F. Rule, formerly the Reagan administration's chief antitrust official, summed it up: "In the Sixties and Seventies, the evaluation of proposed mergers was all based on concentration. In the Seventies, as an underpinning, it was wiped out. There was a problem with just using concentration. In the Eighties, we used it as a screen to tell us when to look further, say, into market operations, price discrimination, previous market share and loss of entry into the market by competitors."

Global is another reason that economists and antitrust officials are less concerned about industrial concentration. According to Lester Thurow (1980), "With the growth of international trade it is no longer possible to determine whether an effective monopoly exists by looking at local market shares. Regardless of the share of domestic production

[40] Richards, 2003.

held by General Motors, General Motors is part of a competitive industry and must deal with strong Japanese and European competitors. In markets where international trade exists or could exist, national antitrust laws no longer make sense. If they do anything, they only serve to hinder U.S. competitors who must live by a code that their foreign competitors can ignore." In 1986, for example, just three companies—General Motors, Ford, and Chrysler—produced 95 percent of all cars manufactured in the United States. However, the big three accounted for only 70 percent of auto sales in the United States, the remainder being foreign imports. General Motors, Ford, and Chrysler produce only 30 percent of the world's automobiles.[41]

3.2.2 Effects of mergers on profits

From a theoretical point of view, a merger may increase or decrease profitability. On one hand, it may increase the market power of the merged firms; on the other hand, the merging parties' market share and profits may be reduced due to the expanding production of their rival's following the merger. The merger must involve a substantial proportion of firms to be profitable (Salant et al., 1983).

Comparing pre and post merger profits is an often used way to analyze the impact on profitability. Mueller (1980) studies around 250 mergers in the United States during the period 1962 to 1972. He compares profitability three years after and five years before the merger. The merged firms experience a loss in comparison to the non-merged firms.

[41] Levy and Reitzes, 1992.

Another famous study analyzing merger's effects on profitability is Scherer and Ravenscraft (1987). It is a very general and detailed study considering a large sample of the United States mergers over a long period of time. In one study, Scherer and Ravenscraft (1987a) estimate the pre-merger profitability of 634 manufacturing companies. They include small companies which were not listed on major stock exchanges, acquired in the years of 1968, 1971, or 1974. Profitability was measured by using the ratio of annual operating income to total end-of-period assets. The average profitability of the samples was 20 percent and the average profitability of all manufacturing corporations was 11 percent and the difference is statistically significant. Hence, the merged companies were substantially more profitable. Scherer and Ravenscraft (1987a) study the pre-merger profitability of 95 samples of 1962-1976 tender offers. These samples were slightly less profitable than the industries to which they belonged.

In another study, Scherer and Ravenscraft (1987b) examine post-merger performance, using line of business data. That is, the unit of observation is not the acquiring firm, but the branch of the firm that made the acquisition. Branches are defined according to the three or four-digit level of the United States' Standard Industrial Classification. The sample consists of 4,409 lines of business observations. For each line of business, they collected data on profitability from 1974 to 1977 and on the merger history, as measured by the ratio of the value of the acquired assets to total assets between 1950 and 1977 (more than 7,000 acquisitions were undertaken totally, and the

median acquisition was made eight or nine years before the date for measuring profitability). In an ordinary least squares regression model, they show that merger intensity has a small negative effect on profitability. Scherer and Ravenscraft (1987) also study the sell-off of acquired units. They estimate that between 19 and 47 percent of the acquired units were subsequently sold off. They also show that these units experienced a fall in profitability preceding sell-off, and that their profitability was below the profitability of non-divested lines in the same industry. Combining these observations with the observation that the acquired units were twice as profitable as the industry average, Scherer and Ravenscraft conclude that acquired companies are more profitable than otherwise similar non-acquired firms, and these units were in good health at the time of their acquisition, but became gravely ill thereafter.

Ruback and Palepu (1992) study the post acquisition performance of the 50 largest U.S. mergers between 1979 and mid-1984. Following Scherer and Ravenscraft's work, they use pre-tax operating cash flow returns on assets, with industry performance as a benchmark. They collected data for each of the five years before the merger and each of the five years after the merger (leaving out the year of the merger). In the period before the merger, the merging firms earned a median annual return of around 25 percent. After the merger the return had declined to around 20 percent. However, this decline was smaller than the decline experienced by other firms in the same industries. Hence, the industrial adjusted median annual return was around zero percent before the merger. After the merger it had increased to around 3 percent.

3.2.3 Effects of mergers on size

If mergers can increase economic efficiency, they will have effects on size: costs will fall, leading to a decrease in prices and sales' expansion. Analyzing the effects of mergers on market share is a good way to assess the growth in size. The change in the market share of the acquiring firm depends on the motives behind the merger. If a merger is driven by market power, the acquiring firm will increase its price and reduce output, lowering its market share. Otherwise, if the merger generates sufficient cost synergies, the acquiring firm may increase its market share. Hence, by analyzing the change of a firm's market share, we can draw conclusions about the impact of the merger on size.

Goldberg (1973) analyzed a sample of 44 companies collected in the fifties and sixties, and found no significant change in market shares in the years following the mergers (he compared the post-merger market share with the pre-merger market share of the acquiring firms only). Mueller (1985) uses surveys for 1950 and 1972 of sales for the 1,000 largest companies in the U.S. He constructs a sample of 209 acquired firms and 123 acquiring firms together with a control group of firms that did not participate in mergers. The control-group of firms participating in conglomerate mergers retained 88.5 percent of their 1950 market share in 1972. On the other hand firms participating in conglomerate mergers retained only 18 percent of their market share. The corresponding figures for horizontal mergers are 55 percent and 14 percent respectively. Hereby, we can conclude that the market shares of firms engaged in horizontal mergers or conglomerate mergers declined. The growth rate is also a good method to tell the change in size. In the

Netherlands and the United States a slowdown in the growth rate of the merging firms was observed in the post-merger period relative to the change in growth rate performance of the control group companies.[42] Therefore, no significant increase in the acquiring firms' size was found.

3.2.4 Effects of mergers on shareholder returns

The most popular empirical methodology to assess the performance of mergers on shareholder returns is *event study analysis*, which consists in studying the effects on the stock prices of the participating firms at the time of the merger announcement.[43] Event study analysts estimate whether there is a significant difference in stock prices a few weeks before and after an "event" such as a merger announcement. The changes in the legal and institutional environments will change the shareholder returns. The effects on shareholder returns are usually divided into two parts: returns to bidders and returns to targets. Acquisitions always entail a large gain for the target firm's shareholders over the market value of the freestanding entity.[44] The average return to the bidding firm's shareholders is less clear. I will discuss their effects separately.

For the target firm, according to Jensen and Ruback (1983), the average target shareholder return varies between 20 to 35 percent. The target firm gets more via tender offers than via mergers. The return is higher if there is more than one bidder. They review

[42] Berger, 1992.
[43] Caves, 1989.
[44] Avkiran, 1999.

13 early event studies through 1956 to 1981: six concern mergers, and seven concern tender offers. The abnormal percentage stock price changes associated with successful corporate takeovers was 30 percent for tender offers, and 20 percent for mergers.

Bradley et al. (1988) use a sample of 236 successful tender offers occurring over the period 1963 to 1984. They find that the average target firm's return for the whole period was 32 percent. They also show that competition among bidding firms increases the returns to targets, and decreases the returns to bidders.

Schwert (1988) studies 1814 target firms in successful and unsuccessful takeovers during 1975 to 1991. The average return via tender offers was 36 percent and via mergers was 17 percent. He also shows that the total return of the target firm is composed of two almost equal parts. One is the mark-up, which is the increase in the stock price from the beginning of the day when the first bid is announced; the other is the run-up, which is the increase in the stock price during the period of 40 days before the first bid. The mark-ups are essentially unrelated to the size of the run-up. One interpretation of this result is that the run-up reflects information held by other potential bidders, rather than insider trading or information leakage. If this interpretation is correct, then previous event studies may have exaggerated the returns from mergers since they normally include the run-up as a part of the merger premium.

For the bidding firm, some studies found that the return is small but statistically significant; others found that there are small losses. Hence, it would seem that the bidder's shareholder returns are close to zero. In Jensen and Ruback's survey (1988), the

abnormal percentage stock price changes associated with successful corporate takeovers was four percent for tender offers, and zero percent for mergers. Bradley et al. (1988) report significant positive excess returns of 1 percent for bidders' shareholders over 1963 to 1984, with the average falling from 4.1 percent in 1963-1968 to -2.9 percent in 1981-1984. This occurred while the average total return from mergers was stationary and the premiums to targets were rising accordingly. Jarrell et al. (1988) also find that bidders realized small but statistically significant gains of about one to two percent. They show that these returns have declined, becoming negative and statistically insignificant in the 1980s.

How to evaluate the total effect of mergers on shareholder returns? Some may think that mergers are profitable and therefore socially desirable. And even if the bidding firm's return is zero, it will be positive after adding the target's shareholder returns. However, event studies leave important doubts. Bidding firms are much larger than their targets, and the sum of the targets' proportionally large return and a zero mean will not yield a significant positive return for sure. Firth (1980) finds that the mean sum is negative but insignificantly different from zero for British mergers. The most positive study, by Bradley et al. (1988), finds a statistically significant weighted average return of 7.4 percent to bidder and target firms in tender offers, yet 25 percent of the combined values are negative, and the bidder's shareholders gain in only 47 percent of the cases. Thereby, there is no unanimity regarding the impact of mergers on shareholder returns, but the effects are mostly insignificant and small.

3.2.5 Effects of mergers on efficiency

Mergers can increase economic efficiency in many ways. The most simple way is a horizontal merger between two firms, which can increase efficiency by expanding sales; for vertical integration, cost reduction is very likely, especially transaction costs; for conglomerate mergers, besides cost reduction, they can also efficiently lower the systemic risk through risk-pooling and capital transfer. To the extent that mergers reduce costs, in the long run mergers can affect consumer welfare by changing either costs or quality.[45]

The most effective way to assess the effects of mergers on efficiency is by measuring productivity gains and economies of scale realized following a merger.[46] Berger and Humphrey (1992) study 57 United States banking mega-mergers from 1981 to 1989. They estimate a neo-classical cost function which allows them to consider two types of efficiencies: scale economies and slacks. Earlier studies have shown that there are no substantial cost efficiency gains to be made simply by increasing the size of already large banks. In fact, there may be slight diseconomies of scale. On the other hand, there is a growing literature on slacks in banking, or variations in cost ascribed to differences in managerial ability (Amel, 1989; Millon, 1991). They find that these efficiencies account for cost variations of 20 percent or more and that these differences are stable over time. Thus, if more efficient banks take over less efficient ones, a merger

[45] Weston and Jawien, 1999.
[46] Scherer and Rose, 1990.

could create substantial efficiency gains.

Another case study is provided by Scherer and Ross (1990). They study the 1969 merger of three English anti-friction bearing manufacturers. The firms sold extensively overlapping lines of general-purpose bearings. Immediately following the merger, production assignments were revamped to eliminate duplication and lengthen runs. Within three years, output per employee had been improved by some 40 percent, at least partly as a result of the increased specialization. Further improvements were expected later, as a result of increased mechanization. Some argue that capital-raising is much cheaper for large than small firms. Hence, when a small firm joins a large firm, the smaller firm is likely to benefit from the larger enterprise's lower cost of capital. Case studies by Scherer and Ravenscraft (1987) reveal that this may be one of the most compelling advantages of mergers.

Fisher and Lande (1983) also review a set of case studies of mergers (many from the trade and general business). They emphasize that it is dangerous to draw conclusions from examples. Nevertheless, they argue that many individual mergers create substantial efficiencies, while many others are notable failures, and that the record of prediction is too poor to give any confidence that we can predict the level of cost saving on a case-by-case basis sufficiently accurately.

There is an important interaction between the efficiency and market share effects. If mergers are efficiency-enhancing, they should raise the market share of the merged entities. As was pointed out in section 3.2.3, the market share of the merged firm is prone

to decline after horizontal and conglomerate mergers. Moreover, the growth rate slows down. Thereby, these results suggest that overall no improvements in economic efficiency took place as a direct result of these mergers.

The next section illustrates the motives and consequences of mergers through two case studies.

4. Case studies

In this section I will illustrate two cases. One is the Union Pacific and Southern Pacific Railroad merger. This case was finally approved because the administration board concluded that the merger would result in superior service, substantial cost savings, enhanced competition, and by virtue of the trackage rights agreement providing full protection to captive shippers. The other is the Staples and Office Depot merger. This case was rejected because the administration board thought that the merger would lead to a significant decrease in competition in the market for consumable office supplies sold through office superstores, and the price would substantially increase. These two cases will give us a comprehensive and detailed demonstration for analyzing mergers' motives and effects.

Case 1: The Union Pacific and Southern Pacific Railroad Merger

The Union Pacific (UP) and the Southern Pacific (SP) railroads have had long and intertwined histories. The UP and the Central Pacific (a predecessor to the SP) were the two railroads commissioned by President Abraham Lincoln in 1862 to construct a transcontinental rail system. The UP laid rail westward from Kansan while the CP began construction in Sacramento. The driving of the Golden Spike into the rail that joined the two at Promontory, Utah, in 1869 helped realize the country's "manifest destiny" of

integrating from coast to coast.[47] Over the next century the UP and the SP provided rail transportation services throughout the western United States. However, in the twentieth century, the rail transportation's dominant position in the freight shipping market has changed for two reasons: one is the development of new technologies, making other modes of freight transportation, especially trucks more popular; the other is the ICC (Interstate Commerce Commission)'s all-encompassing rate and service regulatory structure, in which the industry had been enmeshed since 1887.[48] The current market share of railroads (41%) is much lower than it was in the early decades of the century, when it stood close to 100%. Not only the share of intercity freight declined, but also financial losses were widespread, are even bankruptcies. Facing such a situation, in 1980 the Congress passed the Staggers Act, which substantially deregulated the industry and gave railroads wide discretion for pricing flexibility and made mergers proceed apace. Thereby, the 39 class 1 railroads of 1980 had diminished to only 11 by early 1995. Only 4 major railroads remained in the western United States:[49] The UP, the SP, the Burlington Northern (BN), and the Santa Fe (SF). Among them, the UP and the BN were roughly comparable in route structure, revenues and employees, followed by the SP and the SF. The first of these mergers was the Burlington Northern's acquisition of the Santa Fe, which was proposed in 1994. After their merger was approved in 1995, the new firm

[47] Wilner, 1997.
[48] The ICC regulates the railroad mergers since 1995, standard critiques of the ICC's general discouragement of competition and creation of inefficiencies can be found in Gruley and Daniel, 1996.
[49] Park et al., 2001.

became the largest railroad company in the western United States.[50] Two weeks before the BN-SF merger got final approval, the UP announced its intention to acquire the SP. If the merger were approved, their new company would become the biggest in the western part of the United States. The UP and SP claimed that the combination would allow them to offer new and improved services to shippers, to relieve capacity constraints that they faced on certain routes, and to save $500 million in annual expenses, an estimate which was later raised to $750 million.[51]

The facts are as follows. The UP is known as the "central corridor", its route structure connected three west coast areas- the Pacific Northwest, northern California and southern California. The UP enjoyed a reputation for strong management, attention to service and cost efficiency. The SP has a strong route structure, its central corridor route ran from northern California to Utah and Kansas and then to St. Louis. Yet the SP was widely perceived as having inadequate terminals and outdated locomotives and providing poor services. The UP and the SP filed extensive documentation with the ICC in support of their proposed merger. They expected to significantly improve the rail service quality and achieve substantial cost reductions. Moreover, the merged entity will become a more effective rival to the large BNSF. Therefore, the merger will result in "a pervasive, dramatic intensification of transportation competition throughout the West" (Peterson, 1995, p. 6).

[50] Gruley and Machalaba, 1996.
[51] Davis and Wilson, 1999.

The principal motive behind the UP and the SP proposing to merger is consistent with the profits enhancing hypothesis. That is: cost reductions and efficiency improvement. First, both companies have very strong route structures. After the merger, they can reduce the costs by simply shortening unnecessary distances. Since both explicit transport costs and implicit time costs to shippers are a direct function of route length, they can reduce the actual mileage by integrating their networks.[52] For example, the shortest mileage between Oakland and Chicago would decrease by 189 miles for shippers who were previously served only on UP track; and by 388 miles for SP's customers. They argued that they needed to shorten traffic distances to remain competitive.

Second, vertical integration is also important for railroad transportation. Replacing the joint-line service in which shippers' products are handled by two railroads along a continuous route by a single-line service will eliminate delays, reduce losses and damage, simplify rate determination, and avoid incompatibilities in operating procedures and priorities between carries.[53]

Third, the capacity imposed on the UP and the SP can be alleviated by the merger. For example, with more trains operating at different speeds or needing to move in both directions, the rail system efficiency declined. This problem can be effectively solved by integrating the management of alternative or parallel routes. This will make asset utilization more flexible and increase the concentration of trains, lowering costs. All these

[52] Grimm, 1996.
[53] Wilner, 1997.

improvements in operation will result in faster, more frequent, more reliable, and cheaper service to shippers throughout the western United States.

The merger can also achieve efficiency via the following channels. First, it can improve access to terminal facilities together by combining the best of the UP and the SP terminal facilities. By doing this, both of them can achieve better service, especially for the SP, and the problem of the inadequate terminal can be better addressed. This is an example of "synergies". Second, it can improve deployment and utilization of equipment. Freight cars can be used more frequently, especially specialized equipment such as refrigeration cars. More economical purchasing will result and savings in labor costs will be made, improving efficiency. This is an example of "economies of scope".

Besides the motives mentioned above, there is also the market for corporate control hypothesis. The SP is too weak to compete with the new-formed BNSF and the UP. As a consequence, the UP and the SP argued, the only solution for SP is a merger with UP.[54] The SP needed new equipment, upgrading of yards, improvements in rights of way, etc. The BNSF was said to be "far larger" than the UP or the SP, whether measured by mileage, employees, tons of freight hauled, freight revenues, or operating income. In addition, the BNSF was described as leading in various technologies and moving rapidly to consolidate its gains from the BN-SF merger.[55] Hence, a UP-SP merger is necessary to create an entity capable of competing with the BNSF.

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[54] Peterson, 1995, p. 83.
[55] Burton, 1993.

Since the proposal was announced, it was widely debated. The merger's opponents argued that the risks of new or enhanced market power in hundreds of rail freight markets were quite high, and that the promised efficiencies were speculative at best. They recommended that the ICC either reject the merger outright or condition its approval on the divestiture of duplicative tracks.[56]

Finally, the ICC announced its decision to approve the merger between the UP and the SP on July 3, 1996. Its decision reflected the UP-SP position on all the major issues. The Board concluded that the merger would result in superior service, substantial cost savings, enhanced competition, and by virtue of the trackage rights agreement, full protection to captive shippers.[57]

After the merger was implemented in September 1996, the UP-SP merger met a lot of difficulties. First, there was deterioration in the safety of the UP, which experienced three major train crashes that resulted in seven deaths. Second, the UP began experiencing congestion and service problems, and the carrier's service worsened. Third, the managerial and logistics problems were hard to solve. For example, the UP and the SP had different computer systems and dispatching methods. Cutbacks in management, crews and equipment made the problem worse. In the short-run, the merger of two organizations and managing a large railroad has been disastrously prescient. For the long-run, the CEO of the UP assures that logistics and managerial problems will be

[56] UP and SP, Railway Merger Application, ICC, 1996, Vol. 1, p. 93.
[57] Surface Transportation Board, 1996, p. 108.

resolved.[58] To sum up, the experience of UP-SP shows that the expected efficiencies are not easy to realize, and that the implementation of promising mergers often encounters many difficulties.

Case 2: Staples and Office Depot merger

Office Depot and Staples are the first and the second largest office superstore (OSS) chains in the United States. Staples pioneered the office superstore concept in 1986. In 1997, it operated approximately 550 stores in 28 States. In 1996, it had revenues of around $4 billion and a stock market valuation of approximately $3 billion. Office Depot, which adopted the concept of superstores within months after Staples invented it, operated more than 500 stores in 38 States, had 1996 sales of approximately $6.1 billion, and had a stock market value of about $2.2 billion at the end of 1996.[59]

The typical superstore is approximately 23,000 to 30,000 square feet in area, stocks 5000 to 6000 items, is usually located in an urban business area, and looks like a warehouse. Almost half of their revenues are derived from sales of office supplies, with the rest coming from the sale of computers, office furniture, and other business-related items. The superstore concept is the source of competitive advantage. Both of them have the lowest costs: all inventories are purchased directly from manufactures in large quantities and are subject to volume discounts which are unavailable to medium-sized

[58] For a detailed discussion of the post-merger effects of the UP-SP, see Machalaba, 1997b. He is the CEO of the UP railroads company.

[59] Dalkir et al., 2000. The superstore concept was simple: while large businesses were able to purchase office supplies through high-volume contract stationers, small businesses and individuals had no comparably convenient, low-cost source of office supplies and other business-related products.

and small retailers. These low costs result in the lowest price: office supplies are typically sold by superstores at discounts of 30 to 70 percent below manufacturer-suggested retail prices. Hence, the Staples and Office-Depot have absolutely dominant positions in the market.

Moreover, there is another store named OfficeMax, the only remaining close rival to Staples and Office Depot. Spun off from K-Mart in 1994, OfficeMax operated 575 superstores and 17 delivery centers in over 220 areas in 48 States. Like Staples and Office Depot, each OfficeMax superstore offers an extensive selection of over 7000 items at discount prices, selling primarily to small and medium-sized businesses, home office customers and individuals. OfficeMax's total revenues for the fiscal year 1997 were $3.2 billion, with office supplies making up about 40 percent of total revenues.[60]

Consumers get benefits and convenience from the OSS concept. They buy office supplies in one shop with lower prices, which is due to each OSS chain slashed the prices, drove down costs, developed innovative approaches to marketing, distribution, and store layout, and expanded rapidly. However, Office Depot is the most competitive among them, and it offers the lowest prices.

On September 4, 1996, Staples and Office Depot announced their agreement to merge. The FTC (*Federal Trade Commission*) analyzed the merger proposal through following aspects.[61] First, it examined the concentration and the competitive effects of

[60] Dalkir et al., 2000.
[61] For details, see FTC v. Staples, Inc., No. 97-701 (1997).

the merger. According to the *Merger Guidelines,* mergers that have the ability to profitably maintain prices above competitive levels for a significant period of time are not permitted. There are two ways in which mergers can lead to higher prices: coordinated interaction and unilateral effects.[62] If the merger between Staples and Office Depot is approved, they can achieve higher prices by either coordinating their actions or using unilateral price effects. Coordinated interaction is of particular concern in homogenous product markets, where all firms must charge very similar prices. Unilateral price effects are of particular concern if the products or services are differentiated, but those supplied by merging firms are much closer substitutes for each other than for those of other suppliers.[63] However, the merger may cause a transfer of wealth from buyers to sellers and also a misallocation of resources.

Second, the FTC defined the relevant market as "the sale of consumable office supplies through office superstores". The FTC supported its market definition by introducing evidence showing that: (1) OSSs offer a distinct set of products and services; (2) OSSs regard each other as their primary competitors; (3) Non-OSSs retailers do not tightly constrain OSS pricing; (4) a hypothetical merger to monopoly among all three OSSs could be expected to result in a significant increase in their prices for consumable office suppliers- an outcome that would not occur if OSSs and other stores selling office suppliers were in the same product market.[64]

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[62] *Horizontal Merger Guidelines*, 1992.
[63] FTC, 1997.
[64] Dalkir et al., 2000.

Third, the merger's likely anticompetitive consequences are very obvious. Without the merger, only three OSS chains compete in the United States. Office Depot was the main constraint on Staple's prices and Staples "planned to cut prices significantly over the next few years in response to current and future competitive pressures from Office Depot".[65] The proposed merger would eliminate these pressures. Hereby, large price increases due to the merger will harm consumer's benefit. The FTC also reached a similar conclusion via structural evidence, empirical evidence, estimates from the prudential study and from a stock-market event-probability study. All these supported the hypothesis that the price will be significantly increased after the merger.[66]

Fourth, the FTC considered the merger from the point of view of entry. On one hand, potential competition can affect the incumbents' prices but the prices of office superstore products could not be affected by potential entry; thus the increasing prices after the merger will affect competition in the market. On the other hand, the merger between Staples and Office Depot will produce significant barriers to entry. They can take advantage of economies of multi-store operation and a firm currently attempting to enter will fail to do so.

Lastly, the efficiencies were not sufficient to offset price increases after the merger. The FTC thought that the efficiencies claimed by the parties were exaggerated. It argued that the efficiencies lacked support by reliable evidence, and were irrelevant to the

[65] Baker, 1997.
[66] For details see FTC, 1997.

analysis of the merger, and most important was that even if the merger would bring true efficiencies, only a small proportion of them would be passed through to consumers.

In conclusion, the five aspects discussed above made the FTC believe that a significant decrease in competition in the market for consumable office supplies would occur and result in long-lasting price increases. Therefore, the merger would cause considerable harm to consumers.

Staples and Office Depot argued that the merger would not have anti-competitive consequences. They explained their points of view as follows.[67] First, they thought the FTC's product market definition was erroneous. They argued that the FTC's definition was based exclusively on the identity of the seller but not on the characteristics of the product or service supplied. Hence, the conclusions based on this market definition were not correct. Second, they claimed that OSS firms were founded on the principle of providing low prices through large sales volume. Hence, they argued that the merger would increase the total volume of combined purchases; therefore it would lower the price. They also claimed that much of the efficiencies brought by the merger would be passed on to consumers. Third, they claimed that entry into the office supplies business was easy; they argued that blocking the merger would impose losses on both consumers and shareholders.

In 1997, the FTC voted 4 to 1 to oppose the merger because is was likely to harm competition and lead to higher prices. The merged parties chose to contest the FTC's

[67] Stemberg, 1996.

actions in court. On June 30, 1997, after a seven-day trial, Judge Thomas F. Hogan of the U.S. District Court for the District of Columbia agreed with the FTC and granted a preliminary injunction, effectively dooming the merger. In his decision, Judge Hogan defined the relevant product market as the OSS submarket and found that Staples and Office Depot would have a "dominant market share" (between 45 percent and 100 percent) in many geographic markets after the merger. He also concluded that FTC's pricing evidence demonstrated a reasonable likelihood of anticompetitive effects. The Judge noted that neither the public nor the private equities claimed by the defendants were sufficient to offset the likely anticompetitive effects.[68]

[68] Dalkir et al., 2000.

5. Summary and conclusions

In this paper we have discussed a set of issues related to mergers. We analyzed the merger behavior mainly from two angles: motives and effects.

As pointed out, mergers can occur for many reasons, such as to displace inefficient managers, achieve economies of scale and scope in production, enhance monopoly power, exploit tax reduction opportunities, etc. By analyzing the motives for mergers, we can better understand why they happen.

The second dimension is the impact of mergers. Evaluating the effects of mergers on market performance can be traced to early studies of the wave of giant consolidations at the beginning of the twentieth century. There has been a shift away from horizontal mergers toward transactions largely involving diversified product markets until the 1960s, and again a shift from vertical and conglomerate mergers towards horizontal mergers in the 1980s and 1990s.

In the first section, we reviewed merger activity since the last century, and discussed mergers' causes and effects. Then, in the second section, we analyzed the motives for mergers. We grouped the causes into five broad categories, and we also examined the particular motives for different types of mergers. We concluded that the profits increasing hypothesis is the most common motive behind mergers.

In section 3, we examined the effects of mergers by reviewing a sample of theoretical and empirical studies. For the theoretical analysis, we considered two aspects:

the effects of mergers and mergers' anti-competitive effects. For the empirical evidence, we focused on the effects of mergers on concentration, profits, size, shareholder returns, and efficiency respectively. Since the first merger wave, the merger activities are very important for overall concentration, also, antitrust authorities loosened the limitation toward mergers according to changes in concentration. For mergers' effects on profits, numerous studies show that the merger must involve a substantial proportion of firms to be profitable by comparing pre and post-merger profits. Analyzing the effects of mergers on market share is a common way to assess the growth in size, which was shown to slightly decline. For mergers' effects on shareholder returns, there is no unanimity but the effects are mostly insignificant and small. Mergers can increase economic efficiency in many ways. The most effective way to assess this effect is by measuring productivity gains and economies of scale realized following the merger.

In section 4, we provided two case studies: the Union Pacific and Southern Pacific Railroad Merger and the Staples and Office Depot merger. For each case, we analyzed the motives behind the mergers as well as their consequences. Then we examined the effects claimed by the merging parties and the administration office respectively. Finally, we investigated the results of each proposed merger. We saw how the authorities focused on the merger's anti-competitive effects while the merging parties focused on the increase in profits.

Today's economy is based on knowledge, innovation, and information technology. Mergers in high-tech industries and in sectors characterized by network externalities are

common. The traditional analysis of mergers needs to be constantly reviewed to account for the particularities of such industries. This is true both at the level of economic research and of policy analysis.

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