



The University of Chicago

The Booth School of Business of the University of Chicago

The University of Chicago Law School

Fisher—General Motors and the Nature of the Firm

Author(s): By Benjamin Klein

Reviewed work(s):

Source: *Journal of Law and Economics*, Vol. 43, No. 1 (April 2000), pp. 105-142

Published by: [The University of Chicago Press](#) for [The Booth School of Business of the University of Chicago](#) and [The University of Chicago Law School](#)

Stable URL: <http://www.jstor.org/stable/10.1086/467449>

Accessed: 07/01/2013 17:11

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



The University of Chicago Press, The University of Chicago, The Booth School of Business of the University of Chicago, The University of Chicago Law School are collaborating with JSTOR to digitize, preserve and extend access to *Journal of Law and Economics*.

<http://www.jstor.org>

FISHER–GENERAL MOTORS AND THE NATURE OF THE FIRM*

BENJAMIN KLEIN

University of California, Los Angeles

ABSTRACT

After working well for more than 5 years, the Fisher Body–General Motors (GM) contract for the supply of automobile bodies broke down when GM's demand for Fisher's bodies unexpectedly increased dramatically. This pushed the imperfect contractual arrangement between the parties outside the self-enforcing range and led Fisher to take advantage of the fact that GM was contractually obligated to purchase bodies on a cost-plus basis. Fisher increased its short-term profit by failing to make the investments required by GM in a plant located near GM production facilities in Flint, Michigan. Vertical integration, with an associated side payment from GM to Fisher, was the way in which this contractual hold-up problem was solved. This examination of the Fisher-GM case illustrates the role of vertical integration in avoiding the rigidity costs of long-term contracts.

I. INTRODUCTION

RONALD Coase's landmark contribution in *The Nature of the Firm*¹ fundamentally changed the way we look at economic institutions. Coase recognized that one must compare the costs of transacting to explain the boundaries of the firm. Without transaction costs, the organization of economic exchange is indeterminate. This forced economists to focus on the costs and benefits of transacting under alternative institutional arrangements.

Benjamin Klein, Robert Crawford, and Armen Alchian expanded upon this insight by emphasizing the role of specific investments as a determinant of economic organization.² The presence of transactor-specific investments, we claimed, created a potential hold-up problem that increased market contracting costs and, therefore, the incentive for vertical integration. Our analysis of the contractual relationship between Fisher Body and General Motors (GM) provided a concrete example of this mechanism. It illustrated the

* Professor of Economics, University of California, Los Angeles. I am indebted to Ryan Sullivan and Joshua Wright for superb research assistance and to Scott Masten for extensive comments on an earlier draft.

¹ R. H. Coase, *The Nature of the Firm*, 4 *Economica* (n.s.) 386 (1937).

² Benjamin Klein, Robert G. Crawford, & Armen A. Alchian, *Vertical Integration, Appropriate Rents and the Competitive Contracting Process*, 21 *J. Law & Econ.* 297 (1978).

[*Journal of Law and Economics*, vol. XLIII (April 2000)]

© 2000 by The University of Chicago. All rights reserved. 0022-2186/2000/4301-0005\$01.50

problems that arise when transactors use imperfect long-term contracts to solve hold-up problems created by specific investments and also illuminated the economic motivation for GM's use of vertical integration. The Fisher-GM case has been cited by numerous researchers, and many studies have since empirically documented the relationship between vertical integration and specific investments in widely varying circumstances.³

Coase rejects this idea that specific investments are a determinant of vertical integration. He claims that hold-up problems created by the presence of specific investments normally can be handled satisfactorily with long-term contracts without requiring vertical integration. He also specifically rejects the view that the Fisher-GM case involved hold-up behavior.⁴ Coase claims that my description of the Fisher-GM case, which has become an accepted element of transaction cost theory, does not reflect what actually occurred.

In what follows, I first reexamine in detail the operation of the long-term contract entered into by Fisher Body and GM in 1919. Contrary to Coase and to the two other papers by Robert Freeland⁵ and by Ramon Casadesus-Masanell and Daniel Spulber⁶ included in this issue, the facts of the Fisher-GM case are shown to be fully consistent with the hold-up description provided in Klein, Crawford, and Alchian. The evidence unambiguously demonstrates that while the contract that governed the relationship between Fisher Body and GM initially worked well, this contract broke down in 1925 when GM's demand for Fisher bodies increased dramatically. Fisher then refused to make the necessary capital investments required to produce bodies efficiently for GM, in particular refusing to build an important body plant close to a GM production facility in Flint, Michigan. These contractual difficulties were the primary reason GM decided in 1926 to vertically integrate with Fisher Body.

The marked change in Fisher's behavior between the early 1919–24 period and the later 1925–26 period provides important insights into the basic economic forces at work in contractual arrangements. Similar to a biologist

³ Surveys of these studies are provided in Paul L. Joskow, *Asset Specificity and the Structure of Vertical Relationships: Empirical Evidence*, 4 *J. L. Econ. & Org.* 95 (1988); Howard A. Shelanski & Peter G. Klein, *Empirical Research in Transaction Cost Economics: A Review and Assessment*, 7 *J. L. Econ. & Org.* 335 (1995); and Keith J. Crocker & Scott F. Masten, *Regulation and Administered Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation*, 9 *J. Reg. Econ.* 5 (1996).

⁴ R. H. Coase, *The Acquisition of Fisher Body by General Motors*, in this issue, at 15.

⁵ Robert F. Freeland, *Creating Holdup through Vertical Integration: Fisher Body Revisited*, in this issue, at 33.

⁶ Ramon Casadesus-Masanell & Daniel F. Spulber, *The Fable of Fisher Body*, in this issue, at 67.

doing medical research on how the human body functions by studying the onset of disease, we can learn a great deal about the economics of contractual arrangements by studying the conditions under which the Fisher-GM contract failed. In particular, examining the operation of the Fisher-GM contract helps us to understand why transactors may choose what appear to be obviously imperfect contract terms, the conditions under which such imperfect contracts are likely to break down, and the advantages of vertical integration under these circumstances.

The answers to these questions rest on the role transactors assign to contract terms. Transactors choose the imperfect contract terms that govern their relationship based on the expected effectiveness of the terms in supporting self-enforcement of the underlying contractual understanding. It is only when market conditions develop unexpectedly, as they did in the Fisher Body-GM case, that the relationship moves outside the “self-enforcing range” defined by these imperfect contract terms and the transactors’ reputational capital. When this occurs, one transactor will find it profitable to use the court to take advantage of the imperfect, legally enforceable contract terms in order to violate the intent of the contractual understanding. The Fisher Body-GM case not only provides a useful illustration of these economic forces but also illuminates the economic advantages of vertical integration, namely, the increased flexibility transactors gain from not having to use a rigid long-term contract to supplement their limited reputational capital.

II. THE HOLDUP OF GENERAL MOTORS BY FISHER BODY

A. *The Fisher Body-General Motors 1919 Supply Agreement*

The Fisher Body-GM case concerns a contract signed in 1919 for Fisher Body to supply automobile bodies to GM.⁷ Fisher Body, in order to produce GM’s closed auto bodies, had to make an investment in plant and equipment that was specific to GM. Casadesus-Masanell and Spulber rely on the fact that the closed bodies produced by Fisher and other body producers at this time were composite (wood framed and metal skinned) to claim that

⁷ The contractual agreement between Fisher Body and GM can be found in the minutes of the Board of Directors of Fisher Body Corporation for November 7, 1919. The agreement is described in Letter from Fred and Charles Fisher to the General Motors Corporation (September 25, 1919), Gov’t Trial Ex. No. 426, *United States v. E. I. Du Pont de Nemours & Co., General Motors, et al.*, Civil Action 49C-1071, 126 F. Supp. 235 (N.D. Ill. 1954); 353 U.S. 586 (1957); 366 U.S. 316 (1961). Much of the evidence of the relationship between Fisher Body and GM is taken from this antitrust case brought by the United States Department of Justice in 1949 that challenged the 1917–19 acquisition by Du Pont of approximately 23 percent of the GM voting common stock.

Fisher's investments were not GM-specific. However, although composite bodies required less specific capital investment than the pure metal bodies that began to be used in the mid-1930s, these composite closed bodies required substantially more specific investment than the largely wooden open bodies they replaced.⁸ As we shall see below, the economic necessity for body plants to be located close to the particular automobile production facility they supplied also made body plant investments somewhat relationship specific.

Fisher Body's GM-specific investments created a potential for GM to hold up Fisher. After Fisher made these investments, GM could have threatened to reduce its demand for Fisher-produced bodies, or even to terminate its relationship with Fisher completely, unless Fisher reduced its body prices to GM.

Coase is correct that this situation, in and of itself, is insufficient to generate vertical integration. In fact, GM and Fisher Body used a long-term (10-year) exclusive dealing contract to prevent GM from holding up Fisher and, thereby, to encourage Fisher to make the GM-specific investments. Since GM was contractually obligated to buy all of its automobile bodies from Fisher for a period of 10 years, GM could not threaten to move its demand to another supplier, and Fisher's specific investments were protected against GM's hold-up threat.

Obviously, the parties recognized that a contract that essentially gave Fisher a 10-year monopoly over the supply of auto bodies to GM also must set a reasonable (competitive) price or price formula at which supply was

⁸ A description of the production process for automobile bodies during the 1920s is given in Roger White, *Body by Fisher: The Closed Car Revolution*, 29 *Automobile Q.* 46, 50, 51 (August 1991). White notes that automobile bodies (which were supplied along with automobile interiors) required significant labor input, with workers having "to cut dies, lumber, and sheet steel, screw and glue frames together, install upholstery, paint and varnish exteriors, and perform other time-consuming manual tasks." But he also notes that "large sums of capital were needed to make unique dies for each metal panel required, and huge facilities were needed to store bodies while paint and varnish dried." Robert Thomas documents that the introduction and success of the new mostly closed models and the movement to annual model changes after 1924 dramatically increased industry capital expenditures on the nondepreciable tooling necessary to make closed body dies (from a level of \$12 million in 1921 to \$36 million in 1928). See Robert Paul Thomas, *Style Change and the Automobile Industry during the Roaring Twenties*, in *Business Enterprise and Economic Change* 122, table 3, 131 (Louis P. Cain & Paul J. Uselding eds. 1973). Because of these large capital investments, the automobile-body-producing industry was fundamentally restructured during the 1920s, shifting from "a large number of companies, most of which had previously built carriages and wagons" at the turn of the century (Thomas G. Marx & Laura Bennett Peterson, *Theory versus Fact in the Choice of Organizational Form: A Study of Body and Frame Production in the Automobile Industry* 12–13 (unpublished manuscript, 1995)) to a much smaller number of firms that made composite closed bodies, most important Fisher Body, Briggs Manufacturing, and the Murray Corporation of America. See White, *supra*; *Body by Briggs*, *Special-Interest Autos* 24–29 (November–December 1973).

to occur. Fisher and GM agreed upon a formula where the price was set equal to Fisher's "variable cost" plus 17.6 percent. The 17.6 percent upcharge presumably was designed to cover Fisher's anticipated capital and overhead costs.⁹ In addition, the contract further protected GM with a most-favored-purchaser clause.¹⁰

B. General Motors Did Not Obtain Control of Fisher Body in 1919

General Motors, in connection with its entering into a long-term body supply contract with Fisher in 1919, also acquired a 60 percent interest in Fisher Body.¹¹ However, purchase of the 60 percent interest did not provide GM with control of Fisher Body. A voting trust agreement that ran until October 1, 1924, was established in 1919 in connection with the purchase, and this agreement provided the Fisher brothers with continued effective control of the Fisher Body Corporation.¹² The Fisher Body shares purchased by GM, along with some of the shares owned by Fred Fisher and Louis Mendelssohn (a major early investor in the Fisher Body Corporation), were placed in the voting trust, and a unanimous decision by the trust's four trustees, including Fred Fisher, was required in order for the trust to vote its shares on any action.¹³

In addition to the Fisher brothers retaining control of Fisher Body during 1919–24, they also retained operational authority. In 1919 the six Fisher brothers entered into employment contracts with Fisher Body for a period

⁹ An upcharge over variable costs, rather than a formula based on Fisher's total cost, was probably used because Fisher was selling automobile bodies to many different companies and it was difficult to isolate and measure the capital and overhead costs associated with GM shipments.

¹⁰ As a practical matter this term guaranteed only that GM would not pay more than other buyers of "like products." See Letter from Fred and Charles Fisher to the General Motors Corporation, *supra* note 7. Since Fisher could argue that GM's bodies were unique, this most-favored-purchaser clause was not a very effective constraint on pricing. In addition, as we shall see, GM sales and Fisher's hold-up potential became so large that, if necessary, it would have been profitable for Fisher to concentrate its business entirely on GM to avoid this clause.

¹¹ The purchase consisted of 300,000 shares of newly issued Fisher Body common stock at \$92 per share, or \$27.6 million. See General Motors Corporation, Report of General Motors Corporation for the Fiscal Year Ended December 31, 1919, at 12–13 (1920) [hereinafter all such reports will be cited as "(year) Annual Report of General Motors Corporation"]; Lawrence Seltzer, *A Financial History of the American Automobile Industry* 218 (1928).

¹² Voting Trust Agreement (November 24, 1919), Gov't Trial Ex. No. 429, *Du Pont*, 126 F. Supp. 235.

¹³ The four trustees were Fred Fisher, Louis Mendelssohn, W. C. Durant, and Pierre S. du Pont. Although Coase and Freeland recognize the unanimity provisions of the voting trust, Casadesus-Masanell and Spulber miss this and incorrectly claim that GM obtained 50 percent control of Fisher Body in 1919.

of 5 years, also running through October 1, 1924.¹⁴ Each Fisher brother received as compensation, in addition to nominal salaries,¹⁵ a 5 percent share of Fisher Body profits (amounting in total to about \$7.5 million over the 5-year agreement) plus the dividends payable on their remaining 20 percent (100,000 shares) of Fisher Body stock (amounting in total to about \$5 million over the 5-year agreement).¹⁶

In 1924, shortly before expiration of these employment agreements (and the voting trust), the Fisher brothers extended their relationships with Fisher Body. In lieu of their 5 percent profit shares, they each received shares in the Managers Securities Company, GM's stock incentive plan,¹⁷ and were required to remain as managers of Fisher Body until 1929 before they could fully redeem their GM shares in the plan. In addition, two brothers (Fred and Lawrence) became employees of GM and members of the GM executive committee.¹⁸

C. 1919–24: *The Fisher–General Motors Contract Works Well*

In analyzing the Fisher-GM body supply contract, it is crucial to distinguish between the early period of operation, from 1919 to 1924, when the contract functioned well, and the period 1925–26, when the contract was used by Fisher to hold up GM and was the primary motivation for GM's acquisition of the remaining 40 percent interest of Fisher Body.

During 1919–24 Fisher Body initially used money from its sale of shares

¹⁴ Agreement between Fisher Body Corporation and Fred J. Fisher (the eldest brother) (December 9, 1919), Gov't Trial Ex. No. 430, *Du Pont*, 126 F. Supp. 235; Direct Testimony of Lawrence Fisher, at 1569 (stenographer's minutes), *Du Pont*, 126 F. Supp. 235.

¹⁵ For example, Fred Fisher received \$33,000 per year from Fisher Body Corporation and \$7,200 per year from Fisher Body Company of Canada. Agreement between Fisher Body Corporation and Fred J. Fisher, *supra* note 14.

¹⁶ The 1919 agreement required that up to two-thirds of Fisher Body's net earnings would be paid out annually to shareholders in dividends until the annual dividend reached \$10 per share per annum. See Letter from Fred and Charles Fisher to the General Motors Corporation, *supra* note 7. See also Letter from General Motors Corporation to Fred and Charles Fisher (September 25, 1919), Gov't Trial Ex. No. 427, *Du Pont*, 126 F. Supp. 235; Letter from Pierre S. du Pont to Sir Henry McGowan (October 21, 1924), Defendants' Trial Ex. No. GM-32, *Du Pont*, 126 F. Supp. 235; and Agreement between Fisher Body Corporation and Fred J. Fisher, *supra* note 14.

¹⁷ The Managers Securities Company was formed in November 1923 with 2,250,000 shares of GM common stock. See 1923 Annual Report of General Motors Corporation 9 (1924).

¹⁸ Charles Fisher also joined the GM executive committee but, contrary to Freeland's account, remained an employee of Fisher Body to "spend most of his time in guiding Fisher interests." William A. Fisher became president, and Edward and Alfred Fisher remained as executives of Fisher Body Corporation. Letter from Pierre S. du Pont to Sir Henry McGowan, *supra* note 16.

to GM to build or purchase a number of assembly plants.¹⁹ These plants were generally conveniently located near GM production facilities. As Table 1 indicates, between 1919 and 1924 Fisher Body Corporation built or purchased 14 assembly plants, 12 of which were located near GM production facilities.²⁰ During this period at least three of the new Fisher plants, all located near GM production facilities, were financed by GM. These included the St. Louis plant (Table 1, No. 3), built in 1922 near a GM Chevrolet facility; the Flint plant (No. 11), built in 1923 near a GM Buick/Chevrolet facility; and the Tarrytown, New York, plant (No. 14), built in 1924 near a GM Chevrolet facility.

Coase's account of Fisher Body's plant expansion under the 1919 supply agreement during this period is somewhat inaccurate.²¹ But the conclusion Coase reaches, that Fisher generally located its plants close to GM production facilities during this early period, is accurate. Unfortunately, the inference Coase then draws from this evidence, that Fisher did not hold up GM, is incorrect. Coase fails to distinguish this early period, when the Fisher-GM contract was working and when Fisher was properly investing in plants to serve GM production facilities, from the post-1924 period, when the con-

¹⁹ See Direct Testimony of Lawrence Fisher, at 1599–1600 (stenographer's minutes), *Du Pont*, 126 F. Supp. 235.

²⁰ Fisher Body also built or purchased at least eight nonassembly plants involved in producing hardware, glassware, and wood products during this period. See Arthur Pound, *The Turning Wheel* 292, 298–99 (1934). See also 1923 Annual Report of General Motors Corporation, *supra* note 17, at 25; 1924 Annual Report of General Motors Corporation 27 (1925); and 1926 Annual Report of General Motors Corporation 31 (1927).

²¹ Coase misses five of the 14 body plants Fisher built or acquired during 1919–24. This is partially because he appears to rely entirely on Pound for his plant information, missing three body plants not included in Pound—a body plant (No. 5) built in 1922 in Detroit near Cadillac and Scripps Booth production (see White, *supra* note 8, at 55; 1919 Annual Report of General Motors Corporation) and two plants (No. 12 and No. 13) built in 1923, one in Tennessee and one in Ontario, Canada. The latter two plants are referenced in 1923 Annual Report of General Motors Corporation, *supra* note 17; and 1924 Annual Report of General Motors Corporation, *supra* note 20; as well as in General Motors Corporation, *Fisher Body, Its Contributions to the Automotive Industry* (1924). In addition, Coase ignores two plants added by Fisher during 1919 listed by Pound: the Fisher Body acquisition of its Fleetwood Division (plant No. 1 (Table 1)) in Detroit in 1919 and the body plant (No. 2) added in Cleveland in 1919. The Cleveland plant was not located near any GM facility. See Pound, *supra* note 20, at 298–99. The existence of the Cleveland facility is confirmed in 1920 Annual Report of General Motors Corporation 7 (1921); and Poor & Moody's Manual, *Consolidated Industrial Section* (1919). Last, Coase, relying entirely on Pound, also incorrectly refers to the Tarrytown plant as having been built in 1925. The Fisher Body Tarrytown facility is listed in the 1924 Annual Report of General Motors Corporation, *supra*, and is also included as a plant in operation in 1924 in General Motors Corporation, *Fisher Body, Its Contributions to the Automotive Industry*, *supra*, at 6. Casadesus-Masanell and Spulber's account of Fisher's plant additions is much more inaccurate. They miss nine of the 16 plants listed in Table 1 (Nos. 1–5, 12–13, 15–16), including all the Fisher plant additions during 1919–22, two of the eight 1923 plants, and, most important, as we shall later see, the 1926 Flint plant.

TABLE 1
FISHER BODY ASSEMBLY PLANT ADDITIONS (1919–26)

Year	Location	Terms of Acquisition	Plant Size	Near GM Division
1 1919 ^a	Detroit ^a	....	1,373,275	Cadillac/Scripps Booth ^d
2 1919 ^a	Cleveland ^a	....	1,525,217	....
3 1922 ^a	St. Louis ^a	Financed by GM ^f	884,362	Chevrolet ^e
4 1922 ^{ac}	Pontiac, Mich. ^{ac}	Purchased from Beaudette ^e	1,393,004	GM Truck/Oakland (later Pontiac) ^e
5 1922 ^c	Detroit ^c	....		Cadillac/Scripps Booth ^d
6 1923 ^a	Lansing, Mich. ^a	....	622,234	Olds Motor ^e
7 1923 ^a	Cincinnati ^a	....	182,167	Chevrolet ^e
8 1923 ^a	Buffalo, N.Y. ^a	....	150,692	Chevrolet ^e
9 1923 ^a	Oakland, Cal. ^a	....	163,920	Oakland (later Pontiac) ^e
10 1923 ^a	Janesville, Wis. ^a	....	257,790	Chevrolet ^e
11 1923 ^a	Flint, Mich. ^a	Financed by GM ^f	266,443	Buick Motor/Chevrolet ^e
12 1923 ^{ch}	Memphis, Tenn. ^{ch}	....		....
13 1923 ^{eh}	Walkerville, Ontario ^{eh}	....		All GM Models
14 1924 ^f	Tarrytown, N.Y. ^{ah}	Financed by GM ^f	376,924	Chevrolet ^e
15 1925 ^a	Fleetwood, Pa. ^a	Purchased from Fleetwood Body ^b	230,465	....
16 1926 ^a	Flint, Mich. ^a	Purchased from Durant Motors ^b	2,127,909	Buick Motor/Chevrolet ^g

NOTE.—Year: year in which Fisher Body acquired the plant, rather than the production start date when discrepancies exist. Terms of Acquisition: whether the plant was purchased by Fisher Body or leased from GM, when information is available. Plant size: square feet of floor space as of June 1, 1933, from Arthur Pound, *The Turning Wheel 298–99* (1934). Near GM Division: make of GM vehicle assembled near the Fisher Body plant when applicable, from GM annual reports.

^a Arthur Pound, *The Turning Wheel 298–99* (1934).

^b Arthur Pound, *The Turning Wheel 292–93* (1934).

^c Roger White, *Body by Fisher: The Closed Car Revolution*, 29 Automobile Q. 55 (August 1991).

^d 1919 Annual Report of General Motors Corporation 7 (1920).

^e 1923 Annual Report of General Motors Corporation 22, 25 (1924).

^f 1924 Annual Report of General Motors Corporation 27 (1925).

^g 1926 Annual Report of General Motors Corporation 31 (1927).

^h General Motors Corporation, *Fisher Body, Its Contributions to the Automotive Industry 6* (1924).

ⁱ Letter from F. G. Donner (vice president of GM) to Pierre S. du Pont (September 4, 1951).

^j Minutes of Executive Committee of General Motors (October 24, 1923).

tract was not working and when Fisher was not making the investments GM required. As Table 1 indicates, after the GM-financed Tarrytown plant was constructed in 1924, no new Fisher Body plants were built or acquired near GM facilities until GM integrated with Fisher in 1926, after which GM purchased the Durant plant in Flint. The only body assembly plant added by Fisher Body during this period before vertical integration with GM was its purchase in 1925 of a plant from Fleetwood Body in Fleetwood, Pennsylvania, which was not near any GM auto plant.²²

D. 1925–26: The Breakdown of the Fisher–General Motors Contract

During 1925–26 the demand by GM for closed Fisher bodies increased dramatically. After growing modestly (about 50 percent) over the initial 5-year period of the contract from 1919 to 1924, the number of vehicles produced by GM jumped 42 percent in 1925, and then another 48 percent in 1926.²³ The industry share of sales that were closed bodies, which was 17 percent in 1920 and only 24 percent as late as 1923, simultaneously jumped to 43 percent in 1924, 56 percent in 1925, and 72 percent in 1926,²⁴ with GM projecting in its 1924 annual report that 65 percent of its 1925 sales would be closed bodies, and in its 1925 annual report that 75 percent of its 1926 sales would be closed bodies.²⁵ The combination during 1925–26 of very rapidly growing GM sales and the dramatic shift to closed bodies resulted in an increase in Fisher closed body sales to GM during this 2-year period of approximately 200 percent.

Coinciding with this dramatic increase in demand by GM for Fisher product during 1925–26, the GM–Fisher Body relationship began to unravel.²⁶ Alfred Sloan summarizes the situation in the following way: “In

²² Pound, *supra* note 20, at 292–93.

²³ General Motors production was 391,738 vehicles in 1919, 587,341 in 1924, 835,902 in 1925, and 1,234,850 in 1926. See Alfred P. Sloan, Jr., *My Years with General Motors* 214 (1964).

²⁴ *Id.* at 152.

²⁵ 1924 Annual Report of General Motors Corporation, *supra* note 20, at 12; 1925 Annual Report of General Motors Corporation 10 (1926). I am grateful to Freeland for pointing out that my previous reference to GM closed-body sales share of 65 percent in 1924 should have referred to a 1924 projection of a 1925 sales share.

²⁶ Exactly when the contract breakdown began is unclear. However, contrary to Freeland’s assertion that the contract difficulties surrounded the extension of the Fisher’s employment agreements in 1924, the overwhelming weight of the available evidence indicates that significant difficulties in the operation of the body supply contract, in particular the Flint plant disagreement, arose after the renegotiation of the Fisher brothers’ employment and compensation arrangements in 1924. Freeland, *supra* note 5, at 44 n.34, recognizes that it is unclear exactly when GM decided it was necessary to purchase the remainder of Fisher Body and that much of the evidence indicates that this did not occur until 1925. But he assumes that the contract breakdown and vertical integration decision was made in 1924 so he can tie it to the employment agreement renegotiation. Although Freeland claims to make this assumption

the intervening years between 1919 and 1924, the industry had moved forward to the point where it was almost an exclusively closed body as compared to the open bodies which was the practice before 1919. The contract relationship between Fisher Body Corporation and General Motors Corporation being cost plus and profit, it became burdensome."²⁷

Sloan describes the burdensome nature of the Fisher Body supply contract in two distinct ways. One problem, Sloan testifies, was related to the increased demand by GM for bodies. In particular, "[t]he increased turn-over reflected in return on capital resulted in cost and selling prices that were no longer competitive."²⁸ A second problem, Sloan testifies, is that "the Fisher brothers, who were really operating the Fisher Body Company in those times, rather questioned the desirability of their putting up large amounts of capital to establish these assembly plants in conjunction with the GM assembly plants."²⁹ He continues, "[W]here we had a chassis assembly plant, we had to have a Fisher Body assembly plant, but the Fisher Body Corporation was unwilling to put in an investment in these assembly plants. That handicapped us considerably."³⁰

As a consequence of these problems, Sloan testifies, the acquisition of Fisher Body in 1926 was "not a question of anything but a must. We just had to have that forty percent interest. It was unrealistic to think that an operation of the magnitude of General Motors could continue an operating arrangement such as I testified to here, and buy a substantial part of its bodies or all of its closed bodies under such circumstances. We had to have an integrated operation. . . . the acquisition of that forty percent in 1926 was a must. We just had to have it irrespective of any other considerations."³¹

arguendo (because of the mistaken statement in Klein, Crawford, & Alchian, *supra* note 2, at 310, that the contract became intolerable to GM in 1924, rather than in 1925), his argument in fact turns on this assumption. In addition to Freeland's numerous references (in n.34) to the exact timing of GM's acquisition decision, which are largely consistent with a 1925 date, we should add Sloan's statement that the earliest discussions held in the GM executive committee on whether to bring Fisher body production into GM occurred on February 3, 1925. See Sloan, *supra* note 25, at 161. Coase's and Casadesus-Masanell and Spulber's references to the fact that GM had discussed the idea of a possible merger or "closer association" with Fisher earlier is not surprising. One would expect vertical integration to be discussed as an alternative in any relationship that warranted a 10-year exclusive dealing contract, but these earlier discussions did not deal with GM's urgent economic necessity for vertical integration, as did the critical discussions in 1925.

²⁷ Direct Testimony of Alfred P. Sloan, Jr., at 2911, *Du Pont*, 126 F. Supp. 235.

²⁸ *Id.* Similar testimony is repeated by Sloan in his Deposition Testimony, at 188, *Du Pont*, 126 F. Supp. 235.

²⁹ Deposition Testimony of Alfred P. Sloan, Jr., at 190, *Du Pont*, 126 F. Supp. 235.

³⁰ Direct Testimony of Alfred P. Sloan, Jr., at 2912, *Du Pont*, 126 F. Supp. 235.

³¹ *Id.*

One cannot examine the record without concluding that from GM's perspective the contract with Fisher Body was not working during 1925–26 and that this motivated vertical integration.³² Coase brushes over this testimonial evidence by describing the situation in 1925 as one where GM was “dissatisfied with the 1919 arrangement.”³³ In fact, GM was much more than merely “dissatisfied.” Sloan's testimony clearly describes what he perceives as the disastrous consequences of a “burdensome” contract that led to noncompetitive prices and inadequate investments. Moreover, Coase does not explain why GM was “dissatisfied with the 1919 arrangement.” He only vaguely notes that Fisher “paid less attention to the needs of General Motors than General Motors would have liked.”³⁴ Coase tells us neither in what ways Fisher did not consider the needs of GM nor exactly how the contractual arrangement failed in these respects.

Examining the two problems that Sloan says existed in the Fisher-GM contractual arrangement provides economic insight into the nature of the contract breakdown. First of all, Sloan suggests that the rapid unexpected increase in demand for Fisher bodies (“increased turnover”) led to greater than competitive costs and prices because this permitted Fisher to earn a greater than competitive return on capital. The demand increase appears to have led to an increase in the ratio of Fisher Body's sales (and, hence, non-capital costs) to its required capital investment. Therefore, according to Sloan, the contractually fixed percentage upcharge on noncapital costs (17.6 percent) resulted in prices that were too high because it implied a margin that was more than sufficient to provide a normal rate of return on capital.

This increase in Fisher's sales-to-capital ratio may have been due solely to the realization of large economies of scale in capital (for example, dies that could be used more intensively as sales increased) caused by the very large increase in sales that was unrecognized at the initial time of contracting when the 17.6 percent upcharge was set. But if this problem of too high a rate of return earned by Fisher on capital was caused entirely by the unexpected realization of economies of scale in capital, it might conceivably have been solved contractually, at the very least going forward (per-

³² Casadesus-Masanell and Spulber incredibly claim (*supra* note 6, at 79) that Sloan's testimony refers solely to pricing flexibility, not to high prices, completely ignoring Sloan's statement that the contract “resulted in selling prices that were no longer competitive.” Their claim is also internally inconsistent with their incorrect assertion (*id.*) that “General Motors was able to update pricing provisions because it had a controlling interest in Fisher Body dating back to 1919.” (See Section IIB *infra* for documentation that GM did not obtain control of Fisher Body in 1919.)

³³ Coase, *supra* note 4, at 24.

³⁴ *Id.*

haps after a side payment was made by GM to Fisher) by the use of a simple price adjustment contract term based on Fisher sales.

However, it is clear from the record that much more was involved with GM's dissatisfaction than merely a failure of the contract formula to account for the unexpectedly rapid sales growth. Sloan testifies that GM was also upset about Fisher's refusal to make the necessary capital investments in new body plants in conjunction with GM assembly plant expansions. Fisher's reluctance to make the necessary investments in capacity to handle GM's increased requirements resulted in GM experiencing body shortages that forced it to reduce its scheduled production during 1925.³⁵

E. Fisher's Flint Plant Holdup of General Motors

What was particularly troublesome to GM in 1925 was Fisher's refusal to make the investment in plant and equipment necessary to move Fisher's production of Buick bodies from Detroit to a site near the GM Buick assembly plant in Flint. Fisher insisted on continuing to produce Buick bodies in its Detroit plant, where (beginning around 1924) it was also supplying closed bodies for the Chrysler Corporation.³⁶ For GM this involved increased shipping costs, including the extra costs of transporting the bodies 57 miles from Detroit to Flint and the extra labor costs involved in loading and unloading the bodies, on which Fisher could add 17.6 percent.³⁷

Coase acknowledges that a problem existed with regard to the Flint plant in 1925 but states that this was only one plant out of many plants that were built or acquired by Fisher during the period before vertical integration in 1926. This ignores the fact that the earlier plants were built before GM's large demand increase, when the contract was functioning as intended. Moreover, the Flint plant should not be considered as merely one plant out of many. The plant became the largest Fisher Body facility and, ultimately, the largest auto body plant in the world.³⁸

³⁵ See 53 (12) *Automotive Industries* 476 (1925). Fisher's failure to make adequate investments does not appear to be due to an inadequacy of investment funds. In fact, Fisher was making investments in body capacity for other companies such as Chrysler at the same time. See *Fisher Body Co. Starts Addition to Cost \$350,000*, 53 (9) *Automotive Industries* 358 (1925).

³⁶ Direct Testimony of Lawrence Fisher, at 1614–17 (stenographer's minutes), *Du Pont*, 126 F. Supp. 235.

³⁷ This does not mean that Fisher could have legally used its GM contract to put a plant in, say, Alaska to collect additional transportation and labor costs. Contract law, even in the 1920s, likely would not have enforced such a clear Fisher holdup. But the courts then and now would be very unlikely to second-guess Fisher's decision to expand body production in Detroit, rather than build a new plant in Flint, to serve GM's Buick demand.

³⁸ Pound, *supra* note 20, at 293.

Coase also dismisses the Flint plant episode as merely a disagreement over financing.³⁹ Presumably, this is because Sloan describes the situation in terms of Fisher refusing to put up the large amounts of capital required for GM's expansion.⁴⁰ But a disagreement over financing would not likely have produced a complete impasse over the Flint plant. It is unlikely Fisher merely was dragging its feet to get GM to finance construction. General Motors could have financed the Flint plant, as it had done for at least three other plants during 1922–24, by providing a loan to Fisher for the capital costs. If Fisher had wanted to build the Flint plant under these GM finance terms, there is no reason it would not have been built, and the Buick body supply problems would have been solved. But a GM-financed solution to the Flint plant would have implied increased capital costs to Fisher that were not reimbursable under the terms of the 1919 body supply contract. And Fisher would have owned the Flint plant, as it owned the other plants financed by GM, and would have been obligated to continue making financing payments to GM even after expiration of the body supply contract in 1929.

This points up a major problem associated with the large unexpected increase in demand and the required specific capital investments that developed late in the life of the contract. Fisher's investment in a plant specific to GM, located some distance from other automobile manufacturers, with only 4 years to run in the body supply contractual agreement (or perhaps only 3 years to run after completion of the plant), would have created a potential for GM to hold up Fisher at the expiration of the contract.

However, it is unlikely that GM was trying to hold up Fisher with this demand for new Fisher investments. Fisher obviously would be reluctant to make such investments. It makes no economic sense to explain GM's behavior as an attempt to deceive a naive Fisher Body. Instead, this demand by GM should be thought of as the start of the required contract negotiation process. But rather than merely ask GM for an extension of the contract before making new large investments in Flint, Fisher used its existing contract with GM and, in particular, the fact that GM was exclusively tied to Fisher for another 4 years by a cost-plus contract to increase its renegotiation bargaining power by continuing to supply Buick bodies from its Detroit facility. Fisher thereby avoided the extra capital costs of the Flint plant while imposing costs on GM in the form of added transportation and labor costs upon which GM was contractually obligated to pay Fisher an up-charge. Fisher was, in effect, demanding a large side payment before making the required contractual adjustments, and GM's purchase of the remain-

³⁹ Coase, *supra* note 4, at 28.

⁴⁰ Deposition Testimony of Alfred P. Sloan, Jr., at 190, *Du Pont*, 126 F. Supp. 235.

der of Fisher Body was the form in which this side payment ultimately occurred.

*F. Freeland's Claim That the Flint Plant Disagreement
Did Not Involve a Fisher Holdup of General Motors*

Freeland, contrary to Coase, does not minimize the problem of Fisher's failure to invest in properly located plant capacity and, in particular, recognizes that Fisher's resistance to building a plant in Flint in 1925 was a primary motivation for GM's decision to purchase the remainder of Fisher Body. But Freeland suggests that Fisher's reluctance to establish a new plant in Flint and its behavior that followed were economically understandable. Freeland notes that "Fisher undoubtedly preferred to add operations in Detroit rather than to build an entirely new facility less than 60 miles away."⁴¹ However, a plant at Flint was not an unreasonable desire for GM. Once vertical integration occurred in 1926, GM made a large investment in a Flint facility and eventually closed the Detroit operation. A Flint plant investment clearly would have maximized the joint profit of GM and Fisher. While it was reasonable for Fisher not to want to make a new large GM-specific investment without an additional long-term contractual commitment, Fisher's behavior took advantage of the existing contractual arrangement to disadvantage GM substantially.

Freeland also notes that it was logical for Fisher to want to keep Buick production in Detroit because "Detroit was one area in which Fisher had important customers besides GM."⁴² This is just a statement of why it was in Fisher's narrow economic interest not to make the desired relationship-specific investments in a plant located close to GM's facility in Flint. By keeping Buick production in Detroit, Fisher was able to share its GM overhead costs with Chrysler production and, by making its investment less specific, to protect against a possible GM holdup at the expiration of the contract. But, by refusing to make the large capital investments desired by GM in a new plant at Flint, Fisher was also improving its bargaining position by adopting an inefficient (more labor- and transportation-intensive and less capital-intensive) production technology that increased GM's costs and artificially increased its own profits.⁴³

⁴¹ Freeland, *supra* note 5, at 51.

⁴² *Id.*

⁴³ *Id.* at n.61, also uses the fact that the Flint plant was planned to produce Buicks, rather than GM's largest selling product, Chevrolets, as evidence that the Flint plant location disagreement did not involve a holdup. Chevrolets, not Buicks, he claims would have been the "most lucrative target." The sales of Chevrolet were indeed greater than the sales of Buick, but at this time GM was producing Chevrolets in four separate plant locations (St. Louis, Buffalo, Tarrytown, and Janesville), while Buicks were being produced only in Detroit. See

Freeland presents three additional arguments that, he claims, convincingly demonstrate that the 1925 Flint plant location problem did not involve Fisher taking advantage of the imperfect 1919 contract to hold up GM. All three arguments are incorrect. Freeland's first argument is that a Fisher holdup of GM never occurred because the 1919 body supply contract was likely not in effect at the time of the Flint plant disagreement. He supports this claim by referring to the "foremost scholarly account" of Alfred Chandler and Stephen Salsbury, which states that the 1919 cost-plus contract, originally scheduled to run to 1929, was renegotiated in 1924.⁴⁴ However, the supporting documents cited by Chandler and Salsbury refer only to the 1924 renegotiation of the original 1919 employment contracts of the Fisher brothers. These documents provide absolutely no evidence for Chandler and Salsbury's claim that the body supply contract also was renegotiated at this time.⁴⁵

In fact, a letter written by the board of directors of Fisher Body Corporation to its shareholders in May 1926 in connection with the proposed merger with GM states unambiguously that the 1919 body supply contract was still in effect in 1926.⁴⁶ This is also consistent with the fact that

1926 Annual Report of General Motors Corporation, *supra* note 20. Moreover, it was the Buick plant investment decision that came up at the time that the contract broke down in 1925.

⁴⁴ Freeland, *supra* note 5, at 47, citing Alfred D. Chandler, Jr., & Stephen Salsbury, *Pierre S. du Pont and the Making of the Modern Corporation 576* (1971). Casadesus-Masanell and Spulber also refer to Chandler and Salsbury for this point.

⁴⁵ Chandler and Salsbury rely on three primary documents: (1) letter from Pierre S. du Pont to Arthur Bishop (October 14, 1924) (on file with the Pierre S. du Pont Papers, Hagley Museum and Library, Wilmington, Del.) [this archive is hereinafter referred to as du Pont Papers]; (2) letter from Harry McGowan to Pierre S. du Pont (November 7, 1924), Defendants' Trial Ex. No. GM-33, *Du Pont*, 126 F. Supp. 235; and (3) letter from Pierre S. du Pont to General Motors Finance Committee (January 26, 1925), du Pont Papers. All three of these documents refer only to the employment contract renegotiated in 1924 and do not make any mention of pricing arrangements and, in particular, the separate cost-plus body supply contract, which had a 10-year term. Freeland prefaces his discussion of Chandler and Salsbury with the statement "If this claim is correct" (Freeland, *supra* note 5, at 45), apparently recognizing the lack of support in the record for the Chandler and Salsbury conclusion. But he then misleadingly refers to the Chandler and Salsbury conclusion numerous times in his paper as if it were correct and includes a detailed description of how Fisher body pricing reverted in 1924 to a formula based on operating value, overhead allocation, and a return on invested capital, none of which is specifically mentioned by Chandler and Salsbury.

⁴⁶ "In 1919 General Motors acquired a sixty per cent (60%) interest in the common stock of Fisher Body and at the same time entered into a ten-year contract for its automobile body requirements. As you are aware, this contract has been exceedingly profitable to Fisher Body, and at the present time about 90% of its business consists of bodies made for General Motors. . . . As the contract made with General Motors in 1919 has but a relatively short term remaining, your officers and directors have given serious thought to the future prospects of Fisher Body. In 1929 a new contract must be negotiated, or General Motors will be free either to build its own bodies or purchase them elsewhere." Letter from Board of Directors

GM officials during the 1926 negotiation did not want Fisher to obtain the “unfair” benefits of the contractual arrangement going forward⁴⁷ and with Sloan’s testimony, reproduced above, that the “burdensome” cost-plus contract was a motivation for GM’s integration with Fisher in 1926.⁴⁸

Freeland’s second reason for why a holdup did not occur in 1925 is that, even if the body supply contract remained in place, the voting trust expired October 1, 1924. Therefore, after that date GM was free to vote its 60 percent interest in Fisher Body and had effective control of Fisher Body.⁴⁹ However, contrary to Freeland, GM clearly did not have control of Fisher Body until its complete acquisition of Fisher in 1926. If GM fully controlled the relationship after the expiration of the voting trust agreement in 1924, it certainly would not have continued the “burdensome” Fisher-GM contract. Sloan refers to GM’s lack of control and, in particular, its inability to rescind the Fisher contract when testifying that “we could not adjust because we always had to respect the forty percent outstanding interests.”⁵⁰ He also said that “we were bound by a contract in which the minority interest was outstanding, which we had to respect.”⁵¹

In addition to Sloan’s testimony that GM was “bound by a contract” in which Fisher’s 40 percent interest remained outstanding and had to be hon-

of Fisher Body Corporation to the Stockholders of Fisher Body Corporation (May 17, 1926), Gov’t Trial Ex. No. 506, *Du Pont*, 126 F. Supp. 235.

⁴⁷ Correspondence among GM officials states that the value of Fisher Body should be determined independent of the favorable contract, or, at the very least, a compromise should be struck. “I am absolutely against making a deal other than on the basis of looking forward rather than backward. I feel as we go on our position becomes strengthened [presumably because the contract was getting closer to expiration in 1929], but irrespective of our shortcomings in the past, which of course affects our present market situation to some extent, it has nothing to do with the future and this perhaps deals with the future to a very material degree. Irrespective of all this, of course I recognize the market position in a thing of this kind necessitates some sort of a compromise. Whatever Fred [Fisher] may have in mind, of course I do not know, but I fear that he will feel that the market should be equalized to its full present relation. If that is insisted upon, I do not think we should go ahead and that is the reason why I feel that that is the vital point on which his position should be determined.” Letter from Alfred Sloan to J. J. Raskob (an official of GM) (February 13, 1926), Defendants’ Trial Ex. No. GM-34, *Du Pont*, 126 F. Supp. 235.

⁴⁸ Freeland, *supra* note 5, at 48 n.44, thanks Coase for pointing out to him that Sloan’s testimony is “subtly ambiguous about whether the cost-plus provisions were in effect after 1924.” Neither author informs us about the nature of the ambiguity. The alleged ambiguity may be based on the fact that Sloan describes the “burdensome” cost-plus contract after describing the industry growth of closed bodies during 1919–24. See Direct Testimony of Alfred P. Sloan, Jr., at 2911, *Du Pont*, 126 F. Supp. 235. If so, this is a contrived ambiguity. Sloan’s answer is in response to a question regarding the reasons for GM’s purchase in 1926 of the remaining 40 percent of Fisher Body.

⁴⁹ Freeland, *supra* note 5 at 48.

⁵⁰ Direct Testimony of Alfred P. Sloan, Jr., at 2912, *Du Pont*, 126 F. Supp. 235.

⁵¹ Deposition Testimony of Alfred P. Sloan, Jr., at 188, *Du Pont*, 126 F. Supp. 235.

ored, Lawrence Fisher explicitly testified that the management of Fisher Body maintained operating control of Fisher Body after the expiration of the voting trust in 1924.⁵² The evidence is unambiguous that GM did not have the power to abrogate its body supply contract with Fisher during 1925–26 or to determine Fisher Body investment decisions or plant locations, in spite of its 60 percent ownership share. Perhaps it was because, under its ownership agreement with Fisher, GM controlled only 50 percent of the board of directors and only two-sevenths of the executive committee of Fisher Body.⁵³ Or perhaps GM would have faced litigation by the minority shareholders of Fisher Body if it unilaterally abrogated the contract. In any event, it is clear from the events during both 1925 and the 1926 negotiation over the terms of vertical integration that the GM–Fisher Body cost-plus exclusive dealing contract remained in effect in 1926 and was proving especially burdensome to GM.⁵⁴

Freeland's third reason why it is unlikely Fisher engaged in a holdup of GM is that once the Fisher brothers were more fully brought into GM in 1924, the financial incentives of the Fisher brothers became aligned with those of GM.⁵⁵ However, although Freeland correctly notes that after 1924 the Fisher brothers' compensation was provided primarily by a stake in the GM stock incentive plan, the Managers Securities Company, the Fisher brothers' collective 15 percent share in this plan represented less than 2 percent of the total outstanding shares of GM common stock.⁵⁶ In contrast, the

⁵² Direct Testimony of Lawrence Fisher, at 1559–60, *Du Pont*, 126 F. Supp. 235.

⁵³ The board of directors of Fisher Body consisted of 14 members, with seven members nominated by the finance committee of the GM Corporation and the other seven members nominated by Fred Fisher and Louis Mendelssohn. The executive committee of Fisher Body, which had complete charge of the operations of the corporation except finances, consisted of seven members, two of whom were chosen from the representatives of the board of the GM Corporation, and the balance from the members of the board nominated by Fisher and Mendelssohn. See Letter from Fred and Charles Fisher to General Motors, *supra* note 7.

⁵⁴ Coase also makes a control-type argument to refute the possibility of a Fisher holdup, claiming that Fisher could not have built inefficient plants because "to the extent that Fisher Body was paying the capital costs, it needs to be remembered that General Motors nominated a majority of the members of the finance committee of Fisher Body, which would have had to approve such expenditures." Coase, *supra* note 4 at 30. However, Fisher was only deciding to continue production at Detroit. The finance committee of Fisher Body could not have made the unilateral decision to build a plant in Flint. The actions of the finance committee likely dealt with approval of investment decisions made by the board of directors, which GM did not control. See Letter from Fred and Charles Fisher to General Motors Corporation *supra* note 7.

⁵⁵ Freeland, *supra* note 5, at 46–47.

⁵⁶ The Fishers' share of the plan is based on Letter from Pierre S. du Pont to Arthur Bishop, *supra* note 45; Managers Securities Company, Interrogatory 7(a) and 7(b), Gov't Trial Ex. No. 259, *Du Pont*, 126 F. Supp. 235. In 1924 the number of shares of GM common stock outstanding was reduced from 20,646,397 (in 1923) to 5,161,599 (see 1924 Annual Report of General Motors Corporation, *supra* note 20), and the holdings of the Managers

Fisher brothers' ownership interest in Fisher Body Corporation was about 20 percent.⁵⁷ Although the Fisher brothers did not want GM to fail, the fact that the Fisher brothers' interest in Fisher Body Corporation was more than 10 times greater than their interest in GM Corporation implies that they could make more money if they transferred income from the latter to the former.⁵⁸

On July 1, 1926, 1 day after the GM acquisition of Fisher Body was finalized, GM announced a \$40 million expansion program for 1927.⁵⁹ This included \$5 million authorized to create body-building facilities in Flint, which was accomplished by the purchase of the Durant Motors plant in Flint in 1926,⁶⁰ and \$8 million and \$5 million to be used to provide additional capacity for the Chevrolet division and Oakland division, respectively.⁶¹ The original Fisher plant in Detroit subsequently shut down, and the new plant that was developed in Flint became the largest Fisher Body plant.⁶²

Securities Company were reduced from 2,250,000 shares of GM common stock to 562,500 shares. See *Managers Receive Dividend Benefits*, Wall St. J., May 15, 1926. Therefore, the Fisher brothers' ownership interest in GM was about 1.6 percent $(0.15(562,500)/5,161,599 = 0.016)$.

⁵⁷ The Fisher brothers owned approximately 20 percent of Fisher Body Corporation in October 1922. I have not been able to locate any evidence of the Fisher brothers' share holdings in Fisher Body during the 1924–26 time period and assume that the Fisher brothers' interest in Fisher Body Corporation did not change substantially from the fall of 1922 to the fall of 1924. See Letter from Pierre S. du Pont to Lamont du Pont (October 31, 1922), Gov't Trial Ex. No. 435, *Du Pont*, 126 F. Supp. 235.

⁵⁸ Distinct from Fisher's financial incentives, Coase argues, GM would not have brought the Fisher brothers more fully into GM and appointed them to various senior positions of authority within the GM organization if the Fishers were engaging in a holdup. But, once again, Coase is ignoring the timing of these actions. In particular, the Fishers were appointed before the 1925–26 disagreement, when the contract was functioning well. Specifically, Fred Fisher was made a director of GM in 1921, was appointed a member of the executive committee of GM in 1922, and was appointed to the finance committee in 1924 after the renegotiation of his employment relationship. Charles and Lawrence Fisher also joined the board of directors and the executive committee of GM in 1924 in connection with the renegotiation of their employment relationship. In explaining why the Fishers maintained these positions throughout the hold-up period in 1925–26, it is important to distinguish between appointing someone to a senior position, which I agree with Coase is unlikely to occur if a holdup is taking place, and terminating someone (assuming this would have been legally possible in the time frame involved) given that negotiation was ongoing to resolve the disputed issues and that a complete break in relations had not occurred.

⁵⁹ GMC Divisions Get \$40,000,000 for 1927 Expansion Program, 55 *Automotive Industries* 30 (1926).

⁶⁰ Pound, *supra* note 20, at 293; see also *New Fisher Plant Will Start Work Nov. 1*, 55 *Automotive Industries* 710 (1926).

⁶¹ GMC Divisions Get \$40,000,000 for 1927 Expansion Program, *supra* note 59, at 30.

⁶² Pound, *supra* note 20, at 293, 298–99.

G. Defining Hold-Up Behavior: 1925–26 versus 1933–34

Although my statement of the facts of the Fisher Body–GM case is labeled “erroneous” by Coase,⁶³ “grossly inaccurate and misleading” by Freeland,⁶⁴ and a “fable” by Casadesus-Masanell and Spulber, my description of the relevant events fundamentally agrees with Coase’s and Freeland’s descriptions.⁶⁵ In particular, both Coase and Freeland agree that problems existed during 1925–26 regarding the Fishers’ willingness to finance expansion and to locate a plant in Flint. Freeland further agrees that these problems were a major motivation for GM’s vertical integration with Fisher Body in 1926, and Coase notes that this is consistent with what he reports he was told by GM executives during his visit to the United States in 1931–32 regarding the reason for vertical integration.

Coase’s and Freeland’s disagreements with my description of events primarily involve my interpretation of these agreed upon facts. In particular, neither Coase nor Freeland want to label the problems experienced during 1925–26 as a holdup. In contrast, Freeland describes as a holdup the Fisher brothers’ demand for increased compensation in 1933–34, after vertical integration already had occurred.⁶⁶ Comparing these two episodes provides a helpful economic framework in which to formulate a useful definition of hold-up behavior. As we shall see, the Fisher brothers’ investment and pricing behavior in 1925–26, which led to the breakdown of the Fisher-GM contract and to vertical integration, should more properly be classified as a holdup than the Fisher brothers’ employment contract renegotiation in 1933–34.

Freeland describes the 1933–34 episode as a demand by the Fisher brothers for increased compensation if they were to continue working for Fisher Body (now fully owned by GM). Specifically, the Fishers demanded that GM grant them options on 200,000 shares of GM common stock at an exercise price of the then prevailing \$40 market price. In response to this threat by the Fisher brothers to collectively leave Fisher Body, GM eventually agreed to grant options on a total of 100,000 shares of GM stock, with one-third of the shares exercisable after each of 3 years of employment.⁶⁷

Freeland describes this demand by the Fishers for additional compensation as an attempt to force GM, after having purchased Fisher Body at a

⁶³ Coase, *supra* note 4, at 30.

⁶⁴ Freeland, *supra* note 5, at 34.

⁶⁵ As noted above (*supra* note 21), Casadesus-Masanell and Spulber inexplicably ignore the Flint plant episode entirely in their analysis.

⁶⁶ Freeland, *supra* note 6, at 35.

⁶⁷ Letter from William du Pont to Lamot du Pont Copeland (May 4, 1934), du Pont Papers.

substantial premium in 1926, to “pay yet again” in 1934.⁶⁸ This is a gross overstatement. The options granted to the Fishers in 1934 had a market value of about \$1 million.⁶⁹ In contrast, the Fishers received \$65 million for their 20 percent interest in Fisher Body in 1926, or a premium of more than \$36 million over market value.⁷⁰ Clearly, GM was not “paying twice” for the company. However, the question remains whether the demand by the Fishers for additional compensation was a holdup.

At the time the Fisher brothers made their demand for stock options, a formal employment contract did not exist between GM and the Fisher brothers. All of the Fisher brothers were employees of GM, but there was no long-term contractual commitment by the Fishers to manage Fisher Body or by GM to guarantee future employment. Indeed, the testimony of Lawrence Fisher indicates that an explicit employment contract did not exist after vertical integration occurred in 1926.⁷¹ The Fisher brothers appear to have been operating under employment-at-will arrangements. Therefore, the threat by the Fishers to leave GM did not involve the violation of any explicit contractual agreement on their part. If a holdup is defined as an attempt by one transacting party to renege on an explicit, agreed upon contract, the Fisher brothers were not holding up GM when they threatened to leave in 1934.

Reneging on an explicit contract is too narrow a view of holdups, however. A more useful definition of hold-up behavior involves one party taking advantage of the fact that its transacting partner has made specific investments and that the contract governing the relationship is incomplete to appropriate the quasi-rents from the relationship-specific investments. I dis-

⁶⁸ Freeland, *supra* note 5, at 59.

⁶⁹ *Id.* at 58 incorrectly describes the Fishers’ initial request for options on 200,000 shares at the then prevailing market price of \$40 as an “\$8 million investment.” However, the options simply would have provided the Fishers with the right to purchase shares at a future date at the predetermined price of \$40. Using the Black-Scholes option pricing formula and assuming (perhaps unrealistically) that the future volatility of GM stock can be measured by the extremely high level of volatility of the previous year’s daily closing prices, the approximate value on May 4, 1934, of the options eventually granted to the Fisher brothers was about \$1.1 million. (This calculation uses an extremely low risk-free interest rate in 1934 of less than one-tenth of 1 percent (0.076 percent) obtained from the Center for Research in Security Prices at the University of Chicago.)

⁷⁰ The value of the net assets of Fisher Body Corporation was approximately \$143 million in 1926. The Fisher brothers’ portion (20 percent) of this amount was equal to \$28.6 million. The market value of the GM stock used to acquire the remaining 40 percent of Fisher Body that GM did not already own was about \$130 million, and, therefore, the Fisher brothers received approximately \$65 million for their \$28.6 million interest. See Seltzer, *supra* note 11, at 218–19.

⁷¹ Direct Testimony of Lawrence Fisher, at 1565–66 (stenographer’s minutes), *Du Pont*, 126 F. Supp. 235.

cuss in the next section why transactors make specific investments that put themselves into this position where they can be held up, but the important thing to recognize here is that hold-up behavior need not involve the violation of the explicit written terms of the parties' contractual arrangement. Under this definition of a holdup, the Fishers may have been holding up GM when they jointly demanded renegotiation of their employment relationship in 1933, if they were taking advantage of the specific investments made by GM in Fisher Body that depended on the continued management of the Fisher brothers.

But this broader, more useful, definition of a holdup—based on the appropriation of relationship-specific investments—would imply that Fisher Body also was engaging in hold-up behavior during 1925–26, when the Fishers used the imperfect cost-plus body supply contract with GM to “overcharge” for bodies and to refuse to make the required investments in new plant capacity. The fundamental economic behavior in both examples is identical. They both involve Fisher taking advantage of GM-specific investments and the fact that the court will enforce the imperfect explicit contract terms that govern an economic relationship rather than the underlying contractual understanding.

With regard to the Fisher body supply holdup in 1925–26, the court presumably would have enforced the imperfect long-term, exclusive dealing contract that locked in GM, thereby permitting Fisher to engage in a holdup by not making the desired investments and by charging GM relatively high body prices. With regard to the Fisher labor supply holdup in 1933–34, the court presumably would have enforced the imperfect contract that governed the contractual understanding between the Fishers and GM (in particular, the court would have recognized the absence of any long-term employment commitment between the parties), thereby permitting the Fisher brothers to take advantage of any Fisher-specific investments made by GM by threatening to leave if they did not receive an additional payment from GM. In both cases the Fishers were taking advantage of the imperfect contract that governed a postcontract bilateral monopoly (created by a long-term exclusive dealing contract in the 1925–26 case and by the Fisher-specific reliance investments of GM in the 1933–34 case) to hold up their transacting partner.

However, while the Fishers' behavior during 1925–26 clearly involved the appropriation of relationship-specific quasi-rents, the Fishers' demand for stock options in 1933–34 may be explainable on other terms. As documented by Freeland, the Fishers' behavior during 1933–34 may have been caused by the fact that the depression forced them to liquidate their 500,000 shares of GM stock in 1931.⁷² This left them with no holdings in

⁷² Freeland, *supra* note 5, at 57.

GM outside of their participation in the stock incentive plan. Since the Fishers were being compensated predominantly by a return on their GM stock, some renegotiation of the employment agreement was required if they were to have the proper incentive to continue working for GM and managing Fisher Body. This is analogous to the readjustments that commonly occur in the exercise prices on executive stock options in order to keep managers' performance incentives high when the general stock market falls. For these reasons it is not clear that the Fishers were holding up GM during 1933–34.⁷³

Freeland may label the Fishers' 1933–34 demand for stock options as a holdup because a GM executive described the Fisher demand for increased compensation in 1934 as "almost a 'hold up.'"⁷⁴ But it is less obvious that the Fishers' behavior during 1933–34 involved a holdup, in the sense of a transactor using an imperfectly specified contract to appropriate the quasi-rents from relationship-specific investments, than that the Fishers' behavior during 1925–26 involved such a holdup. The GM demand in 1925 that large additional specific investments be made by Fisher late in the contract term no doubt required some form of contractual adjustment (at the very least a contract extension). However, the Fishers' failure to build the body plant at Flint that GM required for efficient production and, instead, their decision to increase their short-run profit by taking advantage of the existing imperfect contract clearly involved appropriation of relationship-specific quasi-rents.

III. WHY THE FISHER BODY HOLDUP OF GENERAL MOTORS OCCURRED

An obvious question is why GM entered into a contractual agreement that placed it in a position where it could be held up by Fisher. As I have explained in detail elsewhere,⁷⁵ it does not make sense to assume that Fisher deceived GM into entering the long-term cost-plus contract. Relying on the ability of transactors to take advantage of their transacting partners is a highly unsatisfactory, usually untestable, way to explain holdups. General

⁷³ Freeland arbitrarily assumes that the Fishers were motivated in 1933 by the possession of inside information that GM stock was undervalued in the market and that (contrary to the usual economic assumption that individuals at all times are wealth maximizing) they were trying to recoup the wealth (estimated at \$400 million) they had lost in the depression (see Freeland, *supra* note 5, at 57 n.85). However, if the Fishers possessed such inside information, they could have earned a significant return without demanding a change in their employment terms.

⁷⁴ Freeland, *supra* note 5, at 58, citing Letter from William du Pont to Lammot du Pont Copeland, *supra* note 67.

⁷⁵ Benjamin Klein, Why Hold-Ups Occur: The Self-Enforcing Range of Contractual Relationships, 34 *Econ. Inquiry* 444 (1996).

Motors and Fisher Body were two large, sophisticated business firms that likely were fully cognizant of the malincentive problems inherent in the imperfect contract they were entering. General Motors and Fisher adopted the contract in spite of these potential hold-up problems because they expected it to function satisfactorily in combination with a self-enforcement mechanism.

A self-enforcement mechanism assures performance by threatening termination of the relationship.⁷⁶ Such a mechanism is what initially prevented Fisher from taking advantage of the contract. Fisher always had the ability to exploit the imperfect body supply contract, as it started to do in 1925, but if Fisher took advantage of the contract before 1925, it had more to lose from GM's nonrenewal of the agreement than it had to gain. That is why the allegedly "imperfect" contract functioned well for more than 5 years.

The loss that can be imposed on a nonperforming transactor by termination of the relationship is called the transactor's reputational capital. When sufficient reputational capital exists, self-enforcement is superior to court enforcement. With self-enforcement, transactors know (with a lag) if their transacting partner has or has not performed and, therefore, whether to impose the termination sanction or not. Court enforcement, on the other hand, involves interpretation of the contract terms by a third party before a non-performance sanction is imposed. This entails both an increased time lag and, because the contract terms used to communicate the elements of the agreed upon performance to the third-party enforcer are necessarily imperfect, increased noise in determining whether the contractual understanding has been violated. As the Fisher-GM case illustrates, the court can be used to enforce imperfect contract terms in a way that may be contrary to the contractual understanding of the parties and may result in a holdup.

To avoid these contract interpretation problems, when reputational capital is sufficiently large, transactors handle specific investments and potential hold-up problems without specifying very much in their contracts and, instead, rely primarily on self-enforcement mechanisms to assure performance. For example, Japanese automobile manufacturers use largely unspecified contracts in dealings with their parts suppliers.⁷⁷ Similarly, if GM

⁷⁶ Analysis of the self-enforcement mechanism is presented in Benjamin Klein & Keith B. Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 *J. Pol. Econ.* 615 (1981). Stewart Macaulay, *Non-contractual Relations in Business: A Preliminary Study*, 28 *Am. Soc. Rev.* 55 (1963), documents the importance of this mechanism in most business relationships.

⁷⁷ The explicit contract terms between Japanese automakers and their suppliers are short-term and relatively unspecified, with prices adjusted downward at regular intervals as sales increase and supplier costs fall based on an implicit understanding. See Banri Asanuma, *Manufacturer-Supplier Relationships in Japan and the Concept of Relation-Specific Skill*, 3 *J. Japanese & Int'l Econ.* 1 (1989). The expectations of the parties are effectively self-

had possessed sufficient reputational capital or a sufficiently high cost from not being able to use Fisher Body in the future, an imperfect long-term contract would not have been necessary to assure Fisher Body that it would not be held up by GM for its specific investments. However, because GM's reputational capital in this sense was limited relative to its potential to hold up Fisher, court-enforced imperfect contract terms had to be used as a supplement to self-enforcement. But as long as Fisher Body's reputational capital or the cost to Fisher Body of not supplying bodies to GM in the future after expiration of the current contract was sufficiently large, Fisher Body would not have taken advantage of the imperfect contract to hold up GM.

Rather than think of court enforcement and self-enforcement as alternative enforcement mechanisms that may be chosen by transactors to assure performance, we may think of them as complementary mechanisms used in conjunction with one another.⁷⁸ In general, the goal of contractual specification within this framework is not to create optimal incentives on some imperfect court-enforceable proxy for performance but to economize on the reputational capital necessary to make a contractual relationship self-enforcing in the widest range of postcontract circumstances.⁷⁹ The long-term and exclusive dealing cost-plus contract terms chosen by Fisher and GM, while imperfect, supplemented the parties' limited reputational capital in this sense of facilitating performance in likely future states of the world. However, as illustrated by what occurred, the contract terms also created performance problems in some other states of the world. When Fisher and GM entered into their contract in 1919, they presumably believed the states of

enforced in these arrangements by the threat of nonrenewal of the supply relationship. Such self-enforcing contractual arrangements may work especially well in Japan because of the high levels of Japanese auto producers' reputational capital due to (until recently) the high level of expected future demand growth and possibly because of the increased communication and social cohesiveness often claimed to exist among participants in the Japanese economy. Similar descriptions of Japanese auto supply contracts are provided in Maschiko Aoki, *Toward an Economic Model of the Japanese Firm*, 28 *J. Econ. Literature* 1 (1990); Michael A. Cusumano & Akira Takeishi, *Supplier Relations and Management: A Survey of Japanese, Japanese-Transplant, and U.S. Auto Plants*, 12 *Strategic Mgmt.* 563 (1991); Bengt Holmström & John Roberts, *The Boundaries of the Firm Revisited*, 12 *J. Econ. Persp.* 73, 80–83 (Fall 1998); and Mari Sako & Susan Helper, *Determinants of Trust in Supplier Relations: Evidence from the Automotive Industry in Japan and the United States*, 34 *J. Econ. Behav. & Org.* 387 (1998).

⁷⁸ Klein, *supra* note 75; and Benjamin Klein, *The Role of Incomplete Contracts in Self-Enforcing Relationships*, *Revue d'Economie Industrielle* (in press, 2000).

⁷⁹ Contract terms may accomplish this not only by (imperfectly) defining performance or controlling nonperformance, but also by shifting rents among transacting parties. See Benjamin Klein & Kevin M. Murphy, *Vertical Restraints as Contract Enforcement Mechanisms*, 31 *J. Law & Econ.* 265 (1988); Benjamin Klein, *Distribution Restrictions Operate by Creating Dealer Profits: Explaining the Use of Maximum Resale Price Maintenance in State Oil v. Khan*, 7 *Sup. Ct. Econ. Rev.* 1 (1999).

the world where their contract would not be self-enforcing work were sufficiently low-probability states. This is consistent with the evidence that the Fisher-GM contract functioned well prior to 1925.

Fisher and GM expected their contractual relationship to remain self-enforcing in the sense that it would remain within the self-enforcing range defined by each transactor's reputational capital. The self-enforcing range of a contractual relationship measures the extent to which unanticipated market conditions may change, thereby altering the gains to one or the other party from nonperformance, yet performance is still assured because each transactor's reputational capital remains greater than its hold-up gain. Changes in market conditions may alter the value of specific investments and, therefore, the hold-up potential. Yet as long as the relationship remains within the self-enforcing range where each transactor's hold-up gain is less than the self-enforcing sanction that can be imposed, a holdup will not take place. If the large unanticipated increase in demand by GM for Fisher bodies had not occurred in 1925–26, the Fisher-GM contract would have remained self-enforcing, and the malincentives associated with the cost-plus contract terms would not have mattered.

When they entered their contractual relationship and made their specific investments, Fisher and GM presumably recognized that their reputational capital was limited, that the written contract terms they had chosen were imperfect and incomplete, and, therefore, that there was some probability of a holdup occurring if changes in market conditions moved either of them outside the self-enforcing range. This is exactly what occurred during 1925 when GM's demand for closed bodies supplied by Fisher greatly increased. Fisher's hold-up gain became greater than the private sanction that could be imposed by GM for nonperformance. The pressure placed on the imperfect contractual agreement used to facilitate self-enforcement became greater than what the contract could withstand, and the Fisher Body–GM relationship moved outside the self-enforcing range, where Fisher found it profitable to take advantage of the imperfect terms of the contract to hold up GM.⁸⁰

An interesting economic question is: What was it about the large, unexpected demand increase by GM that caused Fisher to take advantage of the imperfect body supply contract? Although the GM demand increase did it-

⁸⁰ Freeland does not understand this analysis, claiming (*supra* note 5, at n.9) that I have retreated from my earlier view that specific assets played a primary role in Fisher's holdup of GM and that I now believe the unanticipated increase in GM demand was, in itself, sufficient to generate contract failure. Obviously, without Fisher having to make GM-specific investments, there would have been no need in the first place for the long-term, cost-plus exclusive dealing contract that broke down because of the very large, unanticipated increase in GM demand.

self increase Fisher's short-run hold-up potential, it also increased the long-run costs to Fisher of taking advantage of GM and, as a consequence, of not having the GM contract renewed. Only if GM's demand increase also lowered the future rate of growth of GM demand (a not very likely event) would the increase in Fisher's short-run holdup potential exceed the increase in its long-run costs of engaging in a holdup.

One factor that may explain Fisher's behavior is that the growth in automobile demand and the movement to largely closed bodies greatly increased Fisher's leverage over GM. Since Fisher was now supplying an absolutely critical input for the future survival and success of GM, Fisher acquired the ability to expropriate rents earned by GM on all GM-specific assets. The entire GM company was at stake if Fisher disrupted the supply of bodies to GM. Moreover, the continued disruption of production at a point in time when the market was growing rapidly and GM was attempting to establish a dominant market position likely would have had large effects on GM's market share and sales into the future. But, whatever the economic reason for Fisher's behavior, it is clear that the very large, unexpected demand shock in 1925 threw the Fisher-GM relationship outside the self-enforcing range and led Fisher to take advantage of the fact that GM was contractually obligated for another 4 years to purchase bodies at cost-plus terms.

The holdup that occurred in Fisher-GM case shows that contract terms in some circumstances can make things worse, that is, that increased contractual specification has not only benefits, but also costs. In particular, the contract terms used to facilitate self-enforcement by preventing GM from holding up Fisher Body were used by Fisher to create a much greater holdup of GM. Once an agreement is formalized in a written contract, rigidity is created that can substantially increase the potential hold-up costs when unanticipated changes occur in the market. The only way GM could opt out of not performing to the literal imperfect terms of the long-term Fisher Body contract, that is, not continuing to buy bodies at cost-plus from improperly located plants until the contract expired in 1929, was to declare bankruptcy. It is these "rigidity costs" associated with long-term explicit contracts that are avoided with vertical integration.

IV. THE ECONOMIC ADVANTAGES OF GENERAL MOTORS'S INTEGRATION WITH FISHER BODY

The Fisher-GM case illustrates that transactors design their contracts by combining court-enforced written contract terms with self-enforced unwritten terms so as to optimally define the self-enforcing range of their relationship, that is, to minimize expected hold-up possibilities. Transactors wish

to reduce expected holdups because of the real costs they engender. For example, when automobile bodies were produced and priced inefficiently by Fisher during 1925–26, the total gains from trade were reduced. We can expect in such cases for ex post renegotiation of the contract to occur so that, after a lump sum is paid to the transactor engaging in the holdup, price and cost will return to the efficient level. However, as the Fisher-GM case demonstrates, this renegotiation will not be instantaneous and without cost.⁸¹ Real resources are wasted during the renegotiation process, as the transactor engaging in a holdup attempts to convince its transacting partner of the extent and magnitude of the holdup and, therefore, of the side payment that must be made. It is these dissipative, purely redistributive transitional costs associated with hold-up behavior that lead transactors to design contractual arrangements that minimize the likelihood of a holdup occurring.

A question that remains is why the renegotiation that occurred in the Fisher-GM case in 1926 took the form of GM purchasing the remainder of the Fisher Body Corporation. Although GM's large unexpected increase in demand for Fisher closed bodies led to a breakdown of the contractual arrangement by shifting it outside the self-enforcing range, why could not GM merely have made a lump sum payment to Fisher and continued the contractual relationship by extending and readjusting the contract to take account of the now larger level of sales? What advantages did GM obtain from the use of vertical integration? Rather than attempt to answer this question by first defining the essential characteristics of what is commonly referred to as "the firm" (a definitional question upon which too much effort has been expended in the literature), we may find it more fruitful to focus the analysis on determining the concrete changes vertical integration made in the Fisher-GM relationship after GM acquired Fisher Body in 1926.

Most important, General Motors's acquisition of Fisher Body involved a shift in the operating control of Fisher Body from the Fisher brothers to GM. This shift in operating control was accomplished in part by the shift in ownership of all Fisher Body physical capital to GM. However, physical capital ownership is unlikely to have been the key motivation for vertical

⁸¹ This is contrary to the assumption made in the incomplete contracting/property rights literature that has developed from the pioneering work of Sanford J. Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 *J. Pol. Econ.* 691 (1986), where ex post renegotiation is assumed to be without cost. These models focus on ex ante investment inefficiencies as the economic motivation for the organization of production. Although the reduced willingness to make specific investments (as well as the wasteful expenditure of resources during the initial contracting process to protect against a future holdup) are costs of hold-up behavior, the costless renegotiation formulation of the problem makes it difficult to justify the postcontract flexibility advantages of vertical integration emphasized here.

integration. All decision rights, that is, the legal power to take certain actions, do not shift with physical asset ownership.⁸² Even if GM owned all the physical capital, including all the GM-specific dies and tooling, and leased it or otherwise made it available to an independent Fisher Body firm,⁸³ there were major decisions over which Fisher would retain control. The ownership of physical capital generally does not legally transfer all residual decision and control rights to the physical capital owner. For example, the legal decision rights regarding the location of the plants may continue to reside in Fisher Body, and, therefore, hold-up problems like the Flint plant disagreement are likely to remain. More important than ownership of physical capital, vertical integration implies ownership of the key intangible assets of the firm⁸⁴ and, as we shall see, a fundamental change in GM's relationship with the Fisher brothers.

Freeland and Casadesus-Masanell and Spulber claim that a major motivation for GM's vertical integration with Fisher Body in 1926 was the importance to GM of maintaining a relationship with the Fisher brothers. However, it is important to keep in mind that although GM found the Fishers' expertise extremely valuable, this, by itself, merely implies the desirability of a relationship. It does not imply a motivation for vertical integration, that is, the particular form the relationship between GM and Fisher should take. In fact, after vertical integration in 1926, the Fishers became employees without any long-term employment contract, and, therefore, less of a com-

⁸² The contrary assumption is made in the basic Grossman & Hart (*id.*) framework and in the property rights theory of the firm literature that has developed from the Grossman and Hart model (see, for example, Oliver Hart & John Moore, Property Rights and the Nature of the Firm, 98 J. Pol. Econ. 119 (1990); and Oliver D. Hart, Firms, Contracts and Financial Structure (1995)). This literature recognizes the importance of allocating unspecified (or residual) contract rights to transactors but assumes that the resulting control derives solely from physical asset ownership. The Grossman and Hart theory helps to answer incentive-type questions, such as "Should an employee own his own tools or should they be owned by the employer?" but it does not provide us with a useful theory of the firm.

⁸³ Coase discusses this as a possible contractual solution to the hold-up problem both in R. H. Coase, The Nature of the Firm: Origin, Meaning, Influence, 4 J. L. Econ. & Org. 3 (1988), and in Coase, *supra* note 4, at 17. Kirk Monteverde & David J. Teece, Appropriable Rents and Quasi-Vertical Integration, 25 J. Law & Econ. 321 (1982), describes this as a common arrangement in the automobile industry. Also see Scott E. Masten, James W. Meehan, Jr., & Edward A. Snyder, Vertical Integration in the U.S. Auto Industry, 12 J. Econ. Behav. & Org. 265 (1989). This also was the solution adopted by Ford for body supply in the 1920s, although apparently not with much success. See Marx & Peterson, *supra* note 8.

⁸⁴ Vertical integration transfers ownership of the firm's brand name and other intellectual property, the firm's trade relationships and contracts, and the firm's organizational capital, that is, the team of employees and that team's specific knowledge regarding how things are done and how individuals work together. See Benjamin Klein, Vertical Integration as Organizational Ownership: The Fisher Body-GM Relationship Revisited, 4 J. L. Econ. & Org. 199 (1988).

mitted relationship to GM existed than when the Fishers were independent suppliers to GM operating under a long-term supply agreement.

However, when GM vertically integrated with Fisher Body, the Fishers became employee-managers of a GM-controlled Fisher Body, rather than independent contractors to GM. The Fisher brothers thereby lost their ultimate legal operating authority over Fisher Body. General Motors obtained much more control over Fisher Body decisions because employee-managers, even with designated authority to make, for example, plant location decisions, have much less ability to take advantage of their authority for their own personal gain. Employees possess a legal obligation of loyalty to their employer, which places important legal constraints on employee behavior,⁸⁵ and any threat of nonperformance can be overridden by the employer. Therefore, after GM's acquisition of Fisher Body, there could be no problems like the hold-up problems encountered over the Flint plant.

Vertical integration permitted GM to control Fisher Body while avoiding the difficulties created by the alternative mechanism of control, the imperfect long-term, fixed-price-formula body supply contract. In fact, vertical integration eliminated the need for an automobile body supply contract altogether. Rather than attempt to specify performance contractually, GM, as the employer/owner of Fisher Body, could now more flexibly control its employees, including the Fisher brothers, by merely instructing them to "come to work and then I'll tell you what to do." This decrease in contractual specification is a major advantage of vertical integration compared to a long-term contract because it increases the ability of the firm owner to coordinate production flexibly.⁸⁶

Freeland, Casadesus-Masanell and Spulber, Coase,⁸⁷ and Thomas Marx and Laura Bennett Peterson⁸⁸ all correctly emphasize the coordination ad-

⁸⁵ Scott E. Masten, *A Legal Basis for the Firm*, 4 *J. L. Econ. & Org.* 181 (1988). This is contrary to the Grossman and Hart formulation of the problem, where it is asserted that because "it is difficult to write a complete contract between a buyer and seller and this creates room for opportunistic behavior, the transactions cost-based arguments for integration do not explain how the scope for such behavior changes when one of the self-interested owners becomes an equally self-interested employee of the other firm" (Grossman & Hart, *supra* note 81, at 692). In addition to changing the legal constraints on the transaction, GM now owns the Fisher team of employees who cannot jointly collude in holding up GM. See Klein, *supra* note 84. There is absolutely no basis for Freeland's assertion that vertical integration makes specific human capital hold-up problems worse.

⁸⁶ In the Grossman and Hart framework, in contrast, the contractually unspecified residual is assumed to be unaffected by the organizational form. In particular, the framework ignores the fact that the use of a firm-type organization (including an employment relationship) generally implies a greater unspecified contractual residual.

⁸⁷ See Coase, *Nature of the Firm*, *supra* note 83; Coase, *supra* note 4.

⁸⁸ Marx & Peterson, *supra* note 8.

vantages of vertical integration.⁸⁹ But they do not explain how vertical integration facilitates coordination. In particular, they do not recognize the advantages of vertical integration in reducing contractual specification and, therefore, reducing reliance on the courts to enforce necessarily imperfect and rigid long-term contracts.⁹⁰

Because the coordination advantages of vertical integration involve avoiding the rigidity costs of long-term contracts, the advantages of vertical integration depend upon the presence of specific investments and insufficient reputational capital, the conditions that lead to the use of long-term contracts. When transactors do not make specific investments, they can coordinate their activities in a spot market without using long-term contracts. For example, GM could have contracted for bodies and purchased bodies on such a basis from Fisher Body. This would have avoided the potential hold-up problems associated with a rigid and imperfect long-term contract and preserved GM's ability to coordinate body supply flexibly.

⁸⁹ Freeland also claims that GM was motivated to vertically integrate with Fisher by the anticompetitive desire to deprive competitors of access to Fisher's bodies. However, while Fisher Body had a large share of U.S. closed body production (50 percent in 1919 and 60 percent by 1926 (see E. D. Kennedy, *The Automobile Industry: The Coming of Age of Capitalism's Favorite Child* (1972)), there were other independent body suppliers, the most important of which were Briggs Manufacturing Company (which became Chrysler's main supplier in 1927 and supplied bodies to Ford) and Murray Corporation of America (which also supplied bodies to Ford). See Body by Briggs, *supra* note 8, at 25. Freeland's claim that Ford's very significant problems in the mid-1920s in switching its production from the standardized, primarily open-car design Model T to the closed-body Model A were largely due to GM's acquisition of Fisher Body has no basis in fact. Although some other automobile manufacturers initially did poorly in the switch over to the new closed-body, style-conscious environment, most companies other than Ford had no trouble quickly recovering in spite of the fact that they could not purchase bodies from Fisher. Chrysler's market share, which was 3.1 percent in 1925, was 5.4 percent in 1927, Hudson's share was 6.3 percent in 1925 and 8.1 percent in 1927, and Studebaker's share was 3.1 percent in 1925 and 3.5 percent in 1927. General Motors's market share increase from 18.5 percent in 1925 to 43.3 percent in 1927, a level at which it remained for nearly 50 years, came entirely at the expense of Ford, with Ford's share dropping from 38.5 percent in 1925 to 10.5 percent in 1927. All the evidence indicates that Ford's problems were due to its failure to adapt to the annual model change environment. See Sloan, *supra* note 23; James J. Bradley & Richard M. Langworth, *Calendar Year Production: 1896 to Date, in The American Car since 1775* (Automobile Quarterly ed., 2d ed. 1971).

⁹⁰ In contrast, Casadesus-Masanell and Spulber claim that vertical integration facilitated coordination by ameliorating the high transportation and communication costs present in the economy at the time. But the change in organizational structure produced by vertical integration does not reduce transportation costs by physically moving the body operation into the automobile plant. And, although a number of authors have emphasized the benefit to vertically integrated firms of obtaining information about supply conditions earlier than nonintegrated firms (for example, Kenneth J. Arrow, *Vertical Integration and Communication*, 6 *Bell J. Econ.* 173 (1975)), the Flint Buick plant location problem that arose in the Fisher-GM case was not a question of insufficient information. General Motors knew where it wanted to put its plant; it did not require market information from Fisher to determine the efficient location.

Even when specific investments are involved, flexible coordination may occur without the need for vertical integration if sufficient reputational capital exists. The Japanese auto supply contracts are an obvious example of this. In general, as long as contracts can define performance precisely enough that the residual, unspecified elements of performance are more than sufficiently covered by the parties' reputational capital, transactors will have the ability to make required flexible adjustments over time. It is only when the necessary contractual specification becomes too rigid because expected changes are too large relative to the parties' reputation capital that vertical integration is the preferred way to facilitate self-enforcement and thereby achieve flexible coordination.⁹¹

These coordination advantages of vertical integration became especially important in the automobile industry after annual model change programs were instituted by the automobile manufacturers in 1925.⁹² As body design became more important and more interrelated with chassis design and production, the amount of coordination required between a body supplier and its automobile manufacturer customer increased substantially. This made it more difficult to specify performance contractually in a way precise enough that a long-term contract would almost always remain within the self-enforcing range.

The growth in demand for annually changing closed bodies can be thought of as an increase in contractual uncertainty, and the movement to vertical integration as consistent with the frequently noted but unexplained relationship between increased uncertainty and vertical integration.⁹³ In-

⁹¹ In contrast to the flexible Japanese auto parts supply contracts, the recent contract between the Lear Seating Company and Ford is a prime example of a failed rigid contract between an auto part supplier and an automobile company. Lear was contractually designated the sole supplier of seats for the new 1996 model Ford Taurus, with the contract providing that Lear would be compensated for investments associated with design changes. Although Lear apparently met the original contract terms, inferior seats would have been supplied if significant changes had not been made. Consequently, Ford had no choice but to pay large sums in order to receive acceptable seats. At one point, for example, Lear requested an additional \$4 million to cover unexpected engineering costs, plus an additional \$70 per seat for content and labor. "There were people at Lear who couldn't believe Ford had gotten itself in this position. . . . Ford was crazy—Lear had them by the short hairs. 'They can keep saying they need more money and more money, and Ford has nowhere to go.'" See Mary Walton, *Car: A Drama of the American Workplace 196* (1997). This case provides a very interesting contrast to the flexible Japanese auto parts supply contracts.

⁹² Annual model changes were adopted by most automobile manufacturers other than Ford and necessitated large increases in annual industry investments for new dies and tooling. See Thomas, *supra* note 8.

⁹³ The empirical relationship between vertical integration and uncertainty is documented by George John & Barton A. Weitz, *Forward Integration into Distribution: An Empirical Test of Transaction Cost Analysis*, 4 *J. L. Econ. & Org.* 337 (1988), which find uncertainty positively affects the decision to use an in-house sales force for a sample of industrial manufacturing companies; Erin Anderson, *The Salesperson as Outside Agent or Employee: A Trans-*

creased uncertainty leads to vertical integration because it makes it more likely that the alternative of an explicitly specified long-term contract, such as the Fisher-GM contract, will move outside the self-enforcing range. Therefore, increased uncertainty induces vertical integration (even if transactors are risk neutral) because it increases the likelihood of contractual failure, with its associated hold-up costs.⁹⁴ When the variance of market conditions increases, the value of the hold-up option present in every imperfect contract also increases, making vertical integration, with its increased ability to make flexible postcontract adjustments, more likely.⁹⁵

These economic forces connected with annual model changes ultimately led all automobile manufacturers to adopt vertical integration. Ford, the

action Cost Analysis, 4 *Marketing Sci.* 234 (1985), which finds a similar positive relationship on the use of an in-house sales force only when uncertainty is interacted with asset specificity; and Joseph P. H. Fan, *Price Uncertainty and Vertical Integration: An Empirical Examination of Petrochemical Firms* (unpublished manuscript, Hong Kong Univ. Sci. & Tech. 1999), for petrochemical firms. Dennis Carlton, *Vertical Integration in Competitive Markets under Uncertainty*, 27 *J. Indus. Econ.* 189 (1979), explained this relationship in the context of a model where uncertain price changes lead to rationing, although it is unclear why this would not merely lead to long-term contracts. In contrast to my analysis, in Carlton's model price uncertainty creates no incentive for vertical integration if markets clear.

⁹⁴ This effect is distinct from the effect of increased uncertainty on the increased incompleteness of contracts because of an increase in the number of contractual contingencies. If the parties are risk neutral, increased incompleteness, in itself, has no effect on vertical integration. That is why uncertainty has no role in the property rights (Grossman and Hart-type) approach to the theory of the firm. If the parties are risk neutral, then increased uncertainty and increased contractual incompleteness do not affect organizational form or, in particular, which party owns which assets because these models ignore self-enforcement. An important recent paper by George Baker, Robert Gibbons, and Kevin Murphy that extends the Grossman and Hart model with self-enforcement claims a positive effect of *ex ante* uncertainty on vertical integration. However, although the authors provide a number of valuable insights regarding the operation of the self-enforcement mechanism, the "price uncertainty" effect in this model is not what empirical researchers are referring to as market uncertainty. Baker, Gibbons, and Murphy do not identify what I consider to be the key advantage of vertical integration that facilitates self-enforcement in an uncertain environment, namely, postcontract flexibility. George Baker, Robert Gibbons, & Kevin Murphy, *Relational Contracts and the Theory of the Firm* (Working paper, Harvard Univ. 1999).

⁹⁵ In Klein, *supra* note 75, I show that when parties enter a contractual relationship they can be thought of as buying and selling what amount to options related to the probability of a holdup occurring. As in standard options-pricing theory, the values of these options increase as the value of the ratio of the underlying asset price increases relative to the exercise price (in our case, as the value of the hold-up potential increases relative to the transactor's reputational capital) and as the variance per period of the asset price multiplied by the number of periods increases (in our case, as the variance of underlying market conditions multiplied by the length of the contract increases). This analysis is similar, in effect, to Oliver Williamson, *The Economic Institutions of Capitalism* 5659 (1985), where the combination of asset specificity and uncertainty leads to a greater need for *ex post* adjustments in the relationship and, hence, the efficiency of what he refers to as a hierarchical relationship, where one party has control over the transaction. However, Williamson does not place his analysis within a self-enforcing framework.

company that resisted the movement to annual model changes to the greatest extent, continued to rely largely on outside suppliers for its bodies until 1939. Ford used a cost-plus “open book” contract with its body suppliers, where suppliers had to provide Ford with detailed breakdowns of costs and complete access to their accounting records, while Ford itself made the necessary investments in Ford-specific tooling.⁹⁶ General Motors’s full integration with Fisher Body, by contrast, occurred before any other company decided to vertically integrate fully, possibly because of the importance of annual model changes to the primary GM marketing thrust in the 1920s and possibly because Fisher’s holdup and GM’s associated production problems in 1925–26 made GM more sensitive to the necessity of controlling Fisher Body.

V. CONCLUSION

In order to advance our economic understanding, it is necessary to get our hands dirty and learn how particular contracts actually work in practice. I agree completely with Coase’s warning that “theory is outrunning our knowledge of the facts in the study of industrial organization and that more empirical work is required if we are to make progress.”⁹⁷ Learning how a particular contractual arrangement operated is exactly what I have attempted to accomplish with my examination of the Fisher-GM case. When one studies the details of this case, the evidence is unambiguous that the long-term contract governing the relationship between GM and Fisher broke down during 1925 and led to vertical integration in 1926. During 1925–26 Fisher used the fact that GM was locked in to an imperfect supply contract to increase its short-term profit by inefficiently building bodies in Detroit and shipping them to Flint, rather than constructing a body plant adjacent to the GM facilities in Flint.

Coase and Freeland agree on these fundamental facts surrounding the Flint plant disagreement that immediately preceded GM’s vertical integration with Fisher Body. (Casadesus-Masanell and Spulber inexplicably fail to discuss this episode at all.) What Coase and Freeland lack is a useful organizing framework in which to interpret these facts. In particular, Coase’s insistence that the Flint plant experience was an outlier and that Fisher previously constructed a number of other plants adjacent to GM production facilities fails to recognize that contractual arrangements may operate perfectly well for a period of time before breaking down and leading to a new organizational form. And Freeland’s view that Fisher’s reluctance to

⁹⁶ Body by Briggs, *supra* note 8.

⁹⁷ R. H. Coase, Contracts and the Activities of Firms, 34 *J. Law & Econ.* 451 (1991).

make new, large investments in Flint was understandable does not mean that Fisher's behavior in taking advantage of the fact that GM was locked in to an exclusive dealing contract did not constitute a holdup.

Contrary to Coase's original formulation of the problem that simply contrasts "the firm" with "the market," the above analysis shows that it is useful to think of all arrangements, including vertical integration, as forms of market contracts chosen by transactors to supplement self-enforcement when transactors have limited reputational capital. To determine the conditions under which vertical integration is the particular self-enforcing contractual arrangement that is likely to be used, it is important to consider more than the narrow transaction costs of spot contracting (discovering prices and executing contracts) upon which Coase focuses. The much more important economic determinants of vertical integration are the contracting costs illustrated so vividly in the Fisher-GM case, namely, the rigidity costs associated with court enforcement of imperfect long-term contract terms. The importance of these rigidity costs and the ability of transactors to avoid such costs with a more flexible vertical integration arrangement (at the cost of weakening individual incentives) are the main economic lessons of the Fisher-GM case.

Although Coase is correct that transactor-specific investments and hold-up problems can normally be handled with long-term contracts (and sometimes are even handled well with short-term contracts when sufficient reputational capital exists), the rigidity costs associated with long-term contracts increase as relationship-specific investments increase. Holding constant both the difficulties of specifying contractual performance (which may, in fact, have increased after GM moved to an annual model change program) and the level of the transactors' reputational capital, the greater the relationship-specific investments, the more likely it is that transactors will have to use explicit long-term contract terms in their arrangement to assure performance. Therefore, the greater the relationship-specific investments present in an exchange, the more likely vertical integration (that avoids the rigidity costs associated with long-term contracts) will be chosen as the self-enforcing contractual arrangement. All that is required for this positive relationship between specific investments and the likelihood of vertical integration is that the relative inefficiency costs of vertical integration from the weakening of incentives not be systematically positively related to the level of specific investments, and there is no reason to believe they are.

This analysis does not imply that vertical integration will always be used when large specific investments are present. As Bengt Holmström and John Roberts discuss in detail,⁹⁸ there are many examples of large specific invest-

⁹⁸ Holmström & Roberts, *supra* note 77.

ments and incomplete contracts where we do not observe vertical integration. However, contrary to Holmström and Roberts's conclusion, this evidence is not inconsistent with what they call the transaction cost theory (or what, more generally, should be called the contracting cost theory) of vertical integration. Because of the incentive costs associated with vertical integration, transactors always prefer a contractual arrangement that keeps transactors independent if performance can be assured without too much rigidity. Therefore, if sufficient reputational capital exists or if performance can be measured *ex ante* reasonably accurately, transactors will be able to solve the hold-up problem with a flexible contractual arrangement (or sometimes with essentially no contract at all, as in the case of Japanese auto suppliers).

Although there is substantial variability in the contractual arrangements and organizational forms used by transactors in the presence of relationship-specific investments, the theory illustrated by the Fisher-GM case merely implies that the greater these relationship-specific investments, *ceteris paribus*, the greater the likelihood vertical integration will be used to minimize the expected hold-up costs. Without specific investments and the associated hold-up problem, there is no reason for a long-term contract and, therefore, no reason to use vertical integration as a substitute for a rigid long-term contract. More generally, the key to understanding variations in contractual arrangements, including the incidence of vertical integration, lies in analyzing how particular arrangements may efficiently facilitate self-enforcement.

BIBLIOGRAPHY

- Anderson, Erin. "The Salesperson as Outside Agent or Employee: A Transaction Cost Analysis." *Marketing Science* 4 (1985): 234–54.
- Aoki, Maschiko. "Toward an Economic Model of the Japanese Firm." *Journal of Economic Literature* 28 (1990): 1–27.
- Arrow, Kenneth J. "Vertical Integration and Communication." *Bell Journal of Economics* 6 (1975): 173–83.
- Asanuma, Banri. "Manufacturer-Supplier Relationships in Japan and the Concept of Relation-Specific Skill." *Journal of the Japanese and International Economies* 3 (1989): 1–30.
- Baker, George; Gibbons, Robert; and Murphy, Kevin J. "Relational Contracts and the Theory of the Firm." Working paper. Cambridge, Mass.: Harvard University, 1999.
- Body by Briggs. *Special-Interest Autos* (November-December 1973).
- Carlton, Dennis W. "Vertical Integration in Competitive Markets under Uncertainty." *Journal of Industrial Economics* 27 (1979): 189–209.
- Casadesus-Masanell, Ramon, and Spulber, Daniel F. "The Fable of Fisher Body." *Journal of Law and Economics* 43 (2000): 67–104.

- Chandler, Alfred D., and Salsbury, Stephen. *Pierre S. du Pont and the Making of the Modern Corporation*. New York: Harper & Row, 1971.
- Coase, R. H. "The Nature of the Firm." *Economica*, n.s., 4 (1937): 386–405.
- Coase, R. H. "The Nature of the Firm: Origin, Meaning, Influence." *Journal of Law, Economics, and Organization* 4 (1988): 3–47.
- Coase, R. H. "Contracts and the Activities of Firms." *Journal of Law and Economics* 34 (1991): 451–52.
- Coase, R. H. "The Acquisition of Fisher Body by General Motors." *Journal of Law and Economics* 43 (2000): 15–31.
- Crocker, Keith J., and Masten, Scott E. "Regulation and Administered Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation." *Journal of Regulatory Economics* 9 (1996): 5–39.
- Cusumano, Michael A., and Takeishi, Akira. "Supplier Relations and Management: A Survey of Japanese, Japanese-Transplant, and U.S. Auto Plants." *Strategic Management Journal* 12 (1991): 563–88.
- Fan, Joseph P. H. "Price Uncertainty and Vertical Integration: An Empirical Examination of Petrochemical Firms." Working paper. Hong Kong: Hong Kong University of Science and Technology, 1999.
- Freeland, Robert F. "Creating Holdup through Vertical Integration: Fisher Body Revisited." *Journal of Law and Economics* 43 (2000): 33–66.
- General Motors Corporation. *Fisher Body, Its Contributions to the Automotive Industry*. Detroit: General Motors Corporation, 1924.
- Grossman, Sanford J., and Hart, Oliver D. "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration." *Journal of Political Economy* 94 (1986): 691–719.
- Hart, Oliver, and Moore, John. "Property Rights and the Nature of the Firm." *Journal of Political Economy* 98 (1990): 1119–58.
- Hart, Oliver D. *Firms, Contracts, and Financial Structure*. Oxford: Clarendon Press, 1995.
- Holmström, Bengt, and Roberts, John. "The Boundaries of the Firm Revisited." *Journal of Economic Perspectives* 12, No. 2 (1998): 73–94.
- John, George, and Weitz, Barton A. "Forward Integration into Distribution: An Empirical Test of Transaction Cost Analysis." *Journal of Law, Economics, and Organization* 4 (1988): 337–55.
- Joskow, Paul L. "Asset Specificity and the Structure of Vertical Relationships: Empirical Evidence." *Journal of Law, Economics, and Organization* 4 (1988): 95–117.
- Kennedy, E. D. *The Automobile Industry: The Coming of Age of Capitalism's Favorite Child*. Clifton, N.J.: Kelley, 1972.
- Klein, Benjamin. "Vertical Integration as Organizational Ownership: The Fisher Body–General Motors Relationship Revisited." *Journal of Law, Economics, and Organization* 4 (1988): 199–213.
- Klein, Benjamin. "Why Hold-Ups Occur: The Self-Enforcing Range of Contractual Relationships." *Economic Inquiry* 34 (1996): 444–63.
- Klein, Benjamin. "Distribution Restrictions Operate by Creating Dealer Profits: Explaining the Use of Maximum Resale Price Maintenance in *State Oil v. Khan*." *Supreme Court Economic Review* 9 (1999): 1–58.

- Klein, Benjamin. "The Role of Incomplete Contracts in Self-Enforcing Relationships." *Revue d'Economie Industrielle* (2000), in press.
- Klein, Benjamin; Crawford, Robert G.; and Alchian, Armen A. "Vertical Integration, Appropriable Rents and the Competitive Contracting Process." *Journal of Law and Economics* 21 (1978): 297–326.
- Klein, Benjamin, and Leffler, Keith B. "The Role of Market Forces in Assuring Contractual Performance." *Journal of Political Economy* 89 (1981): 615–41.
- Klein, Benjamin, and Murphy, Kevin M. "Vertical Restraints as Contract Enforcement Mechanisms." *Journal of Law and Economics* 31 (1988): 265–97.
- Macaulay, Stewart. "Non-contractual Relations in Business: A Preliminary Study." *American Sociological Review* 28 (1963): 55–67.
- Marx, Thomas G., and Peterson, Laura Bennett. "Theory versus Fact in the Choice of Organizational Form: A Study of Body and Frame Production in the Automobile Industry." Unpublished manuscript. 1995.
- Masten, Scott E. "A Legal Basis for the Firm." *Journal of Law, Economics, and Organization* 4 (1988): 181–98.
- Masten, Scott E.; Meehan, James W., Jr.; and Snyder, Edward A. "Vertical Integration in the U.S. Auto Industry." *Journal of Economic Behavior and Organization* 12 (1989): 265–73.
- Monteverde, Kirk, and Teece, David J. "Appropriable Rents and Quasi-Vertical Integration." *Journal of Law and Economics* 25 (1982): 321–28.
- Pound, Arthur. *The Turning Wheel: The Story of General Motors through Twenty-Five Years, 1908–1933*. Garden City, N.Y.: Doubleday, 1934.
- Sako, Mari, and Helper, Susan. "Determinants of Trust in Supplier Relations: Evidence from the Automotive Industry in Japan and the United States." *Journal of Economic Behavior and Organization* 34 (1998): 387–417.
- Seltzer, Lawrence. *A Financial History of the American Automobile Industry*. New York: Houghton Mifflin, 1928.
- Shelanski, Howard A., and Klein, Peter. "Empirical Research in Transaction Cost Economics: A Review and Assessment." *Journal of Law, Economics, and Organization* 11 (1995): 335–61.
- Sloan, Alfred P., Jr. *My Years with General Motors*. New York: Doubleday, 1964.
- Thomas, Robert Paul. "Style Change and the Automobile Industry during the Roaring Twenties." In *Business Enterprise and Economic Change*, edited by Louis P. Cain and Paul J. Uselding, pp. 118–38. Kent, Ohio: Kent State University Press, 1973.
- United States v. E. I. Du Pont de Nemours & Co., General Motors, et al., Civil Action 49C-1071, 126 F. Supp. 235 (N.D. Ill. 1954); 353 U.S. 586 (1957); 366 U.S. 316 (1961).
- Walton, Mary. *Car: A Drama of the American Workplace*. New York: Norton, 1997.
- White, Roger. "Body by Fisher: The Closed Car Revolution." *Automobile Quarterly* 29 (August 1991): 46–63.
- Williamson, Oliver E. *The Economic Institutions of Capitalism*. New York: Free Press, 1985.

