

WHEN DOES A CONTRACTUAL ADJUSTMENT INVOLVE A HOLDUP?: THE DYNAMICS OF FISHER-BODY- GENERAL MOTORS

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I. Introduction

Fisher Body-General Motors has become a classic example in economics. Since the brief discussion of the case 35 years ago,¹ it has been cited more than one thousand times,² primarily to illustrate the now generally accepted proposition that vertical integration is more likely when transactors make relationship-specific investments.³ The theoretical and empirical confirmation of this proposition is described by Michael Whinston as “one of the great success stories in industrial organization over the last 25 years.”⁴

The popularity of the Fisher Body-General Motors case may be difficult to understand since it is merely one of many documented examples of the relationship between vertical integration and specific investments.⁵ However, the Fisher Body-General Motors case uniquely focuses on the dynamics of this

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¹ Klein, Crawford and Alchian (1978) at 308-310.

² There are 1,089 cites to Klein, Crawford and Alchian in the Social Sciences Citation Index, October 19, 2004.

³ [Oliver Williamson cites.]

⁴ Whinston (2001) at 185.

relationship. General Motors was not always vertically integrated with Fisher Body. Fisher Body and General Motors originally operated under a long-term exclusive dealing contract which over time was modified and ultimately replaced by vertical integration. The failure of the Fisher Body-General Motors contract, therefore, provides us with a unique opportunity to learn about the costs that exist when a long-term contract rather than vertical integration is used to control potential holdup problems.

This illuminates Ronald Coase's hostility to the holdup explanation for the Fisher Body-General Motors movement to vertical integration.⁶ Coase recognizes that specific investments create a holdup risk that may increase the costs of contracting, but he does not believe that the costs of contracting are ever likely to become greater than the costs of vertical integration.⁷ Therefore, he is led "to doubt not the reality of this [holdup] risk, but its importance."⁸ The reason is that "the propensity for opportunistic behavior is usually effectively checked by the need to take account of the effect of the firm's actions on future business" and by "contractual arrangements."⁹ The ability of reputation and long-term contracts to control holdup problems leads to Coase's conclusion that he is "very doubtful whether there is such a systematic relationship [between specific investments and costs of contracting relative to vertical integration] as that described."¹⁰ The Fisher Body-General Motors case, as distinct from the well-established cross-section empirical evidence of the relationship of

⁵ Surveys of the empirical studies are provided in Joskow (1988), Shelanski & Klein (1995), Crocker & Masten (1996), Lyons (1996 at 27), Coeurderoy and Quélin (1997) and Masten & Saussier (2000).

⁶ See Coase (2000) for the latest statement, as well as Freeland (2000) and Casadesus-Masanell and Spulber (2000). Klein (2000) presents responses to all three articles.

⁷ Coase (1988) at 43.

⁸ *Id.* at 44.

⁹ *Id.*

¹⁰ *Id.* at 43.

organizational form on proxy measures of relationship-specific investments, provides direct evidence of both the reality and the importance of holdups.

This paper provides a much more complete empirical analysis of what occurred over time in the Fisher Body-General Motors relationship in an attempt to document that, contrary to Coase, vertical integration is sometimes the least costly solution to potential holdup problems. A more complete analysis is now possible because a copy of the actual 1919 Fisher Body-General Motors contract, previously unavailable from any public source, is now available.¹¹ The contract differs in a number of respects from the description and testimony in the Du Pont case record relied upon in earlier analysis.¹² Most importantly, the actual contract includes some capital costs in the cost-plus pricing formula and requires General Motors to compensate Fisher Body for its expenditures on GM-specific tools and dies. The actual contract permits us to more fully understand how the Fisher Body-General Motors contractual arrangement operated and was altered over time, and this understanding is shown to be consistent with a new detailed empirical examination of the relative financial performance and stock price movements of Fisher Body and General Motors.

It is unlikely that the new facts I discuss will alter the conclusion of Coase and others that Fisher Body did not hold up General Motors. They base their conclusion largely on the fact that General Motors continued to work closely

¹¹ I am grateful for the assistance provided by Mr. Thomas Gottschalk and Mr. William Slowey, General Counsel and Counsel of General Motors Corporation, respectively, who searched the private archives of General Motors to find the Fisher Body-General Motors contract in the minutes of the meeting of the Board of Directors of Fisher Body Corporation on November 7, 1919. The pricing section of the contract is reproduced in the Appendix. A copy of the entire contract can be obtained by contacting the author at bklein@econ.ucla.edu.

¹² See *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) (hereafter *Du Pont*), Gov't Trial Ex. Nos. 424-30 (especially No. 425 and No. 426); Defendant's Ex. No. 101; and Testimony of Lawrence Fisher, Trial Transcript, Vol. 2.

with the Fisher brothers throughout the period before vertical integration and that over this period General Motors and Fisher Body disagreed on the location of only one plant, a Buick plant that General Motors desired in Flint, Michigan, right before General Motors and Fisher Body vertically integrated in 1926. Neither of these two fundamental facts are altered by the new, more complete empirical analysis presented here. The essential disagreement about whether a holdup took place in the Fisher-GM case does not fundamentally involve a disagreement over what occurred, but a disagreement on what label to apply to what occurred, that is, on the interpretation of what occurred. This state of affairs highlights what I believe is a major deficiency in our current transaction-cost analytical framework. While economists now frequently refer to holdup behavior, there does not appear to be an accepted rigorous definition of what such behavior consists of or agreement on how to determine whether such behavior has occurred. Future research progress in understanding contractual arrangements requires a clarification of these basic concepts, a primary goal of this paper.

In what follows, section II first describes the 1919 Fisher Body-General Motors contractual arrangement, which included a ten year exclusive dealing commitment made by General Motors along with a General Motors investment in Fisher Body. Section III then describes how this contractual arrangement was disrupted in 1922, when there was a large unexpected increase in General Motors' demand for Fisher bodies. The most important new finding of our detailed re-examination of the Fisher Body-General Motors case is that this demand increase, by itself, is not what disrupted the Fisher-GM relationship. Problems were created because General Motors changed its production process and required Fisher Body to meet this increased demand with investments in body plants located close to GM assembly facilities. Fisher Body understandably was reluctant to make such new highly GM-specific locational investments and,

given its pre-existing long-term exclusive dealing contract with General Motors, possessed considerable bargaining leverage to avoid making such investments. General Motors overcame Fisher's reluctance only after agreeing to finance a number of the required co-located body plants. Under the cost-plus 17.6 percent body pricing formula in the Fisher Body-General Motors contract, this resulted in a large wealth transfer from General Motors to Fisher Body, documented in section IV.

When three years later, in 1925, additional locational-specific body plant investments were demanded by General Motors to serve its Buick assembly operations in Flint, Michigan, General Motors refused to share the required Flint plant investments with Fisher Body, as it had done earlier. Doing so would have further increased Fisher Body's financial advantage over General Motors under the original contract. Section V describes this Flint plant impasse and how General Motors and Fisher Body ultimately resolved the conflict, and all future conflicts over co-located body plant investments, by moving to vertical integration in 1926.

Section VI addresses the question of whether either of the two contractual modifications made by Fisher Body and General Motors entailed a holdup -- first in 1922, when, contrary to the original contractual arrangement, General Motors agreed to make some of the Fisher body plant investments, and then in 1926, when General Motors integrated with Fisher Body. A definitive answer requires knowing the nature of the transactors' self-enforced contractual understanding, something that is difficult to know. However, it is clear that Fisher Body used the fact that General Motors was locked into an imperfect long-term contract to transfer wealth from General Motors during 1922-25, that General Motors complained about this wealth transfer, and that the wealth transfer ended with vertical integration in 1926 only after some inefficiencies of temporarily

misallocated body plants. These factors lead to the conclusion that the Fisher-GM case involved a holdup.

However, independent of whether one labels what occurred between Fisher Body and General Motors as a Fisher holdup of GM, the Fisher Body-General Motors case clearly illustrates the type of inefficiencies associated with contract renegotiation that may arise when transactors who have made relationship-specific investments are operating under a long-term incomplete contract and there is an unanticipated change in market conditions. The *potential* for a holdup, therefore, may lead transactors to adopt the more flexible organizational form of vertical integration.

II. The 1919 Fisher Body-General Motors Contractual Arrangement

A. G.M.'s Exclusive Dealing Commitment

On December 3, 1919 General Motors entered into a ten year body supply contract with Fisher Body.¹³ The agreement required General Motors to purchase all its automobile bodies from Fisher Body with two exceptions. General Motors could continue to purchase bodies it had already contracted for from other firms and it could continue to build bodies on its own. Since General Motors was only building open bodies and did not have the expertise or facilities to make the closed bodies the industry would move to during the 1920s, GM's agreement not to enter into or renew supply contracts with any other body manufacturer ultimately amounted to an exclusive dealing contract with Fisher Body. However, the immediate effect of the contract was that Fisher supplied bodies only for GM's Buick and Cadillac model cars.¹⁴

¹³ Contract, Article I.

¹⁴ "After 1919, Fisher limited its output for GM to bodies for Cadillac and Buick." (White, Body by Fisher at 55.) In 1919 Buick accounted for 31 percent and Cadillac 5 percent of total GM U.S. production.

The contract set the price General Motors paid for automobile bodies on the basis of a formula that placed a 17.6 percent upcharge on Fisher Body's costs. The costs included in the price formula consisted of Fisher's variable materials and labor costs and, contrary to my previous description of the cost-plus price term, an allocated proportion of Fisher's per period overhead, depreciation and interest expense.¹⁵

Under the contract formula the 17.6 percent upcharge or "profit" over and above Fisher Body's costs was designed to provide a return to Fisher Body on its equity investments, including the value of Fisher's expertise and other intangible capital. The contract explicitly stated that costs on which body prices were to be calculated did not include any return on Fisher Body's invested capital.¹⁶

In addition, the contract required General Motors to reimburse Fisher Body at cost plus 17.6 percent for all expenditures made by Fisher on "dies and special tools" necessary for the production of GM bodies.¹⁷ However, Fisher Body's GM-specific investments included more than tools and dies. Fisher Body had to undertake a very large expansion in its capacity in 1919 to handle the expected General Motors business,¹⁸ and these Fisher investments in plant and equipment were to some extent GM-specific.

¹⁵ The allocation of Fisher's overhead costs was based on GM's share of Fisher production. Contract, Article VI.(a).

¹⁶ Contract, Article VI.(f).

¹⁷ Contract, Article VI.(g). This contractual solution for Fisher Body's highly firm-specific investments was suggested as a possibility in Coase (1988). Monteverde and Teece (1982) and Masten, Meehan and Snyder (1989) describe this as a common arrangement in the automobile industry.

¹⁸ Fisher Body assets increased by 255 percent between fiscal year 1919 and 1920. (*Moody's Manual of Railroads and Corporation Securities, 1919; Moody's Manual of Investments and Security*

Although Fisher's investments in plant and equipment could be used to produce bodies for other manufacturers, the output from the plants was not sold in a spot market. Therefore, if General Motors decided to stop purchasing Fisher bodies after Fisher Body made its large capacity investments, Fisher Body would have borne substantial costs in finding new buyers. The General Motors' holdup threat to terminate purchases from Fisher Body would be credible if the costs to Fisher Body of finding new buyers for its production was greater than the costs to General Motors of contracting with a new supplier.¹⁹ The ten year de facto exclusive dealing commitment by General Motors essentially eliminated GM's potential threat to stop purchasing from Fisher Body and, by protecting Fisher Body's investments in body plants, encouraged Fisher Body to make the large investments in body producing capacity necessary to serve General Motors.²⁰

Rating Service, 1926).

¹⁹ This is consistent with the original discussion of the Fisher Body-General Motors contract in Klein, Crawford and Alchian (1978) at 309, where the protection of GM-specific Fisher Body capacity investments against the threat of appropriation by General Motors is the rationale given for the ten-year exclusive dealing contract. It is also consistent with Coase's observations of the U.S. automobile industry in the 1930s, where "suppliers were often unwilling to sell too great a proportion of their output to one customer" (Coase (1988) at 44) because the customer might be able to take advantage of its dominant position "to drive down the price to a level which yields no return on such investments" (Coase (1988) at 42). Coase, however, rejects these considerations, as well as what automobile industry executives told him, as a motivation for vertical integration.

²⁰ Segal and Whinston (2000) claim to demonstrate that exclusive dealing does not protect a firm's specific investments when the investments are "internal," i.e., cannot be used by the firm's transacting partner in another relationship. (For example, when the investments cannot be used by a retailer to "free-ride" by using the manufacturer's investments to sell rival products.) Transactors are considered by Segal and Whinston to be bilateral monopolists bargaining over the surplus from the specific investments and it is assumed that there will be a 50-50 sharing of the surplus created by the investments independent of whether an exclusive contract is present. That is, buyers are assumed to be able to engage in a holdup and obtain 50% of the surplus from a seller's investments whether an exclusive is present or not. More realistically, however, an exclusive gives the selling firm making the investment the ability to impose a court-enforced sanction on buyers that attempt a holdup. Therefore, the commitment by a firm to purchase exclusively from a particular supplier reduces the firm's threat point in its bilateral bargaining over the surplus and, hence, the firm's ability to hold up the supplier. In particular, if General Motors is operating under an exclusive (and wishes to continue operating), it can no longer credibly threaten to stop purchasing bodies from Fisher Body. See Klein, Lerner and Murphy (2004).

This suggests that specific investments should be thought of more broadly than the usual examples given in the literature, where a specific asset's value is almost completely dependent on a particular firm. Rather than defining specific investments in terms of the fraction of a particular asset's value that is firm-specific, the absolute amount of an asset's value that is dependent on a particular firm (representing the fraction of the firm's total cost) may be the more relevant economic determinant of a contractual arrangement. A smaller fraction of Fisher's investment in body plants than its investment in tools and dies was specific to General Motors. However, a non-trivial amount of Fisher's body plant investment, accounting for a larger fraction of Fisher's total production cost, would have been lost if Fisher Body were forced to use its plant investment to supply someone other than General Motors. Economically, it is necessary to scale the specific investment in this way because the costs associated with adoption of a contractual arrangement to handle the potential holdup problem (such as the exclusive dealing arrangement the parties adopted in this case) are likely to be a fraction of total cost.

B. G.M.'s Investment in Fisher Body

At the same time in 1919 when General Motors entered into a long-term supply relationship with Fisher Body, it also invested \$27.6 million in Fisher Body in return for a 60 percent ownership interest. This turned out to be an extremely good investment for General Motors.²¹

²¹ On August 29, 1919, shortly before General Motors made its Fisher Body offer, Fisher Body stock traded at \$92.00, exactly what General Motors offered per share for the 300,000 new shares of common stock Fisher Body issued to GM. Between August 29 and September 11, 1919 (when General Motors formally announced its offer) Fisher Body's stock price increased to \$113, and by September 15, 1919 Fisher Body's stock price reached \$143.75. This amounted to an overall increase of 56 percent in the two weeks surrounding the GM offer. Less than two months later, on November 6, 1919, when Fisher Body's shareholders approved the GM contract, Fisher Body stock traded at \$157.50.

However, in spite of General Motors' 60 percent ownership interest in Fisher Body, General Motors did not gain control of Fisher Body in 1919. The shares of Fisher Body common stock owned by General Motors were placed in a five year Voting Trust over which Fisher had veto power.²² It was not until expiration of the Trust in October 1924 that General Motors could independently vote Fisher Body shares. And, as we shall see, General Motors did not obtain full effective control of Fisher Body, specifically Fisher Body's plant location and pricing decisions, until June 1926, when it purchased the remaining 40 percent ownership interest of Fisher Body.

General Motors' investment in Fisher Body was planned to provide Fisher with all the funds required for the plant expansions to meet GM's expected demand.²³ Fisher Body used these funds to expand its body producing facilities in Detroit and Cleveland, where Fisher Body had pre-existing plants.²⁴ From Detroit Fisher Body shipped bodies to the GM Buick facility in Flint, located

²² Voting Trust Agreement (November 24, 1919), Gov't Trial Ex. No. 429, *Du Pont* 126 F.Supp. 235. The Fisher Body shares purchased by General Motors, 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 a Voting Trust that required a unanimous decision by the four trustees (W. C. Durant and Pierre S. du Pont in addition to Fred Fisher and Mendelssohn) before the Trust could vote its shares on any action.

²³ Fred J. Fisher, in an October 18, 1919 letter to Fisher Body shareholders discussing the proposed General Motors investment in Fisher Body, stated that "The new capital provided by the sale of the 300,000 shares of common stock will, it is estimated, be sufficient to provide for all present needs of the greatly increased business afforded by the proposed manufacturing contract, as well as to retire at maturity the present outstanding Serial Gold Notes of the company." (Du Pont Gov't Trial Exhibit No. 428.) The Serial Gold Notes consisted of \$5 million of recently issued Fisher Body debt (September 11, 1919 letter to F. J. Fisher, Govt. Trial Exhibit No. 425). Once this debt was paid off, Fisher's debt to assets ratio declined from .41 in 1919 to .31 in 1921, just slightly below the national average of manufacturing corporations of .34. (Fisher Body figures from *Moody's Manual of Railroads and Corporation Securities, 1919*; *Moody's Manual of Investments and Security Rating Service, 1926*; national figures from *Statistical History of the United States from Colonial Times to the Present, 1965*.)

²⁴ White, *Body By Fisher* at 50 describes Fisher's pre-existing Detroit plants, Pound at 298 describes Fisher's pre-existing Cleveland plant.

57 miles outside of Detroit, and to the GM Cadillac facility located in Detroit. Fisher Body used its Cleveland plant, further expanded in 1920-21, to service its three major non-GM customers, Chrysler, Cleveland and Chandler.²⁵

The 1919 Fisher Body-General Motors agreement set dividend payments at \$10 per share annually.²⁶ This amounted to a 10.6 percent yield on GM's initial \$27.6 million investment in 300,000 Fisher Body shares.²⁷ The 17.6 percent upcharge over cost in the pricing formula provided Fisher Body with just enough profit to meet these promised dividend payments.²⁸ However, as we shall now see, Fisher Body's financial performance improved substantially in 1922, when GM sales and demand for Fisher bodies accelerated.

III. G.M.'s 1922 Shift to Co-located Body Plants

Figure 1, which presents General Motors sales over time, shows that, after General Motors entered into its contractual arrangement with Fisher Body effective December 1919, GM total sales remained largely unchanged in 1920,

²⁵ White, Fisher Body Corporation at 189. Fisher Body's other non-GM automobile manufacturer customers at the time included EMF, Hudson, Packard and Studebaker. (Marx and Peterson, Table 1.)

²⁶ Minutes of Meeting of Board of Directors of Fisher Body Corporation on 11/7/19; September 25, 1919 letter to General Motors Corporation (Gov't Trial Ex. No. 426 *U.S. v. du Pont*).

²⁷ After the Fisher Body approval of the GM contract on November 3, 1919 and appreciation of the Fisher Body stock to reflect the GM investment and contractual body purchase commitment, the \$10 contractually set dividend represented a 6.5 percent dividend yield. This compares to the 5.2 percent dividend yield on U.S. industrial stocks during 1919 (from U.S. Department of Commerce, Bureau of the Census, *The Statistical History of the United States from Colonial Times to the Present* (1965) at 656).

²⁸ Fisher Body's annual surplus (defined by Moody's as net income minus dividends) averaged less than \$1 million during fiscal years 1920-1922 (ending April 30). See *Moody's Manual Of Investments and Securities Rating Service*, 1926 at 1101-1102 and *Moody's Analyses Of Investments*, 1920 at 204. General Motors and Fisher Body apparently ignored the clause in their agreement which stated that Fisher's dividend payments need not exceed two-thirds of Fisher's earnings after taxes, interest and preferred dividends (Minutes of Meeting of Board of Directors of Fisher Body Corporation on 11/7/19; September 25, 1919 letter to General Motors Corporation, Gov't Trial Ex. No. 426 *U.S. v. du Pont*).

declined dramatically in 1921 (due to a severe economy-wide recession) and then started growing rapidly in 1922.

[Figure 1 here]

GM sales gains in 1922 did not involve merely a bounce back from the 1921 recession in the sales of all GM models. Figure 1 breaks total General Motors sales up into Chevrolet sales, Buick sales and all the other, less popular GM model lines.²⁹ As we can see, GM's rapid sales increase in 1922 involved a dramatic shift to GM's lower priced Chevrolet line of automobiles.³⁰ Chevrolet sales, which tripled in 1922 and then doubled in 1923, accounted for 69 percent of the 1922-23 General Motors U.S. sales increase. The result of this rapid expansion in Chevrolet sales was a dramatic shift in Chevrolet's share of total GM sales from 34 percent in 1921 to 60 percent in 1923.

The significance of this dramatic increase in Chevrolet sales during 1922-23 for the Fisher Body-General Motors relationship was twofold. First, the increase in Chevrolet sales resulted in a large increase in General Motors demand for Fisher bodies. Before 1922, General Motors built its own open Chevrolet bodies and obtained closed Chevrolet bodies from Hayes Ionia Body Co. In 1922, as the industry demand for closed body models was growing rapidly, Fisher Body took over the supply of Chevrolet closed bodies.³¹

²⁹ The other GM models included Cadillac (La Salle), Oldsmobile (Viking), Pontiac (Oakland), GMC Truck, Cartercar, Elmore, Marquette, Randolph, Scripps-Booth and Welch passenger cars and Samson trucks and tractors.

³⁰ Sloan describes the 1921 strategic decision to expand Chevrolet sales as emphasizing a product that filled the niche "between the Ford car below and the medium-price group above" (Sloan (1964) at 152). In 1922 GM lowered the price of the Chevrolet 490 Sedan from \$1,375 to \$875, which was still \$230 above the Ford Model T center door sedan (White at 55).

³¹ September 4, 1951 GM letter to Du pont. (Hagley Museum, Wilmington, Del., available from the author upon request.) The closed body share of industry automobile sales, which was only 10 percent in 1919 at the time Fisher Body entered into its GM supply contract, rose

Second, General Motors requested that Fisher Body make the required investments in body plants necessary to meet the rapidly increasing demand for Chevrolet bodies in plants located close to the associated Chevrolet assembly facility. In contrast to Fisher Body's initial 1919 plant investments concentrated in Detroit and Cleveland and the continuing practice of other body manufacturers, this represented a significant change in GM's production process to smaller, co-located body plants.³² This change in the body production process may have increased Fisher Body's costs, but clearly it reduced the total joint costs of Fisher Body and General Motors, including body transportation and handling costs. We know this is true because, as we shall see, General Motors paid a premium to Fisher Body during 1922-25 to achieve co-located body production. Also, after General Motors vertically integrated with Fisher Body in 1926, it continued this co-located production process.

Fisher Body resisted the move to co-located body plants. Alfred Sloan testified 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."³³ This, Sloan claimed, "handicapped us considerably"

continuously -- to 17 percent in 1920, 22 percent in 1921, 30 percent in 1922 and 34 percent in 1923. (Sloan (1964) at 152.) This combination of very rapidly growing Chevrolet sales and the shift to closed bodies contributed to a 327 percent increase in the number of bodies sold by Fisher Body from fiscal 1919 to fiscal 1924. ("Fisher Body Makes Record," *Wall Street Journal*, 4/23/25.)

³² Briggs, a major body manufacturer, had plants only in Detroit and Cleveland, while its major customer, Ford, also was in Cleveland, Buffalo, Charlotte, Chester (Pennsylvania), Columbus, Jacksonville and Kearney (Nebraska). (Body by Briggs at 26.) Budd Company, which originated in Philadelphia as a parts supplier but became a major body supplier and moved to Detroit in 1925 as it received business from Ford and Chrysler, also did not have co-located plants. (Robert J. Kothe, Budd Company, in *The Encyclopedia of American Business History and Biography* at 61.) There is no evidence that the body manufacturer Murray had plants outside of Detroit. [Fisher's non-GM customers were primarily in Cleveland and Detroit.]

³³ Deposition Testimony of Alfred P. Sloan, Jr. at 190, *Du Pont*, 126 F. Supp. 235.

[because] “where 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.”³⁴

Fisher Body’s reluctance to make investments in body plants located in conjunction with GM’s new and expanding Chevrolet assembly plants was understandable. Fisher Body would be making large, much more highly GM-specific investments than it originally made in 1919, with now less than 10 years left in GM’s purchase commitment. If General Motors threatened not to renew the Fisher Body supply contract at its expiration in 1929, the risk to Fisher of capital losses on these highly GM-specific co-located plant investments would have been substantial. In addition to the costs of finding new buyers for its greatly expanded capacity, Fisher Body would bear the capital loss of having plants with higher shipping costs of serving other buyers and possibly with production cost disadvantages due to diseconomies of relatively small plant size.

A solution to Fisher Body’s legitimate concerns could have been a contract extension by General Motors. However, given the much more GM-specific nature of Fisher Body’s investments, the required contract adjustment would have involved extending the remaining term significantly beyond the ten years of the original 1919 contract. This would have magnified the rigidity inherent in any long-term contract illustrated so concretely by the problems now faced by General Motors in attempting to make these changes in its production technology after only three years into its agreement with Fisher Body.

Alternatively, the parties could have adopted vertical integration. As Paul Joskow (1989) has convincingly demonstrated, this is a reasonable solution when

³⁴ Direct Testimony of Alfred P. Sloan, Jr. at 2912, *Du Pont*, 126 F. Supp. 235.

highly locational specific investments are required.³⁵ Moreover, it was the solution Fisher Body and General Motors ultimately moved to in 1926. In fact, General Motors began preliminary discussions with Fisher Body in 1922 regarding the possibility of a merger or “closer association.”³⁶ But, as we shall see, it was not until in 1925, after the Voting Trust expired and General Motors was free to independently vote its 60 percent interest in Fisher Body, that General Motors was able to reach agreement with Fisher Body on acquiring the remaining 40 percent interest in Fisher Body it did not already own.

Instead of adopting a longer-term contract or moving to vertical integration, the parties solved the problem of highly GM-specific Fisher Body investments by having General Motors make a number of the co-located body plant investments itself, and then leasing the plants to Fisher Body. In particular, General Motors financed and leased to Fisher Body three of the six new Chevrolet body plants built between 1922 and 1924 -- in St. Louis in 1922, Flint in 1923, and Tarrytown in 1924.³⁷ As Table 1 indicates, Fisher Body financed the remaining co-located Chevrolet body plants built during 1922-23 in Cincinnati, Buffalo and Janesville, Wisconsin, as well as constructing or acquiring three additional plants during 1922-23 to supply other models.³⁸ In contrast to Fisher

³⁵ Joskow (1989) empirically documents the importance of firm specific locational investments in explaining ownership of coal mines by electric utilities located at the coal mine-mouth.

³⁶ Letter from Pierre S. du Pont to Lammont du Pont (October 31, 1922), Gov’t Trial Ex. No. 435, *Du Pont*, 126 F.Supp. 235.

³⁷ “Chevrolet built a new body plant in Flint and leased that plant and another, in St. Louis, to Fisher to build Chevrolet bodies. These body plants were adjacent to Chevrolet assembly plants to avoid the problem of shipping bodies. Subsequently, a Fisher Body plant was located adjacent to each Chevrolet assembly plant.” (September 4, 1951 letter from F. G. Donner, Vice-President of General Motors to P. S. duPont, Hagley Museum and Library, Wilmington, Delaware.) The third Chevrolet body plant in Tarrytown is described as financed by GM in the Minutes of Executive Committee of General Motors of October 24, 1923.

³⁸ Fisher Body financed these plant investments, in part, by issuing \$20 million of new debt and \$7.5 million of new equity. The Fisher Body equity was raised by a rights offering, a common

Body's previous centralized production in Detroit and Cleveland, all body plant additions beginning in 1922 were located close to the GM assembly facility where the bodies were to be used.³⁹

[Table 1 here]

General Motors' decision to finance a number of the new Fisher Body Chevrolet plants involved a substantial commitment of resources.⁴⁰ In addition, as we shall see in the next section, under the 1919 contract formula GM's body plant investments amounted to a per period transfer of profits from General Motors to Fisher Body. However, GM's investments solved the problem of Fisher Body's reluctance to make highly GM-specific investments in co-located body plants. GM's body plant investments induced Fisher Body to agree to make the remaining investments in co-located body plants by reducing the quasi-rents General Motors could appropriate from Fisher Body at contract

practice at the time. Fisher Body issued 100,000 shares of common stock at \$75/share, with each existing shareholder given the option to purchase a 1/5 new share for each share already owned at this reduced price. Since Fisher Body shares traded during 1923 between \$140 and \$212.25, \$75 was a substantial discount to the market price. (*Moody's Manual of Investments and Security Rating Service, 1926.*) General Motors exercised its option and maintained its overall ownership percentage of Fisher Body.

³⁹ The Fisher Body plant locations in Table 1 are identical to the information supplied in Coase (2000), with the only difference that it includes Fisher Body's 1919 investments in Detroit and Cleveland plants. Although Coase is correct that Fisher Body plants existed at these locations before the 1919 agreement with General Motors, Fisher Body used the initial GM investment in Fisher Body in 1919 to make major additions to those Detroit and Cleveland plant capacities, when the GM investment could have been used to build new plants elsewhere.

⁴⁰ If one considers the decline in the ratio of Fisher Body plant and equipment relative to the number of bodies produced in fiscal 1923-24 compared to fiscal 1921-22, GM's investment was \$15.8 million during this period, or 40 percent of the necessary increase in plant and equipment cost to keep the ratio constant. A constant ratio of plant and equipment cost relative to the number of bodies is a reasonable assumption because the percentage of Fisher bodies that were closed was roughly the same over these two periods (53.5 percent during 1921-22 versus 55.1 percent during 1923-24) ("Fisher Body - Its Contribution to the Automotive Industry", General Motors publication, 12/12/24 at 5). Although the industry was moving to closed body production, Fisher Body was always weighted towards closed bodies. This may understate GM's capital contribution if there were diseconomies of scale from adopting a co-located plant technology.

expiration, i.e., the potential General Motors' holdup of Fisher Body, and by increasing Fisher Body's profit.

Fisher Body and General Motors reached this negotiated equilibrium which involved agreeing upon the share of the investment in new body plants that General Motors would make, s . The present value of the additional profit that Fisher Body would earn over the remaining contract term due to GM's investment is positively related to s and denoted by $W(s)$. The potential General Motors' holdup of Fisher Body's co-located plant investment at the end of the contract, on the other hand, is negatively related to s and denoted by $H(s)$. The minimum GM investment share that Fisher Body would accept is such that

$$(1) \quad W(s) \geq H(s).$$

On the other hand, the maximum GM investment share that General Motors would accept is such that the extra present value of the profit paid by General Motors to Fisher Body over the remaining contract term, $W(s)$, is equal to the present value of GM's cost savings from having co-located plants, C , plus the holdup potential GM could earn at the end of the contract, $H(s)$, or

$$(2) \quad W(s) \leq C + H(s).$$

From equations (1) and (2) the equilibrium investment share is such that $W(s) - H(s)$, which is a positive function of s , is between 0 and C ,

$$(3) \quad 0 \leq W(s) - H(s) \leq C.$$

Figure 2 presents these relationships graphically, with C and $H(s = 0)$ defining the parameters of bilateral bargaining given that General Motors is

locked into a long-term exclusive dealing contract with Fisher Body. The final equilibrium share of body plant capacity investments that will be made by General Motors will be set somewhere between s_0 and s_1 .

[Figure 2 here]

If the economic efficiency of co-located body plants was recognized by the transactors before they entered the contract, an alternative contractual arrangement likely would have been adopted. For example, GM's investment share would have been set at s_0 if General Motors had perfectly substitutable alternative body suppliers available, or the parties may have adopted vertical integration. But the evidence indicates that Fisher Body took advantage of the existing long-term, exclusive dealing contract with General Motors to increase its profit by negotiating a higher GM investment share than s_0 .

IV. GM's Overcompensation of Fisher Body

General Motors' decision to make significant direct investments in body plants during 1922-24 that it then leased to Fisher Body altered the financial relationship between Fisher Body and General Motors originally envisioned in the 1919 contract. Under the 1919 Fisher-GM contract pricing formula, the 17.6 percent upcharge on costs were intended to cover Fisher's equity costs not included in the contract's cost-plus pricing formula. When General Motors began making significant direct investments in body plants, this had the effect of increasing Fisher Body sales relative to its own equity investments in body producing capacity.⁴¹ As a consequence, the contractually fixed 17.6 percent

⁴¹ The number of bodies sold by Fisher per dollar of plant and equipment was 36 percent higher during fiscal year 1923-24 than during fiscal year 1921-22. (Financial figures from *Moody's Manual of Railroads and Corporation Securities*, 1919 and *Moody's Manual of Investments and Security Rating Service*, 1926; bodies sold from Fisher Body - Its Contribution to the Automotive Industry,

profit upcharge on sales implied a significant increase in Fisher's rate of return on assets.⁴²

The drastic increase in Fisher Body's rate of return is reflected in its stock price. Figure 3 plots Fisher Body and General Motors stock prices, adjusted for all splits, cash dividends and rights offerings from 1919 to 1926.⁴³ After Fisher Body's initial rapid stock price increase in 1919 with the signing of the General Motors contract, Fisher Body's stock price declined in 1920-21 before beginning to increase very rapidly in 1922, both absolutely and relative to GM's declining stock price, as shown by the ratio of the Fisher Body to General Motors stock prices, also presented in Figure 3. Over the entire period of the operation of the contract, from December 1919 until vertical integration in June 1926, the total rate of return of an investment in Fisher Body was 3,003 percent, while GM's total rate of return was 499 percent or, absent its stake in Fisher Body, 421 percent.

[Figure 3 here]

Fisher Body's increased profitability and stock price increase after 1922 clearly was due, in part, to the favorable GM contract and to the General Motors decision to partially fund Fisher's rapid capital expansion. While GM's share of

1924.) (The fraction of Fisher production consisting of closed bodies is approximately the same over the two periods. See n. ___ *supra*.)

⁴² Fisher Body's return on assets increased from 8.1 percent during fiscal 1919-22 to 17.3 percent during fiscal 1923-25. *Moody's Manual of Investments and Security Rating Service, 1926* (Fisher FY 1920-24); *Moody's Manual of Railroads and Corporation Securities, 1919* (Fisher FY 1918-19); *The Commercial and Financial Chronicle, 1926 V.122* (Fisher calendar year 1925).

⁴³ Stock prices and dividends from *Moody's Analyses of Investments and Security Rating Books, 1921, 1923, 1924*; *Moody's Manual of Investments and Security Rating Service, 1926*; cash dividend payments are assumed to be reinvested.

total Fisher Body sales increased over time,⁴⁴ the 17.6 percent upcharge on GM sales that Fisher Body earned under the GM contract now covered General Motors' equity costs in plant capacity in addition to its own equity investment costs.

The mechanism by which the cost-plus pricing formula in the Fisher-GM contract increased Fisher Body's profits is analytically similar to the mechanism I previously claimed was operating when I thought (based on the contract description in the Du Pont case record) that capital costs were not covered in the pricing formula. Rather than the 17.6 percent upcharge on costs designed to cover all capital costs, we now know the upcharge was designed to cover only equity capital costs. And we now also know that Fisher Body reduced its equity investments relative to its sales not by adopting an inefficient, less capital-intensive production process, but by having General Motors make the capital investments in a number of the plants used by Fisher Body.⁴⁵ However, the end result was the same -- a reduction in Fisher Body's capital to sales ratio which led, under the fixed upcharge on sales contract, to Fisher Body earning a supra-normal return.

Alfred Sloan, the Chairman of General Motors, described this situation as one where "the increased turnover reflected in return on capital resulted in cost

⁴⁴ By 1926 GM accounted for 90 percent of Fisher Body production. (Letter from Board of Directors 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.)

⁴⁵ I previously incorrectly inferred a decrease in the capital intensity of Fisher Body's production process from Sloan's complaint about Fisher's reluctance to make new capital investments and from the actual decrease in Fisher Body's capital to sales ratio after 1922. However, the contract explicitly required Fisher Body to use "the most modern, efficient and economical methods, machinery and devices consistent with good workmanship" (Contract, Article III) and, in spite of the decrease in Fisher's capital to sales ratio, there is no evidence of inefficient decreased capital intensity in Fisher Body's production process. The measured decrease in Fisher's capital to sales ratio apparently was caused entirely by GM's investments in Fisher body plants

and selling prices that were no longer competitive.”⁴⁶ Under the Fisher Body contract a consequence of Fisher’s increased turnover (i.e., increased sales relative to capital) resulted in an increase in GM’s total cost of purchasing bodies. General Motors was now bearing the additional per period equity costs associated with building plants for Fisher Body. However, although GM’s total per period costs of purchasing bodies increased, body prices may not have increased above competitive levels because General Motors had an economic incentive to set plant lease rates below market levels.

Although I have no data on GM’s Fisher plant lease rates, lease rates at the market level necessary to fully cover GM’s capital costs would have added insult to injury -- not only permitting Fisher Body to earn the extra per period savings from not having to make equity investments in body plants, but also permitting Fisher Body to earn an extra 17.6 percent upcharge on these savings. By setting Fisher Body’s lease payments below market levels, both body prices and the per period wealth transfer to Fisher Body would have been reduced. If, for example, General Motors set Fisher Body’s lease payments below market levels and equal to what would have been Fisher’s debt costs of building the plants itself, the price of bodies would have been the same as if Fisher Body had built the plants. Fisher Body could add a 17.6 percent upcharge to its reimburseable lease costs under the GM body supply contract pricing formula and would have added a similar 17.6 percent upcharge to its debt costs if it had made the body plant investments. However, under these hypothetical conditions, Fisher Body would still be receiving a per period wealth transfer from General Motors equal to the equity cost savings of not having to make the body plant investments.⁴⁷

⁴⁶ Direct Testimony of Alfred P. Sloan, Jr., at 2911, *Du Pont*, 126 F. Supp. 235.

⁴⁷ Any reduction in lease payments below Fisher’s debt costs would have reduced GM’s body prices below the competitive level and further reduced the wealth transfer to Fisher Body. For example, at a zero lease rate, body prices would be below “competitive” levels by 1.176 (debt costs) and the real wealth transfer from GM’s financing of the Fisher plants would be r (equity

Whatever the exact level of Fisher Body lease payments to General Motors and body prices, it is clear that Fisher Body did extremely well selling bodies to General Motors under these arrangements after 1922. In addition to Alfred Sloan's testimony that Fisher Body's increased turnover distorted the 1919 contract formula and Fisher Body's increased profitability and higher stock price after 1922, the Fisher Body Board of Directors described the GM contract in a statement to shareholders in 1926 (in connection with the approval of GM's proposal to acquire the remaining 40 percent of Fisher Body) as having been "exceedingly profitable to Fisher Body."⁴⁸ Further, as we shall see, during the negotiations surrounding the 1926 purchase of the remainder of Fisher Body by General Motors, internal GM communications describe "shortcomings" in the Fisher Body contract that created Fisher Body financial advantages that General Motors believed should not be reflected in the final Fisher Body purchase price.

V. The 1925 Flint Plant Impasse Leads to Vertical Integration

General Motors believed that its significant plant investments jointly undertaken with Fisher Body during 1922-23 were likely to meet all of Fisher Body's capacity requirements for the immediate future and that further expansion would be minimal.⁴⁹ However, this did not turn out to be the case.

costs) - .176 (debt costs). In addition to the GM economic incentives to keep plant lease rates and, hence, body prices down, Fisher Body was constrained by the Fisher-GM contract which contained a most-favored-purchaser provision (Contract, Article X) and a provision whereby General Motors could void the exclusive purchase term if its body prices exceeded the "general average market price of similar grade" (Contract, Article XI).

⁴⁸ Letter from Board of Directors 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.

⁴⁹ In 1924 General Motors described its investment plans for 1925 in the following way: "As our plants are now well rounded out and amply capable of meeting the estimated sales demand likely to be made upon them, there is every reason to believe that the increase in this investment during the coming year will be relatively small, as it was during 1924." 1924 Annual Report of General Motors at 6.

Figure 1 shows that, after GM's sales declined in 1924, GM's sales began to increase rapidly again in 1925, jumping 42 percent in 1925 and then another 49 percent in 1926.⁵⁰

To meet this growing demand, in 1925 General Motors asked Fisher to build a new Buick body plant near GM's Buick production facility in Flint. Although some Buick bodies were already produced in the Fisher Body Flint plant financed by General Motors in 1923 that was supplying bodies to Chevrolet, most Buick bodies were supplied from Detroit. GM's request for a new body plant in Flint to meet the growing demand for Buick automobiles was aimed at making its entire Buick production process consistent with its Chevrolet production process, in the sense that essentially all Buick bodies would be supplied from plants located near the associated Buick assembly plant.

General Motors did not offer to make the investment in a Flint Buick body plant for Fisher Body, as it had done for a number of Fisher's Chevrolet plants during 1922-23. Instead, General Motors asked Fisher Body to finance the new plant itself. Fisher Body refused to make the investment and continued to supply Buick bodies from Detroit. Fisher Body's reluctance to make a large, highly specific new plant investment in Flint in 1925 is understandable, even more so than its reluctance to make co-located Chevrolet plant investments during 1922-23. The potential for General Motors to appropriate the quasi-rents on such a Fisher Body investment was now substantially greater because GM's exclusive purchase commitment had only four years left to run.

⁵⁰ The share of GM sales that consisted of closed bodies also continued to rise rapidly. The 1924 and 1925 GM Annual Reports projected that 65 percent of 1925 sales and 75 percent of 1926 sales would be closed bodies. (1924 Annual Report of General Motors Corporation at 12; 1925 Annual Report of General Motors Corporation at 10. During the 1925-26 period of very rapid growth Fisher Body added only one new plant, a small Fleetwood Body plant that it purchased in 1925. This plant, located in Fleetwood, Pennsylvania, was at the time of its acquisition making only a few custom bodies for GM's Cadillac division. (See Marx and Peterson (1995).)

Although General Motors' 60 percent ownership interest of Fisher Body was no longer subject to the Voting Trust restrictions, which had expired in October 1924, the evidence indicates that General Motors did not have the ability to force Fisher Body to build a new body plant in Flint. In spite of General Motors' majority ownership of Fisher Body, it could not determine the location of new Fisher Body plants or abrogate or unilaterally adjust the body supply contract with Fisher Body or force Fisher Body to act in any way contrary to its economic interests. Alfred Sloan testified that General Motors had to continue to operate after 1924 under what it considered to be unfavorable contract terms, stating that "we could not adjust because we always had to respect the forty percent outstanding interests"⁵¹ and that "we were bound by a contract in which the minority interest was outstanding, which we had to respect."⁵² Therefore, General Motors had to reach a negotiated solution with Fisher Body to the Flint plant impasse.

Without extending the term of the Fisher Body contract, the only way General Motors could ameliorate Fisher Body's concerns about making new highly locational specific investments when there was now only four years left in the contract was to make an even larger proportion of the Flint Buick body plant investment than it had made of the Chevrolet plant investments during 1922-23. (In terms of Figure 2 this would involve rotating line around $H(s = 0)$ point, increasing both s_0 and s_1 .) However, if General Motors had made a large proportion of the Flint Buick body plant investment to obtain Fisher Body

⁵¹ Direct Testimony of Alfred P. Sloan, Jr., *Du Pont*, 126 F. Supp. 235 at 2912.

⁵² Deposition Testimony of Alfred P. Sloan, Jr. at 188, *Du Pont*, 126 F.Supp. 235. The law at the time was similar to what it is today, that majority shareholders had the right to control, but also a fiduciary duty toward minority shareholders. See *Southern Pacific Company v. Bogart, et al.*, 250 U.S. 483 (1919); *Allied Chemical & Dye Corporation v. The Steel and Tube Company of America, et al.*, 14 Del. Ch. 1 (1923). [This episode shows that ownership should not be identified with control.]

acceptance, it would have resulted in an even greater windfall for Fisher Body for the remainder of the contract. Rather than adopting some combination of extending the long-term exclusive dealing contract and making a significant fraction of the investment themselves, General Motors decided to negotiate an agreement with Fisher Body to acquire the remaining 40 percent interest of Fisher Body it did not already own.

The bargaining that occurred in 1925-26 between Fisher Body and General Motors over GM's acquisition terms for the remaining 40 percent interest of Fisher Body took some time. This may have been due to the fact that Fisher Body was supplying bodies under a contract that had turned out to be highly favorable while General Motors firmly believed Fisher should not receive in the purchase price the benefits of the existing contract formula. Executives at General Motors believed that fair purchase terms for the remaining Fisher Body ownership interests should involve *de novo* calculations of value, not value based on Fisher's profitability under the 1919 contract in combination with the plant investments made by General Motors during 1922-24. Specifically, Alfred Sloan wrote to J. J. Raskob (an official of GM) on February 13, 1926 that:

"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, 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 this is the vital point on which his position should be determined."⁵³

⁵³ Defendants' Trial Ex. No. GM-34, *Du Pont*, 126 F. Supp. 235.

This clearly indicates that General Motors feared that Fisher would want to continue to reap the gains it had been earning under the GM contract in its negotiation over the Fisher Body acquisition price. If Fisher had that view in 1922, it would explain why, when GM's production process shifted to require more highly-specific co-located body plant investments, General Motors and Fisher Body could not reach agreement on vertical integration. In 1925, after the Voting Trust had expired, General Motors was free to vote its shares independently of Fisher. Although General Motors recognized that it "had to respect" the 40 percent ownership interests of Fisher, it now possessed sufficient bargaining power to obtain the remaining Fisher Body interests for what it considered to be a reasonable price.

As we can see from Figure 3, the ratio of Fisher Body's stock price relative to General Motors' stock price started to decline after July 30, 1925, when the New York Times reported that General Motors would soon make an offer for the remaining 40 percent of Fisher Body it did not already own.⁵⁴ On May 13, 1926 the parties reached agreement on the final terms of the acquisition -- one share of General Motors stock for each of the 1.5 shares of Fisher Body unowned by General Motors. As we can see from Figure 3, the terms of the acquisition amounted on a dividend and split-adjusted basis to the ratio of the Fisher Body and General Motors stock prices that existed in 1922.

The fact that after agreement was reached by Fisher Body and General Motors on acquisition terms on May 13, 1926, both companies' stock prices increased by more than 20 percent until the acquisition closed on June 30, 1926

⁵⁴ Fisher Body's stock price continued to increase, along with a more rapid increase in GM's stock price, until October 1925, when Fisher Body's stock price started to decline, while GM's stock price continued to rise, until the final acquisition terms were reached on May 13, 1926, after which both Fisher Body and General Motors' stock prices rose dramatically until the acquisition closed on June 30, 1926.

indicates the efficiencies associated with elimination of the dispute and the movement of the parties to vertical integration. One day after General Motors purchased Fisher Body it authorized \$5 million for additional body-building facilities in Flint.⁵⁵ Shortly thereafter, General Motors purchased the Durant Motors plant located in Flint and closed the Fisher Buick facility in Detroit.⁵⁶ This is further convincing evidence for the efficiency of the Flint location for Buick body production.

VI. Did The Fisher-G.M. Contractual Adjustments Involve a Holdup?

A. What is a Holdup?

We now turn to the question of whether to label the behavior that occurred in the Fisher Body-General Motors case a holdup. A holdup occurs when one transactor takes advantage of a locked-in trading partner to appropriate relationship-specific quasi-rents. The trading partner may be locked-in either economically (having made relationship-specific investments whose salvage value is lower outside the relationship) or legally (having agreed to a long-term contract motivated by the presence of such relationship-specific investments). In either case, quasi-rents can be appropriated because the contract governing the relationship is less than perfect.

This definition of holdup behavior does not rely on deception. There are examples where a transactor may be deceived into entering an imperfect contract that permits its transacting partner to engage in a holdup. However, it is not useful to rely on deception to explain why a holdup may occur. Deception is not easily verifiable and, in any event, transactors should more realistically be

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

⁵⁶ Pound (1934) at 293; New Fisher Plant Will Start Work Nov. 1, 55 *Automotive Industries* 710 (1926).

assumed to knowingly enter into imperfect contractual arrangements where holdups are possible.⁵⁷

For example, in the Fisher-GM case there is no evidence that Fisher Body deceived General Motors into entering their long-term, exclusive dealing cost-plus contract that turned out so unfavorable for General Motors relative to Fisher Body after 1922. Rather than deception, the Fisher Body-General Motors case illustrates the much more common reason transactors enter imperfect contracts that sometimes result in holdup behavior -- unanticipated market events push the contractual relationship outside what I have called "the self-enforcing range."⁵⁸

Because explicit contractual specification and court enforcement is costly and inherently imperfect, transactors often rely on a self-enforcement mechanism to assure contractual performance. Self-enforcement utilizes the threat of termination of a relationship, with the consequent loss of future rents to the terminated transactor, if the transactor fails to perform according to the implicit contractual understanding.⁵⁹ Transactors find it efficient to rely on such a self-enforcement mechanism because this permits them to avoid the rigidity of imperfectly specified contract terms that may turn out to be inappropriate, as occurred with the Fisher Body-General Motors contract. However, because transactor reputational capital (defined as the capital value of the rents that are

⁵⁷ See Klein (1996). [In contrast, Oliver Williamson explicitly defines "opportunism" in terms of deception. "By opportunism I mean self-interest seeking with guile. This includes but is scarcely limited to more blatant forms, such as lying, stealing and cheating. Opportunism more often involves subtle forms of deceit. ...More generally, opportunism refers to the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, obfuscate, or otherwise confuse." (Williamson [1985 at 47]. Also see Williamson [1979 at 234, n. 3].)]

⁵⁸ Klein (1996).

⁵⁹ Macauley (1963) is most frequently cited for the first systematic documentation of the importance of this phenomenon in business relationships. Klein and Leffler (1981) provide an early statement of the economics underlying such a self-enforcement mechanism.

lost upon termination) is limited, transactors generally do not rely entirely on self-enforcement. Transactors choose contract terms to complement their limited reputational capital, designing this combination of imperfect court-enforced contract terms and self-enforced contractual understandings so as to maximize the expected self-enforcing range of the contractual relationship.

This explains the use of the long-term exclusive dealing contract by Fisher Body and General Motors in 1919. The exclusive contract encouraged Fisher Body to make GM-specific investments in spite of the fact that General Motors had otherwise insufficient reputational capital. However, the Fisher-GM case also illustrates that a sufficiently large unanticipated shift may occur in market conditions so that one party finds it in its interests to take advantage of the imperfect contract that governs the contractual relationship to appropriate the quasi-rents present from the economic or contractual lock-in. Once the potential wealth transfer from violating the implicit contractual understanding becomes greater than the reputational sanction that can be imposed for nonperformance, so that the contractual relationship is outside the self-enforcing range determined by the imperfect contract terms and each transactor's limited reputational capital, a transactor will take advantage of the imperfect contract terms to appropriate the other transactor's quasi-rents.⁶⁰

B. How Do We Know When a Holdup Has Occurred?

The difficulty in determining whether a holdup has occurred within this framework is that one cannot look merely for wealth transfers or unilateral contractual adjustments. Wealth transfers and unilateral contractual adjustments may occur in response to unanticipated changes in market conditions when a relationship is within the self-enforcing range. An element of the transactors'

implicit self-enforced understanding may be that there is a sharing of the surplus from the exchange, so that unanticipated changes in market conditions are adjusted to in this way.

For example, consider the analysis by Victor Goldberg and John Erickson (1987) of the unilateral contractual adjustments made by calciners during the period of very rapid oil price increases in the 1970s.⁶¹ Calciners are demanders of coke, a by-product of the petroleum refining process for some refiners. Since coke has a high transportation cost relative to its value, many calciners build their coke processing plants adjacent to a refiner producing coke, often on land owned by the refinery, with the refiner contractually committing to supply its coke to the calciner at a fixed price or fixed price formula for a significant period of time. This situation, therefore, is analogous to the Fisher Body-General Motors case in the sense that highly firm-specific co-located investments are made by the calciner (Fisher Body) who is protected with a long-term contractual commitment to sell by the refiner (to buy by General Motors).

Goldberg and Erickson document that after the large unanticipated increase in the market price of petroleum (and, therefore, of petroleum coke) that occurred in 1973, almost all calciners unilaterally increased the price they paid for coke above the contractually specified price. Presumably, this was because a calciner's failure to make such adjustments would have been a violation of the implicit understanding and led to the refiner's failure to renew the contract at expiration. Because of the highly location-specific investments made by calciners, such termination would have imposed a significant cost on an unadjusting calciner. If the capital value of what the calciner could gain in the

⁶⁰ [It may be less misleading to refer to this behavior in Williamson's terminology as "opportunistic", which emphasizes its probabilistic nature, rather than as a "holdup."]

⁶¹ Also see the insightful analysis of contractual flexibility in Crocker and Masten (1991).

short-run by not increasing the price it paid for coke was less than the present discounted cost the refiner could impose on the calciner by non-renewal of the contract, the calciner would find it in its interests to unilaterally increase the price it paid for coke.⁶²

However, we cannot determine if a holdup has occurred merely by determining if a unilateral contractual adjustment benefits one transactor at the expense of the other transactor. This is what occurred, for example, in the Fisher-GM relationship during 1922-25 when General Motors shared the cost of investments with Fisher in new co-located Chevrolet body plants -- a contract change that clearly was not required under the original terms of the contract and produced a large windfall for Fisher Body. But this contract change may have been part of the original self-enforced understanding, with the risk implicitly assumed by General Motors and the expected cost of such a change implicitly included in the original agreed upon contract terms. Therefore, merely observing a unilateral, uncompensated contract adjustment or a lump sum payment does not imply that a holdup has occurred. We cannot look solely at the direction of a contract change or of the renegotiated compensatory payment to determine if a holdup has occurred or, if so, who is holding up whom. The self-enforced contractual understanding may have required the transactor making the contract adjustment or payment to actually make an even larger contract adjustment or lump sum payment. One must know what the implicit self-enforced understanding is in order to know if the contractual adjustment occurred within or outside the self-enforcing range.

⁶² Violation of the implicit understanding must change the bargaining position of the two parties (either by the loss of reputation in the marketplace, the intervention of the court or the incentive of one transactor to bear costs because of what it learns about the other transactor, e.g., that he bears low costs of acting "immorally" or has a relatively high discount rate). Otherwise, one transactor can impose the sanction before the change in the market, e.g., the refiner could threaten non-renewal of the contract if contract prices are not increased, even though market prices have not increased.

One way to determine if a unilateral contractual adjustment involves a holdup may be to see if transitional inefficiencies occur during the contract renegotiation process. If the contract change is part of the self-enforced understanding, the contract renegotiation is likely to go more smoothly because the reputational sanction that can be imposed for non-performance outweighs the gains from non-adjustment. Transitional renegotiation inefficiencies occur only if there are disagreements between transactors on the value of the holdup and the reputational sanction that can be imposed. Within the self-enforcing range the sanction for nonperformance is likely to be greater than these differences in transactor estimates of the short-run gains and long-run costs, so that transactors will be more likely to adopt a costless solution in spite of differing estimates of value. In contrast, transitional bargaining costs are likely to be greater outside self-enforcing range because differences in transactor estimates of holdup and reputational sanction values are more likely to lead to a significant impasse.

However, even when a relationship moves outside the self-enforcing range, there may not be renegotiation inefficiencies because these inefficiencies involve deadweight losses that reduce the total gains from exchange. Instead, a negotiated solution should be reached with a lump-sum wealth transfer made by one transactor to the other, reduced by the amount of the reputational sanction that can be imposed by one transactor on the other and the contract terms moved to the new efficient market level.

For example, Goldberg and Erickson's examination of a large number of calciner-refiner contracts found that in only one case did the calciner not increase the price it paid for coke after 1973. In that case the calciner was terminated by the refiner when its contract expired and was forced to move its calcining plant

to another location. Presumably, such behavior occurred in that one case because the calciner's estimate of the short-run gain from non-adjustment minus the costs that could be imposed on it from refiner termination was greater than the refiner's estimates of these net gains. Otherwise an agreement would have been reached and a side-payment made to avoid the large inefficiencies associated with termination and the moving of the calciner's plant to another location.⁶³ However, in all the other cases we cannot determine if the contractual adjustment did or did not involve a holdup.

Moreover, even when transactors are within the self-enforcing range, transitional inefficiencies may occur when there is a change in the equilibrium as transactors search for information regarding what has happened and what should be done to remain consistent with the original contractual understanding. Only when transitional contract renegotiation costs persist, so that we observe behavior that clearly would not exist within the self-enforcing range, do we know that it is likely a holdup has occurred.

C. Did Fisher Body Hold Up General Motors?

Because we do not expect to see many examples of renegotiation inefficiencies even when a holdup is occurring, it is not surprising that Fisher's body plants were located near the appropriate General Motors assembly plant after General Motors made the decision to move to geographically dispersed co-located body production in 1922. Coase (2000) uses this fact that all Fisher Body plants were located adjacent to the appropriate General Motors assembly plant after 1922 until Fisher Body refused to locate a body plant in Flint to serve Buick in 1925 to discredit what he reports General Motors executives told him in

⁶³ Terminations also may occur if a transactor learns something about its transacting partner or if a transactor wishes to invest in its reputation for willingness to bear the costs of imposing a termination sanction when a contractual understanding is violated.

1932 was the reason General Motors integrated with Fisher Body -- "to make sure that the body plants were located near the assembly plants."⁶⁴ However, we would expect transactors to minimize inefficiency costs by renegotiating and adjusting their contractual relationship before plants were placed in the wrong place.

Moreover, it is not surprising that General Motors continued working closely with the Fisher brothers. Although Fisher Body was unwilling to locate new body plants adjacent to General Motors production facilities in 1922 and, as described in detail above, General Motors had to overcome Fisher Body's reluctance to make investments in co-located Chevrolet body plants by financing a number of these plants itself, there is no evidence that Fisher Body acted "immorally" in 1922 when it required General Motors to make some of the new body plant investments necessary to accommodate the shift in production technology to locational-specific body plants. Any reasonable transactor in the same circumstances would have demanded the same thing as Fisher Body. In particular, General Motors did not learn anything particularly negative about the Fisher brothers from their behavior. But this does not imply that a holdup was not occurring.

It appears clear from GM's internal statements and Sloan's testimony that General Motors considered Fisher to be taking advantage of the original long-term exclusive dealing contract. Fisher used GM's desire for co-located body plants to substantially increase its profit by getting General Motors to agree to finance approximately half of the required new co-located body plants, at a significant additional cost to General Motors and resulting windfall to Fisher Body. As described above, General Motors complained about the deal Fisher

⁶⁴ Coase (2000) at 18.

Body was getting under this adjusted contractual arrangement, suggesting that the contract adjustment negotiated by Fisher Body in 1922 was not part of the original self-enforced understanding.⁶⁵

In contrast to the contractual adjustment made by Fisher Body and General Motors in 1922, the impasse between Fisher Body and General Motors during 1925-26 over the Buick body plant in Flint resulted in the parties being unable to reach a solution before inefficiencies were created. These contractual adjustment negotiations involved not only the Flint plant, but also the terms of General Motors' vertical integration with Fisher Body. Consequently, until an agreement with regard to the purchase of the remaining outstanding interests was reached in 1926, Fisher Body continued to supply Buick bodies from Detroit rather than the more efficient Flint location.⁶⁶

It appears that during 1925-26 General Motors decided to use its 60 percent ownership interest to get Fisher to recognize the realities of situation -- that Fisher could not increase its windfall in connection with the Flint plant -- and to eliminate all future plant location disputes. General Motors believed the agreement with Fisher Body and contractual adjustment it undertook in 1922

⁶⁵ If sufficient Fisher Body reputational capital had existed, in the sense that General Motors could have imposed a sufficient sanction on Fisher Body by not renewing the contract at expiration, Fisher Body would have more fully adjusted to keep the economic shares of the original bargain undisturbed, perhaps by getting Fisher to accept a lower *s* or agreeing to vertical integration. Alternatively, if sufficient General Motors reputational capital had existed, it would have been unnecessary for the parties to use the ten year exclusive dealing term in the original 1919 contract that Fisher Body was later able to take advantage of.

⁶⁶ In Klein (2000) I said that the contract worked well during 1919-24 until breaking down in 1925. More accurately, the contract worked well without any adjustments during 1919-21; during 1922-24 the contract continued to work well in the sense that the contract modifications (although likely involving a holdup of General Motors by Fisher Body) occurred without major renegotiation inefficiencies. In 1925 the contract broke down in the sense that inefficiencies were created for the first time in the form of the failure to locate a Buick plant in Flint. This inefficiency existed until Fisher Body and General Motors reached agreement on the terms of vertical integration.

would solve these problems for the foreseeable future. But the rapid increase in GM sales during 1925-26 created the problem all over again. However, now General Motors possessed the voting rights over its Fisher Body stock and decided to eliminate the possibility of any future wealth transfers, as well as any transitional renegotiation inefficiencies, by vertically integrating with Fisher Body.

As we can see from Figure 3, the final terms of the Fisher Body acquisition in June, 1926 involved General Motors paying Fisher Body substantially less General Motors stock for the remaining 40 percent interest in Fisher Body than the relative Fisher Body valuation that existed in early 1925. It is not clear, however, what the market was discounting in 1925 in the Fisher Body stock price. Was it the ability of Fisher to take advantage fully of the remaining three years of the favorable General Motors contract? As described above, once it became clear that General Motors would acquire the remaining 40 percent of Fisher Body, the market price of both General Motors and Fisher Body began to rise and the ratio of the Fisher to GM stock started to fall.

It is difficult to describe General Motors' negotiation over the terms of vertical integration as involving General Motors holding up Fisher Body. Fisher Body was using its bargaining leverage while the body supply contract was being renegotiated to impose a cost on General Motors, supplying GM's increased demand for Buick bodies from its existing plants in Detroit while benefiting from the added transportation costs under the cost-plus 17.6 percent terms of the contract. General Motors would not have borne these transitional costs if it did not result in the avoidance of the current and future plant location problems and Fisher Body wealth transfers that had begun in 1922. However, General Motors was now using its increased bargaining position from the fact that it could now independently vote its Fisher Body stock to terminate the

windfall gain Fisher Body had experienced during 1922-25. Figure 3 indicates that, once the market recognized that an agreement would be reached and that these issues would be resolved by the Fisher Body acquisition, both parties gained substantially. This implies that vertical integration was a more efficient form of organization of the relationship than the original contractual arrangement.

VII. Conclusion

This paper presents much new detailed information about the operation of the Fisher Body-General Motors contract. The fundamental facts of the case remain the same -- that a long-term exclusive dealing contract was entered into in 1919 to encourage Fisher Body to make GM-specific investments and that this contractual arrangement began to break down in 1922 as GM's demand for bodies increased, leading to an impasse over the Flint Buick plant in 1925 and ultimately to vertical integration in 1926.

We now know that it was not the Fisher Body specific investments in tools and dies that led the parties to adopt their long-term exclusive dealing contract. That would have been equivalent to the tail wagging the dog in terms of the magnitude of specific investments involved. Instead, it was the specificity of Fisher Body's extremely large overall General Motors investment that required contractual protection. In addition, we now know that it was not GM's demand increase after 1922 that created problems with the original contractual arrangement. Instead, it was the shift in GM's production process to smaller, co-located body plants. This required Fisher Body to make increased locational-specific plant investments that it was reluctant to make without GM's adjustment of the contractual arrangement that produced a wealth transfer from General Motors to Fisher Body during 1922-25 until General Motors negotiated a purchase price for the remaining ownership interest of Fisher Body in 1926.

However, the basic empirical proposition of transaction-cost analysis, that greater transactor-specific investments (in this case, locational-specific plant investments) increases the likelihood of integration, remains fully consistent with our increased knowledge about the Fisher Body-General Motors case.

Fisher Body's conduct throughout this process is consistent with the conclusion that it took advantage of the leverage it possessed in its existing long-term exclusive dealing, cost-plus contract with General Motors by enforcing the literal terms of the contract during the contract renegotiation in 1922. The fact that General Motors initiated the change in production technology to co-located body plants in 1922, that no plants were actually mislocated during 1922-24, and that General Motors continued to work closely with the Fisher brothers during this period is not inconsistent with a Fisher Body holdup. The unfortunate identification of a holdup with transactor deception and "immoral" behavior is what misleadingly suggests the contrary.

However, whether an actual holdup of General Motors occurred is not as important as the inefficiencies that may be created when transactors place themselves in position for a potential holdup. Analysis of the breakdown of the long-term, exclusive dealing contract that governed the Fisher Body-General Motors relationship provides us with a detailed example of the type of transitional negotiation and inefficiency costs associated with long-term contracts and, therefore, with concrete evidence of the benefits of vertical integration as a contractual arrangement that solves such potential holdup problems.

Coase is correct in maintaining that long-term contracts and reputational effects can handle potential holdup problems created by the presence of

relationship-specific investments.⁶⁷ However, the Fisher Body-General Motors case vividly illustrates that long-term contracts are inherently less than perfect and transactors' reputational capital is limited. Therefore, this alternative self-enforcement mechanism may break down in the face of unanticipated changes in market conditions and lead to transitional inefficiencies. Consequently, transactors will adopt contractual arrangements to avoid potential holdups. The rent-dissipating bargaining and misallocation costs associated with holdup behavior that may be borne by transactors during the transitional period before the lump sum is agreed upon and the contract is renegotiated are deadweight costs that reduce the gains from trade and will be avoided by transactors.⁶⁸

[Coase does not want to consider the avoidance of potential holdups present when transactors use long-term contracts as a legitimate economic motivation for vertical integration because he focuses on the narrow transaction costs of contracting (discovering prices and executing the contracts).⁶⁹ The much more important economic determinants of vertical integration are the contracting costs illustrated concretely 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.⁷⁰

⁶⁷ *Supra* note ____.

⁶⁸ Rather than these real resource costs associated with ex post bargaining, the assumption of the standard property rights model of vertical integration, first presented by Grossman and Hart (1986), is that holdups are costlessly adjusted to by transactors. Economists in this tradition focus on the ex ante investment inefficiencies associated with holdup behavior, where transactors reduce their specific investments because they know they will be held up and cannot contract to avoid it. These models are summarized in Hart (1995) and Whinston (2001). [Expand]

⁶⁹ Coase (1988) and Coase (1937).

⁷⁰ [Describe how vertical integration is more flexible and cite Masten (1988).]

This analysis does not imply that vertical integration will always be used when large specific investments are present. As Bengt Holmstrom and John Roberts discuss in detail,⁷¹ there are many examples of large specific investments and incomplete contracts where we do not observe vertical integration. However, contrary to Holmstrom 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 additional 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 potential holdup problem with a long-term contractual arrangement (and sometimes even handled well with short-term contracts or no contract at all when sufficient reputational capital exists).

[Holding constant both the difficulties of specifying contractual performance 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 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

⁷¹ See Bengt Holmstrom & John Roberts, *The Boundaries of the Firm Revisited*, 12 *J. Econ. Persp.* 73 at 80-83 (Fall 1998). [other new cites?]

not be systematically positively related to the level of specific investments, and there is no reason to believe they are.]⁷²

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 relationship-specific investments, *ceteris paribus*, the greater the likelihood vertical integration will be used to minimize the expected costs associated with potential holdups.

⁷² [The likelihood of vertical integration is a multiplicative function of specific investments and contract costs (see Klein (1988) and Williamson (1979)?), an alternative motivation for vertical integration may have been the increased flexibility of vertical integration compared to a pre-specified long-term contract. In particular, Casadesus-Masanell and Spulber (2000) claim that General Motors' movement to annual model changes in 1922 substantially increased the need for supplier flexibility and thereby the advantages of vertical integration. However, all automobile companies other than Ford also moved to annual model changes during the 1920s and no other company other than General Motors adopted vertical integration. In particular, Chrysler did not vertically integrate until 1952-53 when it purchased Briggs (Body by Briggs at 29) and Ford, who was making a large number of its own bodies, increased reliance on outside suppliers, primarily Briggs, for half its bodies after it replaced the Model T with the Model A in 1927 (Marx at 26-28).]

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APPENDIX

Pricing terms from Fisher Body-General Motors contract.

ARTICLE VI. GENERAL MOTORS Agrees that it will pay to the FISHER COMPANY, in payment for automobile bodies, from time to time delivered by the FISHER COMPANY to GENERAL MOTORS, the actual cost of such automobile bodies, to be ascertained as hereinafter provided, and in addition thereto an amount equal to (17.6%) Seventeen and Six Tenths Per Cent. of the cost thereof.

In ascertaining the actual cost of such automobile bodies manufactured by the FISHER COMPANY, there shall be included:

(a) Material and labor at actual cost with proper allowance for wastage according to present practice of the FISHER COMPANY.

(b) Such proportion of the overhead expense as properly applies to the manufacture of automobile bodies for GENERAL MOTORS.

(c) Drawings, patterns and jigs applying to said manufacture of the said automobile bodies to be absorbed in the overhead.

(d) A reasonable depreciation upon plant buildings, machinery, standard tools and equipment, based upon the percentage the volume of business done for GENERAL MOTORS bears to the total volume of business done by the FISHER COMPANY.

(e) Interest on borrowed money, pro-rated according to the ratio of gross sales to GENERAL MOTORS to the entire gross sales of the FISHER COMPANY.

(f) There shall not be included in the cost of manufacture the amount of any Income or Profits Tax; any expense incurred by the FISHER COMPANY in the manufacture, sale or advertising of automobile bodies for third parties, nor shall there be included any interest on invested capital.

(g) Dies and special tools shall be manufactured for GENERAL MOTORS at cost plus 17.6% of such cost.