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ABSTRACT

Williamson (1985) argues that individuals form firms with specific internal governance structures to mitigate certain types of opportunistic behavior that may inhibit efficient contracting between independent contractors. But once firms are established, the individuals that comprise them may still act opportunistically. This paper investigates a specific historical case: the partnership in early America. Partnerships grappled with information-based problems, such as adverse selection, moral hazard, as well as ex ante and ex post contractual opportunism, including hold-up. Asset specificity and imperfect contracts made partnerships vulnerable to hold-up, especially when one partner invested in a sunk asset that enhanced the productivity of all other partners. This was a particular problem facing existing partners when they invited a new partner into their firm. Empirical evidence from the mid-nineteenth century suggests that individuals mitigated the effects of pre- and post-contractual opportunism by forming partnerships with others of similar age, productivity, and capital. This finding brings the traditional interpretation of partnerships as mentor-protégé relationships into question.

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Partnership and Hold-Up in Early America

On 6 March 1850, John Murphy of John Murphy & Company published the following co-partnership notice in the (Baltimore) *American and Commercial Daily Advertiser*: "We have this day, associated with us in business, Mr. JOHN B. PIET, who has been for the last six years, connected with the Establishment as Clerk, Salesman, &c." Blumin (1989) argues that this was typical, that shopkeepers rewarded clerks with partnerships after a period of loyal service to the firm and that these partnership bids offered opportunities for upward mobility unavailable elsewhere. Similarly, Lamoreaux (1985, p. 64) contends that a substantial percentage of Boston's partnerships were formed when an experienced businessman offered a partnership to a younger man even when that man offered the firm little in terms of financial resources or business experience. Young partners brought their labor and little more. This view envisions the early American partnership as an inherently mentor-protégé relationship.

Why did experienced businessmen choose to share their profits rather than pay a wage? One possibility is that employers believed that ownership elicited effort. Economic theory connects compensation and shirking in team production (Alchian and Demsetz 1972). There are, of course, a number of agency-related problems beyond shirking that firms must deal with, including moral hazard, adverse selection, hold-up and post-contractual opportunism. Internal governance structures and compensation schemes must contend with these as well. The essence of the early American employ-or-partner choice was ownership. Ownership defined a different bundle of rights and created different incentives than wage labor. The employ-or-partner choice, then, should have been responsive to the benefits and costs of alternative assignments. Moreover, alternative ownership

assignments had real consequences. Outside Coase's (1960) world of fully defined property rights and zero transaction costs, the identity of owners had consequences for resource allocation. "This is why some bundles of rights are more appropriate to one set of underlying conditions than to another" (Demsetz 1988, p. 20).

It is unfortunate in some ways that the modern literature concerning the nature of the firm is labeled "corporate" rather than "firm" governance, but the "corporate" label is apt because the existing research largely deals with agency problems faced by the modern corporation. But corporations do not and, historically, have not constituted the universe of organizational forms. Until the late-nineteenth century, firms were far more likely to be partnerships than corporations. Yet theoretical treatments of partnerships are all of recent vintage and economic and business historians have yet to produce more than a handful of studies of partnership within a broad conceptual framework.[1] This long-standing oversight leaves a significant void in our understanding of the firm as an historical actor. In some occupations, partnerships represented up to 70 percent of firms (Bodenhorn 2001). Even in industries dominated by proprietorships, partnerships typically represented up to 20 or 30 percent of firms. Thus an appreciation of the subtleties of firm governance before the rise of the corporation must account for the choice between proprietorship and partnership. An important question surrounding the early American firm is: When would an existing proprietor hire an employee and when would he take in a partner and share the profits? This paper develops a simple model of the employ-or-partner choice and provides some preliminary empirical evidence that extends our understanding of the use of business partnerships.

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[1] Recent theoretical treatments include Kandel and Lazear (1992), Lang and Gordon (1995) and Legros and Matthews (1993). Economic histories of partnerships include Bodenhorn (2001) and Lamoreaux (1995, 1998).

Accepting, as Williamson (1985) does, that people behave opportunistically and that at least some assets are transaction specific, the model shows that the employ-partner choice will depend critically on the extent to which potential employees or incoming partners act opportunistically. The model fails to provide unambiguous results, however, so a resolution depends on empirical evidence. Available evidence is consistent with the hypothesis that potential partners were forced to provide credible promises to not act opportunistically while the contractual boundaries of the firm were being established or once the firm was operating. These promises entailed the contribution of sizable amounts of human and physical capital. Thus, the traditional notion of older partners tendering a young protege a partnership bid may not accurately depict partnership formation in early America.

The Costs and Benefits of Partnerships

When complete state-contingent contracts are uneconomic, relational contracts emerge. Relational contracts structure relationships in general rather than specific terms. They paint broad outlines of a firm's mission, purposely define tasks in vague terms, establish general rules for decision making, and allocate costs and rewards. Corporate charters and partnership agreements are relational contracts in that such contracts broadly specify the firm's mission and loosely assign authority. If people are rational and forward looking, as economists posit, the fact that they opt for vague rather than specific contract terms must be efficient under certain conditions. But connecting ex ante choices with ex post outcomes requires a careful consideration of several factors, including a determination of why alternative organizational arrangements (proprietorship, agency, partnership, or corporation) were rejected; the identification of the costs and benefits of alternative arrangements, including agency costs; how the costs and benefits change over time; and how the technical

requirements of different occupations affects the choice between alternative organizational arrangements.

Partnerships are attractive for a number of reasons. Partnerships involve two or more people who share the financing and management of the firm. Thus partnerships often begin with more inside and can raise more outside capital than proprietorships. Moreover, in sharing managerial responsibilities, each partner remains involved in strategic decisions but may be freed from the drudgery of daily tasks he or she views as unpleasant. In addition to the simple division of labor, a partner may provide complementary inputs, specialized technical knowledge, simple business experience, or important industry connections.

Partnerships also act as risk-sharing and insurance mechanisms. In many occupations partners make significant investments in human capital that are uninsurable against unforeseen shocks (Gaynor and Gertler 1995; Lang and Gordon 1995). Insurers indirectly protect human capital by insuring life and limb, but for moral hazard reasons do not insure specific human capital investments. What the market fails to provide, contractual relationships may. Pooling the human capital and the profits of two or more individuals reduces the likelihood that one of them will suffer a catastrophic income collapse. Law firms, for instance, often include specialists in family law, criminal and civil litigation, tax, estate planning, and so forth. In forming these alliances, professionals capture potential gains from specialization and reduce the variance of income.

The disadvantages of partnerships are also well known. Unlike corporations, partnerships have limited lives. If one partner dies or becomes incapacitated, the firm must be dissolved, the creditors paid, and the remaining assets distributed among the surviving partners and heirs. But impermanence can be addressed contractually. It is common for partnership agreements to anticipate

the death of a partner and provide for the smooth transfer of assets without dissolving the firm. Agreements may allow existing partners to buy out the deceased partner's share, allow an outsider to buy her share, or to take in one or more of the deceased partner's heirs as silent or active partners. Nevertheless, incorporating contingencies into a partnership agreement is a cumbersome process and increasingly so as the solutions become more complex.

A second disadvantage of partnerships relative to corporations is unlimited liability. The entirety of the partners' real and personal estates can be seized to satisfy the partnership's debts. The attraction of the corporate form is that it shields the firm's owners from unlimited liability and, thereby, encourages investment. This advantage should not be exaggerated, especially for nineteenth-century firms. Early New England textile mills adopted the corporate form because the availability of corporate shares enticed individuals not interested in forming partnerships with mill owners to invest in potentially lucrative firms that still carried downside risks (Lamoreaux 2000a). Although corporations faced reduced equity capital costs, they faced higher debt costs. Corporate mills secured bank loans only if the firm's managers and directors provided personal guarantees for the firm's notes.

Partnerships also grapple with information-based problems, such as adverse selection, moral hazard, and hold-up. Hold-up is a general class of phenomena in which parties to a contract may be forced to accept disadvantageous terms after they have invested in a relationship-specific sunk asset that exposes the investor to opportunistic behavior by other parties (Milgrom and Roberts 1992, p. 137). Concerns about hold-up can lead to inefficiently low levels of investment, which reduces the total value to be shared. If hold-up simply redistributes a given output, the transfer is still consistent with a Pareto outcome. But if individuals alter their behavior in anticipation of opportunism, society

suffers a loss in potential output.

Hold-up can occur at any point in a relationship, from initial negotiations in forming a partnership to one partner threatening premature liquidation if the other refuses to concede a portion of his or her share of the firm's profits. Ultimately, it is the combination of asset specificity and imperfect contracts that create vulnerabilities to hold-up. The next section develops a model of ex ante hold-up when one partner makes a sunk investment in physical or reputational capital that improves the productivity of the other partner. Accounts of nineteenth-century partnerships, wherein older, established proprietors take on and junior partners, contain the possibility for this type of hold-up.

Partnership Formation and the Hold-Up Problem

Recent studies of corporate governance recognize that stakeholders other than shareholders (i.e., suppliers, customers, neighbors and employees) make investments specific to their relationship with a firm.[2] Employees, for instance, may purchase a home close to their place of employment. Suppliers may invest in capital to meet a buyer's specific technical specifications. Neighbors build roads and sewage systems to accommodate the firm's transportation and effluent needs. Clearly, these investments are more valuable and more likely to be made if the relationship is expected to continue. At the same time, the firm may undertake specific investments to attract and accommodate employees, neighbors, suppliers and customers. In the absence of complete contracts, one party can threaten to terminate the relationship and destroy the value of the sunk asset as a

[2] Blair (1995) makes a case for incorporating the consequences of firm decisions on stakeholders other than shareholders into the managers' calculus.

bargaining ploy to capture a greater share of the gains from trade. This is the essence of hold-up, discussed extensively by Williamson (1985). This section develops a simple model of hold-up in that spirit to illuminate the employ-or-partner decision. As in Malcomson (1997), the hold-up problem is formalized as a purely bilateral relationship in which proprietors have no other potential employees (partners), workers have no other potential employers (partners), information is symmetric in that each knows what the other knows, and both parties are risk neutral.

The Baseline Model: Hold-Up in Employer- Employee Relations

Consider first the potential for hold-up when a firm contemplates hiring an employee.[3] Suppose the firm's net revenue from hiring the employee is R(I,s) where I is the money it invests in physical or reputational capital and s is the state of nature describing everything pertinent to the relationship (e.g., nonlabor input prices, output prices, etc.) that is revealed ex post. Suppose further that investment increases the employee's productivity so that $R'(I, s)>0$, but with diminishing marginal returns so that $R''(I, s)<0$ where primes indicate partial derivatives with respect to I.

The proprietor's ex post profit is $\pi(w, I, s) = R(I, s) - w - I$, where w is the wage paid the employee. By rearranging terms we find that the total payoff to the firm and the employee (profits and wages) is then just equal to $R(I, s) - I$. The standard maximizing result reveals that the efficient level of investment is that level of I, denoted I*, found in the solution to $E[R'(I^*, s)] = 1$, where E denotes expectations taken across states of nature s. With investment made prior to state realization, the firm equates the expected marginal returns to investment and the marginal cost of investment. Because investment is measured in the numeraire, the latter equals one.

[3] This section follows closely the derivation in Malcomson (1997, pp. 1925-26).

Now suppose that the proprietor makes his tangible or intangible capital investment prior to hiring the employee and fixing the wage. The employee may bargain for a higher wage. To determine the employee's potential gain from opportunism, we need to specify the default payoff each party (employer and employee) receives while bargaining proceeds. In the absence of alternative employers or employees, these are the payoffs when no employment takes place. As with employment payoffs, the default payoffs may depend on state realizations, which we denote as $w^0(s)$ for the employee and $\pi^0(I, s)$ for the proprietor. The gain from reaching agreement after the investment is made and the state is realized equals $R(I, s) - w^0(s) - \pi^0(I, s)$ because the investment is a bygone cost. If bargaining allows the employee to capture α ($0 \leq \alpha \leq 1$) of the gains from the investment, the resulting wage will be $w^*(I, s) = w^0(s) + \alpha[R(I, s) - w^0(s) - \pi^0(I, s)]$.

Because $\pi^0(I, s)$ increases in investment, the bargained-for wage also increases with the amount of investment. Thus, the employee captures some of the proprietor's return on investment. If the proprietor anticipates the employee's action, however, his profit maximizing level of investment is defined by the solution to $E[R'(\hat{I}, s)] = 1/(1-\alpha)$.[4] Hold-up, therefore, diminishes investment by effectively increasing the cost of investment by a factor of $1/(1-\alpha)$. Because the marginal return on investment is diminishing (e.g., $R''(I, s) <0$), it must be true that $\hat{I} < I^*$ for any $\alpha >0$. Thus, if the employee has any bargaining power at all, the proprietor anticipates that he or she will use it and *underinvests*. Further, Malcomson (1997, p.1926) shows that underinvestment occurs even when additional investment increases the proprietor's revenues.

Extending the Model: Hold-Up in Partnerships

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[4] The details to this solution are provided in the appendix.

Can a partnership agreement solve the hold-up problem? That is, can an existing proprietor bring in a prospective worker as a share partner rather than a wage employee and forestall the entering partner's desire to capture a greater share of the returns from investment?

Consider first the case of a partnership formed prior to an existing proprietor making an productivity-enhancing investment, which parallels the baseline employment case analyzed above. Suppose the partnership's revenue is R(I, s), where R and s are defined as above. In this case, I represents the money invested in tangible or intangible assets that increases both partners' productivities. Assume that partner 1 is the incumbent proprietor and partner 2 is the recruited partner, so we focus on partner 1's investment choice and the effects of that choice on the behavior of partner 2.

If the partnership's ex post profit can be separated as Π (I, s) = π_1(I, s) + π_2(I, s), where subscript 1 represents the incumbent proprietor, subscript 2 the recruited partner, and $\pi_2 = \beta\ \pi_1$ (β>0). We can rewrite the proprietor's profit as π_1 (I, s) = R(I, s) - π_2(I, s) - I. Substituting $\pi_2 = \beta$ π_1 and recognizing the that the total payoff to the partners is just equal to R(I, s) - I, the standard maximizing result defines the efficient level of investment as that I* such that it solves E[R(I*, s)] = 1, where E again denotes expectations taken across states of nature. With investment made prior to state realization and neither partner acting opportunistically, the partnership equates expected marginal returns to investment and the marginal cost of investment, and invests optimally. Note that in the absence of opportunism an existing proprietor would be indifferent between hiring an employee or taking a partner so long as the investment makes the incoming worker equally productive under either contractual relationship. Similarly, the incoming individual would be indifferent between an employment offer and a partnership bid in that the anticipated (nonhold-up)

wage w* is just equal to the expected profits $\pi_2(I, s)$ accruing to an incoming partner, assuming risk neutrality. The choice between the two, then, would be determined by nonpecuniary arguments in the individuals' utility functions. (Potential nonpecuniary preferences are discussed below.)

Now suppose that the incumbent proprietor makes his tangible or intangible capital investment, which will increase the productivity of the recruited partner, prior to recruiting the new partner and fixing his or her profit share. When investment precedes partnership formation, the incoming partner may be able to bargain for a higher share as a result of the incumbent proprietor's bygone investment. To determine the incoming partner's potential gain from opportunism, we again need to specify each player's default payoff while bargaining proceeds. In the absence of alternative recruiters, these are the payoffs realized while the partnership is not formed. If the default payoffs depend on state realizations, we can define them as $\pi_1^0(I, s)$ and $\pi_2^0(I, s)$. The gains from entering into a partnership agreement after the investment is made and the state is realized is $R(I, s) - \pi_1^0(I, s) - \pi_2^0(I, s)$ because the investment is a bygone and irrelevant to the decision. If bargaining allows the recruited partner to capture γ $(0 \leq \gamma \leq 1)$ of the gains resulting from the proprietor's previous investment, the recruited partner's share will be $\pi_2^*(I, s) = \pi_2^0(I, s) + \gamma[R(I, s) - \pi_1^0(I, s) - \pi_2^0(I, s)]$.

Because $\pi_2^0(I, s)$ increases in the bygone investment, the bargained-for share increases with the amount of the investment. Thus, the incoming partner captures some of the incumbent proprietor's return on investment, which is again consistent with Williamson's ex ante opportunism or hold-up.[5] If the incumbent proprietor foresees the possibility that recruits will act

[5] Although the model is set in the context of bargaining prior to partnership formation, it can be used to analyze post-contractual opportunism as well. Think instead of partner 2 threatening to dissolve the partnership unless partner 1 agrees to give partner 2 a greater share of the firm's profits. If partnership dissolution is costly, partners are given opportunities to hold-up other partners. So long as the partner using the hold-up threat asks for an amount smaller than

opportunistically, the profit maximizing level of investment is defined by the solution to $E[R'(\tilde{I}, s)] = 1/(1 - \gamma)$. The potential for hold-up acts to diminish investment by increasing the cost of investment by a factor of $1/(1 - \gamma)$. Because the marginal return on investment is diminishing, it must be true that $\tilde{I} < I^*$ for any $\gamma > 0$. Thus, if the recruited partner has any bargaining power at all, the incumbent proprietor anticipates that he or she will exploit it and preemptively underinvests.

The motivating question is whether an existing proprietor is better served by hiring an employee or taking a partner who shares in the firm's profits. In the absence of opportunistic behavior, the firm and the worker are both indifferent between an employment offer and a partnership bid. With opportunism, the answer revolves on whether employee hold-up exceeds partner hold-up. Recall that under employee hold-up, the employer's investment decision is defined by $E[R'(\hat{I}, s)] = 1/(1-\alpha)$; under recruited partner hold-up it is defined by $E[R'(\tilde{I}, s)] = 1/(1 - \gamma)$. Determining whether an employee or a partner is less costly turns on the relative size of α and γ. Assuming risk neutrality, diminishing returns on investment, and that the prior subjective probabilities assigned to alternative states of nature are independent of the employ-or-partner decision, the costs of forming partnerships are lower than hiring employees whenever $\alpha > \gamma$; that is, partnerships reduce the degree of underinvestment when new employees have greater propensity for hold-up than incoming partners.

Discussion

Lamoreaux (2000b) argues that partnerships offer greater protection against hold-up than ordinary employment contracts because if one partner extorts a second, the second can counter with an equally credible threat to dissolve the firm. If dissolution is costly, the threatened partner can

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the costs imposed on the other partner of dissolving the firm, his threat is credible.

force the extortionist to bear a proportionate share of the costs. Similarly, if failing to form a partnership is costly in that the default payoff to the recruited partner ($\pi_2^0(I, s)$) is sufficiently small, the incumbent proprietor's threat to walk away may effectively mitigate the hold-up problem. This is more likely, as well, if it was relatively more costly to walk away from a partnership opportunity than from an employment offer.

The greater cost of failed partnership formation is consistent with Lamoreaux's (1997, p. 290) finding that the popularity of partnership as an organizational form in early Boston was seemingly out of proportion to its economic advantages. She finds no convincing evidence that partners brought complementary human or physical capital to their business relationships, which suggests that partnerships were unlikely to have captured significant organizational economies. Rather, she attributes the popularity of partnerships to "young men's abhorrence of relations of dependence." Because young men in early America were more comfortable with a self-image of independent producer rather than dependent wage earner, they preferred entering firms as partners, even as junior partners, rather than employees. Thus, existing proprietors looking to expand their businesses took on partners instead of employees. To the extent that this preference was powerful enough to shape economic institutions, it is consistent with a belief that hold-up was a less serious threat to proprietorships taking in partners than hiring employees. The expected nonpecuniary costs of jeopardizing a partnership offer were high enough to limit hold-up.

A textbook explanation of how young men's preferences toward employment relations affected economic institutions can be made by analogy. When buying neckties, consumers focus on the price of the necktie as well as various nonprice attributes such as pattern and color. A user with a preference for bright colors and flashy patterns will pay a higher price for an eye-catching necktie

than for a more conservative one, all else equal. Necktie manufacturers thus face incentives to match pattern options as closely to consumer preferences as possible. This does not imply that manufacturers will produce an infinite number of patterns, nor that every consumer will get the exact pattern that he most prefers. Increasing the range of options is costly, and the addition of some patterns is uneconomic in that the marginal revenue from introducing the pattern is not as great as the marginal costs of offering it. Although some patterns are not offered, the resulting distribution is efficient in the sense that the options will include all patterns for which the marginal benefit to consumers is equal to or greater than the marginal cost to the producer of providing them.

An analogous mechanism operated in early American labor markets. In equilibrium labor markets provided an efficient menu of employment relations from which individuals could choose. Wage employment existed at one extreme, equalitarian profit-sharing partnerships at the other, and convex combinations in between. Indeed, Lamoreaux (1995) maintains that early Americans developed a number of firm-like contractual relations, some closely resembling employer-employee relations, some resembling, but not quite, partnerships. In the 1830s, courts were asked to interpret these complex relationships, and the law ultimately settled on an interpretation that partnerships were contractual relationships involving power sharing. Alternative contractual relationships were something other than partnerships. If the mid-nineteenth-century labor market was as efficient in producing alternative contractual firm-like arrangements as twenty-first-century necktie markets, an optimal number of contractual relations emerged such that the marginal cost of constructing a new contractual nexus exceeded the marginal benefit to workers of forming the nexus. Not every young man's preferences were exactly met, but a close match was possible for all.

The question remains about which individuals insisted on entry into the firm as a partner and

which accepted wage employment. The answer must recognize that firms are contractual nexuses that reduce transaction costs (Coase 1937), limit opportunism (Williamson 1985), monitor work effort (Alchian and Demsetz 1972), and provide direction (Demsetz 1993). Being a particular type of contractual nexus, partnership was used selectively because it reduced particular classes of transaction costs, mitigated certain types of opportunism, facilitated monitoring, or promoted certain types of direction-taking and giving. Gilson and Mnookin (1985) argue that partnerships are particularly useful in monitoring equals, people of equal productivities who share power equally.

To simplify, compensation methods are chosen to cope with various organizational problems and firms can typically choose between two compensation schemes: pay-for-performance or equal-sharing rules.[6] Partnerships utilize equal-sharing rules because sharing rules create ownership rights that elicit desired types and levels of effort. Typically, individuals involved in complex, team-oriented tasks where attributing output to specific individuals is difficult are more likely to adopt sharing rules rather than pay for performance (Baker, Jensen and Murphy 1988; Landers et al. 1996). Differences in pay that cannot be attributed to performance are likely to generate internal dissension. A sharing rule reduces the bickering and time consumed in resolving disputes over the distribution of the gains from cooperation. In certain instances, such as when a firm's existing reputation benefits all members, the gains from cooperation may be indivisible. In other instances, sharing rules act to insure group members from income shocks (Lang and Gordon 1995).

The model presented above shows that if all labor market participants are identical, the

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[6] Firms, of course, can and do construct compensation schemes that make use of convex combinations of these two types. For our purposes we will focus on the polar cases and recognize that combinations tend to be more like one case than the other and will, therefore, approach the incentive effects of one or the other.

distribution of pay is the same under pay-for-performance or profit-sharing, so long as profit shares reflect relative productivity. But if some members of the firm are more productive than others, an equal sharing rule will result in the relatively more productive members subsidizing relatively less productive members. Thus, partners utilizing equal-sharing rules will tend to seek out partners of similar productivities.

If work propensities are easily observed or credibly communicated, the best any worker would do would be to form a partnership with others of similar talents and propensities (Landers et al. 1996, pp. 222-23). An individual who works 8 hours and produces $50 in surplus per hour clearly wants to form a partnership with someone of equal productivity who prefers to work 10 hours, but the 10-hour worker will not want to partner with the worker with an 8-hour preference. If the two were to form a partnership with an equal-sharing rule, the 10 hour partner would produce $500 in surplus but receive only $450. So long as propensities and talents are observable, workers with 8-hour preferences form partnerships with other 8-hour workers and workers with 10-hour preferences affiliate with other 10-hour workers.

If worker propensities and talents are not readily observable, however, the 10-hour worker will need to take steps to keep 8-hour workers out. Because talk is cheap, one effective screening mechanism will be to demand long hours, perhaps as many as 11 or 12 hours per day. Such rules are likely to screen out 8-hour workers because 8-hour workers are likely to find 11-hour work days more objectionable than workers with 10-hour preferences. The advantage of this screening mechanism is that it is likely to generate beneficial job matches. Just as consumers buy neckties with patterns closest to their preferences, workers seek matches that most closely align with their preferences. Those workers willing to conform to a firm's work rules and adopt behaviors that

closely resemble those of existing members will be admitted as partners. Those unwilling or unable to exert effort, contribute capital or adopt behaviors consistent with other members of the groups are screened out. This result implies that partners will be outwardly similar in many regards. Their productivities will be more similar than not; their capital contributions will be more similar than not; their unobserved talents and taste for risk-taking will be more similar than not. This stands in stark contrast to the traditional notion of early American partnerships, one in which older mentors took inexperienced young proteges under their wings and taught them the business.

Empirical Evidence on Early American Partnerships

Ideally, an empirical study of firm hiring and partnership formation would directly measure α and γ to determine the extent to which hold-up affected the incentives to expand or form firms. Unfortunately, neither α nor γ is observable to the historian. We are forced to look for proxy measures and other types of evidence. As suggested above, evidence of similarities in outward appearances, capital contributions and so forth may be suggestive of relatively equal productivites and a reduced likelihood of ex ante hold-up.

Partner Age Differentials

Given the traditional characterization of the partnership as a mentor-protégé relationship, it is reasonable to consider first the age differential between partners. Blumin's (1989) and Lamoreaux's (1995, 1997) views suggest a substantial gap in ages between partners in the typical partnership. The job-matching view of Landers et al. (1996), on the other hand, suggests small age gaps, particularly if productivity is positively related to experience and experience increases with

age. If the widely observed inverted U-shaped life-cycle pattern of earnings and productivity held for partners in early America, the job-matching hypothesis holds that partnerships were more likely to consist of members of approximately similar ages.

Data on partners and their ages were collected from two sources. First, lists of partnerships existing in 1860 in seven southern cities were collected from published city directories.[7] Directories were the antebellum equivalent of modern white and yellow page directories, providing alphabetical lists of residents with addresses and, often, a business directory that grouped businesses alphabetically by occupation. Directories are valuable resources, which researchers have possibly underutilized (Goldin 1986), but they do have limitations.

One such limitation is that the business directories appended to the end of most late antebellum directories did not necessarily provide a unique identification for a firm's partners. If, for example, the business directory listed a partner as John Smith, there is no way to distinguish this John Smith from other John Smith's residing in the city at that time. A second limitation is that the directories do not tell us if one or more partners resided in another city, which was not uncommon among mercantile firms that traded interregionally or internationally. If a Baltimore shipper, for example, traded extensively with grain wholesalers in Pittsburgh, the Baltimore firm may have had a partner residing in Pittsburgh, especially during the active trading season. A third limitation is that the directories do not describe the personal characteristics (age, education, training, income, or wealth) of the partners themselves. To a limited extent, the last shortcoming can be corrected.

Personal information on partners identified in the business directories was gathered by

[7] The seven cities are: Charleston, South Carolina; Frederick, Maryland; Louisville, Kentucky; Mobile, Alabama; Nashville, Tennessee; Petersburg and Richmond, Virginia.

matching these individuals to the 1860 manuscript population census. The manuscript censuses report ages, occupations, literacy, nativity, as well as estimates of real and personal estates. The latter two are reported inconsistently and require particular care in use and interpretation (Conley and Galenson 1994, 1998) and are not used in the following analysis. Approximately 40 percent of all partners were matched to the census. Two or more members of a partnership were simultaneously matched for about one-quarter of all partnerships listed in the directories, which resulted in 627 matched pairs.

Despite the relatively large proportion of matches, the results must be interpreted with care. Only those partners residing in the partnership's home city were potential matches. If partners operating away from the home office differed from partners working in the home office, the data will generate a biased view of partnership characteristics. On a more fundamental level, if matched partners differed from unmatched partners, a second (unknown) bias will be introduced. It is possible that census marshals were more likely to overlook young, single men without families or permanent residence in the city. To the extent that this occurred, and to the extent that early American partnerships conformed to the traditional characterization of a mentor-protégé relationship, the results reported below understate the mentoring efforts of established business owners.

Figure 1 presents the distribution of matched partners' age differentials at five-year intervals (i.e., 0-5 years, 6-10 years, and so forth). Histograms are provided for family partnerships (same surname), nonfamily partnerships (different surname), and all partnerships. The most common partnership was one that matched men whose ages differed by 5 years or less. A majority (60.8%) of all partners were separated by 10 years or less, a pattern that holds for both family and nonfamily partnerships. Even family partnerships appear to be groups of brothers and cousins of similar ages

rather than father-son, uncle-nephew or grandfather-grandson groupings. There is a modest increase in the number of family partnerships at the 21 to 25 year interval consistent with father-son partnerships, but even this group is much smaller than the likely brother/cousin partnerships in the 0 to 15 year interval.

Although the mentor-protégé partnership was not unheard of, they were less common than pairings of men of nearly equal ages. The job-matching hypothesis, which holds that individuals of approximately similar productivity are more likely to form partnerships than workers of differing productivity, is consistent with the age data. Men between their early thirties and late forties were more likely to partner with men their own age than men in their fifties and sixties were to partner with anyone, especially very young men. Indeed, Figure 2 presents a histogram of all matched partners by age and shows that partnerships were middle-aged (by contemporary standards) organizations. Few partnership offers were tendered to men 25 years of age and under. After age 50, the number of men involved in partnerships fell sharply. Thus 50-year old, established merchants did not typically offer partnerships to a 24 year old clerks, nor did 50 year old craftsmen offer partnerships to 21 year old apprentices. In the crafts, men were expected to serve a period as journeymen after their apprenticeship, which would have delayed partnership formation for several years after their twenty-first birthday. The same was probably true for merchant's clerks. Rather than assisting young men embarking in a career, older men with accumulations of human, physical and financial capital seemingly either retired or dissolved their partnerships and pursued their callings as proprietors. It seems that as men aged, the costs of partnership eventually outweighed the benefits.

How did the cost-benefit relationship change as men aged? It might have been that

simultaneously running a business and monitoring a partner's actions grew increasingly tiresome as a man grew older. At some point, it simply became preferable or cost-effective to work on one's own. Sacrificing the division of labor may have reduced productivity, but relief from the daily grind of monitoring a partner's actions increased utility more than decreases in income reduced it. For young men, one cost of partnership formation -- unforeseen incapacitation or death of an older partner -- may have outweighed the benefits of mentoring. With the potentially high costs of dissolving and liquidating partnerships, young men may have avoided older partners as much as older men avoided young partners.

A second likely influence was the life-cycle pattern of wealth accumulation. Wealth typically increased with age, peaked in a man's late-fifties or early sixties, then declined as assets were depleted in retirement. Partnerships, then, may have been as much about acquiring adequate financial resources to do business as much as capturing gains from human capital complementarities. Young men rarely had the financial capabilities to make credible commitments with older, wealthier men or to take the responsibility to resolve a partnership thrown into premature liquidation due to an older partner's demise.

Partnerships and Capital Contributions

Shleifer and Vishny (1997) and Vives (2000) argue that the underlying theme of the corporate governance literature is how suppliers of firm finance assure themselves of a return on their investment.[8] Suitable governance mechanisms are required to assure both an inflow of funds and

[8] Recent contributions by Allen and Gale (2000), Hellwig (2000) and Rajan and Zingales (2000) challenge researchers to broaden their approach, but this premise remains the cornerstone of the existing literature.

the repatriation of profits to the providers of finance. In this regard, partnerships are little different than corporations. Investment funds flow in to the extent that suppliers of finance assure themselves of repayment. At the same time, appropriate governance structures mitigate the potential for opportunistic behavior, especially hold-up. Because ex ante hold-up may emerge when one party has committed to a prior sunk investment and interim hold-up is possible if the cost of firm dissolution is greater for one partner than another, existing firms would be relatively unwilling to take in new partners unless the potential benefits from an injection of financial or human capital outweigh the potential costs. Similarly, new partnerships would reduce the potential for hold-up by linking men of equal means and skills. The previous section suggests that the majority of partners were men of similar age and experience. This section provides some evidence that partners were drawn from a pool of men of similar means.

In the 1850s, businessmen regularly placed advertisements in newspapers in search of partners. These ads can be divided into two categories: WANTED ads placed by firms (proprietorships or partnerships) wanting to add a new partner and individuals wanting to form a new partnership; and SEEKING ads placed by individuals seeking admission to an existing firm. Advertisements A through C are representative of the former; advertisement D is typical of the latter.

A. PARTNER WANTED IN THE EXCHANGE BUSINESS -- Wanted by a young man of experience and thoroughly acquainted with the Stock and Exchange business in all its branches, a PARTNER, either active or silent, with a cash capital of $12,000 to $15,000. The advertiser can command the balance of the capital necessary for the prosecution of a successful and profitable business -- a rare opportunity now offers to any one desirous of engaging in a safe and respectable business. (*American and Commercial Daily Advertiser*, 6 May 1856)

B. WANTED -- A PARTNER, with Five Thousand Dollars, to join a party with the same amount in the commencement of a SHIPPING AND COMMISSION or other business.

(*American and Commercial Daily Advertiser*, 27 May 1856)

C. WANTED -- A PARTNER of good steady habits and character, with a capital of from 5 to 10,000 dollars to engage in a safe and profitable business with one of equal means. (*American and Commercial Daily Advertiser* 22 July 1856)

D. PARTNER WANTED -- The advertiser wishes to engage in the Produce Commission Business on the wharf, and to connect himself with a House already established, or a gentleman wishing to engage in the business. He is acquainted with the business, has sufficient means and trade at his command to justify his application. (*American and Commercial Daily Advertiser*, 29 June 1856)

There are at least three common threads running through these, and many other, ads. First, all advertisers claim to have substantial (and substantive) prior business experience. Second, most of the advertisers express a willingness to invest substantial (sometimes unspecified) amounts of capital. And, third, most advertisers expect potential partners to contribute similar amounts of capital.

That advertisers had prior experience and that they had substantial accumulations of capital is consistent with the age distribution of partners discussed previously. The type or extent of the advertisers' experiences are not detailed and, of course, many of these advertisers' experiences may have been little more than a clerkship, but that seems unlikely. Most journeymen artisans labored for years before they could open their own shop, either as a proprietor or partner (Rorabaugh 1986). Merchants, too, graduated from clerkships, but often did so after engaging in a few limited mercantile speculations on their own account while they were still employed as a clerk at an existing house. Successful speculations sharpened their skills, offered demonstrable proof of ability, and allowed for the accumulation of capital.

From the information given in the typical ad it is difficult to determine and evaluate the nature and quality of prior experience, but men who responded to the ads surely screened potential partners using several criteria. Viewed in conjunction with a willingness to contribute substantial equity capital, claims of prior experience become more credible. Given the typical inverted U-shaped wealth profile and absent a benefactor, men would have some experience and likely be beyond their early twenties before they could offer $5,000 to $15,000 in equity capital to an existing or start-up firm.

The most striking feature of the advertisements, however, is the regularity with which advertisers sought businessmen of means and, especially, of similar means or, at least, with a willingness to invest a like amount in a partnership. Equal capital contributions are consistent with the legal interpretation of a partnership as a business organization with shared authority and pooled profits. Moreover, it is consistent with insurance against hold-up. By contributing similar amounts of equity, particularly at a firm's inception, each partner was effectively posting a good-behavior bond.

Asset specificity and imperfect contracts makes parties vulnerable to hold-up, but it is often inefficient for firms to invest only in general-purpose assets to avoid hold-up. Despite potential efficiency losses, antebellum American partnerships were most common for firms that relied on general-purpose assets (Bodenhorn 2001). Wholesale distribution, which required the fewest specialized assets, had the greatest proportion of partnerships (about 65 percent of all firms). The professions (law and medicine), which required substantial firm-specific reputation investments, had the lowest proportion (about 10 percent). Because the returns to a firm's reputation were indivisible, the theory of job-matching implies that professionals with valuable reputations were unwilling to

partner with professionals of lesser repute. More generally, if one individual in a partnership acquired relatively more specialized, firm-specific skills and knowledge, it exposed him to hold-up by other members of the team. When people recognized this possibility, they were reluctant to form teams.

In many mercantile and manufacturing ventures, the failure to form partnerships and invest in productive, firm-specific assets may have been Pareto-inefficient and potential partners needed a credible contractual mechanism that reduced the rewards to opportunistic behavior. Lamoreaux (2000b) argues that partnerships offered greater protections against hold-up than typical employment contracts. If one partner attempted to hold up a second, the second could threaten to dissolve the firm and force the extortionist to bear a proportionate share of the costs. The dissolution threat was credible, however, only when the partners had similar amounts at risk. If the partnership was based on the human capital contribution of one partner, and the physical capital of another, ownership rights allocated primarily by contributions of physical capital did not protect each partner's investments equally. The partner contributing relatively little human and relatively more physical capital may have found hold-up profitable, especially if the human capital was firm-specific.

A simple solution was for each partner to contribute capital as a good-behavior bond. It was not necessary, of course, for each partner to contribute exactly equal amounts. A credible bond would be one that equated the marginal disutility of income (or wealth) lost due to opportunism-induced premature dissolution across partners. Thus, the more alike the partners' preferences, income and wealth the more equal their contributions.

Information on the amounts of capital aspiring partners stood ready to contribute was collected from 253 advertisements appearing in the Baltimore *American and Daily Commercial*

Advertiser between January 1854 and December 1856. The results are reported in Figure 3. A sizable majority (193 of 253) offered to inject up to $10,000 into a new or existing firm. About one-half offered up to $5,000. These were not insignificant amounts. Five thousand dollars in 1855 was about $121,000 in constant 2000 dollars, and few young, inexperienced men would have amassed such amounts. Antebellum businessmen recognized the hold-up problem and offered sizable (and presumably credible) bonds against opportunism, which made the partnership form economic in certain callings.

A combination of vulnerabilities to hold-up and the relatively large sums invested in partnerships is consistent with Bodenhorn's (2001) evidence on the incidence of partnerships across occupations. Partnerships were far more common in the wholesale trade (65 percent of all firms) than in artisan's shops (about 30 percent), and the professions (about 10 percent). Financial capital was a credible bonding mechanism in wholesaling partnerships because the capital was invested in general-purpose assets, mostly large shipments of staple products, that could be sold quickly without much loss of value if one partner began behaving opportunistically. While reputations for fair dealing were certainly an important part of any successful wholesaler's intangible capital, the salability of the goods they dealt in reduced the importance of reputational capital. Professionals, on the other hand, often had little more than reputational capital to exploit and we have seen that contributions of financial capital into a partnership may not protect all parties if human capital contributions are unequal. Besides, law and medicine were not capital intensive callings in early America, so promises of capital contributions may not have been credible bonding devices. It was too easy for a low-quality producer to tarnish the reputation of a high-quality producer. Thus, without a credible, nonfinancial bonding mechanism, like kinship ties, professionals were unlikely

to establish partnerships.

Concluding Comments

When complete state-contingent contracts are uneconomic, relational contracts emerge. Relational contracts structure relationships in general rather than specific terms, establish general rules for decision making, provide for the internal resolution of grievances, and allocate the costs and benefits of organizing and operating the firm. Corporate charters and partnership agreements are good examples of relational contracting in that both broadly specify the firm's mission and loosely allocate authority. But whereas corporate charters must allocate the costs and benefits of a one-way agency relationship (managers act as the agents of shareholders) partnership agreements must deal with the added complexity that the same individuals are both principals and agents simultaneously. This makes partners vulnerable to hold-up.

Given the extensive use of the partnership form in many callings, individuals obviously found various solutions and effectively mitigated hold-up. An important solution was the posting of a good-behavior bond through the commitment of sizable amounts of capital to the firm. Through similar capital injections, parties to the partnership agreement made credible commitments to not behave opportunistically toward other members of the firm. Moreover, capital contributions acted as a screening mechanism for experience and ability, in addition to its use as an implicit bond against ex ante and ex post opportunism. Thus, it is not surprising that few ads like the following were found:

PARTNER WANTED -- Two young men having a thorough knowledge of a mercantile

> business, and who can influence a large amount of trade, *but without capital*, are desirous of obtaining a PARTNER with a capital of ten to fifteen thousand dollars, to commence a business which is safe and very profitable. (*American and Commercial Daily Advertiser*, 11 February 1856, emphasis added).

These men simply could not offer a credible commitment to potential investors. Unlike most advertisements that appeared just once or a few times, this advertisement appeared recurrently throughout 1856 and even into 1857. Apparently, there were no takers to these mens' offer. Few prudent businessmen were willing to inject the modern equivalent of $365,000 into a partnership when the advertisers could offer few plausible promises of continued good behavior.

Appendix I: Sketch of the Solutions

Baseline Model with Hold-Up

From the text we have the bargained-for wage of:

(A1) $w^*(I, s) = w^0(s) + \alpha[R(I, s) - w^0(s) - \pi^0(I, s)]$

With this wage the firm's expected profits are now:

(A2) $\pi(I,s) + R(I,s) - w^*(I,s) - I$

Substituting (A1) into (A2) and differentiating with respect to I yields:

(A3) $\partial\pi / \partial I = (1-\alpha)[\partial R / \partial I] - 1$

Solving for a maximum and rearranging terms yields:

(A4) $\partial R(I',s) / \partial I = 1/ (1-\alpha)$

Partnership Model with Hold-Up

From the text we have the bargained-for profit share of:

(A5) $\pi_2^*(I, s) = \pi_2^0(I, s) + \gamma[R(I, s) - \pi_1^0(I, s) - \pi_2^0(I, s)]$

With this definition of the incoming partner's share, the incumbent proprietor's profits are defined by:

(A6) $\pi_1(I,s) = R(I,s) - \pi_2(I,s) - I$

Substituting (A5) into (A6) and recalling that $\pi_2 = \beta\, \pi_1$ and differentiating with respect to I yields:

(A7) $\partial\pi_1(I,s)/ \partial I = (1-\gamma)\ [\partial R / \partial I] - 1$

Solving for a maximum and rearranging terms yields:

(A8) $\partial R(\tilde{I},s) / \partial I = 1/ (1-\gamma)$

Data Appendix

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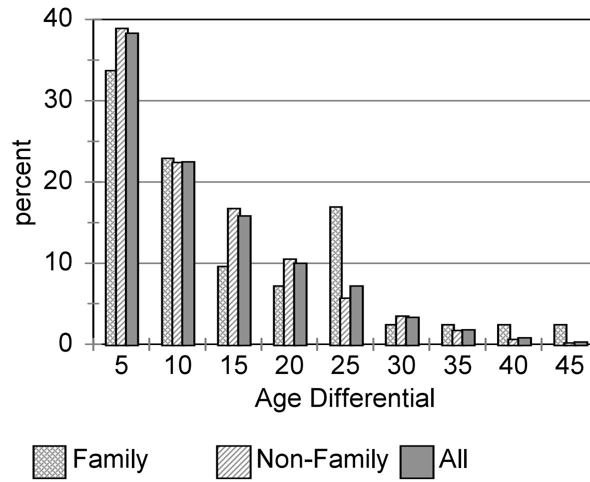
Figure 1
Partner Age Differentials
Family and Non-Family Firms
(percent of observations)



Sources: See data appendix.

Figure 2
Partner's Ages
at Five Year Intervals
Age 20 - 75
(percent of partners)

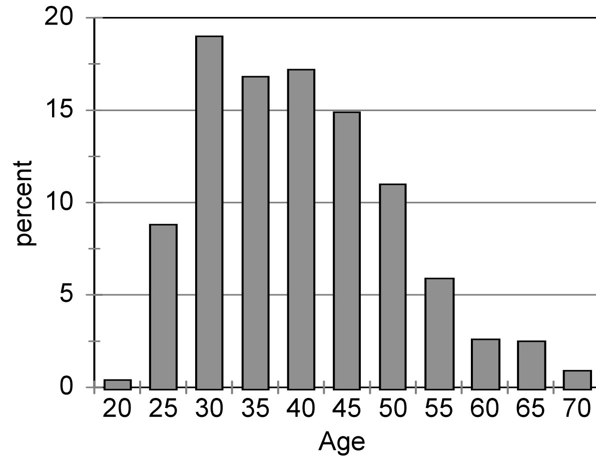


Figure 3
Desired Capital Contribution of Incoming Partner
Firms Wanting Partners and Individuals Seeking to Join Firms
(percent)