

Extensions and Empirical Applications

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The (new) property rights approach

- ▶ Major contributions: Grossman and Hart (1986), Hart and Moore (1990), Hart (1995) (hence “GHM”)
- ▶ Framework
 - Ownership is an important economic phenomenon to be explained.
 - Contracts are incomplete.
 - Actions and payments must be determined ex post, either unilaterally or through further negotiation; contracting parties are thus concerned, ex ante, with the threat of opportunistic behavior and the results of possible renegotiation.
- ▶ Key innovation
 - In a world of incomplete contracts, “ownership” \equiv residual rights of control, i.e., the right to choose some decision variable ex post.
 - Ownership patterns—and many aspects of the governance of long-run relationships—can thus be viewed as attempts to induce efficient levels of nonverifiable investment in relationship-specific assets.
 - Given this definition of ownership, who should “own” various assets ex ante? How does the distribution of ex post bargaining power affect ex ante investment incentives?

The (new) property rights approach (cont.)

▶ Simplified version of Grossman and Hart (1986)

■ Setup

- ▶ Two parties, $i \in \{1, 2\}$, and two periods
- ▶ Period 1: each party chooses a level of relationship-specific investment a_i .
- ▶ Period 2: each party chooses output q_i .
- ▶ Payoffs (net benefits) to each party: $B_i(a_i, q_i, q_j)$. (I.e., each party needs the other – my benefit depends on your second-period action.)
- ▶ Ownership \equiv right to choose q_i in period 2 (e.g., if party 1 buys out party 2, then party 1 gets to choose a_1 , q_1 , and q_2).

■ Assumptions about contracting

- ▶ Before period 1, parties can negotiate over the ownership of the assets.
- ▶ Ex-ante payments for ownership rights can't be contingent upon a_i , q_i , or B_i
- ▶ Contracts (in period 2) can't be contingent on a_i (standard moral-hazard framework – relationship-specific investments can't be verified ex post)

The (new) property rights approach (cont.)

▶ Simplified version of Grossman and Hart (1986) (cont.)

■ Analysis

- ▶ If both parties retain ownership of their own assets, then the a 's are chosen to split the net gains from production (Nash bargaining solution). Ex post, however, each party can threaten to holdup the other, and thus both will underinvest in a_j . Integration solves the holdup problem.
- ▶ However, if party 1 sells his assets to party 2, then party 1 knows that q_1 and q_2 will be chosen to maximize party 2's benefits. This affects a_1 – party 1 will underinvest in a_1 . (Same if party 2 sells his assets to party 1.) These are the potential costs of integration.
- ▶ Basic insight (p. 708): Party 1 should own both his and party 2's assets if party 1's ex ante relationship-specific investment is more important to the relationship than party 2's (so that party 2's underinvestment under party 1's control is relatively unimportant), and vice versa. Non-integration is preferred if both a_1 and a_2 are equally important.

The (new) property rights approach (cont.)

Williamson and Klein et al. made the important observation that firms matter when parties must make specific investments and, because of the impossibility of writing detailed long-term contracts, the quasi rents from these investments cannot be divided up appropriately in advance. Integration is seen as a way of reducing the opportunistic behavior and holdup problems that can arise in such circumstances. Grossman and Hart argued that a change in ownership brings costs as well as benefits. Transferring ownership of an asset from party 2 to party 1 increases 1's freedom of action to use the asset as he or she sees fit and therefore increases 1's share of ex post surplus and ex ante incentive to invest in the relationship; but 2's share of ex post surplus and incentive to invest falls. Hence concentrating ownership in 1's hands will be good to the extent that 1's investment decision is important relative to 2's but will be bad if the opposite is the case. In this way, the costs and benefits of integration can be understood as two sides of the same coin (Hart and Moore, 1990, p. 1120).

The (new) property rights approach (cont.)

► Criticism

- Contractual incompleteness is assumed, rather than explained (Maskin and Tirole, 1997).
- GHM provide a theory of which individuals should own which assets, not which firms should own which assets (the “firms” are owner-operated small proprietorships).
- If some variables are assumed to be nonverifiable, why are ownership rights assumed to be enforceable in court? (Foss and Foss, 2001).
- Ex post bargaining assumed to be costless (Williamson, 2000, p. 605: “GHM vaporize ex post maladaptation by their assumptions of common knowledge and costless ex post bargaining”).
- It seems odd that the direction of integration matters so much (Williamson, 2000).
- Still, a “pathbreaking contribution” (Williamson, 2000, p. 606).

Recap: basic theories of the firm

▶ Nexus-of-contracts approaches

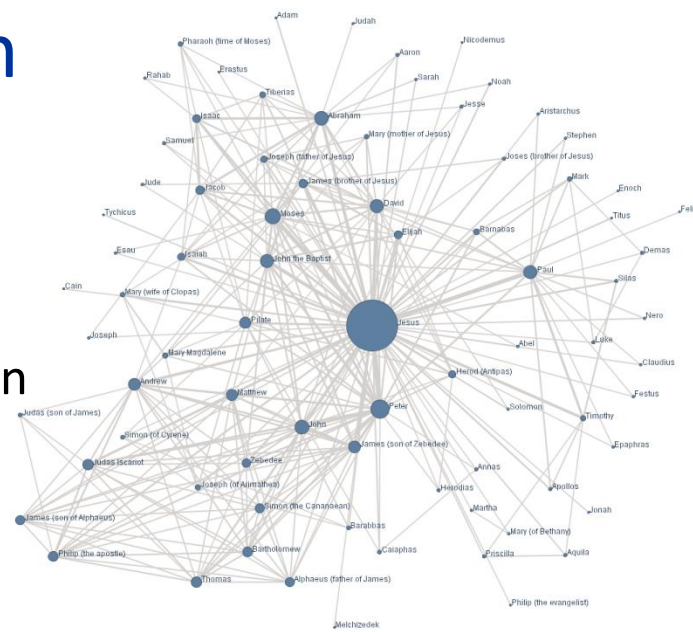
- Boundary questions unimportant
- Focus on moral hazard and adverse selection problems under (complete) contracting

▶ TCE and GHM

- Focus on boundaries (ownership of assets)
- Ownership matters because contracts are incomplete
- Less attention to internal organization

▶ Resource-based theories

- Emphasis on factor returns, not firms per se
- Explains factor combinations, but not necessarily firms as legal entities



Leading up to. . . .

▶ Foss, Foss, Klein, and Klein (2007)

- Foundations

- ▶ Knightian judgment, Austrian capital theory

- Key explanations

- ▶ Existence

- Non-contractibility of entrepreneurial judgment

Knight (1921): “The only ‘risk’ which leads to a profit is a unique uncertainty resulting from an exercise of ultimate responsibility which in its very nature cannot be insured nor capitalized nor salaried. Profit arises out of the inherent, absolute unpredictability of things.”

- Firms as controlled experiments

- ▶ Boundaries: entrepreneurial experimentation with combinations of heterogeneous resources

- ▶ Internal organization: original and derived judgment

- Employees as “proxy entrepreneurs”

- Productive and destructive proxy-entrepreneurship

- Optimal delegation as the choice of efficient tradeoffs



Applications of the theory of the firm

▶ TCE and vertical contractual restrictions

- Vertical integration
 - ▶ Backwards into manufacturing
 - ▶ Forwards into marketing and distribution
- Vertical restrains (resale price maintenance, territorial restrictions)
- Price discrimination
- Labor-market contracting
- Finance

▶ Horizontal and conglomerate boundaries

- Horizontal integration: little TCE work in this area; some applications of GHM
- Williamson (1975, 1981) offers an internal-capital-markets explanation for conglomerate diversification, though not closely connected with TCE (more on this in a minute). . . .

Empirical research in the theory of the firm

- ▶ “[T]he evidence/theory ratio . . . is currently very low in this field” (Holmström and Tirole, 1989, p. 126).
- ▶ Until more empirical work is done, “the new institutional economics [particularly, TCE] and related approaches are acts of faith, or perhaps of piety” (Simon, 1991, p. 27).
- ▶ But, according to Joskow (1991, p. 81): “This empirical work is in much better shape than much of the empirical work in industrial organization generally.” Says Williamson (2001): “TCE is an empirical success story.”
- ▶ Brief historiography of empirical research in TCE (Shelanski and Klein, 1995; David and Han, 2004; Carter and Hodgson, 2006; Macher and Richman, 2006)
- ▶ Possible data source: CORI K-base

Brief summary of the evidence

▶ Boundaries

- Large literature in empirical TCE, mostly corroborative, but many outstanding issues and problems
- Moderate literature in empirical RBV, evidence mixed
- Virtually no papers testing GHM, or distinguishing among GHM, TCE, etc.

▶ Internal organization

- Many studies showing that incentive alignment improves performance
- Little work on other aspects of organizational form

Boundaries

▶ Make-or-buy decision

- First topic studied extensively within TCE
- Component procurement, marketing and distribution
- Many econometric papers, some case studies

▶ Contracts and contractual design

- Contracts versus VI: little evidence (cf. Fisher debate)
- Contractual design (duration, completeness, complexity, inclusion of specific provisions): solid evidence on individual attributes, less evidence on efficient clustering
- Some examples



Empirical TCE literature

- ▶ Basic model: probability of observing a particular governance structure is a function of attributes of the underlying transaction
- ▶ Key assumption: observed organizational forms tend to be “efficient” (more on that later)
- ▶ Data: mostly quantitative and qualitative case studies; few cross-industry studies
- ▶ Measurement problems
- ▶ Examples of “classic” studies

Make-or-buy: component procurement

► Masten, “The Organization of Production: Evidence from the Aerospace Industry” 1984)

- Sample: 1,887 aerospace components, rated as “made” or “bought”
- Independent variables: specialization, complexity (as rated by engineers)
- Probit model: $p(\text{make}) = f(\text{specialized, complex, } \bullet)$
- Results: both independent variables positive and statistically significant
- Similar results found in other industries, including autos, aluminum, forestry, and chemicals



Make-or-buy: forwards integration

- ▶ Anderson and Schmittlein, “Integration of the Sales Force: An Empirical Examination” (1984)
 - Dependent variable: employee sales force versus reliance on independent manufacturer’s representatives
 - Independent variables: human asset specificity, sales volume uncertainty, measurement uncertainty (all based on survey data)
 - Model: $p(\text{direct}) = f(k, u_S, u_M, \bullet)$
 - Results: K and u_M positive and statistically significant
 - Several other marketing studies find similar results.

Make-or-buy: cross-industry studies

- ▶ Several cross-sectional and panel studies
- ▶ Main problem: how to measure integration and asset specificity consistently across industries
 - Integration: value added / sales, input-output measures,
 - Asset specificity: R&D, capital intensity, distance

Contracts versus vertical integration

- ▶ Surprisingly, very little research
- ▶ Controversy over Fisher Body–GM, the canonical example
 - Klein, Crawford, and Alchian: VI solved holdup
 - Coase (2000): long-term contract adequate for mitigating holdup
 - ▶ Original contract gave GM 60% of Fisher, put GM people on Fisher's Board
 - ▶ Three Fisher brothers joined GM's Board
 - ▶ Fisher did build body plants next to GM facilities
 - ▶ GM acquired rest of Fisher to get Fisher brothers more involved in management.
 - See also Helper, MacDuffie and Sabel (1997), Casadesus-Masanell and Spulber (2000), and Freeland (2000)



Contractual form: duration

- ▶ Joskow, “Contract Duration and Transaction-Specific Investment: Empirical Evidence from the Coal Markets” (1987)
 - Sample: 277 contracts between coal mines and coal-burning electric plants
 - Dependent variable: contract duration
 - Key independent variable: mine-mouth
 - OLS regressions: $\text{Duration} = f(\text{mine-mouth}, \bullet)$
 - Results: mine-mouth positive and statistically significant

Contractual form: completeness and complexity

▶ Completeness

- Examples: Crocker and Masten (1991), Crocker and Reynolds (1993), Saussier (2000)
- Dependent variable: qualitative measure of the extent to which renegotiation procedures are specified
- Independent variables: asset specificity, uncertainty, etc.

▶ Characteristics of franchise contracts

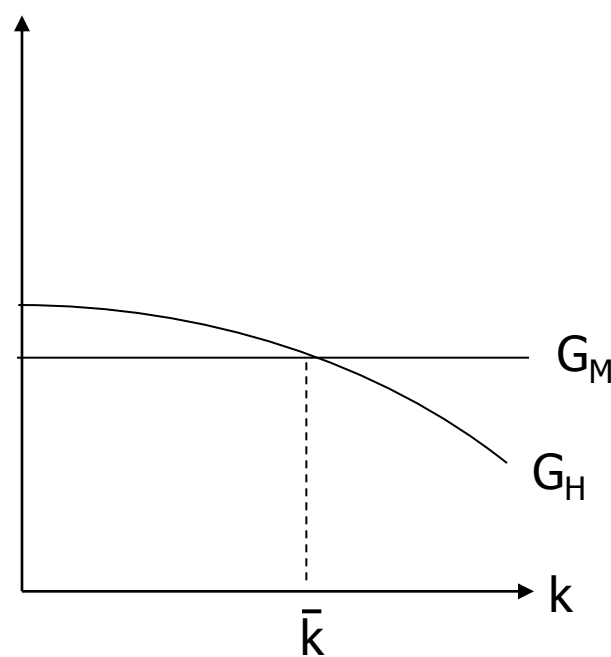
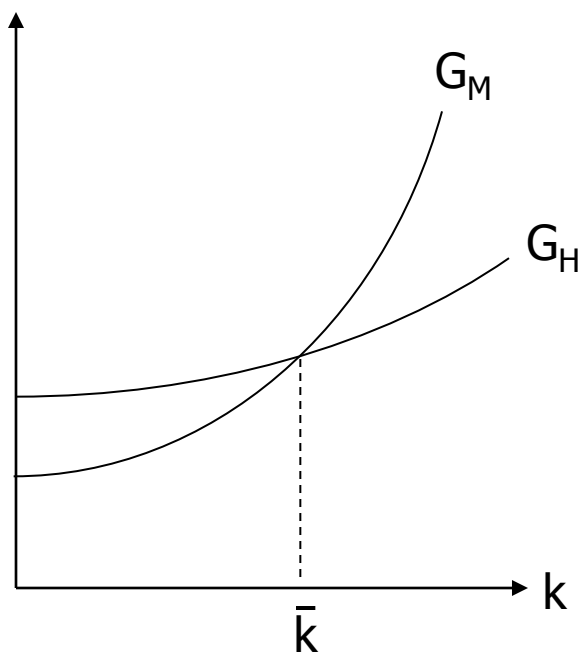
- Large literature
- Dependent variables: license fees, royalty rates, presence of particular requirements



Problems with empirical TCE literature

- ▶ Key variables (especially asset specificity) are hard to define and measure consistently
- ▶ Vertical integration often occurs in the absence of asset specificity.
- ▶ Few studies distinguish between TCE, RBV, GHM, etc.
- ▶ We know little about the costs of internal governance (see diagram).

Masten, Meehan, and Snyder (1991)



Problems with empirical TCE literature

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- ▶ We know little about the costs of internal governance (see diagram).
- ▶ Are all organizations efficient?
 - Two-stage models relating efficient alignment to survival — some encouraging results
 - Problems with survival as a performance measure
 - Learning to contract (Mayer and Argyres, 2004)

Problems with empirical TCE literature (cont.)

- ▶ David and Han (2004): in a “scientifically” selected sample of 308 regressions in 63 empirical TCE articles, 47% “supported” TCE, 10% “contradicted,” and 43% were not statistically significant.
 - Pseudo-scientific method
 - This *is* strong support!
- ▶ Carter and Hodgson (2006): not enough studies are “fully consistent.”
 - Again, compared to what?

Applying the theory of the firm

- ▶ Antitrust and regulation
- ▶ Business history
- ▶ Strategy
- ▶ Finance
 - Financial contracting (e.g., venture capital, bank loans, etc.)
 - Mergers and acquisitions
 - Corporate diversification and internal capital markets

Application I: Diversification

- ▶ Changes in firm boundaries over time
 - Conglomerate merger wave of the 1960s
 - Restructuring movement of the 1980s
 - Applications to agriculture
- ▶ Hot topic in empirical corporate finance
- ▶ Important for practitioners

Internal organization: the M-form corporation

▶ Definition

- Organization by product line or geographic area (diagrams)
- Profit-center divisions
- Separation of operational and strategic responsibility

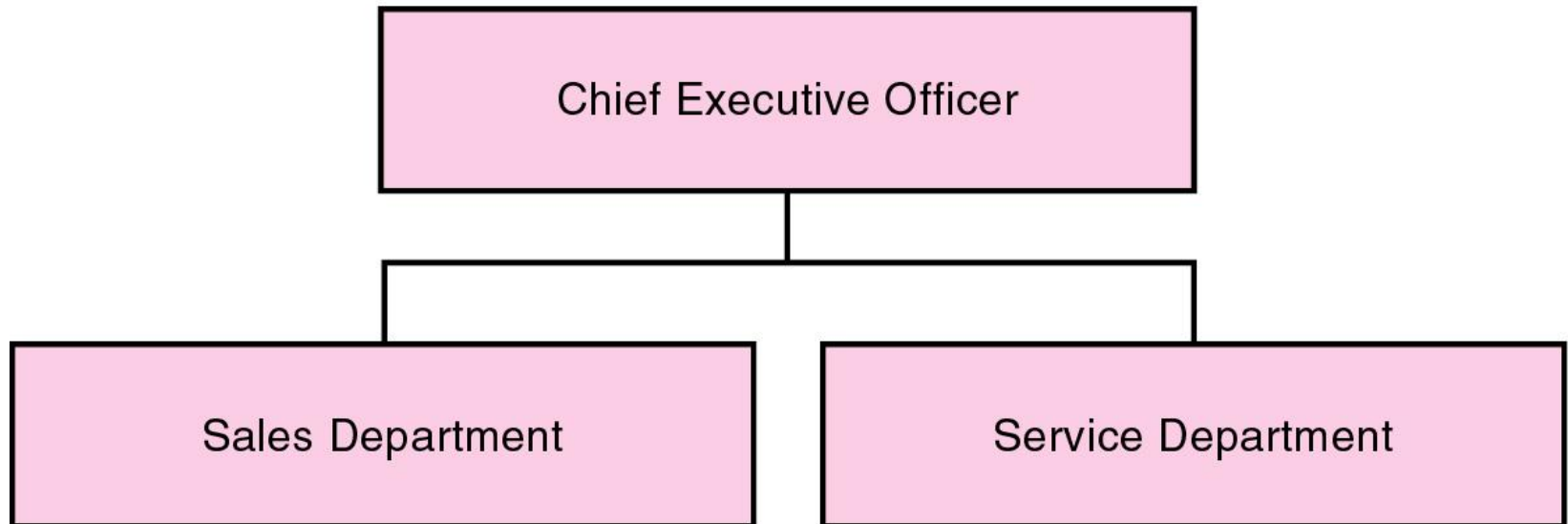
▶ Development by Chandler and Williamson

▶ Key innovation: separation of operational and strategic responsibilities

- Operational decisions are decentralized to those with necessary local knowledge.
- Compensation to divisional managers can be tied to divisional (standalone) performance.
- Corporate staff is free to focus on long-range strategy, organizational design.

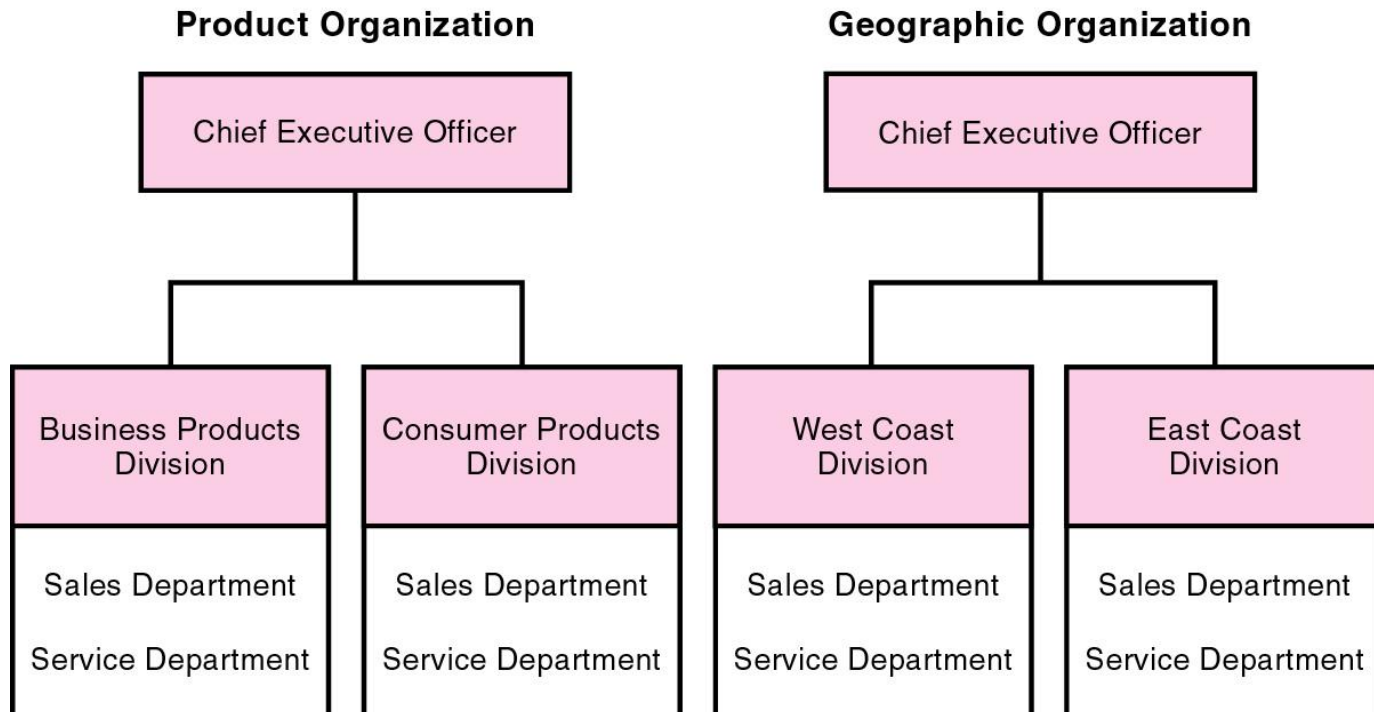
A unitary or “U-form” firm

FinWare, Inc.



Two M-form firms

FinWare, Inc.



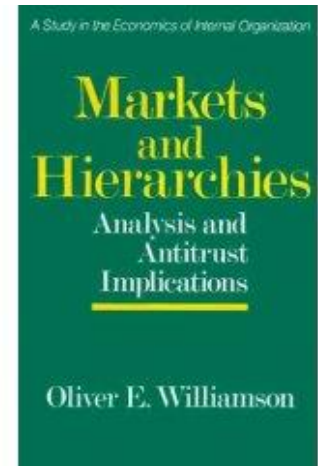
The M-form hypothesis

▶ Performance

“The organization and operation of the large enterprise along the lines of the M-form favors goal pursuit and least-cost behavior more nearly associated with the neoclassical profit maximization hypothesis than does the U-form organizational alternative” (Williamson, *Markets and Hierarchies*, p. 150).

▶ Classification

- Not all divisionalized firms are M-forms.



Organizational form and performance

- ▶ Categories (Williamson and Bhargava, 1972)
 - Multidivisional (M-form)
 - Holding company (H-form)
 - Centralized multidivisional (CM-form)
 - Transitional Multidivisional (M'-form)
- ▶ The M-form hypothesis restated
- ▶ Measuring performance

The M-form as an internal capital market

- ▶ Internal versus external capital markets
 - Literature: Alchian (1969), Williamson (1975), Gertner, Scharfstein, and Stein (1994), Stein (1997)
- ▶ Potential advantages of internal capital markets
 - Better information through internal audits
 - Divisional managers' willingness to reveal information
 - Selective intervention
 - Redeploying assets of poorly performing divisions
 - Reacting “rationally” to new information

The M-form as an internal capital market II

▶ Potential drawbacks

- Influence activities (Scharfstein and Stein, 2000; Wulf, 1998)
- Bargaining problems (Rajan, Servaes, and Zingales, 2000)
- Bureaucratic rigidity (Shin and Stulz, 1998)

▶ Bottom line: relative performance of internal capital markets

- Through time (e.g., 1960s versus 1980s)
- Across space (e.g., developed versus emerging markets)

▶ Applications

- Acquisitions
- Corporate refocusing (Bhide, 1990)
- Multinationals
- Developing economies

Testing the M-form hypothesis

- ▶ Approach: M, H, CM, M', X
- ▶ Examples
 - Armour and Teece (1978)
 - Cable and coauthors (late 1970s, early 1980s)
 - Harris (1983)
 - Klein, Kamerschen, and Meeler (2009)
- ▶ Data: subjective classifications, case studies
 - Center for the Study of Organizational Innovation
- ▶ Results: mixed

Recent empirical literature on organizational form and performance

▶ Examples

- Diversification discount literature in empirical corporate finance
- Literature on performance of internal capital markets
- Relatedness literature in strategic management

▶ Growth area in corporate finance and strategic management

Recent empirical literature on organizational form and performance II

► Approaches

- Assume organizational form is correlated with observable characteristics
 - Number of industry segments, distribution of activities across industries, “relatedness” (Lang and Stulz, 1994; Berger and Ofek, 1995; Campa and Kedia, 2003; Rumelt; Hitt; Hoskisson).
 - Ratio of administrative staff to total employees (Zhang, 2005)
 - Number of positions reporting directly to the CEO, average number of management levels between the CEO and division managers (Rajan and Wulf, 2003)
- Infer organizational form from past performance (e.g., acquisitions likely to establish internal capital markets) (Hubbard and Palia, 1999; Klein, 2001).
- Look directly at intra-firm resource allocation (Shin and Stulz, 1998; Rajan, Servaes, and Zingales, 2000).

Recent empirical literature on organizational form and performance III

- ▶ Main advantage: doable
- ▶ Main drawback: may not capture all the relevant differences among divisionalized firms (e.g., M-form)
- ▶ Assessment
 - Controversy over diversification and firm value
 - Endogeneity problems
 - ▶ Solutions: fixed effects, instrumental variables
 - ▶ Related issues in empirical TCE literature
 - Data and measurement problems

Application II: Mergers and acquisitions

- ▶ Mergers and the boundaries of the firm
 - Merger as a response to a valuation discrepancy
 - Merger as a monitoring institution
- ▶ Forms of merger and acquisitions
 - Mergers, takeovers, LBOs, MBOs
 - Hostile and friendly takeovers
 - Divestitures

Potential efficiency gains from merger

- ▶ Exploiting economies of scale and scope?
- ▶ Reducing transaction costs (alternative to long-term contractual relations)
- ▶ Replacing the management team
 - Internal and external governance mechanisms
 - The market for corporate control
 - Actual versus threatened takeovers
 - Bad bidders make good targets!

Empirical research on mergers

- ▶ Hundreds of studies
- ▶ Methods: event studies and long-term performance comparisons
- ▶ Summary (Jensen, 1989):

The most careful academic research strongly suggests that takeovers — along with leveraged restructurings prompted by the threat of takeover — have generated large gains for shareholders and for the economy as a whole. [These gains] represent gains to economic efficiency, not redistribution between various parties.

Application III: Executive compensation

- ▶ Jensen and Murphy (1990): pay-for-performance sensitivity too low
- ▶ Responses: data and measurement problems
- ▶ Complexity of compensation issues (e.g., multitasking)
- ▶ Ethical issues (e.g., Walsh versus Kaplan)

Summary

- ▶ Many applications of the economic theory of the firm
- ▶ ToF provides an integrated framework for examining the determinants, and performance effects, of firm boundaries and internal organization (levels and changes).
- ▶ Need for more applied and empirical research