Asymmetric Standardization in M&A Agreements

Matthew Jennejohn[*]

March 25, 2017

Abstract

Transactions in the market for corporate control are not fully standardized, but rather exhibit a significant amount of variation. This paper explores a possible structural explanation: that the complexity of M&A agreements makes them susceptible to multiple sources of path dependency, which introduce tensions that unsettle uniform standardization. Using natural language processing techniques and standard regression analysis, the article presents preliminary evidence indicating that the level of standardization of various M&A agreement provisions correlates differently with multiple sources of path dependency, lending support to the hypothesis that endogenous structural factors limit the standardization of M&A transactions. Those findings underscore the importance of including scope economies in theories of contractual innovation, and emphasize the role of transaction designers' organizational routines as a source of market resilience.

1 Introduction

One of the central teachings of recent contract research is that attorneys' production costs can materially affect contract design decisions. To economize on those production costs, transaction designers often standardize governance mechanisms across deals, thereby achieving scale economies a la early-20th century mass production (Richman 2012). As these boilerplate provisions are deployed repeatedly in thick exchange networks, they experience network effects not unlike platform goods in a variety of modern product markets (Klausner 1995). That can lead to standardization's downsides, such as the lock-in of inefficient terms (see Gulati & Scott 2012) or, perhaps, the ossification of contractual language to the point that the original intent of a provision becomes lost to memory—a "contractual black hole" (Choi et al. 2017).

Not all commercial agreements experience such lock-in uniformly or form "black holes." For instance, thousands of transactions are executed every year

---

in the market for corporate control, and yet M&A agreements exhibit a circumscribed amount of standardization (Coates 2015; Anderson & Manns 2016). Rather than being fully standardized, they experience "constrained variation" (Coates 2015), and may be considered a form of a "mass customizable" product (Gilmore & Pine 1997; Durav et al. 2000).

Why do provisions in some contracts, such as sovereign debt indentures, ossify, while others remain vibrant, such as in M&A? This paper explores the possibility of a structural explanation for why black holes do not develop in M&A agreements. My over-arching hypothesis is that the complexity of M&A agreements makes them susceptible to multiple sources of path dependency, which introduce tensions that require the attorneys designing the transactions to regularly interrogate the meaning of the contractual language they employ.[1] This hypothesis does not argue against recent research's findings; rather, it makes the complementary claim that, when the internal complexity of modern contracts is acknowledged, the very incentives that can lead to standardization in other situations may have the paradoxical effect of sowing boilerplate's limits.

Testing that structural hypothesis requires expanding our frame of reference. Much of the light shed by the existing boilerplate literature has come from qualitative and quantitative empirical research focusing upon the characteristics and evolution of discrete contract terms. Gulati & Scott's (2012) already classic account of the development and enforcement of the *pari passu* clause in sovereign debt indentures provides an example. Research has yet to dilate upon the behavior of broader combinations of governance mechanisms in agreements,[2] which is the critical step that this study takes.

Specifically, this study analyzes the standardization of a number of exemplary terms in a sample of M&A agreements designed by a single Bay Area law firm during the 1996-2001 tech bubble.[3] It employs natural language processing techniques and regression analysis to study whether those exemplary terms appear to respond differently to multiple potential sources of path dependency. The analysis reveals distinctive patterns, where some provisions appear standardized across agreements while others appear customized, suggesting that provisions following the same pattern are interrelated.[4] Correlations between those patterns of standardization and three sources of path dependency—the level of uncertainty, deal structure, and legal precedent—are then analyzed. The results of this preliminary analysis suggest that all three sources of path dependency shape the design of the sampled M&A agreements, but they affect provisions within the agreements differently. Analysis of all exemplary provisions indicates that, as one might expect, lower levels of uncertainty correlate positively and significantly with standardization. Digging deeper into the sample on a provision type-by-provision type basis reveals more subtle standardization patterns, however. Some provisions cluster around common standards

---

1. To extend the black hole metaphor, perhaps M&A agreements are like a celestial object subject to gravitational tides from an orbiting body of comparable mass—the unsettled character of the object is a result of the opposing force to which it is subject.

2. Macher & Richman (2008) note in an interdisciplinary review of empirical contract scholarship that interaction effects between contract provisions are rarely studied.

3. NTD: Collection of two additional Bay Area law firms' M&A agreements is currently underway, and that data will be included in the next turn of this draft.

4. This method of identifying interconnections complements the alternative method of identifying interdependencies between provisions—mapping explicit references between terms—developed in Jennejohn 2017.

according to the transaction's structure—*i.e.*, whether the deal is an asset purchase, merger, or stock purchase. Interestingly, deal structure shapes not only the operative terms of the agreements but also less obvious terms in the contracts, suggesting that the structure of a transaction has a deep effect on the design of governance mechanisms. Additionally, some provisions appear to coalesce around legal precedents, with different standards being chosen according to which state's law is selected to govern the agreement. Taken together, those results suggest that the standardization of M&A agreements is asymmetric across terms.

One way to understand the patterns observed is that deal attorneys engage in a form of "multihoming" to different contractual standards, in that they design agreements to be compatible with multiple standards.[5] Meaning is retained somewhat paradoxically—multihoming to diverse standards requires transaction cost engineers to regularly revisit the purposes underlying the provisions they are recombining from deal to deal.[6]

Asymmetric standardization calls for taking scope economies seriously in our models of contractual innovation. Whereas existing scholarship emphasizes scale economies and an assembly line-like organization of production, asymmetric standardization emphasizes transaction designers' ability to recombine different technological platforms across a high volume of deals. A foundation for including scope economies in our models of contractual innovation can be found in a well-established line of strategy research on "ambidextrous" organizations, which are capable of pursuing both scale and scope economies simultaneously (March 1991; Tushman & O'Reilly 1997; O'Reilly & Tushman 2008).

The paper proceeds as follows. First, I briefly discuss current research on contractual standardization and its inability to explain the mass customization of M&A agreements. Second, I present the results of a preliminary empirical analysis, which supplies tentative evidence that the standardization of certain agreement terms correlates differently with various potential sources of path dependency, suggesting that standardization is asymmetric. Finally, I discuss the possibility that corporate law firms involved in the design of M&A agreement are examples of "ambidextrous" organizations, and outline next steps for future research in that regard.

2   The Design of Complex Contractual Systems

2.1   Designing Customized and Standardized Governance Mechanisms

Conventional contract economics is rooted in the insight that markets do not operate as smoothly as general equilibrium models theorize (Spulber 1999). The uncertain decisionmaking environments of modern markets often limit humans' ability to foresee future events, which makes determining and enforcing performance obligations difficult (Simon 1972). As Coase pointed out, transactions

---

5. Multihoming to different technical standards is the topic of an extensive literature in information technology (citations) and has attracted the attention of economists (see, e.g., Economides 2007).

6. For readers familiar with the modularity literature (see Hwang 2015; Baldwin & Clark 2000), multi-homing requires deal lawyers to regularly engage in architectural rather than infra-modular innovation.

are costly, and the neoclassical assumption that markets naturally clear does not necessarily hold (Coase 1937). This has led to two great literatures, one on the theory of the firm, which understands the modern company as a solution to contractual incompleteness (Williamson 1974, 1985; Hart 1995), and one on contract design, which explores how parties can use contractual governance mechanisms to mitigate the effects of incompleteness to the extent that market exchange is efficient (Brousseu & Glachant 2012).

Most research on contract design makes two fundamental simplifying assumptions, which are useful for rendering contracting problems more tractable for game theoretic methods. First, it is commonly assumed that agreements are fully customized, and therefore the terms of a contract are direct reflections of the parties' preferences, capacity to foresee future contingencies, risk tolerances, and bargaining positions (Choi et al. 2017). The potential for path dependencies is afforded little place in the standard families of models. Second, most research abstracts away from complexity, so that governance mechanisms are often studied in isolation. In a certain sense, complexity plays an important role in contract economics, but it is largely limited to *environmental* complexity— *i.e.*, the extent to which complicated decision landscapes prevent parties from specifying obligations *ex ante* (Segal 1999; Che & Hausch 1999). Interactions between collections of terms are often overlooked (Macher & Richman 2008).

Recent legal scholarship has added an important dimension to the contract design literature by relaxing that first assumption. Beginning with pioneering work by Goetz & Scott (1985), Klausner (1995), and Kahan & Klausner (1997), a rich literature has grown exploring the standardization of governance mechanisms across transactions. This work emphasizes that attorneys' pursuit of scale economies can affect contract design. As markets grow thicker and the costs of negotiating and drafting contracts increase, transaction designers may economize on production costs by reusing contract language from one deal to the next. At least, that strategy is available to address low-uncertainty exchange hazards (Gilson et al. 2012), which recur frequently enough for attorneys to gravitate towards a standardized governance response. Producing contractual governance mechanisms at scale has its obvious benefits: use of a widely accepted standard allows parties to reduce *ex ante* negotiating costs and *ex post* enforcement costs, and it may serve as a signaling mechanism within the market (Kahan & Klausner 1997). But it also comes with an important cost: the increasing returns to scale that contractual standards enjoy can lead to lock-in, as parties' costs of switching from the standard rise, which in turn may result in parties using provisions that are in fact inefficient with respect to the details of their particular deal (Gulati & Scott 2012). In that respect, the boilerplate literature problematizes contractual innovation, whereas conventional contract economics assumes innovation is readily achievable.

Just why parties' switching costs may increase as contractual language becomes more standardized has been a matter of debate. A number of explanations focus, as one would expect, on the incentives transaction designers face. From this perspective, lock-in is rational because boilerplate terms may reduce learning costs for transaction designers, who can come to rely on contractual language that is worked pure through the standardization process, or, relatedly, because switching from standardized terms may be costly if other market actors will not be able to accurately price a formulation that deviates from the standard (Gulati & Scott 2012). Another group of explanations points to

4

somewhat darker explanations: that standardization is the result of inefficient organizational routines at large law firms, attorneys free-riding on others' work, or rent-seeking by lawyers insulated from rigorous competition (Gulati & Scott 2012; Anderson & Manns 2016; Hadfield 2017).

Court interpretation of contract terms can also contribute to their standardization. Courts can provide definitive interpretations, which confirm the market's understanding of a standardized contract term (Gulati & Scott 2012). In a broad study of a variety of transaction types, including M&A agreements, Eisenberg & Miller (2006) find evidence that contract terms standardize around legal precedent in certain circumstances. Conversely, if a court interpretation of a term conflicts with the market's conventional wisdom, then an "overhang" may result, where the contracts in parties' portfolios now have provisions that mean something different than what parties originally thought (Gulati & Scott 2012). Where courts' interpretations conflict with market understandings, available evidence suggests that court intervention can spur the recalibration of a contractual standard (Choi et al. 2017).

A study by Coates adds another dimension to our theory of contractual standardization. In a detailed empirical analysis of M&A contracting, Coates finds evidence that differences in the concentration of share ownership drive aspects of deal structure and the design of a number of provisions in M&A agreements (Coates 2012). That is, certain provisions are used more frequently—suggesting they are more standardized—depending upon whether ownership of the selling entity is concentrated or dispersed. Widely dispersed ownership affects aspects of deal structure and contract design because it introduces collective action problems, which make certain contractual mechanisms (indemnification provisions being an obvious example) unwieldy. The important theoretical contribution of Coates' study is to show that the characteristics of asset ownership act as an antecedent shaping contract design.

2.2 The Puzzle of Mass Customization and the Problem of Systemic Complexity

Current theory struggles to explain the mass customization of M&A agreements. Given the maturity and thickness of the market for corporate control, which in the United States has experienced thousands of transactions each year for decades, one would expect a significant amount of contractual standardization as deal lawyers converge on best practices. Yet, M&A agreements occupy a hybrid ground of "constrained variation" (Coates 2015), which some have taken for grounds that greater efficiencies can be achieved through further standardization of M&A contracts (Anderson & Manns 2016).

Existing theory struggles to explain the material amount of customization observed in M&A agreements because it overlooks infra-transactional complexity. Contractual complexity raises the possibility of an endogenous source of variation in contract design. Higher complexity opens up two inter-related possibilities: first, that terms may be interdependent, so that a change in one term affects another; and, second, that expanding an agreement's design space increases the likelihood that more than one of the multiple theories of how standardized terms become locked-in introduced above affects a portion of the contract. Few studies analyze either how provisions interact or how different incentives to standardize may intersect with one another as they shape parts of

an agreement. Presumably, multiple incentives to standardize may reinforce one another, raising impediments to contract innovation even further; but it seems equally possible that incentives to standardize may not work in tandem. This paper takes a step toward filling that gap in the literature.

3 Asymmetric Standardization in M&A Agreement Design

This section presents the results of an empirical study that takes a step towards addressing the complexity gap in the literature discussed above. The study attempts to accommodate greater complexity with respect to both the sources of path dependency affecting a transaction and the collections of governance mechanisms combined in modern contracts. It does so by focusing upon three potential sources of path dependency and examining whether there is evidence of any of them correlating with the level of standardization of a variety of exemplary terms in M&A agreements. To measure the standardization of contract provisions, the study follows Rauterberg & Talley (2017a, 2017b) by leveraging vector-space natural language processing techniques, although the unsupervised approach here differs from their supervised method with respect to the specific research question being addressed and in certain technical aspects. The study then specifies an ordinary least squares model to analyze correlations between the level of standardization of various terms and the potential sources of path dependency.

The results of that analysis reveal distinctive patterns, where some provisions appear standardized across agreements while others appear customized, suggesting that provisions following the same pattern are interrelated. Correlations between those patterns of standardization and three sources of path dependency—the level of uncertainty, deal structure, and legal precedent—are then analyzed. The results of this preliminary analysis suggest that all three sources of path dependency shape the design of the sampled M&A agreements, but they affect provisions within the agreements differently. Analysis of all exemplary provisions indicates that, as one might expect, lower levels of uncertainty correlate positively and significantly with standardization. Digging deeper into the sample on a provision type-by-provision type basis reveals more subtle standardization patterns, however. Some provisions cluster around common standards according to the transaction's structure—*i.e.*, whether the deal is an asset purchase, merger, or stock purchase. Interestingly, deal structure shapes not only the operative terms of the agreements but also less obvious terms in the contracts, suggesting that the structure of a transaction has a deep effect on the design of governance mechanisms. Additionally, some provisions appear to coalesce around legal precedents, with different standards being chosen according to which state's law is selected to govern the agreement. Taken together, those results suggest that the standardization of M&A agreements is asymmetric across terms.

3.1 Research Design and Hypotheses

The study's overarching research question asks whether different incentives to standardize contractual language have differing effects on the design of various

provisions in M&A agreements. Given the abundance of theories of why provisions become locked-in, and given the large number of terms found in a modern M&A agreement, some choices must be made on how to narrow that question sufficiently to make it tractable and yet not obscure the very complexity it is meant to study. This study therefore focuses on three factors shaping the standardization of contract terms: the level of environmental uncertainty, deal structure, and legal precedent. It then studies correlations between those three factors and seven types of provisions frequently found in M&A agreements.

Testing the effects of varying levels of uncertainty on contractual standardization is difficult without an observable proxy for parties' subjective perceptions. This study operationalizes uncertainty by making an assumption that certain types of risk in M&A deals are more calculable *ex ante* than others. Namely, it is assumed that parties are more readily able to anticipate provisions targeted at discrete exchange hazards, such as a representation & warranty directed to a particular pre-closing agency cost, than provisions covering multiple hazards, such as a provision directed at pre-closing business risk, which in part includes broader developments in the product and capital markets in which the parties operate. This leads to the following hypotheses:

H1a - Provisions policing discrete agency problems are more standardized across all agreement types, reflecting relatively low levels of uncertainty.

H1b - Provisions addressing multiple risks are less standardized across all agreement types, reflecting relatively greater uncertainty.

Testing the effects of deal type on the standardization of terms is more straightforward, because the structure of different deals is readily ascertainable from the agreements themselves. Evidence of deal type affecting standardization is found where:

H2 - Contract provisions are less standardized *across* agreements, but are more standardized *within* agreement types.

Finally, testing the effect of legal precedent is possible by examining correlations between standardization and the law chosen to govern an agreement. Evidence of legal precedent affecting standardization is therefore found where:

H3- Contract provisions are less standardized across agreements, but are more standardized with respect to the choice of governing law.

3.2   Data and Variables

The sample of M&A agreements analyzed here were all negotiated by Brobeck, Pfleger & Harrison LLP, as either buyer or seller's counsel, from 1996 to 2001.[7] The sample includes agreements of three types: asset purchase agreements,

---

7. NTD: Collection of Fenwick & West and Wilson Sonsini agreements from the same time period is currently underway, and the analyses of those contracts will be included in the next turn of this draft.

merger agreements, and stock purchase agreements. All agreements are public documents filed with the SEC and can be found on the SEC's EDGAR portal.[8]

Two broad categories of data were collected with respect to that sample. First, key provisions were extracted from the sampled agreements in order to study the extent of their standardization. Those provisions serve as the dependent variables in this study. Second, certain characteristics of the agreements and the parties to them—such as the deal type, each contract's choice of law, the SIC codes of the parties, whether ownership of the seller is concentrated or dispersed—were hand collected. These characteristics comprise the explanatory and control variables of the study.

3.2.1   Delineating the Dependent Variables

Selecting Provisions to Study

Testing the hypotheses above requires the collection of a range of provisions from each sampled agreement. Extraction, which was undertaken through a combination of manual processing and python code, focused upon the following provisions:

1. To study the standardization of provisions policing discrete pre-closing agency problems, conduct of business covenants, corporate authority representations, and intellectual property representations were extracted;

2. To study provisions allocating multiple pre-closing risks, Material Adverse Effect definitions, buyer closing conditions, and indemnification provisions were extracted;

3. To study the operative terms of the agreements, the initial terms setting forth the deal consideration, mechanics of the transfer of ownership, etc. were extracted;

4. To study terms shaping the enforcement process, the severability provisions were extracted.

Those provisions were selected for extraction because they frequently appear in the sampled agreements. A background issue affecting the research design of any study undertaking a textual analysis of M&A agreements is that the incidence of terms found in the contracts is not consistent across agreements. Some provision types are routinely included, while others are not. This study focuses upon those provisions that tend to be included more frequently, which may bias the sample towards finding more evidence of standardization because routine use is typically a necessary (though not sufficient) condition to standardization. An important task for subsequent research is to collect samples of sufficient size to allow analysis of less commonly used provisions.

Measuring the Extent of Standardization

Testing the hypotheses set forth above requires a method for measuring the level of standardization within the samples of extracted provisions. The task

---

8. The agreements sampled here were identified using Bloomberg Law's EDGAR search functionality.

is conceptually straightforward and will be familiar to any deal attorney who has run a blackline: how different is Provision A_1 in Agreement X_1 from Provision A_2 in Agreement X_2. Comparing text at scale introduces some technical complications, however. Approaches for comparing large samples of text strings fall roughly into two categories—character-based string similarity functions and vector-space string similarity functions (Bilenko & Mooney 2003)—discussed below. For the reasons that follow, this study employs a vector-space approach.

Character-based similarity functions view strings of text as contiguous sequences differing at the level of individual characters (Bilenko & Mooney 2003). Perhaps the most well-known character-based method for testing the similarity of different text strings is edit, or Levenshtein, distance, which calculates the difference between two strings as the minimum number of character changes, insertions, or deletions that would be required to render one string identical to another (Levenshtein 1966). So, for example, the edit distance between the string, "the cat is black," and the string, "the hat is black," is 1, because changing one character—the "c" in "cat" to an "h"—transforms the first string into the second. Edit distance typically relies upon word sequencing remaining stable between strings, and is therefore often applied to identify typographical errors or abbreviations in strings of text (Bilenko & Mooney 2003). Edit distance also becomes computationally expensive and tends to be inaccurate as the size of text strings increases (Bilenko & Mooney 2003).

A vector-space approach differs in that it does not view strings as ordered sequences of words, but rather as unordered collections of "tokens"—or "bags of words" in the vernacular of the field (Salton & McGill 1983).[9] In a corpus with n tokens, each string is then represented as a vector of real numbers with n-dimensions, where every non-zero component indicates a token present in the given string (Bilenko & Mooney 2003). Tokens represented in the vector are commonly weighted according to their uniqueness by deleting a list of common "stop-words" and/or applying a "term frequency-inverse document frequency" measure (Salton & Buckley 1988). The upshot of transforming written text strings into numerical vectors is that similarity between strings can be measured by reference to the comparative positions of the vectors, using measures such as cosine or Euclidean distance, which has proven to be a robust approach for analyzing similarity in a wide range of corpora (Bilenko & Mooney 2003).

A vector-space approach to analyzing the differences between provisions in merger agreements appears to be the most appropriate for two reasons. First, it is not uncommon for words and phrases in different instances of the same provision type to be arranged in unique orders. To the human reader, it is readily apparent that, although the words are ordered somewhat differently, the provisions are quite similar. A character-based similarity measure such as edit distance, however, may incorrectly compare such strings, if the different word sequences are read as qualitative differences. Second, comparing merger agreements requires a method that can effectively analyze both relatively short strings—such as a severability provision—and fairly long strings—such as an earnout with multiple sub-sections. A string similarity function focused upon individual characters may struggle to accurately assess the latter type of provi-

---

9. For an excellent example of a vector-space approach applied in the legal context, see Rauterberg & Talley's analysis of corporate opportunity waivers (2017a, 2017b). The unsupervised approach pursued here is conceptually similar, though different in some technical details, to Rauterberg & Talley's supervised method.

sion.

 Pursuing a vector-space approach here involved the following process:

1. Using a combination of manual processing and python code, individual text files for the provision types of interest were extracted from the sampled agreements;

2. Each text file was then cleaned by:

   (a) Removing punctuation;

   (b) Removing numbers and dates;

   (c) Removing common stop-words, such as definite and indefinite articles, prepositions, conjunctions, etc.;[10]

   (d) Applying a stemming algorithm, which converts different versions of the same word (such as singular and plural versions of the same noun, or different conjugations of the same verb) to a single base form, or "stem";

3. Each text file was then converted into a matrix of tokens, or a "semantic network," which forms the basis of the vector analysis;

4. Text files for similar provision types were then compared by calculating the cosine and Euclidean distances between (1) the vectors of each text string and (2) the "intersect" vector, which includes all tokens common to every string in the given corpus.[11]

3.2.2 Explanatory and Control Variables

Data with respect to the three explanatory variables was hand-collected. Provision types were coded as to whether they addressed discrete exchange hazards or broader aggregations of hazards. Deal type was coded for each contract by reference to the agreements' titles and recitals. The choice of law selection in each agreement was hand collected. Hand collection involved a two-step process, in which (1) two teams of research assistants extracted the same targeted data, and their results were compared for inconsistencies, and (2) those results were then subjected to an independent quality control process, where initial coding decisions were compared to the source materials.

 Data for a number of control variables was also collected. To control for industry effects, SIC Codes for each target were hand collected from Bloomberg. Concentration of ownership data was hand-collected from parties' securities filings and the sampled agreements. Data on the S&P 500's 200-Day Moving Average, which is used as a proxy for bargaining power, are sourced from Bloomberg.

3.3 Methods

Because the dependent variables are continuous, this study specifies an ordinary least squares model to analyze the correlations between the provisions of interest

---

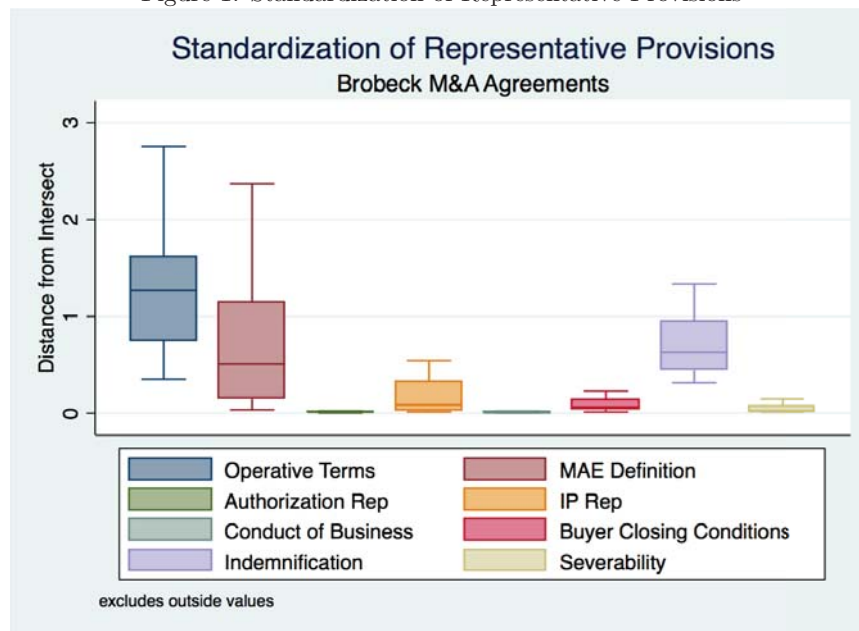10. Party names were also included in the list of stop-words.

11. Both cosine and Euclidean distance are measured in order to increase the robustness of the results. In corpora with high-dimension vectors, Euclidean distance may distort results, and cosine distance may be more appropriate.

and a number of potential determinants of standardization. Of course, because this is an observational study, the regression techniques employed here cannot fully demonstrate causality. However, statistically significant correlations identified through this approach can frame our debate over what is driving contractual standardization, and they can prepare the way for subsequent experimental and quasi-experimental studies.

3.4   Analysis

Analysis of the provisions extracted from the sampled agreements illustrates that standardization is asymmetric across contract terms. Figure 1 below depicts box and whisker plots for all extracted provision types. The Y axis of Figure 1 measures the distance between the vector for each extracted provision and the intersect vector for that provision type.[12] More leptokurtic distributions (*i.e.* distributions with thinner tails) indicate more standardized terms, and more platykurtic distributions (*i.e.* those with fatter tails) indicate more varied provisions. Authorization representations, conduct of business covenants, and severability provisions appear highly standardized across all agreements. Operative terms, MAE definitions, IP representations, and indemnification provisions appear less standardized.

Figure 1: Standardization of Representative Provisions

As we unpack the data further, however, the story becomes more nuanced. Consider first the correlation between the level of standardization and whether a provision addresses either a discrete exchange hazard or multiple hazards. Per

---

12. As mentioned above, the intersect vector includes those tokens that appear in all of the text strings extracted in a given provision type.

H1a and H1b above, we would expect greater discreteness to correlate positively with increased standardization. Figure 2 below plots the standardization of all extracted provisions according to whether they are classified as discrete or broad terms. Again, the Y axis of the figure measures the distance between the vector for each extracted provision and the intersect vector for that provision type. As *H1a and H1b* hypothesize, discrete terms are more standardized, and terms addressing multiple hazards are less standardized.

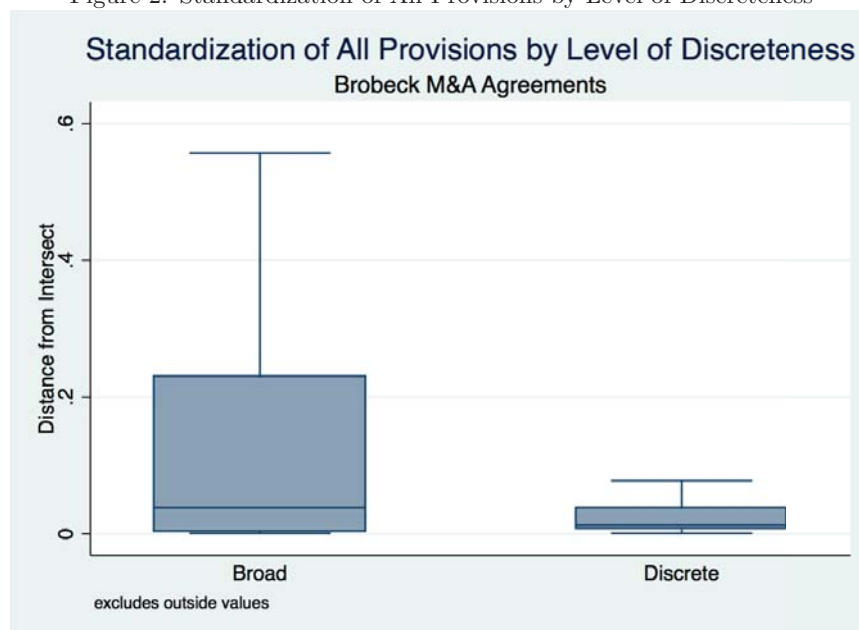Figure 2: Standardization of All Provisions by Level of Discreteness

Table 1 below presents the results of an ordinary least squares regression analysis, which tests the correlations between the dependent variable—the log of the standardization measure of all extracted provisions—and the explanatory and control variables introduced above. As the table indicates, no correlations were significant except for a negative relationship between discreteness and distance from the intersect vector, which was significant at the 1 percent level. In other words, provisions that address a discrete exchange hazard correlate positively and significantly with standardization, lending further support for *H1a and H1b*.
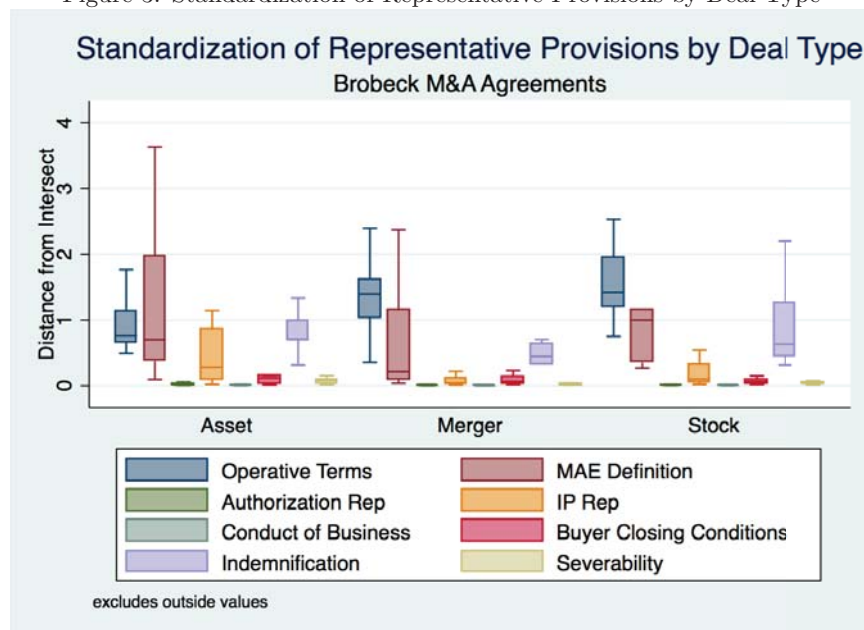
Table 1: Results of Ordinary Least Squares Regression of Main Effects of Discreteness, Deal Structure, and Choice of Law on Contractual Standardization

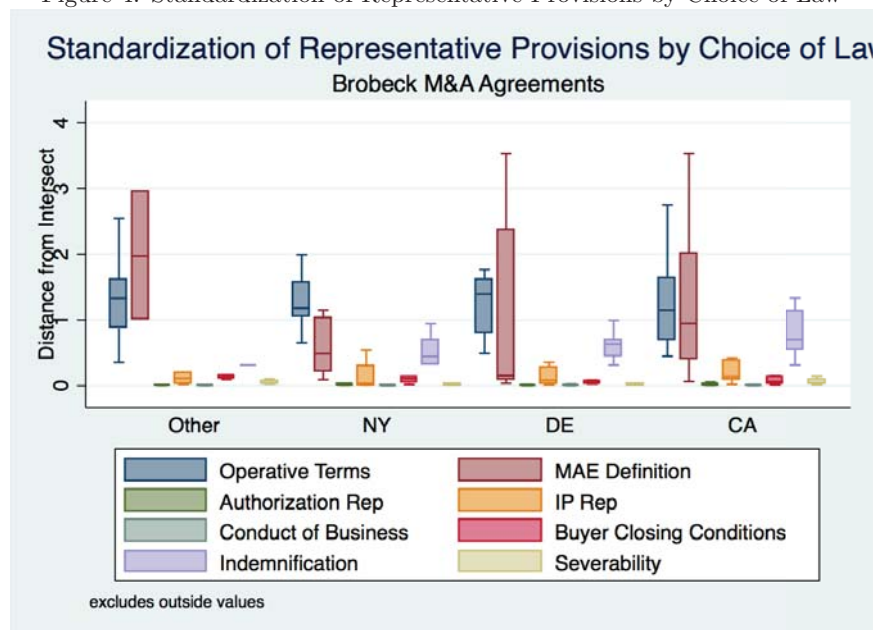|	Distance from Intersect				
	(a)	(b)	(c)	(d)	(e)
SIC 2834	-0.516	-0.493	-0.693	-0.274	-0.396
	(0.634)	(0.626)	(0.676)	(0.677)	(0.749)
SIC 3576	-0.067	-0.093	-0.169	0.066	-0.0417
	(0.488)	(0.482)	(0.511)	(0.514)	(0.547)
SIC 3674	-0.333	-0.239	-0.454	-0.251	-0.2610
	(0.452)	(0.447)	(0.486)	(0.469)	(0.512)
SIC 3845	-0.174	-0.161	-0.292	-0.024	-0.115
	(0.513)	(0.507)	(0.542)	(0.535)	(0.581)
SIC 7372	-0.295	-0.182	-0.390	-0.289	-0.266
	(0.372)	(0.369)	(0.394)	(0.392)	(0.425)
Stock Consideration	-0.396	-0.429	-0.219	-0.398	-0.277
	(0.283)	(0.28)	(0.348)	(0.307)	(0.357)
Mixed Consideration	-0.090	-0.091	0.001	-0.074	0.001
	(0.334)	(0.329)	(0.350)	(0.337)	(0.347)
Concentrated Ownership	0.197	0.188	0 .110	0.109	0.027
	(0.248)	(0.245)	(0.267)	(0.259)	(0.272)
S&P 500 200-Day Moving Average	-0.0004	-0.0004	-0.0004	-0.0004	-0.0003
	(0.0005)	(0.0004)	(0.0004)	(0.0005)	(0.0005)
Discrete		-0.727***			-0.721***
		(0.229)			(0.231)
Merger			-0.341		-0.296
			(0.392)		(0.411)
Stock Purchase			-0.152		-0.034
			(0.339)		(0.377)
NY Law				0.580	0.556
				(0.441)	(0.455)
DE Law				0.187	0.246
				(0.399)	(0.422)
CA Law				0.409	0.381
				(0.383)	(0.422)
Constant	-2.749***	-2.605***	-2.581***	-3.035***	-2.785***
	(0.607)	(0.601)	(0.651)	(0.712)	(0.803)
Observations	503	503	503	503	503
R-squared	0.0246	0.0514	0.0267	0.0314	0.592
df	9	10	11	12	15

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figures 3 and 4 explore the data in further detail. Figure 3 plots the various provision types' distributions according to deal structure. A number of patterns observed in the data are notable. First, recall that in Figure 1 operative terms were less standardized terms; here in Figure 3, distinct differences between the operative terms within each agreement type appear. A similar phenomenon appears with respect to IP representations—IP reps in asset agreements appear less customized, while IP reps in merger agreements appear more standardized. Indemnification provisions also appear to differ materially with respect to their standardization from one deal structure to another.

13

Figure 3: Standardization of Representative Provisions by Deal Type

Distinct patterns are much harder to identify in Figure 4, which plots the provision types' distributions according to choice of law. A visual review suggests that indemnification terms may differ materially according to the legal precedent that applies. MAE definitions may also vary according to which jurisdiction's law applies.

Figure 4: Standardization of Representative Provisions by Choice of Law

The results of the regression analysis reported in Table 2 confirm the impressions given by Figure 3. Deal structure correlates significantly with the distance of operative terms from their intersect vector, indicating that there are material differences between the content of operative terms between the different agreement types, as one would expect. Deal structure also correlates significantly with the distance of IP representatives and indemnification provisions from their respective intersect vectors, indicating that there are material differences in how both IP representations and indemnification provisions are designed across agreement types.

With respect to the effect of legal precedent on contractual standardization, the analysis reported in Table 2 provides evidence that choice of law correlates significantly with the distance of severability provisions from their intersect vector, indicating that there are material differences between the content of severability provisions according to the law chosen to govern the agreements. There is otherwise little notable evidence of a relationship between legal precedent and the design of the provisions studied here.

Figure 5: Results of Ordinary Least Squares Regression of Main Effects of Deal Structure and Choice of Law on the Standardization of Certain Provision Types

	Operative Terms	MAE Definition	Authorization Rep	IP Rep	Conduct of Business	Buyer Closing Conditions	Indemnification	Severability
Deal Type	0.357**	1.207	-0.383	-1.257**	-0.679	0.151	-0.506**	-0.346
	(0.168)	(0.962)	(0.305)	(0.557)	(0.609)	(0.499)	(0.221)	(0.241)
NY Law	-0.019		-0.563	-1.844*	-0.359	-0.045	0.481	-1.328***
	(0.273)		(0.468)	(1.026)	(0.910)	(0.716)	(0.362)	(0.349)
DE Law	0.044	-0.145	-0.643	-1.005	0.511	-0.994	0.814**	-1.041***
	(0.024)	(0.836)	(0.426)	(0.940)	(0.803)	(0.722)	(0.355)	(0.315)
CA Law	0.078	1.205	-0.345	-1.274	0.420	-0.542	0.527	-0.999***
	(0.233)	(0.854)	(0.411)	(1.033)	(0.905)	(0.666)	(0.350)	(0.315)
Concentrated Ownership	-0.106	1.349*	0.337	-0.057	-1.278	0.124		0.318
	(0.158)	(0.736)	(0.285)	(0.482)	(0.619)	(0.366)		(0.209)
S&P 500 200-Day Moving Average	-0.00008	-0.002	-0.0004	-0.002**	0.00001	-0.0005	-0.0001	-0.002
	(0.158)	(0.001)	(0.285)	(0.0009)	(0.0008)	(0.0007)	(0.0003)	(0.0003)
Constant	-6.224***	-0.265	-3.624***	2.449*	-5.238***	-1.534	-0.758	-0.406
	(0.423)	(1.839)	(0.775)	(1.397)	(1.356)	(0.928)	(0.574)	(0.503)
Observations	92	54	66	60	52	58	50	68
R-squared	0.150	0.2797	0.3200	0.467	0.182	0.168	0.4432	0.7354
df	6	5	6	6	6	6	5	6

* p < 0.10, ** p < 0.05, *** p < 0.01

16

4   Ambidextrous Transaction Cost Engineering

The analysis above outlines a preliminary case that complex contracts, such as as the M&A agreements studied here, experience asymmetric standardization. Contract terms are not wholly unconnected but also not designed in lock-step; rather, they are subject to different incentives to standardize of varying intensity. Distinct patterns of continuity and change are observable in the agreements— some terms appear to gravitate towards one standard, and other terms towards another. In a sense, transaction designers are "multi-homing" to more than one standard, in that their product—the M&A agreement—is compatible with a number of different standards (Choi 2010). Path dependencies work subtly on the design of these complex contracts, and their persistent presence arguably creates the tension that prevents the meaning of M&A agreement terms from ossifying.

This account of contract design, which emphasizes the importance of scope economies, elevates the role of the deal attorney and, to the extent the boilerplate literature has questioned the value added by transactional lawyering, perhaps returns her to the prominence implied in Gilson's original conception of the "transaction cost engineer" (Gilson 1984). In doing so, however, it raises the follow-on question of how corporate lawyers are able to recombine contractual governance systems across deals with such alacrity. That is, the combination of economies of both scale and scope in the design of M&A transactions places law firms' internal organizational structures and routines at the center of our understanding of contract innovation.

Strategy theorists have developed the concept of "organizational ambidexterity" (Duncan 1976) in an effort to solve the riddle of how some mature companies are able to recombine assets in ways that sustain competitive advantage over time (O'Reilly & Tushman 2008). That reinvention is puzzling because the capacities for effective *exploitation* of assets—*i.e.* resolving uncertainties, reducing variances, and increasing productivity—are different from those necessary for *exploration*, which requires capabilities of search, exploring ambiguities, and embracing variation (March 1991). Ambidexterity refers to those organizations that can deploy both suites of capabilities, perhaps even simultaneously (O'Reilly & Tushman 2008; Tushman & O'Reilly 1997).

Interestingly, organizational ambidexterity in corporate law firms does not appear to be achieved as conventional wisdom would predict. Strategy research has found that senior management teams, who can appropriately direct resources toward exploitative and explorative efforts, are the key to effective organizational ambidexterity (O'Reilly & Tushman 2008). Transaction design is intriguing in this respect because it is a highly collaborative effort that is often undertaken without the managerial hierarchy employed in a traditional company. The design of an M&A agreement typically involves collaboration between at least two organizations—the client's in-house legal team and external counsel. Particularly in cross-border deals, it is not uncommon for multiple law firms to act as external counsel, increasing the number of organizations collaborating on the transaction. The partnership structure within major law firms, particularly those that follow (more or less) lock-step compensation that encourages task force staffing on matters, also encourages the recombination of teams over time (Jennejohn 2017), which undercuts a hierarchical management approach. A project for future research is unpacking deal team routines in order

to identify how ambidexterity is achieved in the legal industry without strong hierarchy.

5   Conclusion

This paper addresses the question of why transactions in some thick markets are not completely standardized and, as such, do not slip into a contractual "black hole." In the context of M&A transactions, it explores the possibility of a structural explanation: that the complexity of M&A agreements creates space for multiple sources of path dependency to shape parts of the contract asymmetrically, and this criss-crossing of path dependencies undercuts incentives to completely standardize the contracts. Using novel natural language processing techniques and regression analysis, it finds suggestive evidence that exemplary portions of M&A agreements correlate differently with three sources of path dependency. Standardization in M&A agreements does indeed appear asymmetric. That finding's primary theoretical implication is to underscore the need for including economies of scope, not only economies of scale, in theories of contractual innovation. The importance of scope economies also brings organizational routines to the fore, and this article calls for further investigation of how corporate law firms effectively combine economies of scope and scale in the design of complex transactions.