Involuntary Governance Choices in the Electricity Industry

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May 2011

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Abstract

Governmental liberalization policies provide a natural experiment for examining firms’ preferences for governance structures when adapting, voluntarily or involuntarily, to regulatory changes in the business environment. We investigate the involuntary governance choices of the energy firms in the Dutch electricity industry after the European electricity directives of 1996 and 2003. The governance choices are involuntary, because the directives prohibit the energy firms to organize their electricity transactions in the comparatively efficient governance solution of the vertically integrated firm. After the implementation of the directives, the energy firms claim to prefer quasi-integration instead of the market that is prescribed by the directives and national laws for the electricity industry.

In this paper, we use transaction cost economics to study the governance structures. We complement the standard transaction cost analysis by incorporating adaptation as the process of adjustment between governance structures that can explain the involuntary governance choices. We explain how suboptimal governance choices are made, on the basis of both adaptation costs and misalignment costs. We present evidence on the relation between the preferred governance structures, expected adaptation costs and expected misalignment costs, based on expert information.

Key words: Adaptation, adaptation costs, misalignment costs, governance choices, transactions
The intention of any regulation, as authoritative ruling, is primarily to prevent an existing situation to persist or to promote a non-existing situation to come into being. In the case of the European liberalizing electricity industries, regulation was aimed at preventing the existence of vertically integrated industries and at endorsing the unbundling of the composite industrial elements in the value chain, thereby promoting an electricity market. For most regulated industries, this implied a direct and resolute prohibition of the existing governance structure and a change to a different, future governance structure. This raises immediate questions with respect to the transformation between the existing and the new governance structures, as well as to the intricacies and costs related to this governance transformation, and is the starting point of our queries. It also raises questions on the ability to prescribe a transformation to the market.

Building on previous work (Masten et al. 1991, Masten 1993, Nickerson and Silverman 2003, Sampson 2004), we investigate involuntary choices of less efficient governance structures. In our study, we confront the governance arrangement in the electricity industry which has persisted over some time, and which has been estimated to be the cost-efficient structure to govern the existing transactions (Joskow 1996), with the European electricity directives of 1996 and 2003 that prevent this arrangement to exist. For the energy firms involved, the directives have led to involuntary governance choices, which can be illustrated by a history of lobbying activities and court cases (e.g., Gerechtshof ’s-Gravenhage 2010a). Contrary to earlier works (e.g., Nickerson and Silverman 2003), the adaptation processes, which have followed the rulings, have not been into the direction of a closer alignment between transactions and governance structures, but into the direction of less efficient governance structures.

In our study, we investigate the adaptation process of the energy firms 15 years after the first European electricity directive. We employ the theoretical perspective of transaction cost economics, and this paper therefore differs from the
well-known behavioral models of organizational change and adaptive search (Levinthal and March 1981, Siggelkow and Levinthal 2007). The central question in our study is how the energy firms distinguish between ‘bad’ and ‘worse’ and why they have chosen for a particular governance structure. To investigate this adaptation process, we have followed the framework offered by Masten (1993) to establish the differential costs of less efficient governance structures, and we have followed Nickerson and Silverman (2003) to establish the costs of adaptation.

In an earlier study, we have shown that the energy firms did not adopt the market form of governance that was proposed by the European directives, but instead they chose a hybrid structure (Niesten 2009). In this article, we extend this result by distinguishing between three types of hybrids. On a continuum of structures, these hybrids range from structures that are closer to the vertically integrated hierarchy to those that are closer to the market. These hybrids are respectively referred to as quasi-integration, public contract-based agreements and private contract-based agreements (Ménard 2004). We formulate a hypothesis on the probability that firms will choose one of these hybrid forms on the basis of the costs of an inefficient governance structure (i.e. misalignment costs) and the adaptation costs.

We use data on the expected (structural and one-off) unbundling costs reported by experts in the field as measures for misalignment and adaptation costs respectively, and data from annual reports of the energy firms and court cases to determine the firms’ preferred governance choice. While considering the regulatory constraints, energy firms prefer the lesser evil, in the form of quasi-integration, because the misalignment- and adaptation costs of a transformation to quasi-integration are lower than the costs of a transformation to the private contract-based agreements.

This article is organized as follows. First, we discuss the regulations that drive the changes in governance structures in the Dutch electricity industry. Second, we discuss the theoretical framework that is adopted in this paper. We complement
the theory of transaction cost economics, in terms of adaptation, and a confrontation of misalignment and adaptation costs. Third, we present the model and our hypothesis. Fourth, we discuss the research method, the data, and the measures that are used to operationalize the misalignment- and adaptation costs, and the governance choices. Finally, we present our results, and conclude with a discussion and some suggestions for future research.

**Rules and Governance in the Electricity Industry**

In 1996, 2003 and 2009, the European Parliament and Council issued directives with common rules for the creation of an internal, European market in electricity (EC 1996, 2003, 2009). These directives prescribe the legal unbundling of the distribution network operators, and thus the vertical separation of the electricity distribution networks from the integrated energy producers and retailers in terms of their legal structure. The electricity distribution networks had to be unbundled, because their natural monopoly characteristics would provide an unfair competitive advantage to the incumbent, integrated energy firms over the new entrants. The legal unbundling of the distribution networks was aimed at enabling the introduction of competition in the production and retail of electricity. Two Dutch electricity laws of 1998 and 2004 implemented this requirement of legal unbundling of the EC directives of 1996 and 2003, respectively. Under legal unbundling, the distribution network operators are allowed to be part of the same holding as the integrated energy firms, but they must be structured as (legally separate) subsidiaries of the holding.

In 2006, a new electricity law was adopted in the Dutch electricity industry that prescribes the ownership unbundling of the electricity distribution networks. Separate companies will have to be created for the distribution network operators that will own the distribution networks. This ownership unbundling, that needs to be implemented by January 2011, imposes a greater unbundling requirement on the
Dutch firms than is imposed on the European electricity industries by the EC directives. A holding structure with distribution networks as subsidiaries is not sufficient to meet the requirement of ownership unbundling. In addition to the legal and ownership unbundling, the European directives and Dutch laws stimulate the creation of markets in the electricity industries.

In a recent study (Niesten 2009), it was demonstrated that the energy firms and network operators in the Dutch electricity industry did not adopt a market form of governance for four main transactions in the industry. Instead, they chose hybrid governance structures for the transactions to connect to and access the electricity network, for the balancing of electricity supply and demand, and for the transactions to switch consumers between energy firms. These hybrids combine the legal autonomy of the contracting parties (the operators and energy firms) with long-term contracts and several administrative mechanisms, such as information disclosure and verification mechanisms, monitoring, third-party assistance and dispute resolution. The energy firms in the Dutch electricity industry used to be vertically integrated hierarchies, and are now in a long-term process of transforming their governance structures to hybrid forms.

Theory

The problem of governance is at the core of transaction cost economics (TCE). The inquiry into feasible modes of organization for economic activities has led to the scientific program to work out the efficiency logic for managing transactions by alternative modes of governance. According to Williamson “a predictive theory of economic organization resides in the hypothesis that transactions, which differ in their attributes, are aligned with governance structures, which differ in their costs and competencies, so as to effect a (mainly) transaction cost economizing result” (Williamson 2005), often referred to as the discriminating alignment hypothesis.
Standard transactions are aligned with the market, while uncertain and asset-specific transactions are more efficiently organized in the vertically integrated firm. When transactions and governance are not aligned in this manner, transaction costs are not minimized and misalignment costs are created. Standard TCE has been empirically supported by (comparative) static cases of alignments of transactions and governance structures. The TCE framework is less apt, however, to respond to demands of a dynamic nature, such as regulatory changes in the institutional environment or adaptations between governance structures.

**Regulation in TCE**

Within a transaction cost economics setting, regulation is often analyzed as a governance structure (Williamson 1996), as opposed to considering regulation as a parameter in the institutional environment. Other scholars, however, have recognized that there exists a clear distinction between governance structures at the level of the firm and the public authorities that set the rules of the game. Scott (1995, p. 93) remarked that “all organizations are correctly viewed as governance structures, but the state is set apart”. The government and its regulatory agencies are set apart, because they can “exercise authority over other organizations” (Lindblom 1977, p. 21). Lindberg, Campbell and Hollingsworth (1991, p. 31) stated that “the important point is that the state assumes a privileged conceptual position, because it is capable of influencing governance in many complex ways, most of which are not available to organizations in civil society”. And specifically for liberalizing industries, Majone (1996, p. 54) argued that “the main function of the regulator is to ensure that economic actors play by the agreed rules of the game”.

In this article, regulation, as authoritative ruling, is also distinguished from the governance structures at the level of the firm, and it is positioned in the institutional environment. Regulation is analyzed as an external influence on the governance structures. Such an approach can be incorporated within the current TCE,
as TCE includes the institutional environment in its theoretical framework. Previous research within the transaction cost framework has focused on this regulatory influence on governance structures (e.g., Yvrande-Billon and Ménard 2005). In our case of liberalizing and unbundling industries, regulation does not only prohibit the comparatively efficient governance structure, but it also stimulates a governance transformation.

**Comparative Statics of TCE**

Transaction cost economics has often been criticized for offering a comparative static perspective that is incapable by itself of explaining institutional change (Dietrich 1994, Groenewegen and Vromen 1996, de Jong and Nooteboom 2000, Langlois 1992). TCE predicts the comparative efficiency of a governance structure with the attributes of the underlying transaction (Williamson 1985). An efficient alignment between a governance structure and a transaction minimizes transaction costs. TCE is, however, not able to explain changes from one governance structure to another, nor to predict which new forms of governance will emerge to replace the comparatively efficient one.

Several scholars have addressed this inability of TCE to explain governance changes, and have proposed to integrate TCE with a different theoretical perspective as a solution to this limitation. On the one hand, Langlois (1992) introduced the concept of dynamic transaction costs, which are the costs of persuading, negotiating, coordinating and teaching outside suppliers, to allow for a longer time frame in the study of governance structures and thereby to enable a better explanation of why the market or the hierarchy is used. His aim was to combine TCE, which he referred to as a short-run theory, with capabilities theory, which is, according to Langlois, able to explain the boundaries of the firm in the long run. The dynamic transaction costs are also described as “the costs of not having the capabilities you need when you need them” (Langlois 1992, p. 99). On the other hand, Hesterly, Liebeskind and Zenger
(1990) proposed to use institutional theory to refine the process of theory building in TCE. With the coercive isomorphism of DiMaggio and Powell (1983), they illustrated that the issue is “not to choose the most efficient governance mechanism possible, but to choose the most efficient of the legally allowed mechanisms” (Hesterly et al. 1990, p. 412).

Complementing TCE with Adaptation

In this paper, we follow instead the suggestions by Masten et al. (1991), who have argued that “changes in regulations or legal rules that alter the nature of institutional arrangements can have significant efficiency implications” (Masten et al. 1991, p. 22). Our concern is with the consequences of misalignment due to regulation, an option that Masten (1993) had also envisaged: “an alternative approach would be to examine situations in which the selection process has been defeated by the interference of some external authority such as a court or regulator” (Masten 1993, p. 124).

We also follow the argument of Nickerson and Silverman (2003) who have developed a model of organizational change in which the impetus for change is the inappropriate governance of a core transaction. According to Nickerson and Silverman (2003), managers are inclined to realign their core transaction to an appropriate governance structure but are constrained in their efforts to realign because of "adjustment costs" or costs of adaptation.

Adaptation has been described by Williamson as “the central problem of economic organization” (Williamson 1996, p. 229). He has distinguished cooperative adaptation, which is “conscious, deliberate and purposeful” (Barnard 1938, p. 4), from autonomous adaptation, in which economic actors react spontaneously and unilaterally to changes in relative prices (Hayek, 1945). By defining cooperative adaptation as an attribute of the hierarchy, and autonomous adaptation as an attribute of the market, Williamson makes sure that adaptation remains within the comparative
static perspective. In line with Nickerson and Silverman (2003), we redefine the concept of adaptation as a process of adjustment by economic actors from one governance structure to another, to allow for an analysis of governance changes. Nickerson and Silverman argue that economic actors are inclined to adapt, when the transactions are not aligned with the most efficient governance structure, to enjoy superior performance, or else to exit. We argue that economic actors are also inclined to adapt to the next best option, when transaction costs cannot be aligned with the most efficient governance structure. Our focus is on both adaptation costs and on the costs of misalignment. The assumptions on bounded rationality, opportunism and the minimization of costs, whether these are transaction costs or the costs of adapting to new forms of governance, remain the same, as in Williamson’s transaction cost economics.

**Adaptation Costs**

When adapting from one form of governance to another, various costs are incurred. These costs include search costs, and the costs of bargaining, drafting, negotiating and safeguarding an agreement. Search costs have been defined as “the costs of locating information about opportunities for exchange” (North and Thomas 1973, p. 93), and as “the costs of gathering information to identify and evaluate potential trading partners” (Dyer 1997, p. 536). These costs thus involve the costs of searching for information on the types of governance structures, and information on the potential contracting parties. When economic actors have decided on the type of governance structure and on the contracting party, they need to negotiate the specifics of the contract and governance structure with the contracting party. These costs include costs of bargaining, drafting, negotiating and safeguarding the agreement. Williamson (1985) refers to the latter costs as ex ante transaction costs, but does not take the search costs into account.

Since these various costs are incurred in the adaptation process from one
governance structure to another, and thus before the intended and actual transactions take place, they are here referred to as adaptation costs. By taking these search, bargaining, drafting, negotiating and safeguarding costs as a category of one-off costs related to adaptation between governance structures, they are to be distinguished from the transaction costs such as monitoring costs, enforcement costs or policing costs. The latter costs are typically costs, which will emerge once transactions have materialized and have been aligned with a governance structure. As such, the conceptual stance is taken in which transaction costs are considered in cases of executed transactions, as distinguished from the adaptation costs, which are involved in the process prior to the executed transactions.

We hypothesize that whether adaptation from one governance structure to another is, or is not, a feasible option for the economic actor involved is largely determined by the height of the adaptation costs. In case of excessively high adaptation costs this would, indeed, allow for the persistence of a situation of misaligned transactions and governance structures. In our particular case, we argue that relative adaptation costs, in the case of multiple options, also determine the choice between bad and worse options. This implies that, in the case of the involuntary abstention of the most efficient governance structure, economic actors will nevertheless try to minimize the adaptation costs.

**Misalignment Costs**

Following Nickerson and Silverman (2003), an economic actor will be inclined to adapt to another form of governance when its current form of governance is misaligned with the transaction. Misalignment implies that the transaction costs are not optimized to the prevailing governance structure. The difference between the actual transaction costs and the optimal transaction costs may be called the transaction cost differential. This term has also been used by Masten et al. (1991), referring to the positive difference between market and internal organization costs.
when governing transactions that are characterized by asset-specificity and uncertainty. When the actual transaction costs are higher than the optimal transaction costs, a misalignment cost is involved. Sampson (2004) identifies two types of misalignment in R&D alliances: excessive contracting hazards exist when a pooling contract is used for alliances with high opportunism hazards, and excessive bureaucracy exists when an equity joint venture is used for alliances with low opportunism hazards. The costs of these misalignments are measured by the amount of patents foregone. The innovative performance of an alliance, and thus the amount of patents, is lower for misaligned governance structures than for aligned governance structures.

Several reasons have been provided for the existence of misaligned governance structures. Bidwell (2010) argues that complex decision making in firms affects the firms’ ability to achieve a discriminating alignment. He shows that information asymmetries, incentive misalignment and a separation of related decisions among different organizational units may lead to a transaction misalignment (Bidwell 2010, p. 377). Firms also face a constraint on differentiating governance structures across transactions, due to the firms’ prior governance choices (Argyres and Liebeskind 2002). As a result of these prior choices, firms face differential organizational costs when governing new transactions.

In this paper, we focus on misalignments that were created by new laws and regulations. In order to comply to the regulations, the energy firms are forced into a suboptimal situation in which an adaptation process is required. At this stage at least two venues emerge: the economic actors may adjust the attributes of their transactions and settle on a predetermined governance structure, or they may adapt to other forms of governance and re-align the transactions with these governance structures. We focus on this second case. The energy firms will reassess their existing governance structures and will opt for an adaptation of the form of governance, taking into
account the relative adaptation costs and the misalignment costs. The economic actors are assumed to move into the direction where they economize on both costs involved.

**Model**

In order to hypothesize and estimate the influence of the costs of adaptation and misalignment on the involuntary governance choice, we state that the firms have a preferred (new) governance structure on the basis of the lowest expected costs. Hence,

\[
G^* = \begin{cases} 
G^q, & \text{if } C^q < \min(C^{pu}, C^{pr}) \\
G^{pu}, & \text{if } C^{pu} < \min(C^{pr}, C^q) \\
G^{pr}, & \text{if } C^{pr} < \min(C^q, C^{pu})
\end{cases}
\] (1)

where \(G^*\) is the preferred governance structure, 
\(G^q\) is the hybrid governance structure that is the closest to vertical integration, referred to as quasi-integration, 
\(G^{pu}\) is the hybrid governance structures that is closer to the market, but with public ownership, and is referred to as the public contract-based agreement, 
\(G^{pr}\) is the hybrid governance structure that is closest to the market, with a private ownership of the contracting parties, and is referred to as the private contract-based agreement.

\(C^q\) are the costs of governing transactions with quasi-integration, 
\(C^{pu}\) are the costs of governing transactions with the public contract-based agreement, 
\(C^{pr}\) are the costs of governing transactions with the private contract-based agreement.

Furthermore, we have argued that the expected governance costs are equal to the costs of governing transactions plus expected misalignment costs and expected adaptation costs. Hence,
\[ C^q = aX + R_q + A_{v\rightarrow q} \]
\[ C^{pu} = bX + R_{pu} + A_{v\rightarrow pu} \]
\[ C^{pr} = cX + R_{pr} + A_{v\rightarrow pr} \]

(2)

where \( X \) is a vector of attributes of transactions, \( a, b, \) and \( c \) are coefficients.

\( R_q \) is the misalignment cost in quasi-integration due to regulation, and \( R_{pu} \) is the misalignment cost in the public contract-based agreement due to regulation, and \( R_{pr} \) is the misalignment cost in the private contract-based agreement due to regulation.

\( A_{v\rightarrow q} \) is the adaptation cost from the vertically integrated firm to quasi-integration, \( A_{v\rightarrow pu} \) is the adaptation cost from the vertically integrated firm to the public contract-based agreement, and \( A_{v\rightarrow pr} \) is the adaptation cost from the vertically integrated firm to the private contract-based agreement.

From the above it follows that, for instance, quasi-integration is preferred when

\[ aX + R_q + A_{v\rightarrow q} \] is smaller than \[ bX + R_{pu} + A_{v\rightarrow pu} \], and when \( aX + R_q + A_{v\rightarrow q} \) is smaller than \( cX + R_{pr} + A_{v\rightarrow pr} \).

Or,

\[ (R_q - R_{pu}) + (A_{v\rightarrow q} - A_{v\rightarrow pu}) < (b-a)X \]
\[ (R_q - R_{pr}) + (A_{v\rightarrow q} - A_{v\rightarrow pr}) < (c-a)X \]

(3)

On the right hand terms of (3), Williamson (1996, p. 107) has argued that the governance costs of the vertically integrated hierarchy are larger than those of the hybrid, and those of the hybrid are larger than those of the market. He stated the following:

“Let \( M = M(k; \theta) \) and \( H = H(k; \theta) \) be reduced-form expressions that denotes market and hierarchy governance costs as a function of asset specificity \( k \)
and a vector of shift parameters (θ). Assuming that each mode is constrained to choose the same level of asset specificity, the following comparative-cost relations obtain: \( M(0) < H(0) \)” (Williamson 1996, p. 107).

“Letting \( X = X(k; \theta) \) denote the governance costs of the hybrid mode as a function of asset specificity, the argument is that \( M(0) < X(0) < H(0) \)” (Williamson 1996, p. 108).

Following Williamson (1996), we assume that \((b-a)X < 0\) and that \((c-a)X < 0\), which amounts to

\[
(R_q - R_{pu}) + (A_{v\rightarrow q} - A_{v\rightarrow pu}) < 0
\]

\[
(R_q - R_{pv}) + (A_{v\rightarrow q} - A_{v\rightarrow pv}) < 0
\]

and

\[
(R_q + A_{v\rightarrow q}) < (R_{pu} + A_{v\rightarrow pu})
\]

\[
(R_q + A_{v\rightarrow q}) < (R_{pv} + A_{v\rightarrow pv}).
\]

The probability that a particular governance structure is chosen, say quasi-integration, then becomes \( P\{ C^q < \min(C^{pu}, C^{pv}) \} \) or

\[
p\{ (R_q + A_{v\rightarrow q}) < \min((R_{pu} + A_{v\rightarrow pu}), (R_{pv} + A_{v\rightarrow pv})) \}
\]

Subsequently we may present the following hypothesis:

H1: Firms that are confronted with an involuntary governance choice prefer the governance structure with the next lowest expected misalignment costs and the expected adaptation costs.
Method

One of the problematic aspects of a theory of governance choice is that a comparison of governance costs that have not yet been incurred will make such a comparison a hazardous activity. This point was also made by Masten et al. (1991) and led them to conclude that “early claims that observed institutions minimize transaction costs were easy to make and impossible to refute”, mainly because non-observed institutions were not taken into consideration. Masten (1993) argued that, in order to operationalize the theory on governance choice, expected governance costs should be part of the analysis, which can be attained as these costs must be related to observable attributes of the transaction. In other words, the observable attributes of the transaction, now, may hint at similar attributes of transactions in the past, which where then governed at particular governance costs. These governance costs foregone may be the expected governance costs now.

This indirect measure of expected governance costs is based on the assumption that earlier patterns of transactions and governance structures can reveal compositions of future patterns, but neglects the possibility of changing conditions for past and future patterns. It also neglects that managerial mistakes have shaped the patterns in the past. Sampson (2004) also employs an indirect measure of misalignment costs, when she analyzes the differential performance of misaligned versus aligned governance structures, in terms of the number of patents of the alliances.

In this paper we have opted for a direct operationalization of expected governance costs. Given that most of the costs associated with a future governance structure will have to be incurred in the future, the uncertainty related to this measure can be rephrased in terms of a probability measure. The questions then become: “what is the probable governance cost of an alternative governance structure?” and “what will be the probability distribution?”.
In this paper, expert information and information from annual reports is used as data. The literature on the use of expert opinions, such as the Delphi method or opinion pooling, is vast and extensive (e.g., Okoli and Pawlowski 2004, Rufo, Pérez and Martín 2010). We will, however, take a simple way out by averaging (probability) expectations of several experts in the field. This has advantages of simplicity but also some disadvantages: first, the estimates may not be very precise and convey several biases. We presume, however, that this lack of precision applies to all the governance structures in the same manner, and that in the comparison of the costs of the different governance structures this lack of precision will not play a role of significance. Second, the expectation of the experts may have different distributions. As we only take the average of the expectations, the diversity of the distributions will not affect the comparison of the governance costs.

Data

The hypothesis was tested using data from reports of experts, such as consultants and bureaus for economic research, and data from the annual reports of energy firms and court cases. Appendix 1 portrays these reports. The consultants and bureaus for economic research estimated the costs of unbundling the distribution companies from the integrated energy firms (CPB 2005, 2006, Deloitte 2005, Roland Berger 2006, SEO 2006). These reports include both the one-off unbundling costs and the structural unbundling costs. We use the data from the annual reports of energy firms (of 2003 until 2007) and from court cases to demonstrate the preferred governance choices of the energy firms.

Measures

One-off and structural unbundling costs. We measure the adaptation costs (A) with the one-off unbundling costs, and the misalignment costs due to regulation (R) with the structural unbundling costs. The one-off unbundling costs are the costs
that are incurred to accomplish the process of unbundling, such as the re-organization of the former shared call centers, changing cross-border leases, the introduction of new ICT processes, changes in personnel and housing, legal costs, and the costs associated with rearranging the contracts of the companies with third parties (CPB 2005). The structural unbundling costs are costs that are incurred infinitely due to a loss of operational synergy. Synergies or economies of scope were present between the network and the retail activities of energy firms, in the call centers, service centers, billing machines, investment decisions, contracting for outsourced activities, the management of information systems, setting up of annual reports, and a common name. Structural costs arise because the separation of the network from the retail activities removes the gains from economies of scope, and requires the duplication of all these activities (CPB 2005).

*Three types of unbundling.* To calculate the difference between the misalignment and adaptation costs of quasi-integration \((R_q + A_{v\rightarrow q})\), the misalignment and adaptation costs of the public contract-based agreement \((R_{pu} + A_{v\rightarrow pu})\) and the misalignment and adaptation costs of the private contract-based agreement \((R_{pr} + A_{v\rightarrow pr})\), we identify three types of unbundling: legal unbundling, ownership unbundling, and ownership unbundling combined with privatization. In legal unbundling, the distribution network operator is a separate legal entity, but it is still part of the larger holding of the energy firm. In ownership unbundling, the distribution network operator is no longer part of the holding of the energy firm, and the shares of the distribution network operator are separated from those of the energy firm. In ownership unbundling and privatization, the shares of the unbundled segments of the formerly integrated firms are sold by, for instance, municipalities and provinces to a private party.
In each of these three types of unbundling, the distribution network operators and the integrated energy firms are governed by a hybrid form for the various electricity transactions (e.g. network connection, network access, balancing transactions), but they can be located on a continuum from the vertically integrated firm to the market (see figure 1). When the distribution network operator is legally unbundled from the integrated energy firm, the hybrid governance structures are closer to the hierarchy than when the operators are unbundled in terms of their ownership. When the operators are unbundled in terms of their ownership, and their shares are sold to private firms, the governance structures are located closer to the market on the hybrid continuum. We measure the one-off unbundling costs and the structural associated costs associated with these three types of unbundling to determine whether $(R_q + A_{v^{unb}}) < (R_{pr} + A_{v^{unb}})$, and $(R_q + A_{v^{unb}}) < (R_{pr} + A_{v^{unb}})$.

_Governance choices._ The preference for a particular governance structure of the energy firms is measured with the same terms. On the one hand, when energy firms express a preference for legal unbundling in their annual reports, they express a preference for the hybrid form that is closer to the hierarchy (i.e. quasi-integration). On the other hand, when they claim to prefer ownership unbundling and privatization, they express a preference for private contract-based agreements.

Insert figure 1 here

Results

_Governance Choices of Energy Firms_

In 2004, the Dutch Ministry of Economic Affairs formulated a first proposal for the ownership unbundling of the networks from the production and retail of electricity.
The four large energy firms in the Dutch electricity industry, Delta, Eneco, Essent and Nuon, communicated in several ways that they are against this proposal.

First, in their annual reports, they indicate to oppose the ownership unbundling, and they mention multiple disadvantages of this complete separation of the network from the integrated firm. The energy firm Eneco reports that:

“The proposal on unbundling of the Minister will lead to a reduced efficiency and higher energy bills for the consumers” (Eneco 2004, p. 5).

“Due to the proposal on unbundling, Eneco may need to renegotiate the cross-border lease agreements with American investors, which will lead to additional costs” (Eneco 2004, p. 46).

“Since April 2004, Standard & Poor provided Eneco with the prospect of a negative corporate credit rating, due to the Minister of Economic Affairs’ announcement on ownership unbundling. This rating influences the amount of extra collateral that has to be provided for the cross-border lease transactions” (Eneco 2005, p. 41).

In its annual reports of 2003 and 2004, the energy firm Essent mentions that:

“The unbundling has negative consequences, such as higher costs and higher tariffs, due to the loss of the advantages of synergy. Innovation will become unaffordable” (Essent 2003, p. 5).

“Unbundling involves important one-off costs for renegotiating the (cross-border) lease contracts, and substantial expenses for the premature termination of the (cross-border) lease transactions, as well as for the new systems of automated data processing. The structural costs of unbundled activities will be higher than the structural costs of the currently integrated firm, which will lead to higher energy prices for the consumers, and thus to a deterioration of the competitiveness of the firm” (Essent 2004, p. 99).
The energy firm Nuon lists a few other adverse effects of unbundling:

“Unbundling has negative consequences for the employment in the Netherlands and for the sustainable supply of electricity. Unbundling will also destroy value for the shareholders of the energy firms, and it will reduce access to capital markets to finance future projects” (Nuon 2005, p. 16, 2007, p. 56).

The energy firm Delta summarizes its viewpoint on the ownership unbundling as follows: “Unbundling is a bad solution for a problem that does not exist” (Delta 2007, p. 19).

Second, the energy firms discuss their preference for the status quo, i.e. for the integrated structure of their energy firms, which is of course consistent with their objections to the ownership unbundling. Both Eneco and Essent refer to the necessity to maintain their vertically integrated structures:

“Integrated energy firms offer a better guarantee for security of supply in the future” (Eneco 2004, p. 20). “Essent wishes to continue in the currently integrated form, because it offers the best guarantee for a safe, cost-effective and sustainable energy supply” (Essent 2005, p. 32).

Third, the four energy firms have formulated a second-best alternative for the ownership unbundling, and they have presented this alternative to the Minister of Economic Affairs. “The essence of this proposal was the operational separation of the network firm from the energy firm, whereby the ownership of the network would remain with the energy firm” (Eneco 2004, p. 16). This alternative proposal of the energy firms “led to an agreement with the civil servants of the Ministry and with the regulatory agency for the energy sector (Energiekamer), but not with the political leaders” (Essent 2005, p. 32). The Minister of Economic Affairs did not consider this
alternative unbundling proposal of the energy firms, and continued with the plan for
ownership unbundling.

Finally, Delta, Eneco and Essent have started a legal procedure against the
Dutch State with respect to the ownership unbundling. In June 2010, the court of The
Hague ruled that the Dutch law of 2006 that obliges the energy firms to unbundle
their network in terms of its ownership is in conflict with European law, and in
particular with the free movement of capital (Gerechtshof ‘s-Gravenhage 2010bcd).
The court argued that there are no urgent reasons that may serve the public interest to
unbundle the ownership of the energy firms (Gerechtshof ‘s-Gravenhage 2010a).
Following this court ruling, the energy firm Delta announced that it would
immediately stop all its activities related to the unbundling of its distribution network
(Delta 2010). The Minister of Economic Affairs has announced that she will
reformulate the law of 2006 (NRC 2010).

In terms of the preferred governance structure, $G^*$ above, the Dutch energy
firms have expressed a strong preference for an integrated governance structure
which, in absence of a vertically integrated governance, would amount to a quasi-
integration, $G^q$.

Misalignment Costs Due to Regulation
The preference of the energy firms for the hybrid organizational form that is closer to
vertical integration (legal unbundling) may be confronted with the expected costs of
unbundling, which are then hypothesized to be lower for legal unbundling as
compared to ownership unbundling and to privatization. Table 2a and 2b display the
structural unbundling costs as estimated by the experts in the field: consultants and
bureaus of economic research. The structural unbundling costs are all due to the
misalignment that will arise. Although the expected costs differ substantially per
expert, the estimates illustrate that the structural, annual unbundling costs and the structural unbundling costs, discounted for an infinite horizon, are lower under the legal unbundling alternative than under ownership unbundling or privatization. The study by Deloitte (2005) indicates that the largest part of the structural unbundling costs is attributable to ICT policy, services and planning (32%), and to housing, legal affairs, client contacts and billing (30%).

Adaptation Costs
The adaptation costs related to the change from one governance structure to the other, are represented by the one-off costs of unbundling. Table 3 displays that these costs are higher under ownership unbundling and under privatization than when the operators are unbundled only in terms of their legal structure.

The adaptation costs are, in the experts’ opinions, largely in agreement. Table 3 excludes the costs for cross-border leases (CBLs), however. CBLs are long-term leasing transactions under which the use of assets are transferred to investors for extended periods of time, and this use of the assets is subsequently leased back from the investors for shorter periods of time (Essent 2009). In the Dutch electricity industry, the energy firms entered into cross-border leases on their networks and production plants with American investors. These cross-border leases created tax
advantages for the American investors that these investors shared with the Dutch energy firms (SEO 2006). Various studies have warned for large costs of the CBLs as a result of the ownership unbundling, including costs to terminate the CBLs prematurely, costs for increasing the letters of credit, and the legal costs for adjusting the CBLs. These particular one-off costs have led to diverse estimates of the experts. Table 4 summarizes the diverse estimates of the costs of the CBLs.

\[
\begin{array}{|c|c|}
\hline
\text{Comparison of Total Costs} \\
\hline
\text{In the previous subsections, we have presented the costs of misalignment due to regulation and the adaptation costs for the three types of unbundling. The total of these costs for each of the three alternatives, and their differences, may indeed explain the firms’ preference for a governance structure. As we have set out above if} \\
(R_q + A_{v\rightarrow q}) < (R_{pu} + A_{v\rightarrow pu}) \text{ and } (R_q + A_{v\rightarrow q}) < (R_{pr} + A_{v\rightarrow pr}) \text{ a hybrid structure closer to vertical integration would be opted for. Otherwise it would be a hybrid closer to the market. Table 5 illustrates that the expected costs of legal unbundling are lower, by an amount of 3.67 billion euro, than the costs for ownership unbundling, and by an amount of 3.68 billion euro, than the costs of ownership unbundling and privatization.} \\
\hline
\end{array}
\]

\[
\begin{array}{|c|}
\hline
\text{Insert table 4 here} \\
\hline
\end{array}
\]

\[
\begin{array}{|c|}
\hline
\text{Insert table 5 here} \\
\hline
\end{array}
\]
Discussion

Findings
This study explores how governance choice relates to the costs associated to a governance change. In line with transaction cost economics, we investigate whether optimization, in the absence of the most efficient outcome, is still an option for firms, even when forced into an involuntary governance change. We have done so by confronting the ex ante governance preferences, expressed by the energy firms, with the probable misalignment costs and adaptation costs due to regulation, estimated by experts. On the basis of the hypothesis we formulated above, the preferred governance structure, i.e. the quasi-integrated hybrid, coincides with the lowest costs in terms of misalignment and adaptation to the quasi-integrated hybrid. We may therefore confirm our hypothesis. Although the outcome corresponds to a common sense preference for the lowest cost solution, it should be noted that misalignment costs and adaptation costs were never among the original cost components of transaction cost economics.

Theoretical Implications
In this article, we have taken TCE at face value and confronted its comparative static arguments to the requirements of governance adaptation. We have argued that some of the shortcomings of TCE with regards to adaptation processes may be attributable to limitations of the perceptions of adaptation. We have proposed adaptation costs to join transaction costs in the explanation of transformations between governance structures. We have also argued that an efficiency-driven line of argument aims at the reduction of costs of misalignment between transaction and governance structure, the transaction cost differential. This leads to a set of propositions that guides the research in TCE and offers a better understanding of practical experiences of governance transformations in terms of TCE. With the above propositions, we have
addressed the ongoing theoretical concern in TCE about the inability to explain institutional change.

The operationalization of the propositions, however, has immediate measurement implications, which will need to be addressed. Dealing with adaptation costs, i.e. with the costs associated with the search, bargaining, negotiation and safeguarding of potential new governance structures, the TCE framework enters into previously uncharted territory. The well-trodden route of measuring transaction costs (Wang 2003) may inform the measurement of adaptation costs. In our operationalization we have conflated adaptation costs with one-off costs, making the adaptation costs directly related (in time) to a governance change. This has clear advantages, as these costs would not materialize if the governance change does not take place, and can subsequently be differentiated from the structural costs, referred to as misalignment costs.

Another theoretical implication of this paper is the extension of TCE to encompass the comparison of relative optimality rather than absolute optimality. Note that in the choice between bad and worse, the lesser evil is still the relatively best outcome. In standard TCE absolute (but feasible and comparative) optimality is achieved in the alignment of transactions and governance structures. In the case of involuntary change, through standard TCE one would either establish the inefficiency of the new situation or one would abstain from drawing any conclusions. We have argued that there is still a governance issue at stake and the choice for a suboptimal governance structure can still be made in (extended) TCE terms.

**Practical Implications**

Several practical implications can be observed. First, the presence and amount of adaptation costs due to the CBL’s, creates an almost insurmountable barrier for any governance change at all. It is likely that the EU directives and national regulations underestimated these adaptation costs. The consequence for the individual firms has
been to either oppose the realization of these costs or, in order to back up the CBL’s, to immediately merge or sell the unbundled activities to a larger party. Both strategies, in fact, have been implemented and executed by the Dutch energy firms.

Second, the estimated misalignment costs are substantial and, excluding the CBL’s, over 20 times the adaptation costs. The political efforts to introduce a market into the European electricity industry, may have envisaged considerable gains, possibly more than the 2.4 billion euro’s to achieve a welfare neutral operation. More likely, however, the misalignments costs were subordinate in the decision-making process to transform the sector.

**Future Research**

In this article, we have focused on governance choices based on expected costs related to a governance transformation. What it does not do is to explain governance transformation itself. In part, this is due to the fact that the relevant firms are still in the process of transformation; in part, it is also due to the fact that the realized costs of adaptation have not materialized yet. In the future, research may focus on explaining the realized transformations on the basis of realized costs, both misalignment costs as well as adaptation costs. The focus may be more on the adaptation process itself, making transaction cost economics embrace the dynamics of governance changes.

In this article, we have taken the sum of the costs related to misalignment and adaptation whereas a separation of these costs may be indicative for the separate roles that misalignment and adaptation play in governance changes. In future research, it may be theorized how misalignment and adaptation may interact during a process of transformation, and how the underlying transaction may be affected by the adaptation process. The extension of TCE in these directions may not only have a closer resonance with practice, but may also increase its predictive content.

These future advances may also immediately impact on the policy attempts
for governance transformations, such as the prescription of a market for the energy firms. The dynamics of the policy implications, which have been absent in the deliberations in the past on the electricity industry, may in the future be analyzed and grounded in terms of transformation rather than desired outcomes.

Acknowledgments

The authors thank John Groenewegen and Mike Dietrich for insightful suggestions and comments, which significantly improved the paper.

References


University Press, Cambridge, 3-35.


**Figure 1. Types of unbundling as continuum of hybrids**

<table>
<thead>
<tr>
<th>Vertical Integration</th>
<th>Hybrid</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Unbundling: Quasi-Integration</td>
<td>Ownership Unbundling: Public Contract-Based Agreements</td>
<td>Ownership Unbundling &amp; Privatization: Private Contract-Based Agreements</td>
</tr>
</tbody>
</table>

**Table 2a. Structural, annual costs of unbundling, in euro’s**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal unbundling</td>
<td>Welfare decrease</td>
<td>0 - 80,000,000</td>
<td>0 - 400,000,000</td>
<td>130,000,000</td>
<td>-</td>
</tr>
<tr>
<td>Ownership unbundling</td>
<td>Larger welfare</td>
<td>100,000,000</td>
<td>350,000,000 - 460,000,000</td>
<td>150,000,000</td>
<td>410,000,000</td>
</tr>
<tr>
<td>Ownership unbundling &amp;</td>
<td>Larger welfare</td>
<td>100,000,000</td>
<td>350,000,000 - 460,000,000</td>
<td>150,000,000</td>
<td>410,000,000</td>
</tr>
<tr>
<td>privatization</td>
<td>decrease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2b. Structural, discounted costs of unbundling, in euro’s

<table>
<thead>
<tr>
<th></th>
<th>SEO, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal unbundling</td>
<td>2,073,000,000</td>
</tr>
<tr>
<td>Ownership unbundling</td>
<td>2,392,000,000</td>
</tr>
<tr>
<td>Ownership unbundling &amp; privatization</td>
<td>2,392,000,000</td>
</tr>
</tbody>
</table>

Table 3. One-off costs of unbundling, in euro’s

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal unbundling</td>
<td>Welfare decrease</td>
<td>0 – 80,000,000</td>
<td>8,000,000-73,500,000</td>
<td>80,000,000</td>
</tr>
<tr>
<td>Ownership unbundling</td>
<td>Larger welfare decrease</td>
<td>100,000,000</td>
<td>70,000,000 – 100,000,000</td>
<td>100,000,000</td>
</tr>
<tr>
<td>Ownership unbundling &amp; privatization</td>
<td>Larger welfare decrease</td>
<td>100,000,000</td>
<td>70,000,000 – 100,000,000</td>
<td>150,000,000</td>
</tr>
</tbody>
</table>

1 Excluding the cross-border leases

Table 4. Costs of CBLs, in euro’s

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal unbundling</td>
<td>Likely no effect</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ownership unbundling</td>
<td>Risk of large costs</td>
<td>5,000,000,000</td>
<td>4,000,000,000</td>
<td>677,000,000-1,156,000,000</td>
</tr>
<tr>
<td>Ownership unbundling &amp; privatization</td>
<td>Risk of large costs</td>
<td>5,000,000,000</td>
<td>4,000,000,000</td>
<td>677,000,000-1,156,000,000</td>
</tr>
</tbody>
</table>

Table 5. Total costs, in euro’s

<table>
<thead>
<tr>
<th></th>
<th>Misalignment costs</th>
<th>Adaptation costs1</th>
<th>Adaptation costs (CBLs)2</th>
<th>Total</th>
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<tbody>
<tr>
<td>Legal unbundling</td>
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<td>2,126,583,333</td>
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<td>95,000,000</td>
<td>3,305,500,000</td>
<td>5,792,500,000</td>
</tr>
<tr>
<td>Ownership Unbundling &amp; Privatization</td>
<td>2,392,000,000</td>
<td>111,666,666</td>
<td>3,305,500,000</td>
<td>5,809,166,666</td>
</tr>
</tbody>
</table>

1 These costs are an average of the costs, estimated by the various experts, in table 3.
2 These costs are an average of the costs, estimated by the various experts, in table 4.