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Transaction Costs, Institutions and the Organization of Supply Chains: Three “Good Questions”

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Abstract:

The paper examines how Transaction Cost Economics can shed light on a series of institutional and organizational questions in the agri-food sector through an examination of three questions. Why have economies in transition grown at different rates, and why have some been more successful at transition to a market economy than others? Why do different modes of supply chain governance emerge in agri-food supply chains? Why do public and private standards for food safety and quality co-exist? The contribution of a transaction cost lens to each of these questions is examined, drawing upon insights from the literature. Empirical challenges and opportunities are discussed.

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Abstract

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Key words: Transaction costs; institutions; transition economies; supply chain governance; food standards

JEL Codes: Q13; L14; P26

1. Introduction

All good research begins with a good question. In their 2005 book “Freakonomics”, Steven Levitt and Stephen Dubner ask several intriguing questions: what do schoolteachers and sumo wrestlers have in common? Does it matter what name a parent gives to their child? Why do drug dealers still live with their mothers? While this paper is not about sumo wrestlers, the naming of children or drug dealers, it is about asking good research questions; these questions relate to the

agri-food sector. The paper examines how Transaction Cost Economics can shed light on a set of institutional and organizational questions pertaining to the agriculture and food sector.

Transition economies: Why have economies in transition grown at different rates, and why have some been more successful at transition to a market economy than others? Why was privatization and liberalization alone not enough? *Supply chain governance:* why do auction markets play a key role in some agricultural sectors but are obsolete in others? Why are contracts and other hybrid forms of organization used as a coordinating mechanism within supply chains for some commodities, but not for others? *Private standards:* there is a clear economic argument for the existence of market failure in the provision of safe food and most governments regulate food safety; why then do some food retailers and third parties also have their own private food safety standards? Why do public and private food standards co-exist? Transaction Cost Economics helps to answer these questions by shedding light on the role of institutions in a well-functioning economy.

The motivation for this paper is to show how a transaction cost lens has enhanced our understanding of food system change across a variety of dimensions and, in doing so, the paper draws insights from the rich set of literature that has emerged in these areas. The paper is organized as follows: section 2 outlines key dimensions of the transaction cost economics framework and points to the shortcomings of the original neoclassical model of perfect competition with respect to understanding transactions and institutions; section 3 addresses the first of the questions regarding transition economies; section 4 address the supply chain governance question, while section 5 examines the private standards question; section 6 offers concluding comments.

2. Departing from the Theory of the Firm: Transaction Cost Economics

The classic ‘good research question’ that Ronald Coase asked in his seminal paper “The Nature of the Firm” (1937) was ‘Why do firms exist?’; why do some transactions occur within firms while others occur across a market interface. The answer he gave, as is well known, is that there are costs to using the market mechanism: costs of discovering prices, of negotiating and specifying contracts, of monitoring and enforcing contractual agreements; these costs can be avoided if firms vertically integrate, directing economic activity through within-firm managerial orders. Yet there are also internal costs of co-ordination within a firm. Markets and firms are alternative modes of organizing economic transactions. The supply chain governance question posed above essentially reduces to an examination of the transaction costs associated with alternative modes of organizing economic transactions.

Williamson (1979) was later to build on Coase’s original insight, positing that the organizational form that emerges, *ceteris paribus*, will be that which minimizes the sum of production and transaction costs. Cheung (1987) defines transaction costs as:

a spectrum of institutional costs including those of information, of negotiation, of drawing up and enforcing contracts, of delineating and policing property rights, of monitoring performance, and of changing institutional arrangements (p.56).

The ruling economic paradigm for the analysis of markets, industries and firms at the time of Coase’s original insight was the traditional neoclassical economic model enshrined in the theoretically neat, mathematically tractable world of perfect competition. It is worth pausing for a moment to consider the central tenets of the perfectly competitive neoclassical economic transaction: an industry with a large number of competing firms producing the same (a single) product under the same cost conditions and facing the same market demand curve. The exchange

of a homogenous product removed the possibility of quality variations, assuming away measurement costs and negating the need for quality measurement institutions. Economic agents are assumed to have perfect, costless information such that there is no uncertainty over prices, product characteristics or the behaviour of competitors or exchange partners. Monitoring and enforcement of transactions are not needed. Transactions occur in a single time period between multiple buyers and sellers; there is no market power because alternative buyers and sellers are always available.

The perfectly competitive neoclassical model concentrated on equilibrium outcomes, with no real explanation of how or why transactions occurred and how equilibrium was reached. In essence, it ignored, or took as given, the institutional environment within which transactions occur. Transactions were implicitly treated as though they occurred in a frictionless economic vacuum. Somewhat ironically, the “Theory of the Firm” had very little to say about firms, why they existed, or what made them an efficient mode of governance. It also had very little to say about the institutions necessary for markets to function effectively. Indeed, as has been noted by Sexton (2013) many of the interesting issues emerging in agriculture and food sectors in recent years involve quality variability and uncertainty (for example, genetically modified organisms, sustainability, food safety, food quality), information asymmetry, market power, and the changing nature of institutions: all issues which are conveniently assumed away under perfectly competitive market assumptions. The perceived shortcomings of the traditional perfectly competitive neoclassical economic model of the early 20th Century led economists to search for more realistic explanations of firm and market behaviour, including developments in industrial organization theory as well as New Institutional approaches to economic analysis and the

Transaction Cost paradigm (see Williamson, 1979; 1986). The focus of this paper is on insights from the transaction cost economics branch of New Institutional Economics.

Four key concepts explain the existence of transaction costs and highlight the fallacy of a frictionless economic environment, regardless of the economic system: bounded rationality, opportunism, asset specificity and information asymmetry. *Bounded rationality* recognizes that people have limited cognitive abilities: while they intend to act rationally, their capacity to evaluate all possible alternative outcomes of a decision is constrained (Simon, 1961). When combined with situations of uncertainty and complexity, bounded rationality forces agents to incur higher transaction costs and can lead to sub-optimal decisions. Uncertainty and complexity characterize economies in transition and developing economies as institutions begin to develop, the rules change, and new business relationships are established.

Opportunism – “self-interest seeking with guile” (Williamson, 1979, p.234) – becomes a problem in the presence of small-numbers bargaining when agents can exploit a situation to their own advantage. Bounded rationality implies that the potential for opportunistic behaviour is difficult to establish *ex ante*. The privatization process in a transition or developing economy may result in a monopoly or a small number of firms dominating an industry, creating a small-numbers bargaining situation that is compounded in the presence of asset specific investments.

Asset specificity arises when one party to an exchange has invested in resources specific to that exchange, with little or no value in an alternative use (Klein et al., 1978); for example, the purchase of specialized equipment or the development of specialized infrastructure. The investment leaves a firm vulnerable to opportunistic recontracting by an exchange partner.

Bounded rationality or a weak institutional environment with vaguely defined or unenforceable

property rights preclude the development of a fully contingent and enforceable contract to govern this transaction. In the absence of credible contractual protection, investment 'hold-up' problems arise and the transaction does not occur. If these problems are chronic, investment is deterred and economic growth is slowed.

Finally, Transaction Cost Economics relaxes the assumption of full information, allowing for *information asymmetry* in the form of adverse selection or moral hazard. Information institutions that reduce buyer measurement costs or protect the contractual rights of buyers can play an important role in preventing market failure.

As a result of bounded rationality and opportunism, and in the presence of information asymmetry and asset specificity, transaction costs arise. Transaction costs can usefully be thought of as the search, negotiation, monitoring and enforcement costs associated with a transaction. Ex ante search costs arise prior to a transaction and include, for example, the costs of discovering prices, of identifying buyers/sellers. Negotiation costs arise in facilitating the transaction, while ex post monitoring and enforcement costs include, for example the cost of monitoring quality, of ensuring that payment is made. The institutional environment influences the scope and scale of transaction costs, for example, the extent to which property rights are defined and enforceable, the existence of an effective commercial legal system that facilitates enforcement of contracts or the presence of credible quality measurement institutions (e.g. grading, certification). In the three questions which follow, transaction costs and the effectiveness of the institutional environment are recurring themes. We now turn to the first of the three questions.

3. Why have transition economies evolved differently?

3.1. Divergent outcomes from transition

Economies transitioning from a command to a market economy have undergone the transition process with differing degrees of success, as evidenced by key macro-economic indicators: GDP growth, inflation and unemployment rates, income inequalities measured by Gini coefficients, and this was particularly the case during the early years of transition (Weder 2001).

At a sectoral level, productivity growth rates also provide an indicator of diverging outcomes from transition. In a wide-ranging view of the early insights from transition successes and failures, Rozelle and Swinnen (2004) show that comparisons of both output and agricultural productivity growth rates reveal stark differences in the outcomes from transition across Central and Eastern Europe (CEE) and the Commonwealth of Independent states (CIS)¹, as well as China and other East Asian transition economies. While production typically fell steeply in the first years of transition in most CEE and CIS countries, the length of time between the beginning of reform and the bottom of the trend line varied significantly. For example, the downward trend in agricultural output stopped soonest in Balkan CEE countries such as Albania, Romania and Slovenia, lasting only 2-3 years, while in CEE countries such as Poland, The Czech Republic, Hungary and some central Asian countries (Kyrgyzstan, Turkmenistan and Uzbekistan), the decline lasted longer (5-6 years) and for a decade or more in a number of other CIS nations (Rozelle and Swinnen, 2004).

¹ Countries of Central and Eastern Europe (CEE) include the Czech Republic, Slovakia, Hungary, Romania, Poland, Bulgaria, Albania, Croatia, Slovenia and the three Baltic States, Estonia, Latvia and Lithuania. The Commonwealth of Independent States (CIS), formed with the dissolution of the Soviet Union in 1991, includes former Soviet republics such as Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Uzbekistan, as well as Russia.

Rates of productivity growth provide a more nuanced picture of differences in the success of the transition process, as noted by Rozelle and Swinnen (2004) who analyse three sets of productivity indicators: labour productivity (output per unit of labour), yields (output per unit of land), and total factor productivity (TFP). After the first few years of transition, several CEE countries began to experience rising agricultural productivity in the form of labour productivity, yields and TFP. For example, within five years, Hungary, The Czech Republic and Estonia all exhibited strong growth rates in agricultural labour productivity and positive annual growth rates in TFP. In contrast, a number of CIS economies, including Tajikistan, Armenia and Moldova experienced significantly negative agricultural labour productivity changes through the first five years of transition, with growth rates remaining negative a decade after transition.

3.2 Transition: why institutions matter

It is clear that the transition countries, while by no means uniform to start with, have undergone very different transition processes in terms of policy reform and institutional development (Hobbs, 2007; Rozelle and Swinnen, 2004; Weder, 2001). As Cheung's definition of transaction costs suggests, the notion of "institutions" lies at the heart of transaction costs and a wide-ranging literature exists exploring the role of institutions in economic development and the drivers of institutional change drawing upon early work by Coase (1937), North (1987, 1990) and Williamson (1986, 2000). The observation that "institutions matter" is particularly pertinent in exploring the first question posed in this paper: why has the process of transition been more successful in some economies than in others?

In an early analysis of transition economies focusing on the role of institutions, Weder (2001) identifies five clusters of transition countries grouped by institutional performance. The measure

of institutional performance is derived from private sector surveys of firms and expert surveys of country risk assessment firms. It combines several aspects of the economic and business environment, including evaluations of the rule of law, graft, regulatory burden, government effectiveness, political instability, credibility of government announcements, judiciary reliability, property rights enforcement, bribes, and freedom from discretionary bureaucrats. Weak institutions raise transaction costs and inhibit investments.

More recently, as Lloyd and Lee (2016) note, transition economies have proven fertile ground for testing hypotheses about the importance of institutions, particularly given the mixed success with respect to subsequent rates of economic growth. In a wide-ranging review of recent empirical examinations of the role of institutions in explaining cross-country differences in economic performance, the authors conclude that: “*institutions matter ... This empirical research has shown that institutions are a significant determinant of the long-run growth/prosperity performance of economies*” (Lloyd and Lee, 2016, p.17). This conclusion notwithstanding, they point to the empirical challenges inherent in isolating the impact of institutions and institutional change on the long-run growth performance of nations, particularly in cases where growth rates have accelerated or decelerated in the presence of a seemingly stable institutional environment.

For the most part, in most modern market economies, a low transaction cost institutional environment is taken for granted; it exists as a backdrop to market transactions, facilitates the smooth functioning of transactions and the maintenance of a stable investment climate. The institutions of a market economy are many and varied: financial institutions, such as an effective commercial banking system, a credible commercial legal system for enforcing contracts, marketing institutions that facilitate price discovery and risk management, and so on. Most of

these institutions simply were not necessary in a command economy where resources moved between production units or were allocated to distribution outlets as a result of bureaucratic decisions rather than in response to price signals. The transition path involved the establishment and adaptation of institutions, a process fraught with uncertainty. Failure to establish an efficient, credible institutional environment increases the transaction costs of doing business, stunting economic growth and deterring investment (Hobbs et al., 1997; Hobbs, 2007).

Privatization by itself, while a necessary condition for transition to an efficient functioning market economy, was by no means a sufficient condition. In the absence of an effective, credible and transparent institutional environment, the expected gains from privatization are not fully realized. The absence of an effective, enforceable system of property rights leads to high transaction costs and discourages investment, for example, the plethora of “informal rights” that pervaded the Russian economy undermined nascent institutions and slowed the transition process (Nureev and Rudov, 2001; Radaev, 2001). Commercial contract law and effective dispute settlement mechanisms, either through the courts or through commercial arbitration processes, reduce transaction costs and facilitate the development of new supply chains. Weak corporate governance, graft and corruption serve to undermine investor and public confidence and pose a serious threat to economic growth and investment within a transition economy (Hobbs, 2007).

The process of transition to a market economy occurred in very different ways in different countries, with varying levels of emphasis on the nature of institutional change. Rozelle and Swinnen (2004) point to three central differences in the approach to institutional change within the agricultural sectors of transition economies: differences in price and subsidy policies, in the degree of property rights reform and farm restructuring, and in market liberalization and the

establishment of market institutions. For example, they note that the final form and mix of property rights differs significantly among transition countries, often with only partial property rights granted to farmers, which in some countries took the form of income rights but few control rights, while in other cases farmers were provided nearly full control rights but only partial income rights. Ownership changes were sometimes considered separately from questions of farm restructuring, while restructuring sometimes occurred in a process distinct from changes in ownership rights. Rights reform in CEE countries, for example, went much further than transfer of use rights, with restitution of land to former owners occurring in much of Central Europe, the Balkans and the Baltic countries. In contrast, in many CIS countries, for example, Russia, Ukraine and Belarus, land reform proceeded much more slowly, and in a somewhat piecemeal fashion (Rozelle and Swinnen, 2004).

The development of market-supporting institutions in transition economies arose with differing degrees of success. Contract enforcement problems were widespread during the early part of transition, with delayed payments noted as a significant problem in numerous studies (Gorton et al, 2000; Rozelle and Swinnen, 2004; Swinnen and Maertens, 2007). Payment delays were associated with profitability and cash-flow problems in many agri-food supply chains, creating major financing constraints and a significant source of transaction costs. The countries which weathered the transition process most smoothly and relatively quickly were also those within which a set of public and private, formal and informal institutions emerged capable of enforcing contracts, reducing transaction costs, and facilitating access to inputs and output markets (Rozelle and Swinnen, 2004). Poland is often used as an example: at the outset of transition significant differences existed in investments and product quality from farms supplying foreign-owned processors relative to local processors, yet these differences had all but disappeared by

2001 (Rozelle and Swinnen, 2004). In contrast, the emergence of markets progressed considerably more slowly in most CIS countries during the early part of transition due to slow policy reforms which constrained the early development of public institutions, as well as deterring private institutional innovations such as the use of private standards within vertically coordinated supply chains.

Businesses dislike uncertainty; yet high levels of uncertainty characterize an economy in transition with new or emerging market institutions (Peng and Heath, 1996). Getting the institutional environment right is an important prerequisite to lowering transaction costs and facilitating economic growth, and helps to explain the disparity in growth rates and differing levels of success of transition economies over the last two decades. The transaction cost lens has also proven valuable in understanding institutional change and the implications for sustainable value chain relationships within a developing country context. A common feature of many transition and developing economies has been the demise of centralized state-managed vertically integrated agricultural supply chains. In the absence of well-functioning institutions for assuring quality and enforcing contracts, tightly coordinated supply chains have re-emerged in the form of private sector supply chains in which private (third party) standards play a central role. Supply chain governance and the role of private standards are explored in subsequent sections of this paper.

4. Why do Different Supply Chain Governance Structures Emerge?

The second set of questions posed at the outset of this paper dealt with the different types of supply chain governance that exist in agri-food supply chains: the fact that auction markets are used to coordinate some transactions, while in other cases contracts are prevalent; the growth of

so-called 'hybrid' forms of governance, and the presence or absence of vertical integration across different stages of a supply chain. These questions cut to the heart of Coase's original insight of "why do firms exist". Broadly speaking, two different empirical approaches to this question have emerged in the literature: the first uses observed transaction attributes to explain or predict governance structures through their hypothesized effect on transaction costs, while the second uses measures of transaction costs to explain governance structures directly. Both approaches are discussed in the following sections.

4.1 Linking transaction attributes to supply chain governance

Williamson (1979; 1986) identified three attributes (or dimensions) of transactions: uncertainty, asset specificity, and frequency (with complexity later added as a transaction attribute by other scholars). A combination of high levels of uncertainty and highly specific (idiosyncratic) investments raises the transaction costs of short-term, occasional spot market transactions and is expected to lead to vertical integration, or in the case of occasional transactions, a long-term contract. With low levels of uncertainty and low levels of asset specificity, spot market transactions should prevail as a more transaction-cost efficient governance structure. Uncertainty and asset specificity have emerged as the key variables of interest in most empirical applications that use transaction attributes as the explanatory variables.

In an innovative application of the transaction cost framework, Oxley (1997) examines appropriability hazards as a determinant of the choice of strategic alliance in technology transfer relationships. She distinguishes three different types of strategic alliance differentiated by the degree of hierarchical control and, using a multi-industry, multi-country database of co-operative agreements, provides an econometric analysis of the effect of transaction attributes on the choice

of alliance type. She argues that asset specificity and appropriability hazards are likely to be higher when design activities (new products or new technologies) are involved, or when the geographic scope of alliance partnerships is larger. In both cases this makes monitoring more difficult and is expected to result in more hierarchical governance structures (alliances with more vertical control). The empirical results confirm that more hierarchical governance structures are chosen when appropriability hazards are more severe.

In an early application to agricultural marketing channels, Frank and Henderson (1992) develop an index of vertical coordination (governance) that measures the scope and strength of vertical relationships in the US agri-food sector and regress it against a series of proxy measures of transaction attributes (uncertainty and asset specificity), as well as proxy measures of the degree of concentration (capturing the small-numbers bargaining problem) and the costs of administered co-ordination. The paper demonstrates empirical support for the effect of uncertainty and asset specificity on vertical co-ordination, while also highlighting the challenges of obtaining accurate proxy measures of transaction attributes.

In both of these examples, uncertainty and asset specificity were the transaction attributes of primary interest to the authors. Frequency remains somewhat ambiguous as a transaction attribute. Williamson's (1979) original interpretation relates frequency to the viability of transaction-specific governance modes, wherein occasional transactions such as the construction of a factory, albeit highly asset specific, do not justify expenditure on an in-house governance mechanism and would be conducted through a contract rather than vertical integration. In contrast, he argues that very frequent transactions of a highly specific nature, such as between a coal mine and a coal-fired electricity-generating plant, would justify in-house governance

through vertical integration. Thus, in Williamson's model highly frequent transactions are associated with more hierarchical governance. An alternative interpretation, however, is that reputation effects and repeat business take on greater importance in highly frequent transactions, reducing the incentive for opportunistic behaviour, such that *ceteris paribus*, spot market transactions or self-enforcing contracts would suffice and there is a *reduced* need for hierarchical governance. Weseen et al (2014) take this view in an analysis of hold-up problems in ethanol supply chains, arguing that repeated transactions build trust and provide a disincentive for opportunistic behaviour which would jeopardize future transactions. Further empirical analysis of the effect of frequency on governance outcomes could help address this apparent contradiction.

A case study approach to examining the influence of transaction attributes on vertical coordination outcomes has been employed across a number of studies and contexts (Weseen et al 2014; Martino and Frascarelli, 2013). Weseen et al (2014) note that ethanol plants sit at the juxtaposition of three sets of supply chain relationships: on the input side, sourcing feedstock supplies from farmers, and on the output side supplying ethanol to gasoline producers and distillers grains by-products to livestock farmers. Using case studies of wheat-based ethanol plants in western Canada, the authors examine how uncertainty, frequency and the need for asset specific investments creates hold-up risks and detail how and where spot markets, hybrids and integration have emerged as the governance structure of choice. Wever et al (2012) also take a whole supply chain perspective, arguing that transaction cost analyses should consider how specific contractual arrangements enable firms to manage exposure to both demand and supply side risks, rather than considering one side of the transaction in isolation.

Focusing on uncertainty as the transaction attribute of interest, Martino and Frascarelli (2013) observe that both environmental and behavioural uncertainty give rise to contractual hazards and influence the design of governance mechanisms to reduce these hazards. Through a set of case studies covering sugar beet, tomato, potato, organic poultry and cereal supply chains in Italy, the authors examine the sources of environmental and technological uncertainty and the implications for contractual adaptation within those supply chain relationships, hypothesizing that when faced with uncertainty, parties to a transaction will integrate their activities by allocating critical decision rights to the party who is expected to maximize total surplus.

4.2 Linking to transaction costs to supply chain governance

A second empirical approach commonly taken in the literature is to use measures of transaction costs directly as the explanatory variables, and evaluate their relative importance in determining the governance outcome (vertical co-ordination). Transaction costs arise in the process of searching for information prior to a transaction, in negotiating the transaction and in monitoring and enforcing the transaction. In what follows, the nature of transaction costs is first explained, followed by a sampling of the empirical literature exploring the impact of transaction costs on vertical co-ordination in agrifood supply chains.

Search – or information – costs arise directly from the information asymmetry that characterizes many transactions. Economic agents incur search costs in gathering information about products, prices, the reliability of buyers (suppliers), etc. Buyers incur search costs in ascertaining the true quality of a good, particularly when the product has experience or credence attributes that are important to the purchase decision. Barzel (1982) argues that buyers use proxy measures of value, leading to measurement errors and a divergence between the price of a product and its

valuation by the buyer. In consumer markets multiple buyers incur measurement costs as they sort goods to estimate their value. It is in the seller's interest to incur product quality measurement costs to reduce the incentive for costly sorting activities on the part of buyers. Barzel concludes that institutions (both public and private) arise to reduce the costs of measurement. Credible quality signals include firm-level strategies such as branding and product warranties. Industry-wide initiatives include price reporting services, commodity grading schemes, quality assurance and certification systems – usually with third party verification to strengthen the credibility of the quality signal.

Negotiation costs arise from the physical act of the transaction, and include the costs of negotiation and drawing up contractual agreements or the use of an intermediary, such as a broker, etc. In the presence of high levels of uncertainty and a weak institutional environment, drawing up fully contingent contracts is prohibitively costly. In transition or developing economies without an effective set of commercial contract laws, negotiation costs will be higher. Financial institutions reduce negotiation costs by facilitating payment over time and distance and by providing access to a source of credit (Hobbs, 2007).

Monitoring and enforcement costs arise after the transaction has been agreed to, and include the costs of monitoring the quality of goods, the actions of exchange partners, and the costs of enforcing the terms of the transaction agreement. A transparent and enforceable system of property rights, an effective commercial legal system and judiciary, and enforceable rules of corporate governance are all components of the institutional environment that help to mitigate monitoring and enforcement costs. In the context of agricultural markets, quality measurement and certification institutions again help to reduce monitoring costs.

Directly focusing on the costs of conducting a transaction therefore offers another means of answering the second set of research questions. Why are auctions used to coordinate some agricultural transactions, whereas contracts are used in other sectors; why have longer-term alliance or contractual relationships replaced occasional spot market transactions for some agricultural commodities? The answer lies in the relative transaction costs of spot (auction) market transactions versus longer-term (contractual) relationships or strategic alliances. Hobbs (1997) evaluated the relative importance of transaction costs in cattle marketing decisions (auctions versus direct sales to a processor) in the UK beef industry. A survey of cattle producers gathered data on various search (information), negotiation and monitoring costs (e.g. price uncertainty, quality uncertainty, reputation, bargaining costs, monitoring cattle handling during transit, ensuring payment, etc.). The farmer's choice of marketing channel was regressed against a set of transaction cost variables, with a number of negotiation and monitoring cost variables found to be significant determinants of the decision to market through an auction versus a direct sale. The search cost variables were not relevant to this decision due to the well-developed information institutions that existed in the UK beef industry at the time. The method developed by Hobbs (1997) has subsequently been used or adapted in numerous empirical studies of the influence of transaction costs on the structure of agricultural supply chains (e.g. de Bruyn et al, 2001; Ferto and Szabó, 2002; Gong et al., 2007; Woldie and Nuppenau, 2011).

In another early application of the transaction cost framework to a supply chain governance question, Boger (2001) examines the relationship between quality and contractual choice in the Polish hog market, identifying the importance of market institutions and the informational barriers that existed in that sector during transition. Using data from a survey of hog producers, she evaluates the probability of choosing a marketing channel given investments in specific

assets and the degree of contractual safeguards sought by producers. Her approach combines measures of transaction attributes, such as price uncertainty and asset specificity, with assessments of transaction costs such as transportation effort and speed of payment.

Brocklebank et al (2008) use insights from transaction cost economics to explore supply chain co-ordination and the role of branded beef programmes in Canada and the US. A stated preference conjoint analysis is used to evaluate the relative importance of key transaction characteristics (particularly asset specific investments) on the willingness of cattle producers to enter into supply chain alliance relationships. The analysis also explores how different supply chain structures are being used by the beef industry to improve co-ordination and provide consumers with differentiated beef products.

Many other examples of empirical applications of the transaction cost framework to answer agri-food supply chain governance questions exist, and a full sampling of this literature is beyond the scope of this paper. One of the primary challenges lies in developing tractable proxy measures of either transaction attributes or transaction costs. This requires careful design of survey questions in the case of primary data collection, or detailed secondary data that provide reliable measures of uncertainty and asset specificity, and which capture the frequency and complexity of transactions. Evaluating the choice between the two extremes of purely spot market transactions versus vertical integration has been done relatively successfully. Discerning between hybrid forms of governance (contracts, strategic alliances, etc.) in a discriminating way through empirical analysis, however, remains somewhat of a challenge and is a fruitful area for further research.

Finally, several authors have noted that transaction cost explanations of decisions to vertically integrate or the emergence of hybrid modes of governance should be considered alongside other theoretical lenses in a holistic approach. These include strategic management theory (the influence of market power, firm size, appropriability concerns), agency theory (the influence of adverse selection and moral hazard), the resource-based view of the firm (the influence of internal competencies and capabilities), and the effect of the external institutional environment (political, legal, regulatory, technological, economic) (James et al., 2009; Pascucci et al., 2011; Hobbs, 2014; Lees and Nuthall, 2015; Menard, 2017). Organizational decisions regarding the choice of innovation strategy (to innovate in-house or to outsource innovation processes) have been a particular focus of much of this work. Looking ahead, it is clear that the deceptively simple question: why do spot markets prevail in some transactions while other more complex forms of hybrid contractual relationships emerge in other transactions, is in fact a deeply layered question upon which a number of theoretical lenses can shed light. To that end, a transaction cost lens offers a compelling foundation upon which to build a holistic analytical approach.

5. Why Do Public and Private Food Standards Co-Exist?

The third set of questions posed at the start of this paper related to the existence of private food standards. The economic argument for the existence of market failure in the provision of safe and high quality food is difficult to dispute². The classic negative externalities argument posits that markets fail to provide the socially optimal level of food safety (quality) if the costs to a firm of producing unsafe (low quality) food are less than the costs to society. Furthermore, market

² There is an ongoing debate as to whether food safety is subset of food quality or whether the two are separate concepts. For the most part, this section of the paper focuses on food safety (including food safety standards), recognizing that similar arguments may also be made for a broader set of food quality attributes (including credence attributes related to production methods such as animal welfare, sustainability, the use of genetic engineering technologies, etc.).

failure occurs due to information asymmetry: consumers would not knowingly consume unsafe (low quality) food – food safety (quality) is typically either an experience or a credence attribute. As a result, we have a strong economic argument for government intervention in the provision of food safety and food quality on both negative externality and information asymmetry grounds, and indeed most governments intervene to regulate food safety, and often aspects of food quality. However, despite the existence of public food safety standards, private food safety standards have also emerged, and in many cases impose standards more stringent than that of the statutory requirements. For example, food retailers (or coalitions of retailers) have established private food safety and quality standards to which suppliers must adhere (see for example, Jaffee and Masakure, 2005; Mainville et al., 2005), while third party private standards (e.g. established by environmental or animal welfare agencies) also exist. Why then do public and private standards co-exist?

One answer is that uncertainty over product quality and food safety leads to an incomplete contracting problem in food supply chains. Downstream food firms incur transaction costs in safeguarding their reputation investments in brand name capital. Since information asymmetry is pervasive (food safety and quality are experience or credence attributes), downstream food firms incur transaction costs in detecting the presence (absence) of food safety (quality) attributes, or in verifying the safety or quality of production practices used upstream by suppliers (or indeed by their suppliers' suppliers). The transaction costs of obtaining or verifying this information through a series of relatively anonymous spot market exchanges are relatively high, creating pressure for a change in governance towards closer vertical co-ordination. The other pressure for change comes in the form of institutional adaptation. New food safety policies emerge, such as requirements for mandatory risk management systems (e.g. HACCP), or private sector solutions

emerge in the form of labelling, certification and quality assurance programmes. A further private sector solution is the development of private (including third party) food standards. These proprietary standards reduce the search and monitoring costs faced by downstream food processors and retailers in assuring food safety and in providing credible quality claims.

A rich literature has emerged examining the drivers, scope and effects of private standards in food supply chains, and a full consideration of this literature is beyond the scope of this paper. A narrower subset of this literature has focused on the relationship between transaction costs and/or vertical coordination and private standards (examples include Zaibet and Bredahl, 1997; Ménard and Valceschini, 2005; Raynaud et al, 2005; Banterle and Stranieri, 2008; Banterle and Stranieri, 2013; Passuello et al, 2015; Kuijpers and Swinnen, 2016). Private standards range from voluntary consensus standards established by coalitions of firms or industry associations (e.g. GlobalGap, Assured Food Standards (UK)), to proprietary standards established by individual firms, to standards established by third parties (e.g. animal welfare organizations) and standard-setting organizations (e.g. ISO 9000).

In an early analysis of motivations for adopting ISO certification in the UK meat sector using firm-level interviews, Zaibet and Bredahl (1997) find that certification to a common standard facilitated reductions in management and production costs as well as transaction costs, particularly through a reduced need for inspections and monitoring of suppliers who were third party certified. An examination of the use of private standards in Italian poultry meat value chains by Passuello et al. (2015), also using firm-level interviews, shows how proprietary private standards with requirements to comply with binding asset specific technical and quality specifications lead to a shift to tighter governance structures with more vertical control, a finding

consistent with the predictions from Transaction Cost Economics. In an analysis of the effect of value chains on technology adoption, Kuijpers and Swinnen (2016) argue that modernization of procurement systems in transition and developing economies included the introduction of private standards to address information asymmetry, reduce transaction costs and facilitate production differentiation.

Banterle and Stranieri (2008) examine the implications of voluntary (private) traceability systems for supply chain relationships within a transaction cost frame. The analysis shows how the introduction of a private traceability standard in Italy affects transaction characteristics (increasing asset specificity, while reducing uncertainty), transaction costs and governance, creating incentives for closer supply chain co-ordination. Similarly, Banterle and Stranieri (2013) examine how retailer-led private sustainability standards featuring integrated pest management systems increased asset specificity but reduced transaction uncertainty between supply chain partners. These changes to transaction characteristics create new transaction cost burdens stimulating a change in governance towards contracts with a higher degree of vertical control to protect the reputational capital of the retailer, such as more closely specifying production methods, prices, and the respective liabilities of the parties.

Reputational capital is also discussed by Raynaud et al (2005) in an analysis of differences in supply chain governance in the presence of public versus private food standards. Using evidence from 42 case studies across three sectors (processed meat, cheese, fruit and vegetables) in seven European countries, the authors find that when reputational capital is the main quality assurance device (i.e. a private standard), the transaction costs of market governance are prohibitively high,

leading to hierarchical governance featuring high levels of vertical control (vertical integration, tightly specified contracts).

The relationship between transaction costs, governance structures, and quality outcomes in pork supply chains has attracted growing interest among researchers. In an analysis of EU pork supply chains, Wever et al (2010) suggest that insufficient alignment between quality management systems and governance structures results in high transaction costs and leads to under investments in quality improvements, cheating on quality, and difficulties in adjusting quality standards within the chain. Case studies of specific pork supply chains in Germany, Spain, The Netherlands and Hungary are used to examine the relationship between quality outcomes and supply chain governance within a Transaction Cost Economics framework. In a discussion of the differing incentives to adopt technologies to enhance eating quality in pork versus beef supply chains, Schulze-Ehlers and Anders (2017) suggest that supply chain hold-up problems related to the need to make asset specific investments (e.g. in specific breeds), or from the need for increased monitoring by downstream chain members, has deterred adoption of these technologies in many pork supply chains where market co-ordination still dominates. Closer vertical co-ordination, through production contracts and value chain alliances, is needed to reduce the transaction costs of assuring compliance with the quality management techniques and investment requirements needed to achieve superior eating quality.

The relationship between private standards and transaction costs is not straightforward. Private standards may reduce transaction costs for buyers through lowering search and monitoring costs, and for sellers in determining how to meet the quality requirements of buyers. Yet, private standards may also require asset specific investments amplifying vulnerability to opportunistic

behaviour and shifting the burden of transaction costs within supply chains. Industry-wide consensus standards, third party standards, and firm-specific proprietary standards differ in scale, scope and intent, with implications for market power dynamics and hold-up risks. The transaction cost implications of private food standards offers a fertile ground for continued research, with further empirical analysis warranted.

6. Conclusion

All good research begins with a good question. This paper began by posing three apparently diverse research questions about economies in transition, the organization of agri-food supply chains, and the existence of private food standards. The common theme tying these issues together is the effect of transaction costs and how an understanding of Transaction Cost Economics and the fundamental role of institutions in an economy can shed light on these questions. Economic models that allow for information asymmetry, recognize the existence of transaction costs and examine the role played by both public and private sector institutions in facilitating business exchanges and encouraging economic growth enrich our understanding of the functioning of agricultural markets. Empirical research in transaction cost economics continues to make progress. As the examples presented in this paper have shown, empirical approaches range from econometric analyses of supply chain governance choices using secondary or primary survey data, to in-depth case study analyses of specific sectors. Data challenges notwithstanding, further empirical explorations of the role of transaction costs and institutions can continue to provide fascinating insights into how agricultural markets function and how food supply chains are evolving.

References

- Banterle, A. and Stranieri, S. (2008). The consequences of voluntary traceability for supply chain relationships. An application of Transaction Cost Economics. *Food Policy*, **33**(6):560-569.
- Banterle, A. and Stranieri, S. (2013). Sustainability standards and the reorganization of private label supply chains: A transaction cost perspective. *Sustainability*, **5**(12):5272-5288.
- Barzel, Y. (1982) Measurement cost and the organization of markets. *Journal of Law and Economics*, **25**(1):27-48.
- Boger, S. (2001). Quality and contractual choice: A transaction cost approach to the Polish hog market. *European Review of Agricultural Economics*, **28**(3):241-261.
- Brocklebank, A.M., Hobbs, J.E. and Kerr, W.A. (2008). *The North American Beef Industry in Transition: New Consumer Demands and Supply Chain Responses*, Nova Science Publishers Inc., New York, 182pp.
- de Bruyn, P., de Bruyn, J.N., Vink, N. and Kirsten, J.F. (2001). How transaction costs influence cattle marketing decisions in the northern communal areas of Namibia. *Agrekon*, **40**(3):405-425.
- Cheung, S.N.S. (1987). Economic organization and transaction costs. In Eatwell, J., Milgate, M. and Newmann, P. (Eds.), *The New Palgrave – a Dictionary of Economics*. Macmillan Press, London; Stockholm Press: New York, (2), pp.550-57.
- Coase, R.H. (1937). The nature of the firm. *Economica* N.S. **4**:386-405.
- Ferto, I. and Szabó, G.G. (2002). The choice of supply channels in Hungarian fruit and vegetable sector. Paper presented at the Economics of Contracts in Agriculture Second Annual Workshop, Department of Agricultural and Resource Economics, University of Maryland and The Royal Agricultural and Veterinary University of Copenhagen. Available at: <https://pdfs.semanticscholar.org/cbb6/70af913105506758a7c1718ba815a3725942.pdf> (accessed March 29 2017)
- Frank, S.D. and Henderson, D.R. (1992). Transaction costs as determinants of vertical coordination in the U.S. food industries. *American Journal of Agricultural Economics*, **74**(4):941-950.
- Gong, W., Parton, K., Cox R.J. and Zhou, Z. (2007). Transaction costs and cattle farmers' choice of marketing channels in China: A Tobit analysis. *Management Research Review*, **30**(1):47-56.
- Gorton, M., Buckwell, A. and Davidova, S. (2000) Transfers and distortions along CEEC food supply chains. In Tangermann, S. and Banse, M. (Eds.), *Central and Eastern European Agriculture in an Expanding European Union*, CABI Publications, Wallingford, pp89-112.
- Hobbs, J.E. (1997). Measuring the importance of transaction costs in cattle marketing. *American Journal of Agricultural Economics* **79**(4): 1083-1095.

- Hobbs, J.E. (2007). The rocky path of transition: Institutions and transaction costs in the Russian economy. In Gaisford, J.D., Mayevsky, V. and Kerr, W.A. (Eds.), *Revitalizing Russian Industry: The Road Ahead After 15 Years of Transition*. Nova Publishers, pp.39-55.
- Hobbs, J.E. (2014). The private sector: MNEs and SMEs. In Smyth, S.J., Phillips, P.W.B. and Castle, D. (Eds.), *Handbook on Agriculture, Biotechnology and Development*. Edward Elgar Publishing Ltd., Cheltenham, UK, pp.56-70.
- Hobbs, J.E., Kerr, W.A. and Gaisford, J.D. (1997). *The Transformation of the Agrifood System in Central and Eastern Europe and the New Independent States*. CAB International, Wallingford, Oxon, 394pp.
- Jaffee, S. and Masakure, O. (2005). Strategic use of private standards to enhance international competitiveness: Vegetable exports from Kenya and elsewhere. *Food Policy* **30**:316-333.
- James, H.J., Klein, P.G. and Sykuta, M.E. (2011). The adoption, diffusion, and evolution of organizational form: Insights from the agrifood sector. *Managerial Decision Economics* **32**(1): 243-259.
- Klein, B., Crawford, R.G. and Alchian, A.A. (1978). Vertical integration, appropriable rents and the competitive contracting process. *Journal of Law and Economics* **21**(2): 297-326.
- Kuijpers, R. and Swinnen, J. (2016). Value chains and technology transfer to agriculture in developing and emerging economies. *American Journal of Agricultural Economics*, **85**(5):1403-1418.
- Lees, N.J. and Nuthall, P. (2015). Case study analysis on supplier commitment to added value agri-food supply chains in New Zealand. *Agricultural and Food Economics*, **3**(4):1-16.
- Levitt, S.D. and Dubner, S.J. (2005). *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*. Revised and Expanded Edition, HarperCollins Publishers: New York.
- Lloyd, P. and Lee, C. (2016). A review of the recent literature on the institutional economics analysis of the long-run performance of nations. *Journal of Economic Surveys* 1-22
10.1111/joes.12186, December 21 2016 (Early View)
- Mainville, D.Y., Zylbertszajn, D., Farina, E.M.M.Q. and Reardon, T. (2005). Determinants of retailers' decisions to use public or private grades and standards: Evidence from the fresh produce market of São Paulo, Brazil. *Food Policy*, **30**:334-353.
- Martino, G. and Frascarelli, A. (2013). Adaptation in food networks: Theoretical framework and empirical evidences. *International Journal on Food System Dynamics*, **4**(1):1-14.
- Ménard, C. (2017). Finding our way in the jungle: Insights from organization theory. In Martino, G., Karantininis, K., Pascucci, S., Dries, L.K.E. and Codron, J.M. (Eds.) *It's a Jungle Out There – the Sragen Animals of Economics Organization in Agri-Food value Chains*. Wageningen Academic Publishers, pp27-50.

- Ménard, C. and Valceschini, E. (2005). New institutions for governing the agri-food industry. *European Review of Agricultural Economics*, **32**(3):421-440.
- North, D. (1987). Institutions, transaction costs and economic growth. *Economic Inquiry*, **25** (3):419-428.
- North, D. (1990). *Institutions, Institutional Change, and Economic Performance*. New York: Cambridge University Press.
- Nureev, R. and Runov, A. (2001). Russia: whether deprivatization is inevitable? Power-property phenomenon as a path dependence problem. Proceedings of the 5th Annual Conference of the International Society for New Institutional Economics: Institutions and Governance, Berkeley, CA, September.
- Oxley, JE (1997). Appropriability hazards and governance in strategic alliances: A transaction cost approach. *The Journal of Law, Economics, & Organization*, **13**(2): 387-409.
- Pascucci, S., Royer, A. and Bijman, J. (2011). Should I make or should I buy? Innovation strategies and governance structure in the Italian food sector. *International Journal on Food systems Dynamics*, **2**(2):167-180.
- Passuello, F., Boccaletti, S. and Soregaroli, C. (2015) Governance Implications of non-GM private standards on poultry meat value chains. *British Food Journal*, **117**(10):2564-2581.
- Raynaud, E., Sauvee, E. and Valceschini, E. (2005) Alignment between quality enforcement devices and governance structures in the agro-food vertical chains. *Journal of Management and Governance*, **9**(1):47-77.
- Peng, M.W. and Heath, S. (1996). The growth of the firm in planned economies in transition: Institutions, organizations and strategic choice. *Academy of Management Review*, **21**(2):492-528.
- Radaev, V. (2001) Informal institutional arrangements and tax evasion in the Russian economy. Proceedings of the 5th Annual Conference of the International Society for New Institutional Economics: Institutions and Governance, Berkeley, CA, September.
- Rozelle, S. and Swinnen, J.J.M. (2004). Success and failure of reform: Insights from the transition of agriculture. *Journal of Economic Literature*, **42**: 404-456
- Schulze-Ehlers, B. and Anders, S. (2017). Towards consumer-driven meat supply chains: opportunities and challenges for differentiation by taste. *Renewable Agriculture and Food Systems* (forthcoming). <https://doi.org/10.1017/S1742170517000059>
- Sexton, R.J. (2013). Market power, misconceptions, and modern agricultural markets. *American Journal of Agricultural Economics* **95**(2): 200-219.
- Simon, H. (1961). *Administrative Behavior*. 2nd edition, Macmillan, New York, 364pp.

- Swinnen, J.F.M. and Maertens, M. (2007). Globalization, privatization, and vertical coordination in food value chains in developing and transition countries. *Agricultural Economics*, **37**(S1):89-102
- Weder, B. (2001). Institutional reform in transitions economies: How far have they come? Proceedings of the 5th Annual Conference of the International Society for New Institutional Economics: Institutions and Governance, Berkeley, CA, September.
- Weseen, S., Hobbs, J.E, and Kerr, W,A, (2014), Reducing hold-up risks in ethanol supply chains: A transaction cost perspective. *International Food and Agribusiness Management Review*, **17**(2):83-106.
- Wever, M., Wognum, N., Trienekens, J. and Omta, O. (2010). Alignment between chain quality management and chain governance in EU pork supply chains: A Transaction-Cost-Economics perspective. *Meat Science*, **84**:228-237.
- Wever, M., Wognum, P.M., Trienekens, J. and Omta, S.W.F. (2012). Supply chain-wide consequences of transaction risks and their contractual solutions: Towards an extended transaction cost economics framework. *Journal of Supply Chain Management*, **48**(1):73-91.
- Woldie, G.A. and Nuppenau, E.A. (2011). A contribution to transaction costs: Evidence from banana markets in Ethiopia. *Agribusiness*, **27**(4):493-508.
- Williamson, O.E. (1979). Transaction Cost Economics: the governance of contractual relations. *Journal of Law and Economics*, **22**:233-262.
- Williamson, O.E. (1986). *Economic Organization: Firms, Markets and Policy Control*, Harvester Wheatsheaf, Hemel Hempstead.
- Williamson, O.E. (2000). The new institutional economics: taking stock, looking ahead. *Journal of Economic Literature*, **38**(3):595-613
- Zaibet, L. and Bredahl, M. (1997). Gains from ISO certification in the UK meat sector. *Agribusiness*, **13**(4):375-384.