Journal of Institutional Economics (2015), 11: 1, 93–110
© *Millennium Economics Ltd 2014* doi:10.1017/S1744137414000320
First published online 24 July 2014

Coasean method: lessons from the farm

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Abstract. Ronald Coase detested 'blackboard economics' and as a result was often criticized for being 'against theory'. Coase has also been criticized for being overly descriptive in his institutional analysis. Here, I claim that Coase was both theoretical and interested in hypothesis testing. In order to do Coasean analysis, however, it is necessary to analyse a subject matter at the deep transaction level, given the definition of transaction costs. The rich level of detail required may give the impression of an absence of theory or testing. Here, I provide a number of real farm examples and contrast them with blackboard farm economics to make this point.

> After we came out of the church, we stood talking for some time together of Bishop Berkeley's ingenious sophistry to prove the nonexistence of matter, and that everything in the universe is merely ideal. I observed that though we are satisfied his doctrine is not true, it is impossible to refute it. I never shall forget the alacrity with which Johnson answered, striking his foot with mighty force against a large stone, till he rebounded from it – 'I refute it thus'.
>
> [Boswell, Life of Samuel Johnson]

1. Introduction

For those who have devoted so much intellectual energy toward the practice of Coasean methods and reasoning, the recent death of Ronald Coase cannot help but be personal – even if our personal interactions with the man may have been brief and infrequent.[1] Much is said about how little Coase wrote over the course of his long life, but for Coase scholars and practitioners, the impact of his reasoning is immense.[2] The reason is that Coase's 'method' – if I may use that phrase – is so widely applicable and abundantly fruitful. This value stems from his commonsense 'sleeves rolled up' approach to research, combined with the powerful notion of 'transaction costs'. Here, I wish to discuss this method and to show its advantages in a well-worn example of dirt research: farming.

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1 I first saw Ronald Coase in person in 1988. I corresponded with him on a few occasions, and met him several times at various events in Chicago. His response on every new meeting was always the same: 'Ah, "Doug Allen". The name rings a bell, but I just can't place you'.

2 Of course, what amounts to a 'large' volume is somewhat relative. Coase was no Paul Samuelson in this regard, but as Medema (1994) points out, Coase wrote over 90 articles in his life, it is just that most are forgotten or ignored.

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

Coase lived long enough to become a methodological research subject during his own lifetime. Starting with Posner (1987, 1993a,b), and continuing with Foss (1994), Medema (1998), Mäki (1998a,b), Wang (2003), and others, critics and supporters have argued over what distinguished Coase from his neoclassical and main-stream economic colleagues. Coase is partly responsible for this discussion because he methodically made negative comments about economics, mathematical theory, and economists, but seldom defended or elaborated on what he meant. Coase was famous for claiming the neoclassical firm was nothing but a 'black box', that economists were guilty of the great sin of 'blackboard economics', that 'if you torture the data long enough, it will confess', and that 'if economists wished to study the horse, they wouldn't go and look at horses. They'd sit in their studies and say to themselves "what would I do if I were a horse?"'. However, one is hard pressed to find a systematic and thorough explanation of these claims by Coase. What is easy to find, is a steady stream of (critical) methodological statements, often made as asides or introductory remarks, and it is reasonable that others responded in one way or another.

For example, in the introduction to his collected works he goes after some of the most basic economic tools in the box:

> One result of this divorce of the theory from its subject matter has been that the entities whose decisions economists are engaged in analyzing have not been made the subject of study and in consequence lack any substance. The consumer is not a human being but a consistent set of preferences. The firm to an economist, as Slater has said, 'is effectively defined as a cost curve and a demand curve, and the theory is simply the logic of optimal pricing and input combination'. Exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organization, and even exchange without markets. The rational utility maximizer of economic theory bears no resemblance to the man on the Clapham bus or, indeed to any man (or woman) on any bus.
>
> [p. 3–4, 1988]

Economists are weaned on utility maximization and the logic of optimization, and such matters frame our view of the world. Challenging the nature of such economic fundamentals is a little like telling a Lutheran that there is not much to 'salvation through grace'. An attack on utility hits an economist pretty close to home, and it is not too hard to jump to the conclusion that Coase is an enemy.[3]

In the 1990s, this sort of thing led to a brouhaha between Richard Posner and Coase. The trouble started when Posner (1993a), in an attempt to articulate the relationship between new institutional economics and law and economics,

3 Although, once up off the floor, an honest economist has to admit that little comes out of the standard utility model except symmetry conditions (generally refuted) and that demand curves are downward sloping ... sometimes. Coase has a point.

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

expressed an interpretation of Coase that many mainstream economists at the time held that Coase was little more than descriptive at best, and against theory at worse. He added insult to injury by also suggesting Coase was opposed to econometrics – not leaving much left but outright description and case studies.[4] Not too surprising, Coase took exception to the straw man characterization. In a reply to Posner, Coase emphatically rejected the portrait painted:

> Posner states that I 'want to go back to the earlier, simpler, looser, non mathematical theory of Adam Smith'. This is the opposite of the truth.
>
> [1993, p. 96]

> Posner also refers to my 'dislike of abstraction'. This is wrong.
>
> [1993, p. 97]

> There is much in Posner's paper with which I disagree such as his assertion that I object to econometric studies. In fact, much of my early work was econometric.
>
> [1993, p. 97]

In typical Coase fashion, however, his defence was limited to one short reply.

Mäki (1998b) took Posner on more directly and completely, and correctly pointed out that Coase, though often non-theoretical in his work, was never anti-theoretical in his thinking. Indeed, many of Coase's works, including his most famous papers, are theoretical – albeit not mathematical.[5] Coase was never an instrumentalist like Friedman, nor did he care for mathematical economics, and so many confused his voice in the wilderness for hostility toward 'theory'. On the contrary, he was simply opposed to the theoretical positions of many in the profession. And so, Posner is not alone. Many others trained in more formal and mainstream traditions find Coasean reasoning little more than hand waiving.

The first key to understanding Coasean method is to realize that Coase was not a philosopher, but rather, he was a practitioner of the economic profession who liked to dabble in methodology. It is not too surprising then that his methodological musings are rather Coasean, by which I mean they were both realistic and theoretical.[6] When he complained about 'blackboard economics',

4 Posner (1993a), p. 76.

5 Many confuse 'theory' with 'mathematics'. Mathematics is a language that is useful in theoretical arguments, but such a language is neither sufficient nor necessary for a theory. Coase was certainly not mathematical, but he was often theoretical. Aside from his most famous theoretical papers, his works on duopoly (1935), monopoly pricing (1937, 1946a, 1972), marginal costs (1946b), and utility pricing (1970) were all theoretical.

6 I agree with Mäki (1998a, 1998b) that although Coase can be considered a philosophical realist, it is better to think of him as simply arguing for more realism in the economic profession. In this respect, many, including Posner, recognize an element of common sense traditional British empiricism in Coase – a sentiment with a long cultural history in Britain. That is to say Coase would have felt at home

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he often meant little more than that the model on the wall had no possible correspondence with the real world, and therefore, would be unable to help understand how the real world functioned. In his writings, he only opposed theory which he saw as impractical or useless.[7] Understanding 'real things' was the bottom line for Coase.[8]

As a practitioner, not a philosopher, Coase believed economists should attempt to understand the real world in all its messy details – but to do so using economic theory broadly defined. At the end of the day, economics should accomplish a meaningful understanding of behaviour, and this understanding should be theoretically based and empirically robust. Coase's major contribution to economics, of course, was to introduce the concept of transaction costs as a necessary condition for analyzing real organizational behaviour. My own writings on Coase have focused on understanding the true meaning of transaction costs, their interface with property rights, and the meaning of this definition for Coase's work. Although I have formally ignored the methodological position of Coase, I have implicitly accepted the view that he was simultaneously realistic and a theorist. Therefore, the best way to understand Coase is to recognize that he was a practical economist who saw theory as a necessary tool for understanding real phenomena, and that this theory should include transaction costs.[9]

However, to understand transaction costs means it is often necessary to understand the real institutional constraints people face. Realistic details of an exchange or production process require knowledge of the institutional setting and context of the exchange and production. In this, Coase practiced what he preached in his studies of the lighthouse, the post office, the BBC, and other public utilities. Thus, he was no hypocrite when he encouraged others to get

with Samuel Johnson. See Zerbe and Medema (1998) and McCloskey (1998) for more discussion on this topic.

7 In his words:

> I do not dislike abstraction. But the right degree of abstraction depends on the problem that is being analysed. What I object to is mindless abstraction or the kind of abstraction which does not help us to understand the working of the economic system.
>
> [1993, p. 97]

8 One famous line of Coase comes from Kitch (1983, p. 220), who transcribes some dialogue between famous Chicago economists at a symposium discussing how the 'Social Cost' article came about. Coase has just said that Aaron Director suggested that his ideas (now known as the Coase Theorem) were wrong and should be taken out of the article. Coase goes on 'I said that it might be an error, but if it's an error it's an interesting error and I would just as soon it stayed in'.

9 Indeed, Coase argued that transaction costs are the essential tool for understanding laws, social norms, organizations, and other institutions. Ironically, Coase did not define it, and others have gone astray following in his footsteps, but this idea is the heart and soul of Coasean reasoning. See Allen (1991, 1998, and 2000) or Barzel (1985).

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

their hands dirty and discover the constraints and opportunities of real people in actual situations.[10]

The second key in understanding Coasean method is to have a proper understanding of transaction costs themselves. As I have defined elsewhere, transaction costs are the costs of establishing and maintaining property rights.[11] When zero, property rights are perfect and complete and the 'Coase Theorem' holds. When these costs are positive, the 'Coase Theorem' is violated, and the distribution of economic property rights is positively correlated with the level of wealth.[12] Hence, the grand 'actual' Coasean hypothesis is that the distribution of rights is chosen to maximize wealth net of transaction costs.[13] Transaction costs are rich and interesting because they arise at the ground level of any type of exchange or production. Knowledge of transaction costs in any given situation requires an almost hands-on, personal knowledge of the context of analysis. Many economists, and certainly the types Coase disapproved of, lack the patience, interest, or ability to understand behaviour at the nitty-gritty level that a true transaction cost analysis requires. Instead, transaction costs are often simply modelled as a tax, a transportation charge, an iceberg technology, or some other minor model adjustment. Even when they are modelled in a richer fashion, there is often not much flesh on the bones.

This 'dirt level' – Samuel Johnson like – characteristic of a transaction cost analysis has resulted in two sneering reactions to Coase's legacy. First, from a theoretical point of view, actual transaction cost constraints are often not

10 In this regard, he was similar to the great Canadian economist Harold Innes, who championed the idea of 'dirt research' (Watson, 2006). Interestingly, Innes earned his Phd from Chicago in 1920 and was heavily influenced by Veblen. His method, like Coase, always included interviewing the individuals involved with a project and listening to their stories. A practice Coase would have approved of.

11 Allen (1991). I realize that at this point I am 'living dangerously' as Steve Medema puts it, because I'm moving from Coase to Allen. But whether Coase realized it or not, the only definition of transaction costs that work for the Coase Theorem and the general Coasean approach to institutions is what has just been spelled out. Therefore, I cling to the claim that proper Coasean method requires a proper understanding of transaction costs. Although Coase never articulated this, his applied writings are entirely consistent with it.

12 This brief sentence practically summarizes the institutional economics literate. It means that as property rights are more complete (i.e., defined over more attributes of a good) and more perfect (i.e., better enforced), then total wealth will be higher.

13 Coase, of course, never explicitly articulated such a hypothesis in his 1960 paper. However, this argument is implicit in section VI of his social cost paper, and he recognized it in his Nobel address:

> I thought that I was exposing the weaknesses of Pigou's analysis of the divergence between private and social costs, ... and that was all. it was only later, and in part as a result of conversations with Steven Cheung in the 1960s that I came to see the general significance for economic theory of what I had written ...
>
> [p. 717, 1992]

It is interesting that Coase mentions Cheung. The line of Coasean reasoning can be seen between the lines of Cheung (1969), but is explicit and well argued in Cheung (1974).

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

complicated and so transaction cost economics is often considered low-brow (even atheoretical). Second, on the empirical side, because data sets often lack the necessary transaction level detail, transaction costs are often dealt with by crude proxies which lack the econometric prestige of more sophisticated instruments.

Many have responded to these sneers with formal arguments and defences. Here, I want to do something different. Rather than emoting on the philosophical aspects of transaction costs and Coase's method, a more Coasean approach is used to demonstrate Coasean logic. Hence, in this paper, I use a series of simple 'farm stories' to highlight Coase's method. That is, I muck about in the mire and manure of some real agriculture to highlight Coase's contention that actual behaviour is interesting and often missing from economic analysis. In short, this paper tries to show how a Coasean approach can provide some flesh and substance to farm economics, without sacrificing economic theory along the way. It then compares these real stories with some excerpts from blackboard farms to drive home the contrast.

Such a topic seems only appropriate. After all, Coase began his famous 1960 paper with a stylized farming example. Although Coase never wrote on actual farming, he is forever associated with trespassing cattle. Farming, however, turns out to be an excellent field in which to learn about transaction costs and Coasean thinking. Farm production is relatively simple and easy to understand, and yet the large role of nature allows all types of opportunities for exploitation and bad behaviour. Farmers are ever on the watch for chances to increase the bottom line, even if this may come at the expense of a neighbour or a downstream consumer.

2. Some farming stories

In 1987, my friend, Dean Lueck, commented on a paper of mine dealing with the role of sharing in marriage, and noted the similarities and differences with sharing on a farm. That comment started a long collaboration which culminated with the publication of our book *The Nature of the Farm* in 2002. Both Dean and I came from farming families,[14] and although we always strove for our work to reflect actual farming practice, we soon found out this was not a common practice. On one occasion early in our endeavours, we had lunch with a well-known economist who had written a good and influential paper on share contracting. As the lunch proceeded, we were struck by the elementary nature of the questions he asked us about farming. When we commented on this, he unabashedly stated 'Well, I've never actually been on a farm'. Later when we were presenting our work, a very senior economist specializing in contracts asked us why we were studying cropshare contracts in North America. After all, he said, 'they don't exist here anymore'.

14 Although I grew up on a farm more designed around tax considerations. See Allen (1985) for a description and analysis.

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If one were to provide a crude summary of our work, it might be that farming is characterized by (i) nature in both seasonal and random ways, (ii) farmers and landowners are clever and out for their own interests, and (iii) that these two forces come together to produce the contracts and organizations we observe in agriculture. Though our model and approach have withstood formal testing, our confidence in the relative importance of these factors probably stems more from our long experience and knowledge of farming.

To be personally acquainted with farming is to have knowledge of the depth and breadth of the transaction costs involved. It is to see Coasean economics up close, dirty, and relevant. Consider a number of rather personal stories.

Nature: variable and seasonal

My family hails from 'northern' Saskatchewan.[15] While writing *The Nature of the Farm,* I asked my Saskatchewan cousin if I could come out and help in the harvest of his crops. I thought the experience might teach me something about harvesting I did not already know. I contacted my cousin in July for his consent, and then asked when I should arrive. 'I don't know' was the reply. Weeks went by and occasionally I would phone to ask how the crops were doing and whether or not I could book my flight. The answer was always the same: 'I won't know until it's time'. Finally, toward the end of September, I received a phone call: 'can you come tomorrow, the crop is ready'. The cost of the flight ended up being three times the normal price given such a short lead time, but I arrived late the next day only to be told the weather had turned and combining would have to be delayed. For the next three days, I sat around with my cousin. In the mornings, we would go out to the field to measure moisture content, and throughout the day we listened or watched every weather forecast available. Finally, on the fourth day, the decision was made to combine. Once on the field, we stayed until 1 am, when the dew forced us to quit. We were not able to combine again for two more days, but by that time I had to leave for my return flight back home.

That story points directly at one of the critical features of farming, and something that distinguishes it from many other modern manufacturing processes: the significant random role of nature. When crops are grown outside, two natural forces impact the production process: variability and seasonality. Variability – in the form of error terms or random variables – is a common theme in economics. Nature is variable and adds noise to production. In the story above, the grain could not be harvested until it was ripe and reached a certain moisture content. That ripeness and moisture depended critically on the micro weather conditions, and not just at the 'time of harvest' in September, but for the months earlier as well.

Transaction costs hinge critically on the variability of nature. Coase's work led to the idea that institutions, firms, and other organizations are designed

15 Which is to say, about only one-third up the province.

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to mitigate transaction costs. In farming, because there is such large variation in nature, there are big opportunities for bad behaviour, and therefore, the institutional choices (such as organizing production around families) are important. Moisture management, showing up on time, soil erosion, and crop theft are all issues that need to be dealt with because nature is random.

But there is more to the Coasean method than just variability, and this story highlights this other, more subtle aspect: nature is also seasonal. There was no question that to show up for a grain harvest meant arriving sometime in September and not April or January. In Saskatchewan, planting is always done in the spring and harvest is done in the fall. Any farmer who gets that backwards will not be in business for too long. More important, no one plants all year long, nor harvests for more than a few weeks of the year. The cycles of farm production within a given season are often short. Seasonality is entirely predictable and is opposite to variability in this dimension.

Seasonality limits the ability of farmers to specialize and exploit the gains from doing so. Recall that Coase's great hypothesis is that the distribution of rights is chosen to (i) maximize wealth and (ii) net of transaction costs. Coase never claimed that life was organized to minimize transaction costs. Furthermore, Coase never argued that there was a separability to (i) and (ii). Therefore, even though seasonality, in being completely predictable, has no direct bearing on transaction costs, it still influences the choice of property rights through the effect it has on specialization and production. For example, limited abilities to specialize in 'tillage' favour some types of farm organizations over others because some types of organizations cannot exploit specialization anyway. Thus, the family farm is often the best response to moral hazards caused by variability, when the farmer is unable to specialize due to seasonality.[16]

Why no wage farmers?

Although it is natural to think of nature in terms of the weather, variability affects all types of inputs in farm production. On the day my cousin and I went out to combine, it turned out that the gauge for measuring the fan speed on the combine was not functioning properly. A combine is a self-propelled machine that literally combines several stages of harvesting. The combine cuts the grain and moves it up a belt to a set of rollers which crushes the stalk and loosens the grain. The mixture is then blown by a fan over a bin. The heavier seeds drop into the bin while the straw and chaff are sent out the back, onto the field. If the fan speed is set too high, too much seed blows out the back and the farmer looses a fraction of his crop. Even a loss of 5% to 10% can mean he has lost his net-margin. If the fan speed is set too low, too much chaff ends up in the bin and the crop is worth less when taken to the grain elevator. Fan speed, therefore, is critical. On this particular day, my cousin was combining canola.

16 This idea is the backbone of Allen and Lueck (2002).

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Canola is a huge money crop for farmers, and at the time was fetching almost 12 times the price of wheat per bushel. Canola, however, is a tiny, minute brown seed, perhaps 1/10th the size of a kernel of wheat. Such a small seed is even more sensitive to the fan speed. The combination of all these factors created considerable anxiety on the part of my cousin. The result was a request for me to stand behind the combine with a shovel, catch the straw and chaff exhaust as it flew from the combine, and inspect it for seeds as my cousin drove the combine.

After several minutes I was covered in dirt, suffering from hard shots inflicted by sticks and other debris as it came whirling out from the combine at what seemed extreme velocities, and wondering if my cousin was playing a practical joke on his academic relation. After a first inspection, it was determined that too many seeds passed through, so an adjustment to the fan was made, and I was instructed to go behind once more. I refused. An argument commenced over who should do the dirty work, but both were rescued when my cousin's wife came along and volunteered – she knew where the butter on the bread came from. In the end, she stood behind the combine, being hit by all manner of chaff, thistles, and whatever else, for over 30 minutes. Though partly ashamed by my lack of chivalry, I was more struck by the thought: 'there's no chance a wage worker would do this, at least not without a tremendous amount of costly supervision'.

Organizations depend, in part, on monitoring, and monitoring so often depends on the particular circumstances involved. A worker on an assembly line drilling three holes into a steel bar, over and over again, is likely easy to monitor. Not only is a wage worker likely in such a circumstance, but punishment for poor workmanship or low productivity is prone to be swift and consequential. However, a farmer combining for another is a different matter. A wage farmer tasked with harvesting my cousin's field with his broken combine fan, without some type of direct and improbable monitoring, would just set the fan speed once – along with his music station on the radio – and simply proceed to cut the field. What would he care about the seed lost out the back? A tiny, lost brown canola seed on the ground would be invisible to an owner coming by inspecting after the fact. The landowner might wonder why the crop was smaller than expected, but the wage farmer could just blame this on some other natural factor.[17]

Mankind: clever and opportunistic

Individuals are always out to improve their own lot, even at the expense of others. An excellent farming example of this comes from the American folklore story 'Sharing the Crops'.[18] In this story, a poor sharecropper rents twenty acres

17 Wage workers have begun to work fields for planting, spraying, and harvesting over the past 10 years. The reason? GPS. Many modern tractors used on large farms are guided by GPS that eliminates over and under lapping of coverage – a major cost of not paying attention.

18 See Courlander (1993).

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

from a landowner. After ploughing the land, he asks the landowner what part of the crop he gets.

> 'Well, I tell you what', the owner say. 'The top half of the crop is mine, and bottom half is yours'.

The cropper goes on home and plants potatoes. When the owner finds out, he is angry and demands a new deal the following year. Next year rolls around and the landowner says

> 'I likes to rotate the arrangement', the owner say, 'so this year I'll take the bottom half and you take the top half'.

The cropper agrees and goes home and plants oats. Once again, the landowner is mighty mad and demands a new agreement.

> 'Next year', the owner say, 'I'll take the bottom and I'll take the top, too. The middle part, you can have the middle part'.

The cropper agrees and next year shows the owner an entire field of corn.

> 'You got a mighty fine crop of stalks below and tassels above', the cropper say. 'But me and my family prefers the ears in the middle. What kind of arrangement you want to make for next year?' That plantation owner just shake his head. 'Next year won't be no top, bottom, or middle arrangement. I'll take same as you take, half and half'.[19]

It is just a bit of folklore, but it underscores the fact that parties come to a contract with their own interests at heart, and in the end, this private vice often leads to joint improvements. It also points out the general idea that farmers and landowners are likely to reach an equilibrium relatively quickly. After all, the gentleman landowner only went three years without an income from the field. Farming can be a subtle business, and the methods by which one can try to extract more than their share of the surplus are numerous indeed. As Coase so often stressed, if the organization of production is to be understood, the opportunities for manipulation that exist among the individuals involved must be understood first.

As an example, consider milk production. In British Columbia, milk production is regulated by a marketing board which restricts output through quotas. A milk quota is a government-issued licence to produce a given amount of milk per month. Without a quota, it is illegal to sell milk, and if a farmer exceeds

19 The final resolution raises another issue: who measures the final shares? Although many crops are taken to central elevators to be measured and split by a third party, for other crops farmers often have simple solutions to this problem as well. For example, crops are often split by truck or wagon load: farmer takes first load, landowner takes the next (or third). In some corn harvests, the farmer cuts a swath (the width of the harvester header), then skips a swath and cuts the next one. Both methods provide a robust and low-cost way to split the crop honestly and to assure each side the same average quality.

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

the quota limit, the milk must be used on the farm or destroyed. However, milk cows, like other female mammals, produce milk as a byproduct of procreation and the actual volume depends on their hormonal cycle, not the whims of a bureaucratic quota. Thus, sometimes a dairy farmer may find himself with either too much or too little milk, and clever farmers do not like spilled milk. Thus, this simple little problem leads to all types of behaviour and responses. Farmers quite naturally start trading milk between themselves. Those with excess supply ship to those falling short of their quotas, with the direction changing with the cycles of the cows. Of course, this reduces the impact of the quotas, and farmers have their milk monitored by the state, even to the point of having the milk 'tagged' to specific cows.[20] However, milk is also variable in nature, depending on the cows diet, weather conditions, and even the pesticide spraying by neighbour farms. This often leads to conflicts between farmers and inspectors over the source of milk quality variation. Farmers with low volumes of milk also try to deceive the system in more simple ways. Milk is stored on the farm in a stainless steel tank within a concrete building.[21] At the end of the tank is a gauge measuring the volume of milk, and therefore, the payment to the farmer. Because the farmer has to clean the tank, he has access to the inside. Stories abound of farmers who add water, bricks, or rocks to the tank in order to increase the reading on the tank. I recall one farmer who shimmed up the far end of the tank to increase the reading. Dairy processing plants, as well as government quota inspectors, are constantly on the look out for these schemes, and no doubt many of the contractual arrangements between the farmers and others in the production chain are constrained by the ability to alter the milk in light of its natural variability.

When Coase admonishes economists to be more realistic, he is not saying he wants more description for its own sake. Rather, he is insisting we become familiar with the critical details of our subjects in order to understand what margins they operate on, and which ones are important for organizational choice.[22]

Veal signals

As a boy my father would take me to the cattle auction on Saturday mornings to meet with other farmers, and see what kind of deals were to be had. The cattle were brought in the central ring 3 to 4 at a time based on various categories. The dairy cattle were often first, followed by the beef cattle, then calves, and finally the vealers were brought through. Visually, the first thing any visitor would notice was how the breeds of cattle changed with the category of use. When the

20 Every cow produces a slightly different quality of milk in terms of its numerous attributes. By sampling the milk, inspectors can often tell if milk from another herd has been added.

21 The concrete prevents damage to the milk caused by thunder storms, and is easily washed down.

22 Economists were not the only ones to feel Coase's barb on this dimension. For the same reason, he was also as critical of bureaucrats and other state agents.

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

dairy cattle came through, the Holstein breed accounted for almost 100% of the cattle. Holsteins are skinny tall cattle with varying amounts of black and white colouring – the type of cow most people think of when they think of a cow. When the beef breeds were sold, they were mostly Herefords, Angus, or Simmentals. These are shorter, stockier breeds. The calves could be any breed. However, when the veal calves came through, they were almost always Holsteins. If any other breed was found in the veal category, they suffered severely in price.

This is a puzzle. Veal is a type of meat, and one would think the breeds with a comparative advantage in producing meat would dominate the veal market, just like they dominate the beef market. Furthermore, when veal is not sold at the auction, and is sold direct to restaurants, beef breeds are common.[23] To understand this puzzle, it is important once again to pay attention to the actual details of growing veal. Veal is produced from milk and grain fed steer of 6 to 12 months old. By feeding the calf heavy doses of milk and grain, and no hay, the farmer produces meat that is pale, soft and valuable – veal sells for a much higher price than a beef calf. Cattle fed hay produce a tougher, red meat. Unfortunately, it is expensive to feed only milk and grain. Furthermore, when veal is sold through an auction, the seller is unknown to the buyer. Clearly, a less than honest farmer could feed his calf cheap hay, and try to pawn it off as expensive veal. No one could catch him because the auction does not reveal who the seller is. But, of course, buyers would anticipate this and so they would only offer the red meat price. A classic lemons problem, the result of which should be no veal sold at auction.

But we do see veal sold through the auction. The reason is that there is one breed of cattle that provides a signal for what it has been fed – the Holstein calf. The Holstein breed is bred to produce milk not meat. It is a tall skinny animal compared to its beef cousins. Because of its tall, lanky frame, the Holstein calf develops a 'pot-belly' when it is fed hay, and any farmer can recognize this from one end of the barn to the other. Other breeds do not develop this unique signal.

In all breeds of cattle, hay feedings increase stomach size. This is something well known among farmers. The bloating results from different feeds entering different stomachs. Grasses and hays enter the rumen, where the food is partially digested in what is basically a fermenting tank and later regurgitated and chewed as 'cud'. This fermenting process produces a large amount of gas and causes the stomach to appear bloated. On the other hand, milk and grains bypass the rumen, and avoid the production of gas. Hence, bloating is a signal of grass feedings, and therefore, dark red meat. All calves, of course, have rumens. The Holstein pot-belly results from an additional characteristic of the breed – their height. Thus, a Holstein veal calf could put on as much weight as a Hereford calf, and still look skinny. It is the bony physique that makes the bloated stomach stand out and appear as a pot-belly.

23 See Allen (1993) for a complete discussion and evidence.

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The result is that if you go to a cattle auction, and you hear the auctioneer announce that the veal calves are coming, the only breed observed are the Holsteins. It is hard to understand this little phenomenon if you do not understand the dirty details of veal farming and the incentives among the farmers and veal buyers.

3. Blackboard farming

What is it that Coase so often found lacking in 'blackboard economics'? Again, farming provides a nice example because economists have been writing about farming since before the time of Adam Smith.

Contrast what some economists have said about farming with some of the stories just mentioned. Franklin Allen wrote a well-known paper on farming which begins with the following sentence 'Newberry and Stiglitz (1979) suggest four stylized facts of sharecropping which theories should attempt to explain'. Now there is no reason why a 'stylized fact' cannot be real, but in this particular case, all of the four facts were false! Hence, Allen was not interested in explaining actual organizational features of farms, rather he was only interested in explaining the incorrect understanding of two economic theorists. For example, much of the Allen paper is a complicated attempt to explain why crop shares are always 50–50. Leaving aside the inconvenient observation that crop shares are not always 50–50, what is so remarkable about his explanation is that it concludes with 'the percentage division of output depends only on the tenant's rate of time preference'.[24] That is it. The extreme phenomenon only depends on the farmer's rate of time preference. That is equivalent to a NASA aerospace engineer saying that a launch to the moon only depends on the astronaut's appetite. With farming, just like with most other activities in life, the devil is in the details. As the stories point out, even the simplest aspects of farming like 'what day should harvest begin' are relatively complex. If something like the farmer's rate of time preference matters, it could only be a small piece of the puzzle.

Stiglitz had a huge impact on the economics of agriculture. In the paper cited by Allen, they mention the following puzzles: the persistence of 'inefficient' sharecropping along side 'efficient' fixed rental and wage contracts; the absence of share tenancy in modern economies; lower productivity in share contracting when compared to fixed land rentals; and universal sharing at a rate of 50–50. I need not provide the evidence here, but each one of these 'facts' has been shown to be false.[25]

24 F. Allen, p. 33, 1985. Even today, economists still manage to publish papers arguing for why 50–50 share contracts are the only shares in existence. See, for example, Pi (2013).

25 See Allen and Lueck (2002) for all the answers. Other examples of blackboard farm economics include the never ending stream of papers claiming that crop sharing is 'inefficient'. This line of reasoning

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Unfortunately, blackboard farming is still with us. Over the past 20 years, there has been an explosion of cash rent contracts relative to share contracts across farming in North America. The actual reason for this is the revolution taking place in tilling practices. For thousands of years, farmers have tilled, disked, and raked soils to prepare a seed bed. This exposes the soil to sun and rain, kills the little organisms that replenish the soil, and generally causes erosion and loss of soil quality. Due to innovations in genetically modified seeds, herbicides, and Global Positioning System (GPS), farmers are now able to plant directly into the residue of last years crop. This form of 'no-till' cultivation has started to dominate many crops, but most importantly, it limits the farmer's ability to manipulate the soil. With no soil manipulation, the cash rent contract dominates all others and cropshare contracts start to disappear.[26]

But what is the economic explanation for the growth in cash renting? To the extent any economists have noticed, the response has been the benefits of risk sharing have changed because landowners are now more risk averse than farmers! Really? The growth in cash renting varies across regions, crops, and climate. Are just the landowners who lease land to the growers of some crops becoming more risk averse?[27] The more one thinks about an explanation of cash rent growth based on changes in risk aversion, the less compelling it becomes. This is exactly what Coase was talking about when he complained about the absence of realism in the profession and blackboard economics. Too often economists simply have a model in search of a subject, and when that subject cannot be found, it is made up. Or, just as bad, when confronted with some actual piece of data (like the growth of cash renting), the economist pulls out an untestable idea like 'changes in risk aversion' to explain it.

The good news is that all is not lost. An increasing number of economists, no doubt influenced by Coase and his method, looks at actual contracts, behaviours, and practices across different regions and time periods – even in farming. The result has been a growth in our understanding of farming contracts and organizations. Whether looking at grape contracts in Spain or Italy, grain contracts in the 19th century Italy, Pineapples in Cote d'Ivoire, or cropper contracts in the post-bellum south, crop details and the influence these

begins with Adam Smith, and carries on to this day. See for example, Deininger, Jin, and Yadav (2013) or Reiersen (2001). If it really was inefficient, real farmers would have ceased the practice centuries ago.

26 The theory for this comes from Allen and Lueck (2002). Allen and Borchers (2014) find strong evidence for the causal influence of no-till cultivation on cash renting.

27 It is beyond the scope of this short paper to explore the reliance and faith economists put into risk aversion, but the source must lie in how hard it is to generate testable implications regarding organization within the traditional economic framework. Those who follow Coase's method, who learn about the details of a given exchange or production, and who are sensitive to the existence of transaction costs, find testable implications relatively forthcoming, and lack a need to fall back on unobservable risk preferences.

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have on transaction costs seem extremely important.[28] Furthermore, agricultural economists, who have always been well ensconced in neoclassical theory and farming details, are starting to pay more attention to Coase and the actual organization of farming.

4. Conclusion

So Coase was a realist in that he encouraged others to get their hands dirty and learn the actual details of their subject matter. However, we cannot lose sight of the fact that Coase was also a theorist interested in analysis, and he never promoted the mere descriptive. In order to make sense of all the detail involved in farming, it is critical to have a theoretical framework. Coase provided this with his introduction of the concept of transaction costs, and his great methodological point made in 1960.

The official 'Coase Theorem' states that the allocation of resources is independent of the distribution of property rights. That means, when transaction costs are zero, it does not matter what laws we have, it does not matter what types of contracts we make, or firms we work in. Every rule is irrelevant. Why? Because individuals respond in an optimizing way to costs and benefits, and the rules of the game do not change these fundamental factors. Furthermore, because all costs and benefits are internalized, and so who bears the costs and benefits is inconsequential. The 'intuition' behind the traditional Pigouvian problem of externalities is that individuals make wrong choices when they do not bear the costs of their actions. But Coase showed that with zero transaction costs, these costs are simply borne along a different pathway through the reciprocal nature of the problem.

However, as has been pointed out many times, this was not Coase's main point. After all, it does not take a genius to realize that rules, laws, contracts, and organizations all matter a great deal (although it took Coase!). Coase's point was that the 'Coase Theorem' never applies in practice! The key to Coase is recognizing that transaction costs are never equal to zero, at least not in the world we live in. When they are positive, rules and property rights do matter. Thus, the grand hypothesis in the method of Coase is that organizations are designed to maximize the gains from trade net of transaction costs. Hence, if we are to understand farming, or more generally rules, laws, and organizations, then we must understand transaction costs. And to understand transaction costs, we must get our hands dirty and understand the real issues involved in production and exchange. That is the Coasean bottom line of Coase's method.

28 The literature on agricultural organization is large. For some of the more recent articles on share cropping for which Coase would have approved, see: Bellemare (2009); Carmona and Simpson (1999, 2012); Colin (2012); Dubois (2002); Garrett and Xu (2003); Luporini and Parigi (1996).

https://doi.org/10.1017/S1744137414000320 Published online by Cambridge University Press

Acknowledgements

The authors thanks Yoram Barzel, Dean Lueck, Steve Medema, and the anonymous referees for their methodical comments.

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