

Extended Abstract

Please do not add your name or affiliation

Paper/Poster Title	Contract breaching in agricultural markets: An experiment on double moral hazard
---------------------------	---

Abstract prepared for presentation at the 96th Annual Conference of the Agricultural Economics Society, K U Leuven, Belgium

4th – 6th April 2022

Abstract	<i>200 words max</i>
<p>Contract farming is increasingly used to coordinate transactions between farmers and buyers downstream in food chains. However, the potential gains of contracts are often undermined by contract breaches from buyers and sellers. In this paper we develop a simple conceptual framework that highlights how, under standard assumptions of rationality and self-interest, single or double moral hazard should not lead to differences in welfare between buyers and sellers. We test our model in a laboratory experiment where we vary whether: (i) only the buyer can renege on the initial agreement (single moral hazard), or (ii) both the buyer and the seller can renege (double moral hazard). In contrast to our theoretical predictions, we find that in the setting with single moral hazard, not only there is a Pareto improvement in social welfare but also a reduction in income inequality. In a third treatment, we provide buyers with the option to forego their ability to reduce the contract price at the beginning of the contract. When provided with this option, buyers use it as a substitute for a lower offer price, and most buyers opt to retain it yielding a decrease in social welfare, relative to the treatment with single moral hazard.</p>	
Keywords	Double moral hazard, contract breaching, agricultural contracts, laboratory experiments
JEL Code	C91, D02, L14, Q13
Introduction	<i>100 – 250 words</i>
<p>In the last couple of decades, buyers in downstream food chains increased the use of contractual agreements with farmers (MacDonald 2015; Bellemare 2015). These agreements between farmers and buyers have improved farmers' welfare by reducing price and income uncertainty and enabling buyers to improve vertical coordination in high-value quality markets (Eaton and Sheppard 2001; Reardon et al. 2009).</p> <p>However, agricultural contracts in developing countries are often plagued by double moral hazard (DMH), as farmers often renege on output delivery when better prices can be found in spot markets, while buyers often strategically default on agreed prices after product delivery (Fafchamps 1996, 2004; The Pew Charitable Trust, 2013; Wu and MacDonald 2015; Casaburi and Macchiavello 2019).</p>	

This paper aims to investigate how restricting buyers' ability to strategically default contracts impacts social welfare. We propose a simple buyer's/seller game where we investigate alternative strategies to mitigate DMH and then test it using a lab experiment.

Methodology

100 – 250 words

To examine our problem, we first propose a simple buyer-seller model, where we first only allow for sellers contract breach, then we allow for both agents to default and, finally, we give the buyer the option to do a binding contract offer. We find that social welfare is maximized when only the seller can breach, but buyer's would be indifference between having or not the ability to default on prices. Then, we test this model using an experiment with three treatments: sellers breach or Single Moral Hazard (SMH), both agents breach or Double Moral Hazard (DMH), and the case where the buyer offers a binding contract or Endogenous moral hazard (E). Both buyer and seller can source and sell from a spot market. If the buyer offers a contract, he makes a price offer to the seller which either takes and commits to supply a part of its output or rejects it. In SMH, if the buyer offers a contract to the seller, and the latter accepts it, the game finishes once the seller decides how to allocate output produced between the buyer and the spot market. In DMH, after the seller decides how many goods to deliver to the buyer, the latter can reduce the contract price by ϵ . In E, the buyer first decides whether the initial contract price offer is binding or not. Thus, the buyer can decide whether the transaction occurs on a single or double-sided moral hazard setting.

We implemented this experiment in the Experimental Economics Lab at Newcastle University where we conducted 15 sessions involving 300 subjects. We had four SMH and DMH sessions, and seven sessions for E. Each session comprised of 10 rounds. Subjects were randomly assigned the role of buyer or seller, and roles remained fixed throughout the experiment. At the start of each round, buyers and sellers were randomly re-matched, following a perfect stranger matching protocol.

Results

100 – 250 words

Our results show that there are significant differences in the levels of profitability and contract breaches across our treatments. The results confirm that the SMH treatment maximizes not only sellers but also joint profits and therefore is welfare enhancing. However, we contrary to our expectation buyers are not indifferent between offering or not binding contracts and this reduce joint profits. We summarize our results as follow:

Result 1: SMH leads to a Pareto improvement in earnings and a more equitable wealth distribution compared to DMH.

Result 2: While in SMH, buyers contract prices do not differ significantly from 4, in line with theoretical predictions, in DMH the contract price offered is significantly lower than 6, contrary to theoretical predictions.

Result 3: buyers and sellers come more often to contractual agreement in SMH relative DMH.

Result 4: In the E treatment, when buyers choose to forgo the right to price default, profits are more equitably distributed. However, there is no longer a welfare increase in SMH relative to DMH when the choice of setting is endogenous and determined by the buyer.

Result 5: In the Endogenous (E) treatment, buyers are more likely to maintain the right to reduce the contract price, contrary to theoretical predictions.

Discussion and Conclusion

100 – 250 words

We find that under SMH social welfare is higher and profits more equitably distributed. However, this effect is dissipated when buyers can breach contract offers. This result seems to be driven by opportunistic buyers who, in the DMH and E settings, offer an initial contract price that is below the seller's participation constraint. Even though in theory buyers should be indifferent between offering a binding contract, perhaps unsurprisingly they have a strong preference for retaining the option to strategically default. Our results cannot be explained by self-interest, nor theories of social preferences, where agents are concerned about the equality of payoffs (e.g., Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000).