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**Why Do Commodity Futures Markets Exist?
Their Role in Managing Marketing Channel Relationships**

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This paper advances a behavioral perspective on the existence of futures markets. The proposed approach extends and complements the existing framework by focusing on the interorganizational relationships between buyers and sellers. We show how decision-makers' risk attitudes and risk preferences determine contract preferences, and how potential conflicts in these contract preferences may hamper subsequent business relationships between parties. Futures markets can therefore be viewed as third-party services with the ability to solve potential conflicts in decision-makers' contract preferences. Our approach explains why we observe marketing channel structures despite the different contract preferences of the parties involved. The expansion of theory in this direction is particularly useful in understanding how behavioral elements such as risk attitudes and risk perceptions, along with marketing institutions like futures markets, shape interorganizational relationships.

JEL classification: G24, D74, K00, L14

Keywords: Behavior, conflict, contract, futures markets, preference, risk attitude, risk preference

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Their Role in Managing Marketing Channel Relationships

1. Introduction

Economic theory provides several explanations of the existence of organized futures markets. The early school of thought, represented by prominent scholars such as Marshall (1919), Keynes (1930), Hicks (1939), and Kaldor (1940a, b), postulates that futures markets exist because of their ability to offer price insurance. This perspective views futures contracts as tools that businesses can use to mitigate the risk of unfavorable price movements. Subsequent researchers including Working (1962) favor an opposite explanation. Their theory relies on the assumption that speculators must be compensated for bearing the hedgers' price risks. Futures markets therefore exist because they offer speculators the prospect of positive returns. Considering that price risk can also be transferred using forward contracts, Telser (1981) correctly points out that neither of these two theories is valid. Instead, he argues that futures markets exist because they offer lower transaction costs than forward markets. Futures are traded in organized markets with elaborate sets of written rules and arbitration boards, the contracts' standardization ensures liquidity, and the clearinghouse minimizes counter-party default risk. These characteristics minimize transaction costs and make futures superior to informal forward contracts.

Telser's (1981) line of reasoning, however, may be incomplete, because it captures only the financial side of transaction cost theory, while ignoring the fact that firms are part of a marketing channel in which different contract preferences may exist.

These different contract preferences constitute another important part of the explanation of why organized futures markets exist. This behavioral approach, that takes incongruencies in contract preferences into account, views futures markets as marketing institutions that allow for channel structures that otherwise would not exist. In this context, futures markets facilitate differences in contract preferences between negotiating parties. A purchasing agreement typically specifies the quantity, quality, and price of the good to be delivered, as well as the time and place of the exchange. If disagreement between buyers and sellers in any of these components is not resolved, theoretically no business transaction will take place. Yet, despite frequently incongruent contract preferences, many successful contract relationships are observed. The behavioral perspective attributes this phenomenon to the existence of organized futures markets.

This paper focuses on the heterogeneity in channel managers' risk attitudes and risk perceptions. Based on the notion of how contract preferences are formed, we show that risk attitude and risk perception are important determinants of managers' preferences for contracts with differing cash-flow patterns. Since the contracts between different channel members (partly) define the channel structure, preferences for particular cash-flow patterns also determine the channel relationship. Futures markets play a vital role in this process because of their ability to resolve potential interorganizational conflicts that occur when business parties have opposite cash-flow preferences. Specifically, futures markets neutralize the different risk attitudes and risk perceptions of managers towards cash-flow risk. The associated, and seemingly inconsistent, contract preferences between business parties can hence be aligned using the appropriate futures markets.

In this study, we extend the existing theory to help to explain particular interorganizational relationships between buyers and sellers. The behavioral perspective presented is therefore not in contrast with Telser (1981), but rather complements his argument in an important dimension. We argue that third-party financial facilitating services (i.e. futures markets) can extend theory past traditionally-viewed dyads and that the inclusion of these services can help establish channel structures under conditions of heterogeneity in channel members' risk attitudes and risk preferences (Pennings and Leuthold, 2000). The framework may explain why we observe marketing channel structures, despite the different contract preferences of the parties involved. The expansion of theory in this direction is particularly useful in understanding how behavioral elements such as risk attitudes and risk perceptions, along with marketing institutions like futures markets, shape interorganizational relationships.

The paper begins with an overview of contracting, followed by a model of contract relationships and a discussion of the complementing role that third-party services play in resolving conflicts caused by different contract preferences (Poppo and Zenger, 2002). Using survey data from producers, wholesalers, and processors within two industries that are characterized by a high degree of contract conflicts, we then empirically evaluate two research hypotheses: (1) how risk attitudes and risk perceptions influence contract preferences, and (2) how futures markets may facilitate in solving potential conflicts caused by different contract preferences. The final section assesses the theoretical implications of including a behavioral dimension into the existing theory of interorganizational dynamics.

2. Contract Preferences

2.1. *Cash versus Forward Contracts*

A company's contract decisions have important consequences for its subsequent cash-flows. Specifically, "managers must decide whether the price is determined at the time of ordering or at the time of delivery. The difference can be substantial," (Jackson, 1980, p. 290). Both pricing dimensions impact the volatility and vulnerability of cash-flows associated with the transaction in different ways. Two broad contracts are relevant here and subsequently assessed – cash contracts (price determined at delivery) and forward contracts (price determined at ordering).

In cash contracts, the transaction price is based on the current price in the spot market at the time the product is physically delivered (time t_1). Hence, the final price remains uncertain until the actual exchange takes place. Forward contracts, on the other hand, determine the final price already at the time of contract initiation (time t_0).

Therefore, the time and the amount of future cash-flows from the forward contract are certain, as long as both parties meet their obligations. While forward contracts display lower cash-flow risk, they also reduce the flexibility of managers to respond to changes in price and market conditions. As such, they prevent managers from taking advantage of favorable changes in the market price.

The different cash-flow risks of cash and forward contracts cause managers to favor one or the other contract type. Influenced by their internal and external environment, managers develop a particular contract preference for each transaction (MacCall, 1970; Engelbrecht-Wiggans, 1987). The external environment includes, for example, the company's stakeholders, who might be interested in stable cash-flows from

operations (creditors, shareholders, etc.), while the internal environment - the focus of this study - is characterized by the manager's own risk attitude and risk perception. A conceptual summary of how external and internal environment are related to managers' contract preferences is displayed in figure 1.

Two important internal drivers of contract preference are risk attitudes and risk perceptions (Pratt, 1964; Arrow, 1971). Increased risk in cash-flows, for example, results in lower utility levels for risk-averse decision-makers (who would rather have avoided the risk) than for risk-seeking decision-makers (who are willing to accept more risk because of the potential for greater returns). In a recent study, Pennings and Smidts (2000) and Pennings and Wansink (2004) have investigated empirically the role of risk attitude and risk perception in the formation of contract preferences and have found that risk-averse managers who perceive risk are likely to prefer forward contracts over cash contracts, which is consistent with the fact that forward contracts reduce the volatility in cash-flows compared to cash contracts. We therefore hypothesize:

H1: Risk-averse managers who perceive risk will be more likely to prefer a forward over a cash contract than less risk-averse managers or managers who do not perceive risk.

2.2. Preferred versus Realized Contracts

Whether a manager's desired contract relationship is ultimately realized depends on the opposing partner's contract preference. Whenever there is incongruence of contract preference between two parties, their interdependence decides the final outcome. Pfeffer and Salancik (1978, p.40) describe such interdependence as occurring "whenever one

actor does not entirely control all of the conditions necessary for the achievement of an action or for obtaining the outcome desired from the action.”

The degree of interdependence between two contract parties affects each party’s motivation, behavior, and perception in the exchange process. Companies that depend on each other will only continue to interact or exchange as long as each party continues to benefit. When highly interdependent companies disagree on the contract, a conflict situation might arise. Following Lusch (1976) and Gaski (1984), we define a conflict as a situation in which one company perceives another to be engaged in behavior that is preventing or impeding it from achieving its goals. In such a situation, the probability of terminating the relationship increases. Further, this probability becomes larger with increasing asymmetry in the relationship between the parties, as greater disparity tends to cause more conflicts of interest (Kumar, Scheer, and Steenkamp, 1995).

Despite the high potential for incongruent contract preferences, many successful relationships exist. Consider, for example, the relationships between wholesalers and processors of raw food products (such as meat and produce). Their marketing channels are generally characterized by a small number of processors with relatively large operations and a large number of wholesalers or intermediaries with relatively small operations (Keith, Jackson, and Crosby, 1990). Moreover, both groups’ contract preferences are frequently in conflict. Because of the associated power imbalances, contract relationships might be difficult to establish. Yet, despite these conflicting preferences, successful business relationships can and do develop in the marketing channels, because services are available that counterbalance the undesirable cash-flow consequences of particular contracts. Hence, third-party financial facilitating services

remove the incongruence between the parties' contract preferences, thus permitting a successful business relationship.

2.3. Incongruent Contract Preferences and Financial Facilitating Services offered by Futures Exchanges

Suppose company A is a wholesaler of a food raw material and company B is a processor of that raw material. Assume further that the market for this raw material is highly volatile and price fluctuations are large and unpredictable. The managers of the two companies know each other well and know what to expect as seller and buyer.

Furthermore, both companies are located close to one another, so that delivery is a simple matter for both. In this scenario, it would seem beneficial for the managers of both companies to build a relationship and to exchange the raw material. This relationship might then be formalized by a contract that defines when, where, how much, and what quality the wholesaler will deliver to the processor.

One element that still needs further definition is the cash-flow consequence of the contract. Should they establish a cash contract or a forward contract relationship?

Assume that the processor prefers a cash contract relationship, because it allows for adapting to price changes in the raw material. However, the wholesaler may feel that a cash contract would lead to undesirable cash-flow fluctuations that would interfere with generating optimal shareholder value or complying with loan provisions imposed by lenders. The above situation might lead both companies away from an exchange and a contract relationship, even though all the other elements of the exchange process (time, place, quantity, and quality) are highly favorable.

Contracts between companies can be complemented by third-party services purchased by one or both companies in order to improve the contract outcome. Examples of such third-party services include quality checks by independent agencies, product certifications, or the transportation of goods to and from a delivery point. This paper focuses on common financial facilitating services that complement the cash-flow consequences of a contract. These services can make a contract amenable to both parties of the exchange by solving conflicting preferences for particular cash-flows. In the example above, the processor might use the services (e.g., futures) offered by one of the Chicago exchanges to complement the cash contract relationship preferred by the wholesaler. Hence, the facilitating service can be defined as ‘a service through which the processor is offered the opportunity to buy products forward at a fixed price, without restricting the processor to engage in a cash-contract relationship with the wholesaler.’ Suppose the processor agrees not to initiate a forward contract, but instead initiates a cash contract (according to the wholesaler’s contract preferences). The processor then buys at time t_0 (the same time the cash contract with the wholesaler is initiated) the same product in the futures market for delivery at time t_1 for a price agreed upon at t_0 (through the exchange’s hedging service). The processor’s cash contract with the wholesaler, combined with the facilitating service, yields a cash-flow equal to that of a forward contract. Thus, the processor succeeds in fixing the price in advance, without demanding this directly from the wholesaler who prefers a cash contract. Hence, conflicts resulting from incongruent contract preferences may be resolved by financial facilitating services that complement the contracts’ cash-flow consequences. We therefore pose the following hypothesis:

H2: Conflicts caused by incongruence of contract preference increase the probability of managerial use of financial facilitating services.

Many different financial facilitating services are available to influence a contract's cash-flow dimension. When confronted with different levels of risk attitude, risk perception and asymmetric interdependence relationships in the channel, and therefore different contract preferences, managers can use financial facilitating services to resolve the conflict caused by these different goals. Recognizing the role of these facilitating services, expands channel and contract theory, in showing that, in addition to contract incentives, these services can be used to help govern interorganizational relationships.

3. An Empirical Study on Contract Relationships and Financial Facilitating Services

The conceptual framework presented above is examined empirically. The analysis involves formal tests of hypotheses *H1* and *H2* using data from vertically-aligned food companies in the Netherlands. These companies include producers, wholesalers, and processors of hogs and potato products. Since the hog and potato industry are well organized, financial records of performance and contracting behavior were readily available from their industry associations. Moreover, the associations were also willing to assist with organizing the computer-guided interviews of their members that were needed for this study. By combining the accounting data with the survey data, we were

able to relate the behavioral intention measure (risk preference) with revealed market behavior (contract relationships and use of financial facilitating services).

To develop the survey instrument for these interviews, focus groups were first conducted with a preliminary sample of 40 managers from both industry sectors. The results helped to refine the research design and measures and to ensure correct interpretation of the questions. After successful completion of this initial phase, 140 managers were randomly selected from the directories of the Dutch Potato Association, the Dutch Union of Meat Wholesalers, and the Dutch Pork Association, and asked to partake in the formal survey. These managers were contacted by telephone and promised a summary of the research results in exchange for their participation. Of the 140 managers contacted, 127 (=91%) fully cooperated. Their demographic profile and associated company information are displayed in table 1. The average age of the managers was 43.9 years, and 94.2% had a BS or MS/MA degree and were directly responsible for making contractual arrangements with suppliers and customers. All interviews took place in June and July of 2000 at the managers' enterprises.

3.1. Measures

Managers' Risk Attitudes: The psychometric literature proposes several measures to elicit managers' risk attitudes (Miller, Kets de Vries, and Toulouse, 1982; Pennings and Smidts, 2000). From this pool of available constructs, four specific items are chosen for the purpose of this study. The selected measures are adapted to the food industry domain of the managers and make up the final risk-attitude scale (Appendix A). This scale has a composite reliability of 0.80 and is unidimensional. Further, all factor loadings are

significant (minimum $t=4.60$, $p<0.001$) and greater than 0.5. These psychometric properties support the scale's convergent validity (Gerbing and Anderson, 1988) and indicate reliable construct measurement (Hair et al., 1995).

Managers' Risk Perceptions: Risk perception reflects an individual manager's interpretation of the odds of being exposed to the content of the risk. It may be defined as the manager's assessment of the uncertainty of the risk content inherent in a particular situation. In the context of this study, risk perception reflects the manager's interpretations of the odds of being exposed to a volatile market environment (MacCrimmon and Wehrung, 1990; Shapira, 1995; Pennings and Smidts, 2000). Three items make up the final risk-perception scale (Appendix A), which is unidimensional. All factor loadings are significant (minimum $t=5.80$, $p<0.001$) and exceed 0.6, indicating convergent validity. Moreover, the scale's composite reliability of 0.85 reflects reliable construct measurement (Appendix A). Risk attitude and risk perception are two different concepts. On the individual level, risk attitude reflects the decision-maker's interpretation of the content of the risk and how much he or she dislikes this risk. In contrast, risk perception expresses the decision-maker's interpretation of the chance that he or she will be exposed to the content of the risk.

Managers' Contract Preferences: Managers in the Dutch hog and potato industry usually have one main partner through whom they buy or sell the majority of their products. Taking this industry characteristic into account, managers were asked to indicate whether they preferred a cash contract or forward contract when dealing with their main trading partner. In the survey, we explicitly stated that the question about contract preferences was referring to the manager's main business partner.

Realized Contract Relationship: The companies' accounting data revealed the actual realized contract relationships with their main trading partner.

Contract Conflict: Contract conflict situations were identified by comparing each manager's contract preference with the actual contract relationship realized. Whenever the actual contract relationship did not match the contract preference as indicated by the manager, it was considered a contract conflict situation.

Use of Financial Facilitating Services: Using accounting data, we were able to determine whether or not managers had used services that complemented the pricing element of the contract relationship for the year preceding the survey (1999). In the context of the present study, this meant whether they had used futures markets - the only viable financial facilitating service offered to the Dutch hog and potato industry. The relevant contracts were traded at Euronext (Amsterdam, The Netherlands), at Hannover Warenterminboerse (Hannover, Germany), and the Chicago Mercantile Exchange (Chicago, USA) and included potatoes, hogs, and pork bellies.

3.2. Analysis

A summary of managers' contract preferences and conflicts, as well as their usage of financial facilitating services, is provided in table 2. The overview distinguishes between the three different types of companies – producers, wholesalers, and processors. Table 2 indicates that the majority of producers (73.3%) prefer cash contracts, whereas the majority of the processors (70.4%) prefer forward contracts. The accounting data revealed that 55.9% of the managers had used financial facilitating services in the previous year, indicating the importance of financial facilitating services in contract

relationships. Holgate (1996) notes that the critical importance of these services can be extended to a wide range of other goods and services traded around the world, such as packaged goods, financial retail products (e.g. loans and currencies), and raw materials (e.g. metals).

A logistic regression model was chosen to test hypotheses *H1* and *H2*, because both dependent variables, the manager's contract preference and the use of financial facilitating services (i.e. futures markets), are binary variables. Compared to alternative binary choice models, the logistic model provided the best fit to the data. How risk attitude and risk perception relate to managers' contract preferences (*H1*) is evaluated using the log odds ratio in the regression

$$\log\left(\frac{\Pr[cp(i)=1]}{\Pr[cp(i)=0]}\right) = \alpha_0 + \alpha_{RA}RA_i + \alpha_{RP}RP_i + \alpha_{IA}IA_i \quad [1]$$

where $cp(i)$ takes the value of 0 if manager i preferred a cash contract and 1 if manager i preferred a forward contract. Further, RA_i , RP_i , and IA_i denote manager i 's risk attitude, risk perception, and their interaction. Since these latter variables are measured by scales (Appendix A), their average sum scores are used in the regression. The resulting coefficient estimates can be interpreted as the change in the log odds ratio associated with one unit change of the independent parameter. Testing for statistical significance of the coefficient estimates is straightforward, because under the null hypothesis that the parameter being tested equals zero, the likelihood ratio and Wald-statistics (the square of the parameter estimate divided by the standard error) of the logistic model closely follow a Chi-square distribution. Positive and significant coefficient estimates imply that risk

aversion (α_{RA}), risk perception (α_{RP}), and their interaction (α_{AI}) increase the probability that a manager prefers a forward contract over a cash contract.

Whether managers who experienced a conflict between their own and their business partner's contract preference were more likely to use financial facilitating services ($H2$) is assessed in

$$\log\left(\frac{\Pr[f(i) = 1]}{\Pr[f(i) = 0]}\right) = \alpha_0 + \alpha_C C(i) \quad [2]$$

where $f(i)$ takes the value of 1 if manager i did use financial facilitating services and 0 otherwise. Moreover, $C(i)$ is a binary variable that takes a value of 1 if the managers experienced contract preference incongruence and 0 if there was no conflict in contract preferences. The coefficients and tests can be interpreted in a similar manner to those in Equation 1. A positive and significant coefficient estimate α_C implies that contract preference incongruence increases the probability that a manager uses financial facilitating services, while a significant negative or non-significant coefficient indicates that the manager does not rely on futures to overcome differences in contract preferences.

To examine the substantive significance of the variables in the model, we consider two goodness-of-fit statistics, Nagelkerke's R^2 (which is similar to the R^2 in linear regressions), and the proportional reduction of prediction error (PRPE) (Sharma, 1996). The latter statistic indicates the improvement in predictive power, compared to a null model that does not include the predictor variables. The PRPE statistic will get closer to one, the more the amended model improves the null model in terms of predictive power (Hosmer and Lemeshow, 1989).

4. Results

4.1. Risk Attitude, Risk Perception, and Contract Preferences

Hypothesis *H1* states that managers' risk attitudes and risk perceptions influence their contract preferences. Specifically, risk aversion and risk perception are each expected to be positively related to a manager's preference of a forward contract over a cash contract. Moreover, the risk management framework of Pratt (1964) and Arrow (1971) implies that behavior is not only influenced by these main effects of risk attitude and risk perception, but also by their interaction. This interaction causes a risk-averse decision-maker to prefer a forward contract over a cash contract, and this preference to become stronger as the manager perceives more risk (e.g. Pennings and Smidts, 2000). Conceptually, the interaction between risk attitude and risk perception can be interpreted as the intention to cope with the risks inherent in the contract relationship and the risks that the decision-maker's own actions generate (Pennings and Wansink, 2004). It is therefore closely related to risk behavior.

The results reported in table 3 show that the logistic regression model provides a good fit to the data (PRPE=0.80; Nagelkerke's $R^2=0.218$). Approximately 80% of the choices are classified correctly. Risk attitude and risk perception influence contract preferences in the hypothesized direction, as indicated by positive and significant coefficient estimates for α_{RA} and α_{RP} in Equation 1 ($\alpha_{RA}=2.894$ and $\alpha_{RP}=3.238$, $p_{RA}=0.010$ and $p_{RP}=0.005$). This means that more risk-averse managers or managers who perceive more risk have a greater likelihood of preferring a forward contract over a cash contract. A manager's contract preferences are also related to the interaction between risk attitude and risk perception ($p_{IA}=0.006$), indicating that in order to understand behavior, the main

effects of risk attitude and risk perception must be considered along with their interaction. These findings agree with the Pratt (1964) and Arrow (1971) risk-management framework and confirm that risk attitude, risk perception, and their interaction are the fundamental drivers of the managers' contract preferences (Hypothesis *H1*).

4.2. Incongruent Contract Preferences and Use of Third-Party Financial Facilitating Services

The estimates for Equation 2 displayed in table 3 demonstrate the prominent role that financial facilitating services play when managers have incongruent contract preferences. The data are well described by the logistic model employed (PRPE=0.9; Nagelkerke's $R^2=0.305$), which classifies about 90% of the choices correctly. The positive and significant coefficient estimate for α_C shows that existing conflicts in managers' contract preferences increase the probability of using financial facilitating services ($\alpha_C=1.192$, $p_C=0.004$). Whenever a manager's contract preference does not match the actually realized contract relationship (i.e., a contract conflict), the manager is likely to use financial facilitating services to complement the cash-flow generated by the non-preferred contract. These results are consistent with hypothesis *H2* and show that despite discrepancies in contract preferences, managers can still establish successful contract relationships by using third-party financial facilitating services.

In this context, financial services represent an instrument to eliminate negative cash-flow consequences arising from power imbalances between contracting parties. Data from automobile dealers, for example, show that trust in the opposing party and commitment to closing a deal decline as inter-firm conflict increases (Kumar, Scheer, and

Steenkamp, 1995). Using third-party financial facilitating services can neutralize such asymmetric interdependencies and rebalance power in interorganizational relationships by mitigating particular cash flow advantages from one partner to the other. Hence, financial facilitating services can be seen as a conflict-resolution tool.

5. Discussion and Conclusion

In this study, we develop an alternative explanation for the existence of futures markets, thereby extending the channel and contract theory to help understand interorganizational relationships between buyers and sellers. Hence, the proposed perspective is not in contrast to the existing theory by Telser (1981), but rather complements it to attain a more comprehensive framework. Using survey and accounting data from producers, wholesalers, and processors within two industries that are characterized by a high degree of contract conflict, we evaluate how behavioral elements influence managers' contract preferences, and how futures markets solve potential conflicts caused by differences in these contract preferences.

The results show that decision-makers' risk attitudes and risk perceptions influence their contract preferences and hence the marketing-channel structure. Specifically, risk aversion and risk perception are positively related to a manager's preference of a forward price contract over a cash contract. Consistent with the risk-management framework of Pratt (1964) and Arrow (1971), contract preferences were also influenced by the interaction between risk attitude and risk perception. This interaction causes a risk-averse decision-maker to prefer a forward contract over a cash contract, and this preference to become stronger as the manager perceives more risk (e.g. Pennings and

Smidts, 2000). More risk-averse managers or managers who perceive more risk have a greater likelihood of preferring a forward contract over a cash contract. Moreover, our findings confirm the crucial role of futures markets in marketing channels characterized by incongruent contract preferences. The significance of the coefficient estimates shows that existing incongruencies in contract preferences increase the probability of using futures contracts. Whenever a manager's contract preference does not match the actually realized contract relationship, the manager is likely to use futures contracts to complement the cash flow generated by the non-preferred contract. These results demonstrate that futures markets shape channel structures of certain industries by facilitating contract relationships when asymmetric interdependencies and contract preferences exist.

Telser (1981) suggested that futures markets facilitate trade among strangers. Here, we argue that, in addition to trade facilitation between strangers, futures markets facilitate contractual relationships among contract parties. Futures markets therefore contribute to balancing interdependence asymmetries between marketing-channel members.

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APPENDIX A

Measures to elicit managers' risk attitudes and risk perceptions (CFA results)

To elicit managers' risk attitudes and risk perceptions, the managers were asked to indicate their agreement with each item on a nine-point scale ranging from "strongly disagree" to "strongly agree".

Risk attitude

Construct reliability=0.80

1. I like to "play it safe."
2. With respect to the conduct of business, I am risk averse.
3. With respect to the conduct of business, I like to take the sure thing instead of the uncertain thing.
4. When I am selling/buying I like to take risk.

Fit statistics: $\chi^2=2.0$ (df=2, $p=0.370$)

Risk perception

Construct reliability=0.85

1. I am able to predict product prices.
2. The markets in which I operate are not at all risky.
3. I am exposed to a large amount of risk when buying and selling.

Fit statistics: $\chi^2= 0.0$ (df=0, $p=1.000$; saturated model)

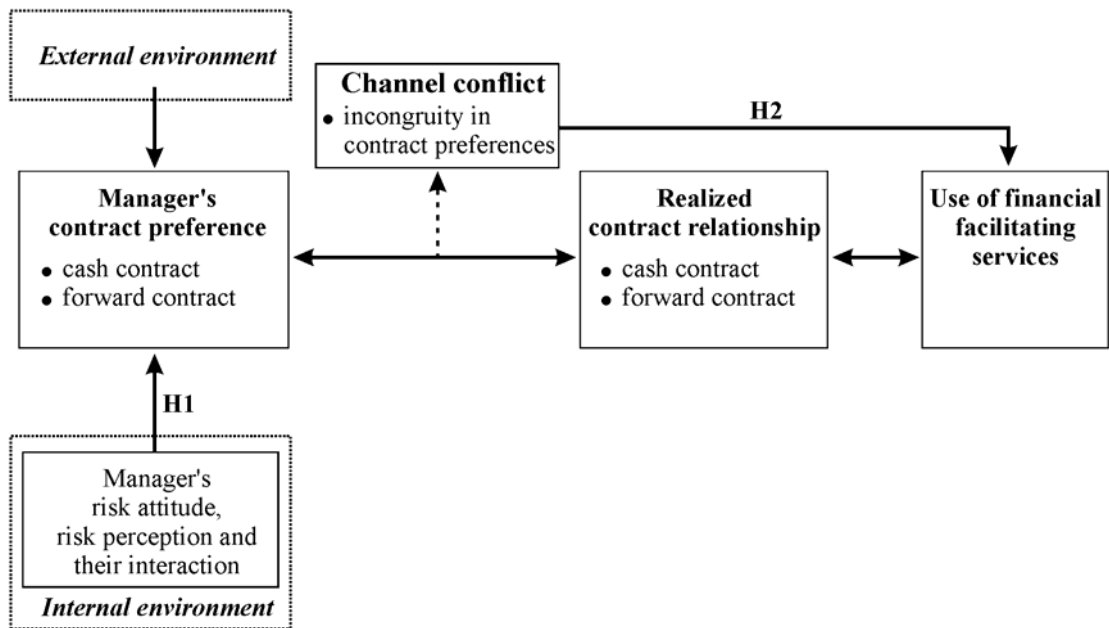


Figure 1. Contract Relationship Preferences and Financial Facilitating Services

Table 1. Demographic and Company Profiles of Participating Managers^a in the Dutch Hog and Potato Industry

	%		%
Legal form of enterprise		Business type	
Private company	15.5	Producer	11.8
Private limited company	70.9	Wholesaler	59.0
Public limited company	13.6	Processor	29.2
	100.0		100.0
Revenue in 2000 (Euros)		Highest educational level	
Less than 1 million	24.4	High school	2.0
1-5 million	21.4	BS degree	52.0
5-10 million	11.7	MA/MS degree	42.2
Over 10 million	42.5	other	3.8
	100.0		100.0

^aThe profile is based on a total of 127 managers who responded to the survey.

Table 2. Managers' Contract Preferences, Risk Preferences, and Use of Financial Facilitating Services

Manager's characteristics	Producers (n=127)	Processors (n=15)	Wholesalers (n=75)	Total (n=37)
Contract preference^a				
Cash	73.3	29.6	49.4	46.5
Forward	26.7	70.4	50.6	53.5
Experiencing contract conflict^a				
Yes	35.7	48.6	54.8	52.0
No	64.3	51.4	45.2	48.0
Use of financial facilitating service^a				
Yes	40.0	48.6	62.6	55.9
No	60.0	51.4	37.4	44.1

^aChi-square tests on the interdependence between companies resulted in *p*-values less than 0.05.

Table 3. Logistic Regression Results: Determinants of Contract Preference and Use of Financial Facilitating Services

Hypothesis	Parameter estimate	p-value	Percent of correctly classified choices	PRPE	Nagelkerke's R ²
Hypothesis 1					
<i>Dependent variable</i>					
Manager's contract preference (0=cash contract, 1=forward contract)					
<i>Independent variable</i>					
Risk Attitude	2.894	0.010	78.2%	0.8	0.218
Risk Perception	3.238	0.005			
Interaction between risk attitude and risk perception	0.237	0.006			
Hypothesis 2					
<i>Dependent variable</i>					
Manager's use of financial facilitating services (0=not using, 1=using)					
<i>Independent variable</i>					
Contract conflict (0=no conflict, 1=conflict)	1.192	0.004	87.2%	0.9	0.305