Padua 2017 Abstract Submission

I want to submit an abstract for:
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Research Question
What are the stock-and-flow strategic decisions by actors in the Champagne wine vertical coordination process, characterized by a cobweb cycle, and their impact over time?

Methods
The research was conducted using system dynamics modeling methods, which are effective when some aspects of theoretical logic are still imprecise and inadequate

Results
The simulation results illustrate how variables in the proposed model are related to major factors mentioned in the current literature on vertical coordination.

Abstract
Objective
The literature analyzes coopetition among partners in vertical coordination. However it does not address the dynamic tension of cooperation and competition of suppliers-clients in long chain industry (vertical coordination) characterized by cobweb phenomenon. So, the objective is to fill the gap and show how rents may be extracted by both partners in strategic alliances to enlarge their business in a context of uncertainty due to cobweb phenomenon. The model is applied to vine growers and Champagne makers who decide flows and stocks strategic decisions.

Application to Champagne
The Champagne industry, with €4.75 billion in sales in 2015, is chosen to examine issues of vertical coordination issues related to wine production. On the input side, the grape market is under stress and the expansion of Champagne production is limited by the legal constraints governing Protected Designation of Origin (PDO). By contrast, the demand for Champagne shows a long-term upward trend, but it is very sensitive to annual fluctuations in world economic growth (Comité Interprofessionnel du Vin de Champagne (CIVC, 2012). Because it takes three years to process the wine, adjusting supply to world demand leads to swings in retail prices. The cobweb phenomenon at the production interface disturbs consumer markets and seriously impacts the market position of suppliers, which have historically responded to these pressures by introducing, or amending, the contractual rules of vertical coordination. The testing of alternative VCMs, taking the cobweb phenomenon into account, is important to better understand the implication of economic forces at play.

Research question

The following research question is raised in this paper: What are the stock-and-flow strategic decisions by actors in the Champagne wine vertical coordination process, characterized by a cobweb cycle, and their impact over time? This paper's main objective is to examine the economic relationships in a vertical coordination structure that lead to higher performance in extracting rents.

Related literature
For Dyer and Singh (1998), such rents are due to comparative advantages of partnerships coming from:
1. Investments in relation-specific assets;
2. Substantial knowledge exchange, including the exchange of knowledge that results in joint learning;
3. The combining of complementary, but scarce, resources or capabilities (typically through multiple functional interfaces), which results in the joint creation of unique new products, services, or technologies; and
4. Lower transaction costs than competitor alliances, owing to more effective governance mechanisms. Examine the mechanisms that preserve the relational rents that dyads and networks jointly create.

Two main theoretical strands have contributed to the model design and simulation process examined in this paper: (1) the economic foundations of vertical coordination, and (2) the managerial economic principles of long-term supply response applied to cobweb phenomena.

Research methods
The research was conducted using system dynamics modeling methods, which are effective when some aspects of theoretical logic is still imprecise and inadequate (Davis, Eisenhardt, & Bingham, 2007; Gary, Kunc, Morecroft, & Rockart, 2008; Oliva, 2003). Observing and understanding the mutual influence and interactions among economic dimensions may lead to unexpected implications for theory and practice. System dynamics (SD) principles, as a set of simulation research methods, are well-suited to capture the impact of prospective strategic change due to a specific stress or break in the vertical coordination rules further to legal, environmental, technological or geographical constraints. SD principles are used to simulate the macrobehavior of the microstructures that characterize the workings of a producer-manufacturer chain. The computation process takes into account the main feedback loops involved in decisions regarding transactions (volume, price) stock and flow adjustment in production. The simulation results illustrate how variables in the proposed model are related to major factors mentioned in the current literature on vertical coordination. In addition, the simulation model is calibrated using statistical estimates of short-term and long-term supply response curves, inventory coverage ratio, demand elasticities and exports.The structure and behavior of the model, as well and consideration to model complexity resolution and hierarchy, were subjected to a series of tests and procedures, as prescribed in the system dynamics literature (Sterman, 2000; Groessler and Schwaninger, 2012), and these particular ones were applied: boundary adequacy, structure assessment, dimensional consistency, parameter assessment, integration error, and behavior reproduction. SD is a useful method of anticipating economic agents' decisions and reactions in production when products are transferred, volumes are negotiated and prices reflect asset stocks. Short- and long-term decisions in addressing the temporal information-based coordination issues in production are highlighted using the results of this model.

Results
In particular, the dynamic behavior of the cobweb phenomenon, which is captured by the model introduces realistic conditions in which one can see how parties involved in the vertical coordination process anticipate the consequences of production stress or breakdown in purposive decision processes over time.The model used in this paper embodies strategic decisions by firms in vertically coordinated long industrial chains in the presence of cobweb phenomena and observes the impact of these decisions over time. Decision-making is modeled and simulated in the presence of a cobweb phenomenon characterized by cycles with long lags in adjusting supply to demand, hence, by capturing the temporal tension in the decision-making process. Empirical simulations provide relevant insights and results that tested and identified efficient vertical mechanisms, resulting in higher profits for both suppliers and buyers. The economic foundations of strategic management theory is expanded by the addition of certain constructs including parameters, such as time lags and the nature of opportunities, which had not previously been examined for their impacts.
Vertical coordination is analyzed increasingly often in the framework of new institutional economics, whereby agents form adaptive expectations when contracting (Bucheli, Mahoney, & Vaaler, 2010). In this study, the two theoretical foundations are unified empirically in the SD model to anticipate strong supply constraints in the short

and long term. The simulation results are robust enough to help Champagne stakeholders (grape producers, wine makers, EU policy makers) understand the cobweb economic cycle better. They can anticipate the consequences of their decisions when production is strongly constrained by the PDO area: (1) their short-term decisions, in terms of annual authorized grape yield, to avoid strong swings in volumes and prices, with negative consequences such as bankruptcy; and (2) their long-term decisions about the impact of a change in the PDO area, with different scenarios of demand growth.

References

Bucheli, M., Mahoney, J. T., & Vaaler P. M. (2010). Chandler's living history: The visible hand of vertical integration in nineteenth century America viewed under a twenty-first century transaction costs economics lens. Journal of Management Studies, 47, 859–883.

CIVC (Comité interprofessionnel du vin de Champagne). (2012). Economic data from 1978 to 2012. Annual bulletins and personal contact with economic department.

Davis, J. D., Eisenhardt, K. M., & Bingham, C. B. (2009). Optimal structure, market dynamism, and the strategy of simple rules. Administrative Sciences Quarterly, 54, 413–452.

Dyer, J, & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. Academy of Management Review, 23, 660-679.

Gary, M. S., Kunc, M., Morecroft, J. D. W., & Rockart, S. F. (2008). System dynamics and strategy. System Dynamics Review, 24, 407–429.

Groesser, S.N., & Schwaninger, M. (2012). Contributions to model validation: Hierarchy, process, and cessation. System Dynamics Review, 28(2), 157-181.

Sterman, J. D. (2000). Business dynamics: Systems thinking and modeling for a complex world. Boston, MA: Irwin/McGraw-Hill.