OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

FAKULTÄT FÜR WIRTSCHAFTSWISSENSCHAFT

FEMM - Working Paper Series - 2014

› FEMM-Antrag (https://www.fww.ovgu.de/fww_media/femm/FEMM.pdf)

14013 Karl Inderfurth/Peter Kelle/Rainer Kleber
› The Effect of Material Price and Product Demand Correlations on Combined Sourcing and Inventory Management

Abstract:

Both material sourcing and inventory management are important competitiveness factors, and it is a significant challenge to integrate the two areas. In sourcing, combined strategies using long-term contracts and the spot market received increasing attention recently, typically concentrating on the financial effects. However, there is limited research on the consequence of combined sourcing considering both purchasing and inventory effects from an operations point of view. In this paper, we analyze the effect of uncertainty on the combined sourcing decision under stochastic demand and rando spot-market-price fluctuations and exploit the benefits of forward buying in periods with low spot-price realizations, but also of intended backordering in case of a high spot price. Since the decision on capacit reservation has to take into account the short-term utilization of each source which in turn depends on th available long-term contract capacity, decision making faces highly complex interactions between long-term and short-term decisions.
From finance research, we find scarce evidence that the spot prices of commodities evolve independentl over time. Rather, price correlation across time periods is found, and a popular way to describe these price dynamics is to model it as a mean reverting process. Thus, in this contribution we will respectively extend common i.i.d. price models from operations management studies and will additionally consider th effect of correlation between demand and price. In this paper, we provide a managerial analysis showing the effects of demand and spot market price correlations on the optimal procurement policy and provide managerial insights. We model the combined sourcing problem as a stochastic dynamic optimization problem and analyze the optimal procurement strategy by means of stochastic dynamic programming. The behavior of the optimal policy confirmed several previous assumptions, though some interesting anc important managerial consequences arise due to demand and price correlations. Based on the policy analysis, a numerical study will reveal to which extent inobservance or misspecification of an existing lev of correlation might result in performance losses in operational decision making. These observations pla an important role under the trend of increasing volatility and dynamic changes on the spot market but als in the customer's behavior.

JEL:

Keywords: Capacity Reservation, Spot Market, Price Correlation, Mean Reverting Process, Stochastic Dynamic Programming, Managerial Analysis

---

14012 Barbara SchöndubePirchegger/Guido Voigt:
Inventory related compensation in decentralized organizations

Abstract:

We consider a principal agent problem in a decentralized organization. The agent holds private information with respect to an uncertain demand within a single selling season. As such his task is to determine the optimal order quantity. Being head of a profit center, however, he naturally focuses on maximizing profit of his particular unit while the principal aims at maximizing long run firm value. This goa incongruency results in a systematic shortfall of order quantity chosen by the agent as opposed to the strategically optimal level.

We show that a menu of contracts offered to the agent to pick from is suitable to solve the agency proble and to achieve first best outcomes. Each contract specifies a fixed payment and a bonus or a penalty, conditioned on the inventory level at the end of the selling season, along with a prescribed order quantity An exogenously given profit share is added to reflect the assumed profit center structure. Omitting any o the contracting elements specified above, however, destroys first best. The paper not only demonstrates that first best can be achieved in the described setting, it also provides a theoretical explanation for the widely observed practice of using inventory related compensation elements in organizations.

JEL:

Keywords: Newsvendor, Asymmetric Information, Incentive Design, Service Level

---

14011 Josephine Clemens/Karl Inderfurth:
› Supply chain coordination by contracts under binomial production yield

Abstract:

Supply chain coordination is enabled by adequately designed contracts so that decision making by multiple actors avoids efficiency losses in the supply chain. From literature it is known that in newsvendo type settings with random demand and deterministic supply the activities in supply chains can be coordinated by sophisticated contracts while the simple wholesale price contract fails to achieve coordination due to the double marginalization effect. Advanced contracts are typically characterized by risk sharing mechanisms between the actors, which have the potential to coordinate the supply chain. Regarding the opposite setting with random supply and deterministic demand, literature offers a considerably smaller spectrum of solution schemes. While contract types for the well-known stochastical proportional yield have been analyzed under different settings, other yield distributions have not receivec much attention in literature so far. However, practice shows that yield distributions strongly depend on th industry and the production process that is considered.
This paper analyzes a buyer-supplier supply chain in a random yield, deterministic demand setting. It is shown how under binomially distributed yields risk sharing contracts can be used to coordinate buyer's ordering and supplier's production decision. Both parties are exposed to risks of overproduction and under-delivery. In contrast to settings with stochastically proportional yield, however, the impact of yield uncertainty can be quite different in the binomial yield case. Under binomial yield, the output uncertainty decreases with larger production quantities while it is independent from lot sizes under stochastically proportional yield. Consequently, the results from previous contract analyses on other yield types may nc hold any longer. The current study reveals that, like under stochastically proportional yield, coordination i impeded by double marginalization if a simple wholesale price contract is applied. However, more sophisticated contracts which penalize or reward the supplier can change the risk distribution so that supply chain coordination is possible under binomial yield. Thus, even though risk diminishes with larger lot sizes, the supply chain benefits from advanced risk sharing contracts because they trigger coordinate behavior.

JEL:

Keywords: Supply chain coordination, contracts, binomial yield, risk sharing

---

14010 Matthias Held/Marcel Omachel:
› An Efficient Parallel Simulation Method for Posterior Inference on Paths of Markov Processes

Abstract:

In this note, we propose a method for efficient simulation of paths of latent Markovian state processes in Markov Chain Monte Carlo setting. Our method harnesses available parallel computing power by breaking the sequential nature of commonly encountered state simulation routines. We offer a worked example that highlights the computational merits of our approach.

JEL: C11, C15

Keywords: Bayesian inference, Markov Chain Monte Carlo, Posterior path simulation

---

14009 Matthias Held/Marcel Omachel:
› Up- and Downside Variance Risk Premia in Global Equity Markets

Abstract:

This paper studies the variance risk premium from a new perspective by disaggregating the total premiu into upper and lower semivariance premia. To this end, we provide novel tools for computing conditional expectations using traded options as well as moment generating functions. Across a dataset of global stock market indices, we find that the variance premium is almost exclusively driven by downside risk. O results are robust with respect to the sample period. These findings substantiate the hypothesis found in the literature that the variance premium is largely driven by the left tail of the index return distribution.

JEL: G12

Keywords: variance risk premium, semivariance, derivatives

14008 Horst Gischer/Toni Richter:

› Produktivitätsmessung von Banken: die Cost Income Ratio ein belastbares Performancemaß?

Abstract:

Die Cost-Income-Ratio (CIR) ist zutiefst im Verständnis der Banking Community wie auch der Wissenschaft als geeigneter Produktivitätsindikator verwurzelt. Gleichwohl impliziert die Messung einer Wert- anstelle einer Mengenrelation von Input und Output eine mögliche Verzerrung durch Preiskomponenten unabhängig von der betrieblichen Leistungsfähigkeit. Dahingehend widmet sich der Beitrag dem Einfluss unterschiedlicher Geschäftsmodelle, ungleicher Lohnniveaus und vor allem divergierender Wettbewerbsverhältnisse auf die CIR. Bestehende Schwachstellen werden aufgezeigt un daran anschließend ein alternativer, adjustierter CIR-Ansatz abgeleitet. Empirisch werden die Zusammenhänge ferner für die privaten Geschäftsbanken aus 13 europäischen Ländern zwischen 1997 und 2009 untersucht.

JEL: G21, L25, L1

Keywords: Cost Income Ratio; Produktivität; Rentabilität; Banken; Lerner-Index

---

14007 Steffen Burchhardt:

› Investigating the industrial demand for scientific knowledge

Abstract:

University-Industry knowledge transfer is a key factor for the economic development and competitivenes of regions. A low level of transparency on the market for academic knowledge is the major obstacle in exploiting the existing innovation potential of cooperation between research institutions and firms. This paper offers a methodological frame-work for exploring the industrial demand for scientific knowledge of research institutions, especially universities. As a direct survey among firms has major drawbacks we propose an inquiry of different intermediates, especially cluster managers. The applicability of the presented methodology is demonstrated with the case of a technical university in Germany. Finally, we introduce an illustration to contrast supply and demand. This constitutes a strategic tool for transfer relevant decisions of research institutions and allows to align governmental support to the real transfer potential that strengthens a region`s economic development.

JEL: I23, O31, D81

Keywords: University-Industry Knowledge Transfer, Informational Gap, Cluster, Demand Determination

---

14006 Tino Henke/M. Grazia Speranza/Gerhard Wäscher:

› The Multi-Compartment Vehicle Routing Problem with Flexible Compartment Sizes

Abstract:

In this paper, a capacitated vehicle routing problem is discussed which occurs in the context of glass waste collection. Supplies of several different product types (glass of different colors) are available at customer locations. The supplies have to be picked up at their locations and moved to a central depot at minimum cost. Different product types may be transported on the same vehicle, however, while being transported they must not be mixed. Technically this is enabled by a specific device, which allows for separating the capacity of each vehicle individually into a limited number of compartments where each compartment can accommodate one or several supplies of the same product type. For this problem, a model formulation and a variable neighborhood search algorithm for its solution are presented. The

performance of the proposed heuristic is evaluated by means of extensive numerical experiments. Furthermore, the economic benefits of introducing compartments on the vehicles are investigated.

JEL:

Keywords: vehicle routing, multiple compartments, glass waste collection, variable neighborhood search, heuristics

---

14005 Rainer Kleber/Karl Inderfurth/Peter Kelle:
› Combined sourcing and inventory management using capacity reservation and spot market

Abstract:

Leading companies in several industries purchase materials with the combined use of capacity reservation contracts and spot market. We analyse the optimal and a simplified policy for making long-term capacity reservation and periodic ordering/inventory decisions using the above two sources under stochastic demand and random spot market price fluctuations. In a numerical study we assess the effect of demand and spot market price uncertainties and of other parameters on both the optimal and simplifie policy. We provide insights into the interaction of capacity reservation decision, demand uncertainty induced safety inventory, and inventory resulting from forward buying on the spot market.

JEL:

Keywords: Supply chain management, Capacity reservation, Spot market

---

14004 Alexander Plum:
› The British Low-Wage Sector and the Employment Prospects of the Unemployed

Abstract:

Are low wages an instrument for the unemployed to switch to high-paying jobs within a medium-term period? Using data from the British Household Panel Survey (BHPS), the labor market dynamics of men are analyzed up to six years after entering unemployment. An alternative econometric approach is presented that allows for correlated random effects between the three labor market states (high-paid employed, low-paid employed and unemployed). The results show that low wages help to significantly reduce the risk of future unemployment. Indications of a “springboard effect” of low wages are found, especially for men without post-secondary education. However, the calculated probability of obtaining a high-paying job is noticeably influenced by the monetary level of the low-wage threshold.

JEL: J64, J62, J31

Keywords: low-pay dynamics, simulated correlated multivariate random effects probit model, state dependence, unobserved heterogeneity

---

14003 Daniel Cracau/Abdolkarim Sadrieh:
› The Divergent Effects of Long-Term and Short-Term Entry Investments on Home Market Cartels

Abstract:

Positive effects of multimarket activities on cooperation between firms are widely acknowledged. We study these effects in a setting with home market asymmetries as is typical for global competition. In our multimarket duopoly experiment each firm has a home market but may also enter the other firm's market Without entry barriers, we observe a high level of mutual forbearance with firms serving their home markets exclusively. With short-term entry barriers, the competition rates decrease significantly, as expected. Surprisingly, with long-term entry barriers, firms exhibit higher levels of competition, entering each other's market more often. We conjecture that in the latter case, bearing the cost of entry is perceived as a signal for the intention to compete and has an adverse effect on cooperation.

JEL: D4, L1

Keywords: Market Entry Barriers, Mutual Forbearance, Prisoner's Dilemma, Experimental Economics

---

14002 Christoph Starke/Steffen Burchhardt:
› Revealing the Preferences of Social Financiers

Abstract:

Financiers of social entrepreneurs are typically characterized as having some form of prosocial or CSR related objective. While in some studies such objectives have been formulated on an analytically inconvenient level, other contributions are limited only to charity finance. In this paper we identify Fehr ar Schmidt's inequality aversion as an analytically tractable and most basic motivation of social financiers ir general. Specifically, we show that the financiers' decision structures and their observable behavior coincide with the experimental findings of Fehr and Schmidt (1999). Moreover, we derive behavioral implications for social entrepreneurs. Paradoxically, given that financiers do not prefer a self-consumptio of the social service, they contribute more if the entrepreneur provides them nevertheless.

JEL: D03, D31, L26, L31

Keywords: inequality aversion, social entrepreneurship, financier, public good, social service

---

14001 Jörg Bühnemann/Bernd Neutschel:

› Universitäre Transferstruktur im Wandel - OvGU als regionaler Impulsgeber

Abstract:

Im Zuge der kommenden EU Strukturfondsperiode 2014 - 2020 verstärkt sich der politische Druck auf di Hochschulen ihrer Verpflichtung, die Wirtschaft aktiv mit F&E-Wissen zu versorgen, nachzukommen. Gerade in kleinstrukturierten Wirtschaftsräumen, in denen die Unternehmen aufgrund mangelhafter Ressourcenausstattung selbst nicht in der Lage sind F&E durchzuführen, sind die Anforderungen an Universitäten als regionaler Innovationsmotor besonders hoch. In der Umsetzung dieser Transferaufgab bleiben die Hoch-schulen vermehrt deutlich hinten den Erwartungen zurück. Der vorliegende Beitrag analysiert die Ursachen für diese Entwicklung und kombiniert sie mit den Ergebnissen einer Regional-studie zum Aufbau effektiver Transferstrukturen. Auf dieser Grundlage entstand das im weiteren Verlauf vorgestellte Konzept für die Otto-von-Guericke-Universität Magdeburg (OvGU), zur Neuausrichtung ihrer Transferaktivitäten mit dem Schwerpunkt der ökonomischen Verwertung. Im Fokus der Betrachtung steh dabei der strukturelle Aufbau einer zentralen Einrichtung, ergänzt durch einzelne Ausführungen zu notwendigen Prozessabläufen. Zum Abschluss gibt der Beitrag Hinweise für die praktische Umsetzung, zeigt regionale Erfolgsfaktoren auf und identifiziert Aspekte für zu hohe Erwartungen an eine zukünftige Transfer-Unit.

JEL:

Keywords: F&E, Wissens- und Technologietransfer, Kommerzialisierung, Hochschulen

---

FEMM Working Paper Series

- 2024
- 2023
- 2022
- 2021
- 2020
- 2019
- 2018
- 2017
- 2016
- 2015
- 2014
- 2013
- 2012
- 2011
- 2010
- 2009
- 2008
- 2007
- 2006
- 2005
- 2004
- 2003
- 2002
- 2001
- 2000