Meet the ITOR Editors Panel

Anna Nagurney

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INFORMS Annual Meeting Phoenix, October 15-18, 2023

Acknowledgments

Many thanks to the outstanding Editor of the *International Transactions in Operational Research* (ITOR) Celso C. Ribeiro for his great work and for bringing us together at so many different conferences around the world!

Congratulations on the 30th aniversary of ITOR!

I Work on the Modeling of Network Systems Including Supply Chains

My Connections to ITOR

I have served as an Associate Editor for over 13 years now and the first paper that I published in ITOR was in 2009.

My most recent ITOR paper was published in 2022.

To-date, I have had 8 of my papers published in ITOR.

I have served on its Best Paper Prize Committee several times.

What I Appreciate About ITOR

- **Interesting topics** covered in the papers

- **Special issues** - some examples:

  - Multidimensional Finance, Insurance, and Investment,
  - OR and Big Data in Agriculture,
  - Operations Research in Healthcare, and
  - Tutorials in Operations Research

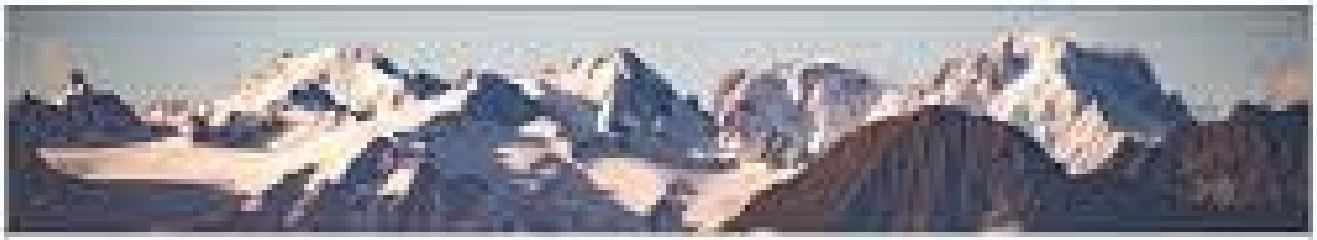
- **Excellent surveys** ranging from logistics areas to finance

- **Best paper awards** in Methodology and Applications and in Surveys and Tutorial categories

- **The Editor and Editorial Board and our meetings around the globe!**

What I Appreciate About ITOR

And the publisher Wiley recognizes "popular" papers:



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Top Downloaded Article

Congratulations to:

Anna Nagurney

whose paper was one of the most downloaded during its first 12 months of publication in

INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

Modeling of Covid-19 trade measures on essential products: a multiproduct, multicountry spatial price equilibrium framework

I Have Even Used Tutorials as Readings in My Classes!

INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

International Transactions in Operational Research

January / March 2012

Volume 19, Issue 1-2
Pages 1–322

Editorial

Tutorials in Operations Research (page 1)
Celso C. Ribeiro and Irene Loiseau
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00837.x
Abstract | Full Article (HTML) | PDF(429K) | Request Permissions

Original Articles

Vehicle routing problems with split deliveries (pages 3–22)
Article first published online: 13 APR 2011 | DOI: 10.1111/j.1475-3995.2011.00811.x
Abstract | Full Article (HTML) | PDF(631K) | References | Request Permissions

The concepts of revenue management: a tutorial (pages 23–37)
Peter C. Bell
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00787.x
Abstract | Full Article (HTML) | PDF(952K) | References | Request Permissions

Operations research in the natural resource industry (pages 39–62)
T. Bjørndal, I. Herrero, A. Newman, C. Romero and A. Weintraub
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00800.x
Abstract | Full Article (HTML) | PDF(562K) | References | Request Permissions

Multicriteria path and tree problems: discussion on exact algorithms and applications (pages 63–98)
João C. N. Clímaco and Marta M. B. Pascoal
Article first published online: 7 JUL 2011 | DOI: 10.1111/j.1475-3995.2011.00815.x
Abstract | Full Article (HTML) | PDF(768K) | References | Request Permissions

A decision support methodology for increasing school efficiency in Bolivia's low-income communities (pages 99–121)
João Neiva de Figueiredo and Miguel Angel Marca Barrientos
Article first published online: 4 AUG 2011 | DOI: 10.1111/j.1475-3995.2011.00821.x
Abstract | Full Article (HTML) | PDF(1245K) | References | Request Permissions

Fragile networks: identifying vulnerabilities and synergies in an uncertain age (pages 123–160)
Anna Nagurney and Qiang Qiang
Article first published online: 7 OCT 2010 | DOI: 10.1111/j.1475-3995.2010.00785.x
Abstract | Full Article (HTML) | PDF(973K) | References | Request Permissions

A tutorial on branch and cut algorithms for the maximum stable set problem (pages 161–199)
Article first published online: 1 MAR 2011 | DOI: 10.1111/j.1475-3995.2011.00805.x
Abstract | Full Article (HTML) | PDF(1057K) | References | Request Permissions

Sports scheduling: Problems and applications (pages 201–226)
Celso C. Ribeiro
Article first published online: 27 JUL 2011 | DOI: 10.1111/j.1475-3995.2011.00819.x
Abstract | Full Article (HTML) | PDF(812K) | References | Request Permissions

OR challenges and experiences from solving industrial applications (pages 227–251)
M. Rönnqvist
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00801.x
Abstract | Full Article (HTML) | PDF(6418K) | References | Request Permissions

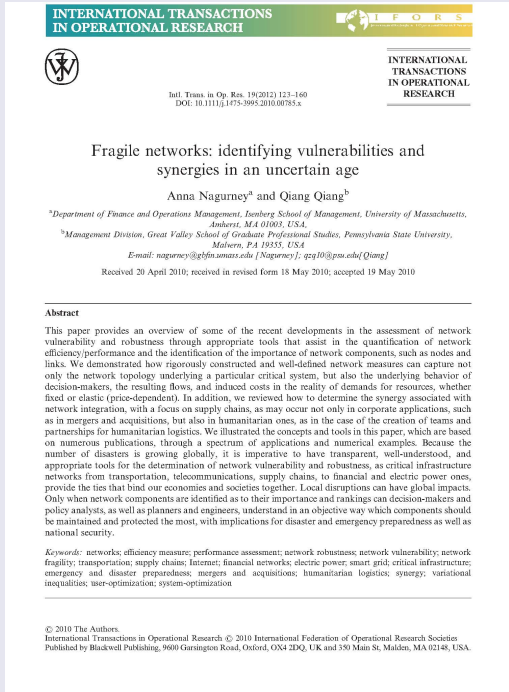
Black Swans, New Nostradamuses, Voodoo decision theories, and the science of decision making in the face of severe uncertainty (pages 253–281)
Moshe Sniedovich
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00790.x
Abstract | Full Article (HTML) | PDF(1380K) | References | Request Permissions

Multi-objective optimization using metaheuristics: non-standard algorithms (pages 283–305)
El-Ghazali Talbi, Matthieu Basseur, Antonio J. Nebro and Enrique Alba
Article first published online: 20 APR 2011 | DOI: 10.1111/j.1475-3995.2011.00808.x
Abstract | Full Article (HTML) | PDF(689K) | References | Request Permissions

Using OR to adapt supply chain management best practices to humanitarian logistics (pages 307–322)
Luk N. Van Wassenhove and Alfonso J. Pedraza Martinez
Article first published online: 4 JAN 2012 | DOI: 10.1111/j.1475-3995.2011.00792.x
Abstract | Full Article (HTML) | PDF(1053K) | References | Request Permissions

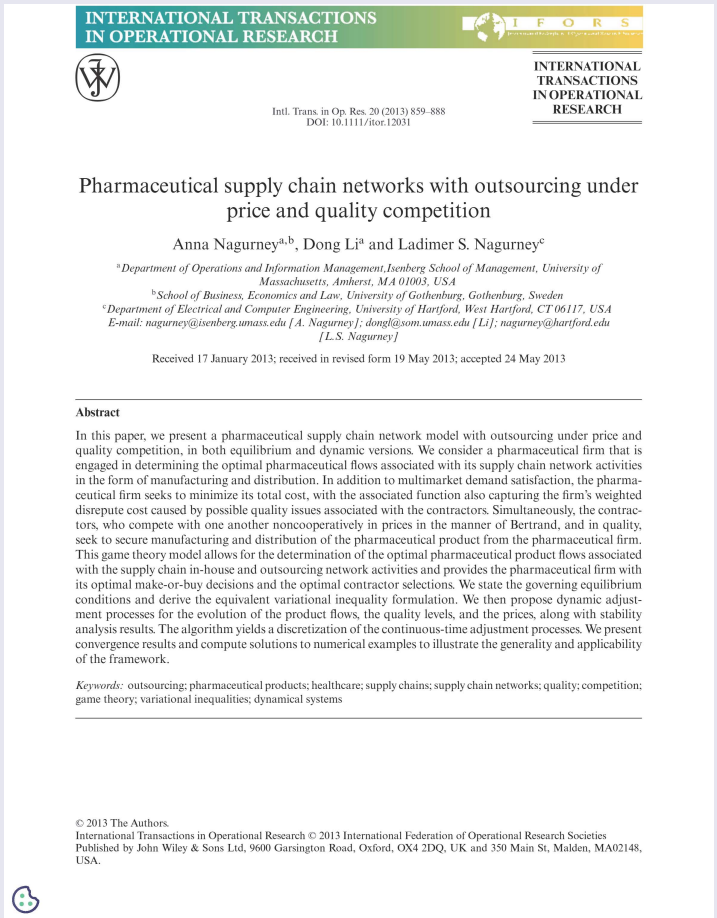
Deeply Honored

I was deeply honored and delighted to have my tutorial paper, "Fragile networks: Identifying vulnerabilities and synergies in an uncertain age," *International Transactions in Operational Research* **19**, 123-160, with Qiang "Patrick" Qiang, selected for publication in the 30th anniversary issue and it is open access.



The Tutorial Was Given at the ALIO-INFORMS Conference in Buenos Aires in 2010

Examples of My Papers in ITOR



INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

Intl. Trans. in Op. Res. 20 (2013) 859–888
DOI: 10.1111/itor.12031

Pharmaceutical supply chain networks with outsourcing under price and quality competition

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Received 17 January 2013; received in revised form 19 May 2013; accepted 24 May 2013

Abstract

In this paper, we present a pharmaceutical supply chain network model with outsourcing under price and quality competition, in both equilibrium and dynamic versions. We consider a pharmaceutical firm that is engaged in determining the optimal pharmaceutical flows associated with its supply chain network activities in the form of manufacturing and distribution. In addition to multimarket demand satisfaction, the pharmaceutical firm seeks to minimize its total cost, with the associated function also capturing the firm's weighted disrepute cost caused by possible quality issues associated with the contractors. Simultaneously, the contractors, who compete with one another noncooperatively in prices in the manner of Bertrand, and in quality, seek to secure manufacturing and distribution of the pharmaceutical product from the pharmaceutical firm. This game theory model allows for the determination of the optimal pharmaceutical product flows associated with the supply chain in-house and outsourcing network activities and provides the pharmaceutical firm with its optimal make-or-buy decisions and the optimal contractor selections. We state the governing equilibrium conditions and derive the equivalent variational inequality formulation. We then propose dynamic adjustment processes for the evolution of the product flows, the quality levels, and the prices, along with stability analysis results. The algorithm yields a discretization of the continuous-time adjustment processes. We present convergence results and compute solutions to numerical examples to illustrate the generality and applicability of the framework.

Keywords: outsourcing; pharmaceutical products; healthcare; supply chains; supply chain networks; quality; competition; game theory; variational inequalities; dynamical systems

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INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

Intl. Trans. in Op. Res. 25 (2018) 1443–1464
DOI: 10.1111/itor.12502

Cybersecurity investments with nonlinear budget constraints and conservation laws: variational equilibrium, marginal expected utilities, and Lagrange multipliers

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Received 31 January 2017; received in revised form 18 September 2017; accepted 24 November 2017

Abstract

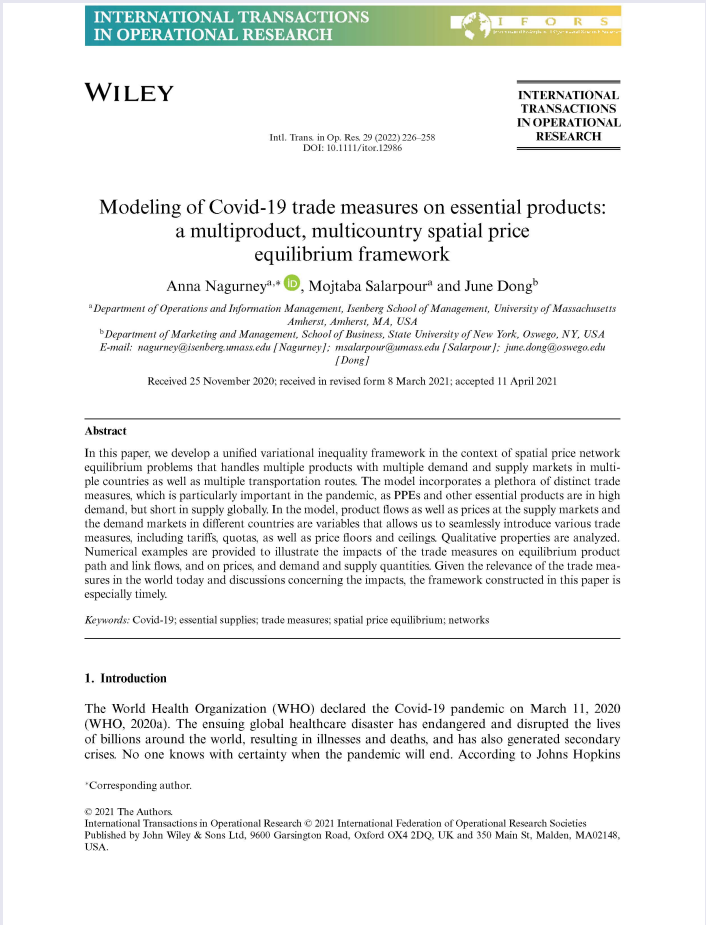
In this paper, we propose a new cybersecurity investment supply chain game theory model, assuming that the demands for the product are known and fixed and, hence, the conservation law of each demand market is fulfilled. The model is a generalized Nash equilibrium model with nonlinear budget constraints for which we define the variational equilibrium, which provides us with a variational inequality formulation. We construct an equivalent formulation, enabling the analysis of the influence of the conservation laws and the importance of the associated Lagrange multipliers. We find that the marginal expected transaction utility of each retailer depends on this Lagrange multiplier and its sign. Finally, numerical examples with reported equilibrium product flows, cybersecurity investment levels, and Lagrange multipliers, along with individual firm vulnerability and network vulnerability, illustrate the obtained results.

Keywords: cybersecurity; investments; supply chains; conservation laws; game theory; generalized Nash equilibrium; variational inequalities; Lagrange multipliers

1. Introduction

Supply chains have become increasingly complex as well as global and they are now highly dependent on information technology to enhance effectiveness and efficiency and also to support communications and coordination among the network of suppliers, manufacturers, distributors, and even freight service providers. At the same time, information technology, if not properly secured, can increase the vulnerability of supply chains to cyberattacks. Many examples of cyberattacks infiltrating supply chains exist, with a vivid example consisting of the major U.S. retailer Target cyber

Examples of My Papers in ITOR



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INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

Intl. Trans. in Op. Res. 29 (2022) 226–258
DOI: 10.1111/itor.12986

Modeling of Covid-19 trade measures on essential products: a multiproduct, multicountry spatial price equilibrium framework

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Received 25 November 2020; received in revised form 8 March 2021; accepted 11 April 2021

Abstract

In this paper, we develop a unified variational inequality framework in the context of spatial price network equilibrium problems that handles multiple products with multiple demand and supply markets in multiple countries as well as multiple transportation routes. The model incorporates a plethora of distinct trade measures, which is particularly important in the pandemic, as PPEs and other essential products are in high demand, but short in supply globally. In the model, product flows as well as prices at the supply markets and the demand markets in different countries are variables that allows us to seamlessly introduce various trade measures, including tariffs, quotas, as well as price floors and ceilings. Qualitative properties are analyzed. Numerical examples are provided to illustrate the impacts of the trade measures on equilibrium product path and link flows, and on prices, and demand and supply quantities. Given the relevance of the trade measures in the world today and discussions concerning the impacts, the framework constructed in this paper is especially timely.

Keywords: Covid-19; essential supplies; trade measures; spatial price equilibrium; networks

1. Introduction

The World Health Organization (WHO) declared the Covid-19 pandemic on March 11, 2020 (WHO, 2020a). The ensuing global healthcare disaster has endangered and disrupted the lives of billions around the world, resulting in illnesses and deaths, and has also generated secondary crises. No one knows with certainty when the pandemic will end. According to Johns Hopkins

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INTERNATIONAL TRANSACTIONS IN OPERATIONAL RESEARCH

Intl. Trans. in Op. Res. 29 (2022) 2116–2144
DOI: 10.1111/itor.13092

Optimization of investments in labor productivity in supply chain networks

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Received 10 August 2021; received in revised form 26 October 2021; accepted 13 November 2021

Abstract

Labor is an essential resource in the functionality of supply chains. The COVID-19 pandemic has demonstrated the varied impacts of disruptions to supply chains because of labor issues. Shortages of labor continue even now as economies begin to open up with progress on vaccinations. Investing in labor productivity is a possible mechanism in moderating shortfalls in labor. This paper constructs a supply chain network optimization model, whose solution yields optimal product path flows to demand markets, the optimal investments in link labor productivity, as well as labor hours needed, and the optimal wages of the workers in production, transportation, storage, and distribution. The model includes a budget constraint on the investments, along with maximum bounds on investments on the supply chain network links. The theoretical framework, which includes Lagrange analysis and the computational approach, are based on the theory of variational inequalities. Managerial insights are provided obtained via the Lagrange analysis and a series of numerical examples, which demonstrate that such investments can help both the firm and the consumers.

Keywords: labor; productivity; investments; supply chain networks; optimization; variational inequalities

1. Introduction

Labor is a critical resource in every supply chain network activity. Without labor, products cannot be produced, transported, stored, and distributed. The COVID-19 pandemic has vividly demonstrated the importance of labor resources, with disruptions to labor, due to illnesses, deaths, the need for social distancing and other mitigation procedures, and even certain labor-related trade measures, affecting the availability of products around the globe as well as product prices (see, e.g., Reiley, 2020; Rosane, 2020; Russell, 2020; Nagurney et al., 2022). Conerly (2021) emphasizes

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Emerging Issues and Trends

OR has never been more needed to address numerous challenging problems that now face us:

- Climate change and associated impacts from the increasing number of disasters such as wildfires and pollution, floods, etc.

- Heightened geopolitical risks and the need for better security measures

- Healthcare shortcomings and inequity including inadequate access to medicines and care

- Numerous societal problems from poverty and rising hunger and food insecurity

- Impact of AI and opportunities

- Need for enhanced education and an excellent workforce.

Tips and Publication Advice

Your research and papers are part of your reputation, so always do your very best in writing up your research and in proofreading your papers. Be thorough in citations.

Referees are volunteers. It is important to be professional in your paper submissions. Take time.

Do reach out to potential collaborators. ITOR has "International" right in its title. Conferences are a great venue at which to build your networks and also to find collaborators.

Enjoy the process of doing the research, writing it up, and presenting it!

Thank You Very Much!