THE INTERNATIONAL AIR CARGO INDUSTRY
ADVANCES IN AIRLINE ECONOMICS

Series Editor: James Peoples

Recent Volumes:

Volume 1: Competition Policy and Anti-Trust, Darin Lee
Volume 2: The Economics of Airline Institutions, Operations and Marketing, Darin Lee
Volume 3: Pricing Behaviour and Non-Price Characteristics in the Airline Industry, James Peoples
Volume 4: The Economics of International Airline Transport, James Peoples
Volume 5: Airline Efficiency, John D. Bitzan, James Peoples and Wesley W. Wilson
Volume 6: The Economics of Airport Operations, John D. Bitzan and James Peoples
Volume 7: Airline Economics in Asia, Xiaowen Fu and James Peoples
Volume 8: Airline Economics in Europe, Kevin Cullinane
ADVANCES IN AIRLINE ECONOMICS  VOLUME 9

THE INTERNATIONAL AIR CARGO INDUSTRY: A MODAL ANALYSIS

EDITED BY

JAMES NOLAN
University of Saskatchewan, Canada

And

JAMES PEOPLES
University of Wisconsin-Milwaukee, USA

United Kingdom – North America – Japan
India – Malaysia – China
CONTENTS

About the Authors ix

Introduction and Overview of the International Air Cargo Industry: A Modal Analysis 1
James Nolan and James Peoples

Modeling an Air Cargo Shipment Planning Problem Including Risk Factors, Consolidations, Integrations, and Divisible Activities 9
Mustafa Egemen Taner

Analyzing and Modeling Performances of Supply Chains Served by Air Cargo Carrier Networks 35
Milan Janić

Productivity and Cost Patterns in the All-Cargo US Airline Sector 83
Zoe Laulederkind and James Peoples

The Evolving Role and Scale of Cargo-Focused Hub Airports in the United States, 2003–2020 117
Joseph Schwieterman and Euan Hague

Leveraging Geography and Operations for Competitive Advantage in Air Cargo: Challenges and Opportunities in Alaska 141
Darren J. Prokop

The Airport Cargo Strategy Canvas: An Application to Brussels Airport (BRU) 155
Thomas Van Asch, Wouter Dewulf and Eddy Van de Voorde
Ireland’s Demand for Aircraft Assets and the Value of Flows in the International Trade in Goods Statistics: Estimating the Role of Domestic Carriers and the Air Cargo Industry 183
Dermot P. Coates and Conor Kelly

Air Trade, Air Cargo Demand, and Network Analysis: Case of the United States 207
Chunyan Yu and Li Zou

Plane to See? Empirical Analysis of the 1999–2006 Air Cargo Cartel 241
James Nolan and Zoe Laulederkind

Implications of the Fifth Freedom Traffic Right for Air Cargo Transport in China 263
Tao Li

Performance of Air Cargo Export to Promote Economic Diversification in Nigeria 283
Adedotun Joseph Adenigbo and Olayemi O. Simon-Oke

Index 303
ABOUT THE AUTHORS

Adedotun Joseph Adenigbo has a PhD in Transport Management with research interest in Logistics and Transport. His PhD thesis focussed on air cargo logistics in Nigeria and Ghana. Currently, Adedotun is a Postdoctoral Research Fellow at the Department of Transport and Supply Chain Management, University of Johannesburg, South Africa. He is also a Senior Lecturer at the Department of Logistics and Transport Technology, Federal University of Technology, Akure, Nigeria. Adedotun has articles published in both local and international journals and has contributed chapters to books such as *Contemporary Issues in Transport Development in Nigeria* and *Promoting Universal Access in Public Transport in Nigeria*.

Dermot P. Coates is a former Senior Economist-Statistician with the Central Bank of Ireland where his research interests included market-based funding, household wealth, and inflation. Dr Coates is also Adjunct Faculty at the National University of Ireland, Maynooth, where he also serves as a member of the Advisory Board of the Department of Economics.

Wouter Dewulf graduated a Master in Applied Economics (1992) and Master in Business Engineering (1993) at the University of Antwerp. After studies in Maitrise d’Administration et Gestion (IAG) at Université Catholique de Louvain, he worked at British Airways in London, Sabena Technics in Belgium and Van Gansewinkel in Belgium, France, and Luxemburg. As an “early midlife crisis,” and after an inspirational meeting with Prof Van de Voorde, he started a PhD in 2007. He graduated in 2014 as a doctor in Applied Economics at the University of Antwerp. He is a Professor at the University of Antwerp and C-MAT (Belgium) and is the Academic Director of C-MAT. His main research areas are in the fields of air cargo, air transport strategy, and cross-border E-commerce. He is a Visiting Professor at the University of Hasselt (Belgium), University of Chongqing (China), and Trisakti Institute of Transportation and Logistics (Jakarta, Indonesia).

Euan Hague is Professor of Public Service and Director of DePaul’s Urban Collaborative. A cultural and urban geographer, Dr. Hague is the coauthor of *Regional and Local Economic Development* (Palgrave, 2011) and coeditor of *Neoliberal Chicago* (University of Illinois, 2017). He received the Barbara A. Holland Scholar-Administrator Award from the Coalition of Urban and Metropolitan Universities in 2019.

Conor Kelly currently works as a Macroprudential Policy Specialist for the Central Bank of Ireland and received his MSc in Quantitative Finance from SOAS. Conor works in the area of financial stability and capital, with a focus on macroprudential tools such as systemic risk buffers and countercyclical capital buffers. He also has research interests in public economics, labor, and housing, among others.

Zoe Laulederkind is a Graduate Research and Teaching Assistant at the University of Wisconsin-Milwaukee. Her research activities include funded research examining the influence of the repeal of prevailing wage in Wisconsin on the participation of out-of-state construction companies. She is also the coauthor of the chapter entitled Allocative Efficiency in the US Air Cargo Industry.

Tao Li is an Associate Professor at the Law School of Hebei University of Economics and Business, China. His research focuses on international economic law and international aviation management. He holds a PhD from the Law School of Shandong Province. He had been a lawyer specialized in trade remedies.

James Nolan is a Professor in the Department of Agricultural and Resource Economics at the University of Saskatchewan. He has published extensively on issues in transportation and agricultural economics, focusing mostly on modern freight transportation and the structure of these markets. A previous President of the Transportation Research Forum, Dr Nolan is also a former Coeditor of the Canadian Journal of Agricultural Economics and currently serves as Editor of the Journal of the Transportation Research Forum.

James Peoples is Professor of Economics at the University of Wisconsin-Milwaukee. His research interest includes analysis of production efficiency for different modes of freight transportation, as well as analysis of labor market activity in transportation industries. He has served as President of the Transportation and Public Utilities Group. He is also the Series Editor of Advances in Airline Economics, Coeditor of Elements of Transportation Economics, and Editorial Board Member of the journal Transport Policy.
Darren J. Prokop is a Professor of Logistics at the University of Alaska Anchorage, USA. He specializes in transportation economics and its effects on international trade and transportation security. Dr Prokop is an active consultant to both government and business. Prominent transport carriers, shippers, and policy-makers have relied on his modelling of complex problems in order to develop workable solutions to meet their needs. An expert on cabotage regulations, his opinions in this area are actively sought by international shippers and carriers. He has published seminal research in the leading academic journals with topics ranging from the microfoundations of logistics; air cargo logistics; and supply chain security modelling. Dr Prokop has contributed chapters to many books in his field. His own books include: *The Business of Transportation, Concepts of Transportation Economics, Global Supply Chain Security and Management,* and *Transportation Operations Management.*

Joseph P. Schwieterman is Professor of Public Service and Director of the Chaddick Institute at DePaul University, as well as President of the Transportation Research Forum. Schwieterman is a nationally known authority on transportation and urban economics. He is author of the book *Air Cargo and the Opening of China* and editor-in-chief of *Issues in Aviation Law and Policy,* a DePaul journal.

Olayemi O. Simon-Oke holds a PhD in Economics with a concentration in industrial, business, and development economics. He is a Professor at the Department of Economics, Federal University of Technology, Akure, Nigeria. Apart from his numerous published articles, he also has edited books and several chapters in Economics, including *The Fundamentals of Economics; Theory of Cost; Nigeria Econometric Reform; Health Investment and Economic Growth in Nigeria; Basic Economics; Community Banking;* and *Rural Development.* Dr Simon-Oke has attended several academic conferences on Economics and Management discourse both at local and international levels.

Mustafa Egemen Taner completed his undergraduate and graduate studies at Pamukkale University. He received his PhD in Industrial Engineering from Yildiz Technical University in 2018 while he was working for Quality Management and Data Evaluation Application and Research Center at Pamukkale University. He has been carrying out many studies on logistics and supply chain management, seaport management, operations research, and quality management and continues his research. He has been working as an Assistant Professor in the Department of Industrial Engineering at Tarsus University since 2021.

Thomas Van Asch graduated as a doctor in Applied Economics at the Faculty of Economics of the University of Antwerp, Belgium. His main areas of research are in the fields of air cargo, e-commerce, and airport strategy development. Thomas’ PhD dealt with the strategy of European airports regarding air cargo. Before obtaining his PhD, Thomas finished his Master of Applied Economics at the University of Antwerp and his Master of Air Transport at C-MAT.
**Eddy Van de Voorde** is a Full Professor at the University of Antwerp, Faculty of Business and Economics. His activities are situated in Maritime Economics, Port Economics, Air Transport, and Logistics. His research, particularly in modelling freight transport, has resulted in a long list of publications in leading academic journals. Moreover, he recently has coauthored various standard works in transport economics and models. In the past years, he fulfilled different functions in international scientific associations, such as being the vice-chair of the International Association of Maritime Economists (IAME), vice-chair of the scientific committee of the World Conference on Transport Research Society (WCTRS), and chair of the Benelux Interuniversity Group of Transport Economists (BIVEC). He is visiting professor at different foreign universities, such as Lisbon, Bari, London (City University), and MIT (Cambridge, USA). In 2011, he got a visiting professorship at the Sapienza University in Rome. In 2005, he was awarded in Genua a prestigious international prize, the Premio Internazionale delle Communicazioni “Cristoforo Colombo,” for his scientific research in Maritime Economics.

**Chunyan Yu** is Professor of Air Transport Management at Embry-Riddle Aeronautical University (ERAU), David B. O’Maley College of Business in Daytona Beach, Florida. Her expertise is in economics of transportation and logistics industries; performance measurement and benchmarking of transportation infrastructure; regulatory policy analysis; demand analysis and forecasting; measurement and analysis of productivity and efficiency; applied statistics and econometrics. Dr Yu has more than 20 years of experience in teaching, research, consulting in Canada, the United States, Asia, and Europe. She has published books and academic articles in international journals and coauthored a number of research reports for government agencies and commissions in Canada, Asia, and Europe. Since 2001, Dr Yu has been the Research Director for the Air Transport Research Society (ATRS)’s Global Airports Performance Benchmarking Task Force.

**Li Zou** is Professor of Marketing and Supply Chain Management in David B. O’Maley College of Business at Embry-Riddle Aeronautical University, Daytona Beach, Florida. Dr Zou earned a PhD in Logistics, Transportation, and Supply Chain Management from University of Maryland, College Park. Her research into the economics of airline alliances, multimarket competition, air cargo revenue management, fleet standardization, and market entry strategies has been published in leading academic journals. She currently teaches airline management, international business, and air cargo logistics management at Embry-Riddle Aeronautical University. Dr Zou has served as guest editor for special issues of the *Journal of Air Transport Management* and *Journal of Air Transport Studies*. She is an executive committee member of the Air Transport Research Society (ATRS).