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Book review

Transportation Security – a missing agenda for the sustainable transportation

Essay

Book reviews:

- *The Economic and Political Economy of Transportation Security*, by **Kenneth Button**, 2016. Edward Elgar. Hardback price: £72.00; Web: £64.80. ISBN 978–1–84,980-373-1.
- *Multimodal Transport Security Frameworks and Policy Applications in Freight and Passenger Transport*, by **Joseph S. Szyliowicz**, **Luca Zamparini**, **Genserik** L. **L. Reniers**, and **Dawna** L. **Rhoades** (editors). 2016. Edward Elgar. Hardback: £100.00; Web: £90. ISBN 978–1–78,347-481-3

Transportation is generally defined as 'the movement of people or goods from one place to another' but in Business English, it is also defined as a 'transport a system of vehicles, for example buses, trains, and aircraft, for getting from one place to another' (Cambridge online Dictionary, 2019). The first definition can be associated with the social science disciplines – the term 'people' is used – while the later with the physical science ones. For the later definition, transportation can be deemed as a 'technology' to optimise time for people/goods movement within a geographical space, it can be interpreted as a function of speed, time and distance of a designed material. For analysis other than the complexity of speed, time and distance and also the design of the (means of transportation) technology and its associated impact to the physical environment, the first definition would mostly apply.

Security on the other hand is defined as 'protection of a person, building, organisation, or country against threats as crime or attacks by foreign countries (ibid). Addressing transportation security for physical scientists such as engineers or material scientist would mean to reduce speed, and consequently time, for saving lives (for instance from traffic accidents); and to design bullet-proof vehicles (for instance from war or terrorism). Costings and appreciating the human aspects for both objectives are supposedly the job for social scientists such as economists.

Kenneth Button's '*The economic and political economy of transportation security*' offers the social science perspectives with generous economics insights. The book covers over decades' experience of the author witnessing evolution of the transportation research and the transportation security policies in the US, following the September 11 terrorist attack in 2001 in New York. The motivation derived from lack of research interest in the economic dimensions in addressing transportation security in general and the way that US government responded with its policies to address its challenges. One big obvious challenges was to predict how unpredictable the terrorist act might be, which consequently limits the data for useful and meaningful econometric analysis. The author, however, regressed his sights with this limited transportation security related data to understand as to why transportation security is difficult to be assessed from the economic perspective and using classic theories, such as logistics supply chains, risk and uncertainties, welfare economics, cost benefit analysis, market structure and so forth, to dive into terrorist-related security cases.

Notable use of theories from big names, such as Malcolm McLean (well-known for as container innovator), John Maynard Keynes (cost stimulus), Gary Becker (service as product commodity), Kelvin Lancaster (service as bundle of attributes), Ronald Coase (market structure importance), Oliver Williamson (institutional evolution) and Michael Porter (competitive advantage), and many more, were well interwoven in the book. This allows bigger value for readers to not only have better understand the author's stance, but also to receive and to reflect some classic economics class in fashionable manner.

The book (172 pages) embraces nine chapters: start with introduction to lay foundation and gaps of the transportation studies using economics in addressing terrorism in general. The next chapter presents scale and nature of the terrorist problem, where statistics of terrorism acts on all type of transportation system explored and contextualised with the global transportation system. It is actually quite brief description of rather limited terrorism data – possibly collected individually by the author – and would rather benefit, if reviewed alongside case studies compilation type of book, to expand further understanding the dimensions of the problem, especially in terms of addressing global geography, and engineers' perspectives. Those perspectives are available in the other book edited by Szyliowicz et al. (2016).

Chapter 3 defines some basic economics of transportation security, where macro-as well as micro- analysis perspectives introduced to inform the development of theoretical economic model of optimal level of security. Chapter 4 follows on with links between market structure and security, starting with treating 'transport security' as a 'commodity/service' and exploring the way business economics and management can play to attract the market products.

Chapter 5 charts the economic instruments of security policy, mainly revisiting the toolkit of public policies to leverage economics change from infrastructure, operations and vehicles level. The following chapters 6, 7 and 8 look to address specifically on different case studies using all of the above theories developed.

Chapter 6 addresses 'air transportation', Chapter 7 on 'the shopping mall', and Chapter 8 at 'maritime'. Those three case studies were highly relevant as it has relatively high impact on the scale for passenger density on air (Chapter 6) and land-based (Chapter 7), as well as for freight density such as on maritime (Chapter 8). On each of those case studies, unique features of transportation security policies and its associated tools, such for instance funding and insurance, were well described and discussed and consequently highly relevant for policy makers, business managers, transport operators and academics to extract the very essence of the best practices.

The book concludes with a clear message of the author on criticism of how economics as a subject normally is hidden behind complex

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mathematical model to look scientific and impress audience. This certainly markets the book well with nothing that non-expert readers would not understand regarding the economics of transportation security. While many transportation studies are still struggling to pass message about developing transportation system resilience to its negative impacts such as pollution and congestion, this book is at a different playing field, in a sense that it attempts to understand the outcomes of system disruption. The author has brought readers to dive into the spectacles of political economists. Certainly an important book to ensure the sustainability of our transportation system.

One comment regarding the use of economics to address the transportation security: as we know that economics as a discipline usually aims to optimise demand and supply, it was envisaged that queue (with mass density of people or goods) for attractive commodities/services will occur. Recent transportation system or big events terrorist attacks such as in Europe (i.e. in Brussels 2016, Paris 2015 and Manchester 2017) were targeting this mass density of crowd and these events demonstrate a long way ahead in understanding response to security alert using economics based models. Perhaps a look on how (transportation) security been done in war-sensitive places, such as in the Middle-East would open eyes governments' authorities to deal with those type of attacks. A case study from this part of the world is presented in the other book edited by Szyliowicz et al. (2016) and discussed next. In addition, use of other social science disciplines, such as theology and philanthropy to addressing transport security might works better[1], for example, the establishment of Newcastle University (1834) in England would never have been possible without the generosity of philanthropists (Harvey et al., 2019).

The *'Multimodal Transport Security Frameworks and Policy Applications in Freight and Passenger Transport'* book edited by Joseph Szyliowicz, Luca Zamparini, Genserik Reniers and Dawna Rhoades – all of whom also act as author contributors – is a compilation research cases in transportation security. The key starting point here, as used by the editors to start discussion in the introduction chapter, was new vision of global transportation due to innovative technology, namely containerisation (also discussed in Button (2016) of Malcolm McLean's case), that allow multimodal transport to flourish and achieve economies of scale at level never seen before. Containerisation, as we know, is applicable to freight only, while for passenger the concept of 'intermodalism' is used in the book, although the term is not always exist in English dictionary (e.g. Cambridge dictionary). The intermodal passenger term originated from the US Transportation Act 1991 which represents funding mechanism for transport infrastructure corridors development, e.g. interstate highways and railroads, to promote jobs (Dilger, 1992).

In European transport policy, however, intermodal is pretty much freight transport definition, exchanging multimodal, defined as intermodal container or vehicle using multiple modes of transport (Aditjandra, 2018, p. 218). Notwithstanding the confusion, the term is meant to determine flow of either passenger or freight to be equally captured in the science of movement. The Multimodal Transport Security book aims to address the security aspect of this movement – systems' movement – alongside its cost-effectiveness and long-term sustainability. The intermodal system approach, as emphasised by the editors here, meant to moderate modal/sectoral transportation organisational perspectives, that deemed to hinder appropriate policies to safeguard the system, thus protecting passenger as well as national economies. The global geography elements of the transportation system, with its security challenges in legal as well as socio-economic and cultural terms, are strong within this book. Satisfying for anyone with interest to understand the diversity of global transportation security challenges. The theoretical aspects, however, would benefit from Button's (2016) book as discussed above, although with mainly using US empirical based cases.

The book (313 pages) comprises 19 chapters and divides into four parts to encompass multimodal 'freight' and 'passenger' transportation security across 'themes and framework' – the theoretical part – and 'policy applications' – the empirical part.

Chapter 2 investigates the definition of intermodal for freight and passenger to some extent. The description was clearly much more weighted towards freight application with example from well-established maritime sector use of standardised box – intermodal container – and its associated strategic operations, business and legal management in land. Security aspects were drawn along freight terms in cargo theft, terrorist acts and piracy, all (of them) very much reflect typical maritime transport security challenges.

Chapter 3 explores the legal economic foundations of global transport trading systems. A number of key initiatives by international regime, such as tracking and tracing cargo, information management, and government partnership network, were described to illustrate efforts made in ensuring efficient and secure global trading.

Chapter 4 assesses vulnerability of global supply chains via theoretical multimodal transport logistics. It defines risk as a linear function of probability and impact, and this function represents main part of the supply chain vulnerability equation. A simulation using hypothetical data of global transport chain network (a container transported from Asia to a European facility) was estimated, and key parameters, e.g. delay, illustrate the level of vulnerability of a transport chain.

Chapter 5 introduces multimodal transport insurances and its descriptive typology for mainly freight transport. The long descriptive list of clauses to cover the multimodality – as agreed in the contractual obligation between involved parties – were noted as key to reduce the security risk.

Chapter 6 to 11 were case studies of multimodal freight transportation security in different countries. The case in the US forms Chapter 6 and covers the freight security regulatory efforts made following 9/11 event to ensure the safety of (maritime) freight destined for US commerce. US customs was key actor here and understood to operate the most elaborate and sophisticated sets of security systems in the world that consequently influences international freight security. Albeit how much money involved as critically scrutinised in Button (2016).

Review of Italian multimodal freight system forms Chapter 7. Key national figures and legal frameworks were well described to depict the national logistic system. The security aspects were very much drawn towards port terminal operations and truck monitoring, including parking area, and technologies' deployment to overcome the problem. Chapter 8 presents the Baltic States railway system operating in the Baltic region. Using the case of Rail Baltica, the regional states railway company, the chapter links regional transportation challenges with key issues such as accidents' rate, energy dependency, control system and crime and business costs.

Chapter 9 describes the case of transport challenges in Kenya. Criminal acts such as piracy (in maritime), robbery (on road and rail) and theft (oil pipeline) were identified as key characteristics of the problem. This was worsen with no clear policy to govern multimodal transport but businesses were anticipating this with support of international treaties and technologies. Chapter 10 introduces review of multimodal transportation system in China. Key features of multimodal security challenges include 'traditional' robberies and burglaries, but overall, China reportedly considered as a low-risk country for cargo security. Brazil (Chapter 11) was characterised with vast natural resources and diverse geography and poverty, which results in high crime rate, and a sizeable but underutilised labour pool. The black market was blamed for cargo theft and hijacking within multimodal transport operations. However, the fact that Brazil successfully hosted the 2014 World Cup and the 2016 Summer Olympics, and also the 13th World

[1] What I am thinking here, is, by understanding the nature of good social human being, such as in charity act as opposed to arms act, would temper terrorist act's will better. Thus addressing security issues by embracing community's spirit and beliefs and establishing trust.

Conference on Transport Research in Rio de Janeiro in 2013, proved resilience of the transportation system despite all of the above problems.

The following chapters moved on to cover multimodal passenger transport and starts with the theoretical framework as described in Chapter 12 and Chapter 13, followed on with country based cases as presented in Chapter 14 to Chapter 18.

The theoretical part of multimodal passenger transport security in Chapter 12, very much adopts the concept of intermodal freight – a special type of multimodal transport, a container. Translating that into passenger, the attention was given to the physical built environment infrastructure, such as intermodal passenger transport hub, for instance, a public transport terminal. Other instance was technologies facilitating passengers to operate efficiently, in Information and Communication Technologies (ICT) and or Intelligent Transport Systems (ITS). A number of European Union (EU) research funded projects were used to illustrate how researchers address the multimodal passenger transport challenges, where security was integral part of the proposals and deliveries. Chapter 13 attempts to address the economic and policy aspects of multimodal passenger transport security. Probability of incident attempt, vulnerability and damage were hypothesised as determinants of security risk. Linking this equation with recent terrorist attacks such as 9/11 event in the US, and Madrid and London attacks, in 2004 and 2005 respectively, argued to increase the probability of incident attempt variable. Some other EU funded research projects dedicated to address transport security were also elaborated in this chapter.

Chapter 14 covers multimodal passenger transport security in the US and assesses figures and policies of public transport hubs/terminals. The role of Transportation Security Administration (TSA) in addressing US transport security were scrutinised along other associated organisations. Similarly, Chapter 15 presents the Dutch multimodal transport system and its associated transport security policies. The relatively small in land area of the country allows the government to have a strong and comprehensive yet simple transport security policy, relying mainly on regulatory framework of two major multimodal hub in Amsterdam Schiphol Airport and the Port of Rotterdam. The robust system as seen in the Netherlands can be an envy for other countries.

The case in Israel as presented in Chapter 16, demonstrates common multimodal transport policies such as used everywhere in the world – notably the one promoted by the United Nations (UN) – and was deemed as insufficient. This was due to the existence of numerous terroristic organisations targeting political gains and recognition. Special Forces was reportedly one of the answers to address this circumstance. For public, passing through metal detectors and an examination of luggage and handbags were common practice and well anticipated by Israeli travellers, in every multimodal transportation hubs, shopping malls and even schools. In addition, efforts to avoid queue in any occasion were immensely effective to reduce risk of people crowd exposed to security hazard.[2]

Chapter 17 explores the transport problem in India with its unique socio-demographic cultural issues. Passengers broke rules when using public transport, with for instances: men not allowed in the women-only coaches, sitting on the floor, eating on the train, and so forth, were examples of Indian transportation safety and security challenges. Chapter 18 covers the case in Brazil with highlights of the pressure of the existing transportation systems for passenger as well as freight to accommodate population and economic growth. The key security challenges were crimes and drug-related activities.

The book as whole captures some essences of global multimodal transportation problem, with special attention given to the element of security. This assessment within this book is in many ways represent engineers mind, although very much supported with socio-geographical aspects to contextualise each case, in addressing the theme. Reading this book alongside the other book, by Button (2016), with economics perspective, will provide readers a full overview of transportation security – a key component that has to always be considered in decision making alongside the sustainability triple bottom line of economic, social and environment.

For those involved in International Logistics studies, such as lecturers and students in Operations Management, Supply Chain and Logistics degrees, transportation security theme is paramount importance. This is remembering the highly complex logistics system of many products and commodities serving households and businesses in cities in these very days compares to what it used to be. Similarly, this also applies to passenger transportation system, the theme is crucial to inform any studies to ensure resilience and safe public (transportation) infrastructure development, such as in civil engineering, geography and planning degrees.

Acknowledging the state-of-knowledge to deal with transportation security related issues and responding with appropriate measures where relevant would be of interest even beyond classrooms. The books will be useful for professionals such as transport planners, transport logisticians, transport business managers, governmental authorities, and international organisations, and most importantly for transportation researchers who are involved with research projects employing technology and policy innovations in addressing EU transportation security from terrorist acts.

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[2] This comment benefitted from discussion between Paulus Aditjandra and Igor Nikolic while queueing to check in Bologna Airport, following Plenary EU H2020 VALUMICS project meeting in Bologna, 17 May 2019.