J Transp Secur
DOI 10.1007/s12198-013-0118-y

The role of transnational smuggling operations in illicit supply chains

Gautam Basu

Received: 3 May 2013 / Accepted: 9 May 2013
© Springer Science+Business Media New York 2013

Abstract The flow of illicit goods and services within the global economy has fostered various black markets around the world. Complex illicit supply chain structures have developed to help support this underground trade. These structures and supporting operations act as a key enabler in the functioning of black markets. Transnational smuggling is a critical component in illicit supply chains and is responsible for the movement of illegal goods from source origin to the markets where they are consumed. Smuggling is a logistics and transport intensive activity. There are unique transportation requirements for smuggling operations, based on mitigation of risk of being detected from customs and border controls. International smuggling employs novel operational methods, multiple transport modes, flexible transport routes, and transport asset types designed to conceal contraband, in order evade border security and law enforcement controls. Smuggling operations can be viewed as a core competence for transnational criminal organizations and as a means for expanding their portfolio of crimes. This paper analyzes the role of transnational smuggling operations in illicit supply chain structures.

Keywords Smuggling · Illicit supply chains · Black markets · Transnational crime · Narcotics trafficking

Introduction

The improved facilitation of international trade, liberalization of global capital markets, progressive development of transportation infrastructure, advanced information and communication technologies have been positive forces of globalization (Oviatt and McDougall 1994). These same forces of globalization have simultaneously benefited illegitimate and illicit economic activity. The illicit side of the global

G. Basu (✉)
Department of Logistics, Aalto University School of Business, Helsinki, Finland
e-mail: gautam.basu@aalto.fi

Published online: 06 June 2013

economy includes the trade in prohibited commodities (cocaine and heroin), the counterfeiting and smuggling of legal commodities (cigarettes) to circumvent sanctions and embargoes or to evade taxes, the black market in stolen commodities (intellectual property rights), the clandestine movement of people (migrants, sex workers), the trafficking of endangered species and animals (such as ivory), and the laundering of money generated by these and other illicit activities (Andreas 2011). It is estimated that such informal economic activities account for approximately 17 % of gross domestic product (GDP) in developed countries and approximately 40 % of GDP in developing countries (Schneider 2002). The costs and impacts to society are substantial. The U.S. Department of Justice (2006) estimates the annual costs of counterfeit goods at $250 billion and 750,000 lost jobs. The revenues lost from uncollected taxes on counterfeit goods and unlicensed services and the costs of curbing those activities by means of regulation, inspection, and enforcement are examples of additional costs resulting from activities in the illicit economy (Fadahunsi and Rosa 2002). In addition to the lost tax revenues and law enforcement costs, violence and political instability resulting from illegal activities has been on the rise in recent years. Approximately 60,000 deaths and 25,000 disappearances in Mexico from 2006 to date can be attributed to the on-going war between rival drug cartels (Washington Post -April 27, 2013). It should be stated that due to the illegal and secretive nature of this research area, it is difficult to calculate with absolute scientific precision the size, scale, and scope of illicit economies. However, if the market size of illicit goods trade is half of what is estimated by official reports, then it remains a significant issue for government policy makers.

Transnational criminal organizations specialize in providing illicit goods and services to market regions where they are demanded (Reuter 2002). The operational process by which they transport these illegal goods is commonly known as smuggling. Criminal enterprises have come up with novel methods in smuggling illegal goods across national borders, in order to avoid the risk of detection and apprehension (Traub et al. 2003; Dean et al. 2010). Smuggling is a logistics intensive process, due to unique transportation, storage, and packaging requirements, reliance on international transportation and distribution systems, and level of coordination among various actors within the illicit supply chain. Smuggling operations can utilize customized private transportation assets, such as customized aircraft or fast boats owned and operated by the smuggling ring or “piggyback” on legitimate forms of conveyance such as commercial airlines or merchant marine vessels (Townsend 2006; Deflem and Turner 2001; Williams 2001; Grillo 2012; Caukins et al. 2009). These operations are highly flexible in nature and designed to evade law enforcement. Government, military, police, customs and border officials face a daunting task in combating international smuggling operations. Transnational smuggling can pose risks to legitimate supply chains. These risks can be viewed as antagonistic threats against logistics and transportation systems (Ekwall 2012). Antagonistic threats are deliberately caused illegal and hostile threats against the planned or wanted logistics process, function, and structure (Ekwall 2009). Possible consequences of antagonistic threats are increased cost; delivery disruption; time delays; interruptions in the smooth flow of product and service; traffic and port congestion; and longer cycle times (Lee and Whang 2005). Supply chain security and criminology research has primarily focused on selected areas of smuggling, such as regulation, enforcement,

security compliance programs, and much less on the actual operational smuggling activities.

Research objective

The purpose of this paper is to analyze the role of international smuggling operations within illicit supply chains. This research seeks to gain some insights into the economic dynamics, supply chain structures, and attributes of logistics and transportation operations which underpin the global trade of illegal and illicit goods and services. Emergent academic literature in the areas of supply chain and transportation security has increased in recent years. While transportation and supply chain security can be viewed as a potential solution in minimizing illicit goods flows, there is a gap in the literature which addresses the underlying problem which the security solution seeks to tackle. This article aims to address this research gap.

Methods

The research method used in this paper is deductive. Due to the sensitive nature of the topic, primary data from the field was difficult to obtain. As a result, the principal research method is archival data collection and analysis, which relies on the use of secondary data sources. The author's utilized secondary data from trust worthy sources, such as public policy documentation, official government reports, and international law enforcement agencies (United Nations Office of Drug Control and Crime, CIA, DEA, and U.S. Dept. of Justice). Archival data collection and analysis is often used by scholars who investigate transportation economics, policy, and transport safety issues (Rabinovich and Cheon 2011).

Black markets and illicit economic activity

The political, social, and economic institutions that underpin illicit economic activity are multi-faceted. However, government policy makers formulate laws and regulations which determine which economic activities are illicit. States have the power to criminalize: laws precede and define criminality (Andreas 2011). Changes in tax, tariff, and duty laws and in the intensity with which those laws are enforced have profound effects on the incidence and profitability of smuggling ventures (Dominguez 1975). Free trade advocate Adam Smith and Nobel laureate economist Milton Friedman both commented on the law, deviance, and market dynamics associated with informal and underground economies. A person who, though no doubt highly blamable for violating those of natural justice, and would have been, in every respect, an excellent citizen, had not the laws of his country made that a crime which nature never meant to be so (Smith 1776). The black market is a way of getting around government controls; it was a way of enabling the free market to work and it was a way of opening up, enabling people (Freidman 2000). The illegal trade enables the market exchange of commodity and service sellers who are willingly induced to

produce goods to buyers who satisfy their own needs and demands for these illegal products (Williams 1999). Traditionally, governments that institute a regulatory ban on a product or service, deviant economic actors spot a regulatory arbitrage opportunity and seek to supply prohibited goods and services in order to maximize the economic profit potential (Gilman et al. 2011; Caukins et al. 2009). The trade of illegal commodities and services bear many of the characteristics that constitute the economic organization of a market. Attributes for illicit markets include: production and / or distribution of goods and services that are inherently illegal; multi-lateral exchanges involving producers, distributors, retailers, money managers on the supply side and willing customers on the demand side; an institutional context which consists of an underground network; voluntary transfers; income earned by suppliers; transfers which take place mainly in cash or bank instruments; an implicit notion of fair market value; ambiguous morality subject to sudden and radical change (Naylor 2003). Criminal organizations respond rapidly and adapt to the market dynamics to exploit opportunities for their illicit products and services by taking advantage of prohibition laws and regulations creating lucrative market and regulatory arbitrage potential. Black markets function based on market exchange and processes that link demand, supply, price, and resource allocation to take place.

The structure of illicit supply chains

Research on supply chains and supply chain management has proliferated in the last three decades. Previous operations management and logistics scholars elaborated on definitions, concepts, and terminology, related to supply chains. The supply chain concept is a managerial interpretation of well-established economics and operations management models and theories (Shapiro 2001). A supply chain is regarded as a set of firms involved in the upstream and downstream flows of products, services, information, and finances from the source to the end customer (La Londe and Masters 1994; Lambert et al. 1998; Mentzer 2004) (Fig. 1). In essence, a supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer demand request (Chopra and Meind 2004). Supply chain operations require managerial processes that span

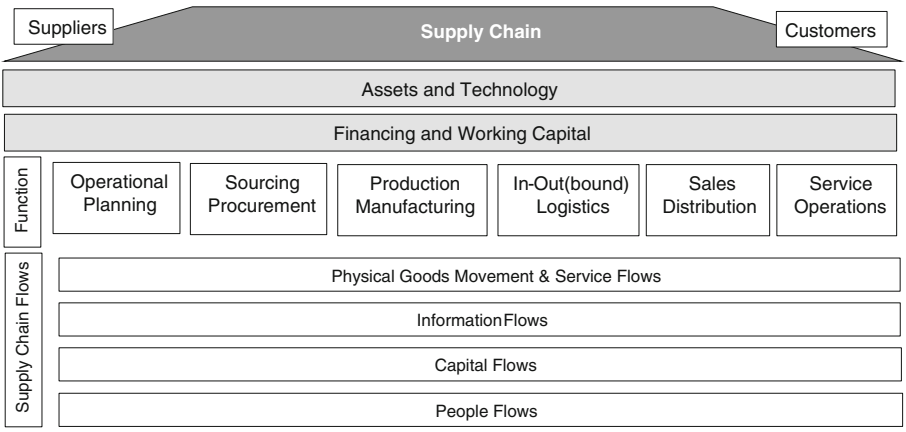

Fig. 1 Functional components and flow depiction of supply chains

functional areas within individual firms and link trading partners and customers across organizational boundaries (Bowersox et al. 2007) (Fig. 1). The nature of the supply chain is comprehensive so that membership is not limited to a supplier, a manufacturer, and a distributor but open to any firm that performs various flow-related services (Mentzer 2004). Functions impacting an organization's supply chain include: operational planning, sourcing, procurement, production, logistics, service operations, and finance. The multiple function areas and level of inter-organizational coordination between supply chain actors contribute to the overall strategic effectiveness and operational efficiency of a supply chain. The real competition in not company against company, but rather supply chain against supply chain (Christopher 1992).

Analogous to a set of legal and legitimate firms comprising a supply chain, a network of criminal organizations create their own form of supply chains. This supply chain configuration can be deemed an illicit supply chain. Illicit supply chains share many of the same functional attributes as legal ones. Criminal organizations conduct operational planning activities, source and procure raw materials and pre-cursor chemicals, manufacture, refine, transport, store, inventory, sell, distribute their illicit products, and service their customers. However, the primary differences between legal and illicit supply chains are in risk mitigation strategies employed by illicit supply chain actors, the use of supply chain assets and financing instruments designed for concealment and stealth, hyper-flexible operations, and elevated rate of adaptability in supply chain structures. These dissimilarities can be partially explained by the constant pressure from law enforcement and regulatory bodies seeking to shut down the operations of criminal enterprises. The risk of detection of illegal activities by law enforcement is equivalent to chapter 7 for criminal businesses. Illicit businesses seek to reduce risk, seek intermediation, to ensure extra levels of insulation between the criminal entrepreneur and regulatory authorities (Naylor 2004). Criminals take abundant precautions to conceal their governance structures and supply chain operations, in order to avoid the risk of detection (Ekwall 2009; Andreas 2013). For the purpose of this paper, we define *an illicit supply chain as a group of multiple organizations and actors engaging in one or more illegitimate activities pertaining to the sourcing, procurement, production, logistics, or distribution of illegal or prohibited goods and services*. These illicit supply chain actors are involved in the planning, coordination, execution, and risk management activities that facilitate the exchange and flow of physical goods, services, information, people, and capital *with illegal intent*.

The structure of illicit supply chains can involve multiple transactions between various parties at different nodes and multiple echelons across the supply chain. Products in a multi-echelon supply chain must pass through multiple sites before it is finally delivered to the end customer; incentive problems may arise in this system when decisions are delegated to corresponding site managers, who maximize his or her own performance metrics (Lee and Whang 1999). The criminal organization has to make economic decisions at each node of the supply chain and these decisions ought to reflect the production and transaction costs faced by the organization at these nodes (Moyle 2009). Criminal markets are often based on ad-hoc networks engaged in arm's length transactions (Naylor 2004). Due to the illegal nature of activities and tension between law enforcement, illicit supply chain structures are highly adaptable. This can be evidenced in the change in narcotics trafficking structures from the 1980s

to current times. In the early 1980s, Colombian drug traffickers (Medellin cartel) held the power in the narcotics supply chain; owning the product, controlling the transport routes and distribution into the U.S. markets (CIA 1999). During the late 1990s, drug interdiction rates increased and key members like Pablo Escobar and Carlos Lehder were captured or killed; smuggling routes adapted to utilize Mexican transshipment hubs into the U.S. and ownership of products and distribution was transferred to the Mexican cartels (Sinaloa, Los Zetas, Tijuana, La Familia) causing an adaptation in the power and structure of the narcotics supply chain (Grillo 2012; UNODC 2008). The actual structure of criminal organizations can reflect a two-tiered network structure (Dean et al. 2010; Williams 2001; von Lampe 2008). Two tiered networks are made up of core and periphery members, whereby the core conduct the "organizing" activities of the operation and the periphery members perform and carry out the actual operations (von Lampe 2008). Two tiered networks provide a formidable internal defense mechanism, as there are several nodes in the network which act as built-in insulators between the core and periphery, distance the core leaders from operations, and make it very difficult for law enforcement to strike at the center of gravity as opposed to nibbling around the edges (Williams 2001). The core of the network can exhibit attributes of hierarchy with formal command and control policies, while maintaining linkage and alliance between several cores and peripheries. This type of structure can be viewed as a "network of hierarchies".

Global cocaine supply chain structures

Global cocaine supply chains exhibit a multi-echelon structure from the source origin of raw materials (coca and pre-cursor chemicals) to the wholesale and retail distribution of the final product (cocaine with varying degrees of purity). The structure of cocaine supply chains are such that 90 % of raw materials and refined products originate in Latin America (Peru, Bolivia, and Colombia) and transported north via major transshipment hubs, such as Mexico to the primary consumption areas to U.S. and Europe (UNODC 2012) (Fig. 2). Illicit supply chains include various providers of services which facilitate the financing, physical goods movements, information, and people from the point of origin to the point of consumption. These illicit support service providers range from real estate brokers and accountants to international smugglers and domestic transport runners (Williams 2001) (Fig. 2). Some service providers are not fully aware they are participating in supporting illegal activities, while others are willing and active participants in the criminal operation. Nonetheless, these providers of various services ultimately profit from and support illicit supply chain structures.

The economics of the cocaine trade can be analyzed by segregating the various stages of the supply chain (e.g.) raw materials sourcing, production, inbound and outbound logistics, wholesale and retail distribution. Starting from the peasant farmer who harvests the coca leaves and refines into the coca paste to the smuggling transport and retail distribution of the final product ready for consumption, at each progressive stage of the supply chain the value per kilogram of product increases. The kilogram price differential between raw material of coca and street level cocaine is an astounding 150,000 %. It is interesting to note the price disparity from the smuggling transport and final distribution, compromising a 6,000 % mark-up. This emphasizes

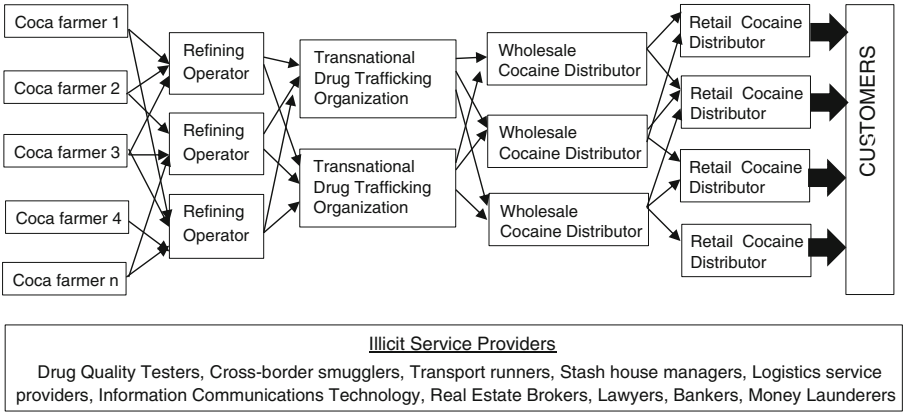

Fig. 2 Cocaine supply chain structure

the critical economic value added role international smuggling activities play within the overall value chain (Table 1).

Individuals and organizations involved in illicit supply chains are often subcontracted to procure, produce, transport, store, sell, and distribute illegal goods across the value chain (Townsend 2006) (Fig. 2). These goods are often purchased and sold several times across the supply chain. To complicate matters for law enforcement, individuals who actually handle the product often have no knowledge of the mastermind or drug cartel that holds title to the goods, only knowing the direct contacts they are dealing with (Grillo 2012).

The logistics of smuggling

Smuggling is one of the oldest forms of deviance (Jutte 1994). For centuries, smuggling has enriched and subverted empires, shaped patterns of global trade, and fueled wars (Andreas 2013). Several scholars of criminology argue that much of transnational organized crime boils down to international smuggling activities (Kleemans and van de Bunt 2003). Smuggling is defined as the clandestine conveyance of goods and services from one jurisdiction to another and this clandestine operation can involve the importation or exportation of prohibited goods or the evasion of customs duties and

Table 1 Cocaine prices by supply chain stage (adapted from) UNODC (2008)

Supply chain stage	Markets	Commodity	Price per KG
Sourcing & procurement	Supply Peru, Bolivia, Colombia	coca leave	$ 80
Production & refining		coca paste to cocaine	$ 800
Inbound logistics (import)	Smuggling/Transshipment Mexico	cocaine in brick form	$ 2,147
Outbound logistics (export)		cocaine in brick form	$ 34,700
Wholesale & retail distribution	Demand U.S.	street level cocaine	$120,000

taxes on goods that are liable to duty (Turner and Kelly 2009). The process of smuggling contraband is in essence a logistics and transport intensive activity, as it deals with the flows of physical goods movements, information, people, and capital. Logistics is a critical value added activity and can provide a source of competitive advantage in many different industries (licit or illicit). The logistics function adds significant value by providing place, time, and possession utility (Stock and Lambert 2001). The delivery of the right product to the right place, at the right time, to the right people is paramount in achieving the proper levels of customer service (Christopher 1992). Operational logistics is important for the development and establishment of organized criminal enterprises (Caukins et al. 2009; Dean et al. 2010). Route planning, load planning, dispatch, goods receipt, warehousing, packaging, transshipment, transportation asset acquisition, and disposal are key logistics activities in both legal and illegal supply chains. The clandestine nature of storage and transporting of illegal commodities within and across national borders make "underground logistics" is a risky endeavor. Transnational criminal organizations go to great lengths in planning and executing their operational logistics activities in order to minimize supply disruptions and eluding law enforcement (Dean et al. 2010). Transportation provides a bridging function between the supply and demand of products and services. Smuggling is the clandestine transportation process, whereby criminal entrepreneurs get their product to market (Reuter 1983; Williams 2001; Andreas 2013). The global nature of smuggling operations offer unique possibilities for criminal organizations engaged in illicit activities. The capacity to cross national borders creates advantages for organized criminals as it enables them to supply markets where profit margins are the largest, operate from countries where the risks are the least, complicate the tasks of law enforcement agencies that are trying to combat them, commit crimes that cross jurisdictions and increase complexity, and adapt their behavior to counter or neutralize regulatory or law enforcement initiatives (Williams 2001).

The transaction costs of smuggling are heavily dependent on the ability to conceal contraband in a flow of legitimate commerce and transport traffic (Reuter 2002). This can be either in the form of concealment in legitimate commercial transportation assets crossing national borders outside or through dedicated and customized transportation assets used specifically for smuggling. Operational smuggling schemes may involve elaborate preparatory work in concealment of the contraband, reloading, repacking, relabeling, temporary storage of the contraband at transshipment points, and clearing cover loads with customs after crossing the border (Decker and Townsend Chapman 2008). Decisions regarding transportation routings, transport modal and asset choice are critical for organizations engaged in smuggling activities, as it can mean the difference between success and failure of the operation. Individuals involved with the smuggling of illegal commodities have come up with more sophisticated smuggling routines and methods, in order to avoid detection by law enforcement and customs officials.

One key aspect of smuggling operations is the choice of a transport route used to smuggle contraband into the region where the end consumption takes place. Smuggling routes are often complex and encompass multi-mode and multi-leg shipments from origin to destination. Based on the specific commodity, different routes are used as the origin source, production, and consumption markets vary by commodity. Smuggling routes are often changed due to the presence of law enforcement and customs controls. Smugglers avoid suspicion and minimize the risk of detection and apprehension by frequently changing smuggling patterns (Decker and Townsend Chapman 2008). This

can be in the form of changing transport routes, modes, assets, and shipment frequencies. This makes smuggling a highly flexible and elusive logistical operation. In addition to this, turf wars occur between rival drug trafficking organizations for control of fiercely contested smuggling routes that have access to prime transshipment points.

The organized crime groups that specialize in the trafficking of illicit drugs employ transport specialists to run cross border smuggling operations. Individuals that specialize in smuggling activities are in essence transportation professionals for hire. There are three main resource profiles drug trafficking organizations seek to employ within their logistics functions: 1) *international smugglers* who are responsible for the transportation of drug contraband across international borders; 2) *stash managers* are responsible for the warehousing function, ensuring the proper storage and inventory of the illegal drugs from purchase to sale; 3) *transport runners* are the individuals responsible for transporting drugs to domestic wholesale and retail distributors (Gross 1992; Williams 2001) . These underworld logistics professionals are typically identified and hired by drug trafficking rings through an internal network of affiliations based on a reputation, trust, and previous operative experience (Townsend 2006). In many cases, smugglers only have the responsibility to transport drug contraband from the source to a transshipment hub over the border into the next echelon of the supply chain closer and do not get involved with the actual end users of the product (Gross 1992).

Management theorists C.K. Prahalad and Gary Hamel first introduced the concept of core competency in the early 1990s. A core competency is a specific factor that a business sees as central to the way the firm works; a core competency results from a particular set of skills and enables the organization to access a wide variety of markets (Prahalad and Hamel 1990). Smuggling can be viewed as a core competency for transnational criminal organizations. The portfolio of crime can be expanded through core operational capability by smuggling multiple illicit commodities and services. Russian, Mexican, and Chinese organized criminals that specialize in smuggling operations have expanded their portfolios of crime from single to multiple commodities and services, which include human smuggling, endangered wildlife species smuggling, illicit drug smuggling, firearms smuggling, and cash smuggling (Deflem and Turner 2001) (Table 2).

Table 2 Key illicit activities and major from-to geographical flows (UNODC 2008)

Illicit activity	From	To
Cocaine smuggling	Andean region	North America
Cocaine smuggling	Andean region	Europe
Heroin smuggling	Afghanistan	Russian Federation
Heroin smuggling	Afghanistan	Europe
Methamphetamine smuggling	Mexico	United States
Firearms smuggling	United States	Mexico
Firearms smuggling	Eastern Europe	Rest of the world
Endangered wildlife parts smuggling	Southeast Asia and Africa	Asia
Migrant smuggling	Africa	Europe
Migrant smuggling	Latin America	United States
Counterfeit medicine smuggling	Southeast and East Asia	Africa

Smuggling in the past used to involve the illicit transportation of such goods as coffee, tobacco, narcotics, and firearms, now include commodities, such as stolen antiques, nuclear materials, toxic waste, and exotic animals (Wiltfang and Cochran 1994; Ruggiero 1997) (Table 2). The expansion of the criminal portfolio may have been made possible by leveraging the core competence of cross border smuggling.

Methods of smuggling

Various methods are used by criminal organizations to smuggle contraband across international borders. These methods can be segregated by the transport modal characteristics (air, land, marine), transport assets used in smuggling, and the packaging used for concealment purposes. The physical goods movement of contraband can occur either via commercial transport assets or private customized assets designed specifically for the smuggling operation (Townsend 2006; Gross 1992; Williams 2001). There are unique risks of detection based on the utilization of transport asset type. If smugglers utilize legitimate forms of conveyance, then the concealment and packaging of the contraband tends to be more elaborate. The illegal commodities must blend in with the legitimate forms of cargo, in order not to raise the suspicions of border control. If the drugs are smuggled via the trafficking organization's private transport assets such as fast boats, semi-submersible vessels, small aircraft, or passenger vehicles, then the concealment via packaging is usually less important and the investment in the transport asset (for speed, stealth, efficiency) is of primary consideration for the traffickers. When goods are moving from the point of origin to the final consumption point, it may cover many different transfer and transshipment points. At each transfer point, the goods may be loaded and unloaded, waiting or stored, weighted, checked, recorded, packed, or reconsolidated (Decker and Townsend Chapman 2008). Each modal choice, transport leg, and choice of transport asset carry unique risks, therefore concealment is the main objective function in the smuggler's transport internal algorithm.

Drug smuggling packaging methods can range from the simple to the very sophisticated. Packaging of contraband cargoes can range from smuggling drugs in luggage suitcases and prosthetic legs to parasitic devices attached to the hulls of ships (Wiegand 1994; Townsend 2006; Gross 1992) (Table 3). Smugglers can also disguise the contents of their illegal shipments by blending or concealing the contents into normal consumer goods like coffee, tobacco, chocolate, commercial alcohol, and figurine toys (Caukins et al. 2009; Grillo 2012) (Table 3). At the Tajik-Afghan border, drug sniffing dogs have been deployed by the Tajik counter-narcotics officials and have had success in drug seizures, especially in the detection of narcotics hidden within car panels and engine parts (Townsend 2006) (Table 3). Disassembling a vehicle can be time-consuming and require a lot of effort by border enforcement agents, especially when the volume of goods and vehicles across borders is substantial, thus border control must balance effectiveness with efficiency in vehicle searches. Mexican drug cartels have come up with innovative packaging methods to evade counter narcotic smuggling efforts. Professional smugglers from Mexico hollow out candles, insert plastic film into small transparent plastic bags filled with marijuana, and re-bundle it with wax to give the illusion of a regular looking candle (Grillo 2012) (Table 3). Drug trafficking rings can

Table 3 Transport modal, asset, and packaging methods used in smuggling operations

Transport mode smuggling	Transport asset for smuggling	Drug smuggling packaging methods
Air	• Small aircraft	• Luggage suitcases
	• Cargo aircraft	• Airline pallets
	• Military aircraft	• Human mules (body packing)
	• Commercial airlines	• Prosthetic limbs
	• Border Catapult	• Coffins
		• Animal (body-packing)
Land	• Drug Tunnels	• Disguised Consumer Packaging
	• Walking by Foot	• Special Vehicle compartments (incl. tires)
	• Donkeys / Horses	• Special Rail-car compartments
	• Commercial Trucks	• Disguised Consumer Packaging
	• Passenger Vehicles	• Truck Pallets
	• Rail	
Water	• Fast Boats	• Fish
	• Semi-submersible vessels	• Parasitic Devices on Shipping Hulls
	• Ocean containers	• Head or Tail Loads of Ocean Containers
	• Fishing vessels	• Disguised Consumer Packaging
	• Barge Ships	

use human mules to transport drug contraband across borders by utilizing the "body-packing method". This method has been highly successful for international drug traffickers as the drugs cannot be detected by normal and nonintrusive search of the mule. A body packer typically fills tiny balloons, often made with multilayered condoms or more sophisticated hollow pellets, with small quantities of a drug, usually heroin, ecstasy, or cocaine and these balloons may be swallowed or may be hidden in other natural or artificial body cavities as the rectum, a colostomy, or vagina (Traub et al. 2003). If the body-packing mule successfully crosses the border, then individual will excrete the balloons, and pass on the drugs on to the next stage of the supply chain. Nigerian drug traffickers specialize in this method of smuggling. In the early 1990s, it was estimated that Nigerian mule couriers smuggled over 500 kg a year of heroin per year through the body-packing smuggling method (Bovard 1994). The economic incentive for an individual to participate in a body-packing operation usually outweighs the risks and monetary compensation from a more legitimate livelihood. The average yearly per capita income in Nigeria is $2,100 compared to $15,000 per trip for a professional body-packing mule (Bovard 1994) (Table 3).

The legal and illegal links for the illicit drug supply chains provide insights into the "piggybacking" phenomena. The various actors within the supply chain may include individuals from the legal business and government as a way to facilitate trade and reduce the risks inherent in organized crime. If drug contraband is transported via legitimate forms of transportation or conveyance, then logistics service providers and normally law abiding citizens may be active accomplices. From an operational context, smuggling rings that transport goods utilizing air modes may link up with airline staff, airplane cleaners, and luggage handlers to bypass customs controls

(Caukins et al. 2009). Smugglers who operate via land or sea modes will seek to establish links with individuals with a background in boating, fishing, truckers, customs brokers, or legitimate logistics service providers (Decker and Townsend Chapman 2008). In addition to this, bribery has proven to be an effective bridge in the formation of legal and illegal linkages between drug trafficking organizations and corrupt law enforcement. In the 1980s, nearly 10 % of Miami's police force was fired or suspended in relation to drug related corruption (Dombrink 1988). In 2008, a Mexican government probe code named Operation Clean House uncovered a network of twenty five federal officials on the payroll of the Sinaloa cartel; these included soldiers, federal police commanders, and detectives (Grillo 2012). Bribery can be seen as a transaction cost for criminal organizations and a necessary cost for doing business in illicit markets.

The constant friction between law enforcement and drug trafficking organizations creates an interdiction-adaptation cycle. For example, George H.W. Bush launched an drug interdiction initiative in 1982 to block air and sea smuggling routes entering the southeast U.S.; drug traffickers adjusted by shifting transport routes away from direct air flights into Florida towards sea routes, ferrying in cocaine loads by speedboat from mother ships waiting offshore; law enforcement adapted and sea interdiction improved until traffickers turned to using airdrops rather than mother ships with speedboat crews picking up floating cocaine packages and ferrying them back to shore (Andreas 2013). The new logistical shift by smugglers entails adaptation of transport routes, utilizing transshipment hubs in Mexico and moving north into border U.S. states (UNODC 2008). New anti-smuggling initiatives and technologies employed by international customs and border enforcement agencies have become more sophisticated. In response, transnational drug traffickers are utilizing counter-surveillance measures at border crossings to gain insights on the border patrol inspection routines (Decker and Townsend Chapman 2008). The constant "cat and mouse" game between law enforcement and illicit trafficking organizations have pushed the boundaries of adaptation and innovation from both sides of the laws.

Conclusions

International smuggling is a logistics and transport intensive activity. Smuggling operations have unique transportation requirements, due to the illegal nature of the commodities being transported. The design of the illicit supply chain and logistics system is specifically designed to circumvent law enforcement controls and avoid the risk of detection. The choice of transport mode, transport routings, stealthy transport assets and concealment methods for border control are of primary concern to professional smuggling operators. Transnational criminal organizations employ transportation and logistics specialists who are responsible for the movement of contraband across national borders. These smuggling specialists are subcontractors for hire and use their expert knowledge of the specific transportation. The smuggling function provides time and place utility for illicit supply chain actors, as it moves contraband from the origin of supply to markets where they are demanded and consumed. From an economic perspective, prices for illicit commodities are significantly marked up once the cross-border smuggling activity is fulfilled. Thus, the role of smuggling is

critical element in the economics of transnational criminal activities, as well as a determining factor for the success or failure in illicit supply chain operations. International criminal organizations that specialize in smuggling operations will continue to take advantage of regulatory and market arbitrage possibilities. As social, economic, political, and technological institutions continue to change and evolve, international governments and policy makers will need to address current and future regulatory regimes, in order to reduce the incentives associated with the illegitimate and illicit flows of goods, services, capital, and people.

References

Andreas P (2011) Illicit globalization: myths, misconceptions, and historical lessons. Polit Sci Q 126(3):403–425

Andreas P (2013) Smuggler nation: How illicit trade made America. Oxford University Press, New York

Bovard J (1994) Lost rights: The destruction of American liberty. St. Martin's Griffin, New York

Bowersox DJ, Closs DJ, Cooper MB (2007) Supply chain logistics management, 2nd edn. McGraw-Hill, Boston

Caukins JP, Burnett H, Edward L (2009) How illegal drugs enter an island country: insights from interviews with incarcerated smugglers. Global Crime 10(1):66–93

Christopher ML (1992) Logistics and supply chain management. Pittman, London

Chopra S, Meind P (2004) Supply chain management: strategy, planning, and operations. Pearson Prentice Hall, London

Central Intelligence Agency (1999) Transnational Issues https://www.cia.gov/library/reports/archived-reports-1/ann_rpt_1999/dci_annual_report_99_12.html

Dean F, Fashing I, Gottschalk P (2010) Organized crime: Policing illegal business entrepreneurism. Oxford University Press, Oxford

Decker SH, Townsend Chapman M (2008) Drug smugglers on drug smuggling: Lessons from the inside. Temple University Press, Philadelphia

Deflem M, Turner KH (2001) Smuggling. Encyclopedia of criminology and deviant behavior (Crime and Juvenile Delinquency), vol 2, Brunner - Routlege, Philadelphia

Dombrink J (1988) The touchables; vice and police corruption in the 1980s. Law Contemp Probl 51(1):201–233

Dominguez JI (1975) Smuggling. Foreign Policy 20(4):87–96

Ekwall D (2012) Antagonistic threats against supply chain activities are wicked problems. J Transport Secur 2012(5):123–145

Ekwall D (2009) Managing the risk for antagonistic threats against the transport network. doctoral dissertation. Chalmers University of Technology, Göteberg

Fadahunsi A, Rosa P (2002) Entrepreneurship and illegality: insights from Nigerian cross-border trade. J Bus Ventur 17:397–429

Freidman M (2000) PBS interview with Milton Friedman (October, 1, 2000) http://www.pbs.org/wgbh/commandingheights/shared/minitext/int_miltonfriedman.html

Gilman N et al (2011) Deviant globalization: Black market economy in the 21st century. The Continuum International Publishing Group, New York

Grillo I (2012) El Narco: The bloody rise of Mexican drug cartels. Bloomsbury Publishing, London

Gross H (1992) Drug smuggling: The forbidden book. Paladin Press, Boulder

Jutte R (1994) Poverty and deviance in early modern Europe. Cambridge University Press, Cambridge

Kleemans E, van de Bunt HG (2003) The social organisation of human trafficking. Global Organized Crime: Trends and Developments 3:97–104

La Londe BJ, Masters JM (1994) Emerging logistics strategies: blueprints for the next century. Int J Phys Distrib Logist Manag 24(7):35–47

Lambert DM, Cooper MC, Ellram LM (1998) Fundamentals of logistics management. McGraw-Hill, Boston

Lee HL, Whang S (2005) Higher supply chain security with lower costs: lessons from total quality management. Int J Prod Econ 96(3):289–300

Lee HL, Whang S (1999) Decentralized multi-echelon supply chains: incentives and information. Manag Sci 45(2):633–640
Mentzer JT (2004) Fundamentals of supply chain management: Twelve drivers of competitive advantage. Sage, Thousand Oaks
Moyle B (2009) The black market in China for tiger parts. Global Crime 10(1):124–143
Naylor RT (2003) Towards a general theory of profit driven crimes. Br J Criminol 43(1):81–101
Naylor RT (2004) Wages of crime: black markets, illegal finance, and underworld economy. Cornell University Press, New York
Oviatt BM, McDougall PP (1994) Toward a theory of international new ventures. J Int Bus Stud 25(1):45–64
Prahalad CK, Hamel G (1990) The core competence of the corporation. Harvard Business Review 68(3):79–91
Rabinovich E, Cheon SH (2011) Expanding horizons and deepening understanding via secondary data sources. J Bus Logist 32(4):303–316
Reuter P (2002) Transnational crime. Conference paper on transnational crime, University of Cambridge
Reuter P (1983) Disorganized crime. MIT Press, Cambridge
Ruggiero V (1997) Trafficking in human beings: slaves in contemporary Europe. Int J Sociol Law 25(2):231–244
Schneider F (2002) Size and measurement of the informal economy in 110 countries around the world. Conference paper at Workshop of the Australian National Tax Center, Canberra
Shapiro JF (2001) Modeling the supply chain. Duxberry Press, Pacific Grove
Smith A (1776) An inquiry into the causes and effects of wealth of nations, 1st edn. W. Strahan, London, retrieved Dec.11.2012 via Google books
Stock JR, Lambert DM (2001) Strategic logistics management (4th edition). McGraw-Hill, New York
Townsend J (2006) The logistics of opiate trafficking in Tajikstan, Kyrgyztan, and Kazakhstan. China Eurasia Q 4(1):69–91
Traub S, Hoffman R, Nelson L (2003) Bodypacking: concealment of illicit drugs. N Engl J Med 349(2):2519–2526
Turner J, Kelly L (2009) Trade secrets: intersections between diasporas and crime groups in the constitution of the human trafficking chain. Brit J Criminol 49(2):184–201
United Nations Office on Drugs and Crime (2008–2012). World Drug Report. United Nations, New York
U.S. Department of Justice (2006) Prepared remarks of Attorney General Alberto R. Gonzales at the U.S. Chamber of Commerce. http://www.usdoj.gov/ag/speeches/2006/ag_speech_060620.html. U.S. Department of Justice, Washington, DC
von Lampe (2008) Organized crime in Europe: conceptions and realities. J Pol Pract 2(1):7–17
Washington Post (April 27, 2013) Mexico's competing drug cartels accessed via internet http://www.washingtonpost.com/investigations/mexicos-competing-drug-cartels/2013/04/27/d85c4a14-afa6-11e2-a986-eec837b1888b_graphic.html
Wiegand B (1994) Black money in Belize: The ethnicity and social structure of black-market crime. Soc Forces 73(1):135–154
Williams P (1999) Illegal immigration and commercial sex: The new slave trade. Frank Cass Publishing, London
Williams P (2001) Networks and netwars: the future of terror, crime, and militancy, chapter 3 Transnational crime networks. RAND, Santa Monica
Wiltfang G, Cochran JK (1994) The sanctuary movement and the smuggling of undocumented Central Americans into the USA: Crime, Deviance, or Defiance? Sociol Spectr 15:101–128