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Cash and carry: the high cost of currency smuggling in the drug trade

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Abstract This research, based primarily on financial records of Colombian money smugglers found by Dutch police investigators, describes the costs and operations of a segment of the high-level drug trade not previously documented in the scholarly literature. Cocaine traffickers pay brokers to move their revenues from the Netherlands to Colombia. The transfers, almost all in 500 euro notes, amount to hundreds of million of euros annually during the period 2003–2008 and drew on the recruitment of hundreds of individuals not otherwise involved in the drug trade. The total cost of the service (bulk cash smuggling) is over 10 % and could be as high as 17 %. These data also shed light on the workings of criminal labor markets and point to some interesting imperfections. The existence and cost of this segment of the cocaine trade suggests that anti money laundering regulations, and perhaps drug enforcement generally, do significantly raise the costs of smuggling, though not of the retail price. The findings also are evidence of the importance 500 euro notes played in facilitating the drug trade, a claim often made but never previously documented (While the article was under review, the European Central Bank (ECB) came to the decision to phase out the 500 euro note. Also see https://www.ecb.europa.eu/press/pr/date/2016/html/pr160504.en.html).

Introduction

In chess, a pawn that manages to reach the other side allows the player to promote it to a new rank. When the pawn is turned into a queen, the most powerful of all chess pieces, this is sometimes referred to as "crowning" as the chess piece representing the queen wears a little crown.

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The crowning analogy can also be found in the cocaine smuggling milieu. "He got crowned" describes somebody who is suddenly seen with a bit of money because he sold or smuggled some cocaine and received financial compensation. But it is not only people who get crowned. A smuggling enterpriseline also can obtain the *coronar* moniker. Zaitch [1] and Mazur [2] use this term to describe smuggling operations that were completed successfully. The parallels with chess are quite fitting. Reaching the other side is not easy. But when it finally does, the rewards are large. In the case of cocaine, smuggling takes time and patience but selling it abroad will net the smuggler large profits in the end.

However, the analogy doesn't stop here. After all, a newly crowned queen replaces the pawn on the same square it arrived at. Selling cocaine abroad often results in a similar position. Where there used to be cocaine, now there is money. As such, it still needs to be moved strategically across the board to reach its full potential. From a wholesaler's point of view, his money is now in the wrong country and in the wrong currency. When cocaine is smuggled to Europe, how do you turn Euros in Amsterdam into usable currency (pesos or dollars) in Medellin?

In our research we examine one particular solution, namely to move the money, the physical smuggling of bulk cash from the Netherlands to Colombia. Our sources consist of a unique data set, i.e. the financial records of Colombian money smugglers found by Dutch police investigators.

The paper is organized in 6 sections. The first section serves as a general literature review. The second section describes the data and research method employed. The third section provides a 'crime script' for bulk cash smuggling. A crime script is a method to map the sequence and activities needed to carry out a specific crime (see also [3, 4]). The fourth section describes the scale of the bulk cash smuggling activities, including its costs and price. The fifth section discusses the efficiency of the bulk cash smuggling method. The final section takes stock of the findings and raises some new questions.

Background and literature review

In contrast to most non-economic crimes, the drug trade is characterized by considerable specialization [5, 6]. For example, there are approximately seven transactions from the growing of opium in Afghanistan to the sale of small quantities of heroin on the streets of European cities [7, 8]. Though most layers are merely moving the finished product along the distribution chain, they involve distinct sets of skills and connections in the trade. For example, the skills and networks needed to get hundred kilogram shipments of heroin from Iran to Turkey are quite different from those needed to distribute quarter ounce bundles to retailers in Manchester. Even after the sale, there are additional activities necessary when large sums of drug money are involved. Broadly referred as money laundering, the illegal funds need to be converted into 'clean' money in order to avoid suspicions in the legal economy.

Over the last 25 years there has been increasing interest in trying to reduce drug trafficking by implementing a broad set of regulations that make financial institutions assist law enforcement, by refusing or reporting transactions that might be associated with criminal proceeds or terrorist financing [9, 10]. Anti-money laundering (AML) measures are particularly attractive for the government because they potentially strike at high level dealers who can otherwise distance themselves from the drugs; moreover the seizure of money seems a particularly condign punishment. However, it is unknown how effective these measures are at raising the price of drugs or imposing costs on drug dealers. Drugs such as cocaine, marijuana and heroin are extraordinarily expensive, even though they are semi-processed agricultural goods. For example, a gram of cocaine on the streets of Amsterdam may sell for 50–60 Euros [11]. A kilo of (much purer) cocaine in 2012 had a wholesale price of 34,000–40,000 Euros [11]. The principal cause of those high prices is presumably the costs arising from illegality, which requires that various actors be compensated for taking risks such as incarceration, seizure of drugs or assets and of violent victimization; illegality also suppresses innovation and advertising.

Hard data on the component costs of the drug trade are, however, fragmentary. Few papers have provided specific details about the individual cost elements and risks [12]. A systematic effort to examine the components of the illegal price of cocaine is over 15 years old, specific to the US market and dependent on data from one study of the 1988 Washington DC retail market ([13]; using data from [14]). The largest recent study of the drug trade collected data from dealers in British prisons serving sentences of 7 years or more [5]. Because the respondents in that study had participated in markets for a variety of drugs (cocaine, heroin, marijuana, amphetamines) at different levels (smuggling, wholesale, retail) and over a period of at least 20 years, the study did not provide specific cost estimates, for example on the amount paid to smuggle 1 kg of cocaine in the year 2000. A narrower study of drug smuggling in the United States [15], based on interviews with incarcerated smugglers, also failed to produce such data.

Although it appears to be difficult to attribute the contribution of specific component activities to drug prices, we suggest there is a previously undocumented important source of costs in the high level drug smuggling business, namely the transportation of money from destination markets back to the source country of the drug. This transport is commonly referred to as "bulk cash smuggling" [16–18]. This is not money laundering in a strict economic sense, i.e. cleaning up money so as to obscure its criminal origins. Quite the contrary, smuggling money increases the conspicuousness of its questionable origins since the money is converted into high denomination bills that are rarely used in legal commerce.

Data and research method

The data used for this article come from six criminal investigations by the Dutch police. These 6 cases involved 12 principal suspects from Colombia who, by way of a business, carried out or arranged the smuggling of cash from the Netherlands using couriers. At least 181 couriers were employed. The six criminal investigations have been concluded and took place within an eight-year period 2003 to 2011. Most importantly, in all these cases, searches were carried out of the suspects and their premises. These searches yielded physical documents and digital data relating to the moving around of money. The evidence ranges from sketchy financial notes to fully worked out accounts, sometimes completely set out in Excel spreadsheets. A short synopsis of each case is given below.

Case 1

In November 2003, an anonymous tip-off led to an individual who supervised money couriers. It is the only case in which euro bills were changed into US dollars. When the police raided this individual's house, they found € 6,995,000, largely in €20 and €50 euro notes, 2 money counting machines, an UV scanner for checking money and some financial administration. The administration consisted of 4 small notebooks with financial figures detailing money sent, costs and several loose sheets of papers with financial data. Some of these sheets detail the size of the bills received, like 650 × 5 euro and 2503 × 10 euro. Other sheets provide a periodical report in US dollars, although the time frame is unknown. The administrative records seized during this raid show that 36 money couriers carrying US dollars were sent from Frankfurt and Brussels to South America between 27 and 2-2003 and 5–4-2003. Furthermore, 2 sketches in a notepad show how money is secretly stashed in a suitcase lid. This corresponds almost exactly with the manner in which 2 intercepted couriers stashed their money in their suitcases.

Case 2

In 2005 the police started an investigation because of a report by the FIU Netherlands on suspicious transactions at a bank. It turned out that a female employee, whose mother had just been released from prison in the Netherlands after serving 5 years for cocaine trafficking, illegally changed smaller denominations into € 500 bills. The bank employee changed the money for her boyfriend, a Colombian drug trafficker, and other Colombian clients. During her break, she divided up the money into smaller sums to avoid the reporting limits. The woman had also involved five coworkers at three other branch locations in her activities. In the ensuing investigation, the police discovered cocaine, cutting agents and money receipts.

In turn, this led to a separate investigation on somebody who seemed to be in charge of money matters. After a phone tap was placed, it turned out a courier was about to leave Schiphol airport to Ecuador with a large sum of money. The courier, the organizer and his accomplices were subsequently arrested. After the arrest, two house searches turned up money, financial notes, money counting machines and a fire arm. The financial notes included an overview list and diary of 51 travel movements by couriers in the period from 9 May to 13 August 2005. The financial accounts consisted of five numbered sheets of a writing pad (31 lines per sheet) covering incoming and outgoing money flows during the period 21 July to 6 August 2005. Furthermore, when the address of a principal suspect was searched, € 797,265 was found. At a second address, the police found € 1,808,000. In addition, at a different location, 2 suspected cocaine traffickers were also arrested, € 62,820 was confiscated and a notebook (14 pages) detailing proceeds from cocaine trafficking including the money handed over to the cash smuggling organization was found. Figures, dates and names in the drugs administration that represent outgoing money flows, turn up in the notebook of the coordinator as money received.

Case 3

Case 3 stems from 2006. A police intelligence report at the end of 2005 states that at a certain tobacco shop, a man (whose parents were born in Venezuela) changes smaller euro denominations for larger ones. The man is identified and is suspected to carry out the transactions for a Colombian woman. The ensuing investigation ends with the arrest of the man, the owner of the tobacco shop, and 2 other Colombians. A search of the apartment of one of the suspects produces a number of simple administrative notes and records. Although unsophisticated, it seems well organized. First, information on money couriers is jotted down, like names, telephone numbers and travel routes. In the period 3 March till 17 September 2006 51 money couriers were employed and a further 13 couriers in the period 8 October till 1 November 2006. Next, two notepads hold the departure date, the name of the courier, the travel route, the amount smuggled, and the cost of each trip (consisting of a fee, a ticket and miscellaneous costs). This information was then entered on sheets of paper that kept periodical track of incoming and outgoing money flows, as well as costs of changing denominations and ordinary living expenses. The financial information of the past 3 months was finally piled in a separate report. Three such reports were found, each consisting of about 8 pages. We believe these were intended for overseas reporting because a fax report of the third period was found in the apartment. The receiver was an unknown number in Colombia. Furthermore, one automatic fire arm, ammunition and pepper spray (all without license) were found at the main suspect's house.

Case 4

Case 4 is an investigation started in 2006 because of suspicions of money smuggling activities of the suspects (mother and son) in the second semester of 2005. During the investigation, authorities in Colombia tapped the telephones of a woman and her brother on the request of Dutch authorities. The brother and sister in Colombia were the receiving contacts of the Dutch suspects. After the arrest of the suspects in the Netherlands, a house search turned up several administrative records. It consisted of a writing pad containing financial notes and five pages of records of debtors, creditors and couriers in the period from September to November 2006. The information on debtors and creditors is hard to place because there is no context (just some names, dates and a positive or negative figure haphazardly jotted down on different pages). Furthermore, the police confiscated 44 telephones in possession of the mother and son. Most of these telephone numbers were unknown to the police. The police also confiscated € 172,300 in 5, 10 and 20 bills when the suspects were about to change it for 500 euro bills.

Case 5

This case accidentally came to light in 2008 as a result of a failed robbery at the house of a Colombian national. The perpetrators, who stole over six million euro, were caught in the act and arrested right outside the premises after a watchful civilian called the police emergency number. The victim, the Colombian national, meanwhile had fled the scene and was nowhere to be found. A police search of his premises, however, yielded another million euro. It was suspected that the place was used to stash the money before it was changed in larger denominations and transported. Furthermore, several administrative records were found, including bits of paper with small financial calculations, 4 writing pads containing dozens of pages with financial notes, 2 printouts with the same financial details as noted down in all 4 writing pads, an email exchange, some receipts of money transfers and 2 sheet of codes. The hand-written financial data had also been entered (by one or more unknown suspects) in digital Excel files. When an analyst of the FIU converted all written material in a single Excel file, it amounted to 1035 lines covering a 20 month period from June 2006 till June 2008. Besides smuggling by courier, numerous entries also show that the organizers used legal money exchange services to send money to South America and other countries.

Case 6

The start of case 6 is the combination of police information obtained from two other investigations combined, one of which is case 5 from 2008 and the other the arrest of a woman from Venezuela in 2011 who was in possession of almost 1 million euros. In short, both investigations provided the police with information on another person who handed over money to the cash smuggling organizers. It turned out that a small family (husband, wife, an aunt and a son) was involved in coordinating the money couriers. When the police arrested the suspects in 2011, among other things, cash (€ 1,3 million), a firearm, 2 money counting machines, 22 telephones and various administrative records were found. These included 2 email messages, two notebooks with hand written financial data and separate sheets of financial notes. The time period recorded spans 3 months in 2009, 8 months in 2010 and 1 month in 2011. Incoming and outgoing sums of money are represented in accordance with accounting conventions, often in combination with the name or nickname of the courier. The records contain 49 individual courier names.

Method of analysis

In each case, all financial data were copied from the original police files. Permission to use this material was granted by the relevant case officers and prosecutors, under the condition that all information in the files is rendered anonymous.

The data were analyzed using the following steps. Each financial record was briefly described by type of document and nature of information recorded. Because financial details were often recorded on loose sheets of paper and small notepads, care was taken to put these in chronological order. In each case, the financial data often showed different categories like money coming in, money going out and general or specific costs. The next task was thus to put exact figures to these categories. This was relatively straightforward because it came down to just adding and subtracting. In 5 out of 6 cases, police analysts had also done the same thing. Comparing their calculations with ours served as a check for accuracy. No mistakes were found although we went into more detail.[1]

[1] In a related paper in Dutch, a slightly smaller figure was found because a few extra confiscated notes were later added to the original file; see Soudijn [19].

To put these figures into the correct background, the case files themselves were also obtained and studied. Noteworthy were police observations and tapped electronic communications in which suspects can be heard making arrangements and sometimes openly discussing organizational problems over the telephone. This provided a good picture of their day-to-day operations. The files also include the police interviews with the suspects after their arrest (although they often refuse to answer questions about their business), as well as interviews with various witnesses.

In addition, we interviewed 6 police officers and analysts about the case with which they were involved and talked to 5 others who had similar experiences. These talks were focused on financial aspects of the case and any information on the (criminal) family background of the suspects. The interviews also led to another file in which a Colombian national provided the Dutch police statements about his involvement during 1998–2001 in the financial aspects of large-scale cocaine smuggling (single shipments of hundreds of kilos). These statements were checked by the Dutch police and found to be consistent and truthful. In addition we had help from a former Colombian drug enforcement official.

Because these records are derived from police investigations, it is also important to note the strengths and weaknesses of this data. An obvious strength is the simple fact that it provides unique material on financial aspects of the cocaine trade as criminals *themselves* see it. A now classic instance that made use of this kind of data is the study by Levitt and Venkatesh [20] of the records of a retail crack distributor in Chicago. Soudijn and Zhang [21] made use of loan sharking records and RAND researchers studied al Qai'da finances in Iraq [22].

However, there are also limitations when it comes to analyzing criminal administrative records. For instance, the administrative records are compiled for personal use or use within the criminal group. As such, they don't measure up to official accounting standards. This sometimes translates to sloppy recording and missing data such as the exact time period. Furthermore, it is important to remember that police files are compiled with a single purpose in mind: finding evidence in order for a judge to assess if a suspect is guilty of a specific criminal act. While we would have liked the police to have asked suspects detailed questions about the confiscated criminal administrative records, this often hadn't happened because it was not needed for the prosecution.

There is also a question of the representativeness of the files that we obtained. Did the raids occur at a time when these operations were particularly active, as is often the case when a drug dealing operation is caught? Though, as noted below, at least one raid may have been triggered indirectly by the arrival of a large amount of cash, the records themselves showed generally consistent levels of business over a period of months before the raid. Was this mode of transferring revenues back to Colombia typical or just one of many such methods? We have no way of assessing this; however we note that despite the fact that these are just six cases over a period of 8 years, the total revenues involved are large relative to the estimated inflow of cocaine to the Netherlands. Moreover they were highly standardized operations, suggesting that this method had been well developed. It would not be unreasonable to conjecture that there were other similar operations operating in the country during the same period; interviews also suggest that similar operations have been observed in more recent years. This kind of bulk cash smuggling may therefore well have been the standard mode of handling the problem of converting Euros in Europe into useful currencies in Latin America. In any case, we think that the volumes just from these operations are large enough to suggest that this was an important modality.

Though they lack the detailed scrutiny that provides the high credibility of materials that are introduced in court, police files in general and criminal administrative records in particular can provide unique insights. They add importantly to our understanding of criminal organizations and finances.

Bulk cash smuggling

The existence of a large flow of criminal earnings internationally in the form of bulk cash smuggling is well established. The Financial Action Task Force recently published yet another lengthy Report *Money Laundering through the Physical Transportation of Cash* [23], describing methods and motives for such smuggling. That study, like all its predecessors [16, 24], lacks data on prices, a critical element for both analytic and policy purposes.

To understand the costs associated with bulk cash smuggling, it is useful to describe the component activities. Figure 1 represents an overview of the people involved. The role and function of each person will be explained in the next sections.

The similarity of the 6 cases makes it possible to identify a common process. This process can be divided in four components: assignment, preparation, smuggling and handover. Most of the available information from the files, however, is focused on the actions that take place in the Netherlands; little information comes from the activities in other countries.

Assignment

From interviews with police officers it becomes clear that the business of transporting cash money to South America starts in South America with wholesale cocaine traders. These traders want to move their proceeds of cocaine sales from the Netherlands (or Europe) to Colombia (or some other Latin American country). They therefore approach so-called money brokers, persons who can arrange such transports and who also reside in South America.[2] Each broker has his own network of coordinators, people whose responsibility it is to receive and arrange the transportation of cash money to other destinations. Each broker asks within his own network how quickly their coordinators can make arrangements and puts a price to the cocaine trader (see section "Prices and costs"). When a broker and the cocaine trader come to a deal, the broker has his coordinator stand by to receive the money that someone in the network of the cocaine trader will drop off in the Netherlands.

Preparation

Once the money is dropped off, the coordinator makes preparations to have a courier transport it. Couriers generally carry € 300,000 (for more details, see section "Prices and costs"). These amounts are always concealed, because it is illegal to take more than 10,000 euros across international borders in the EU without declaring the money.[3]

[2] The term 'money broker' is used by the police. It is unclear if they actually go by this name. Their function, however, seems similar to the money brokers in the Black Market Peso Exchange, who allow drug sales dollars in the US to be used by Colombian businesspeople there, who in turn deposit Colombian currency in Colombia, bypassing exchange controls [25–27].

[3] http://ec.europa.eu/taxation_customs/resources/documents/customs/customs_controls/cash_controls/r1889_2005_en.pdf.

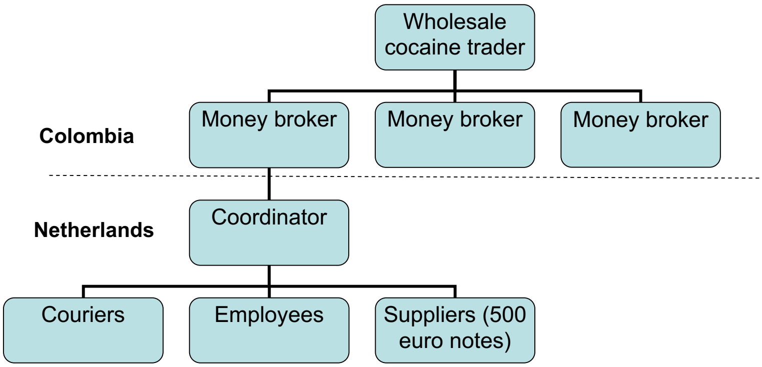

Fig. 1 Schematic overview

In order to ensure that the largest sum possible is smuggled by each courier, the coordinators therefore exchange any small bills for the largest available denomination, i.e. 500 euro notes. Because strict regulation of the financial sector makes it difficult to obtain 500 euro notes anonymously, coordinators use several tactics. In Case 2, the coordinator was able to make use of a corrupt Colombian bank employee and her co-workers to exchange more than 23 million euros. The coordinators also look beyond their own ethnic network. According to an investigator, a suspect from Case 1 had contact with a Pakistani hawala banker (an informal remittance system) for changing money. In Case 3, 500 euro bills were acquired from the Turkish owner of a small tobacco shop that also doubled as a sub-post office. In Case 4, exchange methods included the use of two Dutchmen who sold 500 euro notes to the coordinators.

After the bills have been exchanged, the money is packaged in such a way as to reduce the chance that Customs will find it. It may be sewn into a false-bottomed suitcase or bag, or hidden in gift-wrapping; in one case, it was even concealed in the soles of shoes.

The coordinators do not smuggle the money themselves but make use of couriers who act as money mules. The couriers should not be considered part of the core group; they are hired on a job-by-job basis. Connections can be discerned, however, in the form of a common Colombian nationality or cultural background. The coordinators do not have to do any forced recruiting. Statements by suspects and witnesses indicate that in the Colombian social scene it is well-known that certain people (the coordinators) arrange for money to be moved by couriers. These coordinators are accessible and easy to approach. Whoever may be interested in a few thousand euros' pocket money and a free ticket to South-America can contact them and be on their way as couriers a few days later. Sometimes, the organizers themselves approach someone they know is experiencing financial difficulties (informant interviews in police files). Or they ask returning couriers whether they have family members who would be interested. In Case 4, for instance, one sister travelled first, and another sister was on the verge of departing for Colombia. Their mother and their husbands were aware of their activities. Apparently, there is no social stigma is attached to the work (see also [1]). In the couriers' view, being caught with 'merely' money does not make anyone a criminal, even if everyone knows the money comes from drug trafficking.[4]

Smuggling

Once preparations have been made, the coordinator brings the courier to the airport (or has her taken to the airport) and escorts her to the desk to ensure check-in actually occurs. This ensures that the couriers cannot steal the money and then plead that they were robbed on their way to the airport. Since checks at Schiphol Airport are perceived as being stricter than other airports in the area, most couriers travel by way of airports in Belgium, Germany, and even Spain.

Hand-over

The Dutch criminal investigations focus on criminal offences committed within the Netherlands; hence the files include little to no information about how the money transport proceeds once it leaves the Netherlands. The files and interviews suggest that the couriers have instructions, when they reach the airport abroad, to contact a given person, who will then come and collect them. Sometimes the couriers meet their contact at a pre-arranged hotel. One coordinator (case 2) used nine different hotels in Ecuador. He used them so often that he assigned specific numbers to them in his records, and each courier was noted with the relevant hotel number.

It is unclear if the courier hands over the money to the money broker himself, to the cocaine trader or to a messenger. At any rate, as soon as the courier hands over the money, the courier calls the coordinator in the Netherlands to report back and thereby the transaction is ended on the Dutch side.

Scale

A striking feature of the six operations is simply their scale. Each of them handled multiple millions, sometimes tens of millions of euros, each month for which data are available. All except case 1 sent euros to South-America. Case 1 from 2003 is the only one in which the coordinators received euros but sent US dollars to South America and recorded these figures accordingly in dollars. It is likely that in 2003, the euro was still viewed as less secure than the dollar. The amount of euros in case 1 is recalculated with the historical euro-dollar exchange rate of 31 December 2003. Table 1 gives an overview of the scale of each case.

[4] However, the legal consequences of being charged with importing money are far greater than the couriers themselves estimate. Not only can money couriers be charged with money laundering in the Netherlands and sentenced to 2 years' imprisonment, but the South American authorities do not consider money smuggling a minor offense either.

Table 1 Overview of flows in euros

	Months	Total incoming	Monthly incoming mean	Total outgoing	Monthly outgoing mean	Amount couriers carry	House search
Case 1	0.75	5,163,500	–	4,988,124	–	280,000	6,995,000
Case 2	0.75	7,870,440	–	4,068,000	–	452,000	2,600,000
Case 3	7.5	19,544,760	2,605,968	15,260,000	2,034,667	300,000	–
Case 4	3	–	–	–	–	250,000	172,300
Case 5	21	233,776,290	11,132,204	208,017,322	9,905,587	200,000	7,000,000
Case 6	12	50,350,590	4,195,882	44,794,000	3,732,833	400,000	1,300,000
Total	45	316,705,580		277,127,446			18,067,300

Source: KLPD files

Table 1 shows that in a period of 45 observation months (although some months overlap), over 316 million euros was brought to coordinators in the Netherlands and over 277 million euros were smuggled to South-America. Additionally, house searches turned up over 18 million euros, or about 5.7 % of the total amount that was recorded as received.[5] This suggests a quick turnover. Incoming and outgoing figures for case 4 are missing because such notes were absent.

The number of months recorded in each case varies. Cases 1 and 2 were the shortest, recording only 3 weeks of incoming and outgoing money flows. Case 5 holds the longest period, with financial transactions recorded for 21 months. The differences in time periods are likely explained by the personal habits of coordinators and chance. In case 1 for example, the records were very poorly organized and dishevelled looking. Case 2 on the other hand, included a very carefully worked out writing pad with columns signalling money coming in, money changed in 500 euro notes, money going out and expenses. By the look of it, the entries were just newly started because it only covered 5 sheets in a larger notepad, suggesting that notes of previous periods were somewhere else, destroyed or overlooked by the police.

Notwithstanding the difference in recorded time periods and the level of neatness, there is a general overlap of recording method. Using simple bookkeeping practices, most notes record the money coming in (called *recibido* or receive in case 1; 'D' for debit in case 2; *entradas* or incoming in case 3, 5 and 6), the money going out or leaving (called *salida* or leaving in case 1 and 5; *envios* or transfer in case 3). In addition, all except case 4, record the costs of changing money (called *cambio* or exchange). General costs are at times also recorded and called *gastos* (case 1, 2, 4, 6). These include rent for apartment, food, electricity, gasoline etc,.

[5] This may suggest that the operations were slow in sending the money as the average seizure of money at the facility was more than 1 week's volume. However it should be noted that some of the investigations were triggered by events that themselves were triggered by arrivals of large sums, for example an attempted theft. Moreover, arrivals were lumpy (multi-millions of euros) while shipments are much smaller (200–450,000 euros), so that even a randomly timed raid might turn up large amounts of cash.

The money generally moves in large amounts. In Case 3, the smallest amount delivered by a single person on a single day was € 34,000 and the largest was one million euro. In case 5, multiple millions were brought in on a single day. In case 2 in just a few months, one client made 15 deposits, for a total of 2.6 million euro. We were unable to come up with an accurate count of clients, however, because more often then not incoming entries did not identify the persons concerned.

On average, couriers carried about € 303,333 in cash with them, although couriers in case 2 and 6 smuggled € 400.000 or more. Considering an average amount of € 303,333 that each courier carried compared to the overall amount that was recorded as smuggled in the 6 cases, it is likely that 914 trips were made by couriers. Because the administrative records also show that each courier was used only once in a while, hundreds of couriers were employed.

Prices and costs

Perhaps the most exciting aspect of the data collected from these cases is the insights it provides into the total and component costs of providing this service of moving currency from the Netherlands to Colombia. The cost percentage in each case is based on the smuggling of specific amounts of cash, which is the denominator for the associated costs. For instance, in case 2 we know that each courier carried € 452,000 with her. The records also show the fee a courier gets paid, the ticket costs for each courier, the costs of changing smaller bills into 500 euro notes and the fee for someone to take the courier to the airport. Some notepads held specific costs for preparing false compartments in the luggage, whereas others did not. Table 2 presents an overview of the cost percentages of each case as found in the notebooks.

The percentage cost of shipping, an estimate of marginal cost, ranges between 4.37 % (case 2) and 9.15 % (case 5). Bear in mind that the low figure represented a case in which the largest sum of money was smuggled by each courier (€ 452,000) instead of an average amount of € 303,000, which made it therefore the most cost-efficient.

Table 2 Coordinator component costs

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Changing 500 euro notes	3 %[a]	3 %–3.5 %	3 %	2.5 %–2.25 %	2.5–3.5 %	3–3.5 %
Couriers fee	2.53 %	0.9 %	2 %	2 %	4.75 %	2 %
Ticket costs	0.4 %	0.44 %	0.81 %	0.52 %	0.6 %	0.5 %
Bringing couriers to airport	–	0.03 %	0.19 %	–	–	–
Receving couriers abroad	–	–	–	1 %	–	–
Unspecified expenses	0.23 %	–	0.37 %	0.14 %	0.25 %	1 %
False luggage	–	–	–	0.03 %	0.05 %	–
Total % costs	6.16 %	4.37–4.87 %	6.37 %	5.94–6.19 %	8.15–9.15 %	6.5–7 %

Source: KLPD files

[a] Case 1 is the only case in which euros were changed into US dollars. The cost of changing euros into dollars was recorded at 3 %

Also note that the estimates are biased downwards as there are also costs that are not included in all records, such as case 4 in which payments are made to South American in-betweens responsible for taking the money from the couriers and delivering it to the final customers (presumably the drug smugglers) or the monthly cost of renting apartments and other expenses like gasoline, telephone, food etc. (case 1, 2, and 5).

The cost of changing smaller bills into larger bills is fairly uniform at about 3 % and is also supported by statements to the police. Case 1 had a sheet headed cambio (changing) showing 3 % as the cost. In cases 3 and 6 notepads indicate a 3 % commission or higher. Case 5 showed a range from 2.5–3.5 %. In Case 4 no direct evidence was available in the confiscated records, but wiretapped conversations indicated 2.25–2.5 % commission. In Case 6, an email has a handwritten attachment that shows that 60 bills of 500 euro were changed with a commission of 3 % and 75 bills of 200 euro for 1 %.

The notebooks also contain specific information on payments to the couriers, ticket costs and other unspecified expenses associated with the smuggling trips. Note that the amounts of money carried by individual couriers were quite standard within any single operation but varied substantially across operations (see Table 1). The highest amount for individual couriers was € 452,000 (Case 2); the lowest figure was € 200,000 (Case 5). Payments to couriers were again standard within operations but varying between. The highest was a singular fee of € 9500 (Case 5) and lowest was € 4000 (Case 3). According to the interviews, the differences in couriers' fees are the result of time spent travelling, e.g. direct flights or lots of stopovers. On average, a courier made € 6000. The other substantial costs were air tickets, which ranged between € 1200 (Case 5) and € 2430 (Case 3).[6] Cases 4 and 5 even meticulously recorded the costs for preparing the luggage that would hold the 500 euro notes. Such costs would include the buying of luggage, and even glue, needle and thread needed to prepare said luggage.

Principal missing costs

The costs that we have enumerated here are only those that appear in the administrative records. At least two expenditures are missing and are potentially very important; the costs resulting from lost cash shipments and the income the broker and his coordinator receive. These costs are likely to drive the smuggling price up to a range of 10–15 %, and might be as high as 17 %. Consider the following.

Losses due to interceptions can be quite high. In case 2, the interception of 2 out of 9 couriers during a specifically recorded 2 week time period, led to a loss of € 904,000 on a planned shipment of a total of € 4,068,000. This is a loss of almost 22 %. The interception of 3 couriers out of 22 in case 4, resulted in a loss of € 774,500 on a total of almost €5 million, or a loss of about 15 %.

According to the interviews with police officials, the broker is held responsible for any losses as soon as the drug money is handed over to the coordinator. Such accountability has also been recorded in an earlier study of the US cocaine smuggling market [28]. If money is intercepted by e.g. Customs, the broker at first will try to seek

[6] In at least two cases the price of tickets recorded in the coordinator's statements is higher than the figure the police found in the travel agency records. Whether the travel agency was cheating the tax authority or the coordinator is impossible to determine.

compensation from his own network, i.e. the coordinator or the money courier. However, judging from the files, as long as there is a valid reason for the losses (i.e. an “act of god”, namely the result of bad luck during a border crossing), the courier and in turn the coordinator are let off and it comes down to the broker to compensate his client. Case 4 illustrates this point. Telephone interceptions show that a coordinator is gripped by panic when € 275,000 is seized. She is heard talking about the importance for her to prove to the intended recipient in Colombia that the money has been confiscated. She needs to get hold of the official report drawn up by the Colombian authorities. She finally manages to persuade a lawyer she knows to take on the job and asks for several copies of the official report so that she can show it to the parties involved.

According to police interviews, a broker could either repay the losses immediately, or he could work his debt off by accepting future transactions at zero commission. Of course, this is not to say that smuggling cash is a loss-making operation. Most couriers are not intercepted. But because any losses have to be compensated in the end by the broker, the transport price thus needs to include some charge to insure him against the risks of interception.

Which brings us to the subject of the broker’s total service price. Because the coordinator will also need to be paid, it is not unreasonable to add a further 1 or 2 % to the costs of the smuggling operation in the Netherlands. In case 6 for example, cost entries are written down for exactly 1 % of the money received. The general costs and the fee for the coordinator could thus run up to 10 %.

Broker fees (i.e. payments to the person who hired the co-ordinator) are generally not found in the financial administration. A possible exception is case 5. Several entries show the names of persons on whose behalf the money is sent and include percentages. A printout of an email talks about several contracts worth € 2 million on a certain date acquired on behalf of person X for person Y. The percentages connected to these contracts are generally put at 16.5 % and 17 %, with the exception of one entry for 14 %. These percentages seem like a fairly stiff price to pay for smuggling cash. Because it is unclear what the contract stipulates, these higher percentages might very well involve placement of the money in the financial system as well. However, from the Colombian cocaine smuggler’s perspective, the basic coordinator component costs (Table 2) alone are a small price to pay compared to the advantage of shifting risk.

Considering a flat fee of 4.37 to 9.15 %, the addition of a coordinator’s fee of 1 %, a profit for the broker himself and his ‘insurance’ against confiscation, the total smuggling fee of could very well result in a range of 10–15 % with a recorded maximum of 17 %. Supporting evidence for smuggling fees over 10 % was also found in the witness statements of the interviews of a Colombian national by the Dutch police. This man was involved in the financing of cocaine smuggling in the late nineties. According to his statements, the cartel he worked for paid 13 %–14 % at that time (1998) for the transporting of money from Europe to Colombia. The cartel also gave a large discount for drug buyers who brought the money to Colombia themselves. Normally the cartel sold cocaine for US $ 20,000 a kilo, but when buyers were able to deliver the money in Colombia to the cartel, they only had to pay US $ 17,000 per kilo, a discount of 15 %. It is not unreasonable to suppose that over a 10 year period, during which anti-money laundering measures have been sharpened world-wide, the smuggling fee in 2008 had risen to 17 %.

Efficiency

How efficient is the market for moving money from the Netherlands back to Colombia, the country of origin presumably for the cocaine smugglers? Comparing the costs incurred by legal South American exporters, it looks massively inefficient. A check with Dutch banks shows that they would charge customers with a business account only 0.1 % for the service of moving Euros for a Colombian business from the Netherlands to Colombia.

The option of using a bank, however, is not open to the cocaine smugglers; because of anti-money laundering controls. They would have a hard time explaining the origin of their large monthly inflows of cash. We therefore tried to compare costs of bulk cash smuggling with other countries. A web search turned our attention to U.S. indictments. These provided a few observations restricted to drug dealers in United States markets. For example, one affidavit from a DEA agent who worked undercover as a money launderer for a major cocaine smuggling operation located in Colombia and Venezuela stated that the going rate for money laundering was 5–10 %.[7] The operation involved hundreds of millions of dollars and multi hundred kilo shipments of cocaine.

It is difficult, however, to make accurate comparisons between the Dutch case files and the US indictments. Prices in official documents generally appear as broad ranges and the exact service is not well specified. More importantly, the affidavits talk about bulk cash movements that often end up in the financial system. The data from the Dutch files is unclear about this last aspect but appear to cover only the movement of the money.

The literature on money laundering also describes other methods for concealing the international flow of illegal money. One is Trade Based Money Laundering (TBML), defined as “the process of disguising the proceeds of crime and moving value through the use of trade transactions in an attempt to legitimise their illicit origins”, often coupled with an over- or underinvoicing of goods and services [25].

However, because the wholesale cocaine trade apparently generates such large cash revenues, TBML is easier said than done [29]. First of all, a network of companies must be found(ed) that have trade in the millions of euros a month. Secondly, these companies must find a way of converting small bills into goods without alerting the authorities. Even if payments are done electronically, the bulk cash somehow needs to enter the legal financial system without setting of alarm bells.

Another low cost method for transferring illegal funds across many country-pairs involves hawalas and other Informal Value Transfer Systems, that are used extensively for sending remittances back to migrant workers home countries [30–32]. There are well-documented examples of the use of these financial institutions for international drug transactions. For example in Afghanistan, where Thompson [33] documents high volume transactions by hawalas (millions of dollars) for opium dealers in the region and Maimbo [34] documents prices of about 2 %, with volume discounts.

However, Afghanistan is very different from the Netherlands, not only because it is much poorer but also because of the openness of the opium trade and lack of serious

[7] Affidavit of Jaime X.Cepero, in Federal District Court of Massachusetts, 9 August 2013 http://cf2.100r.org/media/2014/09/narco-cash-flowed-thru-citi-deutsche-bank-and-bofa-court-papers-say/DEA-Affidavit-Money-Laundering-Case.pdf.

enforcement of drug trafficking or money laundering laws. It is also likely that Colombia lacks the presence of an extensive hawala network (interviews). It is noteworthy that Colombians had contact with a hawala network (case 1), but it was only used to exchange euro bills, not to send money.

Taking the findings at face value, it is fair to ask for possible explanations for the crudeness of the method used and the high cost. We suggest that it may be a consequence of the relative small legitimate trade with Colombia.

TBML is dependent on the existence of a substantial legitimate trade between two countries; the illegal is buried inside the regular flow of legal trade and financial transactions. According to official figures of Statistics Netherlands, the total trade between the Netherlands and Colombia in 2010 was only 1.3 billion euros of imports and 461 million euros of exports in 2013.[8] Compared to the flows of cocaine smuggling revenues here, presumably in the hundreds of millions of euros, that is not much. Trade flows between the US and Mexico amounted to $534 billion in 2014,[9] counting only commodities; services add substantially to the financial flow, as do remittances, estimated to be $22 billion in 2010. This is a large pipeline in which to bury perhaps $20 billion of drug revenues.[10]

Ideally, one should compare the costs of returning cocaine smuggling funds generated in Spain, the other major entry point for the European markets, to Colombia. Spain had a much larger trade with Colombia (797 million euros exports; 3.2 billion imports in 2014).[11] Thus we predict that TBML more often occurs in Spain than in the Netherlands.

Discussion

In this study we have shown that one of the hidden components of drug prices is the costs involving the repatriating of drug money to source countries. Suppose a drug trafficker sold 40 k of cocaine for € 25,000 each. He then needs to ship € 1,000,000 to Colombia. At a currency-shipping rate of 15 %, this would cost € 150,000. Roughly, wholesale cocaine prices may be 17 % higher as a result of the transfer costs of cash smuggling to the buyer. However this is a much smaller share of the retail price; cocaine sells for € 50 per gram at the retail level in the Netherlands [11]. Adjusting for purity (25 % at retail and 80 % at import) the transfer cash costs are less than 2.5 % of the retail price. Modest as that figure is, it may be as much as those prices can be increased by actions at the retail level [36].

A further motivation for this study was to take advantage of unusually rich data on a segment of the cocaine industry to learn more about how well illegal markets work. Our conclusions here are unabashedly speculative. The market for repatriating cocaine smuggling revenues from the Netherlands to Colombia seems to work poorly, in the sense that it does not manage to utilize a number of channels that have allowed better

[8] http://opendata.cbs.nl/Dataportaal/#_la=en.
[9] Figures from https://www.census.gov/foreign-trade/balance/c2010.html#2014.
[10] $20 billion is a high end estimate of the total export earnings of Mexican drug dealers. For a systematic analysis that produces a substantially lower figure see Kilmer et al. [35]
[11] http://globaledge.msu.edu/countries/spain/tradestats.

operation for similar functions in other drug markets, like trade based money laundering and informal value transfer systems. That may be primarily due to the lack of a thick pipeline of commerce and traffic between the two countries, which we suggest generates other cost-raising consequences, in particular the difficulty of tapping into the legal financial system. Obviously this is a highly speculative and incomplete explanation for the choice of such an expensive method. Resolution of the issue will require more empirical study of how drug smugglers repatriate their moneys to their home countries.

However the high costs may also represent subtler structural consequences of product illegality, particularly in terms of the selection of individuals who enter illegal markets. The popular literature is full of stories praising the ingenuity of drug dealers in face of the obstacles that the government presents. Indeed, they are often presented as super-villains, for example when Colombian cocaine smugglers hire engineers to help them adapt submarines for their purposes. Even in the criminology literature there can be a tone of admiration for their ability to adapt. For instance, Williams ([37], p.71) compares criminal networks to agile corporations and their "ability to obtain advance warning is complemented by a capacity for rapid reconfiguration of internal structures and operational activities." In a literature review, Desroches ([38], p. 838–839) writes "[…] higher level traffickers employ a sophisticated modus operandi that include a number of security and risk management measures that function to protect them against theft or robbery, diminish losses through bad loans or police seizures, shield clients from competitors, protect themselves from would-be informants, and insulate themselves from arrest and conviction.".

On the other hand there are certain fundamental facts that argue for the opposite proposition. Illegal entrepreneurs face the risk of violent victimization, may have to resort to violence themselves and of course also face risks of arrest and incarceration. A taste for these kinds of risks is not often found among those with the high levels of education so often associated with invention and innovation. Bill Gates and Steve Jobs may "play rough" and have sharp elbows but that is quite distinct from a willingness to accept risks of being beaten up or killed as part of the competitive process.

Is it possible then that illegal markets operate very inefficiently, that they fail to develop methods for keeping costs low in face of law enforcement, methods that they could develop with a higher quality cadre of supporting professionals? A difficulty in testing that hypothesis is that the counter-factual cannot be precisely specified. One can show perhaps that the market participants incur higher costs than their legal counterparts but the cost of using the services employed by legal businesses, in terms of increased exposure to law arrest or incarceration, may be prohibitive.

So high costs relative to similar legal markets then may represent either a failure to adapt or a truly effective law enforcement regime. Could these high costs reflect effective AML measures by the Dutch government? The fact that the smugglers do not try to launder the money in the Netherlands itself is a possible indicator of that. Comparisons with strategies of drug smugglers in other European countries with less strong reputations for effective AML would provide such insights. If costs are lower in a lax enforcement regime, then we might attribute the high costs to enforcement rather than inherent inefficiency. Data from other countries or times are needed for this exercise.

Our last point of discussion concerns the use of 500 euro notes. Just as the media and law enforcement agencies claim [39, 40], the bulk cash smugglers took advantage of the high compression that the 500 euro notes provided to get funds back to South America. The 500 euro note did indeed allow Colombian cocaine smugglers in the Netherlands to improve the efficiency with which they got their ill-gotten gains back to their home country. The six cases here are almost certainly not all operations of this type that were operating in the Netherlands during this time. Yet each of them routinely handled millions of euros per month, following essentially the same procedure to get the money back to South America. This study can therefore be seen as providing new and unusually specific evidence of the extent to which the 500 euro note facilitated the drug trade.

Taking into account concerns that the 500 euro note could facilitate illicit activities, the ECB decided in May 2016 that the 500 euro note is to be phased out by the end of 2018. [12] How will this effect the bulk cash smuggling trade? This is a difficult question, even without going into macro-economics. The next largest note is for € 200. Smuggling large amounts similar to the 6 cases would need twice as many couriers, and thus could drive up the already very high costs. It is hard to believe that the smugglers would not find some other method but it is impossible to predict what that might be.

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[12] https://www.ecb.europa.eu/press/pr/date/2016/html/pr160504.en.html.

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