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for Business and Government

# **Making it Harder for the Bad Guys: The Case for Eliminating High Denomination Notes**

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February 2016

## **M-RCBG Associate Working Paper Series | No. 52**

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# Making it Harder for the Bad Guys

## The Case for Eliminating High Denomination Notes

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Illegal money flows pose a massive challenge to all societies, rich and poor. Tax evasion undercuts the financing of public services and distorts the economy. Financial crime fuels and facilitates criminal activities from drug trafficking and human smuggling to theft and fraud. Corruption corrodes public institutions and warps decision-making. Terrorist finance sustains organisations that spread death and fear.

The scale of such illicit money flows is staggering. Depending on the country, tax evasion robs the public sector of anywhere between 6% and 70% of what tax authorities estimate they should be collecting. Global financial crime flows are estimated to amount to over US\$2tr per year. Corruption amounts to another US\$1tr.

Most of the effort to combat such illicit financial flows focuses on the perpetrators, the underlying criminal activities or on detecting illicit transactions through the banking system. Yet despite huge investments in transaction surveillance systems, intelligence and interdiction, less than 1% of illicit financial flows are seized.

In this paper we suggest a different approach, one that would complement existing policies and make them more effective. Our proposal is to eliminate high denomination, high value currency notes, such as the €500 note, the \$100 bill, the CHF1,000 note and the £50 note. Such notes are the preferred payment mechanism of those pursuing illicit activities, given the anonymity and lack of transaction record they offer, and the relative ease with which they can be transported and moved.

By eliminating high denomination, high value notes we would make life harder for those pursuing tax evasion, financial crime, terrorist finance and corruption<sup>2</sup>. Without being able to use high denomination notes, those engaged in illicit activities – the “bad guys” of our title – would face higher costs and greater risks of detection. Eliminating high denomination notes would disrupt their “business models”.

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<sup>1</sup> See Acknowledgements

<sup>2</sup> The Financial Action Task Force (“FATF”) defines 20 designated categories of predicate offences (FATF 40 Recommendations, 2012). For the purposes of this paper we have grouped these as: “financial crime” encompassing both the financing and laundering of proceeds from illegal activities (FATF categories 1, 3-7, 9-15, 17-20); “tax evasion” as being the illegal avoidance of taxes whether or not the underlying activity is legal (FATF category 16); “corruption” as being the giving and receiving of illegal inducements, whether or not the underlying activity is legal (FATF category 8); and “terrorist finance” (FATF category 2). Like the FATF categories, this paper does not explicitly cover financial sanctions: however, it would seem reasonable to presume that HDN play a non-trivial role in sanctions breaches, so sanctions compliance would be enhanced by eliminating HDN.

This is a bold, relatively simple-to-implement action that could have significant impact and has limited downside. High denomination notes are arguably an anachronism in a modern economy given the availability and effectiveness of electronic payment alternatives. They play little role in the functioning of the legitimate economy, yet a crucial role in the underground economy. The irony is that they are provided to criminals by the state.

This is not an argument for the total elimination of cash. Despite the rapid growth and development of electronic payment mechanisms, cash stills plays a vital role in the functioning of the economy. In every country cash is still the predominant method of making small payments, which represent the vast majority of all payments. Yet in normal, legitimate usage the benefits of using cash relative to electronic alternatives decline sharply as the size of the payment transaction increases. For larger payments, electronic payment mechanisms such as credit or debit cards or bank transfers offer advantages to both sides of the transaction, such as a transaction record and the avoidance of having to carry large quantities of physical cash. So whilst there are significant differences between payment behaviours across countries, most people in most parts of the world use cash for small payments and electronic alternatives for larger payments. As technological innovation enhances the cost effectiveness, flexibility and ubiquity of electronic payments, with internet payment schemes like Paypal, mobile payment systems like mPesa or Applepay, and contactless cards, the balance of usage will continue to shift towards using electronic payments for an increasing share of transactions.

Yet there is no need to wait for new payment innovations. High denomination notes already play a very limited role in the legitimate economy. They account for a tiny share of transactions and are used and held by a small, wealthier sub-segment of the population.

In the underground economy, the reverse is true. High denomination notes are the payment instrument of choice for those evading taxes, committing crimes, financing terrorism or giving or receiving bribes. Cash offers anonymity, leaves no transaction record and is universally accepted. High denomination notes are the form of cash which enable large sums to be paid, moved and stored with minimum cost and detection risk. From the criminals' perspective, high denomination notes are far more attractive than bank transactions, Bitcoin, gold or diamonds. As an example, Figure 1 show part of the largest ever cash seizure related to drug-trafficking: US\$207m seized in Mexico, almost entirely in US\$100 bills.

FIGURE 1

## US\$207m drug cash seizure – 2007, Mexico City



Source: Tobar, Martinez (2007)

Eliminating high denomination notes would not stop tax evasion, crime, terrorism or corruption. But it would increase costs and risk for the “bad guys”. They would find substitutes, such as the next highest denomination note in the same currency, high denomination notes in other currencies, disguised transactions through the banking system, Bitcoin, or valuables such as gold or diamonds. Yet all of these alternatives have disadvantages. In different ways they are heavier and bulkier, more traceable, less widely accepted or have higher transaction costs. By being forced to use substitutes, those conducting illicit activities would face higher costs and more risk of detection and interdiction.

By disrupting the “business model” of tax evaders, criminals, terrorist and bribe givers and receivers, imposing higher costs and detection risks, eliminating high denomination notes would lead to some reduction in such activities. How big an impact depends on precisely how the high denomination notes are eliminated. Collective action by all the countries issuing high denomination notes would have far more impact than unilateral action, since if only one country stops issuing high denomination notes, criminals can switch to using high denomination notes in another widely accepted currency. For this reason, our proposal is for all the major issuers of high denomination notes to commit to eliminating them. This could be achieved through the G7 or G20 mechanisms. The G7 includes the issuers of the most significant high denomination notes, the G20 includes all the issuers of high denomination notes, bar Switzerland, Singapore and Hong Kong. They would need to be persuaded to join this action.

The impact of eliminating the highest denomination notes would also depend on the denomination of the next best alternative in that currency. This is most clearly the case with the Euro, where below the €500 note there is also a €200 note and a €100 note, all of which would qualify as high denomination notes. Whilst it might be difficult to eliminate all three at once, the benefits of eliminating the €500 note would be significantly diminished if €200 issuance simply increased to compensate. Ideally, all high denomination notes would be progressively eliminated with restrictions on issuance and usage limiting substitution in the meantime. Combining elimination of high denomination notes with the introduction of policies to stigmatise and constrain their use (e.g., by limiting the maximum value of cash transactions, or forbidding the use of high denomination notes in certain environments) and to accelerate their removal from the system would further enhance the disruptive impact.

Whilst various arguments are made to defend the continued issuance of high denomination notes, none of these arguments looks compelling. Eliminating high denomination notes has limited downside since such notes play such little role in the legitimate economy.

Central banks would lose some seignorage income from eliminating high denomination notes. However, this loss of income would be more than offset from benefits in increased tax collection and lower crime, corruption and terrorism. In any case, for central banks to be providing high denomination notes to those conducting illegal activities because doing so generates income seems a very difficult policy stance to defend.

The other arguments for retaining high denomination notes largely revolve around some individuals' desire to hoard or save cash "under the bed" given concerns about banks, or the utility of high denomination notes in emergencies, war zones or natural disasters. There probably is some legitimate hoarding, particularly in countries with a history of banking crises, but the reality is that most of the money that is hoarded in cash is kept from the banking system in order to keep its origins from scrutiny. Hoarding cash appears highly correlated with tax evasion. There is also some merit in possessing hard currency high denomination notes in extreme situations where due to war or disaster, the system has broken down, but such usage can only account for a minute fraction of high denomination notes. In both cases, lower denomination notes offer an only slightly more inconvenient solution for ordinary people, given the sums involved. Only the very wealthy would be truly inconvenienced by having to make such a substitution. Given the scale of the benefits from eliminating high denomination notes, these arguments for retaining them look less than compelling.

The case for eliminating high denomination notes has been made before. Some extremely high denomination notes have been eliminated in recent years, such as Canada's \$1,000 note in 2000 and Singapore's \$10,000 note in 2014. But issuance volumes for the notes most commonly used in illicit activity, such as the €500 note and the US\$100 bill continue to rise. Why should this time be different?

- First, there is much greater awareness of the massive costs that tax evasion, financial crime and corruption impose on societies, rich and poor, and much more political determination to fight these scourges. Eliminating high denomination notes would be a big step forward in this agenda.
- Second, electronic payment mechanisms continue to become more available, accepted, flexible and cost-effective. Since most people in most countries already use such alternatives rather than high denomination notes when they make high value payments, they clearly work. Given these technological advances, high denomination notes are no longer required to facilitate the smooth functioning of the legitimate economy.
- Third, we face an acute threat from well-financed international terrorism, most notably ISIS. Actions that help disrupt the economic underpinnings of such activity must be a priority. Eliminating high denomination notes will not stop the financing of terrorism, but without eliminating high denomination notes, it will be very difficult to get traction on stemming such flows. The European Commission's very recent announcement that it will work with the European Central Bank ("ECB") to examine the role of the €500 note in terrorist finance is welcome recognition of this fact<sup>3</sup>.
- Fourth we have stepped up our game in detecting and intercepting illicit transactions passing through the banking system, via more intensive regulatory scrutiny and intensive investment in systems and capabilities. This will drive more illicit activity to high denomination notes unless we remove the alternative.
- Finally, an ultra-low interest environment weakens the seignorage counter-argument.

Only a few countries – largely the most advanced economies – issue high denomination notes. Yet they have corrosive impact almost everywhere. In rich countries high denomination notes are commonly used for tax evasion, drug trafficking and money laundering more generally. In poorer countries, the high denomination notes issued by rich countries – most notably the US\$100 bill and the €500 – are the currency of corrupt elites, of crime of all sorts and of tax evasion. In a world where illicit activity is increasingly globalized, high denomination notes are the key technology by which criminals transfer money across borders cost-effectively and covertly, whether for drug-trafficking, human trafficking or terrorist finance. The question is why it makes sense for governments to continue providing the “bad guys” with such tools, when they no longer play a significant role in legitimate economic activity.

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<sup>3</sup> European Commission (2016)

Significant policy initiatives to combat tax evasion, crime, corruption and terrorism are often complex, expensive and challenging to implement. This is not the case with this proposal. Whilst securing collective agreement from the key issuing countries for a coordinated process of elimination, using either the G7 or G20 mechanisms, might take time and debate, implementation would be straightforward. The first step is to stop printing. Then by constraining, stigmatising and scrutinising the use of the outstanding stock of high denomination notes, governments can accelerate their withdrawal from the system and sharpen the disruptive impact on illicit activities.

In the rest of this paper we flesh out the arguments for this proposal. We start by describing the massive social and economic costs that tax evasion, financial crime, corruption and terrorist finance impose on societies, rich and poor, and the limited success of current policies in stemming such activities. We then go on to discuss in some detail the role that cash, and high denomination notes in particular, play in facilitating these different types of illicit activity.

Before making the case for eliminating high denomination notes, we discuss the overall role cash plays in different economies, and the prevalence and usage of high denomination notes, which differs markedly by country.

We then turn to the case for eliminating high denomination notes, setting out the argument, which revolves around increasing costs and detection risk for those pursuing illegal activities. We examine and respond to the various counter-arguments that are put forward, none of which seems convincing or sufficient to outweigh the benefits. We also briefly touch on other arguments for eliminating high denomination notes which are not based on their connection to illicit activity. Finally, we summarise the case and provide a brief discussion of options for implementation.

## **The Costs of Tax Evasion, Financial Crime and Corruption**

Tax evasion, financial crime and corruption impose massive economic and social costs on societies, rich and poor.

**Tax evasion:** Even in sophisticated economies with well-established tax collection capabilities, the difference between the calculated total tax yield and the actual receipts, known as the “tax gap”, is significant. In the United States, the Internal Revenue Service estimates a tax gap of US\$385bn for 2006, the latest year for which this has been calculated, amounting to 14.5% of tax liabilities<sup>4</sup>. The United Kingdom estimate a somewhat differently defined tax gap of £34bn in 2013/4, amounting to 6.4% of tax liabilities<sup>5</sup>. In less developed countries, the tax gap is typically considerably higher: Bangladesh, South Africa and Thailand were estimated to have tax gaps of 36%, 23% and 53% respectively<sup>6</sup>. Some are much worse: Pakistan was estimated to have a tax gap of 70%<sup>7</sup>.

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<sup>4</sup> United States Internal Revenue Service (2012)

<sup>5</sup> United Kingdom Her Majesty's Revenue & Customs (“HMRC”) (2015)

<sup>6</sup> Schneider (2005)

<sup>7</sup> World Bank (2009)

Tax evasion constrains the capacity of the public sector, increasing public borrowing for any given level of expenditure. Tax evasion also creates competitive distortions and inequity. Businesses that evade tax have an advantage over those that pay their due. Individuals that evade tax benefit from public services they do not pay for. In principle, tax evasion will encourage more resources to be devoted to the sectors of the economy where tax evasion is relatively easy than is economically optimal. Pervasive tax evasion corrodes social norms, contributing to an atmosphere where people think others cheat and are therefore tempted to do so themselves, an environment where illicit behavior becomes habitual and condoned.

**Financial crime:** First, we should clarify terminology. The phrase “financial crime” is somewhat misleading, as is “money laundering”. Financial crime might seem to imply a category of crime particularly related to finance or financial institutions. Money-laundering was coined to describe the mechanisms used by criminals to disguise the illicit origins of the proceeds of crime (turning “dirty” money into “clean” money). Nowadays, both phrases tend to be used somewhat interchangeably to cover all the financial flows relating to all forms of crime.

This analysis treats crime as if it were a kind of business. Nearly all types of crime involve money in some way, both to fund the criminal activities and ultimately as the reward for such activities. Most crime is acquisitive in that the objective is to generate monetary reward. That is clearly the motive behind drug-trafficking or theft. For such acquisitive crimes, receipts typically dwarf costs since serious crime is generally profitable. Yet for some crimes, such as domestic murder or politically-motivated terrorism, money is not the primary objective. For these sorts of crimes, the money flows are typically much smaller. That said, many murders are linked to acquisitive crime, such as those resulting from disputes between drug-trafficking cartels. Moreover, terrorist organisations can also be acquisitive, using terror and other criminal activities to generate power and wealth for their leaders.

The scale of financial crime is enormous. In 2011, the United Nations Office on Drugs and Crime (“UNODC”) estimated the scale of financial crime through meta-analysis at US\$2.1tr or 3.6% global GDP in 2009<sup>8</sup>. This figure excludes tax evasion and corruption and represents solely the flows of money directly related to criminal activity. It does not measure the broader social and economic costs by such activities, which could be as much as three times the direct monetary flows. For example, the social and economic costs of acquisitive organized crime in the United Kingdom have been estimated at £1.8bn, compared to estimated “revenues” of £550m<sup>9</sup>. Of course, such estimates must be given wide latitude since by their nature they are far from precise. Yet even if these figures were wrong by some significant margin, the message would not change – the scale of financial crime flows are enormous, and the broader social costs of crime, even larger.

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<sup>8</sup> United Nations Office on Drugs and Crime (“UNODC”) (2011)

<sup>9</sup> Miles, Skodbo, Blyth (2013)

**Corruption:** The World Bank has estimated that in 2001/2 total bribes across the world amounted to US\$1tr<sup>10</sup>. Whatever the accuracy of this figure, the total sum of bribes massively underestimates the true impact of corruption, which has a significant negative impact on multiple aspects of economic growth and development<sup>11</sup>.

No country is immune from corruption, but the prevalence and impact varies enormously. Transparency International's Corruption Perception Index illustrates this: in Europe, only 16% of countries score below 50 on their 100 point scoring system (where high is very clean, and low is very corrupt), whereas in the Middle East and North Africa the figure is 84% of countries; in Sub-Saharan Africa, 92%; and in Eastern Europe and Central Asia, 95% of countries<sup>12</sup>. The World Bank's Enterprise Surveys corroborate the degree of difference: only 1.7% of firms surveyed in high income OECD countries report at least one bribe payments request, whilst in East Asia & Pacific 27.4% do; in South Asia, 24.8%; and in the Middle East and North Africa, 24.0%<sup>13</sup>.

## **The Limitations of Current Policies**

Despite intensified political and regulatory focus and increased investment in surveillance and interdiction by banks, tax collection authorities and crime agencies, illicit activities continue to thrive, imposing massive costs on society. Whilst the nature of such activities means that data is sparse, the trends in tax evasion, financial crime and corruption appear mixed. Tax evasion appears to be on a gradual declining trend, at least in OECD countries<sup>14</sup>, although tax compliance deteriorated in many parts of the world following the global financial crisis. Overall trends in financial crime are difficult to decipher, since different types of crime are evolving in different ways. Regardless of the trend, only a tiny percentage of illicit financial flows are intercepted: estimates suggest a mere fraction of 1% are seized<sup>15</sup>. It is equally difficult to discern clear trends in corruption<sup>16</sup>, but some sources suggest it is increasing, at least in some parts of the world<sup>17</sup>.

While there are successes in the fight against tax evasion, financial crime and corruption, such illicit activities remain a huge problem. Even allowing for some significant degree of double-count between the categories, the estimates of the scale of tax evasion, financial crime and corruption are staggering. Tax evasion amounts to nearly 3% of GDP in the world's most advanced economies<sup>18</sup> and much more in the developing world. Financial crime flows amount to another 3% and of course, the underlying crimes impose much greater costs on society, in terms of violence, disruption and distortions. The total cost of

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<sup>10</sup> World Bank (2013)

<sup>11</sup> OECD (2014)

<sup>12</sup> Transparency International (2014)

<sup>13</sup> World Bank Enterprise Survey (2015)

<sup>14</sup> Schneider, Buehn (2012)

<sup>15</sup> UNODC (2011)

<sup>16</sup> U4 Expert Answer (2009)

<sup>17</sup> Transparency International (2015)

<sup>18</sup> Schneider, Buehn (2012)

corruption has been estimated at more than 5% of global GDP<sup>19</sup>. Surveys suggest that in developing countries crime and corruption remain at the top of people's concerns, outranking issues like healthcare, education and the environment, and whilst there are marked differences by region, in general people have become more concerned about these issues<sup>20</sup>.

It's also worth noting that the multitude of initiatives to improve tax compliance, crack down on financial crime and eliminate corruption themselves have substantial costs. Indeed, official and banking industry efforts to counter money-laundering through more rigorous "Know Your Customer" procedures and transaction surveillance appear to be having significant unintended consequences, increasing costs and inconvenience for legitimate users, and driving certain segments and geographies out of the formal banking system. These effects appear most marked in cross-border remittances, SME access to trade finance and correspondent banking. To the extent that such flows divert to informal channels (such as hawala for cross-border remittances) the underlying objective of enhancing surveillance is defeated.

### **The Advantages of Cash and High Denomination Notes**

Cash is a highly attractive payments mechanism and store of value for tax evaders, criminals and those who give or receive bribes. For individuals and organizations conducting illicit activities, cash is undoubtedly the preferred payment mechanism. No other payment mechanism simultaneously provides anonymity for payor and payee, leaves no trace of transactions, and is so widely accepted. Some currencies, most obviously the US dollar, are accepted virtually everywhere in the world.

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<sup>19</sup> World Economic Forum (2014)

<sup>20</sup> Pew Research Center (2014)

FIGURE 2

## Attributes of different payment mechanisms from a criminal perspective

	Payor/ payee anonymity	Lack of traceability	Ubiquity of acceptance	Immediacy of value transfer	Irreversibility of value transfer	Value constancy	Transaction cost/ spread	Physical convenience
<b>Bank transfer</b>	No	No	Needs payor and payee to have bank accounts	Typically 1-3 days	No	High	Variable	Yes
<b>Non bank wire transfer</b>	No	No	Through agent	Increasingly real time	Sometimes	High	Variable	Yes
<b>Bitcoin</b>	Yes	No	Very limited	Instant	Yes	Extremely volatile	Extremely low	Yes
<b>Gold</b>	Yes	Yes	Limited	Yes	Yes	Volatile	High	Heavy and bulky
<b>Diamonds</b>	Yes	Yes	Very limited	Yes	Yes	Volatile	Very high	Very compact
<b>Cash</b>	Yes	Yes	Accepted everywhere	Yes	Yes	High	Low	Can be heavy and bulky for large values

Source: own analysis

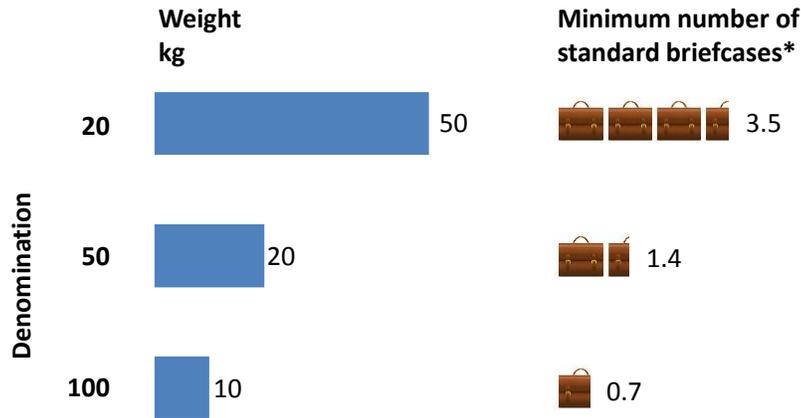
These attributes mean cash offers distinct advantages for those wanting to conduct illicit activities and remain undetected. Yet cash also has disadvantages, most obviously the fact that it is physical. Conducting large value transactions in cash means transferring large numbers of notes which can be surprisingly heavy and bulky. This is why high denomination, or more precisely, high value, notes are particularly attractive. For those wanting to pursue illegal goals, high denomination notes offer all the benefits of cash, with the minimum physical downside.

To get a sense of why this might matter to criminals, tax evaders or terrorists, consider what it would take to transport US\$1m in cash. In US\$20 bills, US\$1m in cash weighs roughly 110lbs and would fill 4 normal briefcases. One courier could not do this. In US\$100 bills, the same amount would weigh roughly 22lbs and take only one briefcase. A single person could certainly do this, but it would not be that discrete. In €500 notes, US\$1m equivalent weighs about 5lbs and would fit in a small bag.

FIGURE 3

## Weight and bulk of US1\$m equivalent

US\$ bills

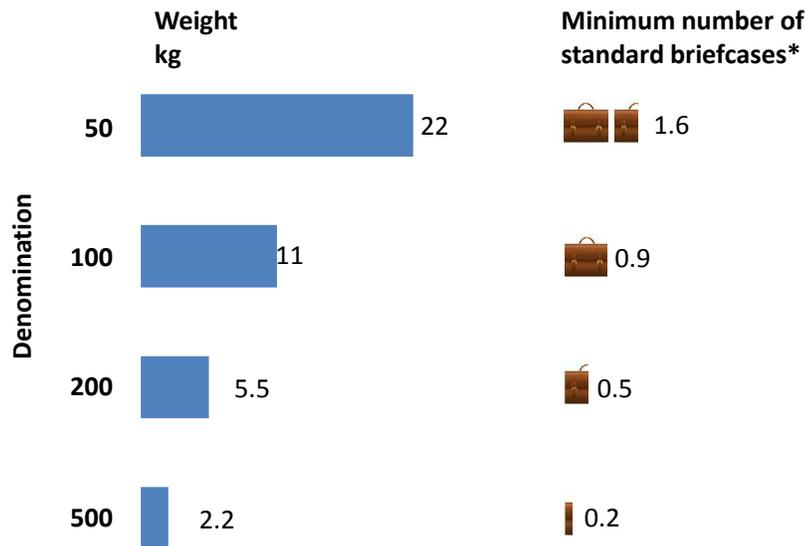


\* Standard 15 litre briefcase; estimate for bulk is for brand new notes; used notes could take up to twice as much space  
Source: United States Federal Reserve, European Central Bank

FIGURE 4

## Weight and bulk of US1\$m equivalent

Euro € notes



\* Standard 15 litre briefcase; estimate for bulk is for brand new notes; used notes could take up to twice as much space  
Source: United States Federal Reserve, European Central Bank

It should be no surprise that in the underworld the €500 note is known as a “Bin Laden”.

In this paper we do not take a definitive view on what specific value makes a certain denomination qualify as a high denomination note<sup>21</sup>. From society’s perspective, cash offers a mix of advantages and disadvantages versus other payment mechanisms, and we would contend that this balance of benefits and costs deteriorates as the denomination and value increase. For legitimate users, cash still offers real benefits versus electronic alternatives for lower value transactions, such as buying a cup of coffee, and for person-to-person payments, such as giving a child pocket money. However, for larger transactions, these advantages diminish and cash’s disadvantages intrude. Making larger transactions in cash means carrying large volumes of cash, exposing the individual to the risks of theft and loss. Individuals making larger transactions typically want the transaction record that an electronic payment automatically generates. These dynamics can be seen in consumer behavior. For example, in the United States, cash accounts for 40% of payments by number, but only 14% by value. Only 1% of payments by number were cash payments over US\$100, corresponding to 5% by value (and some of these may be illicit)<sup>22</sup>. As another indicator, diary analyses across multiple countries shows cash accounting for well over 50% of transactions up to the median transaction value, but falling significantly in share as transaction values increase, although the pattern varies quite significantly by country<sup>23</sup>.

In our view, the arguments for eliminating high denomination notes apply powerfully to all notes with a denomination over the equivalent of US\$50 and could well be compelling at an even lower threshold. However, in thinking about eliminating high denomination notes, it clearly makes sense to start from the highest value denominations, where the arguments are strongest, before proceeding to much lower denominations.

Cash and high denomination notes play a significant role across most types of criminal activity, but the ways in which cash and high denomination notes are used, and their importance, vary significantly by type of illicit activity and by geography. Understanding these differences provides a basis for assessing the potential impact of eliminating high denomination notes. However, by the nature of these activities, reliable data is extremely sparse. Tax evaders, criminal and terrorists and corrupt officials have an obvious incentive not to provide data. Moreover, the data that does exist typically only focuses on cash versus non-cash payment mechanisms. Thus far, there appears to have been very little systematic analysis of the denomination mix of cash seizures or illegal utilization.

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<sup>21</sup> In a sense being a HDN is like a person being tall; the bigger the bill, the more it has the characteristics of HDN; the greater a person’s height, the more they fit the description of tall

<sup>22</sup> Federal Reserve Bank of San Francisco (2014)

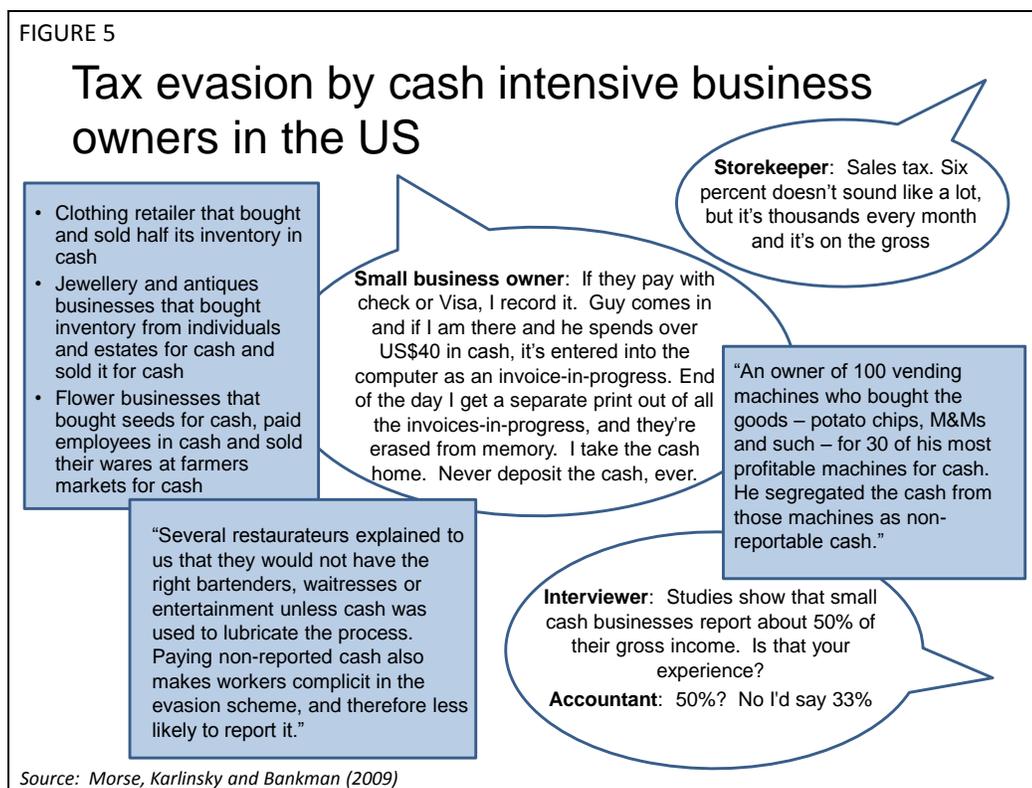
<sup>23</sup> European Central Bank (“ECB”) (2014)

## The Role of High Denomination Notes in Tax Evasion

Cash and high denomination notes play a critical role in tax evasion. Ask people in the United Kingdom when they last used a £50 note, the highest sterling denomination, and the most common answer is to pay a builder or plumber. The incentive is tax evasion, since payment in cash makes it easier for the individual to avoid VAT of 20%; and if the builder pays his workers in cash, he in turn avoids employment taxes and they avoid income tax.

These are anecdotes, but the data supports the thesis that cash is commonly used to evade tax across many countries. Amongst the many components of the tax gap, under-reporting of cash income, particularly by smaller businesses, is one of the largest. Analyzing the United States tax gap for 2001 of US\$345bn, Slemrod estimates that under-reporting of individual income accounts for US\$197bn<sup>24</sup>. Of this number, under-reporting of non-farm proprietor income is the single largest component at US\$68bn. Moreover, this source of income has by far the highest rate of non-reporting, at 57%, compared to 18% overall. Other analyses support the hypothesis that it is cash income that is being under-reported. For example, a qualitative survey of almost 275 US small businesses and their advisers<sup>25</sup>, suggested under-reporting rates of around 50% for business cash income.

Figure 5 gives a flavor of the case studies and quotes from this survey.



<sup>24</sup> Slemrod (2007)

<sup>25</sup> Morse, Karlinsky, Bankman (2009)

Under-reporting of cash receipts also leads to under-reporting of self-employment tax: at US\$39bn, this dwarfs the under-reporting of conventional wages and salaries of US\$10bn, with an under-reporting rate of 52% compared to 4%. To put these numbers in context, Slemrod estimates large company corporation tax under-reporting, a topic that typically attracts much more attention, at US\$25bn.

Whilst there are differences by country, reflecting different tax structures and cultural norms, the use of cash payments to evade tax is ubiquitous:

- Where VAT represents an important part of the tax system cash receipts are often undeclared. Across the EU the VAT tax gap amounted to €193bn in 2011<sup>26</sup>. In August 2015, the Greek Tourism Minister was reduced to pleading with tourists to use cards rather than cash since “We calculate that around 40% of receipts are not issued in tourist areas to avoid VAT”<sup>27</sup>. Interestingly, in Taiwan issuance of receipts has been incentivized by making every receipt a lottery ticket since 1951<sup>28</sup>.
- Analysis of the United Kingdom tax gap suggests a similar pattern to the United States, with cash-based evasion the largest contributor to the tax gap.<sup>29</sup>
- Where employment taxes represent a considerable additional cost to employers, payment in cash and cash supplements to salaries are prevalent<sup>30</sup>.
- In developing countries, cash plays a significant role in multiple aspects of tax evasion, from the use of foreign currency by high net worth individuals, to under-reporting of cash income and employment in cash by businesses<sup>31</sup>.
- Many analyses of the tax gap focus only on under-reporting or other forms of evasion related to otherwise acknowledged economic activities. Yet in every economy there is a “black” or hidden economy where the activities are almost entirely unreported and which operate almost entirely in cash. Whilst such activities are intrinsically difficult to measure, they have been estimated at around 13% of GDP for advanced economies and 36% of GDP for developing economies<sup>32</sup>.

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<sup>26</sup> European Commission (2013)

<sup>27</sup> The Guardian (2015)

<sup>28</sup> Government of Taiwan

<sup>29</sup> HMRC (2015)

<sup>30</sup> Kedir, Fethi, Williams (2011)

<sup>31</sup> International Monetary Fund (“IMF”) (2015)

<sup>32</sup> Schneider (2007); Federal Reserve Bank of St Louis (2015)

It seems reasonable to conclude that cash plays a critical role in tax evasion. What is more difficult is to demonstrate the role of high denomination notes, since there is little data on the use of different denomination bills for tax evasion. However, it seems plausible that high denomination notes facilitate tax evasion involving relatively large transactions paid in cash, such as paying a builder or contractor, rather than the misreporting of small retail transactions. Moreover, high denomination notes are almost certainly used to store income on which tax has not been paid, since depositing such funds in a bank would attract attention if the sums were large. Qualitative surveys of cash-intensive business owners in the United States suggest three strategies for deploying undeclared cash income: 1) purchase of expensive items, from jewelry, art and fashion, to yachts and property; 2) hoarding, often using safe deposit boxes; and 3) reinvestment in the business<sup>33</sup>. Interestingly, analysis by the Boston Federal Reserve suggests that self-employed individuals are nearly four times as likely to be holding a US\$100 bill in their wallet as an individual employed by someone else<sup>34</sup>.

## **The Role of High Denomination Notes in Financial Crime**

Cash and particularly high denomination notes are the payment instrument of choice in financial crime. A recent report by Europol entitled “Why is Cash still King?” answers its own question succinctly. Cash “remains the criminal’s instrument of choice to facilitate money-laundering”. Put another way, “Although not all use of cash is criminal, all criminals use cash at some stage in the money-laundering process”<sup>35</sup>. Cash is used in multiple ways in criminal life:

- 1) To finance illegal activities whilst minimizing the risks of detection of the link between the source of funds and the activity itself. This is particularly important in terrorist finance.
- 2) To garner the rewards of criminal activity, whether selling drugs, trafficking humans, fencing stolen goods, or via extortion. In most such cases, payment for the illegal goods or services is in cash.
- 3) To launder the proceeds of criminal activity, obscuring the trail through transactions that leave no record, by moving the cash abroad, or by mixing the cash with legitimately derived cash (e.g., by co-mingling illegal cash with legitimate business proceeds).

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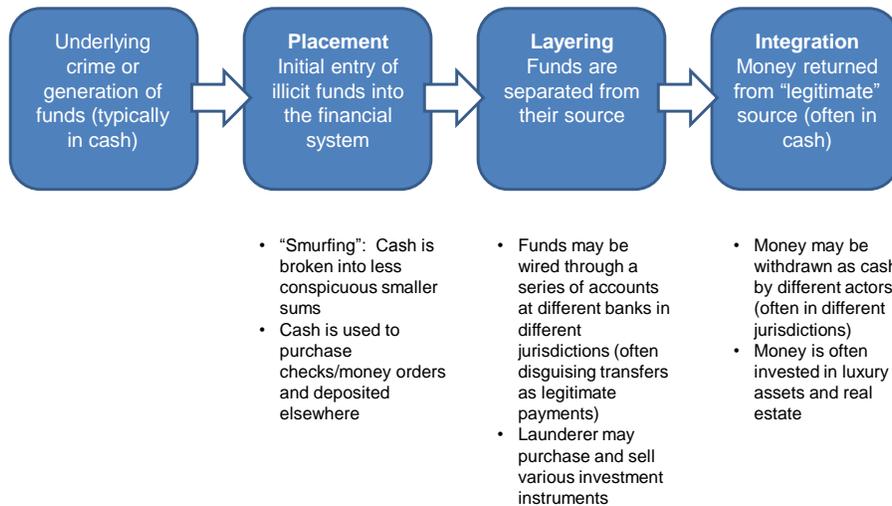
<sup>33</sup> Morse, Karlinsky, Bankman (2009)

<sup>34</sup> Federal Reserve Bank of Boston (2014)

<sup>35</sup> Europol (2015)

FIGURE 6

## Process of money laundering



Source: team analysis

The objective of money-laundering is first to break the link between the crime and the money, and then second to return the money to the criminal in a way that avoids inadvertently connecting the criminal to the crime. Cash is perfect for this purpose: it tells no story – that is, it holds no record of who owns it or where it came from. Indeed, where the money is received in cash and spent in cash, no money laundering is necessary. Less than half of illicit financial flows are laundered, the rest remains in cash<sup>36</sup>.

Even when the original crime was conducted in the world of conventional banking, or in cyberspace, criminals typically move rapidly to convert the proceeds into cash. When a cybercriminal gains access to your account through phishing or hacking, most often they quickly send a “mule” to the ATM to get the cash proceeds out of the banking system.

As the Europol report puts it “cash in itself is not a method of laundering the proceeds of crime, nor is it an illegal commodity; rather it is an entirely legal facilitator which enables criminals to inject illegal proceeds into the legal economy with far fewer risks of detection than other systems”<sup>37</sup>.

In the rest of this section, we explore the ways in which high denomination notes are used across the different types of crime. For obvious reasons there is very limited reliable data on the use of cash in illicit activity. Indeed, criminals prefer cash precisely because it does not generate a data trail. For high denomination notes there is even less data than on cash in general. Indeed it is remarkable how little we know about the whereabouts and

<sup>36</sup> UNODC (2011)

<sup>37</sup> Europol (2015)

utilization of a product created and distributed by the state. In the United States, for example, there has been considerable debate as to what proportion of US\$100 bills are overseas, with estimates varying from 25 to 70%<sup>38</sup>. Given that the total value outstanding of US\$100 bills is over US\$1tr, this is a discrepancy of some magnitude. Consider also Luxembourg, a country at the other extreme of scale. In 2013, Luxembourg’s issuance of Euro notes and coin amounted to €87.5bn, twice Luxembourg’s GDP. The vast majority of this was in €500 and €200 notes. Indeed, Luxembourg, with 0.2% of the Eurozone’s population, accounts for about 15% of total €500 issuance and towards 30% of €200 issuance. One might presume that much of this has gone elsewhere, but no one knows where. EU rules state that cash amounts being taken in and out of the EU of sums greater than €10,000 must be declared. Yet Luxembourg recorded only 15 such declarations last year<sup>39</sup>.

The lack of reliable data on the use of cash in illicit activities and particularly of high denomination notes means that in building a picture of their use across the different types of crime we are somewhat dependent on case studies and interviews. Nevertheless the overall conclusion on cash seems clear: whilst the role of cash is markedly different across different types of crime, reflecting their distinct “business models”, cash is important in almost all types of crime. As an example, Schneider estimates cash usage of between 10-80% across a number of different types of crime<sup>40</sup>.

FIGURE 7

### Proceeds of selected types of transactional crime and use of cash (2003-2009 period)

Kind of crime	US\$ billion per year	% of total proceeds	% of cash	US\$ billion cash proceeds
Drugs	320	50	80	256
Counterfeit goods	250	39	30	75
Human trafficking	32	5	50	16
Oil	11	2	10	1
Wildlife	8-10	1	50	4-5
Timber	7	1	50	4
Fish	4-10	1	50	2-5
	<b>636-640</b>			<b>362-366</b>

55-60% of total proceeds

Source: Schneider (2015)

<sup>38</sup> Feige (1996); Feige (1997); Feige (2012); Porter, Judson (1996); Doyle (2001)

<sup>39</sup> Europol (2015)

<sup>40</sup> Schneider (2015)

In our view these figures may well significantly underestimate the magnitude and cash intensity of illegal oil sales, given the scale of corrupt oil diversion in some oil-producing countries and ISIS's dependence on oil as a primary source of revenue.

The conclusion on the role of high denomination notes as opposed to cash in general seems also fairly clear. High denomination notes are preferred whenever the volumes are large and/or the detection risk is high. Indeed the Europol report notes information that "€500 notes trade hands at above their face value in the criminal environment, so important is their role in cash transportation for money laundering"<sup>41</sup>.

### **The Role of High Denomination Notes in Drug Trafficking.**

By far the largest quantum of income from transnational organized crime is derived from the illicit production and sale of narcotics. UNODC estimates drug-trafficking revenues amount to about 0.4-0.6% of global GDP, or roughly US\$300-450bn. With over three-quarters of drug purchases occurring in the North American and European markets, the dollar and euro play a central role in facilitating the illegal drug trade and moving ill-gotten proceeds across international borders<sup>42</sup>.

In the drug economy, cash dominates. Sales of illicit narcotics are almost exclusively conducted as cash transactions. As a result, large amounts of currency accumulate at collection points and across supply lines over relatively short periods of time. Storing, transporting and smuggling the proceeds of drug sales is a key operational challenge for international syndicates keen to hide the proceeds of their crimes from authorities. Cash derived from sales across the United States is typically taken to regional counting houses in major cities, converted into higher denomination notes, vacuum sealed to further reduce bulk then "concealed in the structure of cars or articulated trucks that are hitherto unknown to law enforcement"<sup>43</sup>. The United States Custom and Border Patrol confirm that most proceeds from illicit drugs are transported as bulk cash, with an estimated US\$20- 30bn in currency crossing from the United States across the border with Mexico each year<sup>44</sup>.

Indeed, as governments have increased scrutiny and control over formal payment systems, cash smuggling has become the principal mechanism for distributing proceeds through global drug production chains<sup>45</sup>. The increased use of cash partially explains the rise in the number and size of drug related seizures at ports and points of entry in both the United States and Continental Europe.

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<sup>41</sup> Europol (2015)

<sup>42</sup> UNODC (2013)

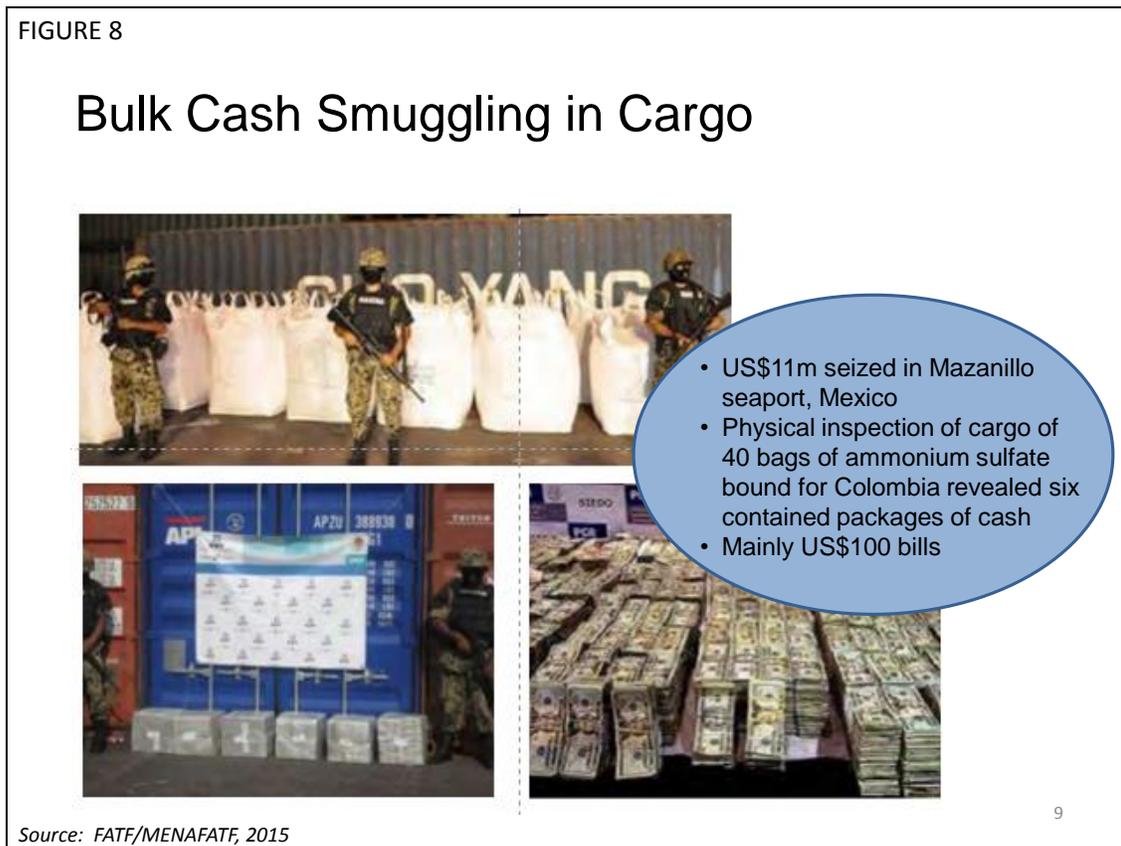
<sup>43</sup> Financial Action Task Force ("FATF") (2015)

<sup>44</sup> US Public Broadcasting Service (2012); Business Insider (2012)

<sup>45</sup> Organization of American States ("OAS")

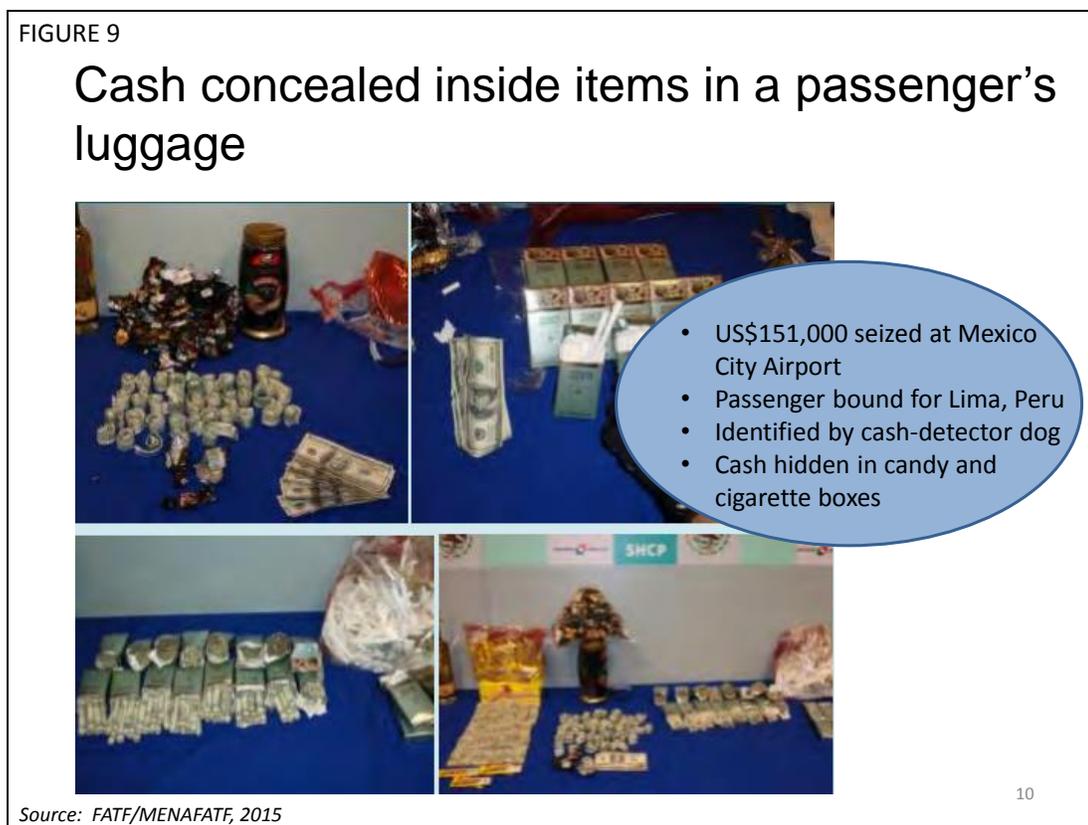
High denomination notes play a critical role in the business models of drug traffickers given the sheer scale of funds involved. High denomination notes enable drug traffickers to store and smuggle enormous sums with minimum costs and risks of detection. Whilst there is no reliable data to establish the precise role and extent to which high denomination notes are used, data from seizures can be used as indicators. However, even seizure data must be treated with caution, since it represents less than 1% of smuggled cash and obviously, a sample that has been demonstrably less successful in avoiding interception.

Yet even accepting this caveat, seizure cases do provide powerful illustrations. For example, the single largest drug cash seizure to date occurred in March 2007 when approximately US\$205.6m was confiscated in Mexico, principally denominated in US\$100 bills, all of which appeared to be legitimate (i.e., non-counterfeit)<sup>46</sup>. In another example, shown in Fig 8 , US\$11m, mainly in US\$100 bills, was seized at Manzanillo seaport in Mexico in September 2009, concealed within a shipment of ammonium sulphate to Colombia.



<sup>46</sup> Los Angeles Times (2007)

Increasingly the United States Department of Justice, the Drug Enforcement Agency and Immigration and Customs Enforcement agencies are stopping large shipments of euros that are transiting through the United States as part of the Colombian cocaine trade. For example, in 2007 United States Federal Agents confiscated 12,224 individual €500 notes (worth €6.1m) at Miami airport, which investigators identified as being part of a US\$1.4bn cocaine money-laundering scheme. The notes were shipped in sealed, tamper-resistant plastic bags<sup>47</sup>. Fig 9 shows a drug seizure in Mexico City airport in 2011. The passenger was on a flight to Lima and was searched after a positive indication from a cash detector dog. The passenger was carrying US\$151,000 in US\$100 bills.



In fact, financial and crime experts suggest a trend for drug traffickers to prefer euros to dollars, given the availability of larger denomination notes<sup>48</sup>. As the UNODC noted in 2010 “the euro, particularly the high value €500 note, has become an important secondary currency for drug traffickers”<sup>49</sup>. Citibank economist Willem Buiters argues that the availability of high denomination notes are “making the euro the currency of choice for underground and black economies, and for all those who value anonymity in their financial transactions and investments”<sup>50</sup>.

<sup>47</sup> Associated Press (2008)

<sup>48</sup> Grant (2004); La Vanguardia (2010)

<sup>49</sup> UNODC (2010)

<sup>50</sup> The Wall Street Journal (2010)

Large denomination notes make it easier for drug smugglers to carry, store and hide the proceeds of their illicit activities. Money smugglers, or “mules”, carry high denomination notes to repatriate the proceeds of drug trafficking (Figure 10 illustrates some of the techniques used by such mules). For example, in October 2004, a “euro mule” was caught travelling to Colombia carrying €200,000 in his stomach in €500 notes<sup>51</sup>. More recently, in August 2015, a Colombian woman was caught smuggling US\$38,500 having swallowed 64 capsules each containing five US\$100 bills<sup>52</sup>. However, such seizures represent a tiny percentage of the “mule” trips – the vast majority are successful.



Bulk cash transfer also plays a role in more complex drug trafficking money laundering schemes as Figure 11 illustrates. Here cash was couriered from Paris to Belgium, where it was used to buy gold, which in turn was couriered to Dubai, where it was made into jewelry which was sold in India with the profits then wired back to France. This network was estimated to launder €170m per year.

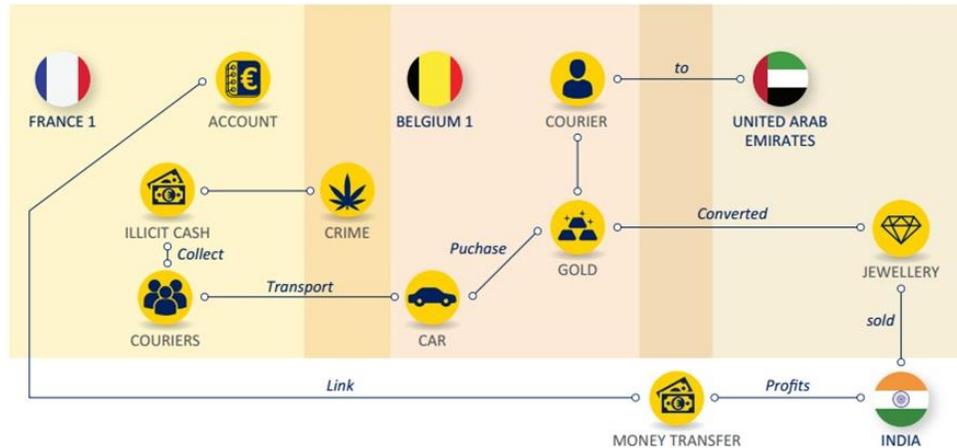
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<sup>51</sup> Gross (2004)

<sup>52</sup> Toronto Sun (2015)

FIGURE 11

## Complex drug money laundering scheme



Source: Europol

As with cross border mules, bulk cash transfer is almost always successful. Consider that total cash seizures by United States Customs & Excise for the decade between 2003 and 2013 amounted to about US\$543m; a tiny fraction of the US\$20-30bn per year estimated to be crossing the United States-Mexico border<sup>53</sup>.

### The Role of High Denomination Notes in Human Trafficking/Smuggling,

In human trafficking and human smuggling, cash is key and high denomination notes probably play a significant role. Whilst often confused, human trafficking and human smuggling are different, as Figure 12 shows.

<sup>53</sup> United States Immigration and Customs Enforcement

FIGURE 12

## Human trafficking and smuggling

	Human trafficking	Human smuggling
Consent	Not required	Required
Exploitation	Required	Not required
Transnationality	Not required	Required

Source: UNODC

Human trafficking is the coercive or deceptive recruitment, transportation and retention of people for exploitative purposes, such as prostitution, slavery or forced labor. Human smuggling is the business of transporting people across borders illegally. Both human trafficking and human smuggling are large. In 2012, the ILO estimated that 21 million people were victims of forced labor, some 5 million in forced sexual exploitation<sup>54</sup>. The numbers of illegal migrants are soaring in Europe<sup>55</sup>. In the United States, 3 million illegal migrants cross the border every year from Mexico, 90% assisted by professional smugglers<sup>56</sup>.

In both human trafficking and human smuggling, cash plays a large role, not least because the ability to move large amounts of money across borders without detection is a critical part of the business model. Depending on the route, migrants will pay up to several thousand dollars per person. This means smugglers need to aggregate, store and move large volumes of cash. Indeed, the United States Treasury's Financial Crime Enforcement Network ("FinCEN") provides lists of indicators of illicit activities to financial institutions: its list of Human Smuggling Red Flags mentions "Frequent exchange of small-denomination for larger denomination bills by a customer who is not in a cash intensive industry. This type of activity may occur as smugglers ready proceeds for bulk cash shipments"<sup>57</sup>.

<sup>54</sup> International Labor Organization ("ILO") (2012)

<sup>55</sup> BBC (2016)

<sup>56</sup> UNODC (2010)

<sup>57</sup> United States Department of the Treasury FinCen (2014)

In human trafficking the revenues from prostitution or cheap labor are often in cash. Where they are not in cash, such as illegal cyber-porn paid for with credit cards, the revenues will typically be converted into cash as part of the money-laundering process. The numbers can be large: estimates for profits from sexual or labor exploitation range from US\$100,000-€160,000 per adult per year and from sale of children of €20,000 per child<sup>58</sup>.

In both cases, the money is often moved across borders in cash and stored in cash. Moreover, in both arenas, cash-intensive businesses are used to co-mingle cash and thus disguise sources<sup>59</sup>.

Whilst human trafficking and human smuggling are different, both involve significant flows of cash, and whilst there is little direct evidence of the role of high denomination notes, given the amounts involved it seems reasonable to conclude that they are used in multiple aspects of the business model.

### **The Role of High Denomination Notes in Other Types of Acquisitive Crime**

In other types of acquisitive crime, such as fraud, counterfeiting, cyber-crime, theft, arms-trafficking or racketeering, the role of high denomination notes will depend on whether the revenues from the crimes are in cash, the quantum of money involved and the need of the criminals to move and store the funds. Where the revenues are in cash, high denomination notes may play a role in the receipt of revenues if the amounts are large enough, or be used to aggregate and transport funds gathered in smaller amounts and denominations. However, it should be acknowledged that a lot of petty crime, such as mugging, pick-pocketing or domestic burglary involves sums too small to necessitate the use of larger denominations. Where the criminal proceeds are not generated in cash, such as in complex fraud, or in cyber-scams, conversion into cash is typically a key part of the money-laundering process. Here again, the need for high denomination notes will depend on the quantum involved<sup>60</sup>.

### **The Role of High Denomination Notes in Terrorist Finance**

It is worth considering terrorist finance separately from other types of financial crime given the significance of the threat and the fact that terrorism, unlike acquisitive crime, generates no revenues directly. The financial flows are all about funding the organization and its terrorist operations. Yet money is a priority for terrorists: as an Al-Qaeda operative remarked: “There are two things a brother must have for jihad, the self and money”<sup>61</sup>. Terrorist organizations use violence and their control of specific geographies and communities to build illegal businesses (e.g., drug trafficking), seize assets (e.g., Islamic State’s looting of banks in Mosul) and extract “taxes” or protection. Development and control of such sources of revenue can become a powerful sustaining objective, in parallel with or eclipsing the terrorists’ stated goals.

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<sup>58</sup> FATF (2011)

<sup>59</sup> MONEYVAL (2005); FATF (2011)

<sup>60</sup> Europol (2015); World Economic Forum (2015)

<sup>61</sup> National Commission on Terrorist Attacks Upon the United States (2004)

According to one of the most comprehensive analyses of terrorist financing methods by Freeman and Ruehsen<sup>62</sup> terrorists prefer payment mechanisms that:

- do not attract attention due to their volume (the biggest disadvantage of using cash)
- are not easily detectable (e.g., cash, hawala or money service businesses versus banks)
- are convenient for the sources of funds (often cash-based)
- are simple and do not require sophisticated technology (e.g., cash, not Bitcoin)
- do not involve high fees (e.g., hawala, mobile money or money transfers versus cash)
- are quick (e.g., cash).

As Figure 13 demonstrates, individual terrorist operations often require strikingly small amounts of money.

FIGURE 13

### Cost of terrorism – selected examples

Date	Incident	Cost
1993	World Trade Center bombing in New York	US\$19,000
2002	Bali bombing	US\$25,000
2004	Madrid train bombing	US\$10,000
2003	Jemaah Islamiyah operatives captured in Cambodia	Carrying US\$50,000
2001	9/11 bombings	13 hijackers received US\$10,000 each
2015	Charlie Hebdo attacks in Paris	€6,000

*Source: Center for Homeland Defense and Security*

<sup>62</sup> Freeman, Ruehsen (2013)

However, terrorist organizations typically need and have much deeper financial resources than the costs of individual operations might suggest. This enables them to recruit, train and pay individuals, acquire weaponry and other equipment and sustain systems of patronage. For these funds terrorist organizations often rely on a variety of other illicit activities, including drug trafficking, kidnapping and extortion (see Figure 14).

FIGURE 14

### The world's 10 richest terrorist organisations

Organisation	Annual turnover	Main sources
ISIS	US\$2bn	Oil trade, kidnapping/ransom, protection, taxes, bank robberies, looting
Hamas	US\$1bn	Taxes/fees, financial aid/donations
FARC	US\$600m	Drug production/trafficking, kidnapping/ransom, mining, fees/taxes
Hezbollah	US\$500m	Financial aid/donations, drug production/trafficking
Taliban	US\$400m	Drug production/trafficking, fees/taxes, financial aid/donations
Al Qaeda	US\$150m	Financial aid/donations, kidnapping/ransom, drug trafficking
Lashkar-e-taiba	US\$100m	Financial assistance/donations
Al-Shabaab	US\$70m	Kidnapping/ransom, illegal trade/piracy, fees/taxes
Boko Haram	US\$52m	Kidnapping/ransom, fees/taxes, protection, bank robberies/looting
Real IRA	US\$50m	Smuggling/illegal trade, financial aid/donations

*Source: Forbes (2014)*

The richest terrorist organization is ISIS (variously known as ISIS, IS, Islamic State, ISIL or Daesh). Estimates of ISIS's annual revenues vary from US\$500m to \$2bn<sup>63</sup>. The higher number (as shown in Figure 14) is probably an over-estimate. Unlike most terrorist organizations ISIS has only limited reliance on donations from abroad. As Figure 15 suggests, most of its income derives from oil production and smuggling, taxation and confiscation, and looting (of banks and antiquities)<sup>64</sup>. As one Syrian rebel commander who used to fight alongside ISIS put it "They leave no source of money untouched – this is their lifeblood"<sup>65</sup>.

<sup>63</sup> Forbes (2014); IHS (2015) The scale of the discrepancy demonstrates how little we know

<sup>64</sup> In Syria and Iraq, IS devotes considerable attention to its economic activities, producing budgets and systems of tax levies (zakat) and customs tariffs

<sup>65</sup> Financial Times (2015)

FIGURE 15

## ISIS – Economic activities and use of cash

Overview	<ul style="list-style-type: none"> <li>• Richest terror organization with annual revenue variously estimated at between US\$500m-2bn, plus substantial assets (\$500-1bn)</li> <li>• Perhaps 40,000 fighters in Iraq and Syria, with small groups in other countries</li> </ul>
Economic activities	<ul style="list-style-type: none"> <li>• Paying for military operations – mainly in Iraq and Syria, but also terror activities in other countries</li> <li>• Maintaining control of significant parts of Iraq (e.g. Mosul) and Syria (e.g., Raqqa)</li> </ul>
Sources of funds	<ul style="list-style-type: none"> <li>• Oil production and smuggling (up to US\$500m per year)</li> <li>• Taxes (20% on business; 5-10% on farming)</li> <li>• Confiscation/extortion</li> <li>• Looting of banks (rumoured to have taken \$450m from banks in Mosul) and antiquities</li> <li>• Iraq government salaries/pensions (from ex-civil servants/military now with IS)</li> <li>• Customs duties on trade (estimated at c.\$140m per year)</li> <li>• Donations/remittances (relatively limited)</li> </ul>
Use of cash/HDN	<ul style="list-style-type: none"> <li>• Profess disdain for conventional currency, advocating return of 'gold dinar'</li> <li>• But in practice use cash for almost all activities, a mix of Iraqi dinar, Turkish lira, Syrian pounds and US dollars</li> </ul>

Source: HIS conflict monitor, FT, Vice News, Washington Post

The biggest source of money for ISIS is oil smuggling, estimated at its peak to be around US\$500m per year, but probably significantly less now, given air-strikes on pumping stations, refineries, pipelines and oil tanker convoys by the US-led coalition, as well as the decline in the oil price. There is very little reliable information on how the oil is sold, but it appears that much is sold for cash, largely US dollars (and given the volumes almost certainly US\$100 bills). Sometimes payments are made to the bank accounts of ISIS sympathizers elsewhere, with the money then couriered into ISIS territory in cash (again, almost certainly in US\$ or Euro). Figure 16 gives a couple of examples of such courier activity.

FIGURE 16

## Examples of cross-border cash transfers to ISIS

Amal El-Wahabi convicted in the UK in 2014 for coercing a friend to carry €20,000 in €500 notes concealed in her clothes to Turkey to fund her husband's jihad for ISIL in Syria

Five men arrested at Johannesburg airport in September 2015 carrying 12 bags with approximately \$6 million, of which \$1.7 million was in Rand, and \$3.8 million in US dollars

Source: 'UK National Risk Assessment of Money Laundering and Terrorist Financing, October 2015; Fox News, September 2015

14

Looking at terrorism more generally, there is limited robust data, but ample evidence from published analysis of individual incidents, court cases and unpublished sources to confirm the importance of cash and high denomination notes. Cash is important in the raising of funds, either because the money is derived from criminal activity, or because legal sources seek to disguise their support of terrorism. High denomination notes are crucially important when terrorist organizations seek to move large quantities of money, especially across borders, since this is when the detection risk is greatest.

One very recent example vividly demonstrates the inter-linkages between drug trafficking and terrorism. In February, 2016 the United States Drug Enforcement Agency (“DEA”) announced details of an enforcement action conducted by the DEA and European agencies targeting a large drug trafficking and money laundering operation generating funds for Hezbollah. This exercise “uncovered an intricate network of couriers who collect and transport millions of euros in drug proceeds from Europe to the Middle East. The currency is then paid in Colombia to drug traffickers using the Hawala disbursement system”<sup>66</sup>.

### **The Role of High Denomination Notes in Facilitating Corruption.**

There are many types of corruption, ranging from small bribes to junior officials, such as police officers or customs agents, through larger payments to secure project approvals or specific licences, all the way to complete kleptocracy, when states are run to enrich their rulers. Most analysts distinguish three types of corruption:

- Petty corruption involving gifts or cash to public official to obtain favors, expedite approvals or remove obstacles.
- Grand corruption at the highest levels of government, where senior officials subvert the legal system and institutional processes.
- Systemic or endemic corruption, where the legal system and institutional process become themselves corrupt.

In petty corruption, bribery is the most common form. In grand and systemic corruption, other forms of corruption are widespread, such as embezzlement, extortion, nepotism and self-dealing.

Cash and high denomination notes play different roles across the different types of corruption. In petty corruption cash is the most common mechanism by which the bribe is paid – the brown envelope or briefcase discretely handed over. Whether high denomination notes are used will depend on the quantum: where the amounts are large, high denomination notes will often be used to minimize bulk and weight. Yet it should be acknowledged that much petty corruption is below the level at which high denominations are required.

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<sup>66</sup> United States Drug Enforcement Agency (2016)

In grand and systemic corruption, cash is sometimes the mechanism of payment, but where there is more continuous pilfering of government funds, such as through commissions, over-invoicing, or the transfer of mis-priced assets, then the initial money transfer will often be through the banking system. However, as in other forms of crime, cash plays a vital role in the laundering of corruption proceeds. By withdrawing funds from the banking system and moving and storing them in cash, corrupt officials and politicians seek to break the link with the original source.

The ongoing FIFA scandals are illustrative. It appears that some payments of hundreds of thousands of dollars were made in cash. In other instances, payments were routed through front companies, with the recipients then converting the money into cash or wiring them to other accounts<sup>67</sup>.

As in drug-trafficking, high denomination notes are particularly attractive to those involved in corruption given that they maximize value versus bulk and weight. There is plenty of evidence of cash seizures relating to corruption, but very little information on the denomination mix of such seizures. Yet anecdotal evidence would suggest that a significant proportion of the large holdings of US\$100 bills in the former Soviet Union and Africa relate to corruption. In Indonesia, Agus Santoso of the Indonesian Financial Transaction Reports and Analysis Centre (PPPATK), commented on Singapore's decision to discontinue the S\$10,000 note, by saying "The S\$10,000 banknote, which is not widely used in Singapore on a daily basis as legal tender, is the bill-of-choice for bribe payers or graft suspects because they can exchange a large amount of rupiah for just a few bank notes." The highest denomination rupiah note is Rp100,000 or less than US\$8. Apparently, "in almost every arrest of graft suspects, the Corruption Eradication Commission (KPK) has seized S\$10,000 bills"<sup>68</sup>. Even long discontinued high denomination notes play a role: in 2012 a witness to a political corruption probe in Quebec spoke of a safe stuffed with CDN\$1000 bills, which had been discontinued more than a decade earlier<sup>69</sup>.

One example from China illustrates the challenges encountered by corrupt officials when there are no high denomination notes. General Xu Caihou was arrested in 2014 for accepting bribes for promotion within the military ranks. The Chinese authorities needed 12 trucks to remove the several million USD equivalent in RMB they found in his home. With the largest RMB denomination (¥100) worth only about US\$16, discretely storing the bribes he had received was clearly a significant problem<sup>70</sup>.

## **The Role of High Denomination Notes By Geography**

Stepping back from the role of high denomination notes in specific sorts of crimes, it is important to recognize that the prevalence and usage of cash and high denomination notes vary significantly by geography, both in the legitimate economy and for illicit purposes.

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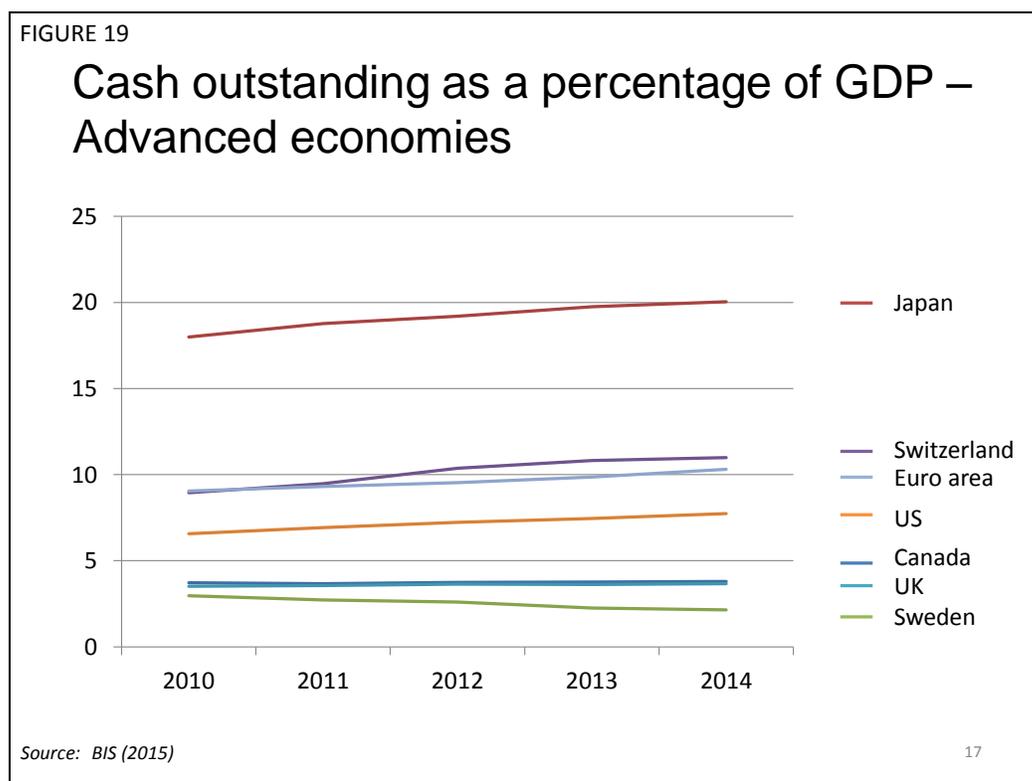
<sup>67</sup> United States Department of Justice (2015)

<sup>68</sup> The Jakarta Post (2014)

<sup>69</sup> National Post (2012)

<sup>70</sup> Financial Times (2014)

Even within the advanced economies there are marked differences in the use of cash, reflecting differences in culture, policy and adoption of electronic means of payment. In the 19 economies surveyed by the Bank of International Settlements, cash outstanding as a percentage of GDP is 7.9%, having fallen slightly over the last five years from a 2010 figure of 8.4%<sup>71</sup>. Yet within this average, there are considerable differences in level and trend in both advanced and developing economies (as Figures 19 and 20 demonstrate).



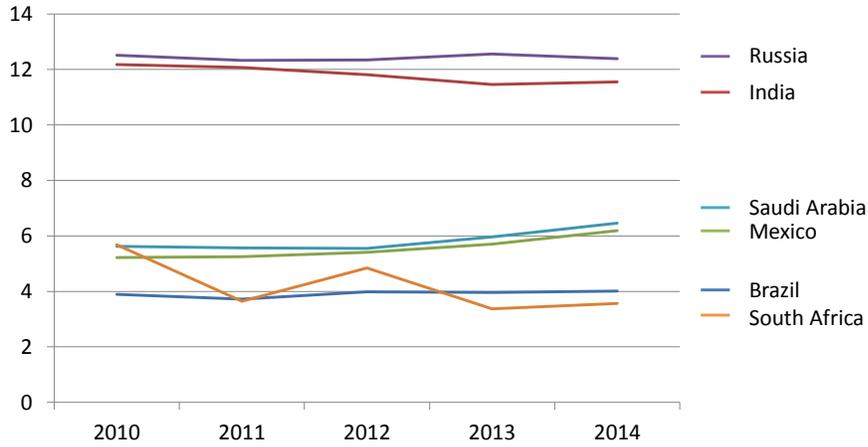
Amongst the advanced economies, at one extreme is Sweden, where cash outstanding as a percentage of GDP is only 2.1%, having fallen from 3.0% in 2010. Sweden is also the only OECD country where the absolute volume of cash in circulation is actually falling. At the other extreme is Japan, where cash outstanding amounts to 20% of GDP, having increased from 18% in 2010. The United States is in-between, with cash outstanding as a percentage of GDP at 7.7%, having increased from 6.6% in 2010. However, this figure overstates the level of cash usage within the United States, since roughly half of United States currency circulates outside the country. This will also be true, but to a lesser extent, with the Euro area figure of 10.3%, which has increased from 9.1% in 2010. The Euro area figure also conceals considerable variation in usage patterns among the Eurozone countries. ECB survey data suggests that whilst cash is the preferred method of making low value payments throughout the EU, it is most often used for higher value payments in Italy, Spain and Austria, least often in France and the Netherlands<sup>72</sup>. The United Kingdom figure for cash outstanding as a percentage of GDP is 3.7%, a small increase from the 2010 figure of 3.5.

<sup>71</sup> Bank for International Settlements (“BIS”) (2015)

<sup>72</sup> ECB (2011)

FIGURE 20

### Cash outstanding as a percentage of GDP – Developing economies



Source: BIS (2015)

Volumes of currency outstanding in less developed markets show a similar dispersion, although typically towards the higher end of these ranges. For example, India is at 11.6% of GDP (12.2% in 2010) and Russia at 12.4% (12.5% in 2010). Brazil, however, is at 4.0% (3.9% in 2010). The use of the United States dollar and Euro in many such markets means that cash/GDP percentages based on locally issued currency understate the role of cash.

Countries also vary enormously in the mix of denominations in issued currency.

FIGURE 21

### High denomination notes in the advanced economies

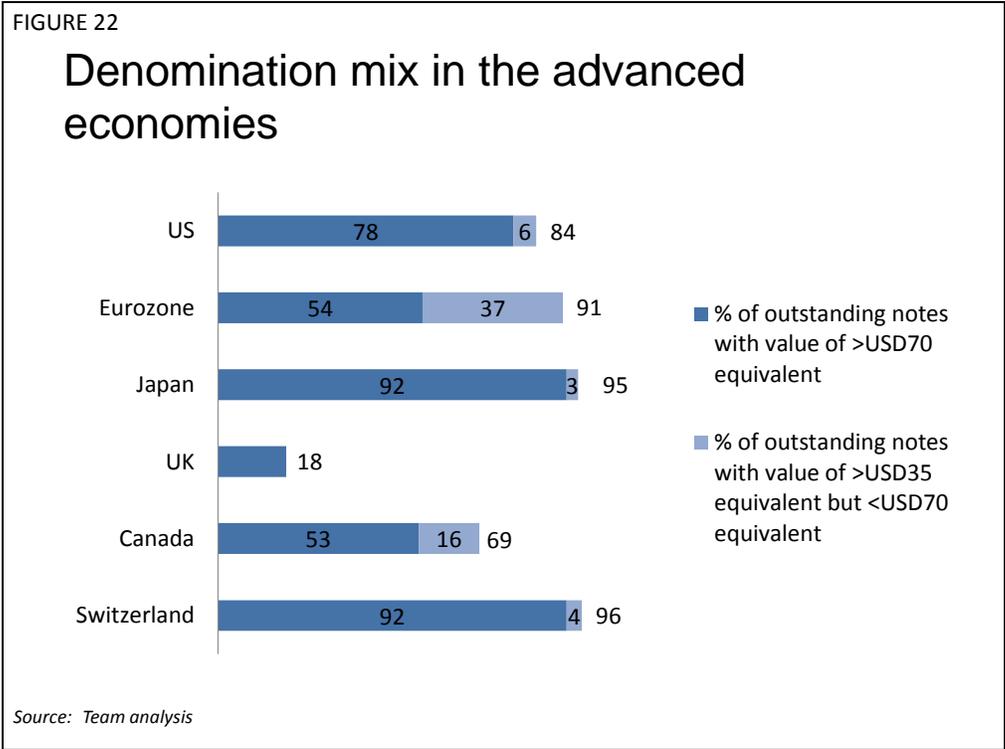
Country	Currency note	Highest denomination	Approximate value in US\$	Outstanding in US\$	% of total cash	% of GDP
US	USD	\$100	100	1014	78	5.9
Eurozone	Euro	€500	532	322	29.9	4.7
Japan	JPY	¥10,000	81	67	92	17.5
UK	GBP	£50	76	17	18	0.6
Canada	CAD	\$100	75	28	53	2.1
Switzerland	CHF	CHF1,000	1006	39	92	5.5

Source: Team analysis

As Figures 21 and 22 show, the most notable issuers of high value, high denomination notes are:

- The Eurozone, where the €500 note is the most valuable note in the world with an issued volume in the hundreds of billions of dollars equivalent. Although the €500 note represents only 30% of total Euro cash outstanding, this amounts to about €300bn.
- The United States, where the US\$100 bill is the largest denomination in the world in terms of issued volume, with over US\$1tr outstanding, representing 78% of the value of United States dollars issued.
- Japan, where the ¥10,000 note represents a remarkable 92% of total cash outstanding.
- Switzerland, where the CHF1,000 note is the most valuable note in the world still being issued, with an outstanding of CHF39bn

Of course it is not just the highest denomination note that matters. This is particularly true in the Eurozone, where there is not just a €500 note, but also €200 and €100 notes, both worth more than the US\$100 bill. Figure 22 illustrates the differing denomination mixes of key advanced economies, showing the proportion of cash outstanding accounted for by notes with a value of over US\$35 equivalent and US\$70 equivalent.



As Figure 23 illustrates, most developing countries do not issue high denomination notes. The most notable exceptions are Saudi Arabia, with the 500 riyal note, and Russia with the 5000 rouble note.

FIGURE 23

## High denomination notes in middle income countries

Country	Currency	Highest denomination note	Approximate value in US\$	Outstanding in US\$bn	% of total cash	% of GDP
China	Yuan	100	16	N/A	N/A	N/A
India	rupee	1000	15	64	 37	 3.1
Indonesia	Rupiah	100,000	7	24	 63	 2.7
Russia	Rouble	5,000	77	82	 69	 4.4
Saudi Arabia	Riyal	500	133	39	 80	 5.2
South Africa	Rand	200	14	N/A	N/A	N/A
Turkey	Lira	200	35	8	 28	 1.0
Mexico	Pesos	1,000	60	5	 8	 0.4

Source: Team analysis

Singapore and Hong Kong should also be mentioned. Until it was discontinued in July 2014, Singapore’s S\$10,000 note was the most valuable note being issued anywhere in the world, with a US\$ equivalent value of around US\$7,100. The Monetary Authority of Singapore based their decision to discontinue this note on the “risks associated with with large value cash transactions and high value notes”<sup>73</sup>. However, Singapore still issues S\$1000 and S\$500 denominations, worth roughly US\$710 and US\$360. The S\$1,000 bill accounts for 39% of the value of Singapore’s issued currency, or about US\$9.8bn. Hong Kong also issues a HK\$1,000, worth roughly US\$130. The outstanding volume of HK\$1,000 notes at US\$21.8bn is about six times greater than it was in 1997 and almost 8% of GDP<sup>74</sup>. Although it represents 49% of the total outstanding value of HK\$ currency, the HK\$1,000 note is not widely used or accepted. Some claim it is the “medium of choice” for mainland-based money laundering<sup>75</sup>.

Measures of cash outstanding against GDP do not provide an accurate portrayal of the way cash is used in everyday life. In the advanced economies which issue high denomination notes, such as the United States, Japan, Switzerland and the Eurozone, these denominations account for a large percentage of the total cash outstanding, but are typically used for a tiny percentage of transactions by a small subset of the population. For example, 56% of Eurozone adults claim to have never had a €500 note in their possession and 75% claim to have used a €500 or €200 note at most once per year.

<sup>73</sup> AsiaOne Business (2014)

<sup>74</sup> Hong Kong Monetary Authority (2014); BIS (2015)

<sup>75</sup> South China Morning Post (2015)

Those Eurozone citizens who do use such high denomination notes are likely to be male, aged between 25 and 54, self-employed, and living in Luxembourg, Italy, Austria, Belgium and Spain<sup>76</sup>. Similarly, in the United States, only 5.2% of adults carry a US\$100 bill in their wallet<sup>77</sup>. In most advanced economies, ordinary people do not typically use high denomination notes. They are used by criminals, and to a limited extent, by the wealthy. The exception might be Japan, given the widespread use of cash and the prevalence of the ¥10,000 note.

Moreover, a large proportion of the high denomination notes issued by advanced economies are taken overseas. Bundesbank analysis suggests that over 70% of the volume of €500 notes issued in Germany between 2002-2009 went overseas, with almost half the issued volume going to Russia alone; a large proportion of the €500 notes issued in Austria went to the Balkans<sup>78</sup>. As mentioned earlier, estimates of the proportion of United States currency held overseas vary between 25% and 70%, but the share of US\$100 bills held overseas will be even higher<sup>79</sup>. United States Treasury estimates in 2006 suggested roughly US\$80 bn was held in Russia, US\$50 bn in each of China and Argentina and \$10bn in Turkey<sup>80</sup>. However, these figures should be treated with considerable caution. Some indication of the importance of the US\$100 bill in countries like Russia was provided by Russians' reaction to the introduction of the new series of notes in 1995. Although the United States made it clear that the old series would continue to be honoured indefinitely, there was a degree of panic and people paid a premium to obtain the new series<sup>81</sup>.

In most developing countries high denomination notes in local currency are rarely of high value in dollar terms. However, high value high denomination notes from advanced economies, such as the US\$100 bill or the €500 note, often play a significant role. Legitimate use of such foreign currency high denomination notes might include protecting savings from kleptocratic regimes, providing a stable monetary alternative in hyper-inflationary environments (e.g., “dollarization” in Zimbabwe and Argentina) or as emergency resources for use in times of war or civil collapse. Yet whilst there is little reliable data, the evidence suggests that foreign high denomination notes are often and perhaps mainly used for illicit purposes: for tax evasion, financial crime and corruption. Using official Federal Reserve data, Hellerstein and Ryan demonstrate that a larger informal economy is correlated with greater demand for US currency<sup>82</sup>. A recent Financial Action Taskforce (“FATF”) survey asked financial crime officials from nearly 70 countries which currencies were most often encountered in suspected criminal cash transport. As Figure 24 shows, US dollars and Euro were by far the most often encountered. A large number of currencies were identified in the “Other” category with

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<sup>76</sup> ECB (2011)

<sup>77</sup> Federal Reserve Bank of Boston (2015)

<sup>78</sup> Bartsch, Rosi, Sietz (2011)

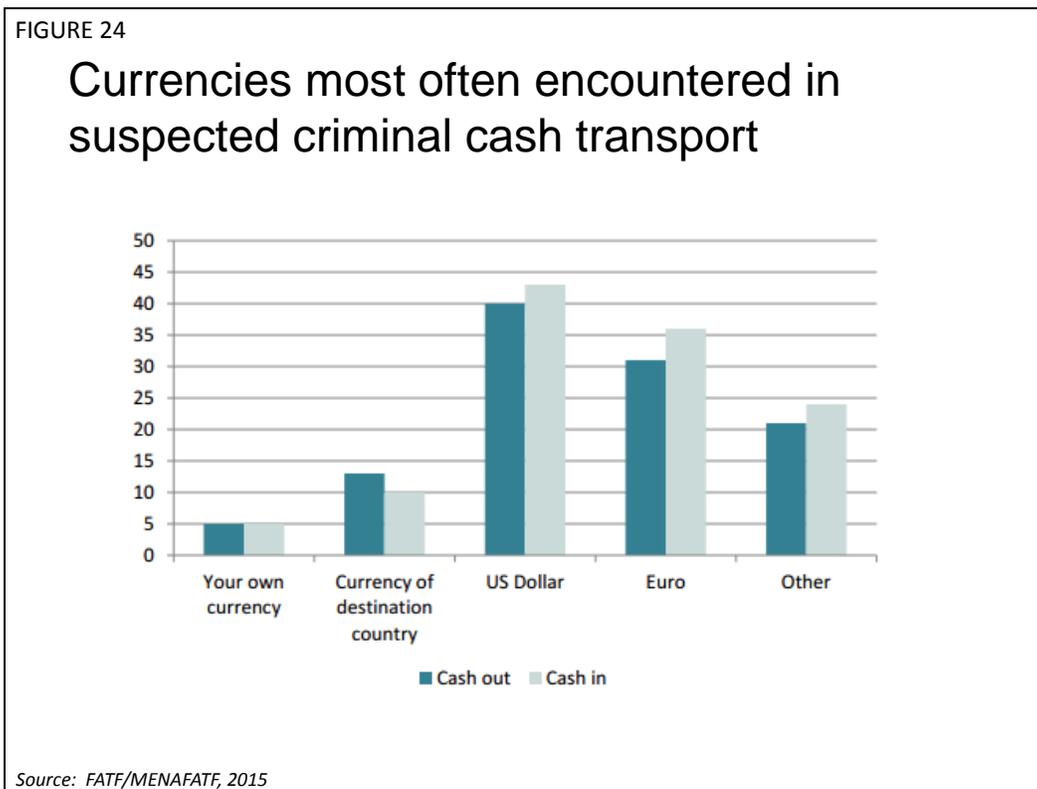
<sup>79</sup> Feige (2012), Porter, Judson (1996), Doyle (2001)

<sup>80</sup> United States Department of the Treasury (2006)

<sup>81</sup> The New York Times (1995)

<sup>82</sup> Federal Reserve Bank of New York (2009)

the most often encountered being (in order), the British pound, the Swiss franc, the Chinese yuan, the Canadian dollar and the Hong Kong dollar<sup>83</sup>.



In fact foreign high denomination notes have their attractions to criminals even in advanced economies. In May, 2010, the United Kingdom banned banks and currency exchange offices from accepting and distributing the €500 note. As the United Kingdom's Serious and Organized Crime Agency ("SOCA") said at the time "90% of the notes sold in the United Kingdom are in the hand of organized crime...an eight-month analysis of movements of the note in the United Kingdom revealed that it was almost exclusively used by money launderers shifting cash for major crime gangs"<sup>84</sup>.

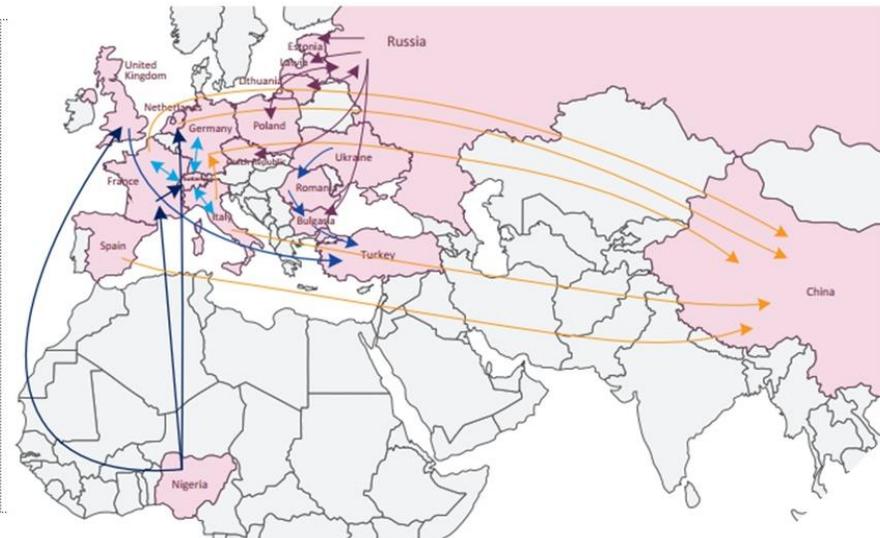
Europol's report on the illicit use of cash includes a revealing map (Figure 25) showing the key countries of destination and origin for cash movement in and out of the EU.

<sup>83</sup> FATF (2015)

<sup>84</sup> BBC (2010)

FIGURE 25

### Map of key countries of destination and origin for cash movements in and out of the EU



Source: Europol

Amongst the most notable flows are:

- 1) The flows out of Nigeria into Europe, presumably including the proceeds of corruption.
- 2) The flows from Europe into China, apparently largely related to the sale of counterfeit goods.
- 3) The flows in and out of Switzerland, quite possibly related to tax evasion and perhaps corruption.
- 4) The flows to Turkey, most likely related to drugs and human trafficking.
- 5) The complex pattern of flow between Russia and eastern and Central Europe, likely linked to a mixture of corruption, human trafficking, tax evasion and other forms of crime.

Despite all the differences between countries and the information gaps on usage, the data and surveys suggest a number of common conclusions about the **legitimate** use of cash and HDN:

- Lower value notes still play an important role in the legitimate functioning of all economies as a highly convenient mechanism for making low value payments. The extent of usage varies by country depending on the adoption of electronic alternatives and cultural factors, but in every country the majority of low value payments still take place in cash.

- In most parts of the world, domestically issued high denomination notes play a very limited role in everyday transactions. To the extent that they have legitimate uses, it appears to be as a savings vehicle, a status symbol, an emergency resource, or for travelling. Such legitimate utilization of higher denominations appears largely confined to the wealthy (since most people will not possess surpluses requiring storage in high denomination notes) and probably accounts for a very small proportion of the outstanding volume.
- Foreign currency high denomination notes are used in countries where there is less confidence in the banking system, as a savings vehicle and for payments. At the extreme, where economies operate in a state of informal “dollarization”, US\$100 bills play a significant role. Usage of foreign high denomination notes such as the \$100 bill or €500 note in such countries will inevitably be skewed towards the elite, given typical patterns of financial asset distribution in such countries.

There are also some common conclusions about the **illegitimate** use of cash:

- Cash is the preferred mechanism for tax evasion and crime everywhere, given payor/payee anonymity, the absence of a transaction record and universal acceptance. This is true across all denominations. However, low denomination notes play an important role in the functioning of the legitimate economy, whilst higher denominations play very little role. That is why this paper focus on the elimination of high denomination notes, whilst accepting that the balance of benefits and costs for low denomination notes still appears advantageous for society.
- High denomination notes are the preferred form of cash for conducting illicit activities where significant values have to be transferred, stored, or moved. As an indicator of the incremental value provided by larger denominations, criminals will pay a premium for €500 notes<sup>85</sup> and US\$100 bills often attract an exchange rate premium relative to smaller US\$ denominations in many emerging markets (Figure 26).

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<sup>85</sup> Europol (2015)

FIGURE 26

## Exchange rate premia for US\$100 bills

Country	USD FX Rate or Black Market rate, if applicable (11/1/15)	Premium for \$100 bills over other USD denominations
Argentina	15.75	4-5%
Cambodia	4050	2-3%
Ethiopia	21.02	10-20%
India	66	5-10%
Indonesia	13538	5%
Myanmar	1277	10%
Rwanda	750	3-5%
Senegal	610	5-10%
Tanzania	2154	10%
Thailand	35	3-5%
Uganda	3460	5-10%
Ukraine	22	10%

Source: Team analysis

- High denomination notes are the preferred method of illicit cross border funds transfer: put simply “The use of high denomination foreign currency in small sized bundles of large value is the easiest method of physically moving funds across borders”<sup>86</sup>. Moreover, as banks respond to regulatory pressures to enhance transaction surveillance of cross-border transactions by investing in ever more sophisticated systems and capabilities, the attractions of high denomination notes will simply increase.

### The Case for Eliminating High Denomination Notes

Eliminating high value, high denomination notes would not entirely eliminate tax evasion, financial crime and corruption, but would raise the costs and risks of such activities significantly. It would, in the words of our title, “Make it Harder for the Bad Guys”. Without high denomination notes, it would simply be more difficult for criminals to make payments, to move money and to store it. It would be more expensive and the detection risks would be greater.

<sup>86</sup> United Kingdom Treasury & Home Office (2015)

How much difference would this make to the level of illicit activity? The ideal way to answer this question would of course be to draw on previous real-life examples. Unfortunately, there do not appear to be any clear cut cases to analyze. Where high denomination notes have been eliminated before, such as the withdrawal of the US\$500, US\$1,000, US\$5,000 and US\$10,000 notes in the United States in 1969 the amounts outstanding were already so small by the time they were formally eliminated, as to make impact negligible. Where high denomination notes and cash more generally play a small and declining role, such as in Sweden, crime rates are low and tax compliance high, but this might also be partly explained by other factors, such as the degree of socio-economic homogeneity, or other policies, such as the level of transparency in individual tax returns<sup>87</sup>.

One interesting example is the United Kingdom's 2010 decision to restrict wholesale distribution of the €500 note in the United Kingdom on the basis that "demand for the €500 note within the UK was almost entirely for criminal purposes". At the time the UK SOCA predicted that criminals would substitute for lower denomination notes such as the €200 note and US\$100 bill<sup>88</sup>. In 2012, an analysis of the impact confirmed this prediction: "there appears to have been a smooth transition by criminal organisations from use of the €500 note to the €200 note and high denomination banknotes in other currencies (particularly the \$100 bill)"<sup>89</sup>. At one level, this must have been disappointing: the language of "smooth transition" does not suggest much disruption to criminal activity. Yet this was not a surprise: total demand for €500 notes had been estimated at roughly €500m – a substantial sum, but accounting for a small proportion of organized crime flows amounting to several billions of British pounds per year<sup>90</sup>. Moreover, this result confirms the hypothesis that the best substitute for a high denomination note is another high denomination note, not another means of payment. It also supports our argument that issuers of high denomination notes should act together and should consider eliminating not just the highest denomination in any currency (so the €200, as well as the €500). SOCA's 2012 analysis also concluded that "There is very little legitimate demand for high denomination banknotes in general and HDE [high denomination euro] notes in particular, in the UK, and there are very few legitimate reasons for a person to carry thousands of pounds worth of HDE notes either out of or in to the UK. The larger the amount of HDE notes carried, the less likely it is that the person carrying them has a legitimate reason for them being in his or her possession"<sup>91</sup>.

Whilst there is scant empirical evidence of the impact of eliminating high denomination notes, there are studies that show that switching from cash to electronic means of payment can cut crime. To give a recent example from the United States, analysis of conversion of welfare delivery benefits from paper checks to electronic benefit transfer systems where recipients received and expended their benefits using debit cards, showed a 9.8% decrease in the overall crime rate as a result of the switch. Implementation of the

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<sup>87</sup> Swedish Tax Agency (2014)

<sup>88</sup> United Kingdom Serious Organised Crime Agency ("SOCA") (2010)

<sup>89</sup> UK SOCA (2012)

<sup>90</sup> Miles, Skodbo, Blyth (2013)

<sup>91</sup> UK SOCA (2012)

program had no impact on non-acquisitive crimes like rape<sup>92</sup>. Whilst we must be cautious in extrapolating directly from such studies, since they do not focus on denomination, let alone high denominations, their results do support the underlying contention that cash facilitates and fuels illicit activity.

Without much in the way of empirical evidence, we must largely rely on first principles to assess the potential impact of eliminating high denomination notes.

If the reason tax evaders and criminals use high denomination notes is because they offer the advantages of cash (anonymity, lack of transaction record, universal acceptance) with the minimum of cash's disadvantages (bulk, weight), then the impact of their elimination will be a function of: first, how changes in these attributes affect the business model for the particular type of illicit activity; and second, the availability of substitutes.

Forcing criminals to use lower denomination notes or non-cash alternatives will have the most impact where the attributes of larger denominations are most valuable. This will be where the criminal activity involves large amounts of money, a lot of movement of money and a high degree of detection risk. Drug-trafficking is the most obvious example of a criminal activity requiring the movement (often cross-border) of very large amounts of money. Terrorism exemplifies the kinds of activity where avoiding detection is the priority.

As the UK experience with the €500 note demonstrates, the availability of substitutes is a key driver of impact, and this fact underscores the importance of the major issuers of high denomination notes pursuing this as a collective endeavor. The best substitute for a high denomination note is another high denomination note, either the next highest denomination in the same currency, or a high denomination note from another currency. Whilst we would argue that it would still make sense for one country to stop issuing high denomination notes on a unilateral basis, the impact would be far greater if the key issuers like acted simultaneously.

The impact of eliminating high denomination notes would also depend on how it was done. At one end of the spectrum, central banks could quietly stop printing the highest denominations and gradually withdraw the notes from the system as they were presented to banks. Alternatively, governments could make stopping the printing of high denomination notes part of a broader package of actions, designed to curtail their use and accelerate their elimination. For example, governments could prohibit the use of existing high denomination notes in certain environments, could impose limits on the scale of cash transactions (as Italy, France and others have done), could specify certain categories of bank branch where high denomination could be deposited, or could instruct banks to seek more information on source of funds when high denomination notes were deposited.

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<sup>92</sup> Wright, et al (2014)

The most assertive approach to eliminating high denomination notes would be to declare a date after which they would no longer be legal tender. This would avoid the problem of discontinued high denomination notes lingering in the underground economy. However, such an approach would run against the conviction of most central banks that they cannot and should not do this, on the basis that any suggestion that there are circumstances in which a note issued by the central bank would not be honoured would undermine confidence.

The absence of empirical data and the dependence on many different factors makes it difficult to be definitive about the precise impact of eliminating high denomination notes. However, it is possible to illustrate what the result might be by considering specific types of illicit activity and devising potential scenarios of impact.

For example, consider the cross-border flows of cash between the United States and Mexico from **drug trafficking**. These amount to billions, which in turn means thousands or tens of thousands of trucks, pick-ups and individual couriers carrying cash. As pointed out earlier, interdiction rates are very low: against cross-border flows of the order of US\$20-30bn per year, total seizures in the decade to 2013 amounted to under US\$550m. Suppose the US\$100 bill was eliminated and the drug traffickers switched entirely to US\$50 bills. All else equal, the number of trucks, pick-ups and couriers would have to double. Costs and interdiction rates would probably more than double.

Taking the logic further, suppose US\$50 issuance was constrained so that the drug traffickers had to rely largely on US\$20 bills. The transportation task would increase by up to five times. It would be very surprising if this did not have a very significant impact on costs and interdiction.

A similar logic prevails for **human trafficking, other types of acquisitive crime and corruption**. Wherever large sums are involved, eliminating high denomination notes would lead to increased costs and higher detection risks. Money laundering would become more difficult and more expensive. The impact of eliminating high denomination notes would be most significant on high stakes, trans-national crime. There would very little, if any, effect on petty crime.

For **terrorist finance**, given the relatively small sums typically involved in funding individual operations, the argument here is more about increasing the detection risk than the challenge of transporting large sums. But surely anything which makes life more difficult for terrorists and increases the risk of detection is worth considering? Moreover, as discussed earlier, terrorist groups rely on other aspects of the illicit economy, such as oil smuggling and drug trafficking to generate funds. To the extent that these activities were affected by the elimination of high denomination notes, this would have an impact on the economic sustainability of terrorist organizations. Put another way, eliminating high denomination notes will not of itself cripple the financing of terrorism, but we have much less chance of getting a grip on terrorist finance if we do not eliminate high denomination notes.

Turning to tax evasion. Given the scale of cash-based **tax evasion**, you only have to assume a fairly modest impact on behavior to generate a substantial increment to tax revenues. For example, the two major components of the United States tax gap most linked to cash are under-reporting on non-farm proprietor income and under-reporting of self-employment tax. These amounted to US\$107bn in 2006. If eliminating US\$100 bills meant – to take a simple assumption – 10% of this was now reported and the tax paid, that is an additional fiscal contribution of over US\$10bn per year.

In the United Kingdom, VAT evasion, much of which is effected through cash transactions, amounts to £13.1bn per year. If eliminating the £50 note reduced this by the same figure of 10%, that would be a benefit of £1.3bn per year. Looking at the Eurozone, the VAT tax gap amounts to about €145bn, so a 10% reduction in this form of evasion alone would amount to almost €15bn per year.

In developing countries, the prize is hard to estimate, given the paucity of analysis on tax compliance gaps in general, let alone the degree to which foreign currency holding contribute to such gaps. However, the dollar and euro are undoubtedly used by both companies and individuals to shield income from tax authorities<sup>93</sup>.

The obvious question is what percentage reduction is reasonable to assume. This is extremely difficult to gauge, since much of cash-based tax evasion involves very small amounts, such as the non-reporting of waiters' tips, which does not require large denominations. Low level tax evasion of this kind would not be affected. Moreover, the impact may depend as much on the signaling and consequent impact on behavioral norms as on the calculus of different denominations' bulk and weight. In many countries, cash-based tax evasion is effectively normalized, attracting relatively little criticism from peers, the media or even politicians. Using the elimination of high denomination notes to shift this perception might significantly increase the benefit<sup>94</sup>. The more that using high denomination notes is stigmatized the less acceptable it will become for otherwise law abiding citizens to use them – or indeed any form of cash – for tax evasion.

Recent policy initiatives in Italy are illuminating in this respect. In an effort to attack tax evasion and the black economy, the Italian government introduced a maximum limit on cash transactions of €1,000 in 2010<sup>95</sup>. Restrictions were also put on the use of cash for specific purposes like paying rent. Building on the apparent success of these measures, similar steps have since been taken in countries like Portugal and France. Such policies to restrict the use of cash for high value transactions make sense for countries which cannot unilaterally eliminate high denomination notes. Even if Italy itself stopped issuing the higher denominations, it could not prevent Italian citizens from using high denomination notes issued by other Eurozone countries. However, the approach also has limitations. Most obviously, it only applies to legitimate transactions. Those conducting transactions in the underground economy are hardly going to worry about breaking this regulation, since they are already operating outside the law. Where national governments

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<sup>93</sup> IMF (2015)

<sup>94</sup> Swedish Tax Agency (2014)

<sup>95</sup> The Italian Government has recently announced that it will increase the limit from €1,000 to €3,000, supposedly to align with the French rule. This seems like a step backwards.

have the choice, it would seem preferable to stop issuing high denomination notes, rather than issue them and then constrain their usage. That said, limits on cash transactions along the lines of the Italian policy would enhance and accelerate the impact of elimination, by making the existing high denomination notes less useful to criminals.

Whilst it is impossible to be definitive about the scale of impact on tax evasion, financial crime and corruption, it seems not unreasonable to believe that eliminating high denomination notes would cause significant disruption to the activities of many criminals, tax evaders, terrorists and corrupt officials, raising their costs and increasing the risks of detection. The bigger the sums of money involved, the more significant the disruption. The more that substitutes are removed, and the more other restrictions on cash transactions are introduced, the greater the impact. Given the scale of tax evasion, financial crime and corruption, and given their enormous costs they impose on societies around the world, even very conservative assumptions about the scale of impact make a powerful case. So what about the counter-arguments?

## **The Arguments for retaining High Denomination Notes**

A range of arguments are made for retaining high denomination notes, but none of these arguments appears compelling or sufficient to outweigh the clear benefits of elimination.

### *Role of High Denomination Notes in Legitimate Economic Activity*

Some suggest that high denomination notes play an important role in economic activity<sup>96</sup>. There is little evidence for this assertion. Whilst low denomination notes continue to play a significant role in legitimate economic activity even in the most advanced economies given the transactional convenience they provide, high denomination notes do not. Surveys suggest that high denomination notes are held by a very small minority of the population and are infrequently used (and even this reported usage may well not be legitimate)<sup>97</sup>. Put another way, for the higher value transactions for which high denominations are relevant, electronic alternatives such as credit and debit cards are now broadly accessible, almost universally accepted and cost-effective – or can be made so. In most countries, ordinary people do not use high denomination notes in everyday life, and where they are being used in such a manner, due to custom or habit, the technology to provide electronic substitutes is well-established.

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<sup>96</sup> This and the subsequent arguments have all been raised in discussions and interviews with policy-makers in different parts of the world,

<sup>97</sup> Federal Reserve Bank of Boston (2015): ECB (2011)

## *Seignorage on High Denomination Notes*

Others point out that eliminating high denomination notes would reduce seignorage. Seignorage is the income generated by central banks from issuing fiat currency. The most straightforward definition of seignorage, and the one that central banks typically reflect in their accounts, treats paper currency as interest free loan by the holder to the central bank. Rogoff terms this the “central bankers’ definition”<sup>98</sup>. On this basis, seignorage amounts to the interest income on the issued outstanding, minus the costs of note production. The quantum of seignorage is therefore primarily a function of the value of outstanding currency times the applicable interest rate. In inflationary periods seignorage is a significant source of income, as the real value of cash holdings deflates rapidly, whilst in ultra-low or negative interest rate scenarios, seignorage can be negligible or flat.

An alternative perspective, put forward by Cagan amongst others, accounts for the fact that since the stock of money issued by the central bank typically increases in line with GDP growth, issuing money is akin to taking a loan that need never be paid back<sup>99</sup>. In this view, seignorage on paper currency equates to the increase in the outstanding. Whilst the economics of this approach make sense, it is not the way central banks or national accounts treat seignorage, since recognizing the increment to outstanding as income would require writing it off as a liability. In essence, the “central bankers’ definition” is a current accounting approach, whilst the more “economic” definition converts the perpetual stream of interest income into a present value. For our purposes we focus on the “central bankers’ definition” of seignorage. However, we will return to the equally valid, more “economic” definition in due course to consider whether taking this approach makes any difference to the conclusion.

Even though they all use the “central bankers’ definition” of seignorage, different central banks adopt different approaches to calculating and reporting it. Since the outstanding value of issued currency is an established fact and the production costs a relatively minor consideration (at least for high denomination notes, not for lower denomination notes or coin), the main source of variation in estimation relates to the effective yield on the assets backed by the notes in issue. For the purpose of this exercise we have used either the yield reported by the relevant central bank or treasury or, failing that, the yield on a 10-year government bond<sup>100</sup>.

On this basis Figure 27 shows how much seignorage is generated by the highest denomination note in a number of key G7 jurisdictions.

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<sup>98</sup> Rogoff (1998)

<sup>99</sup> Cagan (1956)

<sup>100</sup> Seignorage is calculated as the estimated financial return to central bank assets backed by banknote issuance, less the cost of banknote production. Interest rates used are either the average of outstanding sovereign issuance (for the U.S.) or the 10-year sovereign rate. In the case of the UK, seignorage from £50 notes is calculated from the Bank of England’s reported seignorage income (using the £50 note share of total banknotes)

FIGURE 27

## Seignorage from high denomination notes 2014

	Highest denomination note	Estimated seignorage from highest denomination note (in own currency bn)	As % of GDP	In US\$ bn equivalent
US	\$100	\$23.6	0.14	\$23.6
Eurozone	€500	€1.8	0.02	\$1.9
UK	£50	£0.1	0.01	\$0.1
Japan	¥1,000	¥249	0.05	\$2
Switzerland	CHF100	CHF0.1	0.02	\$0.1

Source: Team analysis

Seignorage on currency held domestically can be thought of as a tax. It does not make society richer, but is a source of income to the government. Central banks typically deduct their own costs from seignorage then pay the residual to the government. Seignorage on currency held overseas is of benefit to the issuing country, since in effect it represents an interest free loan from overseas holders.

Eliminating high denomination notes would reduce seignorage to the extent that the total value of cash outstanding fell. In practice, eliminating the highest denomination would lead to some reduction, since the whole objective is to reduce illicit holdings and usage, but there would also be some substitution with lower denomination notes. So the reduction in seignorage would be less than the total currently attributable to the note being eliminated<sup>101</sup>.

In any case, it seems unlikely that eliminating high denomination notes would lead to a net loss, either from the perspective of society as a whole, or from the narrow perspective of the fiscal purse.

<sup>101</sup> To the extent that the central bank maintains its overall monetary stance, offsetting the reduction in cash outstanding with non-cash issuance, the reduction in seignorage would amount to the difference between the seignorage earned on currency versus money created via the banking system. For simplicity, we have assumed that the central bank does not offset the reduction in cash outstanding in this way

The seignorage argument is strongest for the United States, given the scale of seignorage relating to the US\$100 bill at some US\$24bn and the extent of overseas holdings. Yet even here the argument is not compelling. Suppose we assume that 50% of US\$100 bills are held overseas (taking a rough mid-point of the various analyses). Suppose we also make the assumption that 75% of the outstanding value of US\$100 bills was replaced by lower denomination notes. On this basis, domestic seignorage would fall from roughly US\$12bn to US\$9bn and seignorage on US\$100 bills overseas would do the same. On the face of it the Federal Reserve would therefore be suffering a total loss of US\$6bn in annual income<sup>102</sup>.

Yet these numbers have to be looked at in the context of the potential benefits. Take the US\$3bn loss on domestically held US\$100 notes. Given the scale of cash-based under-reporting of income at over US\$100bn, it would take only a small benefit on tax evasion to more than offset this loss. That is before taking any account of the potential reductions in crime or corruption.

The US\$3bn loss in annual income relating to US\$100 bills held overseas might seem more of a real loss to the United States, since any offsetting benefit in reduction in tax evasion is more likely to accrue to overseas governments than to the United States Treasury. Yet here one has to consider the impact on trans-national crime and terrorism and the costs of these activities to the United States. If eliminating US\$100 bills hindered the cross-bordering money flows related to drug-trafficking or human-trafficking, increasing criminals' costs and improving interdiction rates, US\$3bn might seem a small price to pay. Then there is also the impact on terrorist finance.

Furthermore, it would seem perverse to retain the US\$100 bill because the United States earns US\$3bn per year from overseas holders, when there appears to be good reason to believe that most of these holders are tax evaders, criminals, particularly drug-traffickers, or corrupt. Earning income from facilitating illicit activity overseas, particularly in the developing world, seems difficult to defend as a policy stance. In a way, it can be seen as a kind of negative development assistance, one that undermines the societies in which the notes are used, and generates income for the advanced countries that issue the notes.

If the seignorage argument looks weak for the US\$100 bill, it is even weaker for the €500 note, the £50 note, the ¥10,000 note and the CHF1,000 note. For example: seignorage on the €500 note represents less than 2% of the VAT tax gap in the Eurozone; and seignorage on the £50 note represents less than 1% of the VAT tax gap in the United Kingdom.

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<sup>102</sup> This reduction of seignorage income assumes that the central bank's balance sheet decisions are not affected by exogenous reductions in currency demand. If the central bank targets a certain balance sheet size, it may opt to compensate for a decrease in circulating currency by adding to excess reserves in the banking system. In such a case, the central bank would likely still earn a positive return on assets (though, in most cases, the interest paid on excess reserves would be higher than the 0% interest on currency issuance)

The potential loss of seignorage is greater if one takes the alternative “economic” approach to calculating seignorage mentioned earlier, since from this perspective issued currency is not just an interest-free loan, but a loan that need never be repaid. To assess the impact on seignorage from this perspective one has to consider whether the central bank would offset the reduction in cash outstanding from eliminating high denomination notes with an increase in non-cash money creation through the banking system. If a central bank’s overall stance on money creation is independent of the mix of physical and non-physical currency then the loss of seignorage is simply the difference in the yield, since the central bank typically pays interest on excess reserves in the banking system. If the central bank opts not to offset the reduction in cash outstanding, then the economic loss of seignorage would be the net reduction in principal outstanding (since the central bank would be paying back a loan that need not have been paid back).

Where high denomination notes are used primarily in the underground economy or are held overseas, the central bank could argue that since they play no role in the normal functioning of the domestic economy any reduction need not be offset. Moreover, high denomination notes held by criminals at home and overseas are the least likely to be presented as claims on the central bank. So the argument that these represent interest free loans that need never be repaid is strongest for illicitly held high denomination notes. By extension, eliminating such high denomination notes would lead to a potentially significant reduction in “economic” seignorage, even if the figure from a “central bankers’ definition” is relatively modest. Of course one problem with this argument is that it amounts to admitting that seignorage from high denomination notes is particularly attractive precisely because these notes are held by criminals and not used in the normal functioning of the economy. A second, perhaps more fundamental point is that if we take what is essentially a present value view of the costs of eliminating high denomination notes, we should also do the same on the benefit side of the equation.

When one steps back from the technicalities, the argument looks straightforward. Providing criminals with high denomination notes because doing so makes money seems indefensible. Since the benefits from eliminating high denomination notes appear likely to outweigh by far the money made from seignorage whichever way one measures it, it also seems illogical.

#### *Availability of Substitutes for High Denomination Notes*

Some argue that criminals would simply find other ways to make payments and store value, in other words, that eliminating high denomination notes would make no difference.

As discussed earlier, substitution is inevitable. Criminals are not going to stop being criminals simply because we eliminate high denominations. So they are going to look for other ways to make payments and move and store value surreptitiously. The issue is whether the substitutes are more expensive, less convenient and carry greater detection risk. The most obvious substitutes are lower denomination notes of the same currency. Yet using these would raise the cost of doing business for criminals, since they are bulkier and heavier. The high denomination notes of other currencies are also plausible substitutes, at least for some types of criminal activity. Hence the logic for collective action. Substitution to other means of payment, such as diamonds or Bitcoin, has clear disadvantages for criminals. Diamonds offer anonymity of payor/payee and untraceable transactions, but have volatile value and low acceptability. Bitcoin offers payor/payee anonymity but leaves a perfect trace of transactions, and also has the drawbacks of volatile value and low acceptance. Ultimately, the holders of diamonds and Bitcoin will want to translate this value into money. For any significant value, doing this directly into the banking system will expose the holder to scrutiny. Making this exchange through cash once again underscores the value of high denomination notes.

Reflecting on the role of cash and the potential impact of reducing its usage, Schneider, one of the world's experts on the black economy concludes "Cash is still used in many crime activities because it does not leave traces. A reduction of cash can reduce crime activities as transaction costs rise, but as the profits of crime activities are still very high, the reduction will be at most modest (10-20% at most!)"<sup>103</sup>. Yet in our view a 10-20% reduction is quite a prize. What other easy-to-implement strategies have such potential? By driving up the cost of illicit activities, we will reduce them. By making them easier to intercept and disrupt, we will further reduce them.

A variant on the "it'll make no difference" argument points to the fact that even after they are formally discontinued high denomination notes could continue to circulate in the underground economy, being used for transactions between criminals without ever touching the banking system. There is an element of truth in this. For example, more than a decade after the CDN\$1,000 bill was discontinued, about CDN\$1bn is still in circulation, almost all in the hands of criminals<sup>104</sup>. The Indonesian authorities welcomed Singapore's decision to discontinue the S\$10,000 note, saying it would "meaningfully" help, but also called upon Singapore to withdraw or impose an expiry date on the notes, which Singapore declined to do<sup>105</sup>. However, a currency note that can only be used in the underground economy is far less valuable to a criminal than a note that can bridge illicit activity and the legitimate economy. Ultimately criminals want to be able to use their money, and not necessarily by spending it on other criminal products or services. Moreover, experience suggests use of discontinued high denomination notes would quickly become stigmatized, so holding them, exchanging them or seeking to spend them would attract far greater scrutiny. This is where other policy actions, such as restrictions on the size of cash transactions, prohibitions on the use of discontinued high denominations for specific purposes, or rules on the seizure of discontinued high denominations could make a significant difference.

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<sup>103</sup> Schneider (2015)

<sup>104</sup> National Post (2012)

<sup>105</sup> The Jakarta Post (2014)

## *High Denomination Notes as a Way to Save or Hoard*

Some defenders of the status quo argue that the demand for high denomination notes indicates that people prefer to hold cash in high denominations as a way to save or hoard. Where claims of such popular preference are made (and this contention is mainly asserted, rather than evidenced) the reasons for this preference should be teased out and understood.

There may well be some legitimate hoarding or saving driven through fears of calamities such as the collapse of the banking system, societal breakdown, or cybercrime. There was some evidence of increased demand for high denomination notes in the wake of the financial crisis in 2008. However, the question is whether issuing high denominations represents a sensible policy response to such fears. For example, if people are holding high denomination notes to protect themselves against the risk of the banking system collapsing, surely deposit guarantee schemes and robust prudential regulation represent a more effective response? Moreover, if what we are talking about is normal people hoarding relatively small amounts of money (tens of thousands not millions) in safes in their own homes, then the added inconvenience of holding smaller denominations is probably a price worth paying for the benefits of eliminating high denominations.

There may also be hoarding or saving driven by libertarian antipathy towards institutions like banks and governments. For example, Hennigsen at the Centre for Research on Globalisation: “It has long been the dream of collectivists and technocratic elites to eliminate the semi-unregulated cash economy and black markets in order to maximize taxation and to fully control markets...If the cashless society is ushered in, they will have near complete control over the lives of individual people”<sup>106</sup>. Discounting the hyperbole, there is a legitimate concern about the extent to which official scrutiny of electronic payment transactions might infringe civil liberties and the right to privacy. Yet we face this issue already. Most people’s savings and higher value transactions are potentially subject to scrutiny because they are conducted and held within the banking system. Yet if society has decided that this is something we are prepared to tolerate to tackle financial crime, then it would seem perverse not to extend such scrutiny to the self-selected subset of the population that use high denomination notes to transact and save.

In fact we would suspect that much of whatever preference exists for hoarding or saving in cash is driven by a desire to avoid scrutiny of its origins. This is not to claim that it is all criminal proceeds. Much of it is probably the result of tax evasion, the under-reported element of business cash receipts. Indeed, the scale of under-reporting of cash income in most economies would suggest that there must be considerable hoarding of large sums of cash. High denomination notes are undoubtedly the most convenient tool for this purpose. Some authorities appear to adopt an attitude of almost willful blindness to the underlying reasons for hoarding cash in high denominations. For example, the spokeswoman of the Swiss National Bank talking about the CHF1,000 note: “People consider using banknotes to be very practical. Also, the wish for privacy has always been high in Switzerland...Using cash for payments is one manifestation of this. This popularity

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<sup>106</sup> Forbes (2013)

of cash payments is no indication for illegal usage.” The Swiss Federal Police take a similar stance: “From time to time, cash transactions are reported to the MROS [Switzerland’s money laundering agency]. The financial intermediaries, however, report the sum and not the denomination...Fedpol is concerned about the black economy in general; the denomination of the cash involved doesn’t play a role.”<sup>107</sup>

One rational reason for hoarding cash is when interest rates are negative. Rational savers should hold cash where interest rates are negative, since the zero interest rate on holding cash then becomes attractive. There are two responses to this:

- First, far from being an argument against eliminating high denomination notes, this is really an argument for doing so, since this consideration impedes the ability of a central bank to use monetary policy in a deflationary environment. Rogoff and others have therefore advocated the elimination of cash to remove the zero lower bound constraint on monetary policy<sup>108</sup>. We return briefly to this argument later.
- Second, the empirical evidence that people behave in this way is far from compelling. Indeed, Sweden has both the largest negative interest rates amongst advanced economies and the lowest usage of cash<sup>109</sup>.

### *High Denomination Notes as Emergency Money when Travelling*

Some point to the fact that some people like to carry a small number of high denomination notes as emergency money when travelling. This seems a perfectly legitimate use, but also one that must represent a tiny proportion of the total outstanding value, given that it only applies to those who travel, and to the subset of travelers who feel it necessary to take such precautions, and even then the amounts involved are going to be low. The question here is whether the benefits to a very small number of people of being able to carry just a handful of notes for emergency money merits the enormous social and financial costs that high denomination notes contribute to elsewhere. Put another way, is enabling rich Europeans to have a few €500 notes in their inside pocket when they go on safari a significant policy priority?

### *Foreign High Denomination Notes as an Alternative to Domestic Currency*

One interesting argument concerns the use of foreign high denomination notes as an alternative to the local currency and banking system. Where people lack confidence in the local currency or banking system, either because the state is seen as kleptocratic (Russia), incompetent (Zimbabwe), or both (Argentina), those who have access to US dollars – and particularly US\$100 bills – choose to use them to make payments and store value. This is the phenomenon of full or partial dollarization. This argument underscores the fundamental importance to social and economic development of good governance, a sound banking system and sensible monetary policy. The question is whether having the

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<sup>107</sup> SwissInfo (2013)

<sup>108</sup> Rogoff

<sup>109</sup> For a discussion of this, see Koing (2015)

back-up of dollarization is a good thing, because it enables individuals to protect themselves from their own governments, or a bad thing, because it renders tolerable what ought to be intolerable, and thus perpetuates the situation. For example, it is hard to imagine that Argentina's persistent mismanagement of monetary policy and banking would have continued so long if the elite did not have the dollar alternative. Through access to US\$100 bills, elites secure insulation from domestic monetary and banking disasters, which weakens their incentive to seek change. Whilst there is no data to prove this, we would suspect that in most such countries, access to and holdings of foreign currency high denomination notes is highly concentrated. This is not about protecting the populace in general – teachers and nurses - from governmental mismanagement, but about enabling those with power and wealth to protect themselves.

Moreover, we would also suspect that a significant proportion of the holding of foreign currency high denominations in such countries originates from tax evasion, corruption, or other illicit activities.

In terms of sheer volume of foreign currency high denomination note holdings Russia appears to be by some margin the largest, given that the largest overseas concentrations of both US\$100 bills and €500 notes are supposed to be in Russia<sup>110</sup>. It would seem quite difficult to use protecting the livelihoods and savings of powerful and wealthy Russians as a primary argument for retaining the US\$100 bill or €500 note.

#### *High Denomination Notes in Warzones and Natural Disasters*

Another potentially appealing argument is made about the valuable role that high denomination notes can play in warzones or in the wake of natural disaster. This argument does have some merit. When there is an entire collapse of the financial system, people revert to cash, and if confidence in the local currency has plummeted, that will likely mean US dollars. Refugees fleeing warzones or natural disasters will want to take their savings with them, preferably in hard currency. In such extreme circumstances, high denomination notes such as the \$100 bill or €500 note could be particularly useful.

However, whilst it does have merits, this argument only goes so far. The problem of storing and moving large value savings will only be relevant to a minority of refugees. Furthermore, if the problem one was trying to solve was how to provide monetary resilience in a war zone or in the wake of a natural disaster, one could certainly come up with more targeted solutions with less downsides than issuing hundreds of billions of dollars worth of high denomination notes.

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<sup>110</sup> Bundesbank, US Fed

### *High Denomination Notes as an Indicator of Criminal Activity*

Another argument accepts that high denomination notes are used by criminals, but contends that the depositing or withdrawal of high denomination notes from banks is a helpful clue to criminal activity. Large volume, high denomination deposits or the exchange of small denomination notes for higher denominations are among the more obvious indicators of suspicious activity that banks use as the basis for triggering Suspicious Activity Reports. Without high denomination notes it would be less obvious what criminals were up to. This argument, which is made with surprising frequency, seems wrong-headed. First, it accepts that use of high denomination notes is highly correlated with criminal activity (presumably because this is optimal for criminals), then uses this as an argument for retaining such denominations. Second, it ignores the fact that the vast majority of criminal transactions go undetected. That some criminals are stupid enough to signal their activities by depositing or withdrawing high denomination notes from the banking system does not make a sound argument for providing high denomination notes to all criminals.

### *Historical Importance of High Denomination Notes*

Finally, there is the more sentimental argument about the historical resonance of specific high denomination notes. This is quite a difficult argument to refute, since it's intrinsically about sentiment rather than rational fact, but its proponents tend to ignore the fact that even higher value notes have been eliminated before. For example, in the United States, US\$500, US\$1,000, US\$5,000 and US\$10,000 bills were printed until 1945 and only officially discontinued in 1969. Likewise bearer bonds have been largely eliminated following the United States Tax Equity and Fiscal Responsibility Act of 1982, which significantly curtailed their use on the logic that they were heavily used for tax evasion and money laundering. A high denomination note has functional equivalence to a non-interest bearing, sovereign-issued bearer bond.

## **Other Arguments for Reducing the Role of Cash**

In this paper, we have focused on the case for eliminating high denomination notes given their role in tax evasion, financial crime, terrorist finance and corruption. However, there are two other arguments for reducing the role of cash, both of which pertain to high denomination notes, which are worth mentioning although we do not explore them in any detail:

First, as mentioned earlier, there is the argument, advanced by Rogoff and others<sup>111</sup> that cash creates a zero lower bound to monetary policy, thus constraining the policy options of central banks in an ultra-low inflation or deflationary environment. Negative interest rates cannot be imposed on cash. Introducing negative interest rates would create a powerful incentive to hold deposits in cash, most likely in higher denominations. Eliminating high denomination notes, so that saving in cash was more inconvenient would mitigate this problem. This argument might be particularly relevant in countries like Japan, which combine negative interest rates with high levels of cash outstanding.

Second, whilst the analysis of the comparative costs of different payment systems is fraught with methodological difficulties, the weight of the evidence suggests that, even without taking account of illicit usage, the comparative economics of using cash get worse as the value of transactions increases; and that this is becoming ever more true as electronic alternatives proliferate<sup>112</sup>. This conclusion makes high denomination notes look even less attractive.

### **A Bold Step in the Fight against Tax Evasion, Financial Crime, Terrorist Finance and Corruption.**

Eliminating high denomination notes would increase costs and detection risks for tax evaders, criminals, terrorists and those who give and receive bribes.

We believe that the arguments for eliminating high denomination notes are compelling even for a single country acting unilaterally. In the advanced economies that issue high denomination notes, other currencies have limited acceptance and would attract attention (as the €500 note did in the United Kingdom), so would be less than ideal substitutes. A country that took such unilateral action would benefit from reductions in tax evasion and domestic crime and corruption.

However, by acting together, the issuers of high denomination notes could have a much more powerful impact. Such collective action could be achieved through the G7, which includes the most significant issuers of high denomination notes (the key exceptions being Switzerland, Singapore, Hong Kong, Russia and Saudi Arabia). Alternatively, this could be pursued through the G20, which has the advantage of including some of the countries such as Mexico and Indonesia in which foreign high denomination notes play a corrosive role. In either case, FATF could potentially play a coordinating role, monitoring implementation and impact.

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<sup>111</sup> Rogoff (2014); , Buiters (2009)

<sup>112</sup> Kruger and Seitz (2014) has a good overview of the literature

Collective action to eliminate high denomination notes would have greater impact and would send a strong signal about the international community's commitment to tackling tax evasion, financial crime, terrorist finance and corruption. The starting point for such action would almost certainly have to be the Eurozone given the significance of the €500 note in terms of individual note value and total outstanding. In this context, the European Commission's very recent decision to work with the ECB to examine the role of the €500 note in terrorist finance is enormously important. We would encourage the European Commission and ECB to look more broadly at the use of high value euro denominated notes in different types of illicit activities, and urge the governments of other countries that issue high denomination notes to follow Europe's lead.

Once the decision is made to eliminate high denomination notes, there are a range of options about how to implement this, which vary in pace and impact. These are not examined in any depth in this paper. However, the most straightforward option is very simple: stop issuing the highest denominations and withdraw the notes whenever they are presented to a bank. More assertive options would put restrictions on where and how they can be used (e.g., "no more than 20 on any one transaction") or put a maximum value on permissible cash transactions (as Italy has done). The most aggressive option would be to put a time limit on how long the high denomination notes would be honored. However, this would be contrary to the established doctrines of a number of central banks, which continue to honor withdrawn notes many years after the event.

The argument against cash, and against high denomination notes, has been made before. For example, a decade ago, the FATF recommended that "countries should give consideration to large denomination banknotes."<sup>113</sup>

Even before that, Rogoff in 1998 and 2002 advanced the argument that a large percentage of cash and particularly high denomination notes is used for illicit purposes<sup>114</sup>. Why should this time be different?

Five things have changed to make the argument even more compelling:

- First, there is much greater awareness of the costs to society of tax evasion, financial crime, terrorist finance and corruption – and more political determination to tackle these problems.
- Second, we have stepped up our game in detecting and intercepting illicit activity through the banking system, via more intensive regulatory scrutiny and massive investment in systems and capabilities. This will drive more illicit activity to high denomination notes unless we remove the alternative.
- Third, we face an acute threat from well-financed terrorism, most notably ISIS. Anything that helps disrupt such activity must be a priority.

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<sup>113</sup> FATF (2005)

<sup>114</sup> Rogoff (1998); Rogoff (2002)

- Fourth, the convenience, cost-effectiveness and accessibility of digital alternatives to cash has grown enormously, meaning cash no longer plays such an essential role in the functioning of the legitimate economy. Credit and debit cards are well-established, mature technologies that are cost effective for all but the smallest payments. Contactless cards and mobile payments are broadening the reach of digital payment mechanisms into even smaller transactions sizes and person-to-person payments.
- And finally, interest rates are at all time lows, and likely to remain low for some time to come, undermining the seignorage argument and reinforcing the argument for removing the constraint on negative interest rates that high denomination notes create.

The world of politics and public policy is full of difficult trade-offs and policy initiatives that are hard to execute. It's not often that you come across a policy proposal that is simultaneously easy-to-implement, has a powerful positive impact, and very limited downside. Eliminating high denomination notes is one such idea. That's why political leaders should grasp it and make it happen.

## **Acknowledgements**

The research and writing of this paper required the help of many people. I would particularly like to acknowledge the help of my research assistants: Ben Weismann, who played the overall coordinating role and led on overall data gathering and analysis; Maja Sostaric, who led on terrorist finance and Europe; Alex Smith and Joel Smoot, who led on drug financing; Ofir Zigelman, who contributed on terrorist finance; and Joel Mathur, who assisted on tax evasion. Ben, Maja, Alex, Joel and Ofir are graduate students at Harvard Kennedy School; Joel Mathur is a graduate student at Suffolk Law School. I would also like to acknowledge the invaluable counsel and input I received from two professors at Harvard Kennedy School, Larry Summers and Richard Zeckhauser.

Many politicians, central bankers and senior officials from various governments around the world, as well as other academics, were enormously generous with their time and wisdom as I prepared this paper. Without seeking to list them all, I would like to thank them too.

Finally, I would like to thank Jacqui Moseley, my assistant for ensuring the meetings happened and the paper got produced.

The views in this paper are my own and I take full responsibility for them.

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