



Global Developments in Trade-Based Money Laundering

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About this report

The K4D Emerging Issues Report series highlights research and emerging evidence to policymakers to help inform policies that are more resilient to the future. K4D staff researchers work with thematic experts and the UK Government's Foreign, Commonwealth and Development Office (FCDO) to identify where new or emerging research can inform and influence policy.

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List of acronyms

DEA	Drug Enforcement Administration
FATF	Financial Action Task Force
FCA	Financial Conduct Authority
GAO	Government Accountability Office
GDP	gross domestic product
GFI	Global Financial Integrity
HMRC	HM Revenue and Customs
IFFs	illicit financial flows
ILO	International Labour Office
IMF	International Monetary Fund
KYC	know your customer
NCA	National Crime Agency
NFT	non-fungible token
OECD	Organisation for Economic Cooperation and Development
SBML	services-based money laundering
TBML	trade-based money laundering
UK	United Kingdom
UNODC	United Nations Office on Drugs and Crime
US	United States

1. Overview

This rapid research review provides an overview of the current state of knowledge on the scale and dynamics of trade-based money laundering (TBML) and key challenges and opportunities in relation to TBML, both globally and in relation to the United Kingdom (UK) specifically.

The study took place over ten days in August and September 2022, and involved a review of existing literature, as well as two interviews with experts. Much of the literature reviewed originated from international organisations and publications by national governments, supplemented by news reports and publications by private sector firms. Academic papers were also reviewed, though the availability of relevant, recent, peer-reviewed papers was limited.

TBML is defined as ‘the process of disguising the proceeds of crime and moving value through the use of trade transactions in an attempt to legitimise their illicit origins’ (FATF, 2006, p. 3). There is a lack of data on whether TBML is disproportionately related to particular kinds of criminal activity (often referred to as ‘predicate offences’), but it seems likely that the trade in counterfeit goods, government corruption, the narcotics trade and human trafficking are key sources of criminal funds laundered through the trade system.

For the purposes of this report, trade-based is taken to include both traditional merchandise-based trade and services trade (as services-based money laundering (SBML)). While the movement of funds internationally through the trade system to finance terrorism does not necessarily fit the definition of TBML, the two issues overlap significantly in terms of techniques used.

Any kind of merchandise has the potential to be used in TBML, but goods that are non-perishable, of high value, are difficult to inspect and difficult to value appear particularly attractive. Goods that are frequently referenced in the literature are gold; fuels and mining products; luxury products such as jewellery and designer clothes, arts and antiquities; mobile phones; and used vehicles. Traded services appear particularly attractive because there is no physical product that authorities can inspect, while the rise of non-fungible tokens (NFTs), with their volatile and unpredictable prices, offers yet another opportunity for money launderers.

The true scale of TBML remains uncertain, but there is consensus that globally it is among the most important forms of money laundering, if not the most important form. Experts’ ballpark estimates suggest that US\$2tn annually may be a plausible figure, though this figure is largely based on analysis of global trade ‘value gaps’ – as a result, it is likely to both include activity that may not be related to money laundering (e.g. simple customs fraud) and exclude money-laundering activity conducted in a way that does not leave a detectable trace in aggregate trade data.

The importance of TBML is perceived to have been growing, though this appears largely to be based on anecdotal evidence. There are sound reasons to think that the coronavirus (Covid-19) pandemic, while reducing global trade, may have created new opportunities for TBML; for example, in relation to sudden spikes in orders for certain kinds of medical

supplies. It is likely that TBML will increase in importance as regulatory activity combatting other forms of money laundering diverts laundering activity into less regulated spheres of international trade.

Efforts to combat TBML are hampered by:

- The sheer scale of international trade relative to the resources available to national authorities to check shipments.
- The declining importance of traditional trade finance in international trade, which further reduces the ability of regulated financial institutions to identify suspicious transactions.
- Limited will and capacity in many countries to investigate and prosecute cases, including because of corruption.
- The professionalism of money launderers, who – incentivised by the huge sums of money involved – have proven able to innovate as quickly as regulators develop their capability.
- The need to balance enforcement against the already huge cost of compliance with money-laundering regulations.

TBML risks for the UK are high, reflecting its open economy and the importance of the City of London as a global financial centre. There are references in the literature to how Brexit may have increased risks by encouraging UK firms to reorientate export activity towards jurisdictions with problems related to corruption and criminality.

The ongoing conflict in Ukraine may have reduced the risk of TBML from direct trade with Russia, simply because sanctions have led to a huge reduction in trade between the two countries. However, this may merely have led to TBML being conducted via intermediary countries that have not implemented sanctions. Indeed, overall TBML risk may now be higher than before the conflict, reflecting heightened incentives to move the proceeds of crime out of Russia due to increased economic instability in that country.

The gendered aspect of TBML has been under-explored in the literature. However, the trade in counterfeit goods clearly has strongly gendered implications, given the combination of women's important role in the garment industry in many countries and the association between counterfeit clothing production and poor labour standards. In addition, many other predicate offences associated with TBML have a disproportionate impact on women and girls – human trafficking being a key example.

Looking forward, and despite the challenges, there are clear opportunities to better tackle TBML. These include:

- Implementing best-practice regulations and systems in countries where they have not yet been introduced;
- Exploiting proven tools, such as whistle-blower reward schemes;
- Digitalising trade transactions – for example, using digital bills of lading – and exploiting emerging technologies, such as the blockchain, to make it easier to trace traded goods along international supply chains; and

- Improving international data sharing and exploiting big data (large, complex datasets, often created by linking data from multiple sources), including through use of artificial intelligence, to better detect suspicious trade transactions.

2. Key terms and scope

Money laundering

Money laundering is the ‘hiding or the disguising of the proceeds of any form of illegal activity’ (Cassara, 2020, p. 19). Money laundering occurs in three recognisable stages:

- Placement – depositing the proceeds of crime within financial institutions;
- Layering – obscuring the criminal origin of funds through a string of complex transactions; and
- Integration – making the funds appear legitimate through legitimate investments.

According to the Financial Action Task Force (FATF) (FATF, 2006) there are three primary methods of money laundering:

- Via financial institutions and non-bank financial institutions. Generally, the ‘placement’ phase of money laundering involves this method, with criminal proceeds deposited in banks, frequently using ‘structuring’ techniques to avoid arousing suspicion. Financial institutions are also frequently used in the ‘layering’ phase (e.g. through ‘wiring funds to multiple accounts in multiple jurisdictions’), as well as in the ‘integration’ phase (e.g. through investing criminal proceeds in the stock market).
- Cash smuggling between jurisdictions. This frequently forms part of the placement phase, with cash physically moved to jurisdictions where it can be inserted into financial institutions in jurisdictions where the risk of detection is lower.
- TBML and other forms of value transfer (e.g. using traditional banking systems such as hawala – a form of informal value transfer compliant with Islamic law, which involves a network of brokers and does not require the movement of cash or telegraphic transfer – which is not covered by this report).

TBML

TBML is defined as ‘the process of disguising the proceeds of crime and moving value through the use of trade transactions in an attempt to legitimise their illicit origins’ (FATF, 2006, p. 3). For the purposes of this report, SBML – money laundering using the trade in ‘services or other intangibles’ (FATF, 2021, p. 19), rather than goods – is treated as a subset of TBML.

TBML often involves elements of both placement and layering, since it allows criminals both to move funds to jurisdictions where they can more easily place money; and to generate complexity, which makes it hard for authorities to follow the trail of money from the original criminal activity to the beneficiary of the act.

Criminal gangs and professional money launderers will generally not deploy a single money-laundering technique, but will instead combine multiple techniques to reduce the risk

of being detected. Thus, while TBML is the focus of this report, there is a need to examine how it is enabled by related money-laundering techniques (e.g. using shell companies or cryptocurrencies), as well as how it enables other money-laundering technologies.

As noted by FATF (2021) professional money launderers frequently play a key role in TBML. They offer 'specialist expertise' and use TBML alongside a range of other money-laundering techniques to diversify their clients' exposure to risk.

Given that TBML is inherently international in character, it is not only a money-laundering methodology, but also a form of illicit financial flow (IFF). The International Monetary Fund (IMF) defines IFFs as 'the movement of money across borders that is illegal in its source (e.g. corruption, smuggling), its transfer (e.g. tax evasion), or its use (e.g. terrorist financing)' (IMF, 2021, p. 1).

TBML can be thought of as representing a dual harm. Firstly, in its aspect as a money-laundering methodology, it enables criminal and terrorist activity; and secondly, in that it is generally associated with fraudulent misrepresentation of trade that commonly leads to 'substantial' revenue losses for customs agencies in both high- and lower-income countries (Cassara, 2020, p. 51).

There appear to be some important grey areas in terms of what should be classed as TBML. One example concerns the use of techniques such as trade misinvoicing to circumvent capital controls – notably related to capital flight from China (Cassara, 2020, p. 64): here the source of wealth is not necessarily illegal, but the international transfer of value achieved through the classic techniques of TBML is a violation of Chinese law. Such scenarios point to the potential for one jurisdiction to seek to label an offence as money laundering – to secure the greater resources and cooperation that labelling may facilitate – while another may wish to see it as an IFF, but not inherently as money laundering.

Another grey area relates to issues such as antiquities trafficking, where classic TBML techniques such as false description of goods may represent both a way of transferring value and a core part of the predicate crime (Mosna, 2022). Finally, international transfers through sales of cryptocurrency would typically not be thought of as TBML, but potentially should be in situations where criminals invest criminal proceeds in cryptocurrency-mining operations, to enable cryptocurrency to be sold for regular money.

While generally not strictly a form of money laundering, in places this report touches on trade-based terrorist financing, since the techniques used are largely identical, meaning that the challenges posed for national governments and the private sector are closely interrelated. It is worth noting that FATF (2021, p.12) suggests that trade-based terrorist financing is particularly challenging to detect and counter since the money moved may derive from legitimate as well as illegitimate sources.

3. TBML: scale and trends

The global value of money laundering is frequently quoted as being in the order of 2–5% of global gross domestic product (GDP), which would imply a figure between US\$800bn and US\$2tn annually. This ‘consensus estimate’ gained popularity following a 1998 speech by the IMF director general (Camdessus, 1998) and later studies have provided similar estimates (e.g. UNODC, 2011). While this figure appears plausible, it is important to acknowledge that the evidence underpinning it is inevitably highly limited, making it little more than a reasonable best guess. Moreover, this figure may not include TBML (Cassara, 2020).

The literature provides little in the way of estimates of the scale of TBML specifically. FATF leadership has refused to ‘speculate’ on the scale of the problem (Vincent, 2021), though at least one expert has claimed that it is likely ‘the largest money laundering methodology in the world’ (Cassara, 2020, p. 74). Similarly, the United States (US) Government Accountability Office (GAO) has stated that TBML is ‘large’ and has become ‘one of the primary means that criminal organisations use to launder illicit proceeds’ (GAO, 2019, p. 1).

May (2017), writing for Global Financial Integrity (GFI), has estimated that transnational crime – which is not synonymous with TBML, but is interlinked with it – has a value of between US\$1.6tn and US\$2.2tn annually. Based on value gap analysis, Cassara (2020, p. 76) states that ‘an argument could be made that there is about US\$2tn in TBML annually.’ Similarly, GFI (2021) identified a US\$1.6tn value gap in trade involving low- and middle-income countries in 2018. Value gaps indicate trade misinvoicing (though trade misinvoicing is not the only explanation for such gaps), which is a frequently used methodology in TBML. However, not all trade misinvoicing involves money laundering and not all TBML involves the kind of misinvoicing that would create value gaps identifiable when applying GFI’s methodology.

The fact that a meaningful quantity of misinvoicing likely involves TBML is evident from FATF (2020)’s references to a single criminal network that laundered over US\$400m in just a few years using the international trade system. Looking beyond successful prosecutions, Brunvoll, *et al.* (2022) use a difference-in-difference approach to identify an association between the scale of cocaine seizures in Belgium, and imports into Belgium of diamonds, arts and antiquities from cocaine-trafficking countries, indicating that TBML may be an important aspect of efforts by drug cartels to repatriate profits from drugs exports to Europe.

There have been fairly frequent references in recent years to TBML being a growing problem (e.g. US GAO, 2019). However, there is little hard data to confirm or deny this. Data from GFI (2021) suggests that from 2011 to 2018 there was no clear trend in the global value gap in trade involving developing countries.

GFI (2021) has noted how the Covid-19 pandemic might potentially have heightened TBML risks. This reflects issues created by unprecedentedly high trade volumes for medicines and medical supplies, combined with expedited processes for moving them, as well as sudden spikes in government procurement, which can leave customs officials ‘unable to adequately scrutinize containers and associated invoices’ (GFI, 2021, p. 19). GFI suggests this may be a particular problem in low- and middle-income countries and in Africa’s free trade zones specifically.

Hataley (2021, p. 1) has argued that TBML will ‘continue to grow as a preferred methodology for laundering money internationally’, reflecting ‘displacement’ of criminal elements from other money-laundering techniques because of the efforts of regulators and law enforcement, and the likely development of skill sets required to implement TBML within organised crime gangs. This viewpoint receives some support from Ferwerda, *et al.* (2012, p. 1) who developed a model for TBML with specifications that suggested that ‘criminals use TBML in order to escape the stricter anti-money laundering regulations of financial markets.’

No credible estimates of the scale of SBML appear to have been published. An interviewee who works for a body focused on IFFs noted that they were not only unable to estimate the scale of SBML, but were not even sure how they would begin attempting to assess its scale. One expert interviewed for this report suggested that any advances in combatting merchandise TBML would likely lead to an acceleration of SBML, which would represent an obvious refuge for criminal gangs looking to reduce the risk of detection. SBML is being taken increasingly seriously. For example, the Government of the Philippines identified over 1,000 online gambling transactions suspected of being related to money laundering between 2013 and 2019, which contributed to the country curtailing the activities of offshore gambling operators in 2020 (Kennedy, *et al.*, 2022).

4. Products at high risk of TBML

Cullen (2022) identifies the following characteristics of tradable goods that lead to heightened TBML risks:

- They are easy to sell.
- They have wide pricing margins.
- They have extended trade cycles, meaning that they are shipped through multiple jurisdictions.
- They are difficult for customs authorities to examine.

Merchandise trade

In practice, TBML can involve almost any kind of good, but frequently cited popular options include:

- Luxury goods, including designer clothes, jewels and gold (Cassara, 2020, p. 111; HM Treasury and Home Office, 2020). Germany’s National Risk Assessment notes high risks related to precious metals and stones, with dealers receiving frequent cash payments just below the due diligence threshold of €10,000 (FATF, 2021). Cassara (2020) notes that gold is a particularly attractive option because of its status as a stable store of value. This likely represents a high-risk area for the UK, given the importance of London as a location that people from all over the world travel to for luxury shopping.
- Fuels and mining products (FATF, 2021; Cassara, 2020, p. 86). TBML risks may therefore increase in the current climate of soaring energy costs.
- Art and antiquities, as noted in the UK’s money-laundering risk assessment (HM Treasury and Home Office, 2020).

- Electronics and mobile phones, since they are portable, easy to ship, easy to sell and have high value (Cullen, 2022).
- Used vehicles (Cassara, 2020, p.87).
- Textiles (Cassara, 2020, p.87).

Services trade

Services trade generally represents a particular TBML challenge, because there is no physical product that regulators and law enforcement can inspect to verify whether an invoice is an accurate representation of what has been transferred. If SBML is discussed less often than money laundering involving the trade in physical goods, this may in large part simply reflect the fact that it is harder to identify. FATF (2021, p. 5) highlights the challenge the growth of online business poses, which FATF describes as ‘restricting scope for proactive compliance activity’.

A specific form of SBML that appears to be particularly high risk is the trade in NFTs, with one Dutch customs official describing this as ‘the modern, digital way of trade-based money laundering’, reflecting the lack of customer due diligence or ‘know your customer’ (KYC) obligations for platforms facilitating such transactions (J5, 2022, p. 2). NFTs appear intrinsically attractive for money-laundering purposes, since there is not only no physical product but also no objective service provided, making their valuation highly subjective (and in practice highly volatile) – something which makes it much harder to detect whether they are being mispriced to transfer the proceeds of crime across borders.

5. Key predicate offences

It is impossible to determine with any certainty the contribution of different kinds of criminal activity to TBML. However, estimates of the annual profit different kinds of transnational crimes generate may represent a reasonable approximation of the relative importance of different predicate offences:

- Corruption – bribery alone has been assessed to represent around 2 per cent of global GDP, which was equivalent to US\$1.92tn in 2021 – with the range of reasonable estimates likely to be between US\$1.1tn and US\$2.9tn (IMF, 2016, p. 5). This does not include other forms of corruption, which might more than double this figure.
- Cybercrime – US\$1.5tn in profits laundered in 2017 (Ismail, 2018).
- Counterfeiting and pirating of goods – US\$509bn in 2016 (OECD, 2021, p. 9).
- Illegal drugs – US\$471bn–768bn in 2021¹ (May, 2017, pp. 3–4; UNODC, 2005, p. 127).
- Human trafficking: US\$150bn based on 2012 data (ILO, 2014).

¹ Author’s calculation, applying the methodology utilised in GFI (2017), extrapolating from a 2003 UNODC estimate, with the lower-bound estimate based on the rate of inflation since 2003 and the upper-bound estimate on the global GDP growth rate.

- Illegal trade in forestry products: US\$25bn–77bn based on 2019 data² (May, 2017).
- Illegal fishing: US\$15bn–36bn based on 2014 data (May, 2017).
- Illegal wildlife trade: US\$5bn–23bn based on averaging a range of estimates using data from the first half of the 2010s (May, 2017).
- Illegal trade in small arms: US\$650m –1.3bn in 2017 (Florquin, *et al.*, 2020, p. 11; UNODC, 2010, p. 129)

6. TBML challenges

Hataley (2021) describes TBML as the ‘newest and possibly most complex’ money-laundering methodology. There appears to be general consensus among experts that TBML is a particularly challenging form of money laundering to detect. Professional money launderers frequently reduce their risk exposure by using intermediaries spread across multiple jurisdictions to mask the true nature of a transaction. Cassara (2020, p. 77) states that available metrics indicate that TBML countermeasures are ‘not effective.’ The subsections below discuss the key challenges identified.

Scale of international trade

The huge and growing volume of global trade appears to be the main factor impeding detection, with ordinary trade transactions representing a giant haystack in which money launderers are able to hide their needles of dirty money. Similarly, the growth of the services trade – at a rate that has outstripped merchandise trade since 2005 for Organisation for Economic Cooperation and Development (OECD) countries (OECD, 2022) – represents a challenge in identifying SBML.

One key limitation is a lack of the kind of detailed inspections that could detect trade misinvoicing, with some estimates suggesting that customs officials physically examine less than 2 per cent of shipping containers (Cullen, 2022, p.75). Even where they conduct some kind of inspection, it can be challenging for customs officials to detect whether the listed value of a cargo is appropriate.

More broadly, the scale of international trade means that a large number of seemingly suspicious transactions occur every day – only a minority of which will genuinely relate to money laundering or illicit activity – meaning that there is generally inadequate resource available to follow up and investigate most ‘red flags’ in any detail.

² Author’s calculation, applying the methodology utilised in GFI (2017) on FAO data for global forestry product imports in 2019 (correcting for a double counting of imports and exports in the GFI methodology) and applying GFI’s assumption that 10–30% of this is illegally traded, based on a 2014 UN Environment Programme assessment.

Digitalisation of trade processes and transactions

Whilst the digitalisation of trade transactions has the potential to mitigate some TBML risks (see below), it has undoubtedly increased the speed of trade operations (FATF, 2021), thereby making the job of regulators and investigators that much more challenging.

Cassara (2020) notes that ‘quantum encryption in the cloud is going to revolutionize business but also criminal activity’ (p. 3). A key area of concern relates to how cryptocurrencies could facilitate TBML, by circumventing formal banking networks that previously retained (limited) oversight of transactions through the role they play in wire transfers. This could further hamper the traceability of funds and reduce regulators’ ability to identify potential money-laundering activity in the first place.

While cryptocurrencies appear to play a limited role in TBML currently, cases have begun to be detected of TBML enabled by cryptocurrencies such as Bitcoin (DEA, 2017). The UK’s most recent National Risk Assessment raised the risk rating for cryptocurrency-based money laundering from low to medium (HM Treasury and Home Office, 2020).

The removal of financial intermediaries from the system, saving time and money, is frequently cited as a key benefit of blockchain technology. However, given the key role financial intermediaries currently play in anti-money-laundering monitoring (e.g. through KYC legislation) this could actually reduce rates of detection. In addition, the blockchain could be ‘exploited for the setting up of false or fictitious entities’ (Chuah, 2022, p. 1). This highlights that physical checks will remain as important as ever under any blockchain-based system for trade transactions, and that some kind of modified blockchain system may be required in which a role for external oversight is maintained.

Reliance of anti-TBML measures on financial institutions with limited capacity to detect suspicious activity

TBML efforts are highly reliant on detection by financial institutions, which are the main source of money-laundering ‘red flag reports’. This reflects the highly regulated nature of the sector and the existence of strict rules in the form of KYC and other regulations. However, the ability of financial institutions to act effectively in policing international trade is limited, which has raised concerns among UK regulators (Latter, *et al.*, 2021). This partly reflects the scale problem discussed above, but is exacerbated by other systemic problems.

Detection of suspicious activity is reduced by limited information sharing between financial institutions, particularly across jurisdictions. This, in turn, largely appears to reflect regulatory challenges; for example, related to data protection regulations. Without adequate information sharing, suspicious patterns of activity are likely to be missed as criminal groups ‘spread their activity across multiple banks and jurisdictions’ to evade detection (Draper, 2019).

In addition, the information available to financial institutions on international trade transactions is limited, particularly for open account trade. Open account trade refers to situations where an importer pays for goods only after they have been received, with payment normally made 30–90 days after delivery. For such transactions, financial institutions generally will not have access to documentation on the transaction underpinning

a given payment. They will, in effect, simply be processing wire transfers without having sight of the justification for such payments. Open account trade creates 'a disconnect between the movement of the underlying trade and the money used to finance it' (Asia/Pacific Group on Money Laundering, 2012, p. 45).

While the availability of comprehensive statistics is lacking, there is evidence that the importance of open account trade has steadily increased in recent years. The volume of traditional trade finance transactions conducted through the SWIFT system has decreased steadily since at least 2014; it was almost 25 per cent below 2014 levels in 2021 in US dollar terms without adjusting for inflation.³ This data indicates that traditional trade transactions have declined by 58 per cent as a proportion of overall SWIFT traffic during a period in which total global trade volumes have increased substantially. The Wolfsberg Group (2019, p. 21) estimated in 2019 that 80 per cent of international trade processed by financial institutions was through open account trading. Other estimates have put the share of financed trade at as low as 15 per cent of global trade (Cassara, 2020, p. 93). The low share of finance-based trade may underpin why just 7,044 out of the 9.6m Suspicious Activity Reports filed in the US between 2014 and 2018 related to potential TBML (Cassara, 2020, p. 93).

Finally, the high cost of anti-TBML compliance for financial institutions may be having counterproductive side-effects. The cost of compliance, combined with the low-margin nature of the trade finance sector, means that some firms appear to have concluded that the required investment in mitigation measures does not make economic sense for them. Some firms have chosen to exit the sector entirely; notably, 'several European lenders scaled back or mothballed their trade and commodity finance operations in 2020 after a string of fraud scandals' (Global Trade Review, 2022). This risks accelerating the shift to open account trading. Other institutions appear to have decided that the costs of implementing anti-TBML systems exceed the risk-adjusted cost of regulatory fines for failing to tackle the problem. As a result, not all financial institutions may be assiduously playing the role envisaged for them in existing money-laundering regulations.

Limited capacity and will within government agencies with responsibility to tackle TBML

The complexity and cross-cutting nature of TBML make investigations complex, and may reduce the incentive for any one agency to prioritise investigations. This is exacerbated by money launderers frequently combining TBML with other money-laundering techniques, adding further complexity to investigations (Hataley, 2021). Many countries appear to be simply 'not interested in TBML' (Cassara, 2020, p.91). There are indications that government agencies have underinvested in investigating TBML (Cullen, 2022, p. 28) and that TBML has not been subject to 'any meaningful enforcement action in Canada and many other countries' (p. 97).

The situation is likely particularly bad in low- and middle-income countries, where relevant agencies may lack adequate resourcing, skills, technology and the will to tackle TBML. As

³ Author's own comparisons of financial messaging service SWIFT's year-to-date data for December 2014 and December 2021.

one expert interviewed for this report noted, corruption is a serious problem in many customs departments globally and particularly in low-income countries. The same expert described an occasion where the customs agency of a low-income country had requested that the full functionality of a TBML detection system should not be enabled – even though this would have involved no more cost – likely out of a fear that it would hamper the ability of the agency’s staff to enrich themselves through corrupt deals with criminals. As the share of global trade involving or between low-income countries has been rising rapidly in recent years (FATF, 2021; GFI, 2021), the importance of corruption as a driver of TBML has likely increased.

Logistics as a weak link in the chain

The logistics sector has a potentially important role to play in detecting TBML, since its role in the physical shipment of goods provides significant information that could be used to identify suspect transactions. However, it is a low-margin sector, meaning that incentives for market players to invest in technologies that could improve detection of money laundering are limited (Draper, 2019).

Adaptation by money launderers

Gerbrands, *et al.* (2022) analyse a large administrative dataset provided by the Government of the Netherlands, finding evidence that enhanced money-laundering legislation in the European Union since 2015 has affected how the money-laundering industry operates – leading to increased specialisation, expansion of money-laundering networks and greater internationalisation of companies associated with money laundering. In effect, this indicates that enhanced money-laundering regulations have led to a countervailing increase in the complexity and professionalism of money-laundering activity.

Cost of regulation

The shift towards more stringent money-laundering regulations has received criticism in some quarters. LexisNexis Risk Solutions (2021) estimates that the global cost of complying with anti-financial crime regulations – of which anti-money-laundering regulations form perhaps the most important component – was US\$214bn in 2020, up from US\$181bn the previous year.

Lewis (2022) has argued that the cost of money-laundering regulatory compliance has become so high that some financial institutions accept fines as part of the cost of doing business, while others simply stop doing business with high-risk jurisdictions, potentially impeding economic development in low- and middle-income countries most in need of integration into international trade systems. Lewis argues that it would be better to focus on ‘transparency instead of punishment’ and that investment in tackling predicate crimes would be better than focusing ‘inefficiently’ on money laundering itself.

7. TBML and gender

Very little literature specifically appears to examine the gendered impacts of TBML. However, reports examining the impact of IFFs have identified such impacts. Notably, these include the disproportionate impact on women of (Waris, 2017):

- Reduced public sector social expenditure due to lost government revenue caused by issues such as trade misinvoicing, which is associated with TBML;
- Underemployment (e.g. reflecting cultural practices in which women tend to be laid off first), which may be exacerbated by capital flight associated with IFFs, potentially including TBML;
- Regressive taxation (reflecting women's generally lower incomes) implemented in response to revenue shortfalls associated with issues such as trade misinvoicing; and
- Predicate criminal offences, and the instability and insecurity associated with the poor rule of law that tends to develop where money laundering enables criminal elites to enrich themselves.

The gender-differentiated impact of criminal activity – including in areas such as the illegal trade in drugs (UNODC, 2018) and wildlife (WWF, 2021) – is well documented. A key predicate offence with a disproportionate impact on women and girls is people trafficking; around 69 per cent of victims worldwide are women and girls (UNODC, 2021). FATF (2018, p. 14) describes people smuggling as 'one of the most significant generators of criminal proceeds' globally. In 2012, an estimated US\$99bn out of US\$150bn generated by people smuggling came from forced sexual exploitation; the victims were overwhelmingly women (ILO, 2014). FATF (2018, p. 58) has stated that TBML is particularly likely to be used to launder the proceeds of human trafficking. This may relate to the fact that TBML not only serves to disguise the criminal origins of money, but also to transfer value internationally.

Another key predicate offence with gender-specific impacts is counterfeiting. Some 9 per cent of clothing, footwear and leather imported into the UK is believed to be fake, with a value of £2.5bn (OECD, 2019, pp. 7–8); a high proportion of workers in the garment industry globally are women. As noted by campaigning group Fair Wear, 'counterfeiting is not a victimless crime' since workers in factories producing counterfeits have 'no way of assuring fair labour conditions', reflecting the fact that labour inspectorates and unions do not have access to the factories involved (Fair Wear, 2020).

8. TBML risk for the UK

The US Department of State (2022) lists the UK as a 'major money laundering jurisdiction', while the UK National Crime Agency (NCA) (NCA, 2022) has stated that 'it is highly likely that more than £100bn of money laundering impacts the UK annually.' The UK's money-laundering risk assessment (HM Treasury and Home Office, 2020) suggests that 'there is a realistic possibility that it [money laundering in the UK] remains in the hundreds of billions of pounds annually.'

Credible figures do not appear to have been published specifically on the scale of TBML involving the UK. An IMF algorithm that identifies outliers in global cross-border payments – transactions with characteristics that suggest money laundering may be occurring – found that the UK ‘attracts the most inflow payments-outliers globally, while not generating many outflows-outliers’ (IMF, 2022). This suggests that a substantial amount of money linked to money laundering may be flowing into the UK. This is reflected in the UK’s own money-laundering risk assessment (HM Treasury and Home Office, 2020), which describes TBML as ‘a favoured money laundering technique’ that has increased since 2017, with its popularity reflecting ‘the complexity, anonymity and scale of global trade.’ Anti-corruption watchdog Transparency International (2020) has gone further, suggesting that the UK ‘plays a major role in enabling large-scale suspicious financial flows.’

9. Factors driving TBML risks for the UK

Large, open economy

TBML risks are higher in jurisdictions containing ‘international shipping ports’ and where there is a ‘large volume of international trade’ (Cullen, 2022, p.27). This is a good description of the UK, which in 2021 reported US\$900bn in imports (28% of GDP) and US\$860bn in exports (27% of GDP) in 2021.

Importance of the financial sector

The UK’s ‘stable, accessible financial system’ (Cullen, 2022, p.27) makes it attractive to international money launderers, with the importance of the City of London as a financial centre likely generating a heightened risk of money-laundering activity involving the UK (HM Treasury and Home Office, 2020). The US Department of State (2022) notes that ‘money laundering presents risks to the UK because of the size and sophistication of its financial system.’

The importance of the City of London in trade finance activity exacerbates risks related to TBML specifically. City of London financial institutions process a high volume of complex, global transactions, frequently involving multiple currencies, creating attractive conditions for would-be money launderers (IMF, 2022).

Impact of Brexit

There are reasons why Brexit may have indirectly increased the risk of UK entities becoming involved in or exposed to TBML. The NCA (2021, p. 58) has noted that Brexit may have led UK entities to put greater emphasis on trade with non-European Economic Area jurisdictions, potentially leading to a higher risk of becoming ‘drawn [in]to corrupt practices in high-risk industries.’

There is some dispute over the extent to which UK authorities have responded adequately to these risks. Marzouk (2021, p. 1) argues that the UK’s post-Brexit economic strategy to boost trade with developing countries ‘downplays the TBML risks it carries.’ However, the IMF (2022) has suggested that risks have been mitigated because the UK’s anti-money laundering and counter-terrorism financing regime has been ‘strengthened in targeted ways post-Brexit.’

Impact of the Covid-19 pandemic

Concerns have been raised about how the Covid-19 pandemic might have increased the risk of TBML in the UK (IMF, 2022). This reflects a combination of how Covid-19-related restrictions reduced alternative ways of moving illicit funds across the UK's borders (e.g. making cash smuggling more challenging) and the opportunity provided by 'increased demand for certain goods and services during the pandemic, including from new or unfamiliar suppliers' (IMF, 2022, p. 14).

Planned introduction of free ports

In 2021, the UK Government announced that eight freeports – zones that are treated as outside the borders of the country for tariff purposes, allowing export-orientated companies to save on tariff payments for industrial inputs where they will re-export the final product – would be created across England. The reintroduction of freeports, which were scrapped in 2012, has the potential to increase the UK's TBML risk. FATF (2010) dedicated a whole report to the 'systematic weaknesses' that elevate money-laundering risks, particularly TBML risks, in free trade zones. Notably, these weaknesses relates to excessively 'relaxed oversight' and inadequate inspection regimes.

These concerns led Transparency International (2020) to respond to the freeports consultation with a submission recommending that the government ensure that:

- Any freeports regime develop strict oversight and accountability measures for freeport operators and their employees to reduce the risk of corrupt behaviour;
- Businesses using freeports must undergo thorough due diligence procedures to ensure criminals cannot make use of freeport facilities, including providing verified beneficial ownership information;
- The government should firmly commit to ensuring that freeports will at no point be used for high-value storage, including of artworks, to stop them becoming safety deposit boxes for illicit goods;
- Sufficient controls and enforcement measures should be in place to prevent money laundering, particularly TBML, which poses a reputational and security threat to the UK; and
- There should be clarity over which sectors are permitted to operate in freeports and no weakening of money-laundering controls for regulated sectors, such as banking and professional services.

Anti-money-laundering regulations and enforcement in the UK

There are good reasons to concur with the US Department of State Department (2022, p. 193)'s assessment that the UK is 'a leader in combatting illicit finance'. This reflects the UK's key role in increasing beneficial ownership transparency, and efforts since Brexit to strengthen the UK's anti-money-laundering regulations in relation to issues such as 'correspondent banking and high-risk countries', which have brought 'virtual assets, art market participants, and leasing agents under regulation.'

In 2020, there were 1,294 prosecutions and 836 convictions with money laundering as the primary offence in England and Wales alone (US Department of State, 2022). This is the highest number of prosecutions listed for a jurisdiction covered by the State Department's *International Narcotics Control Strategy Report* (though data is missing for some jurisdictions), and represents a similar number of convictions to that achieved most years in the US at federal level (USSC, 2021; Cassara, 2020, p.15). While this is creditable, it seems likely that the probability of conviction for money launders is very low – potentially similar to the 'less than five percent risk of conviction' in the US (Cassara, 2020, p. 15). Internet searches for news articles and on the NCA website found no examples of recent prosecutions for offences involving TBML. This suggests that TBML prosecutions in the UK are relatively infrequent.

Indeed, there are also reasons for concern over whether the UK regime is fit for purpose or provides value for money. Between 2015 and 2021 the Financial Conduct Authority imposed fines of £380m on financial institutions for anti-money-laundering regulation violations. In the same period, the equivalent figure for the US was over US\$5.6bn, something Emson, *et al.* (2021, p. 1) describe as a 'significant difference... even allowing for the greater GDP and population of the United States.'

Furthermore, just £219m of criminal proceeds were recovered in 2020/21 in the UK, representing just 0.2 per cent of the estimated £100bn annual value of money laundering in the UK. This minimal recovery rate came despite compliance with financial crime regulations in the UK costing around US\$40bn (£29bn) in 2020 (LexisNexis Risk Solutions, 2021) – the second-highest cost globally after Germany. While poor recovery rates and limited convictions are a global phenomenon (Cassara, 2021, pp. 13–14), this nonetheless suggests that the UK's system may be achieving limited deterrence and benefits may not be commensurate to the huge cost of the system.

A variety of weaknesses in the UK's anti-money-laundering efforts are highlighted in the literature. The US Department of State (2022, p. 193) recommends that "the United Kingdom should strengthen its Financial Intelligence Unit's (FIU) capabilities, reduce inconsistencies in the supervisory regime, and increase its international reach to tackle money laundering.'

Marzouk (2021) argues that the UK is characterised by 'a lack of strong regulatory stimulus', which contributes to a failure of financial institutions and law enforcement to prioritise TBML intelligence discovery. According to Marzouk, the financial sector has been calling for reforms that would incentivise TBML deterrence, but this is lacking since the government 'underestimates the money laundering risks whilst trading with high-risk jurisdictions post-Brexit.'

While praising efforts since 2016 to increase corporate transparency, Transparency International (2022) states that further reforms are required to tighten oversight of shell companies by Companies House, the UK registrar of companies, given their role in facilitating TBML and other financial crimes. In addition, Transparency International criticises the 'glacially slow' progress in addressing weaknesses related to oversight of company formation agents. Another issue highlighted is that the Joint Money Laundering Intelligence Taskforce, created in 2015, focuses on regulated sectors and so misses leads outside of this scope, such as in relation to open account trade (Vincent, 2021).

While it seems likely that the capacity of UK-based institutions to detect and tackle TBML is relatively high in global terms, various studies have drawn attention to capacity issues. Based on six expert interviews, Marzouk (2021) describes 'deficient skills, resources [and] technology amongst both UK banks and law enforcement agencies.' In a report focused specifically on laundering the proceeds of kleptocratic corruption from Eastern Europe, policy institute Chatham House (Heathershaw, *et al.*, 2021, p. 1) has expressed concerns that 'failures of investigation and enforcement by the NCA and other UK state bodies' have undermined anti-money-laundering efforts in the UK. Specifically, the ability of rich defendants to hire highly capable defence lawyers tends to 'deter the regulators' often weak and under-resourced attempts to prosecute politically exposed persons.'

Heathershaw, *et al.* (2021, p. 1) argue that 'a new approach' to anti-money-laundering efforts is required in the UK, with an increased focus on creating 'a hostile environment for the world's kleptocrats' by closing legal loopholes, increasing transparency in public institutions, 'deploying anticorruption sanctions against post-Soviet elites' and prosecuting UK professionals who enable money laundering.

10. Russia and the impact of the Ukraine conflict

Russia has been a fairly substantial trading partner of the UK in recent times. In the 12 months immediately prior to Russia's invasion of the Ukraine in February 2022, Russia was the UK's 26th largest export partner (£4.6bn of exports) and 15th largest import partner (£12.5bn of imports), with at least 3,800 UK-registered businesses involved in trade with Russia (DIT, 2022). A high proportion of this trade has related to energy, mining and metals, which are generally considered to have high TBML risks.

Among institutions regulated by the Financial Conduct Authority, Russia was the fourth most-cited 'high-risk' location for financial crimes out of the countries where those institutions operated in 2019/20 (FCA, 2021).

Such risks extend specifically to TBML. GFI (2021, p.2) identified a 'value gap' in Russia's trade statistics for 2018 of almost US\$33bn, one of the largest identified globally. Moreover, Transparency International (2022) recently identified 13 UK shell companies involved in likely TBML transactions worth US\$139m. This formed part of a wider scheme that moved US\$820m in suspect funds out of the Russian Federation between 2014 and 2016 via 123 purchases of bottle-moulding machines by Russian companies at 'grossly inflated prices.' Transparency International (2022, p. 1) believes this scheme represents 'the tip of the iceberg', since 'analysis of Russian trade data reveals thousands of similarly suspect transactions involving UK businesses.'

The new sanctions regime developed in the aftermath of Russia's invasion of Ukraine has altered TBML risks for the UK. It seems likely that the risk of direct TBML from Russia has fallen, since sanctions mean that direct trade has dropped dramatically. In June 2022, UK imports from Russia were £33m – just 4 per cent of total imports in June 2021 (ONS, 2022), with sanctions entirely banning UK imports of important Russian commodities such as gold. However, the risk of TBML (and sanctions evasion using TBML techniques) may be heightened for forms of trade exempted from the current sanctions regime; notably, the Office for National Statistics (ONS, 2022) reports a 62 per cent (£39m) year-on-year

increase in UK exports of medicinal and pharmaceutical products to Russia. Moreover, reduced opportunities to trade directly with the UK may well lead to a heightened risk of TBML conducted via countries with which Russia is still able to trade.

Figure 1: Total exports of goods to Russia (January 2021–June 2022)



Source: ONS (2022). *Open Government Licence v3.0*.

Figure 2: Total imports of goods from Russia (January 2021–June 2022)



Source: ONS (2022). *Open Government Licence v3.0*.

Indeed, it is plausible that overall TBML risks related to Russia (including trade conducted via third-party countries) may have risen for the UK. This reflects: (1) the additional incentive in the current climate to move money out of Russia and hide it in stable jurisdictions, such as the UK; and (2) the increase in the scope of what would be defined as money laundering, reflecting the creation of new offences linked to sanctions evasion (Hunter, 2022). This perspective is supported by an NCA assessment (NCA, 2022), which has specifically highlighted TBML risks in the context of Russian sanctions evasion.

One particularly high-risk commodity is gold – with gold worth £130bn stockpiled by Russia up to 2022. This could be particularly relevant for the UK, since buyers in London have been by the largest customers for Russian gold exports, receiving gold worth US\$16.9bn from

Russia in 2020. While the direct Russia–UK trade in gold is effectively impossible through official channels, gold may be exported by Russia to third-party jurisdictions with large gold markets that have not introduced sanctions – such as China, India and the United Arab Emirates. Hunter (2022, p. 5) hypothesises that transnational criminal networks may then engage in ‘gold and money laundering to disguise the origins of the gold and the beneficiaries of gold profits’, enabling onwards trade to sanctioning jurisdictions such as the UK.

11. Opportunities to better combat TBML globally

Regulatory improvements

Bensassi and Raz (2022) conducted a difference-in-difference study which found that voluntary implementation of FATF recommendations by eight African countries over the period 2012–20 led to a reduction in their ‘trade gap’, indicating a reduction in trade misinvoicing (a key TBML method).

A recent European Union initiative has sought to oblige crypto-asset service providers to ‘collect and make accessible certain information about the originator and the beneficiary’ of crypto-asset transfers (Council of the European Union, 2022), but the UK would not automatically be covered by this measure.

Extending whistle-blower reward schemes

In the US, schemes that provide financial rewards to whistle-blowers have become increasingly popular in recent years in domains such as fighting tax evasion and financial crimes, with over US\$1bn awarded by the Securities and Exchange Commission from 2011 to 2021 (Securities and Exchange Commission, 2022). These have not only directly led to the recovery of large sums by the US Treasury, with US\$4.8bn recovered by the Securities and Exchange Commission alone as a result of whistle-blowers over this period; but it is also believed that they are likely to have deterred a substantial amount of criminal activity.

In 2021, the US Government removed a US\$150,000 cap on the reward available to money-laundering whistle-blowers. This reflected a lack of evidence that small, discretionary rewards are as effective as large rewards. The old system was replaced with a new one where whistle-blowers could receive as a reward worth up to 30 per cent of the fines paid by financial institutions for Bank Secrecy Act violations; and up to US\$5m for information leading to the seizure, restraint or forfeiture of assets linked to foreign government corruption. Currently, in the UK, HM Revenue and Customs and the Competition and Markets Authority offer whistle-blower reward schemes, but the scale of pay-outs they provide are substantially lower than in the US (Nyreröd, *et al.*, 2022).

Digitalisation, the internet of things and the blockchain

A high proportion of the documentation surrounding international trade – including in areas such as customs declarations, bills of lading and logistics documentation – is paper based rather than digital. This impedes efforts to track trade from end to end and reduces the scope for big data solutions to identify money-laundering risks. As noted by a lawyer

specialising in money laundering, manual processing of trade documentation impedes detection of issues because it forces reliance on an individual reviewer detecting whether activity deviates from past patterns, based on documents that do not follow a standard template (Basquill, 2022) – a situation which almost inevitably leads to suspicious activity being missed.

There has been significant progress in recent years in terms of developing technologies and templates to enable digitalisation of transactions. However, implementation has been limited – it is at a very early stage in the digitalisation process. For example, the Digital Container Shipping Association (DCSA, 2022) estimates that just 1.2 per cent of bills of lading in 2021 were electronic; however, change could occur rapidly: 1.2 per cent is an order of magnitude greater than just one year previously (when the figure was 0.1%, according to the same report).

Moreover, rapid adoption is already occurring in jurisdictions that have been identified as high risk in terms of money laundering. For example, in the United Arab Emirates a consortium of seven banks is implementing a system that ‘effectively digitalises trade’ in the country with ‘blockchain allowing banks to supply and distribute information in a digitalised way’ (Global Trade Review, 2022).

Further scope for digitalisation could come in the form of ‘smart’ shipping containers that allow shipping companies to track the movement of goods around the world. Experts have described this technology as having ‘a lot of promise’ for tackling TBML, since it increases assurance that containers have not been tampered with. This potentially allows customs agencies to provide expedited clearance processes for a higher proportion of these containers, allowing limited resources to be focused on higher-risk shipments, thus supporting detection of TBML (Cassara, 2020, p. 103).

Distributed ledger and blockchain technology also appear to have significant potential to address TBML risks (US GAO, 2022). As noted by Chuah (2022, p. 1) a blockchain system could not just digitalise trade documents but ‘effectively automate the document-checking process’, making detection of TBML much easier.

Data sharing and big data

A key area where progress could be made, highlighted across multiple sources, is in improving data sharing among financial institutions and between different sectors involved in trade (e.g. the financial sector, logistics sector, and public sector bodies such as customs agencies). The requirement is for more frequent data sharing and the sharing of more detailed data (Global Trade Review, 2022; Hataley, 2021). Sector experts have argued that fraud should become ‘exponentially harder’ where data sharing enables different actors to triangulate information.

Since 2005, the US Government has pioneered the concept of trade transparency units that enable mutual sharing of detailed trade data with selected governments around the world; 17 such units had been created by 2020, including one with the UK in 2017 (US GAO, 2020, p.32). Among their other benefits, trade transparency units can help address TBML by facilitating information sharing across jurisdictions. At base, this involves mutual sharing of detailed transaction-level trade data to enable direct comparison of what was reported to the

originating jurisdiction at the point of export and to the recipient jurisdiction at the point of import. There is evidence that this has already proved a very valuable tool, with reports of asset seizures from 2015 to 2020 worth US\$1bn overall having been enabled as a direct result of such initiatives (Cassara, 2020, p. 89).

However, international data sharing is a challenge, partly reflecting regulatory controls on issues such as financial institutions sharing customer data – notably, concerns around compliance with the UK General Data Protection Regulation and similar data protection regulations. Cassara (2020, p. 91) suggests that ‘the concept of trade transparency should be built into the United States and other countries’ trade agendas.’

The IMF (2022) has noted that ‘leveraging big data and advanced data analytics for efficient, effective, and timely detection and assessment of cross-border money laundering and terrorist-financing risks can support the UK’s risk-based supervisory approach.’ The UK has the advantage of ‘vast amounts of existing data’, which can be paired with ‘advances in machine learning’ to identify ‘entities exposed to cross-border money laundering risks’ and ‘unusual payments potentially related to illicit financial flows.’

Big data is closely linked to the issue of digitalisation, but is not identical with it; significant automation of due diligence using artificial intelligence is possible even where paper documents are still in use (Global Trade Review, 2022) – for example, through processes that validate information provided on forms against external data sources (e.g. confirming whether a ship was in the port where it was described as having been loaded at the time specified). A number of artificial intelligence algorithms have been developed to support financial institutions to assess TBML risks for trade transactions, with evidence that they can play an important role in detection (e.g. Tertychnyi, *et al.*, 2022).

References

- Asia/Pacific Group on Money Laundering (2012, 20 July). *APG typology report on trade based money laundering*. https://www.fatf-gafi.org/media/fatf/documents/reports/Trade_Based_ML_APGReport.pdf
- Basquill, J. (2022, 13 July). Trade-based money laundering: the paper trail. *Global Trade Review*. <https://www.gtreview.com/magazine/the-fintech-issue-2022/trade-based-money-laundering-the-paper-trail/>
- Bensassi, S., and Raz, A. (2022, May). *Combating money laundering: does implementing the Financial Action Task Force recommendations bite?* <https://www.birmingham.ac.uk/documents/college-social-sciences/government-society/publications/combating-money-laundering-briefing.pdf>
- Brunvoll, B., and Øvstedal, B. (2022, June). Detecting money laundering through trade flow analysis. Norwegian School of Economics. <https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/3017132/masterthesis.pdf?sequence=1&isAllowed=y>
- Camdessus, M. (1998, 10 February). Money laundering: the importance of international countermeasures – address by Michel Camdessus. International Monetary Fund. <https://www.imf.org/en/news/articles/2015/09/28/04/53/sp021098>
- Cassara, J. (2020). *Money laundering and illicit financial flows*. Independently Published.
- Chuah, J. (2022). Money laundering considerations in blockchain-based maritime trade and commerce. *European Journal of Risk Regulation* 1–16. <https://doi.org/cambridge.org/core/journals/european-journal-of-risk-regulation/article/money-laundering-considerations-in-blockchainbased-maritime-trade-and-commerce/E2BD70B37401A0870531D65D9123A10F>
- Council of the European Union. (2022, 29 June). *Anti-money laundering: provisional agreement reached on transparency of crypto asset transfers*. <https://www.consilium.europa.eu/en/press/press-releases/2022/06/29/anti-money-laundering-provisional-agreement-reached-on-transparency-of-crypto-asset-transfers/>
- Cullen, A. F. (2020, 9 December). *Proceedings at hearing of December 9 2020 of British Columbia's Cullen Commission*. <https://www.cullencommission.ca/data/transcripts/transcript%20december%209,%202020.pdf>
- Cullen, A. F. (2022). *Commission of inquiry into money laundering in British Columbia (Cullen Report)*. <https://cullencommission.ca/files/reports/cullencommission-finalreport-full.pdf>
- DCSA. (2020, December). *Standard for the bill of lading: a roadmap towards edocumentation*. Digital Container Shipping Association (DCSA). <https://dcsa.org/wp-content/uploads/2020/12/20201208-dcsa-p4-dcsa-standard-for-bill-of-lading-v1.0-final.pdf>
- DCSA. (2022, 6 July). *Paperless trade*. Digital Container Shipping Association (DCSA). <https://dcsa.org/newsroom/resources/paperless-trade-what-the-commonwealths-quantitative-analysis-tells-us/>

- DIT. (2022, 19 August). *Trade and investment factsheets: Russia*. Department for International Trade (DIT).
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1098451/russia-trade-and-investment-factsheet-2022-08-19.pdf
- Draper, J. (2019, 9 October). *Addressing the abuse of trade for money laundering purposes*.
<https://rusi.org/explore-our-research/publications/commentary/addressing-abuse-trade-money-laundering-purposes>
- Drug Enforcement Administration. (2017). *2017 National drug threat assessment*.
https://www.dea.gov/sites/default/files/2018-07/dir-040-17_2017-ndta.pdf
- Emson, L., Bond, F., and Reid, J. (2021, 7 May). Is the United States more effective than the United Kingdom at prosecuting economic crime? *Macfarlanes*.
<https://www.macfarlanes.com/what-we-think/in-depth/2021/is-the-united-states-more-effective-than-the-united-kingdom-at-prosecuting-economic-crime/>
- FAO. (2021). *Forest Products 2019*. Food and Agriculture Organization (FAO).
<https://www.fao.org/3/cb3795m/cb3795m.pdf>
- FATF. (2006). *Trade based money laundering*. Financial Action task Force (FATF).
<http://www.fatf-gafi.org/media/fatf/documents/reports/trade%20based%20money%20laundering.pdf>
- FATF. (2010). *Money laundering vulnerabilities of free trade zones*. Financial Action Task Force (FATF). <https://www.fatf-gafi.org/media/fatf/documents/reports/ML%20vulnerabilities%20of%20Free%20Trade%20Zones.pdf>
- FATF. (2018). *Financial flows from human trafficking*. Financial Action Task Force (FATF).
<https://www.fatf-gafi.org/media/fatf/content/images/human-trafficking-2018.pdf>
- FATF. (2020). *Trade-based money laundering trends and developments*. Financial Action Task Force (FATF). <http://www.fatf-gafi.org/media/fatf/content/trade-based-money-laundering-trends-and-developments.pdf>
- Fair Wear. (2020, September). *Counterfeit ≠ improvement of labour conditions*.
<https://doi.org/Counterfeit%20%2521improvement%20of%20labour%20conditions>
- Ferwerda, J., Kattenberg, M., Chang, H., Unger, B., Groot, L., and Bikker, J.A. (2013). gravity models of trade-based money laundering. *Applied Economics* 45(22), 3170–3182
- FCA. (2021, 7 October). *Financial crime: analysis of firms' 2017–2020 Rep-Crim Data*. Financial Conduct Authority (FCA). <https://www.fca.org.uk/data/financial-crime-analysis-firms-2017-2020>
- Florquin, N., Elodie, H., and Jongleux, B. (2020, December). Trade update 2020: an eye on ammunition transfers to Africa. *Small Arms Survey*.
<https://www.smallarmssurvey.org/sites/default/files/resources/sas-trade-update-2020.pdf>
- Gerbrands, P., Unger, B., Getzner, M., and Ferwerda, J. (2022). The effect of anti-money laundering policies: an empirical network analysis. *Epj Data Science* 11(1), 15
- GFI. (2021). *Trade-related illicit financial flows in 134 developing countries: 2009–2018*. Global Financial Integrity (GFI).
<https://secureservercdn.net/50.62.198.97/34n.8bd.myftpupload.com/wp-content/uploads/2021/12/iffs-report-2021.pdf?time=1661371697>

- Global Trade Review. (2022, 9 June). Roundtable: looking to the future of MENA trade. <https://www.gtreview.com/supplements/gtr-mena-2022/roundtable-looking-to-the-future-of-mena-trade/>
- Goodrich, S. (2022, 7 July). *Bottle laundromat: how fake trades and British shell companies helped move US\$820 million of hot money out of Russia*. Transparency International. <https://www.transparency.org.uk/bottle-laundromat-uk-russia-money-laundering-shell-companies-blog>
- Hataley, T. (2020, 30 March). Trade-based money laundering: organized crime, learning and international trade. *Journal of Money Laundering Control*. <https://www.emerald.com/insight/content/doi/10.1108/jmlc-01-2020-0004/full/html>
- Heathershaw, J., Cooley, A., Mayne, T., Michel, C., Prelec, T., Sharman, J., and Soares de Oliveira, R. (2021, December). *The UK's kleptocracy problem: how servicing post-soviet elites weakens the rule of law*. Chatham House. <https://www.chathamhouse.org/sites/default/files/2022-03/2022-03-29-uk-kleptocracy-problem-heathershaw-mayne-et-al.pdf>
- HM Treasury and Home Office (2020). *National risk assessment of money laundering and terrorist financing 2020*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945411/nra_2020_v1.2_for_publication.pdf
- Hunter, M. (2022, April). Going for gold: Russia, sanctions and illicit gold trade. Global Initiative against Transnational Organized Crime. <https://globalinitiative.net/wp-content/uploads/2022/04/gitoc-going-for-gold-russia-sanctions-and-illicit-gold-trade.pdf>
- ILO. (2014). *Profits and poverty: the economics of forced labour*. International Labour Office (ILO). https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_243391.pdf
- IMF. (2016). *Corruption: costs and mitigating strategies*. International Monetary Fund (IMF). <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1605.pdf>
- IMF. (2021, March). *The IMF and the fight against illicit and tax avoidance related financial flows*. International Monetary Fund (IMF). <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1605.pdf>
- IMF. (2022) *United Kingdom financial sector assessment program*. International Monetary Fund (IMF). <https://www.imf.org/-/media/files/publications/cr/2022/english/1gbrea2022009.ashx>
- Ismail, Nick. (2018, 24 April). Global cybercrime economy generates over US\$1.5tn, according to new study. *Information Age*. <https://www.information-age.com/global-cybercrime-economy-generates-over-1-5tn-according-to-new-study-123471631/>
- JD Supra. (2021, 8 February). *Shift to open account trade highlights evolving risks in the maritime sector*. <https://www.jdsupra.com/legalnews/shift-to-open-account-trade-highlights-9822805/>
- J5 (2022, 10 May). *J5 countries host 'challenge' aimed at NFTs and decentralized exchanges*. Joint Chiefs of Global Tax Enforcement (J5). <https://www.irs.gov/pub/irs-utl/j5-media-release-5-10-2022.pdf>
- Latter, E., Geale, D., Jackson, R., and Beaman, J. (2021, 9 September). *Trade finance activity*. <https://www.bankofengland.co.uk/-/media/boe/files/prudential->

regulation/letter/2021/september/trade-finance-activity-letter.pdf?la=en&hash=dfdad6e357dcdfaf1c4ea5b017509c601c64442b

- Lewis, J. B. (2022). Money finds a way: increasing AML regulation garners diminishing returns and increases demand for dark financing. *Vand. J. Transnat'l L*, 55, 529
- LexisNexis Risk Solutions. (2021, June). *True cost of financial crime compliance study – global cost*. <https://risk.lexisnexis.com/global/en/insights-resources/research/true-cost-of-financial-crime-compliance-study-global-report#:~:text=according%20to%20our%20global%20true,%24180.9%20billion%20the%20previous%20year>
- Kennedy, L., Gore, A., Southern, N. P., and van Uhm, D. (2022). *Asian roulette*. Global Initiative against Transnational Organized Crime. <https://globalinitiative.net/wp-content/uploads/2022/08/gitoc-apa-obs-asian-roulette-criminogenic-casinos-and-illicit-trade-in-environmental-commodities-in-south-east-asia.pdf>
- Marzouk, M. (2021, 16 July). *Trade-based money laundering (TBML) empowers criminals to run free post-Brexit*. <https://www.emerald.com/insight/content/doi/10.1108/jmlc-04-2021-0040/full/html>
- May, C. (2017). *Transnational crime and the developing world*. Global Financial Integrity. <https://gfintegrity.org/report/transnational-crime-and-the-developing-world/>
- Mosna, A. (2022). More than antiquities trafficking: the issue is antiquities laundering. *Global Perspectives on Cultural Property Crime*, 99–118. Routledge. <https://www.taylorfrancis.com/chapters/edit/10.4324/9780367823801-10/antiquities-trafficking-anna-mosna>
- NCA. (2022, March). Combating kleptocracy cell. *SARS in action*. National Crime Agency (NCA). <https://www.nationalcrimeagency.gov.uk/who-we-are/publications/591-sars-in-action-march-2022/file>
- NCA. (2022, July). *Red alert financial sanctions evasion typologies: Russian elites and enablers*. National Crime Agency (NCA). <https://nationalcrimeagency.gov.uk/who-we-are/publications/605-necc-financial-sanctions-evasion-russian-elites-and-enablers/file>
- Nyreröd, T., Andreadakis, S., and Spagnolo, G. (2022, June). *Money laundering and sanctions enforcement: large rewards, leniency and witness protection for whistleblowers*. <https://bura.brunel.ac.uk/bitstream/2438/24982/1/fulltext.pdf>
- ONS. (2022, 24 August). *The impact of sanctions on UK trade with Russia: June 2022*. Office for National Statistics (ONS). <https://www.ons.gov.uk/economy/nationalaccounts/balanceofpayments/articles/theimpactofsanctionsonuktradewithrussia/june2022#:~:text=following%20the%20russian%20invasion%20of,first%20time%20since%20records%20began>
- OECD. (2021, 22 June). *Global trade in fakes: a worrying threat*. Organisation for Economic Cooperation and Development (OECD). <https://www.oecd.org/gov/global-trade-in-fakes-74c81154-en.htm>
- OECD. (2022). *OECD trade data*. Organisation for Economic Cooperation and Development (OECD). <https://data.oecd.org/trade/>
- OECD and IPO (2019). *Trade in counterfeit products and the UK economy: 2019 update*. Organisation for Economic Cooperation and Development (OECD) and Intellectual

- Property Office (IPO). <https://www.oecd.org/gov/risk/trade-in-counterfeit-products-and-uk-economy-report-update-2019.pdf>
- Securities and Exchange Commission. (2022). *Whistleblower awards over US\$1 billion*. <https://www.sec.gov/page/whistleblower-100million>
- Tertychnyi, P., Godgildieva, M., Dumas, M., and Ollikainen, M. (2022). Time-aware and interpretable predictive monitoring system for anti-money laundering. *Machine Learning With Applications*, 8, 100306.
- Transparency International UK. (2020, 13 July). *Freeports consultation – submission to the Department for International Trade*. https://www.transparency.org.uk/sites/default/files/pdf/publications/ti-uk_freeports%20consultation%20submission.pdf
- UNODC. (2005). *World drug report 2005*. United Nations Office on Drugs and Crime (UNODC). http://www.unodc.org/pdf/wdr_2005/volume_1_web.pdf
- UNODC. (2010). *The globalization of crime: a transnational organized crime threat assessment*. United Nations Office on Drugs and Crime (UNODC).
- UNODC. (2011, October). *Estimating illicit financial flows resulting from drug trafficking and other transnational organized crimes*. United Nations Office on Drugs and Crime (UNODC). https://www.unodc.org/documents/data-and-analysis/studies/illicit_financial_flows_2011_web.pdf
- UNODC. (2018, June). *Women and drugs: drug use, drug supply and their consequences*. United Nations Office on Drugs and Crime (UNODC). https://www.unodc.org/wdr2018/prelaunch/wdr18_booklet_5_women.pdf
- UNODC. (2021, January). *Global report on trafficking in persons 2020*. United Nations Office on Drugs and Crime (UNODC). https://www.unodc.org/documents/data-and-analysis/tip/2021/glotip_2020_15jan_web.pdf
- US Department of State (2022, March). *Bureau of international narcotics and law enforcement affairs. International narcotics control strategy report – volume II: money laundering*. <https://www.state.gov/wp-content/uploads/2022/03/22-00768-incsr-2022-vol-2.pdf>
- US GAO. (2019). *Countering illicit finance and trade: US efforts to combat trade-based money laundering*. US Government Accountability Office (GAO). <https://www.gao.gov/assets/gao-20-314r.pdf>
- US GAO. (2020, April). *Trade-based money laundering: us government has worked with partners to combat the threat, but could strengthen its efforts*. US Government Accountability Office (GAO).
- US GAO. (2021, November). *Countering illicit finance and trade: better information sharing and collaboration needed to combat trade-based money laundering*. US Government Accountability Office (GAO). <https://www.gao.gov/assets/gao-22-447.pdf>
- USSC. (2021). *Quick facts – money laundering offenses*. United States Sentencing Commission (USSC). https://www.ussc.gov/sites/default/files/pdf/research-and-publications/quick-facts/money_laundrying_fy21.pdf
- Vincent, M. (2021, January). Why business is worried about trade-based money laundering. *Financial Times*. <https://www.ft.com/content/bf9c5a20-6a2b-458c-b237-e8b6128b82ce>

- Waris, A. (2017, July). *Illicit financial flows: why we should claim these resources for gender, economic and social justice*. Association for Women's Rights in Development.
https://genderandsecurity.org/sites/default/files/waris_-_illicit_financial_flows-_wht_we_should_claim_these_resources.pdf
- Wolfsberg Group. (2019). *The Wolfsberg Group, ICC and BAFT trade finance principles*.
<https://www.wolfsberg-principles.com/sites/default/files/wb/trade%20finance%20principles%202019.pdf>
- World Bank. (2019). *Illegal logging, fishing, and wildlife trade : the costs and how to combat it*. <https://openknowledge.worldbank.org/handle/10986/32806>
- WWF (2021). *Gender and illegal wildlife trade: overlooked and underestimated integrating gender into IWT thinking and responses*. World Wide Fund for Nature (WWF).
https://wwfint.awsassets.panda.org/downloads/gender_iwt_wwf_report_v9.pdf