ESTIMATING ILLICIT FINANCIAL FLOWS FROM TRADE MISINVOICING:

INTRODUCING THE ‘GREY RE-EXPORTS’ METHOD

(THE CASE OF KYRGYZSTAN)

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Abstract

The priority of reducing Illicit Financial Flows has been established as part of development plans for many countries and in the 2030 Agenda for Sustainable Development adopted by the General Assembly in 2015. UNCTAD and UNODC have developed methodological guidelines for countries to estimate illicit financial flows, including financial flows from trade misinvoicing.

The UNCTAD guideline includes two methods for calculating illicit financial flows from trade misinvoicing, the Partner Country Method (PCM) and the Price Filter Method (PFM). This paper explores calculating illicit financial flows using a new, third method called the grey re-exports method. Grey re-exports refer to a scheme of misinvoicing which involves the importation and re-exportation of goods. Goods are imported to one country from another country and are then re-exported to a third country as exports from the second country rather than as re-exports. This scheme is seen in countries that have special trade agreements as part of a customs union.

This paper examines misinvoicing for a trade route between countries with such an agreement; and aims to formally conceptualize grey re-exports. The re-exports are termed grey due to the illicit nature of reporting which generates grey re-exports. This paper provides estimates of illicit flows using the grey re-exports method and compares them to estimates using PCM and PFM. Results show that the grey re-export method is comparable to other methods. Therefore, this new method can be considered an additional method for measuring illicit financial flows from trade misinvoicing, for countries that have similar trade agreements or can otherwise take advantage of such trade flows.

Keywords: Illicit Financial Flows, SDG, SDG indicators, Trade misinvoicing, Grey re-exports, re-exports
1. Introduction

Shadow economic activity is a great threat to the economic stability and prosperity of all countries. Some countries are losing significant tax revenues due to a sizeable shadow economy (Schneider, 2010), which for some countries can reach up to 50% of GDP. The concept of the shadow economy has been largely developed for the purposes of measurement and subsequent policy actions. Multiple studies refer to the size of shadow economies around the world, where shadow economy is used interchangeably with such terms as ‘hidden’ economy, ‘underground’ economy, ‘second’ economy etc. The most comprehensive and widely used methods to estimate the shadow economy or its equivalents are those based on multiple causes, multiple indicators (MIMIC, Schneider & Buehn, 2008) or the currency approach (Gutmann, 1977). The generally agreed findings reiterate that the main driving forces of the shadow economy are indirect taxes, followed by self-employment and unemployment. In a globalized world, a portion of the shadow economy inevitably crosses country borders, parallel to the legal trade of goods and services. This is a hidden exchange, and it is reflected in and measured as Illicit Financial Flows (IFFs). It has to be noted that IFFs do not necessarily represent the cross-border movement of the whole shadow economy, considering that the concept of shadow economy includes the informal sector, which is not a part of IFFs formal sector, among other things, includes households’ production of goods and services for own use and some aspects of informal employment that do not have illicit nature (Medina & Schneider, 2018; Quiros-Romero at al., 2021) thus these activities are not considered a part of IFFs.

Reducing IFFs has been established as a priority in the 2030 Agenda for Sustainable Development adopted by the General Assembly in 2015. The existing methodological framework for estimating IFFs from trade suggests one method which uses mirror statistical data on trade between partner countries (UNCTAD, 2020). Another method detects pricing abnormalities to assess trade mispricing. Work done so far on estimating local patterns of trade IFFs shows evidence of alternative shadow schemes in international trade, in which countries take advantage of local customs preference agreements.

One such shadow scheme has been discovered in trade flows between China, Kyrgyzstan, and its closest trade partners under the customs union – the Russian Federation and Kazakhstan (Yalovkina, 2017; Nazarova, 2018). Reportedly, these trade flows result in massive, underreported flows of googs produced in China, mainly textile goods, from Kyrgyzstan to their partners under the guise of locally manufactured products. A similar pattern albeit in the opposite direction was detected, namely the exports of tobacco products from Kyrgyzstan to China. No local manufacturing of such category of goods is currently happening in Kyrgyzstan, there is significant local consumption combined with insignificant reported imports; this pattern is therefore likely of an illicit origin, and we investigate it further through export figures.

We term such flows grey re-exports, as they originate from a third country and are misreported as local for further export instead of being officially re-exported. This paper seeks to investigate the grey re-export flows for two categories of goods through Kyrgyzstan: textile goods, including product codes 61-65 at the 2-,4-, and 6-digit aggregate level of the harmonized system, and cigarettes containing tobacco, code “240220” at the 6-digit level. Grey re-exports have serious implications for trade policy. One aspect is that they can distort the flow of trade, particularly in customs unions where non-member states take advantage of preferential agreements. In essence, the presence of grey reEXPORTs deprives member
states of much needed import revenues and can affect bonafide exporters in a customs union. Additionally, we report the results of trade related IFFs estimated with conventional methods, the price filter method and the partner country method, and compare them with the estimates of grey re-exports to see if these methods include and appropriately measure grey re-exports.

Additionally, we report the results of trade related IFFs estimated with conventional methods, the price filter method and the partner country method, and compare them with the estimates of grey re-exports to see if these methods include and appropriately measure grey re-exports.
2. Illicit financial flows from trade: recommended estimation methods

To calculate illicit financial flows from trade, two methods, namely the partner country method (PCM) and the price filter method (PFM) are included in the UNCTAD Methodological Guidelines (UNCTAD, 2021)\(^1\).

The Partner Country Method (PCM) investigates trade gaps and misinvoicing from a top-down approach, by assessing inconsistencies between partners in aggregated international trade data. The PCM assesses trade asymmetries by comparing the import (or export) values reported by one country with the corresponding export (or import) values reported by its partner country. The main assumption behind PCM is that partners’ trade statistics are sufficiently accurate and comparable to treat differences in mirror statistics as mis-invoicing, hence directly applicable to measuring tax and commercial IFFs. This assumption is critical yet unlikely to be true, raising serious doubts about the reliability of this method (UNCTAD, 2020).

The concept of the PCM is based on a trade gap, defined as the discrepancy between the values of a trade transaction, reported independently by the two trading partners. There are limitations to the assumption that differences in mirror statistics are a result of mis-invoicing. Rather than being evidence of illicit activity, differences might result from different reporting practices and other factors. When trade asymmetries are discovered, there should be further inspection. Many factors contribute to trade asymmetry. Accordingly, all measures must be taken to correct for other reasons before attributing a portion of asymmetry to IFFs or trade misinvoicing. According to UNSD (2019), three main and well-known reasons for asymmetries in bilateral merchandise trade are:

i. application of different criteria of partner attribution in import and export statistics,

ii. use of CIF-type values in import statistics and FOB-type values in export statistics,

iii. application of different trade systems (General versus Special Trade System).

There are ways to adjust for these limitations. These include (i) comparison of national data with trading partners which improves accuracy of PCM estimates, (ii) use of national granular data including most detailed classification level, (iii) fixing differences between CIF-FOB estimates for imports and exports, (iv) analysis of bilateral asymmetries after resolving CIF-FOB differences, (v) application of reliability weighting procedure where gaps in mirrors statistics are substantial irrespective of the source of gaps and (vi) the validation of results with qualitative methods such as interviews with Customs and other experts.

The other method of measuring illicit financial flows included in the UNCTAD Methodological Guidelines is the price filter method (PFM). It is a bottom-up method which estimates a price filter

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\(^1\) The correct terms for the mentioned methods are Partner Country Method + (PCM+) and Price Filter Method + (PFM+), due to newly introduced adjustments; in this paper we refer to them simply as PCM and PFM.
for each commodity and uses it as a proxy for arm’s length prices. Trade mispricing occurs when the unit price of a given transaction differs from the normal prices assumed by a price filter, i.e., when an abnormal price of a particular transaction is identified. Price filters vary between transactions depending on the circumstances of a given transaction, such as economic circumstances, business strategies of the buyer/seller, contractual terms etc. Price filters’ upper and lower bound prices may be obtained from observable market prices or statistical estimates for each commodity.

A major advantage of the PFM is that it uses transaction-level data, and as such, operates efficiently and at low costs. The method can help with automated monitoring of transactions in real time and the inspection of historical records. Also, PFM does not rely on comparison with partner transaction data – it can detect mispricing also in the case of collusion of importer and exporter, which would not be detected by PCM.

However, the PFM suffers a heterogeneity problem of products at transaction level. Specifically, transactions need to be classified using product classifications, and even at the most detailed level, they include products of varying degrees of heterogeneity. These would inherently have different prices that would be assessed as abnormal prices using the price filter without necessarily being a sign of mispricing (e.g., high-end quality products within the same product code would have high(er) prices, potentially identified as abnormal prices, whereas in reality they sim simply reflect the quality of the product).

In addition, the PFM is unable to detect unusual prices, such as those from long-term trading contracts or during episodes of volatile prices in the global economy.

To address these limitations, a detailed examination of trade records and a refinement of price filters for selected commodities or partners can be used. For example, price filters can be set at detailed product level of the HS code despite the presence of quality differences at detailed level. Alternatively, the use of free market prices can be used to address endogeneity issues that arise from price filters set based on detailed level of commodity. Furthermore, consulting international experts and examination of trade documentation are quite helpful in setting a central price for the filter.

Both methods (PCM and PFM) have their limitations, however, it is recommended to use both to address some aspects of trade IFFs omitted by one or the other. It is considered that PCM describes the total flow of IFFs from trade, and PFM addresses the possible reasons behind these flows, thus the use of both triangulates the results.
3. The concept of grey re-exports

3.1 Theory development

There are several types of grey re-exports of goods. Apart from various forms of smuggling, the most common type of grey re-exports is the illicit import of goods into one country with the aim of subsequent resale of these same goods to other countries, while most of this re-export is not recorded in the official statistics of the country (Mendkovitch, 2017; IA Centr, 2020).

Grey re-exports can be a result of many activities, including the following:

- misclassification of goods categories;
- taking advantage of customs regulations;
- falsification of customs documents;
- mispricing;
- corruption, where a portion of goods crosses borders without accounting or registration;
- smuggling;
- misreporting of goods to give the appearance that goods are of local origin when being exported to other countries for duty-free status.

The concept appears in the literature and press publications when irregularities in trade flows mirror statistics were first detected by analysts in Central Asian countries (Knobel, 2019; Movchan, 2022), and was initially defined as importation of goods with the view to resell them in other countries (Mendkovitch, 2017). Later, smuggling and false transit were also referred to as grey re-export (Akchabar, 2019) with China being the main source of such flows and the Russian Federation and Kazakhstan the recipients (IA Center, 2020). However, grey re-export was never formally established as a concept, which we are seeking to do in the present paper.

Grey re-export is based on the definitions of export and re-export. Exports are the goods and services that a country produces domestically, or within the borders of its own country, and sells to buyers in a foreign country. If goods are imported from outside of national borders and later exported from the same country to another country, these goods should be considered re-exports. When a country exports previously imported goods without any alteration and reports the value as exports without specifying re-exportation or there is evidence of re-exportation, but no flow is recorded, such activity is illicit and generates a trade related IFF. In the general framework of trade related IFFs this activity is categorized as misinvoicing and is termed ‘grey re-export’.
For example, *Country A* is the country of origin for good X and *Country B* is the initial importer of good X. *Country C*, the country of destination, is the country to which good X is later exported (re-exported) from *Country B*. This example also allows for re-exportation of good X to multiple countries of destination, namely Countries n.

In some cases, *Country B* imports good X reportedly for domestic consumption, and produces a certain quantity of good X domestically. *Country B* consumes a portion of good X and exports some amount of good X to Countries n but does not report the full amount re-exported or does not report such exports at all. However, evidence of the true level of exports from *Country B* is seen in the mirror statistics of Countries n, or through other evidence. Such evidence alternatively obtained may be the result of research or an expert survey.

The difference in the true level of exports from *Country B* to Countries n is termed grey re-exports, and includes two types of flows, namely **misreported re-exports** and **unreported re-exports**. These two models are then combined into a general model for estimating **net grey re-exports**.

### Misreported re-exports

Misreported re-exports are goods that are reported in official trade statistics as exports from a source country, but which are inconsistent with the value of locally manufactured goods. The reported export value is higher than the balance after domestic consumption, so we assume that this difference is re-exportation of goods not produced locally, but rather imported from third countries. Thus, we can estimate misreported re-exports as follows:

\[
\text{Misreported Reexports}_{xbct} = \text{Exports}_{xbct} - (\text{Production}_{xbt} - \text{dom} \times \text{Consumption}_{xbt}) \quad (1)
\]
Where subscript $x$ denotes good $x$, $b$ – country B (departure country), $c$ – country C (destination country), and $t$ - year (time-period) of estimation.

Note that consumption of goods is categorized as either consumption of domestically produced goods or consumption of imported goods. The ratio $\text{dom}$ represents the proportion of total consumption that is consumption of domestically produced goods. To estimate this ratio an expert evaluation or literature review is advised, a range-based approach can also be used.

Using the model above; if the value is positive, further investigations should be done. This difference may come from formations of stock of inventory, and perishability and longitudinal analysis can be accounted for in the model. If the goods are perishable within one year, then no inventory stock is feasible. If the goods are not perishable, but the value of misreported re-exports persists for several consecutive time-periods (years) and the total value (balance) for several time periods is positive, then it indicates misreported re-export.

A positive value may also indicate erroneous estimations of consumption and production values, which are difficult to establish, and triangulation is to be used to validate the numbers. Also, prior to this analysis a preliminary review of literature should be done to identify re-exported categories. Alternatively, this can be achieved by correlating longitudinal values of import and exports of the same good categories (preferably comparing results for 2,4, and 6-digit levels) or by comparing values of production and export looking for excessive exports.

A negative value of misreported re-exports may indicate cases where values of goods are produced but not sold, or may indicate misreporting of exports as opposed to re-exports. This can be further investigated by assessing the financial reports of producing companies, if available. If the instance of negative re-exports values is unique, we recommend carrying over the negative balance onto the next year’s production values. If negative values persist, this indicates misreported exports and not misreported re-exports. Using the model, only positive values are treated as misreporting of re-exports.

### Unreported re-exports

Unreported re-exports refer to goods which are imported to country B and re-exported to country C but not reported in trade statistics of one or more partners, however one can believe that goods have crossed to destination country. Having a third partner in this relationship, whose data is assumed to be reliable, can be crucial for estimation. Trade data of all partners are to be compared, and we recommend using the highest reported value or the values of the most reliable partner’s statistics. It can be assumed that all goods imported from country A (according to country A export data), which are not consumed and not officially reported in export from Country B to Country C are actually exported. This method connects with the one used by UNODC to estimate supply-side model of drug export from a transit country (UNODC, 2021).

We estimate the value of unreported re-exports as:

\[
\text{Unreported Reexports}_{xbct} = \text{Imports}_{xbat} - (1 - \text{dom}) \times \text{Consumption}_{xbt}
\]  

(2)

Where $(1 - \text{dom})$ is the proportion of consumption of imported goods $x$ in country $b$, imported from country $a$, the country of origin of the good $x$.

Using the model above, a positive value indicates unreported re-exports. A negative value may stand for misreporting of imports (meaning there is more goods exported than imported and produced) and is still of interest as it may indicate cases of smuggling (Figure 2).
In both cases, with misreported re-exports and unreported re-exports, an assumption of falsification of trade documents is always possible, which may mean that the transaction did not actually occur but was used as a money laundering operation.

### 3.2 Data sources

The value of imports and exports can be obtained from national statistical authorities, customs authorities, or UN Comtrade. The use of more granular data is advised, but the level of granularity should be consistent with production and consumption statistics. Country-reported data are compared with the mirror data of partners, and the mirror values are to be corrected by the CIF/FOB margin. If the actual CIF-FOB conversion margins are not available, current sources recommend applying a 6% margin (GFI, 2019). If partner country data are reliable, then mirror values as reported are to be used. If there is no way to determine reliability, the highest values can be used. It is also important to deduct all officially reported re-exports.

The values of production of good X in country B can be obtained from reports of outputs available at national statistical or tax authorities. A limitation, however, is that many such data are aggregated, and product categories don’t always comply with HS classifications. In this case, it is advised to use data with less granularity, for example, 2-digit HS good categories. This is left to the researcher’s discretion, depending on the category and properties of goods. However, if for greater insight, trade volume data are to be compared, 2-digit codes for which volumes are not reported must be replaced with 4-digit data.

Consumption data can be obtained from national statistical authorities. If these estimates are not available, a CPI approach can be used. That is, the average consumption levels can be estimated based on the volumes in the consumer’s basket, market prices and population data. All values are to be converted into current USD.
### 3.3 Grey re-exports: Model

The two models listed above are combined into one model for grey re-exports. First, we analyze the values of misreported re-exports and unreported re-exports, and estimate the value of grey re-export as follows:

\[
\text{Grey Reexports}_{xibc} = \text{Unreported reexports}_{xibc} - \text{Misreported Reexports}_{xibc} \quad (3)
\]

Substituting the terms from the individual models gives us the following:

\[
\text{Grey Reexports}_{xibc} = (\text{Imports}_{xib} - (1 - \text{dom})\cdot\text{Consumption}_{xib}) - \left[\text{Exports}_{xib} - (\text{Production}_{xib} - \text{dom}\cdot\text{Consumption}_{xib})\right]
\]

\[
\text{Grey Reexports}_{xibc} = \text{Imports}_{xib} - \text{Exports}_{xib} + \text{Production}_{xib} - (1 - \text{dom})\cdot\text{Consumption}_{xib}
\]

\[\text{or}\]

\[
\text{Grey Reexports}_{xibc} = \text{Imports}_{xib} - \text{Exports}_{xib} + \text{Production}_{xib} - \text{Consumption}_{xib} \quad (4)
\]

Figure 3: Grey re-export, general model

Note, that knowing the \textit{dom}-ratio allows us to estimate both types of grey re-export. However, in the absence of data to calculate the \textit{dom}-ratio, the net flow of grey re-exports can be estimated using import and export data, and production and consumption data (or estimates).

Using the formula for net grey re-exports, the net flow is expected to be positive, but a negative value, then, can be interpreted as unreported import or smuggling.

Since both misreported re-exports and unreported re-exports count as illicit financial flows, the absolute value of both must be included in the estimate of total illicit financial flows, in both types of re-exports, imports are included, and there may be some overlap. However, there is not usually sufficient data available to assess the overlap. Therefore, we assume no overlap, and estimate the final value of IFFs as follows:
If there is misreporting the IFF will be observed, but net flow can be low or negative which is why it’s recommended to always compare both.

Limitations include the assumption that all unconsumed imports are re-exported and the reliability of the consumption estimates. Motivation for grey re-exportation also needs to be investigated. We assume for the case reviewed in the present paper that the main motive is to take advantage of the local customs regulations, such as customs agreements etc. between Countries B and C (n). This method can rely both on international (UN Comtrade) and national (National customs authorities) data sources, it is advised to establish data exchange with the counterpart country to verify information.

3.4 Estimation of grey re-exports:

In terms of implementation, the method requires five main steps:

First step: Risk assessment. A qualitative approach can be used to identify grey re-export propensity. Conducting an expert evaluation to identify countries and categories of goods potentially involved in grey re-exports and the motives for it. It is suggested to involve Customs officials, journalists, researchers, and entrepreneurs, as experts. It is also necessary to review existing literature sources on the problem.

A quantitative approach would suggest comparing longitudinal values of export and production or correlating the values of import and export (lagged data can be used for non-perishable goods). It is advised to use the quantitative approach as a next step after qualitative evaluation.

Second step: Obtaining access to data. It is proposed to use data from the UN Comtrade, data from customs authorities and the national statistical authorities as the sources. Data from all participating countries (mirror data) are to be compared to determine the more reliable source which will be used for further estimation. It is also desirable to get access to monthly data in order to make adjustments for the volume of grey re-exports carried over from one year to the other. To clarify the likelihood of such a carryover, expert opinion should also be considered to identify the approximate length of the grey re-export cycle. To address the issue of data reliability, it is also advised to develop confidence intervals for the data used and the estimates obtained.

Parties in the Grey re-export (GRE) operations are to be identified as country A (exporter of good X), country B (country of grey re-export operations, through which the good X transits), and country C (recipient-country, the third country that is the destination of grey re-export of good X, can be multiple countries n).

Third step: Attribution of trade values and adjustments. Attribution of trade values is preferably to be done by 6-digit codes of the Harmonized Commodity Description and Coding System, also trade values are to be CIF-FOB adjusted.

Attribution of trade values for import and export is to be done by comparing mirror data from partner countries, to be left to researcher’s discretion and expert opinion as to the reliability of reported statistics if a discrepancy is found. Relying on an assumption of the hidden character of grey re-export operations, it is advisable to trust trade values reported by partner countries or use the highest estimates. Time-lags and carryovers from previous years are possible and can be corrected if monthly data is to be used, otherwise an expert opinion as to the percentage of such carryover can be used as well.

Fourth step: Calculation. At this stage, the result is the value of grey re-exports to countries n, we use
formulas (1), (2) and (3) if domestic consumption data is available, or (3) if not.

**Fifth step: Estimation of IFFs from grey re-export.**

For country B a positive value of grey re-export is an outward IFFs as it’s primarily under-invoiced export by nature, and a negative value is under-invoiced import, thus, inward IFF. The total illicit financial flow from GRE is calculated for the reporting country B as the sum of the absolute value of misreported re-exports and the value of unreported re-exports:

\[
IFF_{GRE, t} = |\text{Misreported Reexports}| + |\text{Unreported Reexports}|
\]  

(6)

Additionally, to the calculation of the IFFs from grey re-exports done by participating countries \( (n) \), one can estimate tax revenue losses from unpaid import duties if the goods were exported directly to countries \( n \), bypassing the reporting country.
4. Estimation of grey re-export in Kyrgyzstan

For this case study we will compare two categories of goods in Kyrgyzstan trade, textile final goods (combined aggregated categories 61–65), and cigarettes containing tobacco.

4.1 Textile goods

According to many experts, the current pattern of "grey re-export" of goods has existed in Kyrgyzstan for more than 20 years, the main object of which is consumer goods of predominantly originating from China, in particular apparel and footwear (IA-CENTR, 2017), and the general route of such re-export runs from China through Kyrgyzstan and onwards to the commonwealth of Independent States (CIS) countries, especially Kazakhstan and the Russian Federation.

Grey re-export of goods from China was motivated by a number of developments, for example, the geographic vicinity, the membership of Kyrgyzstan (1998) and China (2001) in the World Trade Organization (WTO) (certain preferences exist for the import of goods from China), the presence of Kyrgyzstan (since 1994) in the free trade zone of the CIS countries (certain preferences for the export of goods to the CIS countries), the accession of Kyrgyzstan (2015) to the Customs Union (CU) (duty-free export of goods to the CU member countries).

This study is based on the case of apparel and textiles, as the review of extant literature indicated this to be the sector with high values of grey re-exports, namely, we chose textile goods as classified by the harmonized system under aggregated categories:

- 61 – Articles Of Apparel And Clothing Accessories Knitted Or Crocheted.
- 62 – Articles Of Apparel And Clothing Accessories, Not Knitted Or Crocheted.
- 63 – Other made up textile articles; sets; worn clothing and worn textile articles; rags.
- 64 – Footwear, gaiters and the like; parts of such articles.
- 65 – Hats and other headgear.

These categories correspond to the national classification of textile goods used by the National statistical authorities of Kyrgyzstan (NSCKG, 2021). We term these categories collectively 'textile goods'.

According to some studies (Yalovkina, 2017; Mendkovitch, 2017; Nazarova, 2018), a large flow of textile goods from China passes through the territory of Kyrgyzstan and turns into so-called "grey re-export" of goods to the Eurasian economic union (EAEU) countries (mainly to the Russian Federation and Kazakhstan, CU members). Again according to these studies, goods from China (mainly consumer goods, clothing, footwear, etc.), when imported into Kyrgyzstan, undergo a procedure of false or distorted customs

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2 To avoid significant aggregation bias, particularly the implications showcased in Kravchenko (2018), in this study, data is gathered and analyzed at the 4-digit level of the harmonized system. The authors agree that using a more granular level is advised, however, at such level, some proportion of discrepancies comes from unintentional misreporting or misclassification, thus, the 4-digit level seems a more reliable estimate of potentially illicit intent.
clearance, sometimes without proper invoicing and reporting, or with false trade documents. Subsequently, a certain volume of goods is released, which subsequently turns into a "grey re-export", as evidenced, to some extent, by trade data (Table 1).

Most import to Kyrgyzstan comes from China, with significant discrepancies between the trade values reported by both partners. Trade quantity gaps with partners, including China are not as significant as trade value gaps (Table 1) and do not exceed 200% of the values reported by Kyrgyzstan.

**Table 1: Trade gap between Kyrgyzstan and partner countries in the import of textile goods, millions USD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Trade value (mil $)</th>
<th>Trade quantity (mil units)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kyrgyzstan reported</td>
<td>All partners reported</td>
</tr>
<tr>
<td>2014</td>
<td>255.8</td>
<td>3,231.9</td>
</tr>
<tr>
<td>2015</td>
<td>230.3</td>
<td>2,594.6</td>
</tr>
<tr>
<td>2016</td>
<td>523.0</td>
<td>4,010.5</td>
</tr>
<tr>
<td>2017</td>
<td>556.1</td>
<td>4,125.9</td>
</tr>
<tr>
<td>2018</td>
<td>772.0</td>
<td>3,894.3</td>
</tr>
<tr>
<td>2019</td>
<td>519.8</td>
<td>4,121.9</td>
</tr>
<tr>
<td>2020</td>
<td>204.0</td>
<td>2,008.7</td>
</tr>
</tbody>
</table>


In addition, according to one of the reports and data by the analytical agency of Kyrgyzstan "Temirov Live", in 2021 the discrepancy between the total trade indicators of Kyrgyzstan and China increased to 4.2 times. China reported information that goods worth 6.2 billion US dollars were exported to Kyrgyzstan, and Kyrgyzstan, in turn, shows imports of goods from China in the amount of 76 million US dollars. Also, this source claims that due to the difference in such indicators, which is 4.8 billion US dollars, Kyrgyzstan in 2021 lost almost 573 million US dollars only due to non-payment of import VAT (not to mention customs duties and other taxes). In addition, the above-mentioned agency, having considered the largest category of goods, "clothing" between Kyrgyzstan and China in terms of trade indicators, revealed a discrepancy of almost 40 times: China reported exports of clothes to Kyrgyzstan in the amount of 2.7 billion US dollars, whereas Kyrgyzstan reports (shows) imports of clothing of only 76 million US dollars.

Authors agree, that all of the reporting discrepancies are due to an illicit intent. In fact, according to the information of the NSO of Kyrgyzstan the following factors also contribute to the discrepancies between the data of the two partners, and for more precise estimation these differences need to be taken into account:

1) Methodological differences in accounting for goods: there are different approaches to accounting for quantitative volumes of goods (kilogram and additional units of measure) between the countries. In China, when declaring...
quantitative volumes of goods, the kilogram is not the main unit of measurement. The main unit of measurement of quantitative volumes can be pieces, meters, etc., that is, the main unit of measurement of quantitative volumes of goods is floating, which makes it difficult to identify discrepancies in the statistical value in those commodity items where possible quantitative volumes coincide.

2) Problems of accounting for transit goods from China: Kyrgyzstan is an important transit country for China’s trade with the countries of the Central Asian region. In China’s customs statistics, there is no concept of "trading country", there is the concept of "country of first destination". In most cases, the country of destination in China’s customs documents is Kyrgyzstan as the first country on the route of transit goods from China, for example, to Uzbekistan, Tajikistan, Afghanistan and Turkmenistan. Hence, it is impossible to single out direct deliveries of goods, as well as trade in goods through third countries. Consequently, China includes all goods exported outside the territory of the state, including those in transit, following through the territory of Kyrgyzstan to other states, temporarily exported from China, into export indicators, that is, they form their statistics of international trade according to the principle of the direction of goods flow.

3) Technical factors: differences in approaches to classification and valuation of goods; the spread of exchange rates (with the cost of goods in China indicated in the national currency, even if the transaction was carried out in another currency); different approaches to monitoring exports and imports. Overestimation of the cost of goods exported from China when exporting goods not only to Kyrgyzstan but also to other countries. The decrease in volumes of imports in physical terms (tons) by Kyrgyz importers when declaring can be explained by the fact that customs taxes are levied from individuals not on the value of the goods, but on the physical volume or weight, which leads to underestimated prices per unit of goods. On the partner side, on the contrary, there is a biased increase in prices for certain goods, which is due to the fact that China has a VAT refund mechanism for exporting goods.

However, it should be noted that China exports abnormally high values of textile goods to Kyrgyzstan in so far as these values are inconsistent with the possible consumption needs of the local population. In the global distribution of per capita imports of textiles from China, Kyrgyzstan ranks second to Hong Kong, and China overall, and by different textile-related products, categories are, in the top-10 ranking of countries of the world (Table 2). Among neighboring countries, Kyrgyzstan ranks first by China’s exports per capita of partner countries (Figure 5) and third by total value (Figure 4). Thus, transit accounting differences still manifest significant misreporting and IFF potential, so it needs to be investigated.
Figure 4: Textile export by country, Central Asia and neighboring states, total for 2014 – 2020, million USD


Note: The colors of the chords in Figure 4 represent the export flow from a country with corresponding grid color. The export value in this figure in the total 2014-2020 export flows for textile goods.
**Figure 5:** Textile export per capita of population of the partner country, Central Asia and neighboring states (selected countries), total for 2014 – 2020, million USD


Note - The colors of the chords in Figure 5 represent the per capita export flow from a country with corresponding grid color. The export value in this figure in the total of 2014-2020 per capita export flows for textile goods.
Table 2: Ranking by partner country, mean textile exports per capita, 2016-2020

<table>
<thead>
<tr>
<th>Commodity codes, HS, aggregate level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
</tr>
<tr>
<td>Hong Kong, China</td>
</tr>
<tr>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>Malta</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
</tr>
<tr>
<td>Panama</td>
</tr>
<tr>
<td>Netherlands</td>
</tr>
<tr>
<td>Slovenia</td>
</tr>
<tr>
<td>Singapore</td>
</tr>
<tr>
<td>Israel</td>
</tr>
<tr>
<td>Denmark</td>
</tr>
</tbody>
</table>

The national statistics authorities of Kyrgyzstan report annual data on consumption and local production of textile goods – textiles, apparel, footwear (NSCKG, 2021), also it is considered that no more than 10% (Sadamkulova, 2015) of the textile consumption is satisfied by the local product. As long as there are significant discrepancies between data reported by Kyrgyzstan and Partners, we will report grey re-export estimation results for both data sources: as reported by Kyrgyzstan (Table 2a) and as reported by partners, mirror data (Table 2b).
**Table 2a: Grey re-export estimation for textiles (Kyrgyzstan data), millions USD**

<table>
<thead>
<tr>
<th>Year</th>
<th>Import</th>
<th>Production</th>
<th>Total consumption</th>
<th>Consumption of domestically produced goods</th>
<th>Consumption of imported goods</th>
<th>Balance: value available for export</th>
<th>Reported export</th>
<th>Misreported re-exports</th>
<th>Unreported re-exports</th>
<th>Grey re-exports</th>
<th>IFF(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>256</td>
<td>104</td>
<td>388</td>
<td>39</td>
<td>349</td>
<td>65</td>
<td>110</td>
<td>45</td>
<td>-93</td>
<td>-138</td>
<td>138</td>
</tr>
<tr>
<td>2015</td>
<td>230</td>
<td>71</td>
<td>314</td>
<td>31</td>
<td>283</td>
<td>40</td>
<td>66</td>
<td>26</td>
<td>-52</td>
<td>-78</td>
<td>78</td>
</tr>
<tr>
<td>2016</td>
<td>523</td>
<td>95</td>
<td>356</td>
<td>36</td>
<td>320</td>
<td>59</td>
<td>78</td>
<td>19</td>
<td>203</td>
<td>184</td>
<td>222</td>
</tr>
<tr>
<td>2017</td>
<td>556</td>
<td>98</td>
<td>398</td>
<td>40</td>
<td>358</td>
<td>58</td>
<td>153</td>
<td>95</td>
<td>198</td>
<td>103</td>
<td>293</td>
</tr>
<tr>
<td>2018</td>
<td>772</td>
<td>135</td>
<td>428</td>
<td>43</td>
<td>385</td>
<td>92</td>
<td>176</td>
<td>84</td>
<td>387</td>
<td>303</td>
<td>471</td>
</tr>
<tr>
<td>2019</td>
<td>520</td>
<td>142</td>
<td>446</td>
<td>45</td>
<td>401</td>
<td>97</td>
<td>120</td>
<td>23</td>
<td>118</td>
<td>95</td>
<td>141</td>
</tr>
<tr>
<td>2020</td>
<td>204</td>
<td>94</td>
<td>323</td>
<td>32</td>
<td>291</td>
<td>62</td>
<td>60</td>
<td>-1</td>
<td>-87</td>
<td>-85</td>
<td>88</td>
</tr>
<tr>
<td>Total</td>
<td>3,061</td>
<td>739</td>
<td>2,653</td>
<td>265</td>
<td>2,388</td>
<td>474</td>
<td>764</td>
<td>290</td>
<td>673</td>
<td>383</td>
<td>1,431</td>
</tr>
</tbody>
</table>


\(^3\) Equation 6
### Table 2b: Grey re-export estimation for textiles (partner data), millions USD

<table>
<thead>
<tr>
<th></th>
<th>Import</th>
<th>Production</th>
<th>Total consumption</th>
<th>Consumption of domestically produced goods</th>
<th>Consumption of imported goods</th>
<th>Balance: value available for export</th>
<th>Reported export</th>
<th>Misreported re-exports</th>
<th>Unreported re-exports</th>
<th>Grey re-exports</th>
<th>IFF&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>3,232</td>
<td>104</td>
<td>388</td>
<td>39</td>
<td>349</td>
<td>65</td>
<td>97</td>
<td>32</td>
<td>2,883</td>
<td>2,851</td>
<td>2,915</td>
</tr>
<tr>
<td>2015</td>
<td>2,595</td>
<td>71</td>
<td>314</td>
<td>31</td>
<td>283</td>
<td>40</td>
<td>42</td>
<td>3</td>
<td>2,312</td>
<td>2,309</td>
<td>2,315</td>
</tr>
<tr>
<td>2016</td>
<td>4,011</td>
<td>95</td>
<td>356</td>
<td>36</td>
<td>320</td>
<td>59</td>
<td>21</td>
<td>-38</td>
<td>3,690</td>
<td>3,728</td>
<td>3,728</td>
</tr>
<tr>
<td>2017</td>
<td>4,126</td>
<td>98</td>
<td>398</td>
<td>40</td>
<td>358</td>
<td>58</td>
<td>54</td>
<td>-5</td>
<td>3,768</td>
<td>3,772</td>
<td>3,772</td>
</tr>
<tr>
<td>2018</td>
<td>3,894</td>
<td>135</td>
<td>428</td>
<td>43</td>
<td>385</td>
<td>92</td>
<td>48</td>
<td>-44</td>
<td>3,509</td>
<td>3,553</td>
<td>3,553</td>
</tr>
<tr>
<td>2019</td>
<td>4,122</td>
<td>142</td>
<td>446</td>
<td>45</td>
<td>401</td>
<td>97</td>
<td>50</td>
<td>-48</td>
<td>3,721</td>
<td>3,768</td>
<td>3,768</td>
</tr>
<tr>
<td>2020</td>
<td>2,009</td>
<td>94</td>
<td>323</td>
<td>32</td>
<td>291</td>
<td>62</td>
<td>44</td>
<td>-17</td>
<td>1,718</td>
<td>1,735</td>
<td>1,735</td>
</tr>
<tr>
<td>Total</td>
<td>23,988</td>
<td>739</td>
<td>2,653</td>
<td>265</td>
<td>2,388</td>
<td>474</td>
<td>357</td>
<td>-117</td>
<td>21,600</td>
<td>21,717</td>
<td>21,786</td>
</tr>
</tbody>
</table>


---

<sup>4</sup> Equation 6
Data reported by Kyrgyzstan shows smuggling risk in 2014 – 2015 and in 2020; according to partner data, there is no such risk, but there is significant risk of underreporting of exports. Most importantly, according to partner data, the estimated value of unreported re-exports is 8-10 times higher than that estimated with Kyrgyzstan’s data (Figure 6).

**Figure 6: Comparison of unreported re-export values according to mirror data, Kyrgyzstan, millions USD**

> Source: Authors’ computations.

Misreported re-exports prevail in Kyrgyzstan data, but partner data indicate a negative value. This may mean that these negative values add to the unreported re-exports, as they are excess goods remaining after consumption. If not shown in official exports and classified as misreported re-exports, these excess goods may be smuggled out and become unreported re-exports.

The total values of grey re-exports are significantly high if we base our estimation on partner data and are dominated by one trade partner – China.

### 4.2 Cigarettes containing tobacco

Currently, in Kyrgyzstan there is an increase in the smuggling of tobacco products, namely cigarettes, as evidenced by the annual seizures and facts of illegally imported cigarettes into Kyrgyzstan (Berdakov, 2021).

This is also evidenced by the statements of a number of experts that 20% of the total amount of smuggling of goods to Kyrgyzstan are cigarettes, while only 60-70% are detected by the customs authorities. For example, in 2019, 96 million smuggled cigarettes were seized, which is almost 103 million US dollars in monetary terms, and the budget of Kyrgyzstan did not receive about 79 million US dollars in the form of revenues from excise tax, VAT and NSP (FCSR, 2021; Berdakov, 2021). At the same time, it is noted that the smuggling of cigarettes in Kyrgyzstan comes from Serbia, Bulgaria and the UAE, which can then be freely imported into the territory of the EAEU countries - mainly to the Russian Federation.

According to state customs committee of the Russian Federation (2021) a certain part of cigarette smuggling enters the Russian Federation through "false transit", i.e. officially cigarettes transit through the territory of the Russian Federation to Kyrgyzstan, but in fact cigarettes are...
unloaded in the Russian Federation, and the cargo leaves for Kyrgyzstan either empty or loaded with other goods. According to customs reports transit goes on to Kyrgyzstan and cigarettes were unloaded in Kyrgyzstan, and in some cases, the cargo is reported to completely leave the territory of the Customs Union. To a certain degree, this is demonstrated by specific events that occurred in 2018 in Kyrgyzstan where several Commonwealth of Independent States (CIS) nationals were detained by Kyrgyz police for offering a bribe of 100,000 euros and 138,600 US dollars to Kyrgyz customs officials to expedite the customs procedure for the transit of goods. Subsequently, the investigation revealed that the foreign detainees were involved in orchestrating the illicit “false transit” of tobacco products. Furthermore, in 2020, a Kyrgyz customs officer was arrested for attempting to unlawfully complete the customs procedure for the transit of tobacco products valued at $235,500. These goods were purportedly en route from Latvia through Kyrgyzstan to Afghanistan.

At the same time, according to experts, attention is also drawn to the fact that cigarettes are legally imported into Kyrgyzstan in an amount 4 times higher than the domestic consumption of Kyrgyzstan (Rossiyskaya Gazeta, 2020). This is all against the background of growing cigarette exports, as well as taking into account the lack of domestic production - the only cigarette factory was closed in the second half of 2014.

Figure 7: Cigarettes export by country, Central Asia and neighboring states, total for 2014 – 2020, millions USD

Source: ESCAP calculations based on UN Comtrade (available at https://comtradeplus.un.org/, accessed on 1st of July, 2022)
Since 2015 (after the closure of the domestic cigarette factory), there has been an annual increase in cigarette exports from Kyrgyzstan to China, which currently accounts for 26.6% of the total export of Kyrgyz goods to China, which is also an interesting case, given China's high import rates for tobacco products, including cigarettes. Indeed among CIS and Central Asian countries, only Kyrgyzstan reports cigarette export to China (Figure 7), with no corresponding records in the mirror data. The trade gap between the reports of China and Kyrgyzstan on cigarettes ranks third after Hong Kong, China, and Viet Nam in China's trade statistics in 2016-2020.

Kyrgyzstan reported data consistent with misreported re-exports alongside significant smuggling (Table 3a), but according to partner data (Table 3b), there is only evidence of smuggling (negative value of unreported re-export means smuggling into Kyrgyzstan). The sources report conflicting data on export flow out of Kyrgyzstan, we find the main source of such conflict to be the value gap with China. In fact, the value of grey re-export discovered with this flow may even indicate sources other than smuggling, as partners do not report import from Kyrgyzstan almost at all; this flow may be resulting from money laundering operations etc. and needs to be investigated.

Note: The colors of the chords in Figure 7 represent the export flow from a country with corresponding grid color. The export value in this figure in the total of 2014-2020 export flows for cigarettes containing tobacco.
Table 3a: Grey re-export estimation for cigarettes (Kyrgyzstan data), millions USD

<table>
<thead>
<tr>
<th>Year</th>
<th>Import</th>
<th>Production</th>
<th>Total consumption</th>
<th>Consumption of domestically produced goods</th>
<th>Consumption of imported goods</th>
<th>Balance: value available for export</th>
<th>Reported export</th>
<th>Misreported re-exports</th>
<th>Unreported re-exports</th>
<th>Grey re-exports (4)</th>
<th>IFF (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>72.72</td>
<td>11.92</td>
<td>73.08</td>
<td>12</td>
<td>61</td>
<td>0.23</td>
<td>16.17</td>
<td>15.9</td>
<td>11.3</td>
<td>-4.6</td>
<td>27.3</td>
</tr>
<tr>
<td>2015</td>
<td>44.21</td>
<td>0</td>
<td>75.16</td>
<td>0</td>
<td>75</td>
<td>0.00</td>
<td>16.74</td>
<td>16.7</td>
<td>-30.9</td>
<td>-47.7</td>
<td>47.7</td>
</tr>
<tr>
<td>2016</td>
<td>32.37</td>
<td>0</td>
<td>105.92</td>
<td>0</td>
<td>106</td>
<td>0.00</td>
<td>12.51</td>
<td>12.5</td>
<td>-73.5</td>
<td>-86.1</td>
<td>86.1</td>
</tr>
<tr>
<td>2017</td>
<td>69.15</td>
<td>0</td>
<td>122.30</td>
<td>0</td>
<td>122</td>
<td>0.00</td>
<td>22.10</td>
<td>22.1</td>
<td>-53.1</td>
<td>-75.2</td>
<td>75.2</td>
</tr>
<tr>
<td>2018</td>
<td>73.28</td>
<td>0</td>
<td>142.55</td>
<td>0</td>
<td>143</td>
<td>0.00</td>
<td>10.53</td>
<td>10.5</td>
<td>-69.3</td>
<td>-79.8</td>
<td>79.8</td>
</tr>
<tr>
<td>2019</td>
<td>68.57</td>
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<td>162.95</td>
<td>0</td>
<td>163</td>
<td>0.00</td>
<td>21.83</td>
<td>21.8</td>
<td>-94.4</td>
<td>-116.2</td>
<td>116.2</td>
</tr>
<tr>
<td>2020</td>
<td>49.46</td>
<td>0</td>
<td>150.43</td>
<td>0</td>
<td>150</td>
<td>0.00</td>
<td>12.16</td>
<td>12.2</td>
<td>-101.0</td>
<td>-113.1</td>
<td>113.1</td>
</tr>
<tr>
<td>Total</td>
<td>410</td>
<td>12</td>
<td>832</td>
<td>12</td>
<td>821</td>
<td>0</td>
<td>112</td>
<td>112</td>
<td>-411</td>
<td>-523</td>
<td>545</td>
</tr>
</tbody>
</table>

Table 3b: Grey re-export estimation for cigarettes (partner data), millions USD

<table>
<thead>
<tr>
<th>Data partner</th>
<th>Import</th>
<th>Production</th>
<th>Total consumption</th>
<th>Consumption of domestically produced goods</th>
<th>Consumption of imported goods</th>
<th>Balance: value available for export</th>
<th>Reported export</th>
<th>Misreported re-exports</th>
<th>Unreported re-exports</th>
<th>Grey re-exports (4)</th>
<th>IFF (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>76.30</td>
<td>11.92</td>
<td>73.08</td>
<td>12</td>
<td>61</td>
<td>0</td>
<td>0.0006</td>
<td>-0.2266</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>2015</td>
<td>80.37</td>
<td>0</td>
<td>75.16</td>
<td>0</td>
<td>75</td>
<td>0</td>
<td>0.0000</td>
<td>0.000</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>2016</td>
<td>78.39</td>
<td>0</td>
<td>105.92</td>
<td>0</td>
<td>106</td>
<td>0</td>
<td>0.0000</td>
<td>0.000</td>
<td>-28</td>
<td>-28</td>
<td>28</td>
</tr>
<tr>
<td>2017</td>
<td>78.31</td>
<td>0</td>
<td>122.30</td>
<td>0</td>
<td>122</td>
<td>0</td>
<td>0.0001</td>
<td>0.0001</td>
<td>-44</td>
<td>-44</td>
<td>44</td>
</tr>
<tr>
<td>2018</td>
<td>93.01</td>
<td>0</td>
<td>142.55</td>
<td>0</td>
<td>143</td>
<td>0</td>
<td>0.0001</td>
<td>0.0001</td>
<td>-50</td>
<td>-50</td>
<td>50</td>
</tr>
<tr>
<td>2019</td>
<td>89.85</td>
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<td>162.95</td>
<td>0</td>
<td>163</td>
<td>0</td>
<td>0.0001</td>
<td>0.0001</td>
<td>-73</td>
<td>-73</td>
<td>73</td>
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<td>2020</td>
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<td>150.43</td>
<td>0</td>
<td>150</td>
<td>0</td>
<td>0.0001</td>
<td>0.0001</td>
<td>-83</td>
<td>-83</td>
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<tr>
<td>Total</td>
<td>564</td>
<td>12</td>
<td>832</td>
<td>12</td>
<td>821</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-257</td>
<td>-257</td>
<td>298</td>
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5. Results from other trade-related methods

Application of the partner country method and price filter method also show potential IFFs from the trade of textiles and cigarettes containing tobacco and confirm suspicious occurrences in the trade of these goods identified by the GRE method.

With textiles goods, PCM identified significant inward IFF primarily arising from under-invoiced import, this flow account for most of the total IFFs in this category and is several times higher than the total value of trade reported by Kyrgyzstan (Table 4). Price filter method (Table 5), also reveals the prevalence of inward IFFs in this category, but the estimated value of the illicit flow is lower. GRE results are closer to PCM estimation, due to the high impact of the trade value gap with China, but PFM estimation provides a partial explanation as to the mechanism of the occurrence of the IFF, which is overpricing of imports. In terms of volume gaps, the total volume gaps over the period did not have a similar trend to value gaps and as we can see from PFM results the prices per unit were more consistent.

Table 4: PCM estimation for textiles, HS aggregate level 4, millions USD

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Overinvoiced Import</td>
<td>44.91</td>
<td>28.55</td>
<td>62.31</td>
<td>103.70</td>
<td>162.51</td>
<td>52.40</td>
<td>25.70</td>
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<tr>
<td>Underinvoiced Import</td>
<td>2847.35</td>
<td>2247.40</td>
<td>3373.82</td>
<td>3462.52</td>
<td>3131.61</td>
<td>3450.88</td>
<td>1656.69</td>
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<tr>
<td>Overinvoiced Export</td>
<td>14.79</td>
<td>24.88</td>
<td>73.73</td>
<td>108.86</td>
<td>146.09</td>
<td>90.00</td>
<td>32.42</td>
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<tr>
<td>Underinvoiced Export</td>
<td>2.83</td>
<td>2.36</td>
<td>16.03</td>
<td>9.75</td>
<td>17.94</td>
<td>19.09</td>
<td>16.38</td>
</tr>
<tr>
<td>Inward IFF</td>
<td>2862.14</td>
<td>2272.29</td>
<td>3447.55</td>
<td>3571.38</td>
<td>3277.70</td>
<td>3540.87</td>
<td>1689.12</td>
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<td>Outward IFF</td>
<td>47.74</td>
<td>30.92</td>
<td>78.34</td>
<td>113.45</td>
<td>180.45</td>
<td>71.48</td>
<td>42.08</td>
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<tr>
<td>Total IFF</td>
<td>2909.88</td>
<td>2303.20</td>
<td>3525.89</td>
<td>3684.83</td>
<td>3458.15</td>
<td>3612.36</td>
<td>1731.19</td>
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Table 5: PFM estimation for textiles, HS aggregate level 6, millions USD

<table>
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<tr>
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<td>0.39</td>
<td>0.59</td>
<td>0.67</td>
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<tr>
<td>Underinvoiced Import</td>
<td>1358.69</td>
<td>1142.87</td>
<td>1716.80</td>
<td>1913.69</td>
<td>2328.19</td>
<td>1314.34</td>
<td>503.54</td>
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<tr>
<td>Overinvoiced Export</td>
<td>0.22</td>
<td>9.01</td>
<td>0.30</td>
<td>3.67</td>
<td>0.32</td>
<td>0.66</td>
<td>0.25</td>
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<td>191.24</td>
<td>577.00</td>
<td>206.17</td>
<td>271.08</td>
<td>161.33</td>
<td>193.26</td>
<td>668.87</td>
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<td>1717.09</td>
<td>1917.36</td>
<td>2328.51</td>
<td>1315.00</td>
<td>503.80</td>
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<tr>
<td>Outward IFF</td>
<td>191.64</td>
<td>577.60</td>
<td>206.54</td>
<td>271.98</td>
<td>161.73</td>
<td>193.86</td>
<td>669.54</td>
</tr>
<tr>
<td>Total IFF</td>
<td>1550.55</td>
<td>1729.49</td>
<td>1923.64</td>
<td>2189.34</td>
<td>2490.23</td>
<td>1508.86</td>
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Source of tables 4 and 5: ESCAP calculations, based on UN Comtrade data (available at https://comtradeplus.un.org, accessed on 1st of July, 2022)
Figure 8: Comparison of various models of IFF estimation for textile trade

Table 6: PCM estimation for cigarettes, HS aggregate level 6, millions USD

<table>
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<td>0.76</td>
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<td>36.93</td>
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<tr>
<td>Inward IFF</td>
<td>20.51</td>
<td>53.67</td>
<td>61.22</td>
<td>40.79</td>
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<td>0.75</td>
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<td>54.43</td>
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<td><strong>Underinvoiced Import</strong></td>
<td>16.52</td>
<td>12.95</td>
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<td>15.07</td>
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<td>0.05</td>
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<tr>
<td>Inward IFF</td>
<td>16.52</td>
<td>12.95</td>
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<td>21.98</td>
<td>11.39</td>
<td>15.07</td>
<td>14.37</td>
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<tr>
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<td>5.34</td>
<td>10.49</td>
<td>3.98</td>
<td>13.18</td>
<td>8.51</td>
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<td><strong>Total IFF</strong></td>
<td>16.61</td>
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<td>32.46</td>
<td>15.37</td>
<td>28.25</td>
<td>22.88</td>
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PFM results are interesting because it’s evident that both import and export operations are heavily underpriced; and, starting with 2017 export prices were consistently lower than import prices (Figure 10 and Figure 11), with no local production, this raises a question of feasibility.

**Figure 9**: Comparison of PCM and PFM results for cigarettes containing tobacco, millions USD

Figure 10: Import price distribution analysis of cigarette trade


Figure 11: Export price distribution analysis of cigarette trade

We cannot conclude that in cigarette trade price manipulations are used as the main source of IFF because we observe one-sided reporting of cigarette export to China from Kyrgyzstan. Some manipulations are evident and they did not necessarily come from mis-pricing; in fact, but the value of GRE is more consistent with PCM results which identify the reporting gap.

The method of grey re-export provides additional insight into the existing methods of measuring trade-related IFFs, the PCM and the PFM, in particular in the following cases:

- Where the PCM fails to capture the illicit flow due to the lack of discrepancy between the export data of the reporting country and the import data of the partner country; but the exported commodities did not originate in the reporter, they were imported with the intent of further export however unreported in such a manner, even if there is no actual discrepancy in the ingress of goods either. The PFM can well omit this same issue.

- Where the PCM does not detect the fact of suspiciously high values of per capita import of a commodity into a country that does not consume corresponding volumes of the good, thus the good is assumed to be leaving the country as an export which unreported constitutes an IFF, and a possible volume can be estimated as such.

The estimated values of grey re-exports and their misreported and unreported components can be interpreted differently (Figure 2), but some of these flows can be omitted by the existing estimation methods, so they are recommended for complementary use.
6. Conclusion

This paper discussed the price filter and partner country methods to estimate illicit financial flows and went on to explore the grey re-export method using a case study of Kyrgyzstan.

The paper demonstrates that the grey re-export method to some extent can estimate illicit financial flows emanating from international trade through the following channels: false classification of goods; manipulation of customs regulations, falsification of customs documents, artificial understatement of volumes and prices of goods and corruption, where a portion of goods crosses borders without accounting or registration. In addition, the paper demonstrates the extent of trade distortions and deflection in customs unions where non-member states can take advantage of preferential access to foreign markets that do not apply to them by violating rules of origin. However, this paper while demonstrating the ability to measure illicit financial flows emanating from grey-exports, did not address all issues that may warrant further investigation. The explored method works very well amongst countries that have some type of trade agreements but may work less well for countries not connected through such arrangements. Similarly, the paper did not address the issue of non-intentional errors in reporting in reporting exports or imports, an issue which also if they are zero rated by customs officials whose motivation is often revenue collection. This would necessitate further investigations with customs and major importers or exporters by taking samples of specific products of interest, like textiles in this case. Special diagnostic studies would need to be undertaken to validate some of the findings of the paper.

Nonetheless, given the opening up of most economies and the existence of customs unions, the motivation of unscrupulous exporters to take advantage of undue preferential tariffs and excise taxes is high. In addition, this aspect of trade deflection and distortion gives rise to potential illicit exports warranting further investigation. Criminal syndicates operate across borders to launder money and potentially use formal trade systems to achieve their ends. It is therefore very important to monitor trade discrepancies using this method particularly amongst close trading partners to complement other approaches to detect illicit financial flows and take corrective policy actions.
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Information agency «FOR.KG», «Digit of the day. 3.3 billion cigarettes are smoked annually in Kyrgyzstan», available at https://for.kg/news-602179-ru.html

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Medina, L., & Schneider, M. F. (2018). Shadow economies around the world: what did we learn over the last 20 years?. International Monetary Fund.


Ministry of Economy and Commerce of the Kyrgyz Republic, available at: https://mineconom.gov.kg/ru/post/3440


Sadamkulova F. (2015) The apparel industry of the Kyrgyz Republic is represented by small enterprises and individual entrepreneurship.


## Appendix: Acronyms

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<tr>
<th>Acronym</th>
<th>Description</th>
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<td>IFF</td>
<td>Illicit financial flow</td>
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<tr>
<td>GRE</td>
<td>Grey re-export</td>
</tr>
<tr>
<td>PCM</td>
<td>Partner country method</td>
</tr>
<tr>
<td>PFM</td>
<td>Price filter method</td>
</tr>
<tr>
<td>GFI</td>
<td>Global financial integrity</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Commission of Trade and Development</td>
</tr>
<tr>
<td>UNODC</td>
<td>United Nations Office on Drugs and Crime</td>
</tr>
<tr>
<td>CIF</td>
<td>Cost, Insurance and Freight</td>
</tr>
<tr>
<td>FOB</td>
<td>Free on Board</td>
</tr>
<tr>
<td>HS Classification</td>
<td>Harmonised System Classification</td>
</tr>
<tr>
<td>SE</td>
<td>Shadow economy</td>
</tr>
<tr>
<td>CU</td>
<td>Customs union</td>
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<tr>
<td>CIS</td>
<td>The Commonwealth of Independent States</td>
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<tr>
<td>EAEU</td>
<td>The Eurasian Economic Union</td>
</tr>
<tr>
<td>NSP</td>
<td>Not Separately Priced – this term is used in contracts for an item that is not separately priced, but the price is included in the unit price of another contract line item.</td>
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