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CHANNELIZING AFGHANISTAN TO PAKISTAN INFORMAL TRADE INTO FORMAL CHANNELS

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Channelizing Afghanistan to Pakistan Informal Trade into Formal Channels

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ABSTRACT

Along with other routes, the Afghanistan-Pakistan Transit Trade Agreement (APTTA) is being used by informal traders for smuggling goods into Pakistan. Despite enforcement measures, smuggling continues. Informal traders import goods into Afghanistan, and then route those goods back to Pakistan through informal channels to take advantage from the arbitrage opportunity provided by the differences in applied tariff/taxes between the two countries. Therefore, in addition to strict enforcement measures, the issue of informal trade needs to be handled through incentive measures.

This paper focuses on assessing the possibility of bringing informal trade from Afghanistan to Pakistan into the legal channels by reducing tariff and tax differentials between Pakistan and Afghanistan. A basic model and illustrative example are presented that encompass the monetary incentives of smugglers and shows possible tariff/tax reductions that bring profits from informal trade below the breakeven point. The effects of price discounting of informally traded products in the Pakistan market and possible under-invoicing by traders are also taken into consideration.

The analysis is applied to case studies for LCD TVs and tea, both of which have been identified as smuggling prone items. LCD TVs are a high-value differentiated product, while tea is low value and homogeneous. For LCD TCVs, at existing tariff and tax rates, there are substantial incentives for informal trade through Afghanistan. Very significant reductions are required in the tariff or taxes to eliminate the incentives and make informal trade unprofitable if informal traders are assumed not to sell at a discount. Under-invoicing exacerbates this challenge, but a more substantial effect comes if there is price discounting by the informal traders. With a 20 percent discount, informal trading becomes unprofitable with tariff or tax reductions of as little as 8 percentage points. For tea, sold without discounting, a reduction of the sales tax by 12 percentage points, holding the tariff and income tax rates constant, or an equivalent combination of tariff and tax reductions, would be needed in order to eliminate profits from smuggling.

Two additional trade policy issues which could affect informal trade utilizing the APTTA are also briefly considered. First, trade facilitation measures that enhance the efficiency of the APTTA could make it more competitive with trade into Afghanistan through Iran but also may modestly add to the profits of informal traders. Second, we find only very limited scope, in our LCD TV and tea case studies, for a PTA between Afghanistan and Pakistan to channelize informal trade based on utilizing the APTTA and a formal channel coming back into Pakistan.

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INTRODUCTION

Informal trade between Pakistan and Afghanistan is a source of major concern for policy makers. In a survey conducted in 2012, the Federal Board of Revenue of Pakistan (FBR) compiled a list of smuggling prone items during a customs revenue enforcement drive. A cursory view of the list shows that the margin of applied tariffs on smuggling prone items under the tariff regimes of Pakistan and Afghanistan is high. Informal traders have an incentive to smuggle merchandise to take advantage of arbitrage opportunities provided through the tariff margins. For the identified items, Pakistan maintains higher tariffs than Afghanistan; therefore, these items are smuggled into Pakistan through Afghanistan by informal traders.

This paper assesses the possibility of bringing informal trade from Afghanistan to Pakistan into legal channels. A bottom up approach is adopted to consider cases of individual goods. A simple model is presented that encompasses the monetary incentives of smugglers and shows possible reductions in applied tariffs and taxes that bring profits from informal trade below the breakeven point. Informal trade takes place from Afghanistan to Pakistan (and vice versa) through different trading routes. However, this paper only focuses on informal trade taking place under the Afghanistan-Pakistan Transit Trade Agreement (APTTA).[1]

In focusing on informal trade taking place under the APTTA, the paper investigates possible policy instruments to reduce the profit incentives of informal traders. Policy instruments assessed are applied MFN tariffs, sales tax, and the advance income tax. Different tariff and tax levels necessary to eliminate the profit margins of the informal traders are derived for an illustrative hypothetical example and for two selected smuggling prone items: high-value, differentiated LCD TVs and low-value, non-differentiated, bulk-commodity black tea.

In the main analysis, other transaction costs of informal trade are taken as constant. Then the paper briefly considers the possible effects of trade facilitation measures that would reduce the transaction costs of APTTA trade to make this route more competitive with transhipments to Afghanistan through Iran. These measures, if effectively implemented, could increase the competitiveness of Karachi port transhipment, but some of these measures would lower costs for informal traders, increasing their incentives. Pakistan and Afghanistan are also negotiating a Preferential Trading Agreement (PTA) in 2016. The paper briefly analyses whether the proposed PTA is likely to affect Afghanistan to Pakistan informal trade under the APTTA for the cases of TVs and tea. The results suggest only limited opportunity to bring informal trade of these products from Afghanistan to Pakistan into formal channels through a PTA. This is due to remaining differences in external tariffs and taxes incurred in the formal channel.

The organization of the paper is as follows. The next section describes Pakistan and Afghanistan formal and informal trade, while the third section places the Afghanistan-Pakistan informal trade situation in the context of a literature review on incentives for smuggling and its effects. The fourth section describes the conceptual model of incentives and profits of informal traders and presents the illustrative hypothetical base-case simulations. The LCD TV and tea cases are discussed in the fifth section, including the effects of trade facilitation and a PTA. The last section provides policy discussion and conclusions.

AFGHANISTAN-PAKISTAN TRADE

Pakistan shares a 2,640 kilometre long border with Afghanistan which at many places is porous making it difficult to control and monitor the movement of both people and goods. Formal trade between Pakistan and Afghanistan amounted to U.S. dollars (USD) 2.27 billion in 2014. Pakistan's exports to Afghanistan in 2014 were USD 1.88 billion. It exported 483 major products (value greater than USD 10,000) at the HS 6 digit level to Afghanistan. Exports of remaining products were negligible. Major export items included dairy products, fruit and fruit preparations, petroleum and petroleum products, oil and vegetables, and pharmaceuticals and medical products, among many others. Afghanistan's formal exports of goods to Pakistan in 2014 were valued at USD 392 million. Its major export items were mineral fuels and minerals, iron and steel, cotton, edible fruits and vegetables, and others.

[1] The APTTA was signed between Afghanistan and Pakistan on 28 October 2010. It updated the earlier Afghan Transit Trade Agreement (ATTA) of 1965 between Afghanistan and Pakistan. The APTTA was signed to make the ATTA conform to prevalent international trading practices and to address Pakistan's concerns regarding informal trade associated with the movement of goods under the ATTA. The informal trade under the ATTA was estimated to be USD 2 billion (USAID Trade Project 2014).

As a result of the long and porous border, a large volume of informal trade also takes place between the two countries. The prevalence of informal trade not only distorts bilateral trade statistics that constitute an important component of economic planning but also affects the level of competition faced by domestic producers. Due to the existence of informal trade, revenue authorities are less sure of expected revenue receipts. Similarly, domestic producers are less certain of the level of competition that could affect their production and investment decisions. Consumer preferences for choice of quality products could also be affected due to informal and unregulated trade.

For example, tea imports in Pakistan sharply declined by 24.7 percent during the first two months of FY 2012-13 to USD 42.5 million from USD 56.5 million in the corresponding months of the previous year. The FBR has ascribed the resumption of NATO supplies to Afghanistan under the APTTA (suspended in November 2011) as the reason for smuggling of various commodities into Pakistan, including tea (Shahnawaz 2012). In addition, the Federal Tax Ombudsman, in a report submitted to the Supreme Court of Pakistan on the International Security Assistance Force (ISAF) container scam, has identified the issue of smuggling of various commodities, again including tea, from Afghanistan to Pakistan.[2] A total of at least USD 300 million worth of black tea was estimated to be brought informally into Pakistan in 2013 (Tahir 2014).

As another example, the import of special woven fabric, tufted textiles, under the APTTA to Afghanistan increased to Rs 41.1 billion (about USD 411 million) from Rs 26.38 billion during the first seven months FY 2014-15. The quantity imported into Afghanistan was expected to be 55 percent more than the domestic demand of the country (Mashhud 2015). This suggests that large quantities of this woven textile were smuggled back into Pakistan. Moreover, during the first seven months of FY 2014-15, imports of some other goods under the APTTA also demonstrated abnormal increases of import volumes. Considering the population of Afghanistan, and the presence of most of these items on the smuggling prone list, it can be presumed that re-export of these products through informal channels back into Pakistan influenced the trading pattern under the APTTA.

The transit trade arrangement under the APTTA (and the earlier ATTA) has been availed by the commercial importers of Afghanistan and ISAF. Pilferage of goods/cargo into Pakistan under the APTTA arrangement takes place in both cases. In the case of the ISAF, pilferage of goods/cargo is mostly taking place on reverse cargo (the terminology used for cargo while it is being sent back to the exporting country under temporary import cum re-export arrangement) (Mashhud 2015). Commercial importers also misuse the APTTA either when the goods/cargo are en-route to Afghanistan or after its arrival in Afghanistan. In the latter case, goods destined for Afghanistan under the APTTA, upon arrival at the Karachi port, pay no duties, after which they are loaded onto trucks which transit Pakistani territory to reach Afghanistan via Chamman or Torkham (border crossing points). After arrival in Afghanistan the merchandise is smuggled back to Pakistan. This latter informal trade under the APTTA and back into Pakistan (as opposed to the pilfering) is the focus of this paper.

Formal trade, in the context of this analysis, means that goods destined for consumption in Pakistan are directly imported by Pakistan at Karachi port. Informal trade through Afghanistan means that goods meant for consumption in Pakistan use the APTTA (imported through Karachi port) and, upon arrival in Afghanistan, are shipped back to Pakistan through informal channels. There are additional transaction costs for the informal trade compared to formal imports directly into Pakistan. However, incentives to conduct informal trade are high enough for informal traders to opt for the APTTA route to compete with the formal channel of direct imports.

A second issue concerns the competitiveness of the APTTA compared to trade through Iranian ports.[3] The volume of transit trade through Pakistan under the transit trade arrangement has declined over the years. Imports, in terms of containers, declined from 96,914 in 2009-10 to approximately 31,881 during 2013-14 (USAID Trade Project 2014). This decline in imports is due to the diversion of transit cargo to Iran. Diversions occurred mainly due to the

[2] ISAF is a NATO led security mission in Afghanistan established by United Nations Security Council in December, 2001 by resolution 1386. ISAF is entrusted with maintaining peace and rebuilding key government institutions. ISAF used the transit arrangement through Pakistan for bringing their goods to Afghanistan under the non-commercial category of APTTA (earlier ATTA). The container scam concerned that en route to Afghanistan, through Pakistan, containers went missing in Pakistan causing direct losses and loss in revenue in the form of non-payment of duties and taxes for pilfered goods.

[3] The transit trade agreement between Afghanistan and Iran was signed in 1973 which was later revised in 2005 with an expanded scope. The agreement envisages re-exporting of transit goods to third countries via the Bandar Abbas port. A trilateral transit trade agreement via Chabahar port has also been recently finalized between Afghanistan, Iran, and India.

revision of the ATTA to the more stringent APTTA and the high cost of transit handling charges at Pakistani ports along with their stringent approach towards transit trade (Khan 2015).

Regarding making the APTTA competitive vis-e-vis Iranian ports, recommendations have mostly focused on improving the transaction environment in the form of minimizing levies and reducing regulatory burdens under the APTTA, as transaction costs are high (USAID Trade Project 2014). Besides legal payments, which are higher than at Iranian ports, there are un-authorized payments made to Pakistan Customs for clearance of consignments under the APTTA. No doubt, by reducing transaction costs, Pakistani ports would become more competitive vis-a-vis Iranian ports, and this could diverted transit cargo business back to Pakistani ports from Iranian ports.

However, it is possible that informal trading under the APTTA may increase after reducing transaction costs, as profits for informal traders are likely to be increased. The solution for channelizing informal trade into formal routes is not as easy as some studies suggest (USAID Trade Project 2014) by merely focusing on trade facilitation measures. A solution to informal trade requires an encompassing approach beyond just trade facilitation. It requires rationalization of the tariff and tax incidence structures for smuggling prone items with the objective to minimize the incentives of informal traders.

Informal imports into Pakistan under the APTTA are only one part of the full range of Afghanistan-Pakistan informal trade. Shaheen et al. (2007), while quantifying the informal trade between India and Pakistan, identified five major routes for informal trade. On three out of these five, informal trade takes place in containers, and all three of these routes pass through Afghanistan.[4] The main areas through which unofficial trade takes place are Shahrinow, Babrak, Kotki, Ghulam Khan, Thana in Nangarhar Province and at Lalpoura, Goshta, Mangwal, Gangall, and Dangam in Kunar Province. However, official trade takes place through Torkham (Pakistan) and Weish and also through smaller towns, such as Nowapass, Barikot, and Marawara in Kunar Province (IMF 2001).

On the above mentioned routes, informal trade originates in the UAE and, after passing through Iran and Afghanistan, makes its way into Pakistan. Similarly, with another immediate neighbour, Iran, informal trade to Pakistan reportedly takes place due to the porous nature of the border. For instance, informal trade for tyres from Bandar Abbas (an Iranian port) has increased recently (FBR Times).

The list of items seized during anti-smuggling operation by the revenue authority of Pakistan, and their respective tariff levels in Pakistan and Afghanistan, are shown in Table 1. For all items except one, Pakistan applies higher tariffs than Afghanistan.

[4] The routes are: 1) Dubai-Bandar Abbas-Herat-kabul-Jalalabad-Bara; 2) Dubai-Bandar Abbas-Herat-Kandahar-Wesh-Chaman; and 3) Dubai-Bandar Abbas-Herat-Kandahar-Wesh- Noshki-Quetta.

Table 1: Tariffs of Pakistan and Afghanistan on Smuggling Prone Items

	Item	Pakistan Imports 2014 (USD Mil)	PCT Heading	MFN Pakistan		Pakistan on Afghanistan 2014 (SAFTA)	MFN Afghanistan	
				2012	2014		2012	2013
1	Fabrics	105	5407	15%	15%	12.65%	2.50%	2.50%
2	Black Tea	328.3	902	10%	10%	10%	5%	2.78%
3	Ball bearings	62.3	8482.1	5%	5%	5%	5%	5%
4	Perfumes and toiletries Chapter 33 & 34							
	Essential oils	7.8	3301	10%	10%	5%	5%	5%
	Flavours used in cosmetics	65.9	3302	10%	10%	5%	3%	2.12%
	Perfumes & Cologne	6.3	3303	35%	25%	5%	16%	16%
	Make up	20.4	3304	35%	25%	8.25%	16%	16%
	Hair products	39.6	3305	35%	25%	13.24%	14.50%	13.53%
	Dental products	2.9	3306	35%	25%	21.78%	2.50%	2.50%
	Shaving products	9.6	3307	35%	25%	14.18%	16%	16%
	Soap	34.2	3401	35%	25%	25%	5%	5%
	Cleaning agents	89.1	3402	17%	22.12%	14.63%	5%	5%
	Grease	46.2	3403	13%	16.33%	7.18%	5%	5%
	Artificial waxes	14.4	3404	5%	5.33%	3.66%	5%	5%
	Polishes	3.5	3405	16%	19.87%	5%	5%	5%
	Candles	0.7	3406	25%	25%	5%	10%	10%
	Dental Wax	0.6	3407	10%	10%	5%	2.50%	2.50%
5	Plastic Molding Compounds & Plastic Sheets/ Films (BOPP Films, Cellophane fims) (3901.000 to 3921.0000)							
	Polymers of ethylene	572.2	3901	5%	5%	5%	1%	1%
	Polymers of propylene	586.3	3902	5%	5%	5%	1%	1%
	Polymers of styrene	42.3	3903	12.50%	10.58%	10.92%	5%	5%
	Polymers of vinyl chloride	45.4	3904	13%	11.92%	11.43%	5%	5%
	Polymers of vinyl acetate	33.1	3905	12%	10.26%	11.15%	5%	5%
	Acrylic Polymers	44.9	3906	10%	10.37%	10.40%	5%	5%
	Polyacetals	183.6	3907	14%	12.90%	12.16%	3%	2.33%
	Polyamides	6.3	3908	5%	5%	5%	3%	1.29%
	Amino resins	31.8	3909	18%	10.12%	10.12%	1%	1%
	Silicones	31.9	3910	5%	5%	5%	5%	5%
	Petroleum resins	2.6	3911	20%	20%	5%	5%	5%
	Cellulose	43	3912	12%	10.66%	5%	5%	5%
	Natural Polymers	22.3	3913	10%	10%	5%	5%	5%
	Ion Exchangers	3.1	3914	5%	5%	0%	5%	5%
	Waste parings	18.8	3915	25%	25%	5%	1%	1%
	Monofilament	2.1	3916	20%	20%	11.24%	5%	5%
	Tubes and Pipes	15	3917	16.60%	18.15%	18.07%	10%	10%
	Floor covering of plastic	4	3918	25%	25%	25%	10%	10%
	Self adhesive plates	44.7	3919	18%	19.22%	19.22%	5%	5%
	Other plates, sheets	65.9	3920	20%	20%	19.93%	5%	5%
	Other plates, sheets, foil	43.3	3921	18%	14.09%	14.09%	5%	5%
6	Tires & Tubes	18.8	4011.1	25%	25%	25%	5%	5%
7	Tiles (Ceramic & Porcelain)	2.7	6907.1	35%	25%	5%	10%	10%
	Tiles (Ceramic & Porcelain)	57	6908.901	35%	25%	25%	10%	10%
8	Lubricants	NA	2710.1	10.30%	10.06%	6.75%	10.20%	11%
9	Dyes and Chemicals	218.5	3204	11.20%	14.45%	13.29%	0%	0%
10	Photographic films	16.2	3701	9.30%	7.56%	7.58%	4.50%	3.93%
	Photographic films	5.9	3702	5%	5%	5%	5%	4.43%
11	Cigarette paper/Paper Board	62.5	4802	20%	19.59%	19.23%	2.50%	2.50%

Table 1: Continued

	Item	Pakistan Imports 2014	PCT Heading	MFN Pakistan 2012	MFN Pakistan 2014	Pakistan on Afghanistan 2014	MFN Afghanistan 2012	MFN Afghanistan 2013
12	Domestic Appliances (grinders, mixers. Juicers, extractors, television sets, refrigerators, air conditioners, washing machines, ovens, cooking ranges, VCR/VCP, CD/DVD Players etc.) (8509.0000)							
	Mixers & other appliances	11.8	8509	30%	24.44%	5%	10%	9.68%
	DVD Player	1.9	8521.901	20%	20%	5%	10%	10%
	VSR/VCP	0.6	8521.101	20%	20%	5%	10%	10%
	Washing machines	9.5	8450	35%	25%	13.71%	10%	10%
	Refrigerators	3.9	8418.21	35%	25%	25%	10%	10%
	TV Sets	8.7	8528.7211	35%	25%	25%	10%	10%
	Air conditioners	87.7	8415	35%	24.87%	24.87%	5%	5%
13	Capacitors/diodes/transistors	12.2	8532	20%	23.59%	23.35%	5%	5%
14	Motorcycles and parts	85.7	8711.0000&	65%	65%	65%	10%	10%
			8711.2010	35%	65%	65%	10%	10%
15	Cigarettes	2.3	2402.2	35%	25%	25%	10%	10%

Sources: Federal Board of Revenue (2012), TradeMap (2015)

In addition to tariff differences, incentives for informal trade are created by higher sales and income withholding taxes in Pakistan. These differences, shown in Table 2, are substantial. Low tariffs and taxes in Afghanistan, compared to Pakistan, provide incentives for informal traders to opt for Afghanistan as an import destination and then engage in informal trade back into Pakistan, defined below as "outsourcing evasion".

Table 2: Sales and Income Withholding Taxes Applied by Pakistan and Afghanistan

Pakistan Sales Tax rate at import stage (VAT)	17%
Pakistan Advance Income Tax rate at import stage	6%
Afghanistan Sales Tax rate (Business Receipt Tax)	2%
Afghanistan Advance Income Tax rate	0%

Note: The Afghanistan Advance Income Tax rate shown above is for products for re-export. A rate of 2% applies to products for domestic consumption.

Sources: FBR Pakistan, Afghanistan Revenue Department

Pakistan and Afghanistan agreed, in principle, in 2012 to enter into a PTA with one of the objectives being to bring informal trade into formal channels (formalize informal trade) by reducing the incentives for smuggling. Subsequently, a draft of the "Pak-Afghan" bilateral PTA was shared by Pakistan with Afghanistan in January 2015. Both sides decided to start negotiations on the PTA on the sidelines of the Afghanistan-Pakistan Transit Trade Coordination Authority (APTTCA) in March 2016. In addition, both sides reiterated their intention to enhance the annual level of formal bilateral trade to USD 5 billion by 2017. It is not clear, however, whether creating a PTA can reduce smuggling under the APTTA.

LITERATURE REVIEW

Golub (2015) describes four kinds of informal cross border trade and categorizes two of these as smuggling: parallel trade which evades regulatory burdens in the form of taxes or regulatory compliance; and unofficial re-exports of legally imported products into neighbouring countries.[5] Much earlier, Bhagwati (1964) first used the idea of trade gaps (an observed mismatch in the trade data between Turkey and its trading partners) to highlight tariff evasion. He was of the opinion that missing imports from one country's report may be the result of under-declaration of quantities, under invoicing on price, or misclassification of products to reduce the tariff burden. Bhagwati and Hansen (1973) later provided a theoretical foundation for smuggling and falsified the notion that smuggling must improve economic welfare. In their view, smuggling distorts welfare, as legal traders are squeezed out by smugglers who operate at

[5] The two not classified as smuggling by Golub are official transhipments of imports/exports (mostly for landlocked countries and not recorded in national/international trade data) and cross-border trade in agriculture products and livestock along porous borders.

inferior terms of trade but profit through avoiding tariffs. To understand the nature and magnitude of smuggling, subsequent studies that have used trade gaps to assess evasion of high tariffs include Epaphra 2015, Rotunno and Vezina 2012, Fisman et al. 2008, Mishra et al. 2008, Javorcik and Narciso 2008, Fisman and Wei 2004, and others.

In particular, Fisman and Wei (2004) analysed the missing trade between Hong Kong and China and found that a one percentage point increase in tariff differentials resulted in a three percent increase in missing imports, on average. Fisman et al. (2008) compared direct exports to China and indirect exports to China via Hong Kong and observed that indirect exports rise with an increase in Chinese tariff rates. They introduced the hypothesis of "out-sourcing evasion" and argue that "entrepot" economies, such as Macao, Singapore, Cyprus, Jordan, and others, facilitate tariff evasion. Entrepot economies depend on transhipment of cargo and import goods for re-export without any additional processing and repackaging. Favourable conditions for trade with zero or low import duties are one of the features of the entrepot economies. Fisman et al. (2008) found that a quarter of indirect exports through Hong Kong may be attributed to tariff evasion.

In this context, for Afghanistan relative to Pakistan, one also observes low tariffs and taxes which reduces the regulatory burden on imports and creates conditions for Afghanistan to serve as an entrepot economy relative to Pakistan. The situation is exacerbated by relatively high tariffs of Pakistan. Like many developing countries, Pakistan exhibits an escalating tariff structure in which tariff rates for final goods are higher than those for intermediate inputs, and the latter are then higher than those for raw materials. To illustrate, Table 3 shows that MFN tariff escalation is considerably higher in Pakistan than South Asia and ASEAN. In percentage points difference, it was 9.09 in Pakistan, while in ASEAN it was 2.9, during 2006-09. The trade weighted MFN applied rate in Pakistan (14.66 percent) was also high compared to South Asia (12.69 percent) and ASEAN (6.83 percent).

Table 3: Trade Policy Indicators of Pakistan versus South Asia and ASEAN

Indicators	Pakistan		South Asia	ASEAN
	2005-08	2006-09	2006-09	2006-09
MFN applied tariff (AV+AVE) - Trade Weighted Average - All Goods (%)	15.31	14.66	12.69	6.83
MFN Applied tariff escalation (diff, finished-raw) - All Goods (%)	8.49	9.09	0.25	2.90
TTRI (MFN applied tariff) - All Goods	12.24	12.20	11.75	4.60
Customs and Other Import Duties (as a percent of tax revenues)	18.78	..	35.54	13.59

Source: World Bank, WTI

Pakistan's tariff schedule also had tariff peaks that were much higher than South Asia and ASEAN, and the MFN Tariff Trade Restrictiveness Index (TTRI) depicts that Pakistan's trade regime is slightly more restrictive (12.2 percent) than South Asia (11.75 percent) and considerably more restrictive than ASEAN (4.6 percent). Customs and other import duties amounted to 18.8 percent of total government revenue for Pakistan.

The nature of goods affects the level of tariff evasion. Javorcik and Narciso (2008), relying on Rauch's (1999) definition of differentiated products, tested the hypothesis of tariff evasion for differentiated and homogeneous products on product-level trade data between Germany and East European countries. Rauch (1999) defined homogeneous products as being sold on organized markets or having reference prices, while all others are differentiated. Javorcik and Narciso (2008) found that a one percentage point increase in the tariff rate is associated with a 0.4 percent increase in the trade gap for homogeneous products and 1.7 percent in the case of differentiated products. This shows the responsiveness of the trade gap to tariff levels is four times higher for differentiated products.

Ethnic networks facilitate contract enforcement in informal channels. Rauch and Trindade (2002), using a gravity equation, found that informational barriers to trade are more pronounced in differentiated products; these are

then eased through ethnic networks. Guiso et al. (2009) also found evidence that trust generated by these ethnic networks not only affects aggregate trade but also its composition. In the case of Pakistan and Afghanistan, there are ethnic Pashtun tribes on both sides of the border facilitating the flow of goods in informal channels.

Repeated interactions in the Afghanistan-Pakistan informal trade channels, and the reputation of the individuals involved in the process, provide alternatives to formal contracting institutions. Nunn and Trefler (2013) address the evolution of alternative institutions when the formal contracting institutions are weak, leading to underinvestment in relation specific industries due to hold up problems. In such a situation, they highlight that repeated interactions can facilitate cooperation, and reputation can act as a substitute for legal contract enforcement.

This paper investigates options among policy instruments (tariff/taxes) for reducing the profit incentives of informal traders. The reductions in each policy variable have different political economy and welfare implications. For example, tariffs are applied only on imports, while the Pakistan sales tax is a VAT applied both on foreign and domestic firms. The VAT system was introduced in Pakistan in 2010 and is collected under the name of 'General Sales Tax' (GST). A standard rate is applied on most commodities, however, exemptions exist in the first schedule of federal and provincial VAT bills. Moreover, the government sometimes resorts to varying the rates for both the VAT and advance income tax through the issuance of Statutory Regulatory Orders (SROs).

In an early study, Pritchett and Sethi (1994) observed for three developing countries (Jamaica, Kenya, and Pakistan) that collected and official tariff rates are only weakly related, with the variance of collected rates increasing strongly with official rates. Keen (2008) argues that moving from tariffs to a VAT would reduce distortions and increase welfare. However, Piggot and Whalley (2001) and Emran and Stiglitz (2005) find it is welfare reducing. They are of the opinion that an increase in the VAT would encourage domestic firms to switch from the formal to informal sector which would have a detrimental effect on welfare. Davies and Paz (2011), while analysing the use of tariffs or VATs in developing countries, are of the view that cuts in tariffs reduce the size of the informal sector, and a revenue neutral switch from tariffs to a VAT increase welfare through selection effects. However, Baunsgaard and Keen (2005) and IMF (2005) empirically suggest that developing countries experience difficulties in achieving such revenue neutral replacements of tariff revenue.

In summary, several key points emerge from the literature relevant to this study. The literature highlights that smuggling is often a developing country phenomenon, and there is evidence this phenomena is prevalent on the Pakistan-Afghanistan border. Informal traders engage in smuggling to avoid domestic policy distortions and engage in tariff/tax evasion for selected products. The presence of similar ethnic tribes on both sides of the border helps facilitate the flow of goods in informal channels, and this phenomenon is more pronounced in differentiated products than homogeneous products. Besides ethnic networks, repeat interactions and reputation provide alternative contract enforcing institutions and promote trade in informal channels. Moreover, trading conditions in entrepot countries also play an important part in tariff evasions. In Afghanistan, tariff/taxes are low compared to Pakistan and provide incentives for informal traders to import products in Afghanistan and then smuggle through informal channels to Pakistan. This provides an outsourcing evasion destination to informal traders. While minimizing profits through a reduction in policy variables (tariff/taxes), considerations need to be given to political economy dimensions and the composition of the formal and informal sectors for specific products in the domestic economy.

INFORMAL TRADE UNDER THE APTTA

Cost Parameters and Conceptual Model

As described above, informal traders use the APTTA to bring goods into Afghanistan and then ship those goods to Pakistan through informal channels. Traders incur official as well as unofficial costs to clear their goods at Karachi Port/Port Qasim (USAID Trade Project 2014).[6] After this, they have their goods transported across Pakistan, transiting through land border stations (Chaman/Torkham). Beginning from when the goods land at ports in Pakistan until clearance at border stations to Afghanistan, different authorized (official/legal) receipted payments (ARP) as well as bribes

[6] The USAID Trade Project study focused on dwell time under the APTTA and transaction costs. Dwell time refers to the time taken between when Afghanistan transit consignments arrive in Karachi and when they depart Pakistan's territory through the land border posts of Chaman (approximately 848 kms) and Torkham (approximately 1,400 kms) after completing all formalities under the APTTA such as insurance guarantees for taxes and duties, carriage of containers allowed only through Customs Licensed Bonded Carriers (CLBCs), 100 percent weighing and scanning of containers, and others.

classified as unauthorized non-receipted payments (UNRP) are paid in addition to transport costs. Details of the costs incurred at various stages are given in Tables 4 and 5.

Table 4: Karachi Port: Costs Incurred During Arrival to Exit from Seaport

Step at Karachi Port	Authorized Receipted Payments (ARP), USD		Unauthorized Non-receipted Payments (UNRP), USD	
	20 ft	40 ft	20 ft	40 ft
Delivery Order	150 - 200	250 – 300	-	-
Terminal Handling Charge (KICT/PICT)	87 - 117	138 – 178	-	-
Port Wharfage	17.4	34.8	-	-
Seal, Allow Loading, Lifter, Crane, Delivery-Out	-	-	25 – 28	25 - 28
Port/Gale expenses for Excess Weight	-	-	15 – 20	15 - 20
Customs Clearing Agent	90	130	-	-
Demurrage (14 Days Free Time)	8.5; 10; 13; 18 (5, 10, 15 days and onwards after 14 days Free)	17; 20; 26; 36 (5, 10, 15 days and onwards after 14 days Free)	-	-
Customs (Overall: processing, examination, scanning, seal verification, etc.)	-	-	185	255
Insurance Guarantee (on value of Customs Duties/Taxes)	0.40% / 150 (for instance USD 150 worth insurance guarantee on goods worth USD 0.15 million, with 25% duty)	0.40% / 200(for instance USD 200 worth insurance guarantee on goods worth USD 0.20 million, with 25% duty)	-	-
Insurance for Goods (Marine Insurance) on value of goods	0.50% / USD 750 (for instance USD 750 worth marine insurance guarantee on goods worth USD 0.15 million)	0.50% / USD 1,000 (for instance USD 1,000 worth marine insurance guarantee on goods worth USD 0.20 million)	-	-
Tracking Devices	66.92 (with additional USD 330 onetime per device per vehicle, and USD 70 annual fee)	66.92 (with additional USD 330 onetime per device per vehicle, and USD 70 annual fee)	-	-
Total Karachi	**1,311**	**1,793**	**225**	**295**

Source: USAID Trade Project (2014)

Table 5: APTTA: Costs Incurred in Transit from Seaport to Land Border Station and Port Exit

Stage	Authorized Receipted Payments (ARP), USD		Unauthorized Non-receipted Payments (UNRP), USD	
	20 ft	40 ft	20 ft	40 ft
Road Transit: Freight (15-20 Tonn)				
Karachi-Torkham-Jalalabad	2,600	3,100		
Karachi-Torkham-Kabul	3,100	3,650		
Torkham Average	**2,850**	**3,375**		
Karachi-Chaman-Kandahar	2,250	3,320		
Karachi-Chaman-Spinboldak	1,450	2,200		
Chaman Average	**1,850**	**2,700**		
Customs Check Posts			Nil	Nil
Police Check Posts			5	5
At Customs Border Station Torkham				
Political Agent/Union/Customs	-	-	92	184
Crane Charges	12	12	-	-
Labor	10	10	-	-
Clearing Agent Charges	-	-	120	160
Ilm-o-Khabar	-	-	40	55
Total Torkham	**22**	**22**	**252**	**399**
At Customs Border Station Chaman				
Political Agent/Unions/Customs	-	-	92	184
Crane Charges	15	30	-	-
Labor	10	15	-	-
Clearing Agent Charges	-	-	90	90
Ilm-o-Khabar	35	48	5	7
Total Chaman	**60**	**93**	**187**	**281**

Source: USAID Trade Project (2014)

Formal traders, importing directly into Pakistan, also have to pay some of these charges that are common for exit (clearance) from the sea port. For example, up to the demurrage stage, both direct imports in Pakistan and imports using the APTTA face the same ARPs and UNRPs. However, at the customs stage given in Table 4, direct imports and imports using the APTTA experience different treatment. APTTA shipments pay more than direct imports into Pakistan. Based on interviews conducted as part of this study,[7] APTTA shipments pay more due to examination charges, examination survey charges, high security seal charges, scanning charges, and weightage charges.

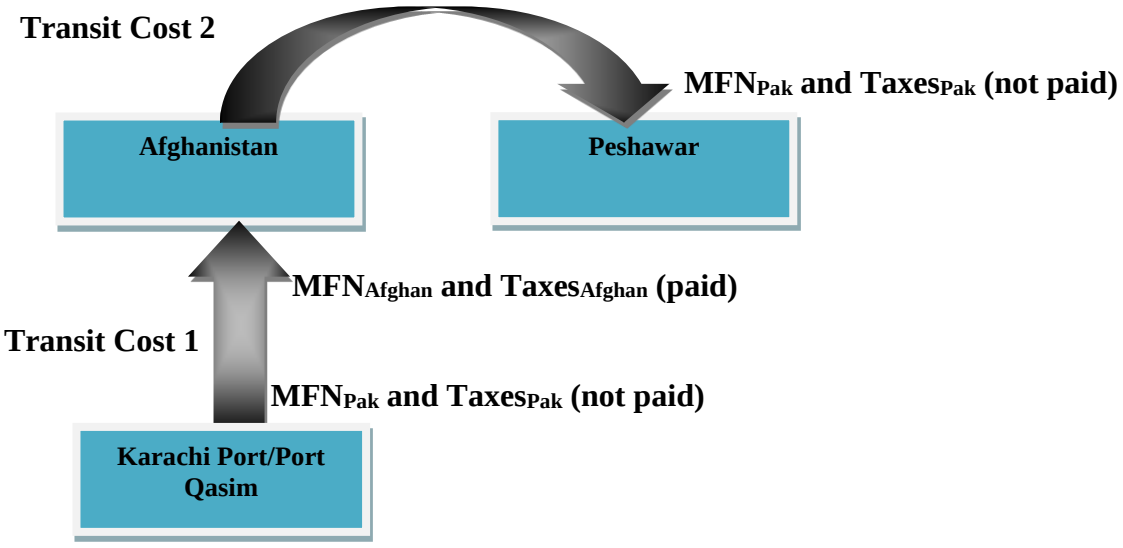
For the return transit back to Pakistan, interviews with informal traders suggest it costs nearly twice as much as transporting goods from Karachi to Afghanistan under the APTTA. As the border is porous, goods are brought in piecemeal (passenger vehicles, border crossers using non-regular channels) or in containers in connivance with custom officials by paying them an UNRP. Goods by-pass all the regular ARPs on the return journey to Pakistan.

Informal traders take advantage of the arbitrage opportunity provided between formal channel direct imports into Pakistan and informal channel shipments to Pakistan using the APTTA route. As noted before, the MFN tariffs on the list of smuggling prone items furnished by the FBR (Table 1) and the sales and income tax charges of Pakistan (Table 2) are higher than those of Afghanistan. Thus arbitrage opportunities arises for smuggling prone items. Even

[7] During January-March 2014, 24 interviews were conducted with individuals representing the public and private sectors. These included representatives from the ministries, revenue authorities, logistic companies, informal trades, and wholesalers/retailers. The topics covered were related to mechanisms of informal trading, transportation, parallel markets in the economy, and selling processes for informal trade products in Pakistan.

though the transaction costs are higher under the APTTA framework, informal traders still opt for it to compete with goods brought directly into Pakistan paying the higher Pakistan tariffs and taxes. A diagram for informal trade under the APTTA is given in Figure 1. More generally, high regulatory burdens under bilateral and regional agreements (for example, if the goods are originating from SAARC countries under the SAFTA arrangement) and policy barriers to trade (Pakistan bans 1,209 articles from India) also contribute to informal trade. In addition, there are also non-tariff barriers (NTBs) under various Import Policy Orders.

Figure 1: Informal Trade under APTTA



Model of Incentives for Informal Trade

To present a model of informal trade taking place under the APTTA, we assume that there are specialized, non-compliant informal traders who are engaged in informal trade, and the cost of smuggling is constant, as they do not operate on a large scale. The specialized informal trader takes advantage of their ethnic networks, repeated interactions, and long-term relationships with the individuals involved in the supply chain of informal trade. Due to these features, informal trade is characterized as a specialized job in which ordinary traders cannot participate, and ethnic networks and repeat interactions act as a barrier to entry.

In terms of the costs given in Tables 4 and 5, it is also assumed that the informal trader brings the goods in a 40 foot container.[8] The cost for bringing the 40 feet container is a fixed cost; a sunk cost once the decision is made. The informal trader would at a minimum have to bring as many units of a product in a 40 foot container as required to achieve the breakeven, where total revenue covers total costs. If this is not feasible, informal trade would cease to occur. In addition, the informal traders treat the international and Pakistani market prices of the product as given. This assumption means they assume that their supply of products is small enough relative to the size of the market that it does not affect the market price. The profit of the informal trader is bounded in terms of quantities per container on the left ($Q \geq 0$) and on the right by the size of container, determining a maximum (S) of the good that can be carried ($Q \leq S$) while paying the transaction costs associated with that container. In addition, we assume the informal trader is not availing any trade preferences under any bilateral or regional trade arrangements.

Under these conditions, a general expression for informal trader profit is:

(E1) Informal Trader Profit = f **[** {difference in Pakistan and Afghanistan MFN tariffs and taxes**}** – {total costs (transport, handling charges and other costs in excess of costs of direct importation into Pakistan)**}]**

[8] As shown in Tables 4 and 5, there are 20 foot and 40 foot containers. There are also two types of 40 foot container. One is the Dry container (12,033*2,350*2,390 mm). Its volume is 67.6 cubic meters and allowed weight is 26,680 Kg. The second is the High cube dry container (12,033*2,350*2,695 mm). Its volume is 76.6 cubic meters and allowed weight is 26,480 Kg.

The valuation method in Pakistan is CIF (Cost, Insurance, and Freight), which means that the import tariffs and taxes payable are calculated on the complete shipping value that includes the cost of the imported goods at export source, the cost of insurance, and the cost of international freight. In addition to tariffs, imports are subject to sales tax, advance income tax (withholding), and excise and import regulatory duties on some products. The model needs to incorporate prices and quantities because high volume items with a low price will have lower incentives for informal trade compared to low volume and high price items.

Informal traders also indulge in fake invoicing to lower the incidence of tariffs/taxes at the customs clearance stage. Furthermore, there is a secondary market for certain smuggled products in Pakistan, mainly for electronic products. The price of the smuggled products is lower as they do not carry warranties or after sales service. Therefore, informal traders sell the smuggled products to retailers at a discount.

Based on competition with directly imported products, assuming all tariffs and taxes are paid *ad valorem* at the import stage, and allowing for the possibility that the trader may under-invoice his shipment or may sell the products to retailers in Pakistan on discount, profit under the informal channel is:

(E2) Profit of informal trader $= [\{(1-\alpha)P(1 + tap)(1 + tsp)(1 + tip) - P\} - \{(1-\beta)[P(1 + taa)(1 + tsa)(1 + tia) - P]\}] * Q - Costs$

where

α = proportion discount extended by smuggler to retailers in Pakistan

β = proportion by which the smuggler under-invoices the imported product for clearance at Afghanistan customs (by declaring less than full price or quantity)

P = price per item from world market at import stage (CIF)

Q = number of items carried in a 40 foot container

tap = the applied Pakistan MFN duty on a particular item

tsp = Pakistan sales tax on the item

tip = Pakistan advance income (income withholding) tax + any other taxes on the item

taa = the applied Afghanistan MFN duty on a particular item

tsa = Afghanistan sales tax on the item

tia = Afghanistan advance income (income withholding) tax + any other taxes on the item

Costs = Total cost incurred per container on the informal route in excess of costs on the item of direct import into Pakistan

Costs have been calculated in the USAID Trade Project (2014) and include:

Transit cost 1 = transport cost from Karachi to Afghanistan

Transit cost 2 = transport cost from Afghanistan to Pakistan

Handling costs = ARPs at ports (Karachi/Port Qasim) and at land border stations (Chaman/Torkham) + UNRPs at various stages

Other costs = transaction cost differences compared to formal trade (documentation, clearance, insurance guarantees on custom duties and also for goods, transit trade charges by custom department, and others).

From this model, with costs per container treated as fixed, the marginal revenue achieved by the informal trader for each additional unit of the good imported is:

$$\text{(E3)} \quad \text{MR of informal trader} = \{(1-\alpha)P(1 + tap)(1 + tsp)(1 + tip) - P\} - \{(1-\beta)[P(1 + taa)(1 + tsa)(1 + tia) - P]\}$$

In the above equations, five key factors are identified on which profit earned through smuggling/informal trade is dependent. First is that the APTTA exempts goods destined for Afghanistan from Pakistan's MFN duties and sales and income taxes. These tariffs/taxes are paid by formal traders importing the goods directly into Pakistan. We assume these tariffs and taxes determine the domestic price of the good with a CIF price P based on world markets. In other words, we assume that direct importers price their products in the domestic market on the principle of Import Parity Pricing (IPP). This mechanism of pricing affects the state of competition in the domestic economy, as local manufacturers have to compete with the imported products. Both formal direct importers and domestic firms pay the sales and income taxes, hence these become part of the domestic price of the good in Pakistan. Tariffs also raise the domestic price compared to the world price but are paid only by the importers, while giving the domestic industry some protection against international competition. In a sense, both the tariff and taxes constitute a "savings opportunity" for traders engaging in informal trade (compared to formal trade) and gives them a potential profit resulting from the higher domestic price compared to the world price. For domestic price determination, we ignore port charges paid equally by both formal and informal traders and, for additional simplicity, the domestic transaction and marketing costs associated with distribution of the goods (essentially, we assume these are similar for formal and informal traders once the goods are in Pakistan).

The second factor is the MFN tariffs of Afghanistan that are paid on the APTTA route at the Afghan border together with any Afghanistan sales and advance income taxes which are paid by informal traders. This is a cost for informal traders and reduces their profits. In the profit equation, the higher the differences between Pakistan and Afghanistan tariff/taxes, the greater the profit from smuggling, all else equal.

The remaining three factors in the equation are related to the transaction costs that informal traders incur in excess of the transaction costs incurred by formal traders importing directly and the discounting and under-invoicing the informal traders may engage in. The model treats the transaction costs (the third factor) as fixed based on the estimates given in Tables 4 and 5.[9] The fourth factor is any discount at which the informal trader sells their goods in the Pakistan market, while paying the same CIF price as the formal trader who does not discount. Finally, the fifth factor is any under-invoicing the informal trader is able to get away with in paying the Afghanistan tariffs and taxes.[10] We can consider three general cases: discounting with no under-invoicing, under-invoicing with no discounting, or a combination of discounting and under-invoicing, where the rates of each could be different or the same.

In Pakistan, the government quite often resorts to regulatory duties at the import stage for various reasons including raising extra revenue for budgetary financing, ensuring domestic food supplies, or providing protection in the short run to domestic producers, among others. Regulatory duties are often an additional tariff or tax, and their imposition would further incentivize the informal trader by adding to their profits. Imposition of a regulatory duty would not change the general structure of model. For valuation purposes, regulatory duties are usually applied ad valorem on the value inclusive of applied tariffs and sales tax but before advance income tax. However, we do not explicitly include the additional regulatory duties in the model or our simulations analysis. They could be added into the simulations without changing the basic structure of the profit equation.

Illustrative Example and Simulations

We now turn to illustrative simulation results for a hypothetical example of smuggling under the APTTA. For this constructed example, it is assumed that the CIF price, P, is USD 100 and the maximum 40 foot container capacity, S, is 500. Costs incurred from Karachi port to Torkham, Afghanistan have been obtained from Tables 4 and 5, while the cost for bringing the goods back into Pakistan from Torkham through informal channels has been collected by the

[9] One slight exception is that the insurance guarantee and insurance for goods costs shown in Table 4 are on a percentage of value basis. We make this slight adjustment in our simulation analysis.

[10] In the model, we assume there is no under-invoicing by formal traders at the entry point directly into Pakistan. This simplifying assumption helps us focus on the incentives of informal traders but can also be relaxed. If formal traders engage in under-invoicing, it would lower the domestic price due to market competition under our import parity pricing assumption. This would lower profits of informal traders, all else equal.

author. These costs amount to USD 6,000 compared to an estimated cost of bringing a container from Karachi to Afghanistan of USD 3,100. The following tariff levels are assumed for the illustrative simulation:

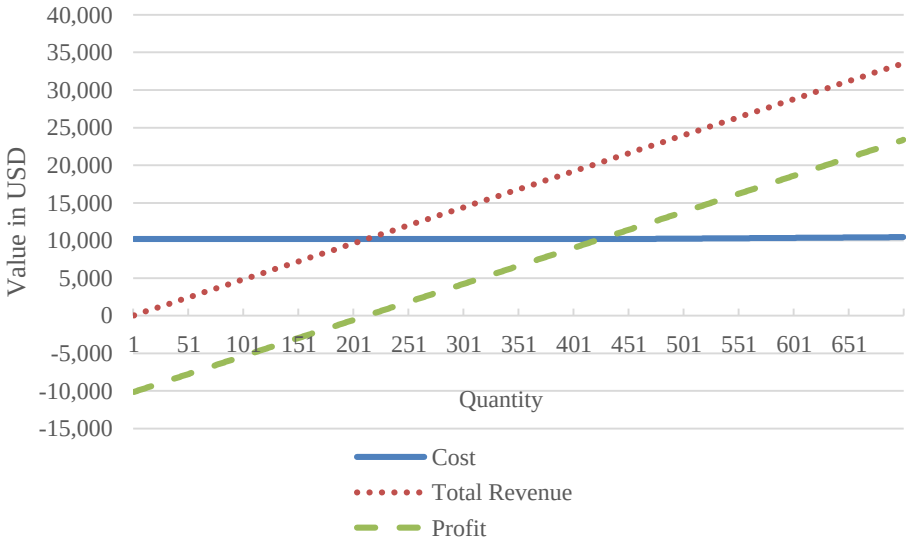
tap = 25 percent, tsp = 17 percent, tip = 6 percent
taa = 5 percent, tsa = 2 percent, tia = 0 percent

We also assume initially that the informal trader neither gives a discount to retailers ($\alpha = 0$) nor under-invoices his products at Afghan customs ($\beta = 0$). For the illustrative case, marginal revenue (MR), maximum revenue and profits for a fully loaded container, and the breakeven quantity (BE) are given in Table 6. For this simulation, the informal trader profit varies with quantity carried per container as shown in Figure 2.

Table 6: Illustrative Model Parameters and Initial Outcome

P (USD):	**100**	**MR**	**Maximum Revenue (MR*S)**	**Maximum Profit (MR*S-C)**	**Breakeven**		
Container capacity (S):	**500**						
		47.93	23,963	13,780	212.5		
Container Costs							
Insurance Guarantee		50					
Insurance for goods		250		**Assumed Tariffs/Taxes**			
Tracking device charges		67		tap	0.25	taa	0.05
UNRP		295		tsp	0.17	tsa	0.02
Freight Charges		3,100		tip	0.06	tia	0
ARP-Torkham		22					
UNRP-Torkham		399					
Transport back to Pakistan		6,000					
Total		**10,183**					

Figure 2: Informal Trade Profit without Retail Discounting or Under-Invoicing



As discussed before, the cost of bringing the container is a sunk cost, and the informal trader has to bring at least the quantity of products required to breakeven. In Figure 2 the marginal cost (MC) for an informal trader to

transport an extra unit is zero[11] as long as Q ≤ S. However, the MR for an extra unit is USD 47.93. There is always incentive for the informal trader to bring as many goods in the container as they can until Q = S. Hoy et al. (2001) provide an example of a similar situation and explains that competitive firms with linear costs may not have a maximum profit, as MR would always be greater than MC. Here, the container size S limits profits.

Regarding the BE quantity in Table 6 and Figure 2, the informal trader would need to bring goods at least up to the level of zero profits (MR = Average Cost (AC)) for long term operations. Based on the analysis, the BE point would be around 212 units (Q = 10,183 / 47.92). The government can eliminate the incentive for informal trade arising from any profits by increasing the BE point for the informal trader until it exceeds the quantity S that can be carried in a container. That could be achieved either by increasing the AC of bringing the goods through the informal channel or by reducing the MR in the informal channel. The former could have adverse consequences, as Pakistan is already losing APTTA transit cargo to Bandar Abbas port in Iran. The latter could be achieved by reducing the rates of applicable policy variables (tariffs/taxes) in Pakistan. Reducing tariffs would reduce protections of domestic firms, while reducing taxes would lower the costs of both domestic firms and importers. Both types of reductions lower domestic prices and thus would reduce profits from informal trade.

Table 7 shows the MR, maximum revenue and profits, and BE points of the base simulation where the informal trader either extends a discount ($\alpha > 0$) to retailers or under-invoices his products at Afghan customs ($\beta > 0$). The table does not show both simultaneously. The discounting results are shown in the top panel, while the under-invoicing results are in the bottom panel. Results are shown for selected discount/under-invoicing rates between 10 percent and 30 percent.

In the illustrative example where the trader offers a discount but does not under-invoice, each 10 percent increase in discounting reduces MR by USD 15.51, as can be derived from the MR reported in tables 6 and 7. The BE quantity rises sharply as MR fall. The informal trader can still make a profit with discounting of 10 percent or 15 percent, but not with discounting of 20 percent.

Table 7: Illustrative Model Simulations with Discounts to Pakistan Retailers or Under-invoicing at Afghanistan Customs

	MR	Maximum Revenue	Maximum Profit	Breakeven
Retail Discounting without Under-invoicing				
30% Discount	1.42	709	-9,474	7,183.8
20% Discount	16.92	8,460	-1,723	601.8
15% Discount	24.67	12,336	2,153	412.7
10% Discount	32.42	16,211	6,028	314.1
Under-invoicing without Retail Discounting				
30% Under	50.06	25,028	14,845	203.4
20% Under	49.35	24,673	14,490	206.4
15% Under	48.99	24,495	14,312	207.9
10% Under	48.64	24,318	14,135	209.4

The extent of their under-invoicing at Afghan customs also affects profits of informal traders. Through this mechanism, they bring down the incidence of tariff/taxes on the imported products and increase their profits, but the effect of a given rate of under-invoicing is smaller than the effect of that rate of discounting. For example, comparing two specific results of informal trader profit with 20 percent discounting only (Figure 3; $\alpha = 0.2$, $\beta = 0$) and profit with 20 percent under-invoicing only (Figure 4; $\alpha = 0$, $\beta = 0.2$), one observes that extending a 20 percent discount has a significant effect, and the informal trader achieves BE only at a quantity of about 602 (Q = 10,183 / 16.92), which exceeds the maximum container capacity. On the other hand, if he does not discount and engages in 20 percent under-

[11] An alternative assumption is that the marginal cost for bringing an extra unit is the discount rate prevailing in the market for the time period in which the goods are in transition from import at Karachi to delivery in Pakistan through the informal channel.

invoicing, the profit of the informal trader increases modestly, and he achieves BE at a quantity of about 206 (Q = 10,183 / 49.34). These two cases are illustrated in Figures 3 and 4. More generally, discounting and under-invoicing can occur simultaneously. The effects can be calculated using (E2). To consider just two examples (not shown in the table or figures), if the informal trader gives a discount to retailers and under-invoices simultaneously at the rate of 20 percent ($\alpha = \beta = 0.2$), the BE point changes to about 555 (Q = 10183 / 18.34) units, again exceeding the container capacity. At discounting and under-invoicing rates of 15 percent ($\alpha = \beta = 0.15$), the BE is 396 (Q = 10182.92 / 25.74). In this case, the number of items that can fit in a container provides incentive for the informal trader to engage in smuggling.

Figure 3: Informal Trade Profit after Retail Discounting

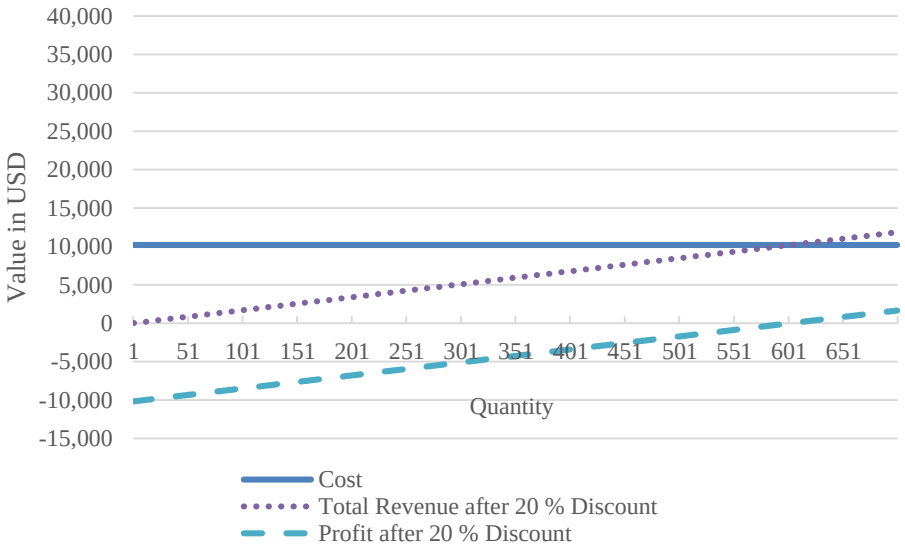
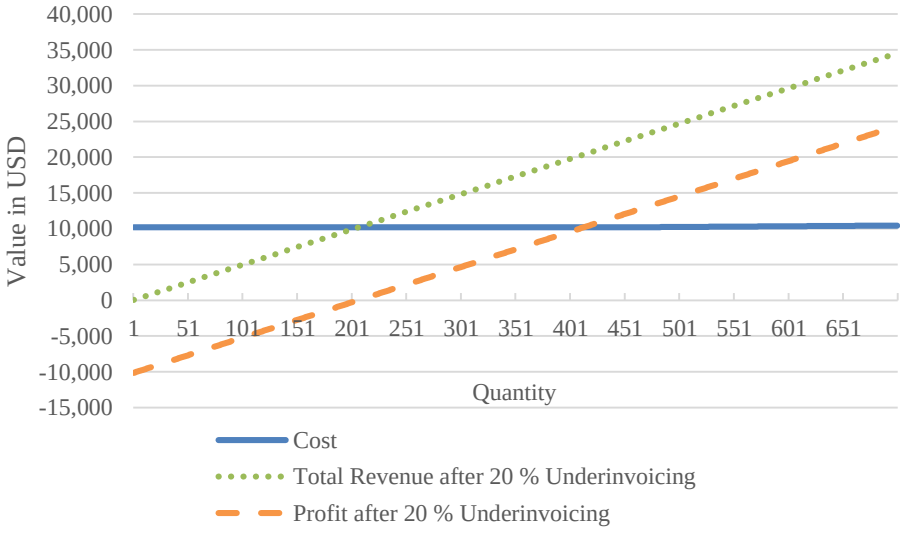


Figure 4: Informal Trade Profit after Under-invoicing



A strategy for channelizing informal trade between Pakistan and Afghanistan needs to discourage the informal trader by bringing their profits down toward the BE point. Profits could be minimized through reductions in

Pakistan's applied tariffs, sales taxes, or advance income tax as smugglers derive their profits from the high tariffs/taxes in Pakistan.[12]

For the illustrative model, Table 8 presents the BE points for simulated reductions by 1 percentage point increments of the tariff, sales tax, and income tax, with the levels of the other two held constant at their initial values. As tariffs/taxes are applied at different initial rates in this illustrative example (applied tariff is highest followed by sales tax and income withholding tax), one facet seen in the model is that it matters slightly which tariff/tax is lowered. At initial tariff and tax levels, a 1 percentage point reduction in the tariff will have slightly less effect on profits of informal traders than a 1 percentage point reduction of sales tax, which in turn has slightly less effect than a 1 percent reduction in income tax. A 1 percentage point decrease in a 25 percent tariff is a smaller proportionate drop than a 1 percentage point decrease in a 17 percent sales tax or 6 percent income tax, creating small difference in their marginal effects. This can be seen by looking across the first row of the table. The tariff decrease from 25 percent to 24 percent increases the BE to 218.1, while the sales tax reduction from 17 percent to 16 percent increases the BE to 218.5; and the decrease in the income tax increases BE to 219.2. Thus, it matters which policy is changed by decreasing the rate by 1 percentage point, but the empirical differences are small. More consequentially, increasing the percent reduction of the tariff or either tax increases the BE by substantial amounts, as shown moving down the rows. For larger reductions in the tariff/taxes, the differences in effects also become more noticeable. For example, when the tariff is reduced by 6 percentage points, the BE increases to 251.5, while a 6 percent reduction in the income tax increases the BE to 260.1.

Table 8: Illustrative Model Breakeven Points (BE) for Individual Pakistan Tariff/Tax Reductions
(assumes other Pakistan tariff/taxes at initial levels, P= USD 100, taa= 5%, tsa= 2%, tia= 0%)

Reduction in Tariff/Tax	Implied Tariff	BE After Change in Tariff	Implied Sales Tax	BE After Change in Sales Tax	Implied Income Tax	BE After Change in Income Tax
1%	24%	218.1	16%	218.5	5%	219.2
2%	23%	224.1	15%	224.9	4%	226.3
3%	22%	230.4	14%	231.7	3%	233.9
4%	21%	237.0	13%	238.9	2%	242.0
5%	20%	244.1	12%	246.6	1%	250.7
6%	19%	251.5	11%	254.7	0%	260.1
7%	18%	259.5	10%	263.5		
8%	17%	267.9	9%	272.8		
9%	16%	277.0	8%	282.9		
10%	15%	286.7	7%	293.7		
11%	14%	297.0	6%	305.3		
12%	13%	308.2	5%	318.0		
13%	12%	320.2	4%	331.7		
14%	11%	333.2	3%	346.7		
15%	10%	347.3	2%	363.0		
16%	9%	362.6				
17%	8%	379.4				
18%	7%	397.8				
19%	6%	418.0				
20%	5%	440.4				

[12] Cigarettes are a special case. Cigarettes are on a negative list under the APTTA but are brought through other routes of informal channels. In the model, federal excise duty is not considered due to the limited scope of its application in terms of products. However, on cigarettes, the margin of federal excise duty is so high that it creates huge profit margins for the informal traders. The excise duty on cigarettes is a source of major revenue for revenue authorities. A strong enforcement drive at the retail level against smuggled cigarettes could help in minimizing the informal trade in cigarettes without changing the federal excise duty. In addition, cigarette consumption has negative health externalities, and, as demand is inelastic, governments such as Australia have also resorted to increases in taxation for discouraging its consumption and raise revenue.

In the simulations, we make the assumption that the maximum any policy will be reduced to lower informal trader profits is to eliminate the differential with the level of that policy in Afghanistan, not to lower Pakistan's tariff or tax below the Afghan rate.[13] Thus, in the illustrative example, the maximum reductions are 20 percent for the tariff, 15 percent for the sales tax, and 6 percent for the income tax. As shown, no single policy can be changed enough to increase the BE point above the maximum container capacity.

Because we cannot increase the BE point above the container capacity by reducing just one of the variables, reductions must be combined to achieve this outcome. We can solve for the combination of Pakistan's tariffs/taxes that would eliminate the profit of informal traders. Letting $(1 + X) = [(1 + tap)\ (1 + tsp)\ (1 + tip)]$, equation (E2) becomes:

$$\text{(E3)}\quad \text{Profit of informal trader} = [\ \{(1-\alpha)P(1 + X) - P\} - \{(1-\beta)[P(1 + taa)\ (1 + tsa)\ (1 + tia) - P]\}\ ] * Q - \text{Costs}$$

For fixed Afghan tariffs/taxes, and assuming Q is at maximum container capacity of S, zero profits is given by rearranging (E3) as:

$$\text{(E4)}\quad \{(1-\alpha)\ P(1 + X) - P\}*S = \{(1-\beta\ )[P(1 + taa)\ (1 + tsa)\ (1 + tia) - P]\}\ ] * S + \text{Costs}$$

With no discounting or under-invoicing, solving for X for the illustrative simulation, we get X = 0.27 for zero profits. This implies that the term (1 + X) needs to be less than 1.27 to eliminate positive profits from informal trade, irrespective of the combination of (1 + tap,), (1 + tsp), and (1 + tip) reached to achieve this overall level. Since initially (1 + X) is equal to 1.55, eliminating profits from informal trade takes some substantial reductions in the combined tariff and taxes. Selected combinations of tariff and tax reductions and the resulting BE are shown in Table 9.

Table 9: Illustrative Model Breakeven Points (BE) for Selected Combinations of Pakistan Tariff/Tax Reductions (without discounting or under-invoicing)

Simultaneous Tariff/Tax Reductions			
Tariff	**Sales Tax**	**Income Tax**	**Breakeven**
5%	5%	0%	287.9
5%	10%	3%	404.9
5%	15%	6%	665.6
10%	5%	0%	346.0
10%	10%	3%	518.4
10%	15%	6%	998.3
15%	5%	0%	433.5
15%	10%	3%	720.6
15%	15%	6%	1,996.7

A BE (of 518), just over the maximum quantity of 500 that can be carried in a container, is achieved by a tariff reduction of 10 percent combined with a sales tax reduction of 10 percent and an income tax reduction of 3

[13] While we focus on reduction or elimination of the differentials, more generally the authorities could go further, lowering tariffs or taxes below the Afghan rates. Negative tariffs or taxes would be a subsidy to imports or producers. Note also that the simulations assume the zero percent Afghanistan advance income tax shown in Table 2. Were the 2 percent rate used, per unit profits of traders would be lower and BE quantities higher. Essentially, the BE achieved by reducing the Pakistani tariff or taxes is achieved by 2 percent smaller reductions. Thus, the reductions shown for the simulations are upper-level estimates of the tariff/tax reductions that would be required to eliminate incentives for informal trade. We use the zero percent Afghanistan advance income tax because companies which are engaged in re-export obtain rulings from their tax department for non-applicability of the advance income tax. This and other mechanisms allows informal traders to avoid this cost.

percent. Similarly, a BE of 665 can be achieved with reductions of 5 percent in the tariff, 15 percent in the sales tax, and 6 percent in the income tax. As these numbers show, across the board, it takes substantial reductions in the tariff and taxes to cross the BE threshold of 500. This suggests, in the illustrative example, that eliminating incentives for informal trade by lowering Pakistan's tariffs or taxes could be quite difficult politically.

TV AND TEA CASE STUDIES

We now turn to simulations for two specific products, namely LCD TVs (48 inch) and black tea. An LCD TVs is a high-value differentiated product while tea is low-value and homogeneous. Both items are on the list of smuggling prone items. High value smuggled items, especially differentiated products like electronics, are sold at a discount to retailers in Pakistan. As smuggled products do not carry warranties, they are therefore sold at a discount even if they are of the same brand. For example, a Samsung 48 inch smuggled LCD TV (carrying no warranty) is cheaper in the secondary market for smuggled products than the same Samsung 48 inch TV with a warranty. LCD TVs with warranties are brought through the formal channels by an authorized distributor who would also provide after sales service to customers. The same TV without warranty is brought through the informal channel and offers no such service. In contrast, for homogeneous products such as tea, discounts are usually low, as the products are not differentiated by consumers in the market, and it is difficult to tell whether the product is smuggled tea or brought through the formal channel.

Simulations for reducing the incentives of informal traders through policy variables are as follows.

LCD TV

The Samsung Smart LCD TV is selected for simulation. The CIF price is USD 600. Based on the dimensions of the TV, we calculate that approximately 500 units can be transported in a 40 foot container. As an LCD TV is a differentiated product described above, we assume informally traded units do not carry a warranty for after sales service and that informal traders may give some level of discount to retailers ($\alpha = 0.1, 0.2$ or 0.3). We also assume that informal traders may under-invoice the product ($\beta = 0.1$ or 0.2) through fake-invoicing for clearance at Afghan customs. Applicable Pakistan and Afghanistan tariffs/taxes are given as:

tap= 25 percent, tsp = 17 percent, tip = 6 percent
taa= 10 percent, tsa = 2 percent, tia = 0 percent

Thus, the LCD TV simulation is similar to the illustrative case above, but with a higher per-unit price and a higher Afghanistan tariff, leaving less room for tariff reduction as a means of reducing incentives for informal trade. The base parameters and initial outcome of the LCD TV simulation are shown in Table 10. The table shows results without discounting or under-invoicing.

Table 10: LCD TV Parameters and Initial Outcome

P (USD):	600	**MR**	**Maximum Revenue (MR*S)**	**Maximum Profit (MR*S-C)**	**Breakeven**	
Container capacity (S):	500					
		256.95	128,475	116,792	45.5	
Container Costs						
Insurance Guarantee		300		**Assumed Tariffs/Taxes**		
Insurance for goods		1,500	tap	0.25	taa	0.1
Tracking device charges		67	tsp	0.17	tsa	0.02
UNRP		295	tip	0.06	tia	0
Freight Charges		3,100				
ARP-Tork		22				
UNRP-Tork		399				
Costs for informal to Pak		6,000				
		11,683				

With the high per-unit value of the TV, the BE quantity is low, only 45.5 units. Profits of the informal trader for a fully-loaded container are USD 116,792. In the initial scenario of no retail discounting and no under-invoicing, (1+ X) needs to be below 1.16 to make the informal trading for LCD TVs un-profitable. As in the illustrative example, for LCD TVs, reductions in any single policy variable cannot achieve this from the current level of 1.55. Only a combination of reductions in policy variables could eliminate profits from informal trading, and very substantial reductions of tariffs and taxes are necessary. As manufacturing of LCD TVs is also taking place in Pakistan, and if the domestic formal sector is tax compliant, then reducing profit incentives of informal traders through lower sales tax and advance income tax may be considered as the preferred option. However, as mentioned, eliminating the sales or income tax differential alone is not sufficient to eliminate incentives for informal trade. Even eliminating both tax differentials is not sufficient to increase the BE above 500.

Although large tariff/tax reductions are necessary to eliminate profits in the LCD TV case, these parameters are affected by the presence of discounting and under-invoicing. Table 11 illustrates the effects on MR, maximum revenue and profits, and BE quantities of discounting and under-invoicing for LCD TVs.

Table 11: LCD TV Model Simulations with Discounts to Pakistan Retailers and/or Under-invoicing at Afghanistan Customs (assumes same other model parameters as Table 10)

	MR	Maximum Revenue	Maximum Profit	Breakeven
Retail Discounting in Pakistan with no Under-invoicing at Afghan Customs				
30% Discount	-22.10	-11,048	-22,730	N/A
20% Discount	70.92	35,460	23,777	164.7
15% Discount	117.43	58,714	47,031	99.5
10% Discount	163.94	81,968	70,285	71.3
Retail Discounting in Pakistan and Under-invoicing by 10 percent at Afghan Customs				
30% Discount	-14.78	-7,388	-19,070	N/A
20% Discount	78.24	39,120	27,437	149.3
15% Discount	124.75	62,374	50,691	93.7
10% Discount	171.26	85,628	73,945	68.2
Retail Discounting in Pakistan and Under-invoicing by 20 percent at Afghan Customs				
30% Discount	-7.46	-3,728	-15,410	N/A
20% Discount	85.56	42,780	31,097	136.5
15% Discount	132.07	66,034	54,351	88.5
10% Discount	178.58	89,288	77,605	65.4
Retail Discounting in Pakistan and Under-invoicing by 30 percent at Afghan Customs				
30% Discount	-0.14	-68	-11,750	N/A
20% Discount	92.88	46,440	34,757	125.8
15% Discount	139.39	69,694	58,011	83.8
10% Discount	185.90	92,948	81,265	62.8

As illustrated above, discounting sharply lowers MR and has a significant effect on profits. When there is no under-invoicing, a 10 percent discount reduces profits from a fully-loaded container from USD 116,792 to USD 70,283. Informal trading is unprofitable if a 30 percent discount has to be offered (even with under-invoicing), while it remains profitable with a 20 percent discount.[14] Similar results are derived when there is under-invoicing. The higher the level of under-invoicing, the higher the profit from a fully-loaded container for a given rate of discounting. Strict monitoring mechanisms to reduce under-invoicing could reduce the MR of informal traders and hence could reduce their incentives to smuggle. But this effect is smaller than the effect of discounting on profits.

[14] The specific results shown are for illustrative purposes. We could also use equation (E2) to calculate the level of discounting that results in zero profit (where BE quantity is equal to the maximum able to fit in a container) for fixed values of the tariff and taxes and an assumed level of under-invoicing.

Table 12 shows the effects of selected combinations of tariff and tax reductions on the BE quantity required per container. These effects are shown the in the cases of 0, 10, and 20 percent discounting with no under-invoicing and for the case of 10 percent discounting with 10 percent under-invoicing as well. With discounting and no under-invoicing, the BE above container capacity is achieved with small reductions in tariff/taxes. For example, at 20 percent discounting, this is achieved at a combined 5 percent reduction in sales tax and 3 percent reduction in income tax which is relatively achievable compared to larger reductions needed without discounting. This means, for smuggled differentiated products, when informal traders have to offer discounts to retailers, and enforcement is in place to eliminate under- invoicing, simply an 8 percent combined reduction in taxes is enough to make informal trading unprofitable. At 10 percent discounting with no under-invoicing, similar results can be seen, although the required tariff and tax reductions are larger. A combined reduction of tariffs by 5 percent, sales tax by 10 percent, and income tax by 6 percent leads to a BE over 500.

Smugglers may also under-invoice. When smugglers under-invoice by 10 percent, and still offer a 10 percent discount, the reductions which eliminate profits at a 10 percent discount without under invoicing are no longer sufficient, leading only to a BE of 425.1. Further policy reductions are required to eliminate informal trader profits. This shows that monitoring at customs is important to minimizing under-invoicing; more monitoring means less reductions in tariffs/taxes would be required to eliminate profits which could also be more politically achievable.

Table 12: LCD TV Model Breakeven Points (BE) for Selected Combinations of Pakistan Tariff/Tax Reductions, Retail Discounts, and Under-invoicing

Tariff Reduction	Sales Tax Reduction	Income Tax Reduction	Breakeven
20 Percent Retail Discounting and no Under-invoicing			
5%	0%	0%	283.9
0%	5%	0%	298.6
0%	5%	3%	616.2
5%	5%	0%	1,099.3
10 Percent Retail Discounting with no Under-invoicing			
0%	5%	3%	110.8
0%	5%	6%	141.1
5%	10%	3%	285.2
5%	10%	6%	579.5
10 Percent Retail Discount and 10 Percent Under-invoicing			
0%	5%	3%	103.6
5%	5%	6%	195.1
5%	10%	6%	425.1
10%	10%	3%	630.7
No Retail Discounting or Under-invoicing			
0%	5%	3%	60.8
5%	10%	6%	120.2
10%	15%	6%	381.8
13%	15%	6%	763.6

Tea

Tea is a homogeneous product and a smuggling prone item. In a 40 foot container, 400 chests/bags of black tea can be transported on 20 pallets, and each chest/bag weighs 50-55 kilograms. Based on these measures, approximately 21 metric tons of black tea can be transported in a 40 foot container.

For this simulation, we take the CIF price as USD 3 per kilogram for good quality tea. In contrast to LCD TVs, informal traders usually do not extend a discount to retailers, as discussed above. Applicable Pakistan and Afghanistan tariffs/taxes on tea are the following:

tap = 10 percent, tsp = 17 percent, tip = 6 percent
taa = 5 percent, tsa = 2.8 percent, tia = 0 percent

The tea simulation base parameters and initial outcome are shown in Table 13. Profits for a fully-loaded container are only USD 7,696 in the case of tea. The current tariff and taxes give (1 + X) = 1.36, and this needs to be reduced to less than 1.23 to generate zero profits for informal trade.

Table 13: Tea Parameters and Initial Outcome

P (USD):	**3**	**MR**	**Maximum Revenue (MR*S)**	**Maximum Profit (MR*S-C)**	**Breakeven Q**	
Container capacity (S):	**21,000**					
		0.86	17,957	7,696	11,999.8	
Container Costs						
Insurance Guarantee		63		**Assumed Tariffs/Taxes**		
Insurance for goods		315	tap	0.1	taa	0.05
Tracking device charges		67	tsp	0.17	tsa	0.028
UNRP		295	tip	0.06	tia	0
Freight Charges		3,100				
ARP-Tork		22				
UNRP-Tork		399				
Costs for informal to Pak		6,000				
		10,261				

Table 14 shows the simulation results for reductions in the tariff and tax parameters. The table shows that reductions in the single policy of sales tax can generate zero profits, while a combination of reductions would be required in the case of tariffs and advance income tax.

Table 14: Tea Simulation Breakeven Points (BE) for Individual Pakistan Tariff/Tax Reductions

Reduction in Tariff/Tax	**Implied Tariff**	**BE After Change in Tariff**	**Implied Sales Tax**	**BE After Change in Sales Tax**	**Implied Income Tax**	**BE After Change in Income Tax**
1%	9%	12,545.7	16%	12,511.6	5%	12,567.3
2%	8%	13,143.6	15%	13,069.1	4%	13,191.0
3%	7%	13,801.4	14%	13,678.5	3%	13,880.0
4%	6%	14,528.4	13%	14,347.5	2%	14,644.9
5%	5%	15,336.3	12%	15,085.4	1%	15,498.9
6%			11%	15,903.2	0%	16,458.8
7%			10%	16,814.8		
8%			9%	17,837.3		
9%			8%	18,992.2		
10%			7%	20,307.0		
11%			6%	21,817.4		
12%			5%	23,570.4		
13%			4%	25,629.9		
14%			3%	28,083.6		

Trade Facilitation Measures to Improve APTTA Competitiveness with Iran

As described above, the APTTA has been losing trade volume to transhipment through Iran. To improve APTTA competitiveness, the USAID Trade Project (2014) recommends efforts to eliminate UNRPs for informal trade under the APTTA. Inefficiencies in the APTTA are leading to most of the transit cargo being diverted to Bandar Abbas. Reducing UNRPs is also a generally desirable policy objective in its own right. In the case of the APTTA, strong monitoring mechanisms in Afghanistan to check under-invoicing would help counter illegal trade into Pakistan. Introducing strict monitoring mechanisms in Afghanistan comes under the umbrella of trade facilitation measures, and checking informal trade into Pakistan would require various collective and coordinated actions from both governments. OECD (2009) focussed on trade facilitation for channelizing informal trade but acknowledged that trade facilitation alone cannot eliminate informal trade.

In the case of informal trade making use of the APTTA, under the present circumstances, when the border with Afghanistan is porous and enforcement measures are lax, trade facilitation measures to bring more efficiency to APTTA transit are likely to increase informal trade into Pakistan, as profit margins for informal traders are likely to increase due to reduction of costs. To give an example, suppose the aggregate of all UNRPs were reduced from their current level of USD 694 (see Tables 4-5) to half that level, a total of USD 347. The effect would lower the container costs in the simulations. For LCD TVs, maximum profits would rise from USD 116,792 to USD 117,139 and BE would fall from 45.5 units to 44.1 in the case of no discounting or under-invoicing. For tea, maximum profits would increase from USD 7,696 to USD 8,043 and BE would fall from 11,999 to 11,594.

Effects of a PTA

Pakistan is in the process of negotiating a PTA with Afghanistan. To investigate how a PTA with Afghanistan would affect informal trade under the APTTA, we analyse the profits for informal traders for LCD TVs and black tea under the proposed PTA arrangement. We assume that Pakistan grants zero tariffs to the above mentioned two products coming from Afghanistan with lax (none) enforcement of rules of origin (ROO).[15] Informal traders can import products from Karachi port and transport it to Afghanistan under the APTTA, paying the Afghan tariff and sales tax. We consider the case where the trader then exports it to Pakistan under the PTA arrangement in the formal channels and compare this to the option of continuing to engage in informal trade back to Pakistan. This exercise is done to determine whether the PTA formal channel back to Pakistan is profitable and whether it offers sufficient profit incentives to informal traders to divert the informal trade to the formal channel back to Pakistan for selling their products to Pakistani retailers.

In making this comparison, there are several points to take into account. First, the domestic Pakistan price is still assumed to be determined by the Pakistan MFN tariff and taxes on direct imports. Second, the MR per unit of imports through Afghanistan is the same whether the trader continues to use the informal channel or chooses to transit back to Pakistan in the formal channel. Just as before, the MR depends on the levels of Pakistan's tariffs and taxes, when other factors are held constant.

In terms of costs, there are several effects. First, the trucks coming through the PTA formal channel from Afghanistan to Pakistan would cost the trader USD 3,100 instead of the informal cost of USD 6,000, a savings of USD 2,900. For example, switching into the formal route there are no loading/unloading charges incurred in Afghanistan, as the trader uses the same vehicle which he used under the APTTA for taking the goods back to Pakistan.

The second cost consideration is that the trader would pay no tariff but would pay Pakistan's sales tax and advance income tax under the PTA formal channel for sending the goods to Pakistan. These taxes introduce a new variable marginal cost per unit of trade, since the amount paid in taxes depends on the value (hence, quantity and price) of the goods being traded. Changes in the tax rate as considered above now have two effects: they affect the MR for informal and formal traders and they affect the total cost for traders using the formal channel.

[15] In general, a PTA requires ROO to ensure that goods from third countries passing through another member country of the PTA meet domestic content requirements before arriving at the final market for consumption to benefit from tariff-free entry. Such ROO can be complex, and there is scope for flouting ROO as long as there are tariff differentials among the PTA members (Taneja and Pohit 2000).

Several general conclusions arise from these points of comparison between continuing to use the informal versus opting for the formal channel back to Pakistan. First, traders will only use the APTTA route if profits are positive for one of the return channels given the MR and maximum container capacity. Second, traders will only opt for the formal channel if the total costs for a fully loaded container are lower than for the informal channel. This means the cost that results from paying Pakistan's sales and income taxes cannot exceed the savings of USD 2,900 on transit costs. With this constraint on the cost associated with the taxes, low levels of taxes are required to induce traders to use the formal channel. Since the level of these taxes affects MR and maximum revenue and profits, the question arises, for any specific product, whether the APTTA trade route can be both profitable and more profitable using the formal PTA channel back to Pakistan rather than using the informal channel. Our analysis for TVs and tea illustrate these points.

In the case of LCD TVs assuming there is no discounting or under-invoicing, while USD 2,900 is saved on freight charges back to Pakistan, this is significantly offset by paying Pakistani sales taxes of USD 51,000 and income taxes of USD 18,000 on a fully-loaded container. Total costs rise from USD 11,683 (Table 10) using informal trade back to Pakistan to USD 77,783 using the formal channel. MR remains the same and profits on a fully-loaded container are positive but fall to USD 50,692 using the formal channel, compared to USD 116,792 for the informal channel. In short, while it is profitable to trade in the formal channel back to Pakistan under a PTA and the initial tax levels, it is not as profitable as continuing to use the informal channel. Hence, informal traders would not have an incentive to switch channels under a PTA.

Next, consider the case of lowering the sales and income taxes to reduce the cost burden these taxes place on traders using the formal channel back to Pakistan. At the limit, these taxes could both be reduced to zero, in which case total costs of the formal channel are USD 8,783 (USD 2,900 below total costs for the informal channel). For both channels, MR also falls, from USD 256.95 (Table 10) to USD 76.80 (calculated using (E3)). Profits for a fully-loaded container are USD 26,717 using the informal channel and higher, at USD 29,617 using the formal channel. Thus with the sales and income withholding taxes eliminated, the PTA would provide incentives for traders to switch into the formal channel for bringing TVs back into Pakistan. The scope for this is limited, however. Once the combination of sales and income taxes (1 + tsp) (1+ tip) exceeds 1.0097 (tax effect less than one percent), the cost of using the formal channel back to Pakistan exceeds the cost of the informal channel, and traders would not have an incentive to leave the informal channel.

Moreover, the above calculations assume there is no discounting to retailers in Pakistan. As before, the LCD TVs brought under a PTA arrangement would not be brought by the authorized dealers of Pakistan and would not carry a warranty and after sales services. The informal trader again might have to give a discount to the retailers in Pakistan. Using the informal channel, with a 10 percent discount (with no under-invoicing), MR at initial tax rates is USD 163.94, and profits on a fully-loaded container are USD 70,284 (Table 11). However, the higher costs of the PTA route leads to profits only being USD 4,724. So again, at initial tax rates, traders have no incentive to switch to the formal channel. With 10 percent discounting, MR falls to just USD 1.80 when taxes are eliminated and it is un-profitable to use the APTTA route with either of the return channels. Thus, if informal traders have to discount their TVs by as little as 10 percent in Pakistan markets, the PTA cannot create incentives to switch from the informal to formal channels back to Pakistan.

There is also a new possible problem from the PTA. Under the PTA, there is the possibility that direct imports for LCD TVs may be diverted to Afghanistan, even by the authorized dealers, and become indirect imports through Afghanistan to avoid the Pakistani MFN tariff. With no discounting required, even at the initial tax rates, it is profitable to import through Afghanistan under the APTTA and return the good to Pakistan in the formal channel paying taxes but no tariff, compared to importing directly into Pakistan and paying the Pakistan tariff as well as taxes. Under this phenomenon, importers could use Afghanistan as a destination for imports, as tariffs/taxes are low, and then rout these goods into Pakistan under the PTA arrangement. To avoid this diversion of trade would require enforcement of ROO, so the tariff-free entry only applied to goods produced for the most part within Afghanistan.

In the case of tea, we also extend our earlier analysis by assuming that Pakistan extends a zero tariff to tea under the PTA arrangement. As in the TV case, sales tax and advance income tax would be applicable on imports through the formal channel back into Pakistan under a PTA arrangement. At the initial tax rates, MR is USD 0.86 per kg, costs are USD 10,261, and importing through Afghanistan, and then using the informal channel back to Pakistan, is profitable (Table 13). However, it is not profitable to do so using the formal channel back to Pakistan. Using the

PTA route, taxes increase the cost for a fully-loaded container by USD 13,710. Even with savings on transit costs, revenue for a fully-loaded container does not cover total costs (maximum profit is USD -3,371 using the formal channel). Thus, importing through Afghanistan remains profitable compared to direct imports of tea into Pakistan, but the PTA does not provide an incentive to switch to the formal channel back to Pakistan. If taxes are eliminated to reduce costs of the formal channel back to Pakistan compared to informal trade, MR falls to USD 0.087 and neither channel leads to positive profits. Thus, in no case does the PTA provide incentive for switching from use of the informal channel back to Pakistan.

POLICY DISCUSSION AND CONCLUSIONS

Informal traders engage in smuggling to benefit from tariff and tax evasion and to circumvent other trade barriers. In the case of Pakistan, smuggling is most prevalent along the border with Afghanistan compared to other border areas. Afghanistan also has low levels of tariff/taxes compared to Pakistan for a range of smuggling prone items. Informal traders will import goods into Afghanistan, and then route those goods back to Pakistan through informal channels to take advantage from the arbitrage opportunity provided by the differences in applied tariffs/taxes between the two countries. A number of other factors facilitate this informal trade, such as the presence of Pashtun ethnic tribes on both sides of the border, well-developed informal trade routes, high volumes of daily traffic between the two countries, repeated interactions, and others.

This paper has focused on assessing the possibility of bringing informal trade from Afghanistan to Pakistan into the legal channels. A bottom up approach is adopted to consider the cases of individual goods transiting into Afghanistan under the APTTA, then coming back into Pakistan through informal channels. A model is presented that encompasses the monetary incentives of smugglers and shows possible reductions in tariffs and taxes applied in the formal channel that reduce profits from informal trade below the BE point. We also consider the effects of price discounting of informally traded differentiated products in the Pakistan market and possible under-invoicing by traders.

When our analysis is applied to LCD TVs and tea, several conclusions emerge. LCD TVs are a high-value differentiated product, while tea is low value and homogeneous. For LCD TCVs, at existing tariff and tax rates, there are substantial incentives for informal trade through Afghanistan if informal traders are assumed not to sell at a discount. Very significant reductions are required in the tariff or taxes to eliminate the incentives and make informal trade unprofitable in this case. Under-invoicing exacerbates this challenge, but the more substantial effect comes from price discounting by informal traders. With a 20 percent discount applied, informal trading becomes unprofitable with tariff or tax reductions of as little as 8 percentage points. For tea, profits of informal trade from a fully loaded container are much smaller than for TVs. Even so, a reduction of the sales tax for tea by 12 percent, holding the tariff and income tax rates constant, or an equivalent combinations of tariff and tax reductions, would be needed in order to eliminate profits from smuggling.

We have also considered two other trade policy issues that could affect informal trade utilizing the APTTA. First, some improved trade facilitation measures reduce profits of informal traders. For example, tightened border enforcement could reduce under-invoicing. Other trade facilitation measures that enhance the efficiency of the APTTA, making it more competitive with trade through Iran, might add to the profits of informal traders. Second, we find only very limited scope, in our LCD TV and tea case studies, for a PTA between Afghanistan and Pakistan to channelizing informal trade into a formal channel coming back into Pakistan.

The analysis can also be considered in a general policy context. Informal trade into Pakistan occurs through different trading routes. These different routes exist due to the relative competitiveness of Pakistan's trading regime and environment vis-e-vis its immediate neighbouring countries. Afghanistan has low tariff and tax regimes compared to Pakistan. Another neighbour, Iran, also has a competitive port which is used for transhipping products into Pakistan through informal channels. Finally, with India, Pakistan stills maintains a negative list. With all of these neighbouring countries, Pakistan has porous borders due to lax monitoring and enforcement mechanisms. The tariff structure of Pakistan, as a source of revenue generation and providing protection to domestic industry, provides considerable monetary incentives to informal traders to use informal routes for bringing goods into Pakistan. Additional regulatory duties are often applied to meet revenue shortfalls, but their imposition makes the informal trading more profitable and further incentivizes informal traders. Therefore, as a policy measure, Pakistan overall needs to rationalize its tariff and tax regime for smuggling prone items so the incentives for informal traders are diminished.

Pakistan also has a regional preferential trading arrangement with its neighbours including Afghanistan and India in the form of the SAFTA. Even though tariff reductions under the SAFTA framework may motivate traders to conduct trade in formal channels for non-sensitive products, it is likely that traders may still engage in informal trade due to ROO qualifying criteria for availing tariff benefits, products in the sensitive lists, and tariff peaks maintained for some products. It is important for any institutional arrangement to have less regulatory requirements as more restrictions and complex trading regimes encourage traders to opt for informal channels.

REFERENCES

Baunsgaard, T. & Keen, M. 2005. "Tax Revenue and (or?) Trade Liberalization", IMF Working Paper 05/112.

Bhagwati, J. 1964. "On the Underinvoicing of Imports", *Bulletin of the Oxford University Institute of Economics & Statistics*, 26(4): 389–97.

Bhagwati, J. & Hansen, B. 1973. "A Theoretical Analysis of Smuggling", *The Quarterly Journal of Economics*, 87(2): 172-187.

Davies, R.B. & Paz, L.S. 2011. 'Tariffs Versus VAT in the Presence of Heterogeneous Firms and an Informal Sector", *International Tax and Public Finance*, 18(5): 533-554.

FBR Times. 2015. 'The Smuggling of Tyres from Bandar Abbas has Increased Recently", 10 April, Karachi.

Fisman, R.J., Moustakerski, P. & Wei S.J. 2008. "Outsourcing Tariff Evasion: A New Explanation for Entrepôt Trade", *The Review of Economics and Statistics*, 90(3): 587–92.

Fisman, R.J. & Wei S.J. 2004. "Tax Rates and Tax Evasion: Evidence from missing Imports in China", *Journal of Political Economy*, University of Chicago Press, 112(2): 471–96.

Epaphra, M. 2015. "Tax Rates and Tax Evasion: Evidence from Missing Imports in Tanzania", *Journal of Business and* Economics, 6(2): 1-10.

Emran, M.S. & Stiglitz, J.E. 2005. "On Selective Indirect Tax Reform in Developing Countries", *Journal of Public Economics*, 89: 599–623.

Golub, S. 2015. "Informal Cross-border Trade and Smuggling in Africa", in Handbook on Trade and Development, Edward Elgar Publishing, UK, Cheltenham.

Guiso, L., Sapienza, P. & Zingales, L. 2009. "Cultural Biases in Economic Exchange", *Quarterly Journal of Economics*, 124(3): 1095-1131.

Hoy, M., Livernois, J., McKenna, C., Rees, R. & Stengos, T. 2001. *Mathematics for Economics, 2nd edition*, MIT Press, Cambridge.

International Monetary Fund. 2001. "Afghanistan International Trade Relations with Neighbouring Countries", Washington D.C.

International Monetary Fund. 2005. "Dealing with the Revenue Consequences of Trade Reform", Washington D.C. https://www.imf.org/external/np/pp/eng/2005/021505.pdf

Javorcik, B.S. & Narciso, G. 2008. "Differentiated Products and Evasion of Import Tariffs", *Journal of International Economics*, 76(2): 208-222.

Keen, M. 2008. "VAT, Tariffs and Withholding: Border Taxes and Informality in Developing Countries", *Journal of Public Economics*, 92: 1892-1906.

Khan, M.Z. 2015. "Falling Afghan Transit Trade", *Dawn* 02 March. http://www.dawn.com/news/1166704

Mashhud. 2015. "Goods Imported by Afghanistan through ATT are being Smuggled Back into Pakistan", *Customnews.pk* 25 February. http://customnews.pk/2015/02/25/goods-imported-by-afghanistan-through-att-are-being-smuggled-back-into-pakistan/

Mishra, P., Subramanian, A. & Topalova, P. 2008. "Tariffs, Enforcement, and Customs Evasion: Evidence from India", *Journal of Public Economics*, 92(1): 10–11.

Nunn & Trefler, D. 2013. "Domestic Institutions As a Source of Comparative Advantage", Working Paper 18851, National Bureau of Economic Research (NBER), Cambridge MA.

OECD. 2009. "Typologies on the Role of Intermediaries in International Business Transactions", Final Report, October.

Piggot, J. & Whalley, J. 2001. "VAT Base Broadening, Self Supply, and the Informal Sector", *American Economic Review*, 91: 1084–1094.

Pohit S. & Taneja, N. 2000, "India's Informal Trade with Bangladesh and Nepal: A Qualitative Assessment", Working Paper 58, Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

Pritchett L. and Sethi, G. 1994. "Tariff Rates, Tariff Revenues, and Tariff Reform: Some New Facts", *World Bank Economic Review*, 8: 1-16.

Rauch, J.E. & Trindade, V. 2002. "Ethnic Chinese Networks in International Trade", *Review of Economics and Statistics*, 84(1): 116-130.

Rauch, J.E. 1999. "Networks Versus Markets in International Trade", *Journal of International Economics*, 48(1).

Rotunno, L. & Vézina, P. 2012. "Chinese Networks and Tariff Evasion", *The World Economy*, 35(12): 1772-1794.

Shaheen, R.K., Yusuf, M., Bokhari, S., & Aziz S. 2007. "Quantify Informal Trade between Pakistan and India", in in Z F Naqvi & P schuler (eds), *The Challenges and Potential of Pakistan-India Trade*, The World bank, Washington, D.C.

Shahnawaz, A. 2012. "Tea Imports Decline by 24.72pc due to Smuggling", *The News*, 23 September, p. 15. http://www.thenews.com.pk/Todays-News-3-133389-Tea-imports-decline-by-2472pc-due-to-smuggling

Tahir, M.B. 2014. "Smuggling inflicts Rs10bn loss on national kitty: Tea worth $300mn smuggled under ATT in 2013", *Business Recorder*, 01 March 2014. http://www.brecorder.com/top-news/108-pakistan-top-news/160201-smuggling-inflicts-rs10bn-loss-on-national-kitty-tea-worth-$300mn-smuggled-under-att-in-2013.html

USAID Trade Project. 2014. "Dwell Time Study', Office of Economic Growth and Agriculture", Pakistan. http://pdf.usaid.gov/pdf_docs/pa00k2d8.pdf

World Bank. 2010. "Pakistan Trade Brief", *World Trade Indicators 2009/10: Country Trade Briefs*. Washington DC: World Bank. Available at http://www.worldbank.org/wti.

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