

The Shadow Economy in Azerbaijan: Size and Causes

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Abstract: Since the collapse of the Soviet Union, the transition economies of the Commonwealth of Independent States (CIS) have kept one of the negative features of the Soviet economy – the informal sector. Despite the shift from command to market economy, the informal sector has proved remarkably persistent, with significant ramifications for policies in areas as diverse as social welfare, taxation and business development. In considering the social and policy impact of illegal activities stemming from the informal economy, it is very important to have accurate and up-to-date information, not only on its size, but also on its nature, distribution, causes and functions. This research paper aims to supply this information and to suggest policy measures to combat the shadow economy in today's Azerbaijan. This research therefore has the following two specific objectives: To determine the present size of the shadow economy in Azerbaijan and to determine its nature and cause.

Keywords: *Azerbaijan, informal sector, shadow economy, cash money, mirror statistics, unofficial imports*

Policy context of the problem

In 2011, the GDP volume produced in Azerbaijan increased by 0.1% compared with the previous year, amounting to 50.1 billion AZN, while the volume of per-capita GDP totaled 70,034 USD (State Statistics Committees, January 2012). The current circumstance of the Azerbaijani economy, of a large but temporary oil production boom, necessitates a validation of the shadow economy. However, any policy suggestions to this end depend first and foremost on a correct estimate of the shadow economy's real size and causes. Therefore, this research attempts to provide an estimate of the fraction of the shadow economy in the GDP, and to this end, various methods are employed to determine the shadow economy's level in Azerbaijan. This research determines the shadow economy and its real limits and looks into the reasons for its existence, as well as methods for its legalization. This paper also deals with the losses incurred by the official economy as a result of shadow economy.

The inherent difficulty in measuring unofficial activities, compounded by the reluctance of many government agencies to acknowledge their importance, has led to the relative neglect of the unofficial economy. However, among the states of the former Soviet Union (FSU) and Eastern Europe, its importance is increasingly evident. Azerbaijan's economy is heavily dependent on a single resource (petroleum), showing signs of Dutch Disease, where a highly capital-intensive enclave export sector inhibits the non-oil economy from developing. Considering the instability in the world oil market and the low capacity of the domestic oil sector to generate employment, the non-oil economy is vital for ensuring stable growth in Azerbaijan. Even though the Household Living Standard Measurement Study (LSMS 2010) shows that the poverty rate fell from over 30 percent in 2005 to 15 percent in 2009 and the Gini inequality index declined by 8 percent to 34 percent, the official unemployment rate fell by only 3 percent during this period, raising doubts about the quality of these statistics as well as the definition of employment.

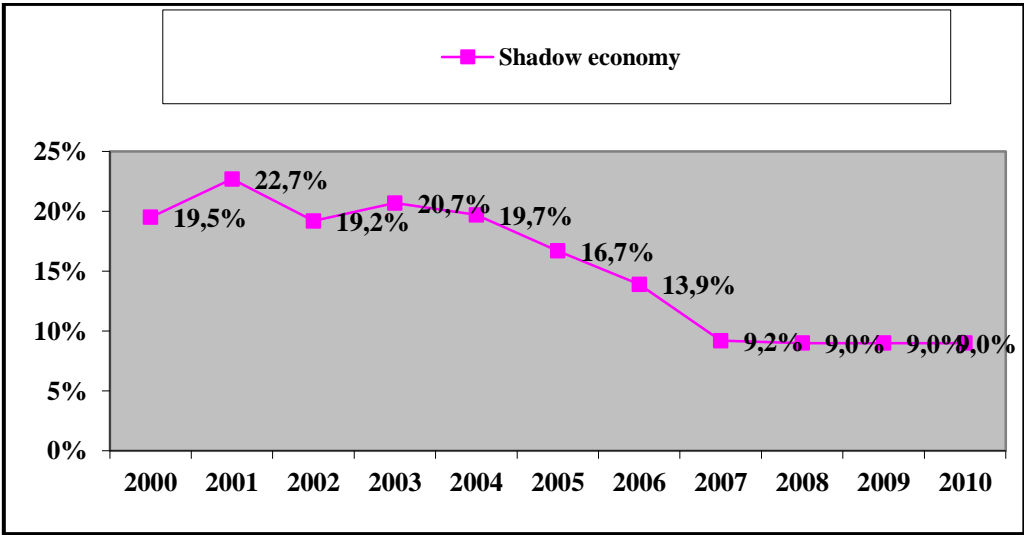
According to some experts, the informal sector in Azerbaijan accounted for 67.9 percent of GDP in 2007 (Schneider et al. 2010: 26-29). With the exception of Georgia, this makes it the largest shadow economy of the former Soviet Union (FSU). The scale of the informal sector, when combined with the importance of developing the non-oil economy for long-term stability in Azerbaijan, makes understanding the shadow economy an essential task for economists and policy makers. Without systematic treatment of the unofficial economy, it is also impossible to form effective policy in areas such as social protection and taxation. Policy

makers in Azerbaijan have yet to address the shadow economy this research project aims to begin this process.

The practical contribution of this research

In 1998, the State Statistics Committee started to provide annual quantitative estimates of the shadow economy in Azerbaijan, adding the results obtained to official macroeconomic parameters. In order to enhance the quality of these quantitative estimates, a special section within the State Statistics Committee was established, but as seen from the estimates supplied so far, these statistics are based on a structural method, i.e. one that engages with the value of the shadow economy by using a method to identify sectors based on shadow economy theory. We consider that in order to improve the practice of quantitatively estimating the shadow economy in our country, we should extend the research conducted in this area, especially the widely applied quantitative estimate methods used in other parts of the world – with the monetary approach method chief among them.

Figure 1. The extent of the shadow economy in Azerbaijan based on the quantitative estimation method (per cent in GDP)



Source: State Statistical Committee of Azerbaijan.

Literature review

Two things are worth noting about the economic literature on the shadow economy. First, this literature is mostly concerned with estimating the size of the shadow economy rather than analyzing its causes. Therefore, it usually hypothesizes causal variables instead of trying to

discover the country-specific issues. This could also lead to some variables being defined as causal in the appearance of the shadow economy when they are in fact outcomes of the shadow economy (see Schneider, Buehn & Montenegro (2010) for more discussion).

Second, there is some confusion concerning which definition of shadow economy is more accurate and can be best tested empirically. The most comprehensive definition of the shadow economy is given by Schneider & Enste (2002) who divide the national economy into two parts: formal and underground. In turn, they define the shadow economy as one of two parts of the underground economy – the other being the household economy. Therefore, the shadow economy includes illegal activities with the final marketable product being both legal and illegal (ordinary goods produced illegally and prohibited production). This definition is more testable because it involves market operations which leave at least some traces in the official sector.

Methodology

This project employed quantitative and qualitative research methods designed to gather and analyze data related to the research objectives presented above. These methods are designed to complement each other, allowing for multiple perspectives on the same processes that can then be compared and contrasted later. Quantitative methods are useful for measuring the size and distribution of the shadow economy, but cannot account for the causes and functions of the shadow economy alone. For this reason social anthropological methods were also employed to elicit new data and refine understanding of the causes and functions of the shadow economy. Qualitative methods were also used to test the extent to which certain variables influence participation in the shadow economy and therefore assist in the identification of appropriate policy instruments. This research used the following empirical models and qualitative tools:

The currency ratio method

Based on estimates of the amount of cash circulating in the shadow economy, the methodology proposed by Peter Guttmann (1999) – the author of one monetary approach method – enables a quantitative estimation of the shadow economy's scale. The principal theoretical proposition of this method advanced by Guttmann is that disposable funds are mainly used in shadow economy transactions. At the same time, as non-monetary assets are not used in settlements, the 'cash money/called-up savings' relationship may appear as an

indicator of the shadow economy's scale. If the shadow economy does not exist, this relationship will be stable over the course of time. Alternatively, if this relationship is increased in duration, it means that the demand for cash funds has been enhanced and this is evidence of a growing shadow economy. The other hypotheses of the aforementioned method include:

- The velocity of money turnover calculated according to the correlation between the gross domestic product (Y_r) and money stock in turnover is equal to each other, both in the public and the shadow sector ($V_r = V_g$)
- The settlement unit in the shadow economy is cash funds (C). The amount of cash funds in the turnover (C) is equal to the total of the cash funds used both in the official (C_r) and the shadow economy (C_g) ($C = C_r + C_g$)
- The proportion of the cash funds in the turnover to the called-up savings (D_1) remains stable within the period when shadow economy transactions were not made ($C/D=k$). The increase of k is evidence of a growing shadow economy
- A 'reference year' includes those years with no shadow economic activity or when there is an insufficient level of activity and this is taken as a base. It is accepted as the year when the price for k is lowest. It will be $C/D = C_r/D$ in a year.

So, the quantitative estimation of the shadow economy is implemented in the following succession, based on the above mentioned hypotheses:

- The C/D relationship during some periods (k) is calculated and one of them is chosen as a 'reference year'
- The C/D relationship in the 'reference year' (k_0) being multiplied by the amount of the called-up deposit (D), the cash fund stock used in the economy is calculated for the current year (C_r)
- The circulating cash funds from the current year being deducted, the money stock circulating in the shadow economy is calculated for the current year ($C_g = C - C_r$)
- In the current year, the official gross domestic product parameter (Y_r) being divided into the money stock M_1 , the money circulating velocity in the official economy is calculated ($V = Y_r / (e + D)$)

- Taking into account that the money circulation velocity is the same in both the official and shadow sectors, the cash fund stock circulating in the shadow economy (Cg) being multiplied by the money's circulating velocity (V), the gross domestic product in the shadow economy is calculated (Yg).

Figure 2. The quantitative estimation of the shadow economy

$$Yg = Yr \frac{C - koD}{MI} = Yr \frac{C - koD}{C + D}$$

'Mirror Statistics' from foreign trade indicators

This study examines the characteristics of Azerbaijan's foreign trade and the data on Azerbaijan's trade with 16 partner countries, as calculated by both the Azerbaijani and the counterpart's side. An extended data base was created from the information provided by both Azerbaijan and its trade partners. We believe that this research will become a respected source of reference during the decision-making process on state regulation of foreign trade, particularly when identifying the problems of implementing foreign trade.

Thus, the database for this research consists of customs statistics from the Republic of Azerbaijan, statistics from the State Statistical Committee on foreign trade, payment balances from the Central Bank and official statistics from foreign countries on export-import operations with Azerbaijan. Using the 'mirror statistics' methodology, the State Statistical Committee data was compared with the same-period information on trade with Azerbaijan from partner countries. The calculation model based on this methodology allowed for a definition of the amount of unregistered products imported and exported within a certain period.

As for these estimates, which are not unanimously recognized, we can say that none of them appeared as a result of research specifically directed at Azerbaijan. In other words, these estimates do not take the reality of Azerbaijan into account. These calculations are based on general principals and methods applicable to the investigated country groups. It is possible to obtain different results thanks to this research, which takes this reality into consideration.

This research was conducted based on the two aforementioned methodologies (the ‘currency ratio method’ and ‘mirror statistics’ on Foreign Trade Indicators.). The first of them is the currency ratio method and we have attempted to make this estimate according to the Peter Gutmann method that has so far not been used to estimate Azerbaijan’s shadow economy.

According to this methodology, we may analyze the results obtained as a result of a calculation of the $k=C/D$ relationship (annual and monthly) during 1991-2006. It becomes obvious that the lowest level of k in Azerbaijan was in 1992, when k was equal to 0.8 – in other years, the price for k was not lower than 0.8. At the same time, and as shown in Table 2, the relationship C/D reduced sharply in 1992, then increased 1992-2002 and decreased again 2003-2006 and again increased 2007-2011. Despite the fact that from 1992 onwards the financial and banking sectors were sufficiently developed and non-cash payments were widened and monetary policy mechanisms completely realized, the relationship C/D is continually higher than that observed at the beginning of the 1990s and in developed countries in general. This gives grounds for thinking about the existence of the shadow economy phenomenon in the country.

Table 1. The results of the correlation of the cash money method (Gutmann) for Azerbaijan’s shadow economy (‘Basic year’ = 1992, $coef = 0.80$)

Date	C (mln. AZN) (M0)	D (mln. AZN)	$k=C/D$	$Ko \cdot D$	C+D (M1)	Yr Official GDP (mln. AZN)	Yg Shadow GDP (mln. AZN)	Shadow economy (the share of the official GDP)
01.01.1992	0.6	0.1	6.00	0.08	0.7	0.54	0.4	74.2%
01.01.1993	0.8	1.0	0.80	0.80	1.8	4.8	0	0%
01.01.1994	7.7	6.1	1.26	4.88	13.8	31.4	6.4	20.4%
01.01.1995	55.2	25.0	2.20	20.00	80.2	374.6	164.4	43.8%
01.01.1996	120.4	64.5	1.86	51.60	184.9	2133.8	793.9	37.2%
01.01.1997	173.0	61.6	2.80	49.28	234.6	2732.6	1441.0	52.7%
01.01.1998	234.1	73.4	3.18	58.72	307.5	3158.2	1801.2	57.0%
01.01.1999	185.2	55.3	3.34	44.24	240.5	3440.6	2016.5	58.6%
01.01.2000	227.1	50.8	4.47	40.64	277.9	3775.0	2532.8	67.0%

01.01.2001	269.9	45.5	5.93	36.40	315.4	4718.2	3493.0	74.0%
01.01.2002	293.,8	43.7	6.72	34.96	337.5	5315.6	4076.7	76.6%
01.01.2003	333.7	59.7	5.58	47.76	393.4	6062.5	4406.4	72.6%
01.01.2004	408.1	91.6	4.45	73.28	499.7	7146.5	4788.4	67.0%
01.01.2005	477.8	179.5	2.66	143.60	657.3	8530.2	4337.1	50.8%
01.01.2006	547.4	200.4	2.73	160.32	747.8	11875.6	6147.1	51.7%
01.01.2007	1311.3	542.3	2.41	433.84	1853.6	17735.8	8395.8	47.3%
01.01.2008	2713.5	939.2	2.89	751.36	3652.7	26815.1	14212.0	53.0%
01.01.2009	4145.7	999.3	4.15	799.44	5145.0	40137.2	26104.9	65.0%
01.01.2010	4174.8	1065.0	3.92	852.00	5239.8	34578.7	21954.4	63.4%
01.01.2011	5455.8	1263.1	4.31	1010.5	6718.9	41574.7	27506.3	66.2%

According to the Guttman method, we recognize the year 1992 as the ‘base year’ and the C/D relationship in that year as the ‘normal parameter’. Although the supposition surrounding the shadow economy in the country in 1992 is not a proposition accepted easily, the hypothesis presented for Armenia by Tunyan (2005) may be advanced for Azerbaijan too. So, beginning from August 15, 1992, the manat was put into circulation and by the end of the year the substitution of the rouble was largely accomplished. Therefore, we can accept that the end of 1992 was the time when cash funds were circulating in the shadow economy to a lesser degree. At the same time, we have to take into account that, besides the process of converting the rouble to manat, the US dollar was not as common in this period as an alternative payment means. So, taking 1992 as the ‘base year’, we are able to quantitatively estimate Azerbaijan’s shadow economy.

As seen in Table 1, the specific weight of the shadow economy has demonstrated a progressive tendency in the national gross product up to 2003 and only after 2003 did it start to regress. But we have to note that despite the contraction of the shadow economy’s specific weight since 2003, its physical volume and per capita indices of cash funds circulating in the shadow economy have gained ground.

The second method is the ‘Mirror statistics’ from foreign trade indicators. Calculations revealed variations of an independent character and volume in the trade operations of 16 countries involved in this research. The differences between the two (external and internal) sources of import operations over the last 7 years are presented in the Table 2 below.

Table 2. Non-registered turnover with 16 countries, 2003-2009 (Million USD)¹

Country	Exports	Imports	Discrepancy = Exports – Imports	Discrepancy /Exports	Discrepancy /Imports	Discrepancy/ (Exports + Imports)
Russia	8099	6277.4	1821.6	22.5	29.0	12.7
Turkey	6416,6	3455.8	2960.8	46.1	85.7	30.0
Georgia	727	293.7	433.3	59.6	147.5	42.5
Ukraine	3159.1	2377.5	781.6	24.7	32.9	14.1
USA	1280.9	1404.1	-123.2	9.6	8.8	4.6
Japan	588	1170.3	-582.3	-99.0	-49.8	-33.1
United Kingdom	2858.8	2619	239.8	8.4	9.2	4.4
Kazakhstan	1375.3	1084	291.3	21.2	26.9	11.8
Iran	2244.4	539.2	1705.2	76.0	316.2	61.3
Italy	1551.7	857	694.7	44.8	81.1	28.8
South Korea	644	507.7	13.3	21.2	26.8	11.8
Israel	517.6	235.6	282	54.5	119.7	37.4
Germany	3641.2	2650.7	990.5	27.20	37.37	15.74
Belarus	398.2	359.3	38.9	9.8	10.8	5.1
China	2642.8	1876.4	766.4	29.0	40.8	17.0
Hungary	272.1	61	211.1	77.6	346.1	63.4

Source: The Azerbaijani State Statistical Committee and official statistics from foreign countries on export-import operations with Azerbaijan.

Export – Exports from these countries to Azerbaijan

Import – Officially registered imports of commodities sent from these countries to Azerbaijan

Total export – Total exports from these countries to Azerbaijan

Total import – Annual amount of the registered official import to Azerbaijan

K – Annual variation of the researched countries

K = Total Exports, Total Imports (in countries)

OI – Official Imports (Annual official imports in Azerbaijan)

The first column of the table indicates the country analyzed, the second column shows official statistical data on exports to Azerbaijan, the third column reflects official data from the State

¹Note: The table below explains the situation for 2003-2009.

Statistical Committee on Azerbaijan's imports from foreign countries, the fourth column illustrates variations between the data (+ increases in comparison with indicators supplied by the State Statistical Committee of Azerbaijan - decreases in comparison with indicators supplied by the State Statistical Committee of Azerbaijan), the fifth column shows variation (K) against the distribution of exports by Azerbaijan (based on information from partner countries), and the sixth column illustrates the distribution of variation (K) of Azerbaijan's imports from foreign countries (based on SSC information. Finally, the seventh column presents the distribution of the variation (K) to the sum of exports and imports in Azerbaijan. Thus the fourth column gives information on yearly variations and total variation (in absolute terms), the fifth, sixth and seventh columns give information on special net variation among specific indicators (in exports to Azerbaijan, in the imports of Azerbaijan, the sum of exports and imports).

According to the data from the countries involved in the research, the greatest variation, especially with import operations, was recorded with Turkey (2960.8 billion USD), Russia (1821.6 million USD) and Germany (990.5 million USD). Meanwhile, the most important point in the table is that the difference between the import statistics in Azerbaijan and the export statistics from the United States and Japan is favorable for the United States. It is likely that this difference results from the HPS operations of these countries.

2003-2009 represents the main period for analysis. During 2003-2009, the variation totaled 10 billion, 645 million, 900 USD among the 16 countries. To go into detail, the confidential circulation assumed for the efficiency counted for each year was revealed. Afterwards, the share for each of the 16 countries was found in the imports officially declared by the State Statistical Committee. It was discovered that these indicators were 67.7% in 2003, 69.2% in 2004, 63.4% in 2005, 73% in 2007, 79.9% in 2008 and 80% in 2009. This study discloses that confidential imports total more than 14 billion, 200 million USD.

Figure 3. Method of Calculation

$$AV = OI / OIN$$

Here,

AV - Assumed variation

OI - official import

OIN - official import net

To calculate the official import net, total imports indicated in Azerbaijani sources needs to be divided by official imports.

$$\text{OIN} = \text{Total import} / \text{OI}$$

During 2003-2009, the general variation for each separate import operation and its share in the overall imports of 16 countries are represented in Table 3 below.

Table 3. Variations for separate import operations, 2003-2009

Year	Exports (million)	Imports (A) (million)	Discrepancy (million)	Ratio of discrepancy in imports (%)
2003	2283.7	1779.3	504.4	28.3
2004	3254.9	2434.5	820.4	33.7
2005	3780.8	2670.3	1110.5	41.6
2006	5089.3	3843.6	1245.7	32.4
2007	6662.1	4563.5	2098.6	46.0
2008	8635.2	5582.8	3052.4	54.7
2009	6710.7	4896.8	1813.9	37.0
Total	36416.7	25770.8	10645.9	41.3

Source: State Statistical Committee of Azerbaijan and official statistics from foreign countries on export-import operations with Azerbaijan

As noted in the second column of the table, the greatest variations were recorded in 2008. Thus, during this year, the variation in the import operation with 16 countries was 3 billion, 52 million, 400 USD and this constituted 43 per cent of imports officially declared by the State Statistical Committee. That was 54.7 per cent of the imports from 16 countries. The last column of the table shows that there were variations of 28.3% and 54.7% in the official statistics of Azerbaijan.

As we noted in the introduction, according to the mirror statistics methodology, when the difference between the countries' statistics in the same period is less than 10%, it does not cause doubt. Calculations on the basis of bilateral information show that, during 2003-2009, this difference was on average 41.3%. This is 4 times greater than the norm. Trend analysis demonstrates that the dynamic of increasing hidden imports, which started in 2003, has decreased since 2009. This can be explained by a 15% decrease in imports into Azerbaijan in 2009 compared to 2008, due to the effects of the global financial crisis.

This study, using the interstate mirror method for the period in question, shows that the variation among 16 countries in import statistics during 2003-2009 constituted 10 billion, 645 million, 900 USD. The difference between exports from Azerbaijan and imports from the 16 countries to Azerbaijan was not particularly large and the trend in recent years has been a downward one. However, the increasing difference between the exports of partner countries to Azerbaijan and Azerbaijan's imports does imply widespread corruption, monopolization, double invoicing, avoidance of registration and violation of transparency procedures.

This study demonstrates that, when calculations are made in accordance with the mirror method, it is important to consider the structure of products. Calculation schemes that focus on food products are based on indirect information from internal statistics, regulated by the retail sources of both the exported products and products produced in the country. The application of the aforementioned mirror method to the issue of discrepancy between intermediate and investment products might create problems in obtaining correct results. Thus, a 'utilization resources' table is prepared for this group of products based on complex statistical methodology and a list of unregistered goods. In this case, the evaluation of non-consumption imports is based on mirror statistics from the previous year.

This research is not presented with the purpose of providing quality to the revealed contradictions. But the fact that mirror difference does not exist during trade operations among countries cannot be denied. Simply put, the main issue here is the relevance of the revealed difference in the operational shares of import operations during the period of analysis. The average volume of the share of the revealed difference in import operations is 41.3 per cent for 2003-2009. This is 4 times more than the norm.

Main findings

As this research has proved, despite the various methodological approaches relating to the determination of the shadow economy, the results obtained as a result of their application in Azerbaijan confirm, once again, the large scale of the shadow economy. Estimating Azerbaijan's shadow economy using the Peter Gutmann method shows that, in 2010, it comprised 66.2% of official GDP. We must note that estimations using this method are common in most countries, but it does have a number of drawbacks too. The most important drawback that arises from its application to transition countries, such as Azerbaijan, is the

assumption that the expanding hidden economy is a unique cause of the increment in the C/D relation. As Hanousek and Palda (2004) showed, the shadow economy is not the only factor in the C/D relation in these countries. Other factors include failures in the banking sector, premature innovation in the finance system, unstable levels of economic growth and inflation, directing the population to cash money as a result of a crisis or negative interest rates, and the changing of legislation in the banking sector. From this point of view, we consider it necessary to take these factors into account for future estimations of the shadow economy in the Azerbaijan Republic, with the purpose of increasing the quality of estimates using the monetary approach.

This research is based on mirror statistics of foreign trade and the findings indicate a difference in import operations between Azerbaijan and its 16 major trade partner countries to the amount of 10.6 billion USD for the period of 2003-2009. According to the mirror statistics method, differences in same-period statistical information between countries do not cause any debate when it is below 10%. Thus, according to international methodology, imports exceeding exports by 10% is deemed normal. However, when imports exceed exports by more than 10%, assumptions about other trade barriers and corruption are stipulated.

Policy recommendations

Analysis of various reasons for the appearance and development of the shadow economy in Azerbaijan indicates the domination of the oil sector in the economy, and its leading role is one of the main reasons for the degradation of indices in this field. Therefore, conducting reforms aimed at liberalizing the Azerbaijani economy and declaring a financial amnesty are very important. This is made even more necessary by the new economic environment that sees oil output slowly decreasing. Additionally, the integration of domestic accounting and audit standards into International Financial Reporting Standards will pave the way for making the financial reporting system more transparent and traceable in Azerbaijan. Furthermore, improving and increasing the usage of non-cash methods in all trade transactions will help to decrease the actual size of the shadow economy. As the analysis of international trade transactions in the light of mirror statistics shows, increasing transparency in customs procedures is vital and the development of e-government and the application of electronic systems in customs can assist in decreasing the size of the shadow economy in Azerbaijan. Finally, instilling a social consciousness intolerant of the shadow economy is also very important.

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