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EXPLAINING FUTURE RESEARCH MODEL OF GOODS SMUGGLING PREVENTION WITH A LOOK AT BUSINESS CYCLES CASE STUDY; ISLAMIC REPUBLIC OF IRAN

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ABSTRACT

Smuggling, especially smuggling of goods, is among the current problems of countries so that many managers and leaders are concerned about it and many institutions and organizations are engaged with it. Smuggling of goods can be studied from different aspects. This phenomenon has undeniably increased in the Islamic Republic of Iran in recent years for various social, economic and political reasons, and had adverse effected the commercial and economic policies and consequently on the whole society, and is becoming a crisis. Many studies have been conducted and many conferences have been organized on the causes and consequences of smuggling in Iran in recent years. Obviously, complex social issues, such as smuggling, require fundamental solutions.
Considering the most reliable issues discussed in the field of smuggling goods, this article seeks to investigate this phenomenon with a new approach so that this major problem can be controllable and less damaging to the economies of countries.

Keywords: Smuggling, Commercial Politics, Economy, Islamic Republic of Iran, Business Cycles

INTRODUCTION

Underground economics or its common form, smuggling, can be defined as the clandestine import of goods from one jurisdiction to another (Deflem and Henry, 2001) or the evasion of excise taxes on goods by circumvention of border controls (Merriman, 2003). The phenomenon of smuggling of goods and underground or illicit trade is among the issues related to black economy (Tanzi, 1980). Today, the size of underground economy is increasing in the world, especially in developing countries.

According to some estimates, underground economy accounts for 41% of GDP in developing countries, 38% of GDP in transition countries and 17% of GDP in the Organization for Economic Cooperation and Development (OECD) countries (Schneider, 2006). According to the Iranian Anti-Smuggling and Anti-Currency Center, smuggling in Iran has risen from $ 19 billion in 2008 to $ 25 billion in 1992. Since the discoveries of smuggled goods in Iran are considered only part of the underground economy, this indicates the widespread illicit trade in Iran.

Smuggling can generally be categorized into public or hidden types. Public smuggling is the smuggling of goods in the traditional way and through forbidden borders. Hidden smuggling is carried out through fraud, manipulation of customs documents and other illegal acts, such as underestimation and a change in the type of goods. Therefore, goods secretly enter and exit from official ports in the hidden type of smuggling. The entry of smuggled goods into Iran is mainly carried out in several ways:

A) Uncontrolled Ports: Some goods are smuggled from ports over which there is no much control.

B) Controlled Ports: Some goods are imported from the controlled ports, but are smuggled illegally smuggled through bribes and collusion.

C) Influential elements: Part of the smuggling of goods is also carried out by those who have power in the decision-making system. Typically, smuggling of goods is carried out by powerful organized gangs or

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by parachutists from free and special trade zones or by indigenous and non-indigenous people from the border areas, but the reality is that the worst smuggling that has inflicted irreparable damage to the Iran's economic system is the type carried out by influential bands. This type of smuggling, referred to as legal smuggling, is carried out through the issuance of special import licenses, economic rents and monopolies. Smuggling is a common phenomenon which has started since the Middle Ages, when goods were taxed. Although the scope of smuggling varies from country to country, the reality is that this tradition has always followed a continual path, so that it can be used for everything ranging from a chocolate package to a human.

The World Bank annual reports the economic status of the world in terms of ease of official trading in countries and compares countries in this regard. According to its report in 2013, among 189 countries, Iran ranked 152 in terms of ease of trade, after countries such as Sudan and Iraq, while this country had been ranked 129 in 2011. Rodriguez et al. believe that the phenomenon of smuggling is everywhere, but the type of smuggling and the factors affecting it differ in different parts of the world (Rodriguez, 2005, 37). The search for effective and innovative ways to combat the various forms of smuggling is one of the research priorities of many national and international research centers.

Considering the problems and consequences associated with this phenomenon, such as: reduction of domestic production and the consequent rise in unemployment, negative effects on the foreign exchange market, disruption of government's executive policies, and reduction of investment in productive activities, and consequent reduction of the per capita income resulting in greater poverty in society, and since changes in economic conditions (prosperity and stagnation) may have different impacts on the extent of smuggling of goods and as Alajoutsijärvi (2012) believes, each stage of business cycles creates its own management issues and problems, so we should adopt appropriate policies and strategies in each economic situation (prosperity and recession) to control and anticipate the future status of smuggling in Iran and consequently to prevent this phenomenon in this country.

In fact, it cannot be easily predicted that smuggling occurs as a result of a period of unemployment and recession, or due to economic prosperity. Theoretically, it can be assumed that unemployed people try to work and even take the risk of engagement in illegal activities during the recession period due to an increase in the unemployment rate and the removal of a number of occupations, or it is no longer justifiable to import a series of goods by paying customs duties, which leads to the smuggling of the above goods and non-payment of customs duties.

Literature Review

- Giles (1999) considered the underlying causes of underground activities as high tax burdens, inflation, high revenues, and the reduction of ethical standards (Arab Mazar Yazdi, 2005).

- Schneider (2000) investigated the factors that have direct and indirect effects on the shadow economy in eighteen Western industrialized countries and consequently direct and indirect tax burden and government regulations as the economic causes, and tax ethics and people's attitude towards government as the non-economic causes (Arab Mazar Yazdi, 2005).

- Schneider and Klingmair (2004) investigated the impact of the shadow economy on economic growth in 109 developing and developed countries during the 1990s and concluded that there is a positive relationship between economic growth and shadow economy size in the industrial and developed countries, while this relationship is negative in developing countries.

- Schneider (2005) investigated the indirect relationship between underground economy and GDP. He showed that the ratios of black economy to GDP in developed countries, developing countries and developed countries were 17%, 38% and 41% respectively, and the GDP of developed countries has increased by 8% only due to a one-percent decrease in the size of their underground economies.

- A study was conducted by the World Bank in 2005, in which industry leaders were asked to comment on the 14 factors that hinder business development in different countries, and to identify five more important factors that affect economic growth. Underground economy was evaluated to be more effective

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than government taxes in hindering business development in all regions of the world, except for the newly industrialized South East Asian countries (Kaufman, 2006).

- Mihayi (2008) studied the relationship between shadow economy and economic growth in Romania over the 1999-2008 period using the Ordinary Least Squares Method and indicated a significant positive relationship between shadow economy and economic growth in this country.

- Puttines and Saoka conducted a study in 2011, in which they estimated the size of the shadow economy for the Baltic countries, including Estonia, Lithuania and Latvia, and used a questionnaire to determine the factors influencing it. Their study showed that the shadow economy in Latvia in 2010 was considerably larger than that in its neighboring countries including Estonia and Lithuania. The researchers also claimed that the most important driver for turning to shadow activities in the Baltic countries is entrepreneurs and employers' dissatisfaction with the government and their distrust in the government and the tax system.

- Elgin and Garcia studied the impact of public trust and taxes on the informal sector in 2011. Elgin and Oz Tenley also used a new methodology based on a two-component general dynamic equilibrium model in 2012 to measure shadow economy. Their methodology made it possible to create a set in the form of an unbalanced panel of 161 countries with 7395 observations during the period 1950-2009 and use it to measure shadow economy. Their study in six different groups, including the European countries of the OECD, Latin American and the Caribbean countries, former socialist countries (transitional), Middle Eastern, North African and \ Central African countries and countries of the Asia-Pacific region showed that, with the assumption of the stability of other conditions, richer countries tend to have a smaller shadow economy.

- Buehn and Eichler (2012) conducted a study entitled "Smuggling Illegal Goods across the US–Mexico Border: A political-economy perspective" in which they analyzed the impact of business and political cycles and priorities of political parties on smuggling illegal goods from the US-Mexico border from 1980 to 2004 and showed that smuggling of goods would be significantly reduced before the congressional elections if the president of the U.S was a Republican.

- Mary-Chene (2014) also showed that underground economy influences economic development in terms of economic productivity and growth, leading to the fair distribution of resources across the population, increased unequal revenues, the social ineffectiveness of welfare programs, and ultimately lower levels of human development. This, in turn, may lower long-term sustainable development, economic growth and equality.

- Frey & Schneider (2015) conducted a study entitled "Informal and Underground Economics", in which they evaluated the underground economy of 17 member states of the OEEC, 21 developed countries and 14 developing countries from 2000 to 1990. They showed that it is possible to reduce the size of the underground economy by increasing financial incentives, reducing the taxes and increasing the security of borders.

- Kireenko (2015) carried out a study entitled "Impact of Shadow Economy on Quality of Life: Indicators and Model Selection" and investigated the effects of the shadow economy on the level and quality of life of people from 150 countries over the period 1999-2000. The results of this study showed that, despite the increase revenues of shadow economy, the increased size of shadow economy reduces life expectancy and quality of life (inverse relationship).

- Tahmasebi & Rocca (2015) conducted a study entitled "A Fuzzy Model to Estimate the Size of the Underground Economy Applying Structural Equation Modeling" and obtained a fuzzy estimated number for underground economy using a structural equation modeled with fuzzy data. The fuzzy model used in this study had two main stages: first, the structural equation model changed to a delivered form, and then a nonlinear model was obtained from the delivered equations using the fuzzy linear regression solutions and concepts. In the end, the time periods of underground economy were calculated and compared with

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the findings of the two MIMIC models and a microeconomic approach using the mathematical optimization software of GAMS.

- Colombo (2016) performed a study entitled "Shadow Economies at Times of Banking Crises" to examine the shadow economy's reaction to banking crises.

The empirical analysis of a large number of countries shows that the informal sector is a powerful buffer that extends the time of bank crises and attracts a large proportion of the lack of proportions (ratios or shares) of formal output.

MATERIALS AND METHODS
Methodology
Creating economic balance, implementing proper trade policies, combating the consequences of smuggling goods, and preventing any disruption in national macro policies are necessary measures to be taken. Unfortunately, the smuggling of goods has weakened the production of domestic goods and led to un-purchase of part of the consumer goods. Therefore, it is necessary to solve the relevant problems at the national level.

We seek to examine the relationship between economic growth and the 9 groups of smuggled goods, and then get an index from the total of 9 commodity groups and estimate a model with the economic growth. The 9 groups of smuggled goods are shown in Table (1).

Table (1): 9 groups of smuggled goods

Commodity group	Symbol
Foodstuffs	CMGH
Prohibited goods	CKM
Home appliances	CLKH
Clothes	CPO
Livestock	CDZ
Seeds and fertilizers	CBZ
Drugs and medical supplies	CDI
Vehicles and spare parts	CLI
Unnecessary goods	CKGH

In order to separate the components and cycles of economic variables, we used the Hodrick-Prescott method. This method was first used in the literature of actual business periods, but its scope was gradually extended to compare business cycle features across countries, so that it has become the standard method for de-trending of time series since the introduction of this filter by Hodrick and Prescott in 1981. In particular, this filter has widely been used in the studies of business periods in order to identify their revealed facts.

In the filter, the numerical value of the parameter, which is based on past information and the length of a complete business period (Hodrick & Prescott, 1980), is considered a problem with the use of this method. The initial value in the present study is considered based on previous studies such as Maravall and Del Rio (2001), corresponding to the length of the period of six years.

In addition, the time series components for annual data are separated into three components, and the total of the cyclical and irregular components is considered as business cycles in most statistical filters. The present study has separated two other components using the Hodrick-Prescott filter again. In the time series analysis, the variable of the irregular component is a variable with a random variable property.

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Now, with the reuse of the above filter and given that the resulting waste component has a random variable property, the random component can be calculated as follows (Farooq Arbi, 2001).

The correlation coefficients for two variables of GDP and the goods smuggling index are presented in Table 2. Correlation coefficient is one of the criteria used to determine the correlation of these two variables and indicates the intensity of the relationship as well as the type of relationship (direct or inverse). As shown in Table (2), the correlation coefficient between goods smuggling and the GDP is 0.04.

Table (2): Correlation Coefficient

	SHECO	CGDP
SHECO	1	0.04
CGDP	0.04	1

Source: Research findings

The correlation coefficients for two variables of GDP and the smuggling of seeds and fertilizers are presented in Table 3. Correlation coefficient is one of the criteria used to determine the correlation of these two variables and indicates the intensity of the relationship as well as the type of relationship (direct or inverse). As shown in Table (3), the correlation coefficient between the GDP and the smuggling of seeds and fertilizers is 0.03.

Table (3): Correlation Coefficient

	CBZ	CGDP
CBZ	1	0.03
CGDP	0.03	1

Source: Research findings

The correlation coefficient for the two variables of GDP and drug smuggling is presented in Table (4). As shown in this table, the correlation coefficient between drug smuggling and the GDP is 0.05.

Table (4): Correlation Coefficient

	CDL	CGDP
CDL	1	0.05
CGDP	0.05	1

Source: Research findings

The correlation coefficient for two variables of GDP and livestock smuggling is presented in Table (5). As shown in this table, the correlation coefficient between livestock smuggling and the GDP is 0.02.

Table (5): Correlation Coefficient

	CDZ	CGDP
CDZ	1	0.02
CGDP	0.02	1

Source: Research findings

The correlation coefficient for two variables of GDP and smuggling the unnecessary goods is presented in Table (6). As shown in this table, the correlation coefficient between these two variables is 0.12.

Table (6): Correlation Coefficient

	CKGH	CGDP
CKGH	1	0.12
CGDP	0.12	1

Source: Research findings

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The correlation coefficient for two variables of GDP and smuggling of prohibited goods is prohibited in Table (7). As you can see in this table, the correlation coefficient between prohibited goods and GDP is 0.31, which has the greatest correlation coefficient of all the 9 groups of smuggled goods.

Table (7): Correlation Coefficient

	CKM	CGDP
CKM	1	0.31
CGDP	0.31	1

Source: Research findings

The correlation coefficient for two variables of GDP and vehicle smuggling is presented in Table 8. As you can see in this table, the correlation coefficient between vehicle smuggling and GDP is 0.01, and this variable has the lowest correlation coefficient of all the 9 groups of smuggled goods.

Table (8): Correlation Coefficient

	CLI	CGDP
CLI	1	0.01
CGDP	0.01	1

Source: Research findings

The correlation coefficient for two variables of GDP and smuggling of household appliances is presented in Table (9). As this table shows, the correlation coefficient between the smuggling of household appliances and GDP is 0.06.

Table (9): Correlation Coefficient

	CLKH	CGDP
CLKH	1	0.06
CGDP	0.06	1

Source: Research findings

The correlation coefficient for two variables of GDP and foodstuff smuggling is presented in Table 10. As this table shows, the correlation coefficient between foodstuff smuggling and GDP is 0.22.

Table (10): Correlation Coefficient

	CMGH	CGDP
CMGH	1	0.22
CGDP	0.22	1

Source: Research findings

The correlation coefficient for two variables of GDP and the smuggling of unnecessary goods is presented in Table 11. As shown in this table, the correlation coefficient between unnecessary commodity smuggling and GDP is 0.01 and this variable, along with vehicle smuggling, has the lowest correlation coefficient.

Table (11): Correlation Coefficient

	CPO	CGDP
CPO	1	0.01
CGDP	0.01	1

Source: Research findings

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Model Estimation

The results of estimating the effect of GDP on goods smuggling are presented in Table 12. As these results show, economic growth has had a significant effect on goods smuggling in all three periods, but this relationship is negative only in the 2012 Q3-2014 Q1 period. The issue of smuggling goods in Iran is important not only due to the its economic consequences, but also as an economic and social challenge in the regional, national and international levels, so that the prevalence of smuggling and its impact as a deterrent to development disrupts the implementation of the government's economic, social and cultural programs, and ultimately leads to a decrease in economic growth and recession. after it decreases production, employment and income; i.e. increased smuggling of goods results in more poverty in society, which in turn increases social corruption and leads to economic crises if continued. Therefore, smuggling of goods also damages the economic information system of countries and eliminates the possibility of planning for long-term growth. On the other hand, it reduces government incomes and disrupts the balance among production, commerce and supply sectors.

Moreover, goods smuggling can indirectly have a negative impact on the national investment of countries. The arrival of trafficked goods (at low prices) decrease national production, demand for domestic production, profitability and, finally, investment in the domestic production sector. Reduced investment will also increase the unemployment rate, which will, in turn, increase the social crises. In fact, increased smuggling of goods increases social crises and ultimately endangers national security.

Conversely, countries with free trade and trade liberalization certainly have less smuggling of goods and higher economic growth.

Table (12): Model Estimation Results

Variable	Coefficient	Standard Deviation	t-statistic	Probability
1383Q3-1389Q1				
CGDP	E+09 1.39	E+08 3.92	3.536684	0.0012
C	E+10 3.30	E+10 4.02	0.821280	0.4170
1389Q4-1391Q2				
CGDP	E+08 3.32	63945049	5.194869	0.0000
C	E+11 -2.46	E+10 3.09	-7.955454	0.0000
1391Q3-1393Q1				
CGDP	E+09 -2.76	E+08 9.20	-2.996777	0.0050
C	E+11 -2.89	E+11 1.41	-2.055016	0.0474
R-squared	0.324691			
Adjusted R-squared	0.228218			
F-statistic	3.365626	Durbin-Watson stat		2.511684
Prob(F-statistic(	0.013808			

Source: Research Findings

SUMMARY AND CONCLUSION

It is important to research smuggling cycles and their relationship with economic growth cycles. The first step in dealing with this economic phenomenon is to estimate its time of occurrence, that is, we should get to know when it comes to recession and when it booms, and what these processes have to do with the

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economic growth cycles in order to respond appropriately to its changes. For example, if we expect the smuggling cycle to boost with a delay of two months from the economic growth cycle, we can use this knowledge and control the timing of decisions to add the labor force at that time and increase professional in-service training. Although greater control may have additional costs, yet we can reduce its cost by changing the related tariffs and controlling the regulations. On the contrary, we can allocate fewer costs for monitoring when the smuggling is in recession. In some cases, the decrease or increase of tariffs, and even a change in the rules and regulations of export and import will not benefit domestic producers and will hurt domestic production, but the economic justification of smuggling should be removed with a measure. As long as the smuggling of goods and services has benefits for smugglers, we cannot expect the removal of this phenomenon with friendly and cost-free recommendations.

The results obtained from the main model show that there is a significant positive relationship between economic growth and smuggling cycles, which is the cause of the economic growth cycles based on the Granger causality test and occurs at an interval of two seasons from the prosperity time and three seasons from the recession time.

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