Reviewing of effective factors on current account imbalance: a case study on Iran

Zahra Fotourehchi[1]* and Davoud Panahi[2]

[1]Young Researcher club, Ardabil Branch, Islamic Azad University, Ardabil, Iran, E-Mail: z.faturechi@yahoo.com, +905313859783
[2]Social Science Departments, Ardabil Branch, Islamic Azad University, Ardabil, Iran, G-Mail: davoudpanahi@gmail.com, +989144529379, +905313859784

Abstract: This paper examinesfactors that by means of household consumption expenditure effect on current account position, for 1980-2010 in Iran. We foundthat among different factors, transition factors and income distribution indicators were significant, the increase of age dependency ratio, young and improvement of income distribution increased household consumption and had negative effect on current account.
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I.Introduction

Explaining the change in the current accountin Iran shown in Fig.1, requires considering a range of other variables. Many of these variables are part of the Iran economy's external sector: the trade account, international financial flows, and the exchange rate. Movements in the current account surplus are due primarily to movements in the trade surplus (box). The current account surplus finance net capital outflows,finally, the exchange rate is related to the current account because international transactions (including trade in goods, services, and financial assets) generally require exchanging Rial for foreign currencies. In other side, behaviors of consumption, investment and government expenditure of internal sector of country, effect on current account.

Although much research has been conducted to detect current account pattern of several developing and advanced countries, there has been no previous research in Iran, After recognizing the lack of research in this area for Iran, among the many different forces that affected the behavior of theIran's external sector from 1980 to 2010, reviewing factors by consumption effect on current account has beendetermined as the main objective of this study.

First, we start by reviewing current account patterns and polices ofIran during last 30 years,thereafter, in literature we introduce classic and modern frameworks of current account, we then conduct anempirical analysis, and finally conclude withan assessment of future trends.

II.Current Account Patterns of Iran

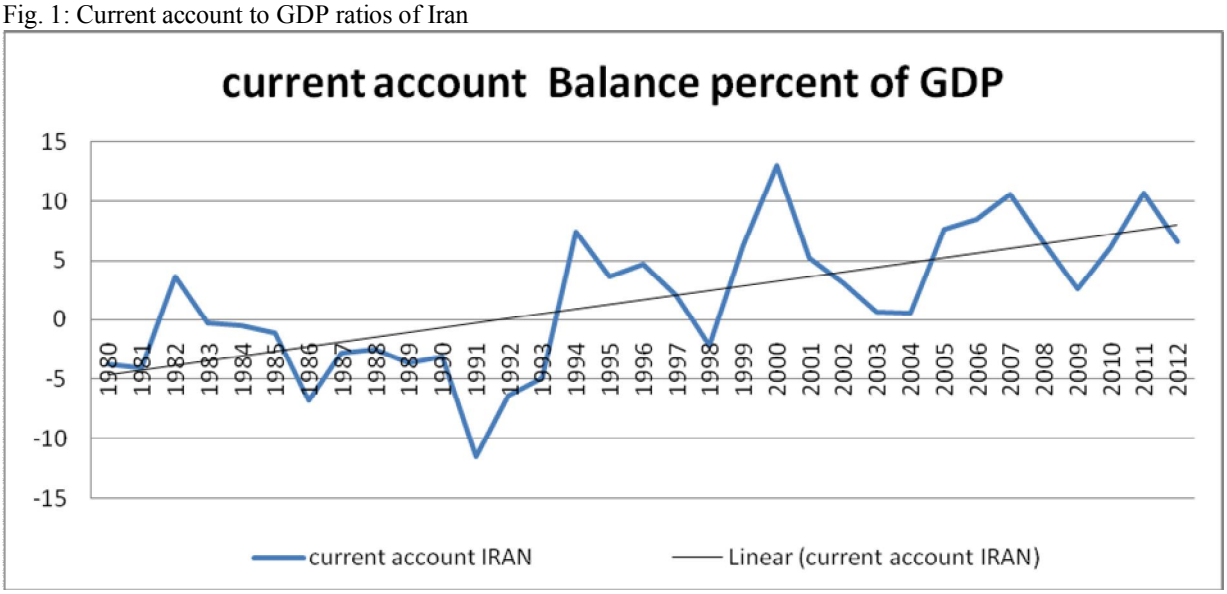
We start by reviewing current account patterns of Iran, andreviewing its political and external behaviors,from new inspection of data,Iran republic revolution had caused oil crisis in 1979 and repressed on oil priceand effectedon Iran's current account. except current account surplus in 1983(%3.6 of GDP, due to increase of oil price),Iran –Iraqwar between 1980-1987 years and negative consequences of warhad caused current account deficit until 1993(Fig.1).

Except1998,Iran had significant current account surplus that had increased persistently from 1994 to 2000(12% of GDP, peak of increment).This was due to its oil incomes, on other hand, with reviewing current account could be observed that during this period, oil and gas export was more than non –oil export and export exceeded to import, Athough with rising of oil incomes, import of capital and intermediate goods increased but their share were low.

Oil crisis in 2000and persistent increase of oil price was important reason ofIran'scurrent account surplus.(Between 2000-2004 years).Iran's current account movedtowards a balanced position during the 2004, current account surplushad anincreasing trend,between 2004-2008 years, and adecreasing trend, between 2008-2009 years(financial crisis led to global recession and had negative effect on oil demand).Oil price increased in 2011 and current account surplus reached to amount 2007 years,(1o% GDP).With respect toIran's autarky and oil dependent economy,we observe that determinant factors of Iran's current account position are more

politicalfactors (war, political agreement, Iranian nuclear plan in 2006, oil price,and economical and political embargoes) than economical factors.

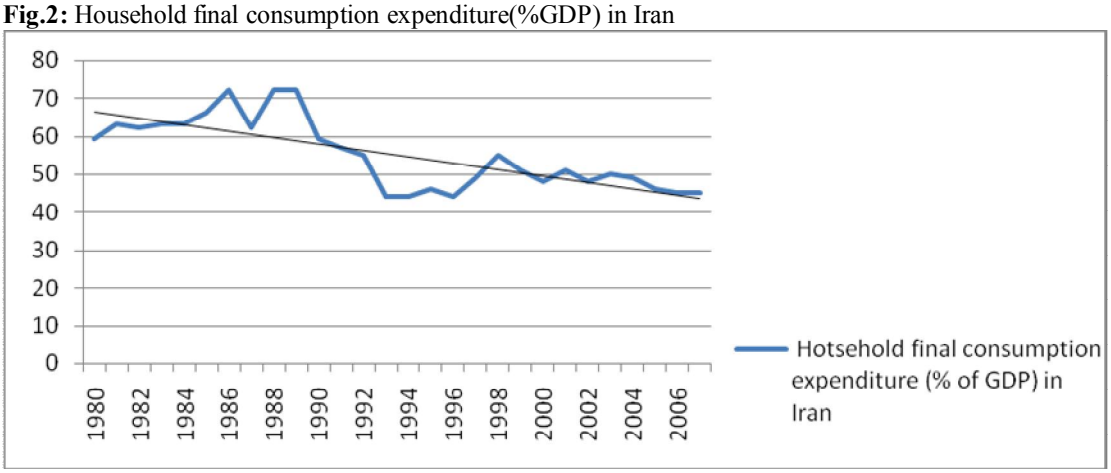
Fig. 1: Current account to GDP ratios of Iran



Source: International Monetary Found

In addition to factors is mentioned in above (political and external behaviors), internal behaviors, for example consumption behaviors of household, firms and government effect on current account position, main goal in this study is evaluation of factors by household consumption effect on current account, this factors are GDP growth, population growth, age dependency ratio-young, age dependency ratio-old,real interest rate,income distribution (by means of Gini,Theil indexes), and etc. In reviewing ofconsumption pattern during last 30 years, we show that consumption is consistently decreasing, so, widely accepted economic theory, current account surplus is expected(Fig. 2).This is one of reasons among different reasons for current account surplus.

Fig.2: Household final consumption expenditure(%GDP) in Iran



Source: World Bank

III.Literature review of Model and Estimation Techniques

The classic elasticities framework

The classic workhorse model for current account is estimating trade elasticities have been used since at

least the 1940s, Adler (1945, 1946) and Chang (1945, 1946). It relates the volume of exports or imports to real foreign and domestic income and relative prices (in log form):

$$\ln trade = \alpha + \beta \ln income + \beta \ln rel.price$$

The model assumes that domestic and foreign tradable goods are imperfect substitutes, that price homogeneity holds (e.g., that an estimated coefficient on the trade price and domestic price are equal, thus allowing for a single relative price term) and that the elasticities with respect to economic activity (e.g.,income) and relative prices are constant over time (seeHooper, Johnson, and Marquez 2000 for a concise summary of the model). The trade balance that is one of elementof current accountresponds positively to foreign income, negatively to domestic income, and negatively to the ratio of domestic to foreign prices.

This framework long has been a workhorse for policymakers and short-term forecasters Krugman (1989). However, the elasticities approach is not helpful in answering the question of what causes current account imbalances over a sustained period of time. The estimated income elasticities are not constant over time or across countries.(Chinnand Prasad (2003), Gruber and Kamin (2007, 2009), Chinn and Ito (2008), and Cheung, Furceri, and Rusticelli (2010).) Important factors such as natural resources, productivity growth,demographic changes, and barriers to trade are not included in the elasticities framework.

A modernframework

With respect to restriction of classic elasticities framework that was mentioned above, a series of recent studies has examined the medium and long-term relationship between the current account balance and its potential determinants, that emerge from the underlying theories, Chinn and Prasad (2003); Gruber and Kamin (2007); Ca'Zorzi et al. (2009) ; Decrassinand Stavrev (2009) ; Cheung, Furceri, and Rusticelli (2010) ; Jaumotte and Sodsriwiboon (2010) ;Aizenman and Sengupta(2011) and Gagnon(2012).

These studies provide fairly robust and consistent estimates (Table 1) of the role played by:

-Country's net foreign asset position (NFA), government budget balance, demographic factors (old and young dependency ratios), domestic credit to GDP ratio (to proxy for domestic financial depth) (Prasad et al., 2006 and Chinn and Prasad, 2003) and world and domestic GDP growth rates, net oil export, official Flow, PPP Per capita and etc. that all of variables expressed as a ratio to GDP.

Table 1: Summary of selected studies of current account balance determinants

Studies	**Countries and Sample**	**Variable**
Chinn &Prased (2003)	89 advanced & developing(1971-1995)	GDP per capita(+), net foreign assets(+), Fiscal balance(+)
Ca Zorzi & et al (2009)	63 advanced & developing(1980-2006)	Age dependency(-), GDP per capita (+), net foreign assets (+) , Oil price(+), Trade openness(+), Financial deepening(-), institutional quality (+)
Gruber &Kaminn(2007)	59 advanced & developing(1982-2003)	Age dependency(-) , Oil price(+), GDP percapita(+), GDP growth rate(-) , Trade openness(+), Institutional quality(+),Fiscal balance(+), Institutional quality (-)
Desressin&Stavrev (2009)	11 eruo (1970-2007)	Age dependency(-), Population growth(-), Oil price (+),GDP per capita(+), GDP growth rate (+), netforeign assets (+), Fiscal balance(+)
Cheung&et al (2010)	30OECD (1194-2008)	Age dependency(-), Oil price(+), GDP percapital (+), net foreign assets(+)
Jaumotte&Sodsriwiboon (2010)	49 advanced & developing(1973-2008)	Age dependency(-), Population growth (-),oilprice (+), GDP per capita(+) ,net foreignAssets(+), Fiscal balance(+), financial deepening (-), EMU membership(-/+)
Koske (2010)	97 advanced &developing (1994-2008)	Age dependency(-), Population growth(-), Structural Rigidity(-)
Aizenman & Sengupta(2011)	Chinn& Germany(1970-2009)	Age dependency(-) , GDP growth rate(-) , netforeign asset (+), Fiscal balance(-) ,Trade openness (-/+), Domestic credit*/GDP(-)*
Gagnon (2012)	G-20 (1984-2008)	GDP growth rate(-),net foreign assets(+), Fiscal balance(+), PPP per capita(+), Officialflow(+), Age dependency(-)

Note :(+/-) are effects of variable on current account.

In this research, we use variables that by means of consumption effect on current account, independent variables defined as:

- Demographic factors (old and young dependency ratios). To recall, the life-cycle theory of consumption and saving Modigliani and Brumberg (1954) and Ando and Modigliani (1963) implies that young households borrow, middle-age households save for retirement, and households in retirement dissave.Therefore relatively young and relatively old countries are more likely to consume and to run current account
- Income distributionis discussed in the context the theory of effective demand. deficits (see Obstfeld and Rogoff (1996, Chapter 3)). These effects may be captured empirically by controlling for youth dependency ratio (the ratio of the population ages 0–14 to the working age population, ages 15–64),and old-age dependency ratio (the ratio of the population 65 and older to the working age population).
- Population growth, led to increase consumption expenditure therefore lower current account balance in samples high population growth country is expected.

Keynes made little more than passing comment on the subject in Chapter 8 (‘The

Propensity to Consume: I') of the General Theory: If fiscal policy is used as a deliberate instrument for the more equal distribution of incomes, its effect in increasing the propensity to consume is, of course, all the greater' (Keynes, 1936, p. 95). Seminal contributions by Friedman (1957) and Modigliani (1966), which provide modern consumption theory, attribute no importance to income distribution. Income distribution does play a role in theories of consumption authored by economists affiliated the Cambridge or Post Keynesian School.[a] Pressman (1997) notes that the dependence of aggregate consumption on the functional distribution of income is the distinctive feature of the Cambridge approach for example Kalecki divided total income between income of workers (W) andprofit or income of capitalists (∏). Let α1 denote the propensity to consume outof wage income and α 2 the propensity to consume out of profits. Thus,aggregateconsumption expenditure (C) is given by:C= α 1W+ α 2∏,If α 1 is greater than α 2, then a change in functional shares in favor of laborincome will boost consumption, So that, for countries with equality income distribution,increment of consumption andlow current account is expected.

- Faster GDP growth may be associated with higher income levels in the future relative to the present and therefore higher consumption out of current income. Also higher growth rates resulting from productivity gains would also coincide with a return on capital, leading to increased investment. For both reasons, higher GDP growth reduces the current account balance, although this result is not very robust across studies.

- Higher long term real interest rates make current consumption more expensive compared with future consumption and therefore decreases consumption. It also increases opportunity cost of investments. For both reasons it is expected to lead to the improved current account balance.

However, quoted studies do not identify statistically significant link.

In generally, if a country increases its demand for imports due to increase of consumption, basic economic theory predicts that the country's current account deficit should widen and its currency depreciates. Holding all else constant(Mishkin, 2001).As a country's demand for imports rises, its trade deficit should worsen, causing its current account deficit to grow larger. On the financial side of the economy, the increased expenditures on foreign goods increase the demand for foreign currencies, putting upward pressure on the value of foreign currencies relative to the value of the domestic currency. Consequently, the country's exchange rate should fall.

In this research due to lack of data for calculatingof real interest rate during 1980-2010, we disregard this variable. We apply earlier literature to estimate of model that is defined by: $CA_{i,t}/GDP_{i,t}=\alpha+\beta_{i,t}X_{i,t}+\epsilon_{i,t}$ where CA is the current account balance(deficit/surplus), GDP is nominal GDP, α is a constant, β a vector of coefficients on theexogenous variables X, ε is an error term, and i and t are respectively the country and time.

Table 2 presents regression results for the model, during last 30 years.Most data are obtained from the IMF International Financial Statistics and World Bank World Development Indicators databases and Central Bank and Statistic Center of Iran (Gini and Thiel).

We conduct unit root and stationary test on all the series first on their level and then on their firstdifferences. Overwhelmingly, all the testing proceduressuggest presenceof unit root in level I(1) for all the variables,for preventing of spurious regression, by use of Engle-granger(1987) co integration test, remaining of equations estimation examine, the result obtained from them show that liner combination of variables are stationary and there arelong-run equilibrium relationship among the variables.

[a]The leading contributor is Kalecki (1943, 1954), but the group also includes Robinson (1954) and Kaldor (1960). See Pressman (1997) for a detailed discussion. Also see Trigg (1994).

Table 2:resulting of Augmented Dickey-Fuller (ADF), and Phillips-Perron (PP)

Variable	**ADF Critical value(5%)**	**prob**	**PP Critical value(5%)**	**prob**
current accunt	-2.55	0.11	-2.51	0.12
GDP growth	-2.57	0.12	-5.25	0.02
Gini	-3.08	0.06	-3.06	0.08
Theil	-1.65	o.44	-1.71	0.41
population growth	-1.31	0.60	-1.16	0.67
Agedependency ratio, young	-1.74	0.39	0.63	0.98
Age dependency ratio,old	-2.90	0.07	-1.74	0.39
ε	4.04	0.004	4.66	0.0008

After estimate equation by Ordinary Least Squares method, wedid not observe heteroskedasticity and correlation in the errors through (Breusch-Pagan-Godfrey and White test, for heteroskedasticity test, Breusch-Godfrey Serial Correlation LM test, Luing-Box test, for autocorrelation)[2]results are as follow:

Table 2: Results of current account model,1980-2010

variable	Income distribution variable is Gini	Income distribution variable is Theil
GDP growth	0.03 (o.25)	-0.03 (0.30)
Gini	**-0.67*** **(2.56)**	**-**
Theil	**-**	**-0.82*** **(2.68)**
population growth	2.99 (0.98)	0.24 (0.08)
Age dependency ratio, young	**-0.13**** **(2.99)**	**-0.28**** **(4.98)**
Age dependency ratio, old	-2.41 (0.57)	-1.44 (0.86)
R-squared	0.58	0.69
Adjusted R-squared	0.49	0.58
F	6.26	8.54
D-W	1.46	1.38

[2]These results are not reported here to conserve space but are made available upon request

The table shows time-series estimation results from ordinary least squares regression over the period from 1980 to 2010. Robust standard errors are in parentheses. **, and * denote significance at the,5%, and 10% levels, respectively

IV.Conclusion

This paper documents statistically robust and economically important effects of exogenous variables on current account balances of Iran, during 1980-2010, among different factors effect on current account, we selected internal factors that by household consumption effect on current account, we observed that among these factors,at 5% and 10%confidence level, transition factors and income distribution indexes were significant respectively. When index of income distribution wasGini, the Iran's current account tended to decrease by about 13 percent (or more) of any increase in, age dependency ratio young and 0.87 percent of any increase in Gini,also when we applied Theil index as incomedistribution indicator, current account tended to decrease by about 0.28 percent of any increase age dependency ratio young and 0.82percentof any increase in Theil. Overall, the regression model provided relatively a good explanation of the data, as implied by relatively good R2,and F statistic showed significance of total model.

Generally, according to theory,we expect relatively young and relatively old countries havemore tendency to consume and to run current account deficits, in Iran proportion of age dependency ratio, young relative to age dependency old is high (Fig.3), therefore the increase of age dependency ratio young, led to increment of household consumption and decrease current account surplus.

Also we show negative effects of income distribution on current account surplus, in recent years by applying of subsides targeted program (elimination of indirect subside and paying of direct subside to consumer by government) improved income distribution(Fig. 4) and relatively decreased rich and poor group gap, according to theory improvement of income distribution led to theincrement of consumption and decrease current account surplus, in other side, paying of direct subside to consumer have inflationary effects and decrease national money value and deteriorate of current account position.

In Iran, based on IMF and World Bank data, we expect that current account move toward thedecrease of surplus, but this moving is not due to the increment of GDP growth and investment, but the increase of household consumption (theincrease of dependency of ratio (young) and improvement of income distribution), and government expenditure are important internal factors of surplus decrease, also mismanagement of fiscal and monetary or external polices and the increase of embargoes and the decrease oil incomes and foreign currency reserves (foreign currency appreciation) is caused by political and external factors will have negative effect on current account.

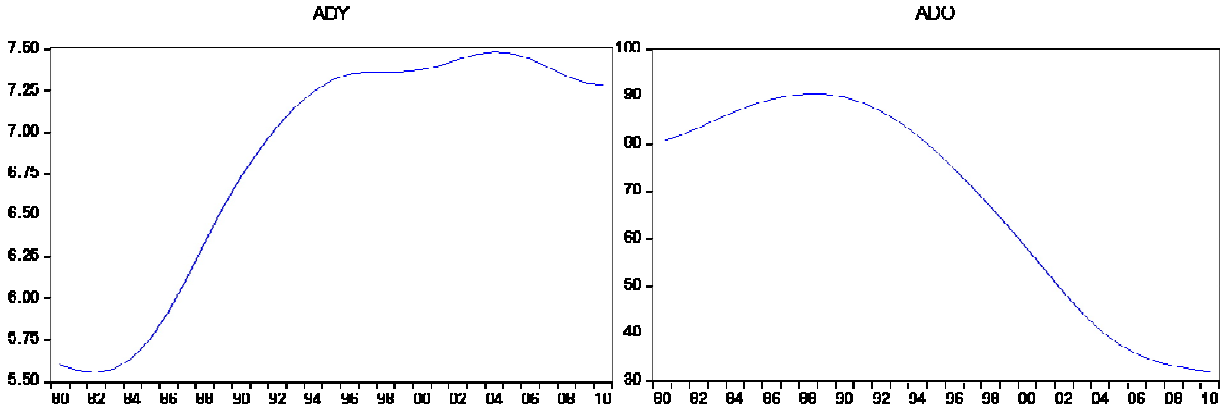
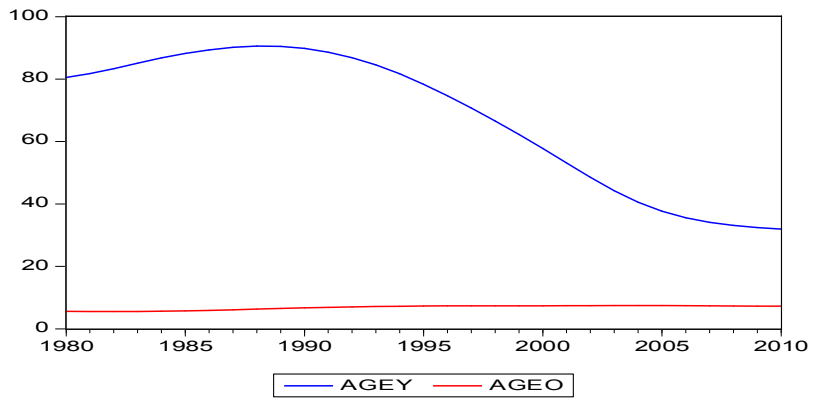
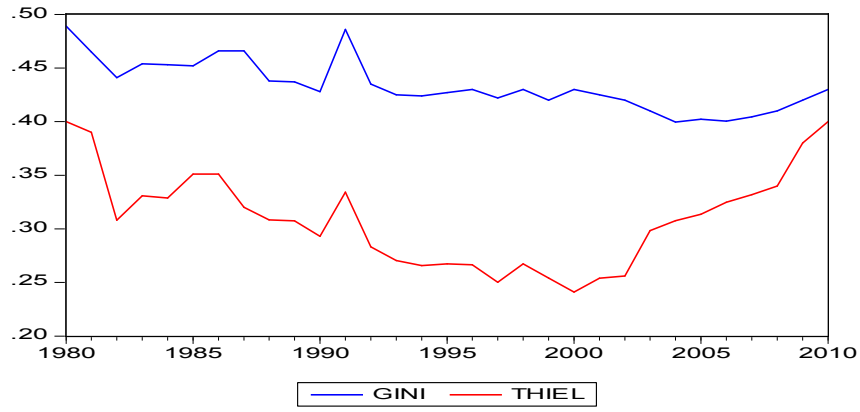


Fig. 3: Age dependency ratio, young and old



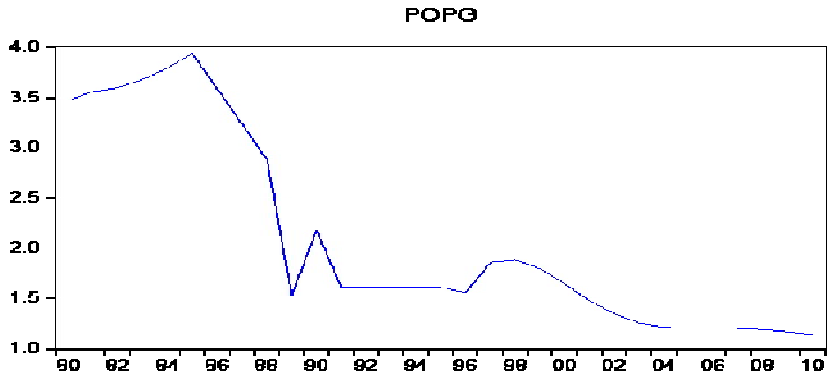
Source: world Bank

Fig. 4: Gini and Theil index



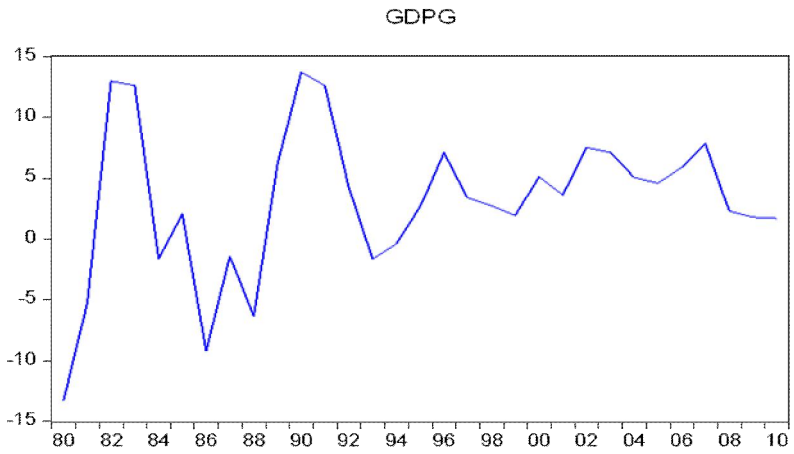
Source: Central Bank and Statistic Center of Iran

Fig. 5: Population Growth



Source: world Bank

Fig. 6: GDP Growth



Source: world Bank

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