The impact of global finance crisis on payable demand: in case of Azerbaijan

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Abstract: – When studying economic relations theoretically and practically, it was determined that modern society is constantly striving to improve living conditions. Also, long–term economic growth is unstable, divided into intermittent unstable periods. The successive rates of increase and decrease in the level of economic development are called economic cycles. The crisis can be caused by factors that can and cannot be managed in accordance with the characteristics of the development of the socio–economic system, as well as in the functional processes themselves. Conflicts can be between the level of equipment and skilled labor, the technology and the conditions of their use (climate, buildings, production process, compatibility), etc. It is known that the income of the population and the effective demand of the population is a manifestation of the payment of people's personal needs for goods and services in cash. It is conditioned by its socio–economic nature, the structure of gross national product, the amount of national income and its distribution, the social welfare of the population and is provided by the level of development of the economy and culture. As the main indicator of consumer behavior, the population's income and effective demand act as a market regulator that determines the flow of finished goods in the market and the required volume of production.

Key Words: – global economıc crısıs, effective demand, population's income, consumer behavior, development.

1 Introduction

It was found durinh studying economic relations theoretically and practically, that modern society is constantly striving to improve living conditions. Also, long–term economic growth is unstable, divided into periods of unstable periods. The successive rates of increase and decrease in the level of economic development are called economic cycles.

There are different views on the causes of economic fluctuations: some economists – D. Ricardo, J.B. Sey – in their works deny the occurrence of general economic crises, explaining that partial crises occur as a result of imbalances between different sectors of production. Another group of economists, J. Keynes and E. Hansen, explain the crisis as a lack of student inclination.

In general, there is an opinion that the market economy can not regulate itself, and in this regard, the regulatory role of the country in this process is objective and justified (Melnik,

2013). At present, the concept of crisis is perceived as any sharp change that negatively affects sustainability. The existence of any economic system is conditioned by two factors: functionality and development. Functionality is the activity of an economic system that combines its features, preservation of its functions, and development is the acquisition of new qualities. Functionality and development are closely linked. This connection has a dialectical character, which implies the regularity and end of the crisis: functionality prevents development, and development stops some processes of functionality, but allows it to be implemented at a higher quality level. At the same time, cyclical economic development takes place, reflecting periodic crises.

The course of modern economic life is not observed with continuous and direct growth (Ludwig von Mises, 2012). The crisis suggests a serious violation of proportionality (Osipov, 1987). Today, in many developed and developing countries, there is a significant decline in economic and production growth (Zakharov, 2009).

Crisis (Greek "Chrisis" – decision, period, speech) – is a speech in which the system comes to a new wave of its development (Lemeshchenko, 2010). Crisis can be not only destructive, but also positive. for example, what is said about the crisis at the microeconomic level is somewhat absurd. Crisis is an excellent opportunity to build an internal marketing system in this enterprise that does not require significant capital investment (Kotova, 2010).

The crisis can be caused by factors that can and cannot be managed in accordance with the characteristics of the development of the socio–economic system, as well as in the functional processes themselves. Conflicts can be between the level of equipment and skilled labor, the technology and the conditions of their use (climate, buildings, production process, compatibility), etc.

It is necessary to study the crisis in the structure of the cycle, without separating it from other phases (Krotov, 2015).

Summarizing the existing theories of different economic schools, we can conclude that the economic crisis has the following features:

- overproduction of goods compared to solvent demand
- a sharp drop in prices as a result of excess supply over demand
- A sharp decline in production – an important line of the economic crisis
- Mass bankruptcy of enterprises
- Large increase in unemployment and decrease in wages
- shock in the credit system (Chvetkov, 2012).

In general, many economists believe that the cause of the crisis is the shortcomings of monetary policy, the impact of complex and contradictory factors, regardless of the state of the population's solvent demand.

2.Basıcs of solvency requırements

It is known that the solvent demand of the population is a manifestation of the payment of people's personal needs for goods and services at the expense of money. It is conditioned by its socio–economic nature, the structure of gross social product, the amount of national income and its distribution, the social welfare of the population and is provided by the level of development of the economy and culture (Great Soviet Encyclopedia). As the main indicator of consumer behavior, solvent demand is an important market regulator that determines the flow of finished goods in the market and the required volume of production (Kunyavsky, 2009).

Demand is one of the main mechanisms for the effective functioning of a market economy. At the same time, it should be noted that economists are interested in the category of "solvent demand", ie the demand confirmed by the cash equivalent (Ibragimova, 2015).

At the same time, long–term economic growth, which leads to an increase in solvent demand, is volatile and unstable. The crisis is based on fundamental macroeconomic, microeconomic and institutional causes.

Under such conditions, the solvent demand of the population could not remain stable due to such factors as the sharp reduction of jobs in large corporations, the bankruptcy of commercial organizations, instability in the monetary system. ... the formation and

development of the population's ... solvent demand is under the influence of a system of contradictory and contradictory internal and external factors (Kiselyov,2015).

Identifying the characteristics of the manifestations of the regularities of the formation of the solvent demand of the population in the economic situation is important for forecasting the development of key parameters in the consumer sphere (Reshetnikova, 2008).

Adaptation to the conditions of a market–type open socially oriented economy primarily affects the living standards of the population. This indicates the importance of analyzing the structural improvements in consumption or the reverse analysis of economic development in times of crisis in increasing the level of average real per capita income (Hussarov, 2010). It is well known that income is the goal of every active market economy participant. In this case, the monetary income of the population includes salaries, pensions, social benefits, etc. paid by persons engaged in entrepreneurial activities. reflects income. Classical concepts such as "remuneration" and "salary" have long been the subject of discussion among economists.

In conclusion, it should be noted that the purchasing power of the population is one of the most important indicators in the system of indicators of living standards and quality of life (Snimshchikova, 2007). In order to revive the economy, it is necessary to form a solvent demand in the total income of society – by increasing the share of income in the gross domestic product (Snimshchikova, 2007).

3.Analysıs of solvent demand ın Azerbaıjan

The main goal of socio–economic development of the country and any region is to achieve a socially accepted standard of living necessary and sufficient for the normal reproduction of the labor force.

First of all, it should be noted that the poorer the population, the lower its solvency and solvency requirements. From this point of view, we can show the reduction of poverty as a result of successful socio–economic policy pursued in Azerbaijan.

Thus, over the last ten years, from 2005 to 2019, the poverty line in our country has increased from 42.6 to 190 manat. As an absolute indicator, this increase is about 148 manat.

One of the main indicators of the growth of the solvent demand of the population is the retail trade turnover, and we can give its dynamics in recent years. Retail trade turnover increased from 1047.7 million manat to 37090.00 million manat during 1995–2018.

The retail trade turnover of non–alcoholic food products, beverages and tobacco products and non–food products excluding motor gasoline is also an important indicator in the study of the solvent demand of the population. Thus, the retail trade turnover of food, beverages and tobacco products without alcohol increased from 799.2 million manat to 18638.4 million manat during 1995–2018.

As for the income of the population, it increased from 2795.7 million manat to 53688.6 million manat during 1995–2018.

However, there is some confusion in the dollar income of the population. Thus, in 1997, when the exchange rate of household income in dollars ($ 1 = manat) was about 0.7974 (1997) – 0.9827 (2004) – 0.7844 (2014). Increased from $ 3101.9 million in 2014 to $ 50321.5 million. In 2014, the population's income in dollars increased 16.22 times compared to 1997, 5.90 times compared to 2005, and 1.57 times compared to 2010. However, in 2015, when the exchange rate was 1.0261, this income figure was 19.26% compared to 2014, and in 2016, when the exchange rate was 1.5959, it was 43.48% compared to 2014, and 30.09% compared to 2015. Of course, the same can be said about the per capita income of the population in dollars.

4. Methodology and methods

4.1. Data

In order to increase the visibility of the above, between 1996 and 2018, the Consumer Market, Retail Trade, Catering, Paid Services, Food, Beverages and Tobacco Products, Non–Food Products, Retail Trade Per capita, Per capita retail trade turnover of food products, average monthly nominal wage of retail trade turnover

of non–food products per capita, incomes of the population, Gross national income per capita (in manats and dollars), consumer price indices (total. food and non–food), Models can be built to express dependence on exchange rates and oil prices. We obtained the following models using the Eviews econometric research and analysis program.

The data were obtained from the State Statistics Committee of Azerbaijan.

Table 1. Data and internet resource

Consumer Market	CM	www.stat.gov.az
Retail Trade	RT	www.stat.gov.az
Public Catering	PC	www.stat.gov.az
Paid Services	PS	www.stat.gov.az
Food Products, Beverages And Tobacco Products	FBTP	www.stat.gov.az
Non–Food Products	NFP	www.stat.gov.az
Retail Trade Turnover Per Capita	RTTPC	www.stat.gov.az
Trade Turnover Of Food Products Per One Person Of Population	TTFPPP	www.stat.gov.az
Trade Turnover Of Non–Food Products Per One Person Of Population	TTNFPPP	www.stat.gov.az
Average Monthly Salary	AMS	www.stat.gov.az
Revenues	RTazn	www.stat.gov.az
Gross National Income Per Capita (Manat)	GNIPCazn	www.stat.gov.az
Gross National Income Per Capita (Dollar)	GNIPCdol	www.stat.gov.az
Consumer Prices Index	CPI	www.stat.gov.az
1$= Manat	$/M	www.cbar.az
Oil price doll	OPD	www.opec.org/

4.2. ARDL Bounds Testing Cointegration

Our study is based on ARDL models and bounds tests for the cointegration approach developed by Pesaran and Shin (1999) and Pesaran et al (2001). These models have recently been widely used by researchers to test the existence of long–term relationships between various macroeconomic variables. The main advantage of this approach is that there is no need to integrate all variables in the same level.

In, we evaluate the following unrestricted error correction model given by equations (1):

$$\Delta LY_t = \beta_0 + \sum_{i=1}^{p} \beta_i \Delta LY_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta LX_{t-j} + \theta_0 \Delta LY_{t-1} + \theta_1 \Delta LX_{t-1} + \varepsilon_t \quad (1)$$

β_0 $\beta_i, \gamma_j,$	Constant Parameters
Bounds test	
Null hypothesis:	H_0: $\theta_0 = \theta_1 = 0$, No cointegration.
Alternative hypothesis:	H_0: $\theta_0 \neq \theta_1 \neq 0$, Cointegration.
p, q	Lags, are chosen based on the Akaike information criterion (AIC)
	All of the tests of stability, normality, autocorrelation, and heteroscedasticity should be used to check the models estimated.

4.3. Long Run Granger Causality Test

When the outcome of the tests shows that the variables are cointegrated, the unrestricted error correction model is estimated by equation (2) to identify both short–term dynamics and the long–term relationship equations.

The existence of a cointegration causal relationship between the dependent and independent variables is checked in every UECM. The value below zero and the statistically significance of the coefficient (π) of the error correction term affirm the existence of long run causality from the explanatory variables toward dependent variable.

$$\Delta LY_t = \beta_0 + \sum_{i=1}^{p} \beta_i \Delta LY_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta LX_{t-j} + \pi ECT_{t-1} + \varepsilon_t \quad (2)$$

4.4. Diagnostic Test

In this part, we will utilize Breusch Godfrey LM test (null hypothesis of the test is "non–existence of serial correlation") in order to check successive correlation issue and use Breusch−Pagan−Godfrey (null hypothesis indicates"no heteroskedasticity") and Autoregressive Conditional Hederoscedasticity test (ARCH) for gaining more reliable results for heteroskedasticity issue. In ARCH test, null hypothesis of "no heteroskedasticity" is examined. Beside this, Normality Test (Jarque–Bera) JB were checked as well. The rejection of null hypothesis is justified for each of the different cases.

5. Empirical results

In order to determine the optimal lag for the ARDL model, lag length selection criteria of the VAR were utilized. In this case, we obtained the following results. The criterion used to select appropriate lag length is based on AIC. The outcomes of the lag length selection in VAR are presented in Table 2.

Table 2. VAR Lag Order Selection Criteria

	Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
LCM	0	63.38639	NA	8.99e–13	–5.035126	–4.638383	–4.941665
	1	309.4604	290.8147*	8.74e–20*	–21.58731*	–18.01662*	–20.74616*
LRT	0	60.14965	NA	1.21e–12	–4.740877	–4.344135	–4.647417
	1	307.9949	292.9080*	9.99e–20*	–21.45408*	–17.88339*	–20.61293*
LPC	0	48.09977	NA	3.61e–12	–3.645434	–3.248691	–3.551973
	1	267.6270	259.4412*	3.92e–18*	–17.78427*	–14.21358*	–16.94312*
LPS	0	58.87730	NA	1.35e–12	–4.625209	–4.228467	–4.531749
	1	281.6709	263.3015*	1.09e–18*	–19.06099*	–15.49031*	–18.21985*
LFBTP	0	63.99400	NA	8.51e–13	–5.090364	–4.693621	–4.996903
	1	300.0348	278.9573*	2.06e–19*	–20.73044*	–17.15975*	–19.88929*
LNFP	0	46.04434	NA	4.35e–12	–3.458576	–3.061834	–3.365116
	1	291.8090	290.4491*	4.35e–19*	–19.98264*	–16.41195*	–19.14149*
LRTTPC	0	62.23137	NA	9.98e–13	–4.930125	–4.533382	–4.836664
	1	307.6281	290.0143*	1.03e–19*	–21.42073*	–17.85005*	–20.57959*
LTTFPPP	0	63.63770	NA	8.79e–13	–5.057973	–4.661230	–4.964512
	1	299.1761	278.3635*	2.23e–19*	–20.65237*	–17.08169*	–19.81122*
LTTNFPPP	0	47.43171	NA	3.83e–12	–3.584701	–3.187958	–3.491241
	1	292.2151	289.2894*	4.19e–19*	–20.01955*	–16.44887*	–19.17840*

Note:
* *Indicates lag order selected by the criterion*
AIC: Akaike Information Criterion
SC: Schwarz Information Criterion

Table 3. Results from bound tests

		Significance								
		I(0) Bound				I(1) Bound				
Dependant variable	F–statistic	10%	5%	2.5%	1%	10%	5%	10%	5%	
ARDL(1, 1, 1, 1, 1, 1, 1, 1)	25.13083***	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	Cointegration
ARDL(1, 0, 0, 1, 0, 1, 0, 0)	15.04307***	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	Cointegration
ARDL(1, 1, 1, 1, 1, 1, 1, 1) @TREND	10.15688***	2.38	2.69	2.98	3.31	3.45	3.83	4.16	4.63	Cointegration
ARDL(1, 1, 1, 1, 1, 1, 1, 0) @TREND	7.721922***	2.38	2.69	2.98	3.31	3.45	3.83	4.16	4.63	Cointegration
ARDL(1, 0, 0, 0, 0, 0, 0, 0)	3.899694**	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	Cointegration
ARDL(1, 0, 0, 0, 0, 0, 0, 0)	2.945815	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	No–Cointegration
ARDL(1, 0, 0, 0, 0, 0, 0, 0)	4.126417**	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	Cointegration
ARDL(1, 0, 0, 0, 0, 0, 0, 0)	2.881773	2.03	2.32	2.6	2.96	3.13	3.5	3.84	4.26	No–Cointegration

Table 3 shows whether there is a cointegration relationship between these variables. Thus, there is a long–term relationship. According to Narayan (2005), F–statistic is higher than upper bound at 5%.

Table 5. Long Run Coefficients

	Variable	Coefficient	Std. Error	t–Statistic	Prob.
LCM	LAMS	0.647528	0.356677	1.815449	0.1194
	LRTAZN	0.948353	0.277538	3.417027	0.0142
	LGNIPCAZN	–3.193449	1.973654	–1.618039	0.1568
	LGNIPCDOL	2.574215	1.731660	1.486560	0.1877
	LOPD	0.138364	0.141892	0.975134	0.3672
	CPI	0.026194	0.018607	1.407761	0.2088
	$/M	2.311812	1.484511	1.557288	0.1704
	C	–3.854984	2.029346	–1.899619	0.1062
Cointeq = *LCM* – (0.6475* LAMS + 0.9484* LRTAZN – 3.1934* LGNIPCAZN + 2.5742* LGNIPCDOL + 0.0262* CPI + 2.3118*$/M + 0.1384* LOPD – 3.8550)					
LRT	LAMS	2.482374	9.318180	0.266401	0.7949
	LRTAZN	–9.066740	39.097001	–0.231904	0.8209
	LGNIPCAZN	–37.061434	138.492094	–0.267607	0.7940
	LGNIPCDOL	44.123840	166.221380	0.265452	0.7956
	LOPD	–0.320009	1.540647	–0.207711	0.8393
	CPI	–0.586648	2.210413	–0.265402	0.7956
	$/M	43.873324	164.317700	0.267003	0.7944
	C	39.840009	155.957038	0.255455	0.8031
Cointeq = *LRT* – (2.4824* LAMS – 9.0667* LRTAZN–37.0614* LGNIPCAZN + 44.1238* LGNIPCDOL – 0.5866* CPI + 43.8733*$/M – 0.3200* LOPD + 39.8400)					
LPC	LAMS	1.295197***	0.147561	8.777387	0.0003
	LRTAZN	0.192195	0.358422	0.536227	0.6148
	LGNIPCAZN	–9.267198***	1.176908	–7.874188	0.0005
	LGNIPCDOL	8.573307***	1.239815	6.914991	0.0010
	LOPD	0.219852*	0.073969	2.972201	0.0311
	CPI	0.011687*	0.003675	3.180203	0.0245
	$/M	7.103652***	0.994888	7.140156	0.0008

	C	–9.013672***	1.125134	–8.011202	0.0005
	@TREND	0.116678*	0.030653	3.806364	0.0125
Cointeq = *LPC* – (1.2952* LAMS + 0.1922* LRTAZN – 9.2672* LGNIPCAZN + 8.5733* LGNIPCDOL + 0.0117* CPI + 7.1037*$/M + 0.2199* LOPD – 9.0137 + 0.1167*@TREND)					
LPS	LAMS	0.388606	0.225627	1.722341	0.1358
	LRTAZN	–0.184287	0.450486	–0.409084	0.6967
	LGNIPCAZN	–6.214323*	2.175707	–2.856232	0.0289
	LGNIPCDOL	7.099695*	2.191421	3.239767	0.0177
	LOPD	–0.132561	0.058528	–2.264926	0.0641
	CPI	0.006883	0.004674	1.472612	0.1913
	$/M	5.880513	1.796590	3.273153	0.0170
	C	–5.930800*	1.025757	–5.781875	0.0012
	@TREND	0.013247	0.030500	0.434342	0.6792
Cointeq = *LPS* – (0.3886* LAMS –0.1843* LRTAZN – 6.2143* LGNIPCAZN + 7.0997* LGNIPCDOL + 0.0069* CPI + 5.8805*$/M – 0.1326* LOPD – 5.9308 + 0.0132*@TREND)					
LFBTP	LAMS	0.194569	0.498686	0.390163	0.7027
	LRTAZN	0.078822	0.798193	0.098751	0.9228
	LGNIPCAZN	3.159626	4.673835	0.676024	0.5109
	LGNIPCDOL	–2.474157	3.996972	–0.619008	0.5466
	LOPD	–0.330260	0.369387	–0.894075	0.3875
	CPI	0.065916	0.076508	0.861553	0.4045
	$/M	–2.147379	3.687899	–0.582277	0.5703
	C	–1.252311	3.144541	–0.398249	0.6969
Cointeq = *LFBTP* – (0.1946* LAMS + 0.0788* LRTAZN + 3.1596* LGNIPCAZN – 2.4742* LGNIPCDOL + 0.0659* CPI – 2.1474*$/M – 0.3303* LOPD – 1.2523)					
LNFP	LAMS	2.726639	10.351575	0.263403	0.7964
	LRTAZN	–5.319670	26.876611	–0.197929	0.8462
	LGNIPCAZN	–14.405179	51.838139	–0.277888	0.7855
	LGNIPCDOL	20.194526	74.391482	0.271463	0.7903
	LOPD	–4.629195	16.936636	–0.273324	0.7889
	CPI	–0.441243	1.587290	–0.277985	0.7854
	$/M	21.169945	76.326070	0.277362	0.7859
	C	35.893912	149.841383	0.239546	0.8144
Cointeq = *LNFP* – (2.7266* LAMS – 5.3197* LRTAZN – 14.4052* LGNIPCAZN + 20.1945* LGNIPCDOL – 0.4412* CPI + 21.1699*$/M – 4.6292* LOPD + 35.8939)					
LRTTPC	LAMS	–3.181574	39.334283	–0.080886	0.9368
	LRTAZN	6.578976	65.138948	0.100999	0.9211
	LGNIPCAZN	47.760628	571.853462	0.083519	0.9347
	LGNIPCDOL	–52.071425	619.523084	–0.084051	0.9343
	LOPD	2.411617	28.716834	0.083979	0.9344
	CPI	1.244974	14.665656	0.084890	0.9336
	$/M	–51.324353	612.387200	–0.083810	0.9345
	C	–79.453381	902.069350	–0.088079	0.9312
Cointeq = *LRTTPC* – (– 3.1816* LAMS + 6.5790* LRTAZN + 47.7606* LGNIPCAZN – 52.0714* LGNIPCDOL + 1.2450* CPI – 51.3244*$/M + 2.4116*LNSERIES19 – 79.4534)					
LTTFPPP	LAMS	0.179919	0.570415	0.315418	0.7575
	LRTAZN	–0.103820	0.963421	–0.107762	0.9158
	LGNIPCAZN	3.554695	5.865585	0.606026	0.5549
	LGNIPCDOL	–2.739018	5.008822	–0.546839	0.5938
	LOPD	–0.386176	0.465569	–0.829470	0.4218
	CPI	0.075470	0.097827	0.771458	0.4542
	$/M	–2.427438	4.607896	–0.526800	0.6072
	C	–3.060208	3.798543	–0.805627	0.4349
Cointeq = *LTTFPPP* – (0.1799* LAMS –0.1038* LRTAZN + 3.5547* LGNIPCAZN – 2.7390* LGNIPCDOL + 0.0755* CPI – 2.4274*$/M – 0.3862* LOPD – 3.0602)					
LTTNFPPP	LAMS	3.690393	19.551619	0.188751	0.8532
	LRTAZN	–7.846613	51.072291	–0.153637	0.8803
	LGNIPCAZN	–19.248996	97.914003	–0.196591	0.8472
	LGNIPCDOL	27.235365	142.323445	0.191362	0.8512
	LOPD	–6.165935	32.309179	–0.190842	0.8516
	CPI	–0.586326	3.044268	–0.192600	0.8502
	$/M	28.167094	145.414449	0.193702	0.8494
	C	48.320452	287.973437	0.167795	0.8693
Cointeq = *LTTNFPPP* – (3.6904* LAMS – 7.8466* LRTAZN –19.2490* LGNIPCAZN + 27.2354* LGNIPCDOL – 0.5863* CPI + 28.1671*$/M – 6.1659* LOPD + 48.3205)					

The coefficients of long–term relationships are presented in Table 5. (* P <0.05, * * P <0.01, *** P <0.001)

Table 6. ARDL Model Coefficients

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9

	DLCM	*DLRT*	*DLPC*	*DLPS*	*DLFBTP*	*DLNFP*	*DLRTTPC*	*DLTTFPPP*	*DLTTNFPPP*
DLCM (–1)	0.48								
LCM	0.09								
DLRT (–1)		–0.38							
LRT		0.23							
DLPC (–1)			–0.54						
LPC			0.84						
DLPS (–1)				0.45					
LPS				1.34					
DLFBTP (–1)					–0.53				
LFBTP					–0.23				
DLNFP (–1)						–0.74			
LNFP						0.12			
DLRTTPC (–1)							–0.37		
LRTTPC							0.25		
DLTTFPPP (–1)								–0.52	
LTTFPPP								–0.22	
DLTTNFPPP (–1)									–0.76
LTTNFPPP									0.143
DLAMS	0.16	0.08	0.79	–0.03	–0.28	0.07	0.09	–0.26	0.07
DLRTAZN	–0.09	0.03	0.83	0.93	–0.05	0.30	0.02	–0.05	0.31
DLGNIPCAZN	0.52	0.42	–2.57	–4.78	2.06	–1.35	0.36	2.03	–1.41
DLGNIPCDOL	–0.22	–0.32	1.87	5.20	–2.03	1.47	–0.25	–2.01	1.51
DCPI	0.00	–0.01	–0.01	0.01	–0.01	–0.01	–0.01	–0.01	–0.01
D$/M	–0.26	–0.14	1.50	3.52	–1.49	1.23	–0.10	–1.48	1.26
DLOPD	0.00	0.02	0.39	–0.17	0.04	–0.10	0.02	0.05	–0.10
LAMS	–0.02	–0.04	–0.46	–0.01	0.42	–0.27	–0.05	0.41	–0.27
LRTAZN	0.15	–0.07	–0.95	0.03	–0.42	0.61	–0.05	–0.45	0.60
LGNIPCAZN	0.29	0.28	3.66	4.65	–0.83	1.07	0.37	–0.80	1.15
LGNIPCDOL	–0.49	–0.43	–3.56	–6.33	1.01	–1.67	–0.53	1.00	–1.74
LOPD	0.00	0.04	–0.11	0.36	–0.06	0.26	0.04	–0.07	0.26
CPI	0.01	0.02	0.02	–0.01	0.02	0.02	0.02	0.02	0.02
$/M	–0.53	–0.56	–3.52	–5.13	0.89	–1.64	–0.64	0.87	–1.70
C	–0.57	–1.23	8.59	7.23	–0.41	–1.78	–0.83	–0.76	–1.46

Table 7. Error Correction (short run) Model Coefficients

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	DLCM	*DLRT*	*DLPC*	*DLPS*	*DLFBTP*	*DLNFP*	*DLRTTPC*	*DLTTFPPP*	*DLTTNFPPP*
DLCM (–1)	0.58**								
DLRT (–1)		0.63**							
DLPC (–1)			0.09						
DLPS (–1)				0.32					
DLFBTP (–1)					0.65***				
DLNFP (–1)						0.62**			
DLRTTPC (–1)							0.58**		
DLTTFPPP (–1)								0.67***	
DLTTNFPPP (–1)									0.61**
DLAMS	0.00	–0.10	0.25	–0.08	–0.01	–0.23	–0.09	–0.01	–0.22
DLRTAZN	0.18	0.26	1.02*	0.11	0.09	0.38	0.26	0.06	0.38
DLGNIPCAZN	0.48	0.67	0.02	0.47	0.90*	0.03	0.63	0.83*	0.02
DLGNIPCDOL	–0.25	–0.50	0.14	0.45	–0.64	0.01	–0.44	–0.59	0.02
DLOPD	–0.07	–0.06	–0.16*	–0.25**	–0.06	–0.03	–0.07	–0.05	–0.04
DCPI	0.01	0.01*	0.01	0.00	0.01*	0.01***	0.01**	0.01**	0.01***
D$/M	–0.25	–0.44	–0.02	0.25	–0.49	–0.14	–0.37	–0.46	–0.13
ECT(–1)	–0.32	–0.37	–0.92*	–0.92*	–0.61**	–0.19	–0.48	–0.60**	–0.21
C	0.01	0.01	0.03	–0.01	0.00	0.05	0.01	0.00	0.04

The results of the short–term and ECM models are summarized in this table 6 and 7.

Table 8. Diagnostic Test Results (LM Version)

	Normality Test (Jarque–Bera) JB	Heteroskedasticity Test: ARCH $\chi 2$	Heteroskedasticity Test: Breusch−Pagan−Godfrey	Breusch–Godfrey Serial Correlation LM Test: $\chi 2$	R^2	D_W
ARDL(1,1,1,1,1,1,1,1)	0.941543 0.624520	0.376852 0.5393	15.02612 0.4495	15.60705 0.0004	0.999974	2.826447
ARDL(1,0,0,1,0,1,0,0)	1.676410 0.432486	0.523910 0.4692	14.50096 0.1513	8.434873 0.0147	0.999934	2.994450
ARDL(1,1,1,1,1,1,1,1) @TREND	2.203066 0.332361	0.159762 0.6894	11.40167 0.7840	14.81376 0.0006	0.999918	2.427871

ARDL(1,1,1,1,1,1,1,0) @TREND	0.047571	1.267126	20.30525	14.95717	0.999853	3.128377
	0.976495	0.2603	0.1605	0.0006		
ARDL(1,0,0,0,0,0,0,0)	1.464940	0.080797	13.79801	1.149802	0.999651	2.280266
	0.480720	0.7762	0.0872	0.5628		
ARDL(1,0,0,0,0,0,0,0)	0.800718	0.499389	7.836633	3.576247	0.999700	2.265919
	0.670080	0.499389	0.4496	0.1673		
ARDL(1,0,0,0,0,0,0,0)	1.214108	0.563857	9.072827	2.376703	0.999837	2.551053
	0.544954	0.4527	0.3362	0.3047		
ARDL(1,0,0,0,0,0,0,0)	1.549410	0.017795	13.68171	1.294713	0.999575	2.294323
	0.460840	0.9039	0.0904	0.5234		
ARDL(1,0,0,0,0,0,0,0)	0.758486	0.408721	8.075529	3.429045	0.999658	2.264879
	0.684379	0.5226	0.4261	0.1800		

Table 9. Diagnostic Test Results (F Version)

	Normality Test (Jarque–Bera)JB	HeteroskedasticityTest: ARCH	Heteroskedasticity Test: Breusch−Pagan−Godfrey	Breusch–Godfrey Serial Correlation LM Test	CUSUM – 5%– Significance	CUSUM Squares– 5%– Significance
ARDL(1,1,1,1,1,1,1,1)	N/A	0.347192	0.861851	4.882585	No–Stably	No–Stably
	N/A	0.5626	0.6229	0.0844		
ARDL(1,0,0,1,0,1,0,0)	N/A	0.486142	2.127080	2.798126	Stably	Stably
	N/A	0.4941	0.1158	0.1135		
ARDL(1,1,1,1,1,1,1,1)	N/A	0.145655	0.336187	3.092107	Stably	Stably
@TREND	N/A	0.7070	0.9563	0.1867		
ARDL(1,1,1,1,1,1,1,0)	N/A	1.220065	4.792499	4.247493	Stably	Stably
@TREND	N/A	0.2831	0.0315	0.1025		
ARDL(1,0,0,0,0,0,0,0)	N/A	0.073385	2.733700	0.303302	Stably	Stably
	N/A	0.7894	0.0520	0.7444		
ARDL(1,0,0,0,0,0,0,0)	N/A	0.462834	0.899117	1.067609	Stably	Stably
	N/A	0.5045	0.5444	0.3769		
ARDL(1,0,0,0,0,0,0,0)	N/A	0.524232	1.140499	0.666140	Stably	Stably
	N/A	0.4779	0.3998	0.5332		
ARDL(1,0,0,0,0,0,0,0)	N/A	0.013395	2.672759	0.343918	Stably	Stably
	N/A	0.9090	0.0558	0.7163		
ARDL(1,0,0,0,0,0,0,0)	N/A	0.377135	0.942422	1.015551	Stably	Stably
	N/A	0.5464	0.5159	0.3938		

Legend: N/A–Not Applicable

Based on the outcomes, ARDL models (model 1) are significant at 5% to 1% and 0.1%, respectively. The regression equations are also adequate, as all diagnostic tests for Serial Correlation (Durbin–Watson test and Breusch–Godfrey test), heteroskedasticity (ARCH − Heteroskedasticity test and Breusch − Pagan − Godfrey – Heteroskedasticity test) and error normalization (Jarque–Bera test) have desireable results. All results of these tests are given in the table (Table 8 and Table 9). The stability of the long–run coefficient is examined by utilizing the short–run dynamics. When the ECM model given by equations is estimated, the cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) tests are implemented to assess the stability parameter (Pesaran and Pesaran 1997).

The results indicate that the coefficients are stable. This is because the plot of the CUSUM and CUSUMSQ statistic is located inside the critical bands of the 5% significant level of parameter stability.

6. Conclusion

The impact of population incomes, consumer price index on retail sales of products should be taken into account by economic entities, the population, as well as relevant governmental and non–governmental organizations, while carrying out activities at the micro and macro levels. By affecting on retail sales of products, price fluctuations in the world oil market will have inevitable impact on the situation of the effective demand. Factors affecting the retail sales of products have strong bonds with indicators such as wages, income, exchange rate etc.

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