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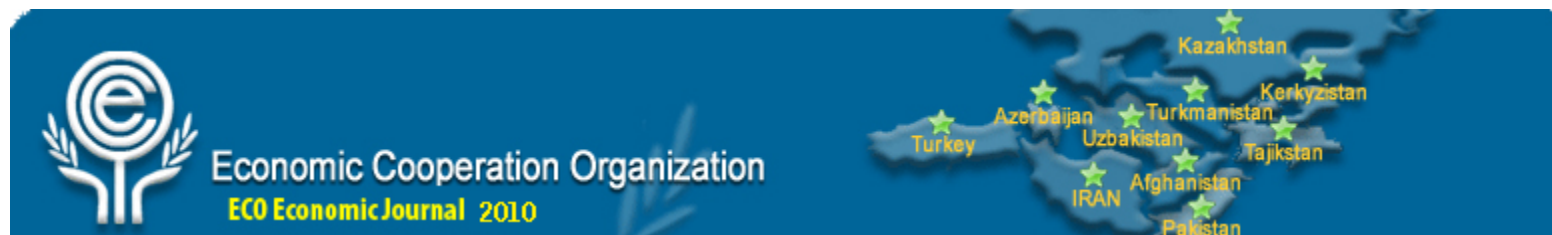
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The Impact of Real Exchange Rate on Non-Oil Exports: *The case of Azerbaijan*

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The Impact of Real Exchange Rate on Non-Oil Exports: The case of Azerbaijan

Fakhri Hasanov [1] and Ilaha Samadova[2]

Abstract

The paper investigates the impact of the real exchange rate on non-oil exports in Azerbaijan by applying Vector Error Correction Model.

The estimation results suggest that real exchange rate has negative impact on non-oil export performance while non-oil GDP affects positively in the long- and short-run. Error correction term indicates that short-run fluctuation can be adjusted into long-run equilibrium relationship.

Based on findings of the study can be concluded that appreciating real exchange rate is one of major factors that impede non-oil export growth.

Since promotion of non-oil export is one of the urgent issues of the strategic economic policy of Azerbaijan Republic then findings of this study may be useful for policymakers.

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Content

1. Introduction

Export earnings assume vital importance not only for developing, but also for developed countries. Developed countries mainly export capital and final goods, while the main part of export of developing countries consists of mining-industry goods especially natural resources. According to export-led growth hypothesis increased export can perform the role of "engine of economic growth" because it can increase employment, create profit, trigger greater productivity and lead to rise in accumulation of reserves allowing a country to balance their finances (Emilio (2001), Goldstein and Pevehouse (2008), Gibson and Michael (1992), McCombie and Thirlwall (1994)). In this context there are some challenges for countries with natural resource abundance such as oil in comparison with other countries. The main point is that in parallel with windfall of oil revenues these countries have to pay more attention to the development of the non-oil sector as well as its export performance (Sorsa, 1999)). Because in the most of the cases oil driven economic development leads to some undesirable consequences such as Dutch Disease in the oil rich countries.

In this regard Dutch Disease concept provides certain link between the real exchange rate and non-oil export. According to this concept the appreciation of a country's real exchange rate caused by the sharp rise in export of a booming resource sector draws capital and labour away from a country's manufacturing and agricultural sectors, which can lead to a decline in exports of agricultural and manufactured goods and inflate the price of non-tradable goods (Corden (1982) and Corden and Nearly (1984)). If we divide overall export of oil rich countries into oil and non-oil exports appreciation of real exchange rate which is specific for these countries negatively affects non-oil exports while export revenues of oil sector mainly depends on oil price in the world markets.

Above stated problem is also specific for Azerbaijan, one of the oil rich countries. According to official statistics the volume of non-oil export has decreased by 26.5 percent between 2004 and 2008 while appreciation of the real effective exchange rate has approximately doubled in the same period[3]. On the other hand, the share of non-oil export in the total export has decreased from 52.5 percent in

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[3] Statistical bulletin of Central Bank of Azerbaijan, 2008

2004 to 4.7 percent in 2008. These facts indicate the worsening of non-oil export performance and urgency for its promotion.

The main objective of this study is to analyze the impact of changes in the real exchange rate on the export performance of the non-oil sector and to suggest policy proposals which may be useful for policymakers in non-oil export promotion issues.

This study finds that appreciating exchange rate is one of the major factors that impede non-oil export growth while increase in value added of non-oil sector leads to raise in non-oil export earnings in Azerbaijan.

The study can contribute to existing empirical literature by investigating the influence of the exchange rate on non-oil exports in Azerbaijan. The rest of the paper is organized as following. *Literature review* section consists of reviewed relevant literatures, while *Data collection, Non-oil Export Equation and Employing methodology* section describes non-oil export equation, required data and underlying methodology. *Estimation issues and interpretation of results* section covers the estimations' outputs and interpretations of them. *Concluding remarks* section summarizes main findings of the study. Reviewed literatures are listed in the *Reference* section and estimation outputs mainly are placed in *Appendix*.

2. Literature Review

There is huge number of studies that investigate the impact of exchange rate on export. But according to our research objective we try mainly to focus on studies that investigate this relationship in case of oil dependent economies like Azerbaijan.

Bernardina (2004) investigates impacts of the real exchange rate, real non-oil GDP, and the world income on Russian non-oil export by using an Error Correction Model over the period 1994-2001. Author finds that there is a robust and negative long run co-integration relationship between the real exchange rate and Russian non-oil exports. Furthermore, the world income has positive effect on Russian non-oil export while real non-oil GDP causes a decline in non-oil export.

By using Static OLS and Fix Effect based on Two Stage LS Masoud and Rastegari (2008) estimate effects of certain factors as well as real exchange rate on non-oil export over the period 1995-2005. Study concludes that Iran's non-oil exports positively related to increase in population, per capita income and consumer price index while negatively depends on appreciation of real exchange rate.

Another study related to Iranian non-oil export comes from Sabuhi and Piri (2008). They explore the effects of exchange rate, export volume, domestic saffron production on price of saffron, Iran's major non-oil export good in the short- and long-run. Employing Autoregressive Distributed Lag (ARDL) model shows that appreciating exchange rate has statistically significant negative impact on export price of saffron while there is no significant relationship between export price and domestic production of Saffron in the long-run.

Sorsa (1999) analyzes Algerian non-oil export promotion issues in presence of oil sector dominancy over the period 1981-1997 and reveals that appreciation of real exchange rate is the major factor that impedes non-oil export growth and its diversification.

The effects of real exchange rate, its movements and volatility on the growth of non-oil export in Nigeria are studied by Ogun (1998) over the period 1960-1990. The results show that real exchange rate and also both its misalignment and volatility affect non-oil export growth adversely.

Oyejide (1986) examines effects of trade and exchange rate policies on Nigeria's agricultural export using Ordinary Least Squares (OLS) over the period 1960-1982 and concludes that appreciation of real exchange rate adversely influences to non-oil export especially during the oil boom.

Another study that investigates relationship between exchange rate and non-oil export goods in Nigeria comes from Yusuf and Edom (2007). By applying Johansen co-integration approach over the period 1970-2003 they reveal that depreciation of official exchange rate promotes export of round wood and sawn wood in Nigeria.

Adubi and Okunmadewa (1999) investigate impact of exchange rate and price indexes and also their volatilities on the agricultural export of Nigeria in the period 1986 to 1993. Results of ARIMA

and OLS estimations indicate that appreciation of exchange rate and its volatility have negative impacts on agricultural export earnings.

By applying OLS on the time series of relevant variables including exchange rate over the annual period of 1970-2005 Abolagba et al. (2010) find that appreciation of real exchange rate has statistically significant and negative impact on export of cocoa and rubber in Nigeria.

Ros (1993) analyzes Mexico's non-oil trade and industrialization experience during 1960-1990 and concludes that appreciation of real exchange rate due to oil revenues is harmful for non-oil export performance.

The influences of trade and exchange rate policies on agricultural export which is the main part of non-oil export of Cameroon is studied by Amin (1996) over the period 1971-1992. Study concludes that current exchange rate policy especially appreciation of national currency impedes agricultural export.

Mohamad et al. (2009) conduct panel data estimation to account for the role of the real exchange rate and other economic fundamentals such as macroeconomic stability, terms of trade, capital goods investment, external demand and human capital on the export performance of Indonesia, Malaysia, Singapore and Thailand. They find that appreciation of real exchange rate and also its misalignment and volatility have strong negative impact on export performance.

By employing Pooled Mean Group over the period of 1970 to 2003 Benbouziane and Benamar (2007) investigate the impact of exchange rate regime on the real sector in some Middle East and North Africa Countries including Algeria, Bahrain, Iran, Kuwait, Libya, Saudi Arabia, and Sudan which are oil rich. Study finds that as a whole, exchange rate overvaluation reduces competitiveness of manufactured goods in these countries.

Egert Balazs and Morales-Zumaquero (2005) estimates export functions both in nominal and real terms in the case of transition countries of Central and Eastern Europe including Russia over the period 1990-2005 by employing panel regression and ARDL modeling. They use domestic and

foreign income, foreign direct investment, relative prices, the nominal exchange rate for nominal exports, the real exchange rate for real exports, and a volatility measure of the nominal and the real exchange rates respectively as explanatory variables and conclude that in general appreciation of exchange rate (nominal or real terms) and also its volatility are harmful for export earnings.

3. Data collection, Non-oil Export Equation and Employing methodology

3.1. Data collection

Non-oil export in real terms (*X*). Since the export price index is unavailable for the entire estimation period, real non-oil exports are calculated as the ratio of nominal non-oil exports to weighted average of the consumer price indices of the main trading partners. The weights correspond to the share of the total trade turnover with the respective country.

The trade turnover based average of the consumer price index of main trade partners (CPI^F) is calculated based on prices and weights of country's main 13 trading partners as below:

$$CPI^F = \sum_{i=1}^{13} CPI_i^F \cdot W_i \qquad (1)$$

Where,

CPI_i^F – is a CPI i th main trading partner;

W_i – is a weight of i th main trading partner in our overall trade turnover.

Real effective exchange rate (*RER*). As a real exchange rate study uses real effective exchange rate.

Non-oil GDP net of non-oil net export in real terms (*Z*)**.** In order to avoid endogeneity we use non-oil GDP net of non-oil net exports as a control variable. This variable will be called "real non-oil GDP" hereafter. Since the deflator of non-oil GDP is not available we use CPI as a proxy for it. We calculate real values of Z as below:

$$Z = \frac{Nominal\ Non\ oil\ GDP - Nominal\ Non\ oil\ Net\ Export}{CPI} \qquad (2)$$

Time series data of all required variables are obtained from the official web page of Central Bank of Azerbaijan.

3.2. Non-oil Export Equation

Based on the conventional equations of supply of exports and by following the approach employed by Jongwanich (2007) our non-oil export equation is as below:

$$X = a_0 + a_1 \left(\frac{p^x}{\bar{p}^d} \right) + a_2 Z \qquad (3)$$

Where,

p^x – is an export price expressed in foreign currency;

$\bar{p}^d = \frac{p^d}{e}$; p^d – is a price of exportable in the domestic market expressed in local currency and

e – stands for nominal exchange rate (local currency per a unit of foreign currency).

If we replace $\bar{p}^d$ with $\frac{p^d}{e}$ then equation (3) becomes as below:

$$X = a_0 + a_1 \left(\frac{ep^x}{p^d} \right) + a_2 Z \qquad (4)$$

It is obvious that $\frac{ep^x}{p^d} = RER$ as indicated Tihomir (2004). Note that an increase in RER means a depreciation of the domestic currency in this definition.

Thus, our final export supply function seems as below:

$$X = a_0 + a_1 RER + a_2 Z \qquad (5)$$

3.3. Employing methodology

We estimate the impacts of the real effective exchange rate and real non-oil GDP on non-oil exports in real terms in the long- and short-run. In other words we construct Error Correction Model between variables in interest. In order to estimate co-integration relationship one can use Engle-Granger or Johansen approaches. But it is also emphasized by econometricians that application of Engle-Granger approach is not appropriate in the presence of more than two variables. The point is that Engle-Granger approach intends only one co-integrating equation between variables. But when we have more than two variables, say that three variables then it is possible existence of two co-integrating equation. Since we have three variables it is preferable to apply Johansen's co-integration method.

Thus, in order to test for co-integration we use the Johansen (1988) and Johansen and Juselius (1990) full information maximum likelihood of a Vector Error Correction Model. The model is given as follows:

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta y_{t-i} + \mu + \varepsilon_t$$

(6)

Where, y_t is a ($n \times 1$) vector of the n variables of interest, i.e. non-oil export in real terms, real effective exchange rate, real non-oil GDP, μ is a ($n \times 1$) vector of constants, Γ represents a ($n \times (k-1)$) matrix of short-run coefficients, ε_t denotes a ($n \times 1$) vector of white noise residuals, and Π is a ($n \times n$) coefficient matrix. If the matrix Π has reduced rank ($0 < r < n$), it can be split into a ($n \times r$) matrix of loading coefficients α, and a ($n \times r$) matrix of co-integrating vectors β. The former indicates the importance of the co-integration relationships in the individual equations of the system and of the speed of adjustment to disequilibrium, while the latter represents the long-term equilibrium relationship, so that $\Pi = \alpha \beta'$. k is number of lags, t denotes time and Δ is a difference operator.

Before estimating co-integrated vector-error correction model, the stochastic properties of the time series are assessed by performing unit-root tests. We are going to employ Augmented Dickey-Fuller

(1981) and Phillips-Perron (1988) for this purpose. Note that, the Augmented Dickey-Fuller and Phillips-Perron tests maintain the null hypothesis of non-stationarity of the time series.

4. Estimation issues and interpretation of results

4.1. Estimation procedures

All variables in estimation procedures are in their logarithm expression and denoted with small caps respectively[4]. Estimations cover the quarterly period of 2002Q3-2009Q3.

As stated in the methodological section we first conduct *Unit-Root Test*s by means of Augmented Dickey-Fuller and Phillips-Perron Tests. The tests results indicate that all variables (x, rer, z) are non-stationary in levels and stationary in first difference (See: Appendix, Table 2).

After ensuring that all variables are integrated of order one as a next step we moved to Johansen co-integration test procedures. We construct a VAR model of three endogenous variables, i.e. x, rer, z and include here constant and a dummy variable for the first quarter of 2005[5]. Then we seek the appropriate lag-length based on the VAR Lag Length Selection Criteria. Most of these criteria indicate that 4 lags are relevant (See: Appendix, Table 3) [6]. Thus, we estimate VAR with 4 lags and this specification has not any problem in terms of autocorrelation, normality and heteroskedasticity of the residuals as shown from Appendix, Table 4-6. Then we employed co-integration test. Both trace and Trace and Max-Eigenvalue tests indicate that there is one co-integrating equation between variables in four versions as indicated at the Appendix, Table 7. In order to choose appropriate one we estimate co-integration equations in all of these four specifications. The third specification is more relevant in terms of model selection criteria (See: Appendix, Table 8). Thus, co-integrating relationship between the non-oil export in real terms, real effective exchange rate and real non-oil

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[4] Note that all estimation procedures are performed in E-views 7.0 econometrical package.

[5] Dummy variable is included into VAR in order to capture sharp decrease of non-oil export in the first quarter of 2005 which mainly caused by deterioration of non-oil tradable and increasing in oil sector and starting appreciation of exchange rate.

[6] Although most of the lag selection criteria suggest 4 lags, we also estimate VAR in all lag length from 6 lags to 1 lag and conduct Johansen co-integration analysis. We reveal that the results are more robust and meaningful when we estimate VAR in 4 lags.

GDP is as below (see: Appendix, Table 8 for detailed information):

$$x = 1.68 + 1.63rer + 1.46z \qquad (7)$$

As given at the Table 8, column 4 in Appendix since the value and sign of error correction coefficient (-0.31) is as expected (i.e. it is in interval of (-1; 0) and statistically significant) we can conclude that there is stable co-integration between non-oil export in real terms, real effective exchange rate and real non-oil GDP. At the same time equation (7) is satisfied in term of autocorrelation, normality and heteroskedasticity of residuals (see: Appendix, Table 8, column 4).

After estimating long-run relationship we are going to examine how growth rates of real non-oil GDP and real effective exchange rate affect non-oil export in real terms in the short-run. For this purpose we estimate error correction model by excluding insignificant variables from the model we get more parsimonious specification as below:

Table 1: Short-run model

Dependent Variable: D(X)				
Independent Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECM_JOH(-1)	**-0.214564**	0.080819	-2.654874	**0.0148**
D(X(-1))	-0.353289	0.111630	-3.164828	0.0047
D(Z(-1))	-0.519433	0.215122	-2.414597	0.0250
D(Z(-4))	0.486856	0.200447	2.428850	0.0242
D(RER(-1))	4.184019	1.227734	3.407920	0.0026
D(RER(-3))	3.894444	1.633674	2.383857	0.0266
D_05Q1	-1.105419	0.272597	-4.055146	0.0006
C	0.050378	0.047895	1.051845	0.3048

Estimated short-run model is satisfactory in terms of coefficient test; residual test and coefficients stability tests as shown from Table 9-15 and Figure 1in the Appendix.

4.2. Interpretation of results

Long-run relationship

Based on the long-run estimation results we conclude that there is statistically significant co-integration between non-oil export in real terms, the real effective exchange rate, and real non-oil GDP. According to equation (7), **one percent** appreciation (depreciation) of real effective exchange

rate leads to **1.63 percent** decrease (increase) in non-oil export in real terms. This finding is in line with theory. This text-book relationship is crucial in the case of Azerbaijan due to increasing appreciation of exchange rate. Note that real effective exchange rate has appreciated about two times during the 2004-2008. According to long-run model to keep other factors in constant this appreciation has caused reduction of non-oil export in real terms approximately by 3.26 (1.63*2) times during the 2004-2008. This is quite high appreciation and it mainly sources from huge inflow of oil revenues into country. If we take into account that the real effective exchange rate has appreciating trend since 2004 then we can conclude that it is one of the major factors that impede non-oil export growth. Therefore, policymakers should take this fact into consideration in the non-oil export promotion issues, one of the urgent tasks of strategic economic policy of Azerbaijan Republic.

According to equation (7) keeping other factors in constant, **one percent** increase in real non-oil GDP causes **1.46 percent** raise in non-oil export in real terms. This finding is also consistent with our expectations. It is obvious that volume of export can expand as increase aggregate supply.

Short-run relationship

According to the short run model real effective exchange rate and real non-oil GDP have statistically significant impact on non-oil export in real term. Ceterius paribus a **one percent** increasing in real non-oil GDP growth with 4 lags results **0.49** percent raising in non-oil export growth in the short-run. Short-run impacts of real effective exchange rate on non-oil export are **4.18** with 1 lag and **3.89** with 3 lags respectively.

Error correction coefficient indicates that short-run fluctuation between variables in interest adjusts to long-run equilibrium relationship. Exactly saying 21 percent of disequilibrium is corrected to the long-run level within a quarter.

It is worth to note that we should be careful when we interpret our estimation results because of small number of observation.

5. Concluding remarks

We attempted shed light to relationship between real exchange rate and non-oil export, one of the important issues for Azerbaijani economy. Based on estimation outputs we can conclude that real effective exchange rate and real non-oil GDP has statistically significant impact on non-oil export both in the long- and short-run. In other words appreciation of real effective exchange rate has negative effect on non-oil export in real terms while real non-oil GDP has positive impacts. It also revealed that short-run fluctuation can be adjusted towards long-run equilibrium relationship. Long-run elasticities of non-oil export in real terms regarding with real effective exchange rate and real non-oil GDP are **1.63** and **1.46** respectively. Short-run impacts of real effective exchange rate on non-oil export are **4.18** with 1 lag and **3.89** with 3 lags respectively. Error correction term indicates that **21 percent** of disequilibrium is corrected toward the long-run level within a quarter.

Findings of this study are consistent with economic theory and also reality of Azerbaijani economy. According to theory in general appreciation of national currency negatively affects export earnings of country. This theoretical hypothesis is crucial in the case of Azerbaijan due to by one hand increasing appreciation of exchange rate which mainly sourced from huge inflow of oil revenues and by the other hand declining share of non-oil export caused by domination of oil sector in overall economy in recent years.

Based on results of the study can be concluded that (a) appreciating exchange rate is one of major factors that impede non-oil export growth; (b) increase in value added of non-oil sector leads to increase in non-oil export earnings.

Since promotion of non-oil export is one of the urgent issues of the strategic economic policy of Azerbaijan Republic then findings of this study may be useful for policymakers.

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Table 2: Results of Unit Root Tests

Variables	Test Method	In the level			In the first difference		
		Constant	Trend	Actual value	Constant	Trend	Actual value
x	*ADF*	No	No	0.144550	No	No	-5.609120***
	PP	No	No	0.340709	No	No	-19.07625***
z	*ADF*	Yes	Yes	-2.958867	Yes	No	-7.302980***
	PP	Yes	Yes	-4.475187	No	No	-5.320252***
rer	*ADF*	Yes	Yes	-1.786916	No	No	-3.576087***
	PP	Yes	Yes	-2.012322	No	No	-3.576087***
Note that *, ** and *** asterisks above actual values indicate statistical significance of actual value at the 10%, 5% and 1% significance levels respectively. Six lags are used as maximum and optimal lag is selected by Schwarz criterion automatically in ADF test.							

Table 3: Lag Order Selection

Endogenous variables: X RER Z		Exogenous variables: C D_05Q1				
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-0.632030	NA	0.000323	0.473716	0.759189	0.560988
1	64.20216	106.5133	6.04e-06	-3.514440	-2.800759	-3.296260
2	71.59215	10.55713	7.04e-06	-3.399439	-2.257550	-3.050352
3	88.94377	21.06982	4.22e-06	-3.995984	-2.425885	-3.515989
4	113.0624	**24.11858***	**1.69e-06***	-5.075883	**-3.077576***	**-4.464980***
5	122.8502	7.690447	2.12e-06	-5.132157	-2.705642	-4.390347
6	131.9543	5.202322	3.50e-06	-5.139590*	-2.284866	-4.266872
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error						
AIC: Akaike information criterion SC: Schwarz information criterion HQ: Hannan-Quinn information criterion						

Table 4: VAR Residual Normality Tests

Jarque-Bera	Prob.
1.966409	0.9228

Table 5: VAR Residual Heteroskedasticity Tests

Joint test:		
Chi-sq	df	Prob.
155.4630	150	0.3632

Table 6: VAR Residual Serial Correlation LM Tests

Lags	LM-Stat	Prob
1	10.30502	0.3264
2	7.220995	0.6141
3	13.79078	0.1300
4	14.02453	0.1215
5	3.668747	0.9318
6	4.474145	0.8775
7	8.513759	0.4833
8	1.481909	0.9973
9	10.01687	0.3491
10	3.727200	0.9284
11	4.025927	0.9097
12	16.85991	0.0510

Table 7: Co-integration Tests

Series: x rer z;	Exogenous series: D_05Q1;	Lags interval: 1 to 4		
Selected (0.05 level*) Number of Cointegrating Relations by Model				

Data Trend:	None	None	Linear	Linear	Quadratic
Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
	No Trend	No Trend	No Trend	Trend	Trend
Trace	1	1	1	1	0
Max-Eig	1	1	1	1	0

*Critical values based on MacKinnon-Haug-Michelis (1999)

Table 8: Co-integration Equations Specifications and Residuals Tests

	Co-integration Equations Specifications			
	No intercept or trend in CE or VAR	Intercept (no trend) in CE–no intercept in VAR	Intercept (no trend) in CE and VAR	Intercept and trend in CE–no trend in VAR
x	1.00000	1.00000	1.00000	1.00000
rer	1.393211	1.491799	1.631752	-0.262.464
t-statistics:	[-3.24841]	[2.33425]	[2.36360]	[- 0.12553]
z	1.656770	1.388286	1.461850	-0.503.368
t-statistics:	[-6.38877]	[5.16244]	[5.03225]	[-0.24603]
C		2.357456	1.678.826	6.093795
t-statistics:		[0.69515]		
@trend				0.111904
t-statistics:				[0.89282]
ECM coefficient	-0.314243	-0.35355	-0.307095	-0.315569
t-statistics:	[-3.93039]	[-3.86026]	[-3.24051]	[-2.93514]
Statistical Properties				
R-squared	0.929911	0.928631	**0.931315**	0.925588
Sum squared residuals	0.364519	0.37118	**0.357218**	0.387006
Log Likelihood	22.30961	22.04708	**22.60301**	21.44165
Akaike AIC	-0.573077	-0.554971	-0.524346	-0.444252
Schwarz SC	-0.086997	0.105103	**0.182876**	0.26297
Residuals Tests				
LM Test	OK	OK	OK	OK
Jarque-Bera	2.090579	1.873939	1.624069	1.916626
Prob.	0.9112	0.9309	0.9508	0.9272
White Heterosk. Test (Chi-sq)	169.1228	169.1684	166.8467	165.6696
Prob.	0.3347	0.3338	0.3807	0.4054

Table 9: Short-run estimation output

Dependent Variable: D(X)		Method: Least Squares		
Independent Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECM_JOH(-1)	-0.214564	0.080819	-2.654874	0.0148
D(X(-1))	-0.353289	0.111630	-3.164828	0.0047
D(Z_(-1))	-0.519433	0.215122	-2.414597	0.0250
D(Z_(-4))	0.486856	0.200447	2.428850	0.0242
D(RER(-1))	4.184019	1.227734	3.407920	0.0026
D(RER(-3))	3.894444	1.633674	2.383857	0.0266
D_05Q1	-1.105419	0.272597	-4.055146	0.0006
C	0.050378	0.047895	1.051845	0.3048
R-squared	0.808480	Mean dependent var		0.012414
Adjusted R-squared	0.744640	S.D. dependent var		0.430980
S.E. of regression	0.217788	Akaike info criterion		0.018360
Sum squared resid	0.996063	Schwarz criterion		0.395545
Log likelihood	7.733775	Hannan-Quinn criter.		0.136490
F-statistic	12.66413	Durbin-Watson stat		2.331871
Prob(F-statistic)	0.000003			

Table 10: Residuals Autocorrelation Test of Short-run Model

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. *| . |	. *| . |	1	-0.197	-0.197	1.2461	0.264
. *| . |	.**| . |	2	-0.195	-0.244	2.5157	0.284
. *| . |	.**| . |	3	-0.139	-0.259	3.1803	0.365
. |*. |	. | . |	4	0.119	-0.041	3.6887	0.450
. | . |	. *| . |	5	-0.038	-0.125	3.7427	0.587
. | . |	. | . |	6	0.053	-0.001	3.8533	0.697
. *| . |	. *| . |	7	-0.077	-0.087	4.0974	0.768
. | . |	. | . |	8	0.072	0.027	4.3163	0.828
. *| . |	.**| . |	9	-0.185	-0.210	5.8591	0.754
. | . |	. *| . |	10	-0.041	-0.199	5.9369	0.821
. |**. |	. |*. |	11	0.265	0.153	9.4390	0.581
. | . |	. | . |	12	0.039	0.029	9.5202	0.658

Table 11: Residuals Normality Test of Short-run Model

Jarque-Bera	Prob.
1.8944	0. 3878

Table 12: Residuals Serial Correlation Test of Short-run Model

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.714244	Prob. F(2,19)	0.2068
Obs*R-squared	4.433029	Prob. Chi-Square(2)	0.1090

**Table 13: Residuals ARCH Heteroskedasticity Test of Short-run Model**

F-statistic	0.436031	Prob. F(1,26)	0.5149
Obs*R-squared	0.461827	Prob. Chi-Square(1)	0.4968

Table 14: Residuals White Heteroskedasticity Test of Short-run Model

F-statistic	1.437604	Prob. F(7,21)	0.2430
Obs*R-squared	9.394824	Prob. Chi-Square(7)	0.2255
Scaled explained SS	2.843943	Prob. Chi-Square(7)	0.8991

Table 15: Ramsey Reset Test of Short-run Model

F-statistic	0.585630	Prob. F(1,20)	0.4531
Log likelihood ratio	0.836968	Prob. Chi-Square(1)	0.3603

Figure 1: Parameters Stability Tests of Short-run Model
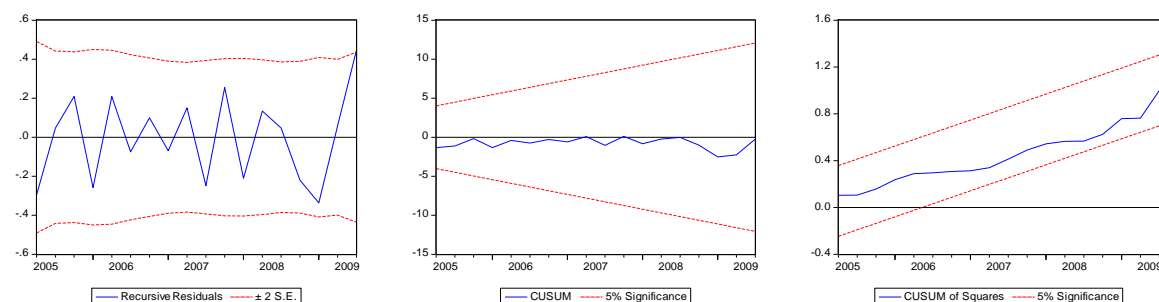
Industrialization and Dependency: the Case of Iran

By

Akbar E. Torbat*

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In the past few years, Iran has rapidly progressed in various scientific and technological fields. Particularly, it has advanced in petrochemical, pharmaceutical, aerospace, defense, and heavy industries. Despite of being under economic sanctions by the United States for about three decades, the country seems to be leaping forward to become an emerging industrialized country. As it appears, no other country in the region has achieved such rapid progress in a short time. In this paper, industrial development in Iran is reviewed in the context of the dependency theory in order to understand Iran's success in pursuing independent development policy. To evaluate Iran's relative progress better, the key features of Iran's economy have been compared with Turkey which is considered to be the only newly industrialized country in the region. Also, Iran and Turkey's experience with neoliberal economic policies is briefly reviewed. Finally, Iran's economic relations with other countries are discussed in the light of the imposed economic sanctions and the recent global economic crisis.

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Iran's Technological Progress

Despite of the government's emphasis on Islamic subjects in the education curricula, Iran has advanced tremendously in secular sciences. Studies reveal Iran that has been the fastest growing country in scientific capabilities in the world during the past two decades.[1] Using the number of scientific publications available in the Web of Science database,[2] Eric Archambault has found that the overall growth of scientific publication in the Middle East has been four times the world average growth -- Iran has had the fastest growth rate followed by Turkey, while contribution share of the countries in North America to the world science has dramatically declined since 1980. The growth of Europe and Africa has been rather unchanged in the past three decades. In his paper, Archambault has tabulated data that shows Iran's publications in organic and nuclear chemistry, nuclear and particle physics, and other subfields of physics have increased substantially faster than the world average.[3] Archambault says Iran's scientific achievements in the past few years may be in part due to its nuclear technology development program. Based on his Growth Index measure, Iran has progressed 11 times faster than the world average, 2 times faster than Turkey and about 12 times faster than Israel in the past three decades.[4] According to his paper, Iran's scientific advancement has been faster than any country, including Brazil, Russia, India, and China. Even though this study is based on quantitative measurement of growth by the number of publications and not qualitative achievement, it still shows tremendous progress for Iran.

 Furthermore, Iranian students' success in international arena is an evidence of Iran's progress in science. Students from top Iranian universities have achieved high ranks in the international Science Olympics, wining prizes in the areas of physics, mathematics, chemistry and robotics. Bruce A. Wooley, a former chairman of the Electrical Engineering Department at Stanford University has said Sharif University of Technology in Tehran has one of the best undergraduate electrical-engineering programs in the world.[5] The Genius of Iranian scientists and engineers is the key to Iran's technological progress. Iran's scientists and engineers are native, as opposed to the United States and the Gulf Co-operation Council (GCC) countries that employ a large number of foreign born scientists and engineers.

Technological progress is commonly referred to as new and better ways of performing customary tasks in production of goods and services. It is the most important contributor to economic growth. Despite the West unwillingness to provide Iran with advanced technology, the country has rapidly progressed on its own in science and technology. The tangible evidence of Iran's technological progress is the breakthroughs it has achieved in heavy industries, aerospace, advanced weapons, and in many engineering and scientific fields. While before the revolution Iran's manufacturing was mostly limited to assembly of foreign items; at present, Iran manufactures a variety of advanced civilian and military products. Iran has its own indigenous defense industry, which builds fighter jets, helicopters, drones, rockets, satellites, destroyers, tanks, armored personnel carriers, torpedoes, and various kinds of

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[1]Archambault, Eric, 30 Years in Science , Secular Movements in Knowledge Creation , 2010, a paper published by Science-Matrix , http://www.science-metrix.com/30years-Paper.pdf
[2] Web of Science http://thomsonreuters.com/products_services/science/science_products/a-z/web_of_science
[3] Archambault, Eric, Table 1, page 6
[4] Ibid P.1-2
[5] Asefati, Dean of Stanford: Sharif University Best in World, 26-, April, 2008
http://www.iranian.com/main/blog/asefati/dean-stanford-sharif-unversity-best-world

missiles. Iran's progress particularly in nuclear technology has concerned the West because of its dual application in development of nuclear weapons.

On February 3, 2009, Iran announced it had launched its first domestically made satellite called Omid into the earth orbit. Launching of the satellite stunned the West as it did the Soviet's launching of Spatnic into space in 1962. The Guardian reported "in another achievement for Iranian scientists under sanctions, Iran launched its first homemade Omid satellite into orbit …."[6] Also, the New Scientist reported "The evidence is mounting that the Iranian rocket recently used to launch a satellite was more powerful and advanced than initially thought." [7] Referring to Iran's recent successes in buildup of its advanced defense capabilities and launching its first homegrown satellite, on the thirtieth anniversary of Iran's 1979 revolution, President Ahmadinejad said "Iran today is a real and true superpower", and the country no longer faces threats from abroad.

In the modern world, competition among nations for power has become competition for developing advanced technologies. Following progress in technological innovations, the leading European countries beginning with Britain in the eighteen century became industrialized and emerged as great powers. Subsequently, prominence of Germany in military technology during the first half of the twentieth century made it a great power. [8] Later, Russia became a superpower after achieving some technological breakthrough in 1950s and its success to put the first man in the earth orbit. It remains to be seen how much Iran's national power has increased as a result of its recent progress in science and Technology.

 For a country that underwent eight years of imposed war with Iraq, suffered a severe brain drain of some of its best professionals and entrepreneurs after the revolution, and has been under sanctions for almost three decades, it is impressive to see the level of technological progress that has been achieved. But what is the reason behind this startling progress, even though it can be rudimentary as compared to technological breakthroughs in the advanced industrialized countries? The answer must be Iran's policy of self-reliance. That proves dependency is a barrier to industrial development. Some may argue that oil revenues are the underlying reason for Iran's recent progress. That could be a significant factor but it is not the primary reason as the other oil exporting countries in the region have not progressed to that level.   Industrial development in most oil exporting countries has been negligible and commonly less than some resource- poor countries. Despite large increases in their oil revenues, they have not been able to establish their basic industrial infrastructure. They are still largely dependent on the industrialized countries for basic manufactured products. That is largely the case for the oil-rich GCC countries. Iran's success in industrial development is an exception in the region.

The Dependency Theory and Development

In recent years the dependency theory has re-emerged as an analytical framework to explain the economic relations between the developed and the developing countries. In 1950s, Raul Prebish argued

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[6] Tait, Robert, Iran launches first domestically produced satellite Omid launch likely to stoke western fears of missile capabilities, 3 February 2009 , http://www.guardian.co.uk/world/2009/feb/03/iran-satellite-launch-omid, viewed September 17, 2010..

[7] New Scientist, Evidence is mounting that Iran used beefed-up rocket, http://www.newscientist.com/article/dn16619-evidence-is-mounting-that-iran-used-beefedup-rocket.html?full=true&print=true , viewed September 17, 2010.

[8] Morgenthau, Hans, *Politic among Nations* , Fourth Edition, Alfred A Knopf, (1968), p.113-5.

"real world economic relations between the mainly industrial **center** and the mainly agricultural-and extractive **periphery** (terms made famous by Prebisch) did not conform to principles of classical or neo-classical theory." In his view, a better metaphor or theory to explain such relations was **unequal exchange**. [9]
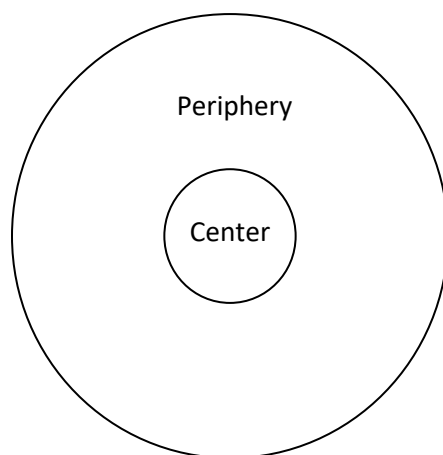

Figure 1. Schematic Diagram of the Center Periphery Model

Classical free trade theories such as the absolute and comparative advantage theories do not adequately describe gains from trades between the developed and developing countries. One criticism is that these theories are examined under too many unrealistic assumptions and in particular ignore the dynamic of international trade. The developed countries commonly export manufactured products and "soft" goods to developing countries in exchange for primary goods such as raw materials. For example a computer software package that has negligible marginal cost can be exchanged for some amount of crude oil, a scarce nonrenewable resource. Hence, the developed countries obviously gain much more from this kind of trade than the developing countries, for that reason, such trade is referred to as unequal exchange.

Dependency theorists argue that international related factors in general and in particular the dependence of the underdeveloped countries on the imperial powers has caused their underdevelopment. The underdeveloped countries that constitute the periphery have been forced to be in the existing situation by the countries in the center. Any country in the periphery that wants to get out of that relationship will be faced with sanctions and military interventions by the countries in the center. That explains why Iran has been under pressure of economic sanctions and threat of military interventions because it has tried to leave out of the center periphery relationships. It is in the benefit of the industrialized countries to keep the resource-rich countries in the periphery status and do not help them to be industrialized. They want to continue to export manufactured products in exchange for the primary goods and raw materials that they badly need to import. This trade arrangement will help them to balance their trade deficits.

Dependency theorists say industrialized countries possess monopolies on some key technologies and manufactured products that are exported to the Third World countries by the multinational corporations (MNCs) and that leads to unequal exchange. Transfer of technology through MNCs is very

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[9] Love, Joseph L., "Raul Prebisch and Origins of the Doctrine of Unequal Exchange", Latin American Research Review, 15:3, pp. 45-72. Quoted in Robert A. Packenham, *The Dependency Movement*., Harvard University Press,(1992), p.16.

limited due to the fact that they tightly control the key information on their design and manufacturing process that is referred to as internalization. This leads to centralization of research and development in their home base that is in conflict with the developing countries' desire for domestic technological independence. This makes the underdeveloped countries dependent on the advanced technologies invented and produced in the developed countries.   Technology dependence refers to lack of means in the underdeveloped countries to master know-how to produce advanced technology products. If a country cannot possess the means to produce such products, it has to be dependent to import them from advanced countries at unequal exchange. This arrangement normally benefits the advanced countries that exchange manufactured goods for primary goods in terms of trade in their favor. This trade arrangement perpetuates underdevelopment and technology dependency that results from the influence of advanced countries over the economic and political sovereignty of the Third World countries. A number of elites in the developing countries act as compradors sacrificing their countries interests for personal gains to bring about that trade relationships.

Furthermore, some developing countries are dependent on financial capital from the developed countries. They need to borrow from the financial institutions in the developed countries for financing their development projects. The oil-rich countries such as Iran normally do not need much to borrow from abroad if they receive sufficient exported oil revenues. The international financial institutions commonly make restrictions on the budgetary and economic policies of the developing countries that borrow in exchange for giving loans that causes them more dependency. In short, technological and financial dependency undermines political sovereignty of the developing countries.

There are two widely known strategies for promoting industrialization in the developing countries. One strategy advocates import substitution industrialization (ISI) and the other support export led industrialization (ELI). The decision to adopt one versus the other is contentious and largely depends on economic and natural resources of a country as well as the geopolitical factors that affect the country. ISI originated from the works of dependency theorists.[10] It is theoretically based on the Prebisch-Singer thesis and is intended to support the infant industries. It is argued a country should attempt to reduce its foreign dependency through domestic production of manufactured products that can be substituted for imported products. ISI discourages external competition from imports into the markets of the targeted industries by tariffs, devalued currencies and other factors. This strategy was adopted by advanced countries in early stage of their industrialization in order to promote their infant industries. ELI is another strategy that speeds-up the industrialization process in a country through exporting goods for which the nation has a comparative advantage. Export-led growth implies opening domestic markets to foreign competition in exchange for market access in other countries. It encourages reducing tariff barriers, floating exchange rate, and often devaluation of national currency to facilitate exports. ELI policy was employed by the national economies of the Asian Tigers: Hong Kong, South Korea, Taiwan and Singapore, even though, these economies had strong barriers on imports in the beginning of their industrialization during the 1960s-1980s. The Asian Tigers began their industrialization by assembling manufactured products for US and Japan markets. They now have reached to the stage that they exports advanced technical products in completion with advanced countries.   S. Korea became industrialized with the help of government investments and export led policies, but this has rarely happened in the resource-rich countries especially in the Persian Gulf region and Latin America. An explanation for lack of progress in these countries' industrializations is the constraint within the center periphery relationship that has lingered from the colonial era. This constraint however was changed in Iran after the 1979 revolution. Even though the country has been subject to external pressures under

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[10] Reynolds, Lloyd G. *Image and Reality in Economic Development*, Yale University Press, New Haven (1977), p.165.

economic sanctions, but it has strived to become rather autonomous of political influence of the great powers and is marching to become industrialized.

Most developing countries undermine their political sovereignty due to dependency to the developed countries for their industrial development. Iran's technological progress can be a proof of success in independent industrial development. Because of its self-reliant policies, Iran was not affected by the global economic crisis in 2008-10 as some developing countries did in Eastern Europe that are dependent on capital flow and technological know-how from the West, or the countries in East Asia that are dependent on exporting their manufactured products to the West. The Asian Tigers' export dependency to the West caused them economic downturn due to lack of demand for their products in the West. Iran self-reliance policy has worked better than the Asian Tigers' export led development strategy. The economic sanctions imposed on Iran have been a blessing in disguise because they have curtailed the country's external economic dependency. Yet Iran's economy is still heavily dependent on crude oil export, but this dependency is rather asymmetric; which means oil importing countries are more dependent on Iran's oil than Iran is dependent on their products. Whether Iran can continue to show rapid technological progress depends on how successful the West will be to suppress Iran's progress with tightening sanctions. President Mahmoud Ahmadinejad has said repeatedly that the West sanctions would only strengthen Iran's technological progress by encouraging it to become more self-sufficient.[11]

Industrialization in Iran

Increase in industrial capacity is referred to as industrialization. Industrial capacity is the size of variety of manufacturing processes and plants in a country, especially in heavy industries that can transform raw materials to usable products. In other words, industrialization is expansion of a country's factories, mills, mines, power plants, railways and the like, especially activities involved in manufacturing and establishment of modern economic infrastructure. Industrialization is a continuous process; it involves change in economic structure from merely handicraft activities to modern production process using skilled labor and advanced technology. Industrialization is a crucial factor to enhance economic growth and is a major contributor to modernization and national power. A newly industrialized country (NIE) is generally more advanced than a typical developing country but not yet fully developed. Such a country of course must show rapid technological progress and economic expansion. The following is a brief review of industrialization process in Iran and an examination of Iran's progress to become a newly industrialized country.

Historical review of industrial development in Iran has been done by a number of authors. For instance, Julian Bharier has studied the development of large-scale industries in Iran from the beginning of twentieth century to 1970. He says industrialization in Iran progressed after 1929, and more intensely between 1939-38.[12] It then interrupted for several years due to occupation of Iran by the Allied forces during the World War Two and the damages that it resulted. It then continued to progress starting in late 1950s, when the number of industrial enterprises significantly grew, and the value of manufacturing output rose about four times from 1959 to 1966.[13] Overall, he concludes Iran's manufacturing industries

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[11] Dareini, Ali Akbar, Ahmadinejad: Sanctions aid, rather than hurt, Iran, April 4, 2010
http://www.guardian.co.uk/world/feedarticle/9016818 , viewed September 17, 2010.
[12] Bharier, Julian, *Economic Development in Iran: 1900-1970*, Oxford University Press, New York (1971) p. 172.
[13] Ibid pp. 186-190.

progressed during the seventy year period but were heavily protected and subsidized due to their infancy and most of them did not reach the maturity stage.[14] More recently, Hadi Salehi Esfahani and M. Hashem Pesaran have studied the Iranian economy during the past century. They say "in the course of 20th century, Iran's economy transformed from a relatively simple agrarian system into a complex and industrialized one with a much higher level of income." They believe "a great part of this transformation came about as a result of Iran's ability to engage in global markets, particularly through imports of knowledge, technology, and capital and intermediate goods."[15] The Pahlavi regime adopted the import substitution strategy to promote industrialization in Iran. Heavy import barriers were imposed on some manufactured products in order to protect domestic infant industries and shift Iran's largely agrarian economy toward the manufacturing sector. In the late1960s, Iran's modern manufacturing sector was primarily consisted of the automobile and household appliance industries. Since most parts had to be imported and assembled in Iran, the industrial sector was heavily dependent on supply of foreign made parts and intermediate inputs.

Also, Hassan Hakimian and Massoud Karshenas have done a comparative study of Iran's economic performance over the period 1960 -1996. They find Iran's economy grew strongly until 1977, at which time began lagging behind as compare to its peers. They specifically compare the growth performance of Iran's economy with Turkey and S. Korea by using a number of economic indicators, including growth of output, employment, productivity and real wages.[16] Their study show in 1960 per capita income in Iran was nearly two times of Turkey and more than three times of South Korea; and in 1975, it was more than double of Turkey and 2.5 times of S. Korea. However, by late 1970s, per capita income in Iran rapidly declined while per capita income in Turkey and S. Korea continued to grow and superseded Iran by 1990.[17] Hakimian and Karshenas further show growth rate of manufacturing output in Iran was about 1.5 times of Turkey in 1963-1977 period, but it fell to about one third of Turkey in 1977-96 period.[18] During which time Korea consistently had higher manufacturing output relative to both countries.

Hakimian and Karshenas say the strategy of promoting manufacturing exports was the main stimulus of Korea's economic growth and Turkey also had adopted similar export promotion strategy. In contrast, Iran had pursued policy of import substitution before revolution and that had been continued after the revolution. However this does not imply that Iran strategy of import substitution was the cause of Iran's lagging behind its peers. Because the multiple exchange rates regime that was enforced for a period of time after the revolution and the lack of adjustment for purchasing power parity exchange rate make the comparison rather incompatible. Furthermore, Iran opened its economy to neoliberal reforms in early 1990s but it ran to difficulties and had to be partly abandoned. Similarly, a few decades of neoliberal reforms in Turkey that had begun in early 1980s led to high inflation and a severe financial crisis by early 2000s. Moreover, Iran encountered an 8-yearr war with Iraq, while Turkey and S. Korea continued to grow without experiencing any noticeable international conflicts. Korea has had special geopolitical factors in its favor. After the Koreas' war (1950-53), the South portion benefited extensively from the US financial and political support that was intended to prevent spread of communism from

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[14] Ibid. 193.

[15] Hadi Salehi Esfahani and M. Hashem Pesaran, The Iranian Economy in the Twentieth Century: A Global Perspective, *Iranian Studies*, Volume 42, Issue 2, April 2009, pages 177-211.

[16] Parvin Alizadeh, Hassan Hakimian, and Massoud Karshenas, *The economy of Iran: dilemmas of an Islamic stat*e, see Chapter1 "Dilemmas and Perspectives for Economic reform and reconstruction in Iran" pp. 29-63, I. B. Tauris (2001)

[17] Ibid p. 32.

[18] Ibid p.38.

China and North Korea. It also benefited from capital and licensing of Japanese companies. Capital flowed in to the country to take advantage of very cheap and productive labor force. In contrast, Iran was under US sanctions from time to time which impeded its development. Hakimian and Karshenas indicate Iran's high dependency on oil export was one of the problems of its economy which is true. Nevertheless, considering Iran's vast oil and gas resources, the petroleum industry should naturally be its primary economic lifeline. But the point is Iran should export much less crude oil and instead promote its refined and petrochemical products exports. That would establish linkages with other sectors of its economy and accelerate economic growth.

The degree that a country has progressed to be industrialized is rather judgmental. However, looking at the key industries of a country, the number of industrial employees, the size of industrial output, and the volume of manufactured goods that it exports are helpful to get a quantitative measure of the degree of industrialization in a country. This study is a brief evaluation of industrialization process in Iran. An extensive evaluation would need much more information and data than is provided here.

Iran's program to promote industrialization actively started in mid 1960s. The foundation for heavy industries began by establishment of a number manufacturing facilities throughout the country, including a machine tool factory in Tabriz and machine manufacturing plant in Arak in late 1960s. Also the first Steel Plant in Esfahan began to be constructed at the same time and became operational in 1973-74.[19] However, the revolution and the eight-year war with Iraq postponed the country's self-sufficiency goal in industrial production. Iran's industries further expanded after the Iraq war. Oil, petrochemical, and heavy industries have especially grown to substantial size. These industries have increased the size of industrial labor force in the country. In 1999, the size of manufacturing labor force was 2,551,962 or 17.5% of the 14,571,572 total labor force, and the share of the entire industrial workers, which includes mining, manufacturing, utility, and construction was 30.6%.[20] In 2009 the industrial workers increased to 6,675,048 or 31.8% of 23,840,676 total labor forces.[21] Thus within 10 years, the share of industrial workers in the total labor force has increased by merely 1.2% because most of increase in the labor force has gone to the service sector.

Heavy industries provide the basis for manufacturing arms and relevant materials for defense. Without industrial plants a country cannot domestically build and maintain an indigenous military establishment. Iran has succeeded to expand its heavy industries. Iran's iron and steel industry have rapidly advanced and according to International Iron and Steel Institute Iran has become the largest producer of crude steel in the Middle East. In 2008, Iran produced 9,964 thousand metric tons of crude steel as compared to 26,806 by Turkey that is classified under Europe.[22] Iranian steel mills and other facilities transform Iran's vast raw materials to industrial products and mechanized weapons to boast defense.

Iran's largest industrial sector is oil and petrochemical. Iran possesses expertise and capabilities in oil refinery, exploration, and drilling. The petrochemicals industry expansion has partly helped to diversify Iran's sizeable crude oil export. The National Petrochemicals Company has now positioned itself in the markets as a viable exporter to various countries in Asia and Europe. Iran's petrochemical export has grown substantially in recent years. Large petrochemical complexes and oil refineries have been

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[19] Amuzegar, Jahangir, *Iran: an Economic Profile*, the Middle East Institute, (1977), p. 90
[20] *Iran Statistical Yearbook*, 1378 (2001), Statistical Center of Iran, pp 106-109.
[21]Markaz Amar Iran http://www.amar.org.ir/
[22] World Steel Association, *Steel Statistical Yearbook 2009*
http://www.worldsteel.org/pictures/publicationfiles/Steel%20Statistical%20Yearbook%202009.pdf , p. 4

established in major cities including Arak, Shiraz, Tabriz, Bandar Abbas, and Isfahan.[23] Iran shares with Qatar the South Pars / North Dome Gas-Condensate field that is the largest natural gas field in the world. Iran's portion called the South Pars Gas field contains 450 trillion C.F. of gas equal to about 6.8% of the world gas reserves.[24] A variety of downstream petrochemical industries have been established in Asalluyeh that is the closest port to this huge field and is a part of the Pars Special Economic Energy Zone in the Persian Gulf.[25]

Iran's automobile industry has had a huge progress. Iran now manufactures different kinds of buses, cars, tractors and trucks. It is the second most active industry in the country, after oil and gas industry. According to OICA survey, in 2008 Iran produced 1,051,430 automobiles, close to 1,147,110 units produced by turkey in that year.[26] Iran's automobile manufacturing has progressed benefiting from high tariffs imposed on imported cars. Iran is now the largest car manufacturer in the Middle East. The country's two leading carmakers, Saipa and Iran Khodro produced more than 1.4 million vehicles in 2009.[27] Iran Khodro and Saipa, have respectively about 60% and 35% shares of the domestic market.[28] Major auto makers in Western Europe, Japan, South Korea, and China have also established assembly plants jointly with the Iranian companies. At the time that the major auto makers in the West have suffered contractions and bankruptcies, Iran's auto industry is thriving. Iran's auto makers have lately designed and built complete homegrown automobiles. That is a technological breakthrough for Iran, although the automobiles may not be as advanced as the competing foreign cars. In December, 2008, Saipa announced its first completely designed and domestically manufactured car called Tiba/Miniatur. In April 2009, the other auto manufacturer Iran Khodro announced the second entirely built automobile at home called Rana or Navand. The cars are manufactured in commercial scale this year. Iran also exports and assembles cars abroad. For example, Iran Khodro assembly plant has produced few hundred cars in Thies 60 km east of Dakar that are used as taxies in Senegal.[29] In May 2010, Saipa opened a large automotive assembly plant in Kashan. This plant is the largest auto assembly factory in the Middle East with a capacity of producing 150,000 cars annually. That would add about 15 percent to Iran's auto production capacity. [30] The plant is entirely Iranian-designed, even though 40 percent of its equipment was imported.   In this plant a new vehicle called Tiba or Deer that is entirely designed domestically is manufactured.

Iran manufactures various machineries and tractors in Tabriz and Arak. Also the pharmaceutical industry has grown tremendously and has been able to produce about 95 per cent of medicines consumed in the country domestically.[31] Other industries including mines and minerals, especially copper and aluminum, casting, pipes and profile, and rubber are growing. Overall, it appears Iran is

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[23] Business Recorder, Pakistan Financial daily, Feb. 11, 2010 , viewed September 17, 2010. http://www.brecorder.com/index.php?id=1019611&currPageNo=1&query=&search=&term=&supDate=m

[24] Asalluyeh, http://www.assaluyeh.com/main-en.php

[25] Pars Special Economic Energy Zone (PSEEZ), http://www.pseez.ir/home-en.html

[26] OICA survey, world motor vehicle production by country 2007-2008, http://oica.net/wp-content/uploads/all-vehicles.pdf

[27] Iran Press TV, http://www.presstv.ir/detail.aspx?id=125922&sectionid=351020102

[28] Atieh Bahar Consulting, http://www.atiehbahar.com/Resource.aspx?n=1000042 , viewed September 17, 2010.

[29] *The Economist*, Feb 4th 2010, Dakar and Nairobi, http://www.economist.com/world/middle-east/displaystory.cfm?story_id=15453225, Iran and Israel in Africa, s search for allies in a hostile world.

[30] *Iran Times*, May 14, 2010 p.3, Giant auto plant opens to make first all-Iran car,

[31] Nasoohi, Sasan , Iran Pharmaceutical Industry, August 24, 2008, http://iran-pharma.blogspot.com/2008/08/iran-pharmaceutical-industry.html

becoming industrialized faster than other countries in the region. In the following section, the key features of Iran's economy and the size of its industrial sector are compared with Turkey in order to evaluate Iran's comparable development.

 Iran's Economy versus Turkey

To understand Iran's industrial progress, it is necessary to compare Iran to at least one of the countries in the region. The only country in the region that has had similar progress and is believed to be a newly industrialized country is Turkey. Hence, Iran's key economic features are compared with Turkey to get a sense of the two countries comparable developments.

A basic measure of economic development is per capita national income that is limited to only monetary income and ignores other development parameters.   In 2007, Iran's Gross national income per capita was $3470 or $10,800 in terms of purchasing power parity (PPP). It is unrealistic to get a time series data for per capita GDP in US dollar, because until 2002, Iran had multiple exchange rates. However, looking at real GDP growth rates shows income has improved in the country. An estimate of per capita PPP GDP for 2009 in the following table shows Iran's per capita income has surpassed Turkey.

Key Economic Data: Iran and Turkey – 2009 Estimate

Country	Population	GDP Billion	GDP PPP billion	Per Capita GDP PPP	Unemployment rate	Inflation Rate	Current Account Balance Billion	External Debt billion	Public Debt % of GDP
Iran	67??	$335	$876	$12,990	11.8 %	13.5%	$26.53	$18	16.7%
Turkey	78	$608	$863	$11,200	14.1%	6.3%	-$13.96	$274	46%

Source: The World Factbook[32]

The following table shows historical annual growth rate of real GDP for both countries. As is shown, Iran has had respectable growth rate and its economy is expected to grow at about 3% on the average till 2015.

Real GDP Annual Growth Rate – Iran and Turkey

Country	Average									Projection		
	1992-2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2015
Iran	2.9	7.5	7.2	5.1	4.7	5.8	7.8	2.3	1.8	3.0	3.2	3.2
Turkey	3.0	6.2	5.3	9.4	8.4	6.9	4.7	0.7	−4.7	5.2	3.4	4.0

Source: World Development Outlook, Table A4 Real GDP Growth pp. 150-160[33]

Despite economic sanctions imposed on Iran and the global economic crisis, Iran's economy has grown in moderate pace in the past few years. In 2008/09, growth on the GDP was about 8% and inflation declined from 22.5% to current rate of about 10%. Tehran Stock Exchange Price Index (TEPIX) increased

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[32] The Central Intelligence Agency, https://www.cia.gov/library/publications/the-world-factbook/geos/ir.html , visited July, 3, 2010.
[33] *World Economic Outlook* , International Monetary Fund, April 2010 http://www.imf.org/external/pubs/ft/weo/2010/01/pdf/text.pdf

about 60% in 2009/10 after declining 21% in 2008/09 due to the global economic crisis.[34] Similarly the Istanbul Stock Exchange National 100 index had huge gain of about 100 % in 2009 after crashing in 2008.[35]

A better measure of progress is Human Development Index (HDI), which in addition to the per capita national income has two more components that are longevity and adult literacy rate. As the following table shows, Iran's development indicators have markedly improved in recent years. In 2007 Iran's HDI index was 0 .782 versus Turkey 0.802, and since 1980 both countries' indices have improved. In 1980 Turkey's HDI index was 12% higher than Iran, while in 2007 was only 3% higher. This means Iran's HDI is improving rapidly to reach Turkey soon. In the latest Human Development Report, Iran is ranked 84 as compared to Turkey that is ranked 79 out of 182 countries.[36]

Human Development Index   1980 - 2007

Country	HDI Rank	1980	1985	1990	1995	2000	2005	2006	2007
Turkey	79	0.628	0.674	0.705	0.730	0.758	0.796	0.802	0.806
Iran	88	0.561	0.620	0.672	0.712	0.738	0.773	0.777	0.782

Source: Human Development Report 2009, United Nation

HDI components show Iran is a bit lagging behind Turkey. In 2007, Iran's life expectancy was 71.2 years, adult literacy rate was 82.3%, and PPP GDP was $10,955. In that same year, Turkey's life expectancy was 71.7 years, adult literacy rate 0.91% and PPP GDP $12,955. This shows substantial improvement as compared to Iran's life expectancy of 63 years, literacy rate of 54%, and $2,489 per capita income in 1990.[37] In Turkey life expectancy was 67 year, literacy rate 81% and per capita income $1,630 in the corresponding year. In 2008/09, Iran's literacy rates further improved to 86.9% among those over six years of age and 95.6% in 6 to29 age group.[38]

Since early 1960s, Urbanization has significantly increased in Iran and rural-urban income disparity has also narrowed. According to the World Development Report, the share of urban population reached to about 70% in 2007 from 49% in 1979. Urban population has increased about 5.4% per year on the average since the revolution. Urban-rural income gap has shrunk and the overall poverty rate has declined in the last three decade.   In the rural areas, female literacy rate has increased and infant mortality has declined.[39] Also, the Gini index that measures income equality shows national income is more equally distributed in Iran than Turkey. Iran's Gini was 38.3 as compared to Turkey that was 43.2.[40]

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[34] Central Bank of the Islamic Republic of Iran, also http://market.tse.ir/Indices.aspx
[35] Istanbul Stock Exchange, http://www.ise.org/Home.aspx
[36] Human Development Report 2009 http://hdr.undp.org/en/media/HDR_2009_EN_Complete.pdf
[37] The World Bank, *World Development Report 1992*, 218-219.
[38] Central Bank of Iran, Economic Trends, 1388, Q1
[39] *World Development Report 2009*, p. 63
[40] United Nations, Human Development Report http://hdr.undp.org/en/media/HDR_2009_EN_Indicators.pdf

Iran has a population of about 75 million, with a large educated labor force. About 27% of the population was below the age of 15 in 2007. According to Iran's central Bank, unemployment currently is about 11 percent and some young educated Iranians are migrating to seek employment in other countries. However, the brain drain has slowed down as compared to the earlier years after the revolution.

Turkey and Iran Economic structure
Real gross domestic product by sector (% share of GDP)

Iran	2003	2004	2005	2006	2007
Agriculture	12	11.2	10.2	10.4	10.2
Industry	39.2	40.6	42.4	40.8	41.3
Services	48.9	48.2	47.5	48.8	48.5
Turkey					
Agriculture	11.4	10.9	10.8	9.5	8.7
Industry	28.6	28.5	28.5	28.7	28.3
Services	60	60.6	60.7	61.8	63

Source: Economist Intelligence Unit.[41]

As is shown in the above table, Iran's Industry share of the GDP is growing and is significantly higher than the similar figure for Turkey from 2003 to 2007, while Turkey's industry share of the GDP has stagnated in the same period.

Iran and the Recent Global Economic Crisis

In the first decade of the twenty first century the advanced counties encountered major economic crisis from which they have not yet recovered. At the same time, certain developing countries have continued to be industrialized and are rapidly growing.[42] They include Brazil, China, and India, some other countries in the Middle East, Latin America, and South East Asia. It has been contended that in the second decade of the twenty first century there is going to be a new world order. The Emerging industrialized countries in the East will be the driving force of the global economy to recovery, while the US, Europe, and Japan struggle to recover from the worst economic recession since the great depression.[43] These emerging economies are expected to grow faster than advanced economies in the current decade. China's economy has continued impressive growth and is leading the world recovery. The economies of Turkey and Iran are also growing. In the previous economic crisis the center countries were leading the world recovery and that would stimulate the countries in the periphery. This time is just the reverse; the recovery is from certain countries in the periphery that have followed self-reliant economic policies. While countries in the center are struggling with financial crisis, current account and budget deficits, and heavy national debt, a number of emerging economies are running account

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[41] Economist Intelligence Unit, Turkey and Iran Country Profiles 2008.
[42] Buerkle, Tom, New World Order, *Institutional Investor*, pp. 50-53, June 2010.
[43] Ibid

surpluses and are rapidly growing. At the time that the economies in the West are in crisis, imposing economic sanctions on Iran is a counterproductive policy. In fact Iran's economy can have a contributing role in the world economic recovery.

In the past few decades, financial dependency has caused major financial crisis for some developing countries, including Iran and Mexico in mid 1990s, several countries in South and East Asia in late 1990, Brazil and Turkey in early 2000, and Greece in 2010. Neoliberal economic policies commonly open the developing countries to financial dependency. In early 1990s, Iran began pursuing neoliberal economic policies prescribed by the World Bank and IMF. That generated a serious financial crisis in Iran as inflation rose to nearly 50% and the country accumulated a whopping 30 billion dollar foreign debt by 1994. Similarly, in early 1980s, Turkey began liberalizing its economy under the IMF and World Bank reforms' guidelines. The outcome of the reforms was not positive for Turkey either. Inflation rose to 65% in 1989 -93 and 85% in 1994- 99, reduced to 50% in 2000 and again rose to above 70% in early 2002. Turkey suffered a major financial crisis in 1999-2002, Recep Tayyip Erdogan inherited an economy deep in recession because of financial crisis and skyrocketed inflation. In 2008, Turkey fell to recession as a result of global economic crisis while Iran did not. However, the two neighboring countries' economies are now growing and expected to contribute to the world economic recovery.   Iran's economy did not go to recession as a result of the global economic crisis and has grown on the moderate pace in the past few years despite of the sanctions and inflation has been controlled to about 13.5%. Turkey's economy suffered a recession because of global crisis, but recovered in 2010 and is expected to grow about 5.2 % this year. Also Premier Erdogan has been able to reduce public debt from 74% of the GDP in 2002 to 39% in 2009, and decreasing inflation to a single digit. Turkey has shunned away from getting loans from IMF lately. In the past, Turkey's financial dependency to IMF had put it under external restrictions, but this time Turkey wanted to be self-reliance and get out of financial crisis on its own.[44]

To deal with the West economic sanctions, Iran has increased its economic ties with other developing countries including Syria, India, China, South Africa, Cuba and Venezuela by pursuing the policy of "South-South" trade and economic integration.   Iran's trade with India amounted to $13 billion in 2007, an 80% increase in trade volume within a year.   According to the Indian Embassy in Tehran, "India exports goods worth US$ 1.937 billion to Iran and imports goods worth US$ 11.049 billion from Iran." "India's imports from Iran include crude oil and petroleum products worth US$ 10.06 billion and India's exports include petroleum products worth US$ 850 million".[45] Also, Iran's trade with Iraq and other neighbors has substantially increased. Furthermore, Iran has expanded its trade ties with the counties located in west and central Asia through a regional economic market called Economic Cooperation Organization (ECO). ECO has ten member countries that include Afghanistan, Azerbaijan (Republic of), Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Turkmenistan, and Uzbekistan.[46] The ECO objective is to be a single market for goods and services similar to the European Union. ECO's secretariat and cultural departments are located in Tehran, its economic bureau is in Turkey and its scientific bureau is in Pakistan. ECO Members have launched several routes that connect them through a network of railways. In 2009, a route that runs from Islamabad through Tehran and onto Istanbul was completed.   ECO plan to launch a container train from Almaty in Kazakhstan to Bandar Abbas that will connect the landlocked countries of Central Asia to international waters. Similarly it plans to establish

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[44] Mellow, Craig, Anatolia: Turkey Shuns Loans as it Cuts Public Spending and Shock-proofs Bank, *Institutional Investor,* April 2010.
[45]State Television, http://www.presstv.ir/Detail.aspx?id=73952&sectionid=351020102
[46] ECO, http://www.ecosecretariat.org/

the ECO Silk Road Truck Caravan this year that passes through the ten ECO countries and ends its route in Istanbul.[47]

As the first decade of the twentieth first century ended, the new liberal economic policy that was preached for the developing world failed in its center. The countries in the periphery that pursued statist policy such as China and Iran were immured from the global financial crisis. China has accumulated a substantial trade surplus, which has increased its financial power. Major developed economies facing sluggish outlook as a result of the recent global economic crisis. They suffer out of range budget deficits and national debts that have clouded their recovery. For example, the United States imports more than half of its oil consumption, which has caused it continuous trade deficits. Some developed countries are now borrowing from the oil producing counties of the Persian Gulf region and the emerging economies in East Asia that have large current account surpluses. The Keynesian economic policies have reached to their limit. Further government spending will lead to explosion of government debt and inability to borrow in the international financial market, followed by currency devaluation. Also, monetary policy has reached to the limit of what is referred to as "liquidity trap". There is now hope that the newly industrialized countries in the "Global South" could help the world economy to recover.

In brief, it seems there is a shift of economic power from the West to emerging market countries in the Global East and South. As is observed, the industrialized countries in the West are losing power to the emerging economies in the East. The countries in the East are expanding their industrial capacity and have become viable exporters to the West. The Western countries are turning to consuming market for the products of the countries in the East. Iran as an emerging regional power in the East is benefiting from this trend and has rapidly increased its industrial capacity.

Concluding Remarks

This was an attempt to review Iran's key strengths in science and technology and understand its success in independent industrial development. As it was shown, Iran's economy has developed in a moderate pace as compared to its regional counterpart Turkey. Despite Turkey's reliance on its Western allies for economic benefits, it seems its economy has not done much better than Iran that has been under economic sanctions for decades. In fact, Iran has had better success in pursuing self-reliance policy. Iran progress in advance technology, aerospace, and establishing its indigenous defense and heavy industries is admirable. In automobile industry, Iran is equally competing with Turkey, yet Iran's steel production is about half as much as Turkey's. Despite Iran's progress in expanding its industrial goods exports, still its major export is crude oil export, while Turkey's exports are mostly consist of industrial goods. Whether Iran has reached to the stage that can be called a newly industrialized country is subject to obtaining more information and data. It is hoped this paper can open discussions among the colleagues to better understand the answer to this important question. Based on the limited information that was gathered for this paper, it seems Iran is marching to become a newly industrialized country.

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[47] ECO, http://www.ecosecretariat.org/index.htm

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Challenges and development prospects of SMEs in the Republic of Kazakhstan

Foreign experience of economic and social development confirms that small business can become a real factor of, not only stability but also growth of many countries economies. Small business contributes to maintenance of competition at the proper level, flexible restructuring of production, acceleration of innovation processes, formation of market economy social dimension and employment growth. In this regard, scientific analysis of small business problems in Kazakhstan is of particular importance in conditions of economy reforming characterized primarily by economy restructuring, the need to stabilize the reproduction processes and provide a perspective of sustainable economic development.

To date, problems of public and private influence optimizing on the small business sector, the lack of an integrated business management system in the level of State, region, and a particular company acquire a special urgency. The state is in need of studies on both a theoretical aspects of business, and definition of small and medium-sized businesses, as well as the study of the practical issues of creation and effective functioning of small firms.

There is an increase in absolute performance of small and medium-sized businesses in general as shown by official statistics: the share of small and medium-sized businesses in Kazakhstan amounted to 32% of GDP, employment rate - 29% (in 2009).

One of the most difficult problems hindering the development of small and medium-sized business is the absence of sufficient financial resources for investment and working capital needs. Particularly acute shortage of credit resources is felt in the real sector of the economy.

The global financial crisis reduced the liquidity of banks in Kazakhstan and aggravated the problem of credit resources deficit in the economy as a whole, and in the SME sector. In addition, the crisis had a negative impact on microfinance institutions sources of funding that were contributed to the micro-enterprises development. The question about a financial instruments development that are specific for small businesses arises in the view of too many existing businesses lending, and lack of credit history, non-coverage of loans, informative financial statements of starting companies.

To date, there are different kinds of financial support instruments for business: loans, microloans, loan guarantees, subsidized interest rates, leasing, and investments.

According to statistics of the National Bank of Kazakhstan the volume of loans granted by banks to small and medium-sized businesses in the October 1, 2010 is 1,746,479 million tenge.[1]

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[1] http://www.nationalbank.kz/cont/publish669629_6279.pdf

Regionally the largest sums were granted to Almaty and Astana cities, the smallest amount of the issue is observed in Zhambyl region. The greatest number of loans granted for projects in trade (38,6%), and the least - in the sphere of communication (0,9%).[2]

The Government of Kazakhstan has provided additional funding totaling 1 087.5 billion dollars, of which 120 billion tenge were directed to support of small and medium-sized business in order to stabilize the economy and financial system of the republic in the period of 2009 - 2010. As a result, 117 billion tenge were placed in 12 banks of second level, however the share of public financing of small and medium-sized business in the loan portfolio of second level banks within the stabilization program was 23%.

JSC EDF "DAMU" puts credit funds in a second level banks. All programs of SME support realized by DAMU are distinguished by priority to ensure targeting and repayment of public funds. Stabilization programs helped to keep lending to SMEs in the difficult period of economic crisis. More than 9,000 projects on stabilization program funded amounting to 421 billion dollars as the result of the activity for the first half of 2010, from the end of 2007. Over 12,000 jobs were created and supported. Money were issued on the revolving basis, and repayments were directed again to SMEs by banks. Sectoral programs aimed to diversifying the economy, SME real sector development. The following programms: "Damu-Ondiris", "Damu-Koldau", "Micro crediting of a female entrepreneurship" and "SME financing, Zhanaozen city of Mangistau region" are implementing by the fund in this area. More than 300 projects on these programs were funded amounting to 29 billion tenge. More than 5,000 jobs were created and supported. Non-bank financing development programs are aimed to microfinance sector supporting and developing as the third level of Kazakhstan financial system and leasing. The program of microcredit organizations funding through the second level banks and the placement of funds in the leasing companies is implementing by the fund in this area.

A multitranche loan of Asian Development Bank under the state guarantee of the Government of the Republic of Kazakhstan was obtained in order to expand the funding base for lending to small and medium business and ensure its long-term financing. Attracted funds are the largest loan on SME sector development in the history of the ADB. The total loan amount - 500 million dollars (1 tranche - 150 million U.S. dollars in 2010, 2 tranche - 150 million U.S. dollars in 2011, 3 tranche - 200 million U.S. dollars after the development of 1 and 2 tranches). At the same time, loans for entrepreneurs in the first tranche will be issued in tenge. The term of each tranche - 7 years. Deposit rate - approximately 5-6%.

One of the major problems in the lending is the high interest rates. Banks are forced to bear the cost of risk on loans by increasing interest rates because of small business low non-coverage of loans.

Microcredit is increasingly in demand among businesses that operate in rural areas. As of October 1, 2010, according to the Statistics Agency, there are 1770 of microcredit organizations registered in Kazakhstan. In the first half of 2010, microcredit organizations have been granted 164,400 micro-credits totaling 23.4 bln. For comparison, in 2009, microcredit organizations have provided more than 190,198 micro-credits totaling $ 37.7 billion. [3]

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[2] http://www.nationalbank.kz/?docid=309
[3] According to the Statistics Agency of RK

The weighted average interest rate on loans in urban areas is higher than in rural areas. If the interest rate on short-term loans for individuals in the city is 32.8% per annum, then in rural areas - 17,2%, on long-term loans - 27% and 14% respectively. [4]

Micro-credit organizations are the least state regulated system level of credit relationships, which leads to the opacity of their activities.

The main directions of implementation «Road Map of Business-2020» are to subsidize interest rates on loans and partial credit guarantees. The program "Road Map of Business-2020" aims to support entrepreneurs working in the priority sectors of the economy. If the former state program of supporting SMEs, implemented through the fund "Damu" were aimed at anti-crisis program, then the current program is directed at further development of new business projects. In addition, it implies support for existing projects. It is expected to reduce subsidy rates for those entrepreneurs whose business is a priority in the region. Subsidization of interest on loans is made by all three directions of the program. A partial guarantee for loans is made only to the first direction - support new business initiatives, i.e. in obtaining new loans. Loans are subsidized with nominal rate no more than 14%: 7% is paid by program participant (SME) 7% - compensates the state, and the maximum amount of guarantee - up to 50% of the loan amount. Fund "Damu" plays a key role of the financial agent and program coordinator.

As of December 6, 2010 second-tier banks considered 648 applications for subsidies of loans totaling $ 314.0 billion, and for guarantee of loans are approved 36 projects totaling $ 9.1 bln loan. However, there are negative and narrow points in the implementation of the Programme. There is a low activity of local executive bodies to review projects by providing support. In some regions, there are only one or two loans supported by subsidies to entrepreneurs.

SMEs that engaged in manufacturing of the country are also use leasing services. Despite to its significant growth, leasing market in Kazakhstan has not reached the level corresponding not only the developed countries of Europe, but even Russia and the Ukraine: the share of leasing in investment in manufacturing assets in Russia is 5-6%, while in Kazakhstan - only 1,5% (for comparison: in Eastern Europe a similar figure is 30%).

The liquidity crisis of the financial sector has strongly influenced not only to the further development, but even to the conservation of mature market of leasing services in the Republic of Kazakhstan. Given the fact that most active leasing companies were "daughters" of commercial banks, they were primarily affected by the liquidity crisis: banks just cut them access to their credit resources.

Leasing activity in Kazakhstan is not subjected to licensing. There is no single body that regulates this market. Only leasing companies that affiliated with banks are controlled by the Financial Supervision Agency. Therefore, the statistics of the leasing market in the context of the companies is not conducted. One of the leading leasing companies are "Kazagrofinance", "DBK-Leasing"and "Leasing company"Astana-Finance ".

To enable the expansion and modernization of fixed assets of SMEs in priority economic sectors by Fund "Damu", there is the Program of financing leases for SME's. As of July 1, 2010 the Fund posted credit funds of JSC "Stress Assets Fund" in JSC

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[4] http://finance.nur.kz/publikacii/mikrokreditovanie_v_kazahstane_itogi_i_perspektivy/

"Leasing Group" totaling $ 375 million tenge (by 2 tranches) and JSC "Temirlizing" in the amount of 255.6 million tenge (by 2 tranches). [5]

Leasing is more attractive to entrepreneurs because there is no need for additional pledged security. However, disadvantage is that leases granted only for 3-5 years, while in Western it is usually 10-15 years. This is a very short period to repay the debt, since a technique that is taken on lease, is very expensive.

Currently, due to SMEs difficulties in obtaining credit and a lack of equity for further development, equity investments has acquired a special urgency. Access to investment is made through Private Equity Funds (JSC «Kazyna Capital Management», JSC "Kazakhstan Investment Fund), venture capital funds (JSC" NIF "), business angels.

Advantages of direct investments are increase in share capital of the company, opening up access to cheaper credit, improvement of its capital structure; do not require payment of interest and provision of any collateral.

In addition, private equity funds provide intangible resources for the company - advice, experience, knowledge, and also contribute to improving the management company, building it into line with international standards of financial and management reporting.

For the financing of innovative small businesses it is necessary to raise resources of venture funds, 11 of which have already been established by JSC "NIF" together with local and foreign investors. The share of JSC "NIF" in Kazakh venture funds is up to 49%.The investment policy of these funds is directed at finding and bringing projects in the sphere of information and communication technology (hereinafter - ICT), new building materials, pharmaceuticals and other promising industries with export potential.

Despite the large number of venture funds, their activities are not always effective. According to the Accounts Committee at the date of 1 October 2009 six venture capital funds out of 11 have made losses totaling $7.5 bln. Only three projects were implemented out of 85 funded projects.

One of the progressive forms of financial support of innovative entrepreneurship in the world is "business angels", whose investment is long term and carried out on their own initiative. The project "National Network of Business Angels of Kazakhstan" has developed by consulting company LLP "TenStep Central Asia", with the support of "Nur Otan" party, the Independent Association of Entrepreneurs of Kazakhstan, JSC "National Innovation Fund", the financial company JSC «ZURICH INVEST MANAGEMENT». The main objectives of the project are the development of private direct investment in Kazakhstan, the creation of interactive sites of the investor with the authors of the projects. Lack of motivation in the form of tax breaks and low awareness of the population do not contribute to the development of "business angels" in Kazakhstan.

Thus, the main problems of financial support of SMEs today are:
- high interest rates of banks;
- short term lending, insufficient for the development of innovative business;
- unavailability of financial resources for entrepreneurs in remote areas and administrative units;
- the complexity of project selection procedures for SME lending through banks;

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[5] Strategic aspects of the JSC "Damu " in the period 2010-2020

- lack of sufficient security of bank loans;
- the opacity of the micro credit organizations;
- low activity of investors in attracting companies;
- ineffectiveness of venture funds;
- lack of motivation of "business-angels".

Problems associated with non-financial support for SMEs are also relevant for today.

In Kazakhstan there are a large number of institutions supporting SMEs. They are - 125 business support centers (hereafter BSC), 119 information-consulting centers (hereinafter ICC), 11 technoparks, 27 business-incubators. However they carry a limited support to small business, i.e. limited number of SMEs and their services do not meet current business requirements.

Performance indicator of the business incubator is the number of newly created innovative small businesses in the industrial segment, which are able to develop independently in the future. However, present day activities of Kazakhstani business incubator is reduced to a simple lease at market prices.

Kazakhstan's first regional business support center (BSC) was created under the initiative of JSC "Entrepreneurship Development Fund "Damu". BSC has been produced with the participation of Pavlodar State University named after S.Toraigyrov. The Foundation plans to open BSC's in South Kazakhstan Region, Kyzylorda and Karaganda regions till the end of 2010. It is planned to launch BSC in the remaining regions until the end of 2011.

Business support centers, providing services to SMEs in the Republic of Kazakhstan can be divided into three categories: private BSC, governorates, acting through the BSC on the basis of tenders and BSCs in EDF "Damu", who provide nearly identical services, only for different prices. Most BSCs provide information and consulting, legal, economic support to SMEs, develop business plans, promote credit and training, organize the participation of SMEs in trade fairs, etc.

Consulting, training and information services market is fully saturated in the major cities, however in the outermost regions, especially at district level - is virtually absent. The greatest number of clients was served by BSC in Almaty: in 2009 almost 13 thousands of businesses was provided different types of services. The lowest coverage observed in the Zhambyl region: business support centers assisted in preparing the 1938 business plans and provided 937 information and consulting services.

Review of existing business support centers shows that as of June 1, 2010 the largest number of objects of service support functions is in Karaganda - 48 units, Almaty - 30, East Kazakhstan - 22 units., in the Pavlodar region - 16 units. The lowest rates have Kostanai, South Kazakhstan, West Kazakhstan region - 3 units.[6]

Customer support is also provided to entrepreneurs in the framework of the "Road Map-2020" program. As of December 6, 2010 service support was provided to 1175 enterprises, 738.9 million tenge has been allocated for these purposes from the national budget.

SME support infrastructure as a whole is inefficient and does not provide uniform coverage of businesses, in the absence of close links with science and production. They do not meet the objectives and priorities of industrial and innovation policies. Most of these organizations are working inconsistently. Their roles and responsibilities are not separated and partially duplicated; only the price of services differs. Reducing of

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[6] By materials of the Department of Business Development, Ministry of Economic Development and Trade

accountability by institutions of non-financial support is due to lack of clearly defined objectives, objective criteria for evaluation and appropriate monitoring by the state. There is no single, unified and centralized infrastructure to support entrepreneurship, providing a comprehensive solution to the problems of small businesses. Also, there is a low coverage of small business in the regions. Activity of the consulting services providing business support infrastructure subjects is unregulated and very expensive.

The questions of advancing administrative approaches to regulate enterprises are also under the constant focus of the President and the Government of Kazakhstan: according to the instructions of the President, which are reflected on the annual message, the Government therefore conducts focused and consistent work to reduce administrative burdens on business. Strategic policy along with planning papers that define the economic development in the medium and long term, it is provided a set of measures aimed at a positive solution of related issues.

The efforts that are made by Government conducted in a systematic manner for years to reduce administrative barriers and improve business climate within the country took simultaneously several trends:
- Reforming of permit system;
- Ordering compliance and enforcement activities of state bodies;
- Improving of the Kazakhstan indicators in the Doing Business ranking of the World Bank.

The government approved the concept of improving the permit system in the Republic of Kazakhstan for 2009 – 2011, whereby the inventory of permitting procedures at the national and regional levels.

The results of the inventory revealed a number of problems. Thus, there are currently no common approaches to certain types of permits.

At initiating the licensing procedures introduction the public authorities do not take into account the specific character of particular permissions in terms of achieving the goals of state regulation, for which it is introduced.

The introduction of majority of permits implies informational purpose, i.e. their issuance enables public authorities to monitor the sphere and those permits which could be issued in a notification procedure became a serious barrier in the form of licenses.

The accreditation and certification processes are also possesses same problem, meanwhile they often substitute each other.

Hence, the need in improving of business climate requires further reform of the administrative regulation of business activity in terms of simplifying the licensing procedures, ordering of compliance and enforcement activities of state bodies. Only the consistent and strong promotion of reforms will enable Kazakhstan to attain the top 50 countries in the "Doing Business" rating of the World Bank.

Institutional support of entrepreneurship is revealed through the collection of organizations that providing favorable conditions for establishment, operation and business development.

Examples of these organizations in the country currently include: government agencies, organizations with state participation, non-governmental organizations and commercial organizations.

To date, there is a gap between the forming and implementing public policies to support and develop SMEs. The current situation leads to fail of implementing policies. In this regard, it is necessary to create state bodies that will be realizing the essence of the

decisions to end users (state bodies and businessmen) as well as to ensure the implementation and subsequently monitor the policy effectiveness.

The financial, service and innovative support for SME will be provided by specially created development institutes and organizations with state participation. Each development institute by realizing its functions will be prosecuting a goal: to move away from commodity dependence by highlighting priority areas to develop and business financing.

Service support of SME will be held through the provision of facilities, equipment, consulting services and information provision. "Center of engineering technology transfer" JSC by mean of business incubators are providing building and consulting services.

Services of technology transfer, development activities and providing engineering will be carried by "Center of engineering technology transfer" JSC and "National Scientific and Technological Holding Parasat" JSC. The activities of "National Scientific and Technological Holding Parasat" JSC effectually are addressed to serve large business, while "Center of engineering technology transfer" JSC - SME. Distinction between the functions of these two facilities maintenance, will concentrate "Center of engineering technology transfer" JSC only on SMEs, thereby enhancing the innovation business.

In order to meet the challenges of socio-economic development of the region there were created socio-entrepreneurial corporations (hereinafter SEC). Have accumulated profit from invested fund SEC directing them to the social needs of the region. However, SEC demonstrated its low efficiency.

Entrepreneurs perceived the "Regional locomotives" as another link in the receipt of government support, since the foundation of SEC the Government did not accept any legal act regulating the activities of corporations. In this regard, the Government has introduced the Decree dated 19.02.2010 acknowledging that all SEC referred to the local executive bodies and converted into regional development corporations. Taking into consideration the previous experience it is necessary to develop a law on "Regional Development Corporations".

The performance efficiency of development institutes in Kazakhstan is assessed by Audit Committee in terms of intended use and development of the allocated funds. In addition to the quantitative assessment it is also necessary to conduct qualitative assessment of the real impact of implemented projects. Quantitative and qualitative features of the development institutes may reflect on the balanced scorecard, the projections, which are finance, marketing, personnel and the innovation level of projects.

In order to stimulate entrepreneurship it is necessary to create a web-portal that would contain information on operating, completed, planned and rejected projects of the development institutes, as well as development strategy of R&D, management team, annual reports, etc.

Thus, the Government established a set of tools to support entrepreneurship in Kazakhstan, but there is a need in systematic coordination and control of their activity.