

Economic Diversification: The Case of Kuwait with Reference to Oil Producing Countries

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The paper addresses the issue of economic diversification as a necessary, but not sufficient condition to enhance economic development process in the state of Kuwait, and oil exporting countries alike. A number of diversification indices are calculated, and an Input-Output based diversity index is provided. The latter measured with reference to the Norwegian economy as a benchmark for a well-diversified oil producing country. Moreover, an econometric model is estimated based on pooled analysis. This is important to draw some conclusions on the main determinants of diversification in the group of a selected oil producing countries: Indonesia, Iran, Kuwait, Oman, and Venezuela. Investment, and other few variables, is turn to be one of the most important determinants. The paper concludes by a set of policy recommendations.

1. Introduction:

Economic diversification in Kuwait should be one of the central issues in the process of economic development for at least two reasons: (a) diversification is essential since most of the Gross Domestic Product (GDP) growth derives from the contribution of oil sector, ranging within (40%) for the period (1985-2004); and (b) most of the economic growth has been accounted for by factor accumulation. After a certain stage,

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factor accumulation becomes binding under certain demographic and physical conditions. Therefore, the potential contribution of diversification to total factor productivity is essential to be employed to achieve substantial growth. Since Kuwait, and most developing countries, has failed to reap tangible benefits from globalization and multilateral trade arrangements, there is a need for new mode on diversification, to enable Kuwait, and countries alike, to benefit from trade liberalization. The need for diversification derives, as well, from the very fact that economic management has been concentrated on macroeconomic management issues and neglect, to some extent, the sectoral issues. Consequently, diversification has been weakened.

Since the release of the five year economic plan (1967/68 – 1971/72), Kuwait has placed a special importance to the economic diversification objective. Speaking of the share of main activity groups in GDP, commodity producing sectors have generated between (52.9% - 65.9%) of total GDP during the period (1985-2004). The high share of these sectors is greatly attributed to the share of oil sector. The latter share ranges from (88.3% - 83.7%) of commodity producing sectors during (1985-2004). As for the contribution of manufacturing sector, it remains stagnant within the range of (10.6% - 15.5%) for the same period.

On the contrary, manufacturing sector has absorbed almost more than two thirds of employment, 78.4% - 74.8% for the years (1985-2000). The same trend is true for wages, (71.7% - 63.0%) for the same period. Whereas the investment has been largely concentrated in oil sector (69.3% in 2000) comparing with (26.8%) in manufacturing sector for the same years. Economic diversification, in terms of GDP generation has concentrated in oil sector (38.5% - 61.5%) of total GDP during (1985-2004), whereas manufacturing activity played a modest role. This is reflected in the low share of the activity in total GDP, ranging from (3.6% - 13.8%) during the same period. Moreover, it is worth mentioning that most of the GDP was generated from oil sector, followed by other services and financial ones, where manufacturing activities came in the fourth place in 2004. In terms of employment generation and wage paid, other services absorbed about (52.5%) and (62.3%) respectively in 2000 (Ministry of Planning, 2001, 2002a, and 2006).

Moreover, Kuwait, as most other oil producing countries, is characterized by heavy dependence on natural resources revenues. To start with first, GDP generation, oil sector share varies from (36.8%-52.9) during 1985-2005. This can be attributed to the increase in production level and oil price due to the mounting demand originated mainly from emerging economies, such as China, and India. The trend of price increase is enhanced by the lack of production capacity in Oil Producing and Exporting Countries (OPEC) and non-OPEC members.

Second, speaking of non-oil sectors contribution, such as manufacturing sector, it witnessed an annual growth of (26.3%) during (2001-2005). This can be attributed to the growth in the refined oil products, which rose from KD (0.79) bn. dollar in 2004 to proximally one bn. in 2005. Other non-oil sectors, which showed an improvement in their share, are Financial Institutions, Transport, Communications and Storage (Global Investment House, 2003 and 2007).

Third, as for public budget, dependence on natural resources can be assessed with reference to the development of oil revenues share in total revenues. The share increased from (88.4%) in 2002/2003 budget to (90.8%) in 2005/2006 budget. Mainly the decreased revenues of land sales, and payments can explain the unexpected decrease of non-oil revenues in 2005/2006 budget, compared with 2004/2005 budget, from United Nations Compensation Committee. Bearing in mind, that non-oil revenues do not include investment income, which is not officially reported. The latter is treated as an off-budget item, which is estimated to be around KD (1.89) bn. This figure generated mainly from the state foreign assets managed by the Kuwaiti Investment Authority (*Ibid*).

Fourth, regarding the export structure, most of Kuwait export derives from oil, (96%) for the year 2005, whereas non-oil export remains at (4%). The Kuwait balance of payments reflects an essential increase of oil exports since 2003 due to the upshot in oil prices. The structure of non-oil exports consists mainly from chemical and petrochemical products (56.6%) in 2004. Followed by machinery and equipments (16.0%), commodities and transactions unclassified commodities (12.4%), food and beverage (5.2%), miscellaneous to kind articles (5.1%), and others (4.7%) (Central Bank of Kuwait, web site). These trends point out to the fact that Kuwait economy is characterized by

economic concentration phenomenon rather than diversification. This is true whether in terms of GDP generation, public budget, and export structure, among others. Section two is devoted to explore further evidences on the lack of diversification in Kuwait economy.

2. Economic Diversity: Conventional Measures:

Reducing risk is the central issue behind achieving the diversification objective. By the time GDP, employment, export, and other economic variables are generated from various sectors, a large fluctuation in economic activity is lowered. Diversification objectives should aim at, as well, utilizing the comparative advantages to enable an economy to make use of its economic endowments. Despite the importance of the above-mentioned considerations, i.e. risk, and comparative advantages, they are not well addressed in almost all standard measures of diversification. Instead, the conventional measures are based on conforming to a standard of dispersion of a number of economic variables, such as output, export, and employment, across different activities or sectors. In this respect, two standard distributions are in use: equal shares, and benchmark shares. The equal share standard states that an equal share of the economic variables in question labels the most diversified economy. Whereas the benchmark shares standard indicates that the most diversified economy is the economy whose shares of output, export, and other economic variables are similar to the benchmark structure.

The first group of conventional measures, equal share, including, among others, UNCTAD's diversification index ⁽¹⁾, and the top four market share index. Where the second group, benchmark shares include other measures such as variation index, and Hachman index ⁽²⁾ (Moore, 2001). As for United Nations Conference on Trade and Development (UNCTAD), a composite index is proposed for economic diversification index consisting of four components: (GDP), the share of labor force in industry, per capita electricity consumption per years and export concentration index.

Accordingly, one can derive few conclusions as far as diversification is concerned. First, economic diversification is not an isolated process from economic development. The Second conclusion is regarding to what extent it is possible for a least developed country to pursue

economic diversification, and at what costs. Young (1973) fears that if a low economically developed country initiates industrialization before being ready, a misallocation of resources may be initiated, as well. On the other hand Leipziger and Thomas (1993) point out that while South Korea succeeded in changing its economic structure in a dramatic way, but this occurred at a high costs. Such high costs are related, among others, in the tight control of the financial system, and heavy intervention in industry. The link between economic diversification and development, rises, as well, the question of how the former can go in parallel with the latter. To respond to this question, answers are divided regarding the role of market and government, and the share of public and private sector in economic activities. Proper economic policy setting should help to handle this type of division.

Since the model, (section four), is based on UNCTAD's diversification index as dependent variable, table (1) shows the trend of the index for OPEC countries, during 1980-2003. On the contrary to the 1980's, most of the countries show an obvious trend toward less diversified economies. This is reflected by the increasing values of the index (the higher value, the bigger difference from the world average).

Table (1) Diversification Indices of Export for OPEC Country (1980- 2003)

Country	1980	1985	1990	1995	2000	2003
Algeria	0.481	0.509	0.626	0.646	0.644	0.69
Angola	0.444	0.54	0.482	0.691	0.681	0.659
Kuwait	0.564	0.542	0.784	0.773	0.766	0.765
Libyan Arab Jamahiriya	0.557	0.437	0.54	0.497	0.622	0.622
Nigeria	0.626	0.626	0.632	0.476	0.552	0.616
Qatar	0.59	0.594	0.67	0.678	0.746	0.757
Saudi Arabia	0.76	0.743	0.793	0.825	0.828	0.806
United Arab Emirates	0.53	0.477	0.494	0.676	0.642	0.638
Venezuela	0.495	0.63	0.747	0.708	0.768	0.792
Norway	0.52	0.608	0.601	0.633	0.65	0.657
Oman	0.488	0.498	0.697	0.656	0.676	0.72

Source: UNCTAD Handbook online, www.unctad.org/statistics

As far as Kuwait is concerned, the declining performance of the export diversification index, table (1), can be attributed, among others, to the deteriorating competitiveness with the rest of the world. Referring to calculated Revealed Comparative Advantage (RCA) ⁽³⁾, as a well-

established indicator of export competitiveness, it shows that the percentage of products (under 2-digit Harmonized System, HS2002, export products) with RCA of (-0.25) and less, are within (89.7%-88.3%) for the years 1997 and 2001, respectively. Meanwhile, the percentage of products with RCA of (0.76 – 1.0) are very modest, i.e. between (5.9%) and (3.9%), respectively. A strong RCA is shown for oil exports, while for the rest of products expressed very low competitiveness level. (Calculation are based on PC-TAS database).

3. Diversity Measures: Input-Output Methodologies:

3.1 The Concept:

The techniques mentioned in section two to capture economic diversification can be labeled as conventional ones. The main shortcoming of these techniques is the negligence of inter-industry nature of economic activities. Therefore, diversity index derives from Input-Output (I-O) models can accommodate the interdependence issue. To do so, Wagner and Deller (1993) propose a composite index, called Primary Diversity Measure (PDM), of three components: (a) number of endogenous industries or the size of (I-A) matrix, where (I) is a unity matrix and (A) a technical coefficient matrix; (b) the density of (I-A) matrix, or the number of non-zero elements in the matrix, and (c) a scalar measures the degree of inter-industry linkages.

Before addressing PDM index and its findings for the case of Kuwait, it should be mentioned that the index is not used, as dependent variable, in the model of section four. The main purpose behind the inclusion and quantification of PDM here is to raise the awareness concerning the necessity of constructing I-O tables on regular basis by OPEC, and other developing countries alike. The provision of inter-industry statistics is an essential tool for much more comprehensive index of diversification, which takes into consideration the impact of indirect requirements, as well as the inter-industry nature of economies, whereas the conventional measures are based only on direct requirement, with full negligence of interdependence of economic activities.

Accordingly, the Primary Diversity Measure (PDM_i) for a country (i) is an outcome of a simple multiplicative combination of the three components:

$$PDM_i = SI_i \cdot DEN_i \cdot CN_i \quad (1)$$

The three components are defined as follows:

(a) The relative size (SI_i) of an economy is represented by:

$$SI_i = N_i / N_{be} \quad (2)$$

where (N_i) reflects the number of indigenous industries in country (i), and (N_{be}) the corresponding industries in the base economy, in our case the Norwegian ($I-O$). The ability to absorb shocks has a direct relationship with the number of industries in the economy in equation, i.e. Kuwait economy.

(b) The density (DEN_i) of the economy is defined as:

$$DEN_i = NON-ZERO / N_i^* N_i \quad (3)$$

where (N_i^*) is the number of non-zero element in the ($I-A$) matrix of the economy in equation. The higher non-zero elements means the higher possibility of inter-industry linkages, and less possibility to be loss economy. Bearing in mind that (b) does not capture the relative magnitudes of the elements nor the position of these elements within ($I-A$) matrix

(c) The Condition Number (CN_i) of ($I-A$) matrix is defined as a scalar indicating the inter-industry linkages:

$$CN_i = \|(I-A)\| \|(I-A)^{-1}\| = \delta(I-A) / \delta_n(I-A) \quad (4)$$

where $\|(I-A)\|$ is 2-norm of ($I-A$) matrix, $\|(I-A)^{-1}\|$ is 2-norm of $(I-A)^{-1}$, the Leontief inverse matrix, $\delta_n(I-A)$ denotes the largest single value and $\delta(I-A)$ represents the smallest signature value of $\delta_n(I-A)^{-1}$ of ($I-A$).

It is worth mentioning that any size of the matrix (I) is characterized by condition number (CN) equals one. Divergence from this matrix causes an increase in the condition number. In terms of ($I-A$) matrix the

divergence from the identity matrix means more purchases from endogenous industries. Therefore, the higher the value of (CN) means the economy in equation is more diversified.

3.2 Database and Findings:

To quantify equation (1), Kuwait (*I-O*) table for the year 2000 is used in comparison with the counterpart table of Kingdom of Norway, as a base economy ⁽⁴⁾. To do so, both tables are re-aggregated into (42) industry to obtain homogenous (A) matrix, based on ISIC, Rev.2, digit 3. The transaction matrices for both countries are converted to international currency, i.e. US dollar, as well. Having done so, the three components of the (PDM) are calculated. Table (2) reveals the results of the diversity index. The diversity calculation, taking into consideration the inter-industry structure of both countries, shows that the diversity index is almost as much half (0.534) in case of Kuwait. Comparing with (1) in the case of Norway.

Table (2) Input-Output Based Diversity Index 2000: Kuwait and Norway

Country	Number of Industries (1)	Condition Number (CN) (2)	Size (SI) (3)	Density (DEN) (4)	Primary Diversity Measure (PDM) (5)	(PDM _i /PDM) (6)
Norway	42	2.535	1.000	0.655	1.660	1.000
Kuwait	29	5.288	0.725	0.232	0.889	0.535

As pointed earlier, one of the virtues of PDM index over conventional diversity measures is the inclusion of inter-industry characteristics of a country in determining the state of diversification. Having a diversity index of Kuwait as much as half of Norway may raise a number of justifications. First, it reflects the lack of linkages between industries. This is represented by the low number of non-zero elements in the Kuwaiti technical coefficient matrix, (29.5%) of total elements, comparing with high number in the case of the Norwegian matrix, (72%) of the total elements. Second, the gap between the two indices indicates, as well, the importance of indirect linkages between different industries, which are not addressed by conventional diversity measures.

Third, the value of (PDM) index should ring the bell towards the need for a structural breakthrough. This should be done whether in terms of activating domestic demand, import substitution, or export promotion. New products should play the essential role in this type of structural change. A number of access to new markets should be employed. This includes the Gulf Cooperation Council markets, Great Arab Free Trade Area, Investment and Free Trade Area bilateral agreement (FDI with the United States and European Union, and the encouragement of direct foreign investment based on horizontal integration (where FDI are linked, forward and backward, with the domestic activities). Fourth, since Kuwait economy is based mainly on oil sector, it is advisable to activate the purchases (backward), and sales (forward) of oil-based activities with other activities.

To do so, disaggregation, on the fifth digit of the International Standard Industrial Classification (ISIC), is required to identify the main purchases and suppliers of the oil-based activities. Based on the Norwegian experience, table A (4) summarizes the activities which should be activated. Practically speaking, every activity should be disaggregated to the fifth digit in order to promoted investment on firm level. In this respect, the considerations of firm sizes should be observed. In other words, large, medium and small sizes of purchasers and suppliers should be highly integrated so as integrate the supply side of small and medium scale firms with the demand side of large scale firms. This would help in solving the lack of demand problems of small scale firms. Having done so, the non-zero elements in the Kuwaiti technical coefficient matrix will be increased by the time, which should be followed by an increase in PDM index. It goes without saying that this mechanism does not work in vacuum, but it should be part and parcel of a proper institutional, economic, social, and political environment.

4. Diversification Determinants:

4.1 The Model:

In this section, an econometric technique is adopted to assess the main determinants of diversification in the case of Kuwait. Since diversification index, the dependent variable and a number of

independent variables are not available for a long period, time series analysis is excluded due to the low degree of freedom. Alternatively, a pooled analysis is used to overcome this problem. It would have been much better if the independent variable used in the pooled analysis is the diversity index calculated in section three, but unfortunately, this requires the availability of Input-Output tables for all countries covered by pooled analysis, which is not the case. Therefore, diversification index of UNCTAD, referred to in section (2), is used instead.

Taking into consideration the observations mentioned in the forgone paragraph, the model listed below is adapted to test the determinants of diversification in the State of Kuwait, in comparison with a number of OPEC/OAPEC members. Since no data available for a number of explanatory variables for the rest of oil producing countries, they are excluded from the model. The model is based on pooled database, when the number of cross sectional units is five: Indonesia, Iran, Kuwait, Oman, and Venezuela, whereas the time series cover the period 1991-2001 (11 years).

$$DI_{it} = \alpha + X_{it}\beta_{it} + \delta_i + \gamma_t + \varepsilon_{it} \quad (5)$$

where

DI_{it} = Diversification index (calculated by UNCTAD, see table

A5)

α = Overall constant

X_{it} = Vector of regressors: per capita income (Y), squared per capita income (Y^2) gross fixed capital formation ($GGFCF$), squared

gross fixed capital formation ($GFCF^2$), Inflation (INF), Institutions (INS), Population (POP), Openness ($OPEN$),

and

Real exchange rate(RER).

δ_i = Cross section specification effect (random or fixed)

γ_t = Time series specification effect (random or fixed)

The hypothesis:

Hypothesis 1: $\beta_{it} = \beta \forall_i$ and \forall_t (common β coefficients across cross sections)

Hypothesis 2: δ_i fixed (the sample is not random)

$$\gamma_t = 0 \quad T \text{ is limited}$$

Hypothesis 3: Residual covariance matrix (Ω) = $E(\varepsilon \varepsilon')$

Case 1: OLS hypothesis

$$\Omega = \begin{pmatrix} \delta^2 I_t & 0 \\ & \ddots \\ 0 & \delta^2 I_T \end{pmatrix}$$

Case 2: Cross sections heteroscedasticity. The examination of the data would suggest the variance will be quite different in the five (countries) time series. If this is a cross-country comparison, we would expect tremendous variation in the scales of all variables in the model. This will lead to relaxation of the classical assumption by allowing (δ^2) to vary across (i):

$$\Omega = \begin{pmatrix} \delta_1^2 I & 0 \\ & \ddots \\ 0 & \delta_5^2 I \end{pmatrix}$$

Case 3: Cross-sectional Correlation: Under the considered issues of diversification, it is expected that the explanatory variables effecting diversification of the countries in question, will affect all of them in different degrees. Therefore, it would be advisable to allow correlation of the distributions across countries:

$$E(\varepsilon_i \varepsilon_j') = \delta_{ij} I$$

$$\Omega = \begin{pmatrix} \delta_{11}^2 I & 0 \\ \delta_{21}^2 I & \ddots \\ \vdots & \\ \delta_{51}^2 I & 0 & \delta_5^2 \end{pmatrix}$$

4.2. Database:

The variables included in the model, equation (5), are one dependent and nine independent, explanatory, variables. The dependent variable (DI) is represented by the UNICTAD diversification index. It is important to emphasize that the lower the index, the deeper the diversification, since the lower value of (DI) refers to a higher diversification. As for independent variables, per capita income (Y) and its square value (Y^2) are taken to represent the effect of the early and later stage of economic growth process on diversification. Investment variable is reflected by gross fixed capital formation (GFCF) as a percentage of GDP. Investment is pointed out to be one of the most important determinants of diversification in most developing countries (ECA, 2007, and Hausmann, Hwang and Rodrik, 2007). Whereas the ($GFCF^2$) shows a significant level but the coefficient value is negligible. Inflation (INF) and real exchange rate (RER) are considered to measure the impact of economic stabilization on diversification. The real exchange rates are calculated by the author. Institutional constraint (INS) is gaining the ground to be an influential determinant of development process in most developing countries (see, for example: Easterly, 2004). Population (POP) is used to take into account the size of countries and their possible impact on diversification. UNICTAD, UNIDO, IMF, and World Bank databases are employed to construct the time series and cross section data used in the pooled analysis.

4.3. Main findings:

The model estimation will be either by Feasible General Least Square (FGLS) or Maximum Likelihood Estimation (MLE). The first method (FGLS) is used in this paper. Eviews6 is used to estimate (SUR) weighted least Square, which is (FGLS) when residuals are both cross section heteroskedastic and contemporaneously correlated. Accordingly, table (3) summarized the results:

Table (3) Main Determinants of Economic Diversification: Pooled Analysis

Independent Variable : Diversification Index (DI)			
Variables	Coefficients	Standard Error	t-test
Constant	0.647	0.171	3.771
Y	1.44E-04	5.88 E-05	2.450
Y ²	-5.29E-09	2.15 E-03	-2.459
GFCF	-4.51 E-03	1.93 E-03	-2.339
<i>GFCF</i> ²	7.15E-05	3.18E-05	2.248
INF	6.98 E-04	2.49 E-04	2.797
INS	-8.807 E-03	3.62 E-03	-2.432
POP	-3.95 E-04	1.24 E-04	-3.184
OPEN	-0.001	6.89E-3	-2.294
RER	7.91 E-06	4.8 E-07	1.656
Fixed Effects (Cross)			
Indonesia	0.698	0.147	4.762
Iran	0.265	0.662	0.399
Kuwait	-0.612	0.306	-0.024
Oman	-0.400	0.203	-1.974
Venezuela	-0.119	0.136	0.875
Tests:	R-squared : 0.974	Durbin-Watson : 1.775	
	F-statistics : 66.109		

As the table shows, the explanation variables are statistically significant except (RER) which is not. Investment, in terms of (GFCF), shows a very strong impact on diversification, with a right sign (negative). This means that with the increase of investment, a decrease in diversification index is expected (again, the decrease in the index refers to more diversification and less concentration). An application to the case of Kuwait is listed below. Institutions (INS), reflected by the International Country Risk Guide composite index, also considered as a second most important determinant of diversification. In their work on trade, institutions, and export specialization, (Crabbe, Beine, and Vandebussche, 2007) point out to the positive and robust effect of institutional variables on export performance. Their work covers thirteen Central European countries for the period 1989-2002. As for (INF) and real exchange rates (RER), the results express a positive effect. Speaking of inflation, its positive relationship with diversification is well recognized in the macroeconomic. Higher inflation does not encourage opening new export activities. This statement is not surprising bearing in mind that diversification itself requires investment in new activities, whether to meet domestic demand, or to be

competitive in the world markets. Higher inflation, as measure of economic stabilization, is not conducive to growth, and is not supportive to an environment that alleviate the impact of other determinants of diversification. The inverse relationship between inflation and exports is well founded. As stated by (Gylfason, 1998) in his survey which covers 160 countries, for the period 1985-1994, price stability is a prerequisite for exports and growth. He lists four channels of the reported linkages between inflation, export, and growth: (i) inflation induced production distortion causing a gap between returns on real and financial capital, (ii) inflation induced overvaluation of national currencies in real terms, (iii) potentially unwanted effects of inflation on saving and investment, and (iv) economic mismanagement, structural weakness ... etc, which inflation is symptomatic. As for (RER) the result shows that depreciation is not always a recommended policy to enhance diversification. This might be counter to the conventional belief that depreciation supports exports expansion. The model result on (RER) can be interpreted as follows: either the countries in question have limited export base. In this case, the depreciation tends to make such limited base more concentrated. The other interpretation is that depreciation is part and parcel of macroeconomic instabilities. As a consequence, unhealthy environment is created that is not leading to diversification. Depreciating (RER) is not a panacea to assure export diversification. As put by (Cherkaoui and Reza, 2001) "Although a more stable and balanced (RER) is conducive to export, sustainable export growth cannot be achieved on this basis or through continuous (RER) depreciation. The latter is a self-defeating policy. Once the initial macroeconomic framework, including equilibrium (RER) is set and domestic resources allocation and exports adjust to relative signals, the momentum for export growth slows. Sustained export expansion requires export diversification, product innovation, and quality upgrade, to form a more income elastic basket of export products, as occurred in the Newly Industrialized Countries". Population (POP), as a measure or size, reflects a negative relation, which can be read as follows: the bigger the size of a country, the more improvement in diversification is expected. The experience of four countries in Central America (Costa Rica, El Salvador, Honduras, and Guatemala), and for twenty years, based on panel data regression, indicates to a positive link between country size, in terms of population, and level of diversification (Denise, Stanley, and Bunnag, 2001). Although the degree of openness (OPEN) expresses a significant level at 5% and 10%, but the coefficient value is

modest. The question here: does the inverse relationship between trade openness and diversification go against the conventional trade theory? The answer is: not necessary. The conventional theory states that under no trade barriers countries tend to specialized in producing and exporting where they have comparative advantages. As a consequence, concentration rather than diversification will follow. Based on International Labor Office (ILO), United Nations Industrial Development Organization (UNIDO), and Organization for Economic Co-operation and Development (OECD), (Imbs and Wacziarg, 2003) show that countries which went through specialization at the early stage of development, turned to be more opened at the later stage. As for the five countries under consideration, only Indonesia, Kuwait, and relatively Oman, have shown a significant fixed effect. In other words, the value of the constant variable of these countries are within the range of the mean value of the overall constant value, i.e. the pooled value of the countries under analysis. The tests point out a high correlation coefficient (97%), and hence an acceptable level of (F) test. The value of DW refers to no autocorrelation (1.7).

The results listed in table (3) indicate an interesting findings. To mention by few, first, the level of investment, as percentage of GDP, is not sufficient to generate economic diversification, which is estimated to be (31.5%). This can be illustrated as follows:

Based on table (10), the estimated regression equation is as follows:

$$DI = C + \alpha_1 y - \alpha_2 y^2 - \alpha_3 GFGF + \alpha_4 GFCF^2 + \alpha_5 INF - \alpha_6 INS - \alpha_7 POP - \alpha_8 OPEN + \alpha_9 RER$$

$$\frac{\partial DI}{\partial GFCF} = \alpha_3 + 2\alpha_4 GFCF = 0$$

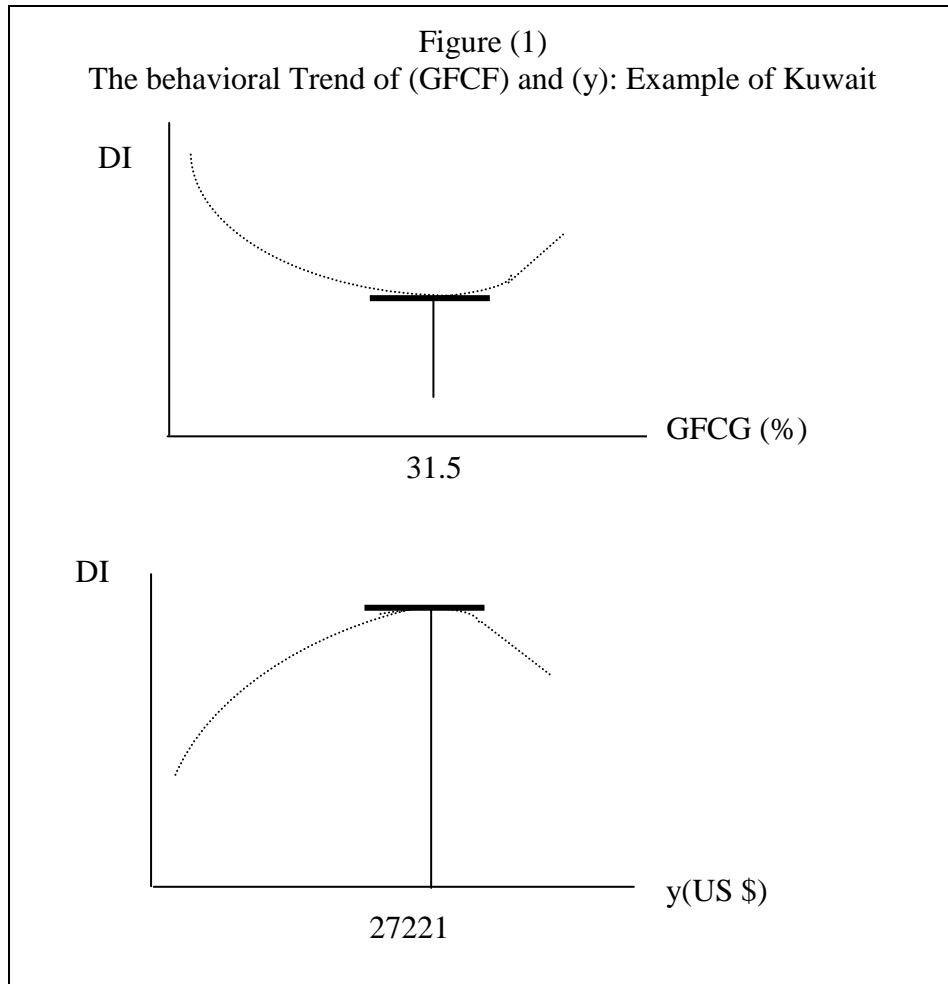
$$GFCF = -\frac{\alpha_3}{2\alpha_4} = \frac{-4.51 \times 10^3}{2 \times 7.15 \times 10^5} = 31.5\%$$

Since Kuwait, for instance, is hardly reaching 13.7% for the period 1991-2001 (Ministry of Planning, 2005), then Kuwait is in bad need to raise its investment rate to reach 31.5% as a minimum level for

economic diversification. Second, speaking of per capital income, the required level is US\$ (27221):

$$\frac{\partial DI}{\partial y} = \alpha_1 + 2\alpha_2 y = 0$$
$$y = -\frac{\alpha_1}{2\alpha_2} = \frac{1.44 \times 10^{-4}}{5.99 \times 10^{-5}} = \frac{1.44}{5.99} \times 10^5 = 27221 \text{ US dollar}$$

Again comparing this level with the prevailing one, US\$(24010) for the year 2006, Kuwait needs to bridge the gap between the current and required per capita by US\$ (3211) in order to achieve the minimum level of diversification. Among the countries that enjoy the required level are Hong Kong and Singapore (World Bank, 2006).



5. Policy Implications:

At the outset, it should be remembered the fact that the economic literature is full of conflicting view on the role of economic policies in the process of economic development (see for example: Chenery and Syrquin, 1975, Rodrik, 1998, and Easterly, 2003). The common agreement is that economic policies should not be overemphasized. To mention but few of developing countries experience, Saudi Arabia, as an oil producing country, has the largest programme of diversification, but the results have been limited. The share of manufacturing industry in GDP increased in very modest way from (5.9%) in 1980 to (8.1%) in

2004; whereas the share of non-oil manufacturing in total exports accounts for (6.5%) in 2004 (IMF, 2006). According to (Looney, 1994) the provision of manufacturing activities are not subject to an overvalued but also to the mounting expenditures on infrastructure and services, which leads to higher price of manufacturing products (regardless of ample manufacturing subsidies). Looney points out, as well, to the severe lack of skilled local workers in general, and technical and professional workers in particular, and to the protection in trade in European Union and United States markets, as additional constraints against the Saudi diversification efforts.

Taking non-Arab oil exporting country, Brunei, shows clearly the barriers against diversifying in a small, but rich country. Two main barriers are identified by Ameer (1996). The first, on the small size of domestic market, and the second, on the cost disadvantage of foreign market (exports). Despite the government effort to promote high technology industry and financial intermediating, both activities are constrained by the skills lack of native population, and the ineffectiveness of the government human capital development, due to the lack of interest of the population in the occupations needed for economic diversification. The Brunei's case shows, as well, that it is easier to diversify the sources of income rather than economy. Income diversification is achievable under the availability of good financial and political management, which keep current expenditure under control.

The central question remains to be answered is: What has to be done to enhance diversification? In this respect, the contributions of Rodrik (2005), Hausmann and Rodrik (2006), Hausmann, Hwang and Rodrik (2007), are of interest. The central issue here is that comparative advantage (a country should concentrate its production in a limited number of activity where comparative advantage lies) play no essential role in diversifying developing countries, and hence in development process. On the contrary, the dynamic nature of comparative advantage which leads some countries to gradually diversifying their investments into whole range of new activities. This goes with the same conclusion of (ECA, 2007) where investment is found to be the most effective variable in explaining the diversification behavior, and where foreign trade and openness is found to be ineffective.

Hausmann, Hwang and Rodrik (2007) contributions are of great interest as well. The methodology adopted by the authors to diagnose the source of diversification, and hence the policy required, is based on the following steps: first, disaggregate the traded commodities on 6-digit. Second, calculate for each traded commodity the average income level of the countries exhibited a RCA in that commodity. Third, aggregate different countries by their weighted average (the weight is the country share of each product in their export basket). The result is an indicator labeled as (EXPY). This indicator measures the quality of the export basket of a country. Fourth, plot the measure EXPY against per capita GDP. A high correlation is found. This confirms that the rich countries are those, which export typical rich countries goods. The interesting thing is: why some countries are above the regression line and others below? This has an implication for economic performance. China, for example, which is far above the line, is exporting a number of commodities, most of which are based on electronics. These commodities are associated with income level prevailing in other countries whose incomes are much higher than China.

To take the case of some Latin American countries: Argentina, Brazil, Chile and Mexico, and their performance over time, it shows that the first three countries, Argentina, Brazil and Chile have the lowest EXPY, income content of export, whereas China's level is close to that of Asia group and Mexico.

This is surprising, because China is considered poorer compared to Latin American countries, yet it is exporting much more sophisticated commodities than those exported by them. This is partially because of the relative greater natural resources endowments of the Latin American countries.

The concentration of EXPY measures is attributed to its significance and robust predictor of subsequent economic growth. These five countries who rest their exports on high quality export basket, EXPY, register a higher rate of growth compared with those who do not. That means if a country latches on high quality export basket, which is labeled with high productivity that productivity will spread to the rest of the economy and will reflect in terms of high economic growth.

In his attempt to explain why some countries succeed in exporting high quality commodities, Hausmann *et al* (2007) find no explanation in traditional variables associated mainly with economic stabilization policies. Instead, they attribute that to idiosyncratic elements, which make some countries develop mastery. They list two main reasons for idiosyncratic elements: coordination and information externalities. The first, externalities, refer to the vertical and horizontal requirement to make a new investment feasible and profitable, whereas the information externalities refer to many types but the most important one is what he calls “cost discovery process”. If an investment turns to be profitable, in a developing country, a process of entry and diffusion will follow by other entrepreneurs (informative externality). Otherwise, i.e. when an investment turns to be not profitable, the investor will bear all the costs himself. In other words, the gains in the first case are a publicized, and in the second case is privatized. This kind of asymmetry of cost discovery process explain, according to the authors, why cost discovery is usually under-financed in low level diversification economies and hence investment in new non-traditional activities.

Referring to the case of Kuwait, and other undiversified oil producing countries, investment and institutional variable (table 13, columns two and four show the right signs and the acceptable significant levels) should be given a priority before any improvement in the high quality of the export basket can be expected. Sectoral investment should receive proper attention. Following the findings of Hausmann *et al* (2007) public policy, in terms of industrial policy should be properly managed. Since Kuwait and alike countries are not classified as exporters of high quality commodities, a proactive industrial policies are in bad need. To make such policies fruitful, they should serve diversification efforts in the sectors that are aligned to the comprehensive industrial strategy. In order to achieve an operational industrial policy, an adoption of sector by sector and from downstream to upstream strategy is required. This is necessary to deepen horizontal integration between sectors, i.e. integrating intermediate goods with capital goods. This type of integration will help, at a later stage, to develop and achieve the second stage of integration, i.e. vertical integration between domestic market and exports. That is to say, downstream industries would be seen as export oriented, whereas intermediate activities would serve domestic markets.

As for institutional aspects, they should be considered as prerequisite to any diversification effort in particular, and, to a sustainable development process, in general. Institutions include those which develop and maintain good governance, as well as those which prevent and well manage the current and expected conflicts. In the absence of such institutions, diversifications benefits can easily evaporate. Kuwait institutional record, in terms of the ICRG composite index which includes democratic accountability, corruption, law and order, and bureaucracy quality, reaches (12.3) point out of (22) the maximum value of the index (ICRG Web Site). Therefore, a special attention is needed to upgrade to the international institutional standard.

Speaking of trade and diversification, a proactive trade policies are required. But a caveat has to be mentioned. Trade openness and liberalization do not necessarily lead to diversification and economic growth (Rodriguez and Rodrik, 2000). Protecting domestic markets, and orthodox trade liberalization should not be taken as granted to activate diversification. Across-the-board and open-ended protection turns to be anti-competitiveness, while the uncontrolled openness has led to a series of financial and trade crises. Trade policy should be used in strategic way aiming at diversifying a specific sector in the short and medium term and to be followed by more sectors in the long term.

To conclude, macroeconomic and sectoral policies should work in parallel. An intensive effort is in need to identify the goods and services which are eligible to be classified under "high quality" category. Having done this, public policy, in full cooperation with private sector, should be oriented, and re-oriented, towards goods and services falls under the category. To achieve well diversified economy, a set of prerequisites should be met. To name but few, a proper institutional framework, developmental role of the state, and highly qualified human capital are essential.

Notes:

¹ Diversification index that ranges from 0 to 1, reveals the external of the difference between the structure of trade of the country and the world average. The index value closer to 1 indicates a bigger difference from the world average.

Absolute deviation of the country share from world structure, as follows:

$$S_j = \frac{\sum_{i=1}^n |h_{ij} - h_i|}{2}$$

where h_{ij} = share of commodity i in total exports (or imports) of country j

h_i = share of commodity i in total world exports (or imports).

² Hachman index = $1 = \left(\sum_j (EMP_{Ku_{jt}} / EMP_{Ben_{jt}}) \times (EMP_{Ku_{jt}}) \right)$

where: $EMP_{Ku_{jt}}$ is the share of the country's (say Kuwait) employment industry (j) in the year (t)

$EMP_{Ben_{jt}}$ is the share of employment in industry (i) in years (j) in the benchmark country.

³ $RCA = (X_i - M_i) / (X_i + M_i)$

where RCA = Revealed Cooperation Advantage.

X_i and M_i = Exports and Imports of commodity (i), respectively.

⁴ Input-Output tables used in constructing (PDM) measure, for Kuwait and Norway, can be obtained from the author upon request.

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