ECONOMIA INTERNAZIONALE

Volume XLIV, Num. 2-3 Maggio-Agosto 1991

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THE VIABILITY OF ARAB GULF INDUSTRIAL DEVELOPMENT: THE RELATIVE IMPORTANCE OF LINKAGES VERSUS SIZE EFFECTS

INTRODUCTION.

The mechanism by which exports could act as an « engine of growth (or leading sector) and the determinants of the overall impact of an export stimulation on the economy have been well discussed in the literature (1). In the classic situation of staples, exports contributed to economic growth directly (through direct contributions to Gross Domestic Product—GDP), and indirectly through contributions to GDP per medium of spread (or carry-over) effects (2).

Since oil revenues in the middle east accrue, for all practical purposes, solely to the host governments and in addition have very few linkages to the domestic economy, their impact on development largely depends on when and how they are spent. As with the classic case of staples, we can conceptualize two major impacts on economic development: a direct one through the government allocation process—for consumption, investment or defense, and an indirect one over time where the general increase in non-oil gross domestic product stemming from earlier government allocations spreads through the economy.

This indirect contribution to growth embraces Hirschman-type linkages (3) and can broadly be considered as a sequence of multiplier-accelerator mechanisms whereby increases in non-oil Gross Domestic Product (GDP) augment demand for various sectoral—manufacturing, services, distribution—outputs. Theoretically, indirect contributions (or spread effects) can continue to accrue long after some export stimulus has occurred. The overall impact of an export stimulus on the economy has many determinants including technology, the propensity to import, the extent to which investment opportunities generated are accepted domestically, the ability to attract foreign factors and so on.

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(1) G. W. BERTRAM « Economic Growth in Canadian Industry », *Canadian Journal of Economics and Political Science* (May 1963); and G. W. BERTRAM, « The Relevance of the Canadian Wheat Boom in Canadian Economic Growth », *Canadian Journal of Economics* (1973).

(2) M. M. METWALLY and H. U. TAMASCHKE, « Oil Exports and Economic Growth in the Middle East », *Kyklos* (1980), pp. 499-500.

(3) Cf. A. O. HIRSCHMAN, *The Strategy of Economic Development* (New Haven, Conn: Yale University Press, 1958).

Obviously, neither the timing pattern exhibited by, nor the relative sizes of, exports' direct and indirect contributions to growth need to be fixed and could conceivably vary between subperiods, especially over long periods of economic development. Provided that investment opportunities generated by the growth of the export sector are exploited, the model predicts that economic growth will be a process of diversification about an export base.

The purpose of this paper is to examine one aspect of the role played by government expeditures in the Gulf States, the impact of government expenditures on the development of a diversified industrial base. Have the Gulf countries been able to diversify around their export bases directly, through increases in government expenditures? or has the process of industrial growth stemmed largely from indirect or spread effects? Has this process been uniform throughout the region or has it varied from country to country and from time period to time period? Based on this analysis several implications are drawn for the future prospects of industrialization in the region.

Recent Trends.

Because total GDP in the Gulf States is so greatly affected by developments in the oil sector, non-oil GDP is undoubtedly the best numerator for measuring progress towards industrial diversification. Domestic absorption—total expenditures is also affected by movements in oil prices and revenues, but because governments can smooth out expenditures more than they can export receipts it is also less affected by developments in the oil sector.

Using these measures as a basis of comparison (Tables 1 and 2) several notable trends stand out:

1. If industrialization is judged in terms of diversification (Table 1), the greatest gains have been made by the UAE, Oman, and Qatar. During the 1974-85 each of these countries experienced substantial increases in the ratio of manufacturing output to non-oil GDP.

2. Despite fairly healthy increases in industrial output, Bahrain, Saudi Arabia and Kuwait, actually experienced fairly dramatic decreases in the share of manufacturing to non-oil GDP. In each case by 1985 their manufacturing sectors accounted for about one half amount of GDP relative to 1974.

3. In general, therefore, the overall pattern for Gulf states is one of countries with relatively low initial levels of industrial diversification experiencing the greatest progress towards this end. In contrast, countries with relatively advanced states of industrial diversification actually regressed during the period under consideration.

TABLE 1. — *Structural Change in the Arab World: Industrial Production.*

(percent of non-oil/mineral GDP)

Country	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*
Oil Economies						
UAE	4.97	2.84	3.18	6.70	7.89	7.94
Bahrain	30.74	31.87	17.70	14.76	13.55	19.12
Saudi Arabia	24.37	21.26	15.02	12.25	10.15	10.75
Oman	1.12	0.89	1.17	1.62	1.88	2.02
Qatar	4.96	8.11	9.67	7.77	8.47	11.27
Kuwait	21.59	19.17	17.74	15.61	16.31	24.65
Iraq	13.06	13.75	11.75	16.69	14.48	13.35
Libya	4.79	4.73	5.32	6.15	5.17	5.70
Non-oil Economies						
Egypt	17.23	17.41	15.37	14.46	14.40	15.42
Algeria	15.46	14.05	15.47	14.53	13.98	16.40
Jordan	12.56	13.41	12.38	11.77	11.72	12.97
PDR Yemen	17.13	10.01	11.18	12.91	13.14	10.55
Yemen Arab Rep	5.67	5.29	4.71	4.69	5.10	5.67
Tunisia	11.12	9.79	10.64	10.71	11.55	12.42
Sudan	8.63	9.18	8.44	8.19	7.46	6.69
Somalia	6.84	5.00	6.49	7.04	5.80	5.79
Morocco	17.91	18.20	17.46	17.36	17.64	17.60
Mauritania	6.09	5.54	5.45	6.02	6.44	6.72

Country	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Oil Economies						
UAE	10.72	15.82	16.80	16.98	17.78	17.01
Bahrain	21.16	19.78	14.21	14.00	13.56	13.91
Saudi Arabia	13.10	14.52	11.22	10.86	11.81	12.32
Oman	1.99	2.66	3.33	4.95	5.71	5.14
Qatar	10.04	13.13	10.99	11.48	13.44	12.47
Kuwait	16.27	12.29	11.92	11.67	11.32	12.42
Iraq	11.14	9.29	9.82	9.66	12.56	12.56
Libya	6.06	5.65	9.00	6.27	7.37	7.47
Non-oil Economies						
Egypt	14.78	14.98	15.22	15.28	15.28	15.28
Algeria	14.56	12.48	12.57	13.10	13.38	13.54
Jordan	13.46	14.73	14.49	12.75	13.80	12.77
PDR Yemen	11.98	11.47	11.60	12.18	12.21	11.29
Yemen Arab Rep	5.80	6.32	6.70	7.15	7.40	7.07
Tunisia	13.46	13.54	12.70	12.60	13.26	13.42
Sudan	5.91	5.78	5.49	7.04	9.57	9.30
Somalia	5.80	5.43	5.57	5.73	5.88	6.02
Morocco	18.00	18.51	16.93	17.60	17.42	17.40
Mauritania	6.70	6.29	7.09	7.14	5,61	5.77

Note: Computed from data in Arab Monetary Fund, *National Income Accounts, 1974-1985.*

TABLE 2. — *Structural Change in the Arab World: Industrial Production.*

(percent of domestic absorption)

Country	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*
Oil Economies						
UAE	3.04	1.71	2.02	4.21	4.95	4.82
Bahrain	21.74	29.20	13.14	13.17	13.22	16.51
Saudi Arabia	17.55	14.06	9.39	7.28	5.66	6.01
Oman	0.47	0.35	0.58	0.83	1.00	1.11
Qatar	5.30	7.06	6.52	4.52	5.44	7.26
Kuwait	7.07	7.95	9.37	11.17	11.27	18.78
Iraq	na	na	na	na	9.25	7.96
Libya	2.53	2.54	3.10	3.57	3.03	3.17
Non-oil Economies						
Egypt	15.15	14.39	13.37	12.42	11.82	11.24
Algeria	10.03	9.04	10.22	9.11	9.12	11.53
Jordan	8.18	8.03	7.48	7.01	7.33	7.60
PDR Yemen	10.90	6.37	6.50	7.01	7.48	6.16
Yemen Arab Rep	4.37	3.93	3.11	3.06	3.06	3.38
Tunisia	9.89	8.43	9.19	9.03	9.91	10.76
Sudan	8.16	8.09	7.64	7.64	6.89	8.20
Somalia	5.53	4.32	5.66	6.13	5.07	4.64
Morocco	15.70	15.11	13.98	13.73	15.12	15.07
Mauritania	4.14	3.55	3.22	3.78	4.31	4.54

Country	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Oil Economies						
UAE	6.75	10.32	11.64	12.18	13.20	12.93
Bahrain	18.62	19.62	12.20	12.38	11.51	11.78
Saudi Arabia	7.43	8.35	6.26	6.36	9.93	7.37
Oman	1.01	1.47	1.78	2.88	3.41	3.73
Qatar	8.06	9.98	7.48	9.07	16.53	11.96
Kuwait	10.55	7.70	7.38	6.49	6.46	6.15
Iraq	6.58	4.95	5.36	na	na	8.35
Libya	3.31	2.90	3.83	3.92	5.13	5.53
Non-oil Economies						
Egypt	11.51	11.42	11.82	11.92	11.61	11.77
Algeria	10.25	8.90	9.14	9.78	10.41	10.83
Jordan	8.61	8.57	8.54	8.00	8.94	8.58
PDR Yemen	6.31	5.82	6.25	6.78	6.71	6.04
Yemen Arab Rep	3.48	3.79	4.21	4.79	5.21	5.16
Tunisia	11.24	10.94	10.13	10.28	10.58	11.24
Sudan	5.41	5.38	5.08	6.14	8.86	8.47
Somalia	4.75	4.90	4.64	4.80	4.77	4.94
Morocco	15.54	15.37	14.28	15.55	14.97	15.31
Mauritania	4.42	4.22	4.40	4.43	3.71	3.84

Note: Computed from data in Arab Monetary Fund, *National Income Accounts, 1974-1985.*

4. In contrast to the Gulf States, other Arab countries experienced little change in their manufacturing output relative to non-oil GDP. In other words these countries experienced increases in manufacturing output over time in roughly the same proportion as in their non-manufacturing activity.

In terms of manufacturing's share of domestic absorption (Table 2):

1. With the possible exception of Kuwait, the Gulf countries experienced similar, albeit less dramatic movements in industrial diversification.

2. Because of the fall in government expenditures after the 1982, the decline in Saudi Arabia's, Bahrain's, and Kuwait's manufacturing sector relative to domestic absorption leveled off and stabilized somewhat.

3. Again, considerable stability has set in the other Arab countries with only several major declines—Egypt, PDR Yemen, and gains—Libya, Tunisia.

A slightly different picture develops if we rank countries in terms of their relative degree of industrial development. For this purpose, factor analysis was used to create an index of industrial diversification. This index consists essentially of the country scores on a factor which in turn is the weighted average of four measures of industrialization.

The first two, the share of manufacturing in non-oil gdp and absorption were examined above. The second two measures, the ratio of manufacturing to distributive and to service activities are designed to capture the alleged « over-development » of non-manufacturing sectors in the oil states. If the oil states did in fact have a relative expansion in non-manufacturing activities, we would expect to see a number of these countries experiencing relatively better (compared to Tables 1 and 2) industrial performance.

On the basis of this index (Table 3):

1. The relative declines of Bahrain, Saudi Arabia, and Kuwait are again apparent, as are the improvements in industrial diversification in the UAE, and Qatar. Using this index, Oman's performance is now relatively poor.

2. The leveling off in recent years of the fall in the industrial diversification index for Bahrain, Saudi Arabia and Kuwait is most likely indicative of a proportional contraction of services/distributional activities, and in particular construction, rather than a major expansion in manufacturing.

TABLE 3. — *Relative Industrialization in the Arab World, 1974, 1985.*

(factor scores)

Country	*1974*	*1975*	*1976*	*1977*	*1978*	*1979*
Oil Economies						
UAE	—0.98	—1.18	—1.41	—0.89	—0.73	—0.86
Bahrain	1.98	2.62	1.00	0.95	0.80	1.28
Saudi Arabia	1.70	1.12	0.73	0.33	—0.19	—0.25
Oman	—1.52	—1.59	—1.92	—2.06	—2.06	—1.73
Qatar	—0.95	—0.31	—0.34	—0.85	—0.71	—0.30
Kuwait	0.41	0.05	0.58	0.83	0.89	2.22
Iraq	na	na	na	na	0.91	0.36
Libya	—1.14	—0.99	—1.14	—1.00	—1.23	—1.00
Non-oil Economies						
Egypt	0.89	0.99	1.37	1.33	1.17	0.64
Algeria	0.62	0.33	1.16	0.94	0.79	0.90
Jordan	—0.20	—0.17	—0.05	0.04	0.07	—0.10
PDR Yemen	0.63	—0.32	—0.10	0.25	0.45	—0.36
Yemen Arab Rep	—0.67	—0.59	—0.85	—1.11	—1.12	—1.06
Tunisia	—0.03	—0.01	0.26	0.33	0.52	0.41
Sudan	—0.12	0.07	0.10	—0.07	—0.30	—0.28
Somalia	—0.37	—0.26	0.07	—0.19	—0.32	—0.61
Morocco	0.67	0.89	1.41	1.62	1.82	1.36
Mauritania	—0.92	—0.65	—0.97	—0.84	—0.75	—0.60

Country	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Oil Economies						
UAE	—0.31	0.63	1.23	1.16	1.22	1.12
Bahrain	1.87	1.81	0.79	0.61	0.23	0.43
Saudi Arabia	0.22	0.52	—0.10	—0.27	0.09	0.01
Oman	—2.07	—2.94	—2.02	—1.78	—1.77	—1.74
Qatar	—0.37	0.09	—0.24	0.03	0.92	0.59
Kuwait	0.49	—0.25	—0.16	—0.37	—0.59	—0.35
Iraq	—0.15	—0.64	—0.41	na	na	—0.01
Libya	—1.16	—1.30	—1.07	—1.23	—1.08	—0.97
Non-oil Economies						
Egypt	0.95	0.91	1.30	1.17	1.00	1.04
Algeria	0.85	0.53	0.71	0.74	0.07	0.85
Jordan	0.23	0.48	0.68	0.22	0.35	0.12
PDR Yemen	—0.04	—0.10	0.07	0.18	0.07	—0.19
Yemen Arab Rep	—1.00	—0.89	—0.88	—0.83	—0.84	—1.01
Tunisia	0.77	0.75	0.71	0.63	0.63	0.82
Sudan	—0.77	—0.76	—0.91	—0.69	—0.35	—0.28
Somalia	—0.30	—0.67	—0.82	—0.95	—1.05	—1.14
Morocco	1.62	1.62	1.83	2.08	1.72	2.07
Mauritania	—0.83	—0.79	—0.70	—0.70	—1.34	—1.39

Note: Based on factor analysis using four measures of industrialization: manufacturing percent of non-oil GDP, domestic absorption, total services and total distribution.

3. Using the diversification index, several of the non-oil economies: Egypt, Jordan, Tunisia and Morocco had major improvements in their industrial diversification efforts.

In sum, all three measures of industrial progress in the Gulf countries paint a similar picture: several countries, the UAE and Qatar, have been fairly successful in diversifying their economies. Despite large absolute increases in industrial product, by 1985 Saudi Arabia, Kuwait and Bahrain, were considerably more dependent on non-industrial activities than they were at the time of the revolution in oil prices.

Spread versus Linkage Effects.

For policy purposes, it is of some interest to determine the factors responsible for these movements. Where improvements in industrial diversification largely the response to spread effects—increases in industrial demand created by an expanding non-oil sector of the economy? Or were they caused by more direct linkages associated with expanding government expenditures?

It should be noted that particularly in the case of the oil economies, government expenditures could have either a positive or negative impact. If government expenditures go directly into investment in or the purchasing of industrial activities, the effect will be positive. If instead, the expansion of the public sector is into areas of a largely non-industrial nature, the impact may be negative as these activities grow relative to industry.

The methodology used to measure these effects consisted of the following steps:

1. A factor analysis was made to determine the main structural features in the Arab economies. Included in the analysis were measures of industrial diversification, service and distributional activities, and imports.

2. To capture the effects of non-oil development on Gulf state industrial diversification efforts, manufacturing/distribution and manufacturing/construction were included in the analysis in addition to the share of manufacturing in absorption and in non-oil GDP.

3. Since interest was primarily in the impact of government expenditures and/or output on industrial diversification, several measures of both factors were included in the analysis. Public sector expenditures and non-oil output were both depicted in terms of their proportion of: (a) absorption, and (b) Gross Domestic product.

4. The over-all influence of both government expenditures and output effects were determined by the correlation of these variables on the industrial factor. To gain some idea of the changing nature of this impact three years were examined: (a) 1976 a period after which the first effects of the oil price shock had time to be reflected, (b) 1980 a period by which the longer term effects of the 1973/74 oil price changes were reflected, and (c) 1985 a date by which some of the effects of the oil price declines were making themselves felt.

5. To determine the linkage and spread effects on industrial diversification in our sample countries, individual factor scores were computed. As in Table 3 above, these factor scores depict the industrial environment, and their values reflect each country's position in the spectrum of Arab world industrial diversification.

6. The factors scores obtained in step 5 reflect the relative success or failure of each country at achieving industrial diversification, given the presence of linkage and spread effects. To determine the relative impact of each effect, separate factor scores were computed by (a) leaving out the output variable while retaining the government expenditure terms, (b) omitting the government expenditure terms, while including the output or spread factors.

7. Finally, the factor scores in these final two exercises were compared with those in step 5 to determine the relative strength of the two effects.

The results (Tables 4-6) of these exercises show several interesting patterns:

1. In the initial year, 1976 (Table 4), the four manufacturing variables loaded on a common factor. This factor also included one aspect of the service sector—the ratio of services to domestic absorption.

2. At this time, the spread effects as depicted by output (non-oil GDP) to absorption appear fairly strong (a standardized regression coefficient of 0.60 on industry).

3. The direct effects of government expenditure, however, appear fairly weak (standardized regression coefficients of 0.19 and 0.14 for government expenditures/absorption and government expenditures GDP respectively).

4. In general the oil economies were achieving net positive effects at this point in time with spread effects predominating. On the other hand the non oil economies had mixed effects with negative spread effects predominating for Jordan, PDR Yemen, Yemen Arab Republic, and Egypt. Positive linkage effects predominated for the rest of the non-oil economies.

TABLE 4. — *Arab States, Relative Strength of Government Expenditures and Sectoral Output on Industrial Diversification, 1976.*

(Standard Regression Coefficients)

Variable	Oblique Factor Pattern				
	Factor 1 industry	Factor 2 serv/import	Factor 3 distrib	Factor 4 output/govex	Factor 5 govex
man/abs	1.01*	0.05	0.16	0.05	0.01
man/gdp	0.96*	0.18	0.10	0.03	0.12
man/dist	0.87*	—0.07	—0.26	—0.04	0.10
man/const	0.75*	—0.14	—0.07	0.48	0.17
OUTPUT/ABS	0.60*	—0.46	0.16	0.14	—0.31
service/abs	0.59*	0.64*	—0.12	—0.21	—0.23
imp/abs	0.04	0.93*	0.28	0.16	0.06
imp/gdp	—0.18	0.88*	0.19	0.11	0.20
service/gdp	0.21	0.77*	—0.25	—0.27	—0.03
dist/abs	0.25	—0.02	1.01*	—0.09	—0.18
dist/gdp	—0.16	0.17	0.88*	—0.18	0.08
OUTPUT/GDP	0.23	0.01	—0.24	0.93*	0.00
GOVEX/ABS	0.19	—0.17	0.05	—0.75*	0.68*
GOVEX/GDP	0.14	0.15	—0.11	0.03	0.93*

Country	Factor Scores			
	Factor 1 manufacturing	Factor 1 minus output	Factor 1 minus govt expenditure	Dominant Effect
Oil Economies				
UAE	—1.43	—1.42 (=)	—1.40 (=)	
Bahrain	1.01	1.04 (=)	1.03 (=)	
Saudi Arabia	0.75	0.39 (+)	0.80 (=)	spread +
Oman	—1.76	—1.68 (=)	—1.70 (=)	
Qatar	—0.15	—0.50 (+)	—1.37 (+)	spread +
Kuwait	na	na	1.10	
Iraq	na	na	na	
Libya	—0.64	—1.06 (+)	—1.02 (+)	spread +
Algeria	0.37	0.57 (—)	0.76 (—)	linkage —
Non-Oil Economies				
Jordan	0.05	0.41 (—)	0.02 (=)	spread —
PDR Yemen	—0.30	0.09 (—)	—0.09 (—)	spread —
YAR	—1.16	—0.88 (—)	—1.07 (—)	spread —
Egypt	1.60	1.82 (—)	1.45 (+)	spread —
Tunisia	0.64	0.35 (+)	0.17 (+)	linkage +
Sudan	0.11	0.09 (=)	—0.24 (+)	linkage +
Somalia	—0.15	—0.02 (—)	—0.30 (+)	linkage +
Morocco	1.69	1.40 (+)	1.52 (+)	linkage +
Mauritania	—0.64	—0.71 (+)	—0.85 (+)	linkage +

Note: ( ) refers to the impact of output (column 2) and government expenditures (column 3) on industrial diversification.

At the height of the oil boom, 1980 (Table 5), the situation had changed considerably:

1. The factor analysis (top of Table 5) indicated that spread effects were likely to be positive for the group as a whole, while the linkage effects were probably insignificant for most countries.

2. An examination of factor scores however, indicates quite the reverse. While a number of the non-oil economies experienced positive spread effects (and negative spread effects for the oil economies), the predominant effects on industrial diversification were produced by direct linkages to government expenditures.

3. In general, all of the non-oil economies where linkage effects were present, experienced negative impacts on industrial diversification from increased government expenditures. In contrast, all of the non-oil economies experiencing linkage effects were able to achieve higher levels of industrial diversification thorough expanded government expenditures.

Finally after several years of declining oil revenues, the situation had again changed (Table 6) to the extent that:

1. There was now a return of spread effects in a number of countries as the dominant factor affecting the pattern of industrial diversification.

2. The demarcation between oil and non-oil economies was much less defined on the bases of linkage and spread effect patterns. Individual countries in each group had both a predominance of either linkage or spread effects, and of different signs for each effect.

3. The magnitudes of each effect also appeared (the differences in scores between column one and columns two and three to be somewhat less than in the past, perhaps indicating a weakening of these effects).

Summing up the results of the factor analysis, it appears that until quite recently the oil and non-oil economies experienced fundamentally different patterns of industrial diversification. In large part, industrial diversification was retard in the oil economies through the dominance of negative linkage effects associated with rapidly expanding government expenditures. Apparently these expenditures had their greatest impact on the service, distribution, and construction sectors, with relatively little direct stimulus to industry.

At the same time these economies were not capable of achieving spread effects sufficient to offset the forces initiated by an expanding public sector. Those countries (The UAE and Qatar) that were able to make

TABLE 5. — *Arab States, Relative Strength of Government Expenditures and Sectoral Output on Industrial Diversification, 1980.*

(Standard Regression Coefficients)

Variable	Oblique Factor Pattern				
	Factor 1 industry	Factor 2 imports	Factor 3 services	Factor 4 govt expend	Factor 5 distrib
man/dist	1.00*	0.00	0.16	—0.04	—0.38
man/gdp	0.97*	0.31	0.09	0.10	0.03
man/abs	0.93*	0.15	0.09	0.00	0.17
man/const	0.82*	—0.19	—0.24	0.06	0.08
imp/gdp	0.04	1.00*	—0.01	—0.05	0.10
imp/abs	0.31	0.87*	—0.03	—0.12	0.29
OUTPUT/ABS	0.43	—0.57	0.00	—0.13	0.42
service/gdp	—0.01	0.11	0.95*	—0.04	—0.15
service/abs	0.26	—0.18	0.93*	—0.09	0.10
OUTPUT/GDP	0.30	—0.22	—0.50*	—0.35	—0.14
GOVEX/ABS	0.00	—0.16	0.22	1.00*	0.12
GOVEX/GDP	0.19	0.02	—0.30	0.99*	—0.10
dist/abs	0.11	0.09	—0.01	—0.01	0.95*
dist/gdp	—0.25	0.44	—0.04	0.08	0.77*

Country	Factor Scores			
	Factor 1 manufacturing	Factor 1 minus output	Factor 1 minus govt expenditure	Dominant Effect
Oil Economies				
UAE	—0.76	—0.63 (—)	—0.50 (—)	linkage —
Bahrain	1.80	1.75 (=)	1.75 (=)	
Saudi Arabia	—0.13	0.00 (—)	0.30 (—)	linkage —
Oman	—1.94	—1.89 (=)	—1.93 (=)	
Qatar	—0.30	0.35 (=)	—0.29 (=)	
Kuwait	0.45	0.60 (—)	0.78 (—)	linkage —
Iraq	—0.50	—0.37 (—)	—0.21 (—)	linkage —
Libya	—1.16	—1.11 (=)	—1.02 (—)	linkage —
Algeria	0.31	0.41 (—)	0.60 (—)	linkage —
Non-Oil Economies				
Jordan	0.23	0.18 (=)	0.11 (+)	linkage +
PDR Yemen	na	na	0.09	
YAR	—0.85	—0.93 (+)	—1.10 (+)	linkage +
Egypt	0.99	1.03 (=)	0.86 (+)	linkage +
Tunisia	0.95	0.89 (+)	0.83 (+)	linkage +
Sudan	—0.43	—0.65 (+)	—0.91 (+)	linkage +
Somalia	0.01	—0.11 (+)	—0.39 (+)	linkage +
Morocco	1.81	1.82 (=)	1.85 (=)	
Mauritania	—0.48	—0.62 (+)	—0.73 (+)	

Note: ( ) refers to the impact of output (column 2) and government expenditures (column 3) on industrial diversification.

TABLE 6. — *Arab States, Relative Strength of Government Expenditures and Sectoral Output on Industrial Diversification, 1985.*

(Standard Regression Coefficients)

Variable	Oblique Factor Pattern				
	Factor 1 govt exp	Factor 2 industry	Factor 3 imports/output	Factor 4 distribut	Factor 5 man/out
GOVEX/ABS	1.01*	—0.20	0.17	—0.14	—0.01
serv/gdp	0.87*	0.18	—0.18	0.11	—0.08
serv/abs	0.85*	0.16	0.31	0.12	—0.09
GOVEX/GDP	0.81*	—0.16	—0.19	—0.31	0.25
manuf/gdp	—0.03	1.01*	—0.12	0.05	0.08
manuf/serv	0.02	0.86*	0.10	—0.49	0.07
manuf/abs	0.01	0.81*	0.31	0.08	0.06
OUTPUT/ABS	0.07	0.06	0.92*	0.16	0.05
imports/gdp	0.00	—0.03	—0.88*	0.14	0.08
distrib/gdp	0.01	—0.09	—0.24	1.00*	0.06
distrib/abs	0.01	—0.05	0.39	0.90*	0.09
manuf/con	0.03	0.44	—0.12	0.17	0.86*
OUTPUT/GDP	—0.45	—0.16	0.31	—0.14	0.55*

Country	Factor Scores			
	Factor 2 manufacturing	Factor 2 minus output	Factor 2 minus govt expenditure	Dominant Effect
Oil Economies				
UAE	1.32	1.15 (+)	0.79 (+)	linkage +
Bahrain	0.45	0.59 (—)	0.28 (+)	linkage +
Saudi Arabia	—0.27	—0.37 (+)	—0.08 (—)	linkage —
Oman	—1.47	—1.65 (+)	—1.68 (+)	linkage +
Qatar	0.45	0.60 (—)	0.40 (=)	spread —
Kuwait	0.08	—0.32 (+)	0.12 (=)	spread +
Iraq	na	na	—0.06	
Libya	na	na	—1.09	
Algeria	0.33	0.44 (—)	0.37 (=)	spread —
Non-Oil Economies				
Jordan	—0.23	—0.18 (=)	0.21 (+)	linkage +
PDR Yemen	na	na	—0.10	
YAR	—1.28	—0.10 (—)	—0.94 (+)	spread —
Egypt	0.70	0.57 (+)	1.36 (+)	linkage +
Tunisia	0.42	0.47 (=)	0.94 (+)	linkage +
Sudan	—0.81	—0.62 (—)	—0.48 (—)	linkage —
Somalia	na	na	—0.93	
Morocco	1.76	1.88 (—)	2.28 (+)	linkage +
Mauritania	—1.51	—1.43 (—)	—1.40 (—)	linkage —

Note: ( ) refers to the impact of output (column 2) and government expenditures (column 3) on industrial diversification.

significant gains in industrial diversification appear to have done so through developing positive spread effects at key points in time (Qatar mid 1970s and the UAE mid 1980s), while avoiding negative linkage effects at others (Qatar early 1980s, UAE mid 1970s).

Conclusions.

The findings presented above are largely consistent with earlier staple theories of development in that industrial diversification in oil based economies in the Arab world developed along lines fundamentally different than that experienced by the non-oil economies of the region. On the other hand, it appears that the general absence in the oil economies until fairly recently of significant spread effects has made the industrialization process much less predictable than in those countries experiencing classic patterns of staple development. The large role played by the governments in the oil economies has resulted in the predominance of discretionary elements over market prices as the chief factor responsible for the allocation of resources.

As noted, the arrival of a viable and self sufficient manufacturing sector industrial structure has long been viewed as the prime objective of the Arab Gulf states, as the key to successful economic diversification, and as the main assurance of continuing and self-sustaining economic growth. Since the large increases in oil revenues in the 1970s Gulf governments have directed a substantial portion of their huge development outlays towards the creation of an adequate industrial infrastructure and the establishment of certain major state and joint public/private public heavy industries.

It is clear from the patterns described above, however, that any way one looks at it, industrial diversification has proceeded at rates lower than anticipated, or at least lower than at feasible rates, and in some cases the process has even been reversed.

Before any final evaluations are made of the Gulf states' attempts at industrialization, however, it is important that two basic factors be recognized which render any precise objective analysis of the Gulf experience in industrialization difficult if not impossible at the present time.

The first factor is the total time span from the first steps in modern industry to the present day, which has been too short to allow the industrial sector to become firmly established as yet, and thus the effect of industrial development on the economic and social growth in the region cannot yet be quantified. The rupture which occurred in the productive processes of Gulf society in the transition from pre-oil export dominated economies was total, in that there is not direct connection, or relationship between the introduction of modern industry to the Gulf states and the historical

relations of production in the Gulf. Consequently the process of industrialization has depended on external rather than internal dynamics (4).

As Abdulla Hamad al-Moajil has noted:

> The fact that industrialization has been an external rather than internal process for the societies of the Gulf resulted in a false understanding of the true meaning of industrialization based on a confusion between the theory o industrialization in its broadest sense and the practical process of installing industrial plant through turnkey contracts with foreign construction and engineering companies. Factories set up in the Gulf on this turnkey basis belong to the region in a graphical sense, but the existence and continued functioning of the factories is dependent on external factors. In other words, the process of industrialization in the Gulf has tended to be a geographical rather than an historical phenomenon (5).

The second factor preventing an objective assessment of Gulf industrialization is the absence of a comprehensive strategy for development on the regional level to provide a definition of the status and role of manufacturing industry within the overall process of social and economic development. Again as observed by al-Moajil although each individual state in the region has formulated and instituted its own development plans, whether on the basis of declared five year plans or a more general long term policy there has been little effort until recently to achieve any coordination between neighboring states (6).

> Thus while the success of each state in achieving its self declared targets has given the semblance of overall development even in terms of industrial growth, the actual growth of industry in each state has not been related to a regional strategy aimed at maximum exploitation of regional resources and markets. In the absence of a coordinated regional strategy, excessive capacity was installed in some sectors of industry, while none was installed in others. This imbalance coupled with the limited size of markets available within any single state, meant that there was no possibility for the growth of integrated industries, so long as development took place at state level rather than in a regional context (7).

The completion of the infrastructure stage of development together with the decline in oil revenues has reduced the options open to govern-

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(4) Abdulla Hamad AL-MOAJIL, « Industrialization in the Arab Gulf States », *Arab Gulf Industry* (January 1986), p. 9.

(5) *Ibid.*, p.9.

(6) *Ibid.*

(7) *Ibid.*, pp. 9-10.

ments in the region and actually make forecasts of future patterns of industrial diversification easier to anticipate than in the past. In general all of the Gulf states are moving from public sector led growth and over-dependence on oil to private sector initiatives and diversified production base. The general objectives of the evolving development strategy in the region include ([8]):

1. diversifying the region's economic structure in order to minimize its exposure to external factors and allow a bigger share of the industrial sectors;

2. the development and optimal utilization of the region's human resources, increasing human productivity and enhancing the relation between reward and productivity;

3. increasing the value added of local natural resources through downstream processing;

4. meeting the local market demand in as much as possible with an outlook toward increasing exports by capitalizing on the region's relative advantage in certain products;

5. creating an industrial and technological base that is self sustaining and is reasonably independent from the oil sector; and

6. working toward a geographically balanced development of the region in order to enhance regional cooperation.

As Azzam notes:

> The first stage of economic development in the region is almost completed, the state lasted from the early 70s still the early 80s and made use of increasing oil revenues to help build the basic infrastructure both physical, human and financial—airports, sports, roads, schools, housing universities, hospitals, telecommunications and financial institutions. The second development phase has actually started. It involves a larger participation of the private sector and relies more on attracting foreign investors as joint venture partners including the transfer of appropriate technology management skills and international distribution system.

The outcome of this process will be the diversification into industry that has long alluded the Gulf States.

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(8) Henry AZZAM, *The Gulf Economies in Transition* (New York: St. Martin's Press, 1988), p. 3.

ABSTRACT

The purpose of this paper is to examine one aspect of the role played by government expenditures in the Gulf States, the impact of government expenditures on the development of a diversified industrial base.

Based on a factor analysis of the structure of the twenty-one Arab economies, it appears that until quite recently the oils and non-oil economies experienced fundamentally different patterns of industrial diversification. In large part, industrial diversification was retard in the oil economies through the dominance of negative linkage effects associated with rapidly expanding government expenditures. Apparently these expenditures had their greatest impact on the service, distribution, and construction sectors, with relatively little direct stimulus to industry. At the same time these economies were not capable of achieving spread effects sufficient to offset the forces initiated by an expanding public sector. Those countries (The UAE and Qatar) that were able to make significant gains in industrial diversification appear to have done so through developing positive spread effects at key points in time (Qatar mid 1970s and the UAE mid 1980s), while avoiding negative linkage effects at others (Qatar early 1980s, UAE mid 1970s).

RIASSUNTO

Le possibilità di sviluppo industriale nel Golfo Arabico: l'importanza relativa degli effetti di collegamento e di quelli dimensionali

Lo scopo dello studio è esaminare un aspetto del ruolo svolto dalle spese pubbliche negli Stati del Golfo: l'effetto delle spese pubbliche sullo sviluppo di attività industriali diversificate.

L'analisi della struttura delle ventuno economie arabe, sembra rilevare che fino a poco tempo fa i Paesi produttori di petrolio e quelli non produttori hanno realizzato modelli fondamentalmente diversi di diversificazione industriale. In genere la diversificazione industriale è in ritardo nei Paesi produttori di petrolio a causa degli effetti negativi dovuti alla rapida espansione delle spese pubbliche. Apparentemente tali spese hanno influenzato principalmente il settore terziario, quello della distribuzione e della costruzione stimolando in misura relativamente modesta l'industria. Al tempo stesso tali economie non sono riuscite ad ottenere effetti di propagazione sufficienti a controbilanciare le forze messe in moto dall'espansione del settore pubblico. I Paesi (gli EAU e il Qatar) che solo hanno potuto trarre vantaggio dalla diversificazione industriale sembrano esserci riusciti stimolando gli effetti positivi di propagazione in alcuni periodi (il Qatar alla metà degli anni '70 e gli EAU alla metà degli anni '80) ed eliminando gli effetti negativi di collegamento in altri periodi (il Qatar all'inizio degli anni '80 e gli EAU alla metà degi anni '70).