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Looney, R.E.

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# PUBLIC BUDGETING AND FINANCIAL MANAGEMENT

Volume 5, Number 3, 1993

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**HUMAN CAPITAL DEVELOPMENT IN THE UAE:  
ANALYSIS OF BUDGETARY CONFLICTS  
IN AN ERA OF RELATIVE AUSTERITY**

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**ABSTRACT**

This paper examines the manner in which the government of the UAE adjusted to declines in oil revenues in the mid- to late 1980s. Specifically, was the government able to support the continuation of investment in human capital that began after the oil price increases of 1973/74? In this regard, what were the main budgetary tradeoffs associated with educational expenditures? Did the country's high levels of defense expenditure significantly diverted funds from human capital development? Did the funding for education suffer in proportionate to other major expenditure items during the current period of relatively slack oil revenues? Based on the answers to these questions, several conclusions are drawn concerning the ability of the country to reduce its dependence on foreign workers.

## INTRODUCTION

The population of the UAE doubled between 1975 and 1983, from 558,000 to 1,195,000. In 1981, immigration was continuing at such a rate that projections forecast the population at 1.23 million by 1985. As it turned out, by 1986, the latest year for official figures, the population had reached 1.67 million. The UAE's main concern, however, is not the overall size of its population but its composition.

The 1980 census figures revealed only 20 percent of the population were UAE nationals. That census gave rise to predictions that, by 1990, nationals would account for no more than 10-12 percent of the population. Such fears were compounded when oil revenues started to subside in 1981-82, drawing the authorities' attention to the fact that expatriates were being paid to run all kinds of social services such as health care, education and housing, demand for which was largely created by the expatriates themselves.<sup>(1)</sup>

The government's immediate response was to propose a twenty-two percent staffing cut in the health and education departments. Although this target was soon dismissed as unworkable, it has remained a primary long term government objective, and in fact has resulted in a fairly sharp reduction in the expansion of the foreign workforce.<sup>(2)</sup>

Clearly, two factors will determine the extent to which the Emirates will be able to reduce their dependence on foreign workers: (1) the ability of the country to attract local youth into educational programs as preparation for many of the jobs currently manned almost exclusively by expatriates, and (2) the ability of the government to fund these programs in an environment of relatively slack oil markets and intense funding competition from other government departments, particularly defense.

This paper focuses on the latter issue. What are the main budgetary tradeoffs associated with educational expenditures? Have the country's high levels of defense expenditure significantly diverted funds from human capital development? Has the funding for education suffered in proportionate to other major expenditure items during the current period of relatively slack oil revenues? Based on the answers to these questions, several conclusions will be drawn concerning the ability of the country to reduce its dependence on foreign workers.

## DEMOGRAPHIC TRENDS

The distinctive features of the UAE's population are the preponderance of foreigners and the shortage of females (Table 1). The total population increased by 6 percent between 1975 and 1980, as a result of the massive influx of immigrant workers after the 1973/74 oil boom. Many expatriates have left since the recession that began during 1982/83, but the census in 1985 found a population of 1.62 million, 64.9 percent of which was male. The December 1980 census had put the total population at 1,042,099, with 717,475 males and 322,800 females, reflecting the bachelor status of a large part of the community.<sup>(3)</sup>

The composition of the population in terms of nationality, sex and age group differs from emirate to emirate. At the time of the 1980 census, for example, the proportion of males aged between 20 and 39 years was greatest in Abu Dhabi at 47 percent, second in Dubai at 39 percent and lowest in Ajman at 29 percent. This in turn reflects in part the distribution of non-nationals. The ratio of UAE nationals to immigrants is an extremely sensitive issue and official statistics on the breakdown are not readily available.<sup>(4)</sup>

When the federal planning ministry drafted a five year development plan to begin in 1980, it assumed a non-national majority of 70:30 and an average annual growth rate of the

indigenous population of 3 percent. In fact, the ratio at that time was probably nearer 80:20, with expatriates from the Indian subcontinent accounting for 45 percent of the total population. The next largest grouping would have been Iranians, making up 16-18 percent, followed by non-UAE Arabs, accounting for perhaps 13 percent and Westerners some 5 percent.<sup>(5)</sup>

Efforts to curb the immigration process date back to 1977, but it was not until the early 1980s that a consensus could be reached among all emirates on this issue. For a long time, Dubai, with plans for extensive industrialization at Jebel Ali, took a more liberal attitude to the question and, in 1978, for instance, 71,000 of the 164,000 work permits issued were for Dubai. Since late 1981, the Ministry of Labor and Social Affairs has been very active in restricting the issuing of visas to workers from overseas and this, combined with the large scale departure of construction workers whose tasks were finished, may have had some impact on the composition of the population by nationality.<sup>(6)</sup>

Additional measures taken to reduce the size of the foreign workforce include:<sup>(7)</sup>

1. According to a Federal Labor Law enacted in 1980, businesses are required to increase participation by UAE nationals in the workforce. While enforcement has been sporadic, private businesses are being pressed by the Ministry of Foreign Affairs to provide training for nationals and to employ nationals whenever possible. It is desired that 20 percent of company posts eventually be occupied by nationals.

2. The same law imposes strict limitations on the mobility of foreign workers, requiring them to leave the UAE before they change employers. As of February 1984, it is no longer sufficient for foreign workers to leave the UAE briefly in order to arrange or a new sponsor and get a new visa; a six month waiting period has been decreed.

TABLE 1

## Population in the UAE and Other Gulf Countries: 1986

(nationals and non-nationals)

Country	Nationals			
	Total	Male %	Female %	
UAE	434,449	51.4	48.6	
Saudi Arabia	7,012,974	51.1	48.9	
Kuwait	750,466	49.8	50.2	
Oman	816,000	47.3	52.7	
Bahrain	295,168	50.3	49.7	
Qatar	105,045	49.9	50.1	
Total	9,414,102	50.7	49.3	
<hr style="border-top: 1px dashed black;"/>				
Country	non-Nationals			
	Total	Male %	Female %	Population
UAE	1,239,204	73.8	26.2	74
S. Arabia	3,150,756	61.2	11.2	31
Kuwait	1,072,296	49.8	38.7	59
Oman	494,000	73.6	26.4	38
Bahrain	139,556	75.4	24.6	32
Qatar	284,209	70.1	29.9	73
Total	6,380,021	77.5	22.5	40

(continued)

TABLE 1 (continued)

## Population in the UAE and Other Gulf Countries: 1986

(nationals and non-nationals)

Country	Total		
	Total	Male %	Female %
UAE	1,673,653	68.0	32.0
S. Arabia	10,163,730	59.7	40.3
Kuwait	1,822,762	56.6	43.4
Oman	1,310,000	57.3	42.7
Bahrain	434,724	58.4	41.6
Qatar	389,253	64.7	35.3
Total	9,414,102	60.1	39.9

Source: United Nations, Economic and Social Commission of West Asia (ESCWA), *Demographic and Related Socio-Economic Data Sheets* (Baghdad: ESCWA, 1987).

3. Entry visas may now be issued to foreign domestics if their sponsors in the UAE have a monthly income of Dh 7,000 (\$1,906) or more, while foreign workers wishing to bring their families with them must have a monthly income of at least Dh 3,500 (\$953).

4. Companies which bring in more than five foreign workers at one time are now required to deposit bank guarantees covering return airfare for the employees they sponsor. In addition, they are restricted to one visa application per month.

5. Foreign companies which do not have a local partner are no longer being issued work permits and such permits as have already been issued to these companies are not being renewed.

6. A new system has been set up to monitor expatriates, particularly to ensure (through computerization) that workers do not by-pass restrictions because of lack of enforcement due to a multiplicity of responsible agencies.

7. The various ministries are now engaged in an effort to cut the percentage of foreigners they employ, a step which could have the beneficial side-effect of aiding the government's current budgetary problems.

8. Inspection campaigns have been initiated to crack down on illegal immigration and employers violating labor regulations.

9. The Ministry of Agriculture has taken steps to reduce by one-half the number of expatriates employed in agriculture (estimated at 20,000) by 1990.

These steps are believed to have succeeded at least in stemming the growth of the percentage of foreigners. However, while such measures may mitigate some of the undesired phenomena listed above, they could as easily provoke hostilities. They have led to higher labor costs and a reduction in the flexibility employers enjoy to expand or modify their range of products. Most likely they have also raised social tensions as foreigners have become fearful of deportation or termination.<sup>(8)</sup>

Perhaps as a result of these difficulties, the government has retracted several of the provisions listed above. For example, the rule which required expatriates to leave the country for six months before changing jobs was dropped in mid-1984, after its adverse effects on highly skilled professional workers became apparent. In addition, restrictions preventing dependents from entering the

country have come under criticism since family units are widely considered far more stable and desirable than single sex workcamps. A Ministry of Labor study in 1985 actually called for measures to encourage foreign workers to live in the UAE with their families and predicted a slight increase in the number of dependents arriving in coming years.<sup>(9)</sup>

The pattern of employment (Table 2) reflects a number of these social and technical realities. The large foreign workforce is, of course, a direct result of the low participation rates of the local population, particularly among females. The high ratio of foreigners employed in construction, transportation and communications reflects the emphasis on infrastructure development and a lingering boom mentality still prevalent despite the reduction in oil revenues.

Government services absorb a large number of nationals, especially educated ones, as evidenced by the high wages in that sector. Trade attracts a large number of workers, partially because it presents many opportunities in an open rapidly growing economy, and partly because of the commercial traditions of the local population. While the oil sector remains the most productive sector and commands the third highest wages, it accounts (1986) for only 1.1 percent of total employment. Agriculture, which used to be a major employer before the discovery of oil, has very low productivity and as a result commands such low pay that only 6.2 percent of the labor force is employed in this sector. Manufacturing, although it has grown in importance in recent years, employs only 8.1 percent of the labor force.

### BUDGETARY PATTERNS

In terms of the actual public sector budgets, the UAE is somewhat unique in that its Federal Budget is considerably smaller what one might expect given the confederation's oil revenues. In

TABLE 2

The United Arab Emirates:  
Labor Force by Economic Sector, 1983-1986

Sector	1983		1986		Change
	#	%	#	%	
Agriculture	33,300	5.8	38,400	6.2	4.9
Mining, oil	7,900	1.4	7,000	1.1	- 4.0
Manufac	49,40	8.6	50,100	8.1	0.5
Electricity	16,000	2.8	21,000	3.4	9.5
Construct	126,000	22.0	112,300	18.1	- 3.8
Trade	89,900	15.7	97,300	15.7	2.7
Transport	72,800	12.7	67,200	10.8	- 2.6
Finance	13,200	2.3	12,300	2.0	- 2.3
Real Estate	1,100	0.2	2,700	0.4	34.9
Other Serv	76,600	13.3	65,900	10.6	- 4.9
Government	85,800	15.0	104,900	16.9	6.9
Household	na		38,700	6.2	-
Total	573,900	100.0	619,700	100.0	0.4*

Source: Economist Intelligence Unit, *Country Profile 1987-88: United Arab Emirates* (London: EIU, 1987), p.13.

\* rate of growth excludes domestic household.

actuality, there are three figures for revenues and expenditures: (1) the consolidated accounts for the federal government, combined with those of the emirates of Abu Dhabi, Dubai, Sharjah and Ras al-Khaimah; (2) the federal budget and (3) the Abu Dhabi budget.

There are differences between the three in terms of the source of revenue as well as expenditure priorities. Unfortunately, Abu Dhabi has not released a breakdown of its revenues since 1979. For the other two, some interesting patterns appear:

1. In 1986 oil receipts accounted for 8.9 percent of total revenues recorded under the consolidated accounts, while other revenue, including domestic and foreign borrowing and investment income, accounted for 19.5 percent. This category had provided only 8.4 percent of revenue in 1982.
2. Current spending accounted for 75.6 percent of total expenditure, with defense, health and education the leading categories.
3. Development spending within the consolidated accounts was dominated in 1986, as in previous years, by the municipalities, industries and electricity, reflecting spending patterns in both the Abu Dhabi and the federal budgets.
4. Spending on industry is contained only in the consolidated budgets, indicating little support for industry at the federal level. Government spending on industry is, therefore, for all practical purposes under the complete control of each individual emirate.
5. Spending on education has declined fairly sharply in recent years, particularly in the development section of the budget. There has also been a significant reduction in the development funds allocated to health. Current expenditures on both items, while contracting a bit, have been much more stable.

A corollary of the federal government's desire to reduce the number of foreigners in the country is its determination to encourage growth within the indigenous population. This has repercussions on the volume of welfare payments given to UAE

nationals to encourage child rearing, and on the scale of health and education that will have to be sustained to care for the growing number of young people. In 1980, despite the large proportion of 20-40 year old expatriates in the country, 34 percent of the population was aged 19 and under.

Since oil revenues began to subside in 1981 and 1982 there has been growing concern that higher spending on health and education has been necessary because it caters to the dependents of expatriates. Proposals for staffing cuts focused on the ministries of education and health, which still employ approximately 18,000 and 11,000 people respectively--together accounting for nearly three quarters of all federal government employees. Of 98,694 pupils in government schools in 1984-85, 23,723 were non-nationals. Another outcome of the new attitude to the welfare state has been the introduction of health charges for expatriates.

In 1985, there were 760 schools (both private and public) in the emirates. These schools accommodated nearly 300,000 students, with 170,000 in government schools and 90,000 in private institutions. Enrollments have been up considerably in recent years, particularly in secondary education. The government has been trying to discourage expatriates from entering state schools, where classes are often too large. Most teachers are expatriates.<sup>(10)</sup>

Even if educational provisions for immigrants' children are reduced, spending on education for nationals will have to reflect the current 3-4 percent growth rate in the indigenous population. Teaching salaries will also have to rise if teachers are to be drawn from the national community, especially if they are to account for any significant percentage of the 26,000 teachers that will probably be needed by the end of the century.<sup>(11)</sup>

### BUDGETARY TRADE-OFFS

Returning to the questions asked at the beginning of the paper: does the concentration of public sector expenditures at the local rather than federal level produce budgetary patterns in which defense expenditures are made at the expense of education? A cursory look at the detailed composition of the Central Government Budget suggests:

1. While growing at 27.9 percent in constant prices over the 1973/80 period (Table 3), education grew at a considerably slower rate than defense (64.3 percent).
2. During the 1980 period, educational expenditures contracted at an average annual rate of 0.4 percent. Over this same period, the amount of resources allocated to defense increased at a rate of 3.1 percent per annum in real terms.
3. It should be noted that education grew at a slower rate than total government expenditures during both sub-periods, while defense grew at a significantly higher rate during the 1973/80 period and a slightly lower rate during the 1980/84 period.
4. Government allocations to health showed similarities to education, increasing at an average annual rate of 40.2 percent over the 1973/80 period, only to decline at an average annual rate of 1.9 percent during the 1980/84 period.

As a result of these expenditure patterns:

1. The share of the government budget allocated to education declined from 19.8 percent in 1973 to 9.7 percent in 1984.
2. Health expenditures remained fairly, but declined from 10.1 percent of the government budget in 1975 to slightly over six percent in 1984.

### TABLE 3

#### UAE: Central Government Budgetary Expenditures, 1973-1984

(million Dirhams, 1980 prices)

Category	Rate of Growth	
	1973/ 1980	1980/ 1984
General Public Services	28.2	9.6
Defense	64.3	3.1
Education	27.9	-0.4
Health	40.2	-1.9
Social Security/Welfare	22.9	16.2
Housing	0.3	-0.2
Other Social	45.4	27.6
Economic	22.5	-0.1
Agriculture	14.8	6.4
Mining/Manufacturing/ Construction	70.3	3.7
Fuel/Power	19.6	5.0
Other Trans/Commun	33.9	-15.2
Other Economic Services	57.0	12.6
Other Purposes	124.6	-2.9
<b>Total Government Expenditures</b>	<b>36.9</b>	<b>4.4</b>

Notes: Based on data from: International Monetary Fund, *Government Finance Statistics Yearbook, 1982, 1988*. International Monetary Fund, *International Financial Statistics Yearbook, 1991*.

3. On the other hand, defense expenditures increased from 13.2 percent of the Central Government budget to 54 percent in 1980. However, this ratio fell to 45.3 percent by 1984.

While these trends are quite suggestive of budgetary trade-offs between defense and allocations to education/health, there may be other factors that could account for these patterns. On the surface, budgetary tradeoffs between defense and allocations to education/health would seem to be straightforward--a given budgetary increase in military expenditure will crowd out an equivalent amount of all other spending, and education and health will be reduced according to their proportion of the total. However, recent research has shown that this view of the budgetary process is simplistic and does not conform with the manner in which governments often chose to prioritize expenditures.<sup>(12)</sup>

In general,<sup>(13)</sup> programs once enlarged seem difficult to reduce, particularly if they generate large employment benefits. As to the choice of which sector to cut back, it is often felt that some sectors are more "vulnerable" than others to reductions. The defense sector, in particular, is usually considered difficult to reduce, while other sectors, particularly the social sectors such as health, education and rural development, are considered vulnerable.

As noted in the UAE's case, this appears particularly true for the development section of the budget where major cuts in education and health took place during the post-1982 period of relative austerity. Apparently, the country has been more willing to cut spending on infrastructure and production which, of course, are likely to have adverse implications for longer term growth prospects, but few early, direct and immediate costs.

This picture of austerity budgetary choice has been recently confirmed for other third world countries by McKinlay<sup>(14)</sup> who found that there was no evidence that third world military

expenditures are responsive to government financial constraints of a short or long term variety.

In this respect, then, we infer that military expenditure has a life largely independent of central financial constraints, indicative therefore on its part of a substantial degree of autonomy.<sup>(15)</sup>

With regard to budgetary priorities, McKinlay found that while a substantial commitment was made by Third World countries to the growth and expansion of education and health expenditure, that commitment was not nearly as high as in the area of military expenditure. In this respect, military expenditure was generally taken to be a higher priority.

Finally, McKinlay found that Third World countries as a whole move their education and health expenditures in a much narrower band than their military expenditure. He found that military expenditure had a greater independence or autonomy of movement. The greater harmony or synchronization between budget size and education/health expenditures could not be explained in terms of the size of education/health as opposed to military expenditure.

As noted at the beginning of this section, simple zero sum models of budgetary shares are not appropriate for determining the impact that military expenditures have on human capital development in developing countries. Ultimately, this impact will depend not just on the UAE government's budgetary priorities, but perhaps more importantly on the degree of simultaneous expansion in the overall size of the economy and the government budget itself.

To apply this general framework to the UAE's situation, it was assumed that the factors (with expected signs) affecting the share of education in the government budget were of the form:

**EDU = f[GEP(?), DEF(-), OTHER(?),  
BUDG(+)]**

Where:

EDU = the share of education in the budget.

GEP = government expenditures per capita.

DEF = the share of defense in the government budget.

OTHER = the share of other various categories of expenditures in the budget.

BUDG = the budgetary position of the government (revenues minus expenditures).

## RESULTS

The results<sup>(16)</sup> (Table 4) of this analysis for the UAE over the 1973-84 period indicated that:

1. As might have been expected from the discussion of the general pattern of budgetary shares over time, educational expenditures have not expanded with government expenditures per capita. In fact, there has been a fairly strong negative relationship between the share of education in the public sector budget and the pattern of public expenditure per capita.

2. The strongest negative budgetary trade-off with education came from social security and welfare expenditures and government allocations to housing.

3. In general, the budgetary share allocated to defense had a weak but positive relationship with the educational share of the budget.

4. The UAE government appears to have used budgetary surplus to expand the educational share of the budget.

TABLE 4

United Arab Emirates: Budgetary  
Tradeoffs, Total Education (1973-1984)

### Public Expenditure Per Capita (GEP)

$$1. \text{ EDU} = -0.05 \text{ GEP} \\ (-2.86)$$

$$\text{RHO} = 0.50, t = 1.92 \quad r^2 = 0.476; \text{ DW} = 1.24$$

### Social Security/Welfare Expenditures (SSW)

$$2. \text{ EDU} = -0.09 \text{ GEP} - 0.91 \text{ SSW} \\ (-5.58) \quad (-2.43)$$

$$\text{RHO} = 0.18, t = 0.62 \quad r^2 = 0.833; \text{ DW} = 1.26$$

### Budgetary Position (BUDG)

$$3. \text{ EDU} = -0.10 \text{ GEP} - 1.36 \text{ SSW} + 0.03 \text{ BUDG} \\ (-7.72) \quad (-3.96) \quad (1.86)$$

$$\text{RHO} = -0.16, t = -0.55 \quad r^2 = 0.940; \text{ DW} = 1.20$$

### Defense (DEF)

$$4. \text{ EDU} = -0.10 \text{ GEP} - 1.11 \text{ SSW} + 0.03 \text{ BUDG} + \\ (-8.97) \quad (-2.96) \quad (2.04)$$

$$0.06 \text{ DEF}$$

$$(1.49)$$

$$\text{RHO} = -0.25, t = -0.87 \quad r^2 = 0.962; \text{ DW} = 1.39$$

### Health (HE)

$$5. \text{ EDU} = -0.10 \text{ GEP} - 1.32 \text{ SSW} + 0.03 \text{ BUDG} + \\ (-8.10) \quad (-4.43) \quad (1.74)$$

$$0.55 \text{ HE}$$

$$(1.83)$$

$$\text{RHO} = -0.23, t = -0.81; r^2 = 0.966; \text{ DW} = 1.16$$

(continued)

TABLE 4 (continued)

**United Arab Emirates: Budgetary  
Tradeoffs, Total Education (1973-1984)**

**Housing (HOU)**

$$6. \text{EDU} = -0.12 \text{GEP} - 1.26 \text{SSW} + 0.02 \text{BUDG} -$$

(-17.18)      (-6.51)      (2.77)

0.29 HOU

(-3.99)

$$\text{RHO} = -0.64, t = -2.83 \quad r^2 = 0.991; \text{DW} = 2.20$$

**Other Social (OS)**

$$7. \text{EDU} = -0.11 \text{GEP} - 1.88 \text{SSW} + 0.04 \text{BUDG} +$$

(-11.33)      (-5.97)      (2.97)

0.78 OS

(1.85)

$$\text{RHO} = -0.59, t = -2.47 \quad r^2 = 0.977; \text{DW} = 1.41$$

**Other Purposes (OP)**

$$8. \text{EDU} = -0.12 \text{GEP} - 1.32 \text{SSW} + 0.02 \text{BUDG} -$$

(-9.93)      (-4.58)      (1.63)

0.37 OP

(-2.00)

$$\text{RHO} = -0.34, t = -1.21 \quad r^2 = 0.972; \text{DW} = 2.15$$

**Notes:** Based on data from: International Monetary Fund, *Government Finance Statistics Yearbook, 1982, 1991*. International Monetary Fund, *International Financial Statistics Yearbook, 1988, 1991*. All budgetary variables are a percentage of government expenditures. ( ) = t statistic;  $r^2$  = coefficient of determination; F = F statistic; DW = Durbin Watson Statistic.

Similarly, during periods of austerity the educational share of the budget suffers proportional cuts.

It is fairly clear that defense has not expanded its share of the budget at the expense of education. The observed decline in the educational share of the budget appears to be more related to general budgetary considerations than any explicit set of priorities involving defense. In large part, the increase in the share of defense in the budget in recent years (and the corresponding reduction in education's share) has occurred because of the contrasting relationship each of these expenditure patterns has with the overall budgetary position (Table 5):

1. Decreases in the government's budgetary position (revenues minus expenditures) have been closely associated with increases in the defense share of the budget.
2. On the other hand increases in the share of education in the budget have occurred during periods of increased budgetary surplus. The same is also true for social security and welfare, and to a lesser extent housing and economic expenditures.

These patterns confirm McKinley's findings that defense expenditures are more stable over time and appear to be much less susceptible to budgetary austerity measures than educational or other social expenditures.

## CONCLUSIONS

The Government's twin goals of reducing public expenditure and reducing the size of the foreign workforce are clearly irreconcilable, and it is difficult to see how any major reductions in the foreign workforce will come about without the government giving education a higher priority. Interestingly enough, the shortage of funds allocated to education does not appear to be related to the budgetary decisions concerning defense.

TABLE 5

**United Arab Emirates: Factors  
Affecting Government Budgetary Position (1973-1984)**

---

**Defense (DEF), Government Revenues/GDP (RY),  
EDUCATION (EDU)**

$$1. \text{ BUDG} = -1.66 \text{ DEF} + 0.06 \text{ RY} + 7.12 \text{ EDU}$$

(-2.43)      (2.02)      (2.36)

$$\text{RHO} = 0.19, t = 0.64 \quad r^2 = 0.590; \text{DW} = 2.04$$

**Social Security/ Welfare Expenditures (SSW)**

$$2. \text{ BUDG} = -1.05 \text{ DEF} + 0.09 \text{ RY} + 8.10 \text{ EDU} +$$

9.84 SSW

(-1.83)      (3.48)      (3.59)

(2.46)

$$\text{RHO} = 0.06, t = 0.22 \quad r^2 = 0.812; \text{DW} = 1.76$$

**Housing (HOU)**

$$3. \text{ BUDG} = -1.12 \text{ DEF} + 0.07 \text{ RY} + 7.36 \text{ EDU} +$$

4.54 HOU

(-1.56)      (2.47)      (2.46)

(1.63)

$$\text{RHO} = 0.38, t = 1.35 \quad r^2 = 0.664; \text{DW} = 2.05$$

**Other Social (OS)**

$$4. \text{ BUDG} = -2.34 \text{ DEF} + 0.07 \text{ RY} + 8.12 \text{ EDU} -$$

14.38 OS

(-3.26)      (2.49)      (2.91)

(-1.78)

$$\text{RHO} = 0.25, t = 0.09 \quad r^2 = 0.716; \text{DW} = 2.09$$

**Mining, Manufacturing, and Construction (MMC)**

$$5. \text{ BUDG} = -0.99 \text{ DEF} + 0.06 \text{ RY} + 6.00 \text{ EDU} +$$

77.17 MMC

(-1.65)      (2.59)      (2.50)

(2.38)

$$\text{RHO} = 0.21, t = 0.74 \quad r^2 = 0.784; \text{DW} = 1.72$$


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Perhaps in part, the relative decline of education in the public sector budget has stemmed from the government's wish to reduce educational benefits to expatriates. To the extent that this is the case, the prospects for replacing foreign workers with nationals will be brighter than the analysis above indicates. On the other hand, it is clear that jobs in engineering, government and commerce are better paid and enjoy a higher status than teaching.

While the government has made the teaching profession more attractive to natives through cutting teacher training courses from two years to one and exempted students from certain parts of degree courses (in addition to allowing them to interrupt and then resume their studies), it is hard to see very many local students pursuing a teaching career unless salaries are significantly increased. Without a major change in the government's funding of education, the projected increase in the number of teachers needed over the next decade and a half (from 14,000 in 1984 to 26,000 by 2000) will only contribute further to the country's dependence on foreign manpower.

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13. A through analysis of these conditions are given in R. Goode, *Government Finance in Developing Countries* (Washington: Brookings Institution, 1984).
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15. *Ibid.*, p. 35.

16. Estimates were made with Ordinary Least Squares Regression technique using a Cochrane-Orcutt iterative estimation procedure to correct for serial correlation. Using this technique an artificial variable, RHO is created to produce estimates free of serial correlation bias. Tradeoffs with all of the expenditure variables in Tables 4 and 5 were introduced into the regression equation, but only those producing statistically significant results were reported here.