Economics of Development

Capital investment driven growth in Oman

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The Hypothesis

The purpose of this paper is to hypothesize and help explain the economic growth of Oman in earlier parts of the past 4 decades. The hypothesis is that Oman's steep growth in these decades has been largely driven by public capital investment in the country (and not as much in current consumption) by the national government.

In specific, I am going to explore the result of capital investment in oil industry infrastructure, and its impact on the country's production capacity in this sector. Other recent investments into human capital, technology and health-care also constitute an important part of this discussion.

Oman – A country profile

Oman is one of the major oil and natural gas rich exporter of the Middle East, and is a member of the Gulf Cooperation Council (GCC). It has a population of just below 3 million citizens, with an unofficial reported 30%+ expatriates, and its nominal GDP per capita, as reported by IMF in 2011, is $21,681. Oman's HDI ranking is 89 out of 187 countries and territories with a score of 0.705 in 2011 (an increase of 2% from 2010). Oman is a 310 sq. km coastal monarchy, and is a trading hub in the Gulf region. The country gained complete independence from the British in 1951.

For over 4 decades now, Oman has been dependent on its oil reserves for its GDP; and even though the country's newest five year plan (Eighth five year plan) is aimed at reducing the dependence of the economy from oil and gas industries, the country still depends on 59% of its GDP from oil and gas (as compared to 33% in 1975). Prior to the first five year plan in 1975, Oman was heavily dependent on subsistence farming for much of its GDP.

The endogenous attempt to shift out of an oil and gas powered economy into a sustainable self-supporting economy dependent on tourism, local produce and technology driven innovation is the highlight of the newest five year plan. It also seeks to lower public expenditure and increase public spending.

Brief history on economic development

Oman's economy primarily depended on subsistence agriculture and fisheries with a very low per capita income until the discovery of oil in 1967. Oman's Development Strategy from 1974 emphasized on the need for private sector development.

The county's first five-year development plan was launched in 1976, and is arguably the most important strategic initiative in the context of capital investment and growth. This plan “aimed at establishing the country's infrastructure such as Government buildings, power stations and communication centers”.

The country's focus on national infrastructure continued into the second five-year plan between 1981 and 1985, with a new emphasis on the national water resources and internal and external energy demands.

It was only in the third five-year plan launched in 1986 did the Ministry of Economy (MoE) begin to focus on human capital, health-care and institution-driven growth. The consequent five-year plans focused on both expanding the production capabilities & private sector and on reforms in institutions and workforce opportunities and development.

Some of the key highlights of the newer five-year plans are: (1) “wider public and private sector participation”, development of human resources and investment in infrastructure for gas in the fifth plan, (2) achieving economic balance, economic diversification and privatization in the sixth plan and (3) focus on national heritage conservation, tourism, growth of financial institutions and development of the Information Technology (IT) sector in the seventh plan.

Also, more than one of the newer five-year plans stresses the role and need for “Omanization”: an initiative to increase the penetration on Omani locals in the workforce by programs to equipping them with vocational skills and allocation of quotas for Omani workers in private establishments (with public sector being dominated by them).

Nature of capital investments in the country

In understanding the human capital development story of the nation, it is important to consider the nature of capital investments in the country in recent history. And in order to understand the nature of capital investments, it is important to have some basic grounding in events that defined the oil industry in the past few decades.

It is unclear when Oman discovered oil – however, what is known is that the country first began production of oil in 1967 with a 60% ownership in a newly established company, the other 40% being owned by partner Royal Dutch Shell. At the time of discovery, it was estimated that Oman had estimated reserves of 1.8 billion barrels.

Fortunately for Oman, the oil prices exploded “during the 1970s and up until 1981, triggering a massive expansion in public spending”. The peak of this period was in 1981, when oil price reached nearly $37 a barrel, but fell shortly after “and then collapsed in 1986 to $13.43 a barrel”. Oil prices recovered into the 1990s, proving impetus to Oman to reconsider their decisions to slash public expenditure, which it eventually did not increase much.

As is clear by the discussion in the development strategy in the national development plans, the government changed its focus from public savings and investment to services and social welfare and development during the mid-1980s. One of the reasons for this measure was to reduce capital expenditure, as continuous investment at that rate would have profound impact on the country's debt, making this model unsustainable. While this may seem like a sign of diversification in economic strategy to plan for sustainability of the country's growth, one of the only reports by a delegation from the World Bank on Oman's economic climate in 1994 describes this shift as “particularly troubling”. This emphasizes the outlook of the nation during this period; the diversification did not really come in the light of willingness to make large strides in human capital development, but rather due to unfortunate circumstances in the energy sector.

Almost all of of Oman's oil has been continued to be exported, the revenues of which have been used to build public infrastructure and providing education and health-care services.

If we take a step back and consider the amount of capital expenditure the government has made between 1976 and 1992, the following graph emerges:

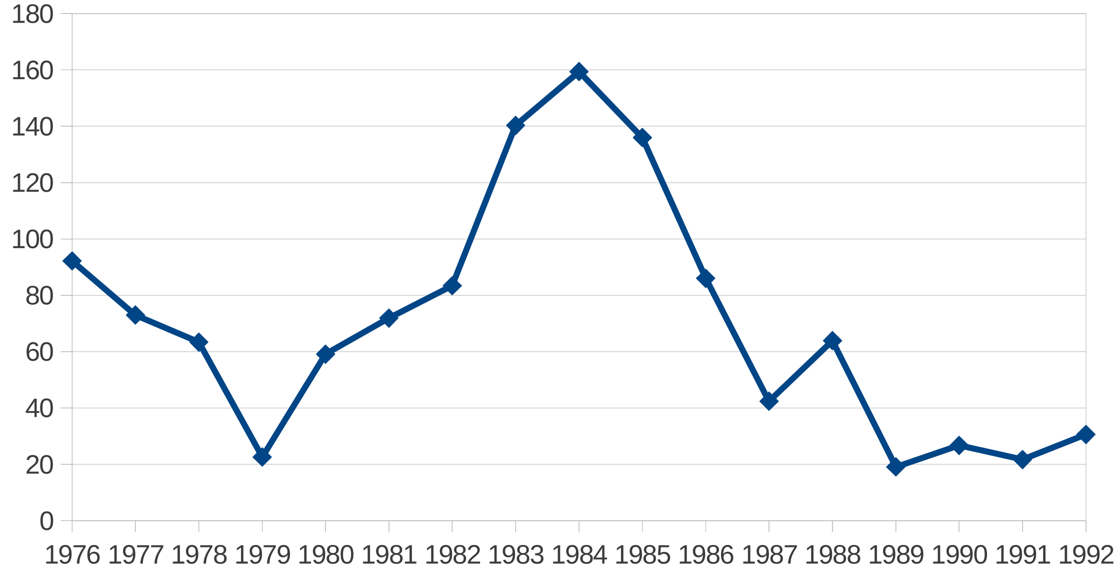


Figure 1: Capital expenditures (in millions of $) between 1976 and 1992 (data from World Bank)

In the absence of capital investment expenditure prior to 1976, we do not have a good sense of the country's capital expenditure at the time of establishment of oil and gas refining industry. However, this period helps us focus on investments in transportation, landscape, water and energy (for internal consumption). We observe that Oman's capital expenditure fell to almost $21 million in 1979, but soared between 1980 and 1984 with rising oil prices around the world. Apart from oil, Oman has begun investing heavily into natural gas during this period. This climate changed significantly post-1985, as a fall in oil prices led to lower public expenditure out of compulsion early on, and then continued at those levels due to change in focus of the economic policy which now lay emphasis on human capital development, growth of services and active role of the privatization in the country.

The decline wasn't just seen in capital investment expenditure, most public expenditure, including other development, defense and national security activities, faced massive slashes. Development expenditure, in particular, “was slashed almost in half, from a peak of RO 534 million in 1985 to RO 270 in 1989” in absolute numbers.

If we introduce savings and consider these variables in relation to GDP, we learn that “savings and investment were relatively high in the early days of the oil boom, averaging 46.7 percent of GDP over 1976-81. The average declined to 41.8 percent over 1982-85 and dropped to 31.3 percent over 1986-91.”

Growth in past 4 decades

Let's naïvely look at some statistics: Oman's growth curve between 1975 and 1996, in terms of gross GDP, almost looks like a perfect linear curve (see *Figure 2*). In this graph, we can see a very positive growth rate, with the following three abnormalities to the otherwise smooth linear growth curve:

1. A small dip between 1976 and 1981
2. Increasing marginal growth rates between 1982 and 1985
3. Destabilization somewhere between 1986 and 1988, followed by quick recovery

(1) and (3) can easily be explained by our learnings about the oil market from the discussion earlier.

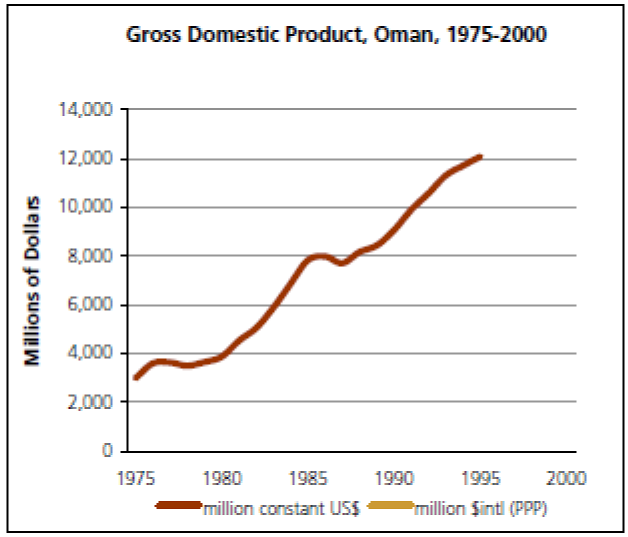


Figure 2: Oman's gross GDP from 1975 through 1996, by EarthTrends

However, let us try and explain how much of (2) and this larger growth curve can be explained by public investment over these years. Taking what we have observed on the government's capital expenditure from the previous section and putting it together with the countries GDP growth above (*Figure 2*) in *Figure 3*, it is interesting to note that the "periods during which Oman experienced positive real growth in income per capita were associated with periods of annual total investment growth exceeding 10 percent".

Table 2.3. Growth in GDP, Saving, and Investment
(In percent a year)[1]

Period	Real GDP Growth	Domestic Saving	National Saving	Domestic Investment Total	Domestic Investment Public	Domestic Investment Private
1981–85	14.1	8.0	6.3	22.3	10.6	26.9
1986–89	1.6	1.7	14.7	−12.2	−17.7	6.8
1990–93	7.3	4.4	−1.0	13.6	15.3	13.1
1994–97	4.0	11.5	18.8	13.2	−2.3	34.2

Sources: Data provided by the Omani authorities; IMF staff estimates.
[1]Data are annual averages.

Figure 3: Growth in GDP, Saving and Investment (in percent a year), by IMF

Let us consider the overlap period from the two graphs of 1986-89. During the period, the government reduced public investment down by 17.7% (averaged over the 4 years), which led to a decline from 14.1% real GDP growth rate from 1981-85 to 1.6%, the lowest growth average growth rate Oman has seen over in all of these decades. While still far smaller than the international average during this period, Oman experienced a fairly substantial average of 14.7% of savings during 1981-85.

That said, this chart does not explain the entire story, as it sets a baseline of 1981-85 as an example for high growth in real GDP associated with the high growth in public investment. If we go back to figures 1 and 2, we observe that there was a modest growth between 1977-1980, associated with a growing public investment. What we notice from this period is that in absolute terms, Oman's public investment was almost the same as during the years 1986-89. 14.1% of average growth rate is indeed phenomenal, but was almost entirely determined by the price of oil and may not be classified as sustainable.

Not so consistent with the finding that there the real GDP growth increases in proportion to the rise in public investment is the growth in the period 1981-85 when compared to the period 1990-93. If we put aside all other variables including private investment and savings, and only consider public investment to be the single determining factor for growth, we observe that while the period 1990-93 experienced a higher public investment, it had just about half as much of growth as compared to the period 1981-85. One could argue that this was due to the oil situation, but in itself, investment does not explain much. What seems most explanatory in this case is domestic savings.

This might lead us to consider that savings alone or savings along with investment explain the growth of the country during the decades. We can certainly rule out the hypothesis that savings alone explains the growth patterns; the period 1994-97 is one of high national and domestic savings but has an unimpressive 4% real growth rate. But if our hypothesis is leaning towards the explanatory ability of savings and public investment, a new emerging model begins to make sense. Across the four decades (1981-85, 1986-89, 1990-93, 1994-97), we observe that the real growth hasn't been impressive during periods of low savings or low investment. Only in one of these four periods, 1981-85, we observe a fair balance of investments and savings, neither being too high, being a period of highest real growth. To further strengthen this argument, we could observe the following period 1986-89, a period dismal growth, which may have been caused by poor domestic savings and poor public investment together.

On the right in “Table 2.6”, we observe that there has not been a very strong correlation between the ratio of public investment to GDP and the ratio of national saving to GNP, but high-growth years like "81, '82, '83, '84, '85, '97 have also been ones with higher ratios (with '91, '92 being exceptions).

Irrespective of our analysis on the data, there is a lot of bias involved. As discussed extensively earlier, oil prices internationally have been the major determinant in GDP growth in Oman. Also, there is a lot to be said about future returns on investments made several years ago, as demands increase.

Table 2.6. Saving and Investment Ratios
(In percent)

	Ratio to GNP	Ratios to GDP			
Year	National saving	Domestic saving	Public investment	Private investment	Total investment
1980	35.1	43.3	14.5	5.7	20.2
1981	39.0	53.2	21.7	6.4	28.1
1982	31.0	45.9	26.5	5.2	31.6
1983	29.0	44.8	24.6	5.7	30.4
1984	26.6	41.9	25.8	4.1	29.9
1985	26.8	43.2	26.0	5.1	31.0
1986	14.0	30.6	27.1	5.0	32.1
1987	27.8	33.8	12.3	3.3	15.6
1988	12.8	23.8	11.2	4.0	15.2
1989	19.9	28.9	8.4	5.6	14.1
1990	25.2	32.0	7.3	5.0	12.3
1991	15.1	23.3	9.9	5.2	15.0
1992	14.7	25.5	11.4	4.9	16.4
1993	10.8	22.5	10.8	6.7	17.5
1994	10.2	24.0	10.0	5.7	15.7
1995	11.6	23.5	9.8	5.2	15.0
1996	15.4	27.5	7.7	6.2	13.9
1997	16.2	27.3	7.8	13.3	21.1
Averages					
1980–97	21.2	32.7	15.2	5.7	20.8
1980–85	31.3	45.4	23.2	5.4	28.5
1986–89	18.6	29.3	14.8	4.5	19.2
1990–93	16.4	25.8	9.9	5.5	15.3
1994–97	13.3	25.5	8.8	7.6	16.4

Sources: Data provided by the Omani authorities; IMF staff estimates.

To reflect on the Harrod-Domar model that mobilization of domestic savings is necessary in order to generate sufficient investment to explain economic growth may or may not be explained by the limited explanation in the scope of the discussion and breadth of the data above. While periods with high savings and investment enjoyed a higher growth rate, the periods following high savings and investments did not necessarily reap the benefit of these savings. It seems like the growth model for an oil-dependent economy is much simpler and dependent on one single factor than that of diversified economies.

Ahsan Mansur, in the IMF publication '*Oman Beyond the Oil Horizon*', notes that over the nearly two decades observed above, “Oman recorded one of the highest growth rates in the Middle East”, and has “experienced persistent growth in non-oil GDP, financial stability, confidence in the economy, and a stable currency, despite severe external terms-of-trade shocks resulting from sharply lower crude oil export prices in the 1980s and early 1990s”.

A key highlight of the human capital in the growth process over these decades has been that this growth has been driven by the expatriate workforces, rather than locals. An economic implication of this has been low national savings as expatriate labor force (a majority) has a tendency to send its remittances home. The World Bank's recommendation to the economic policy makers of the country in the early 1990s was that in order to maximize Oman's social welfare without hampering national savings, employing additional expatriates was justified only as long as the marginal benefits from doing so exceeded the marginal costs of losing out on a percentage of their savings.

Alternative model(s) to explain Oman's growth

Because savings and investment has so well explained Oman's growth, any newer models may or may not add additional value in explaining this growth. Nevertheless, let us consider contribution of factors as a determining factor in this growth, as this has been a policy challenge for the country and is closely tied with the discussion above.

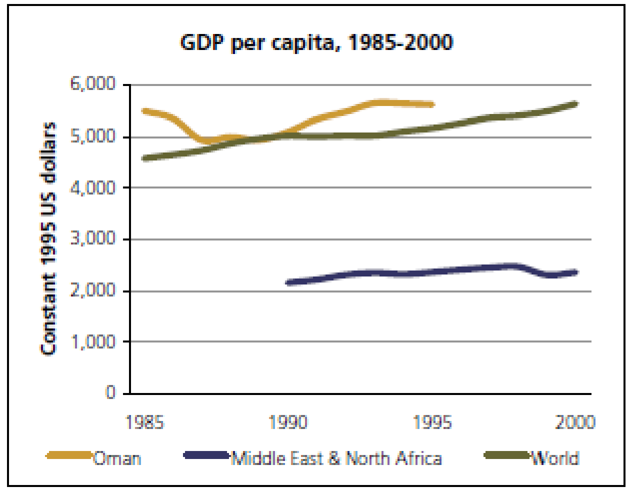
As can be seen in the table to the right, the Solow residual indicates that, “on average, factor productivity made no contribution to Oman's growth during 1980-97. “In essence, the average real growth of 7 percent during the period was more accounted for by substantial capital accumulation and expansion of the labor force, particularly during 1981-85 and 1990-93 [see table]. In other words, Oman's impressive economic growth performance was primarily due to higher investment and increased absorption of labor, reflecting to a large extent the increasing participation of expatriate labor.”

Table 2.7. Contributions to Economic Growth
(In percent of GDP)

Period	Growth in GDP	Contribution of Capital	Contribution of Labor	Solow Residual[1]
Rapid-growth periods				
1981–85	14.1	6.1	9.2	−1.2
1990–93	7.3	4.4	9.0	−6.1
Slow-growth periods				
1986–89	1.6	−6.0	−0.1	7.7
1994–97	4.0	−1.7	6.8	−1.1

Sources: Data provided by the Omani authorities; IMF staff estimates.
[1]Total factor productivity.

Unexplained questions



Consider the figure 4, a relative comparison of time series data on growth (in GDP per capita) of Oman in comparison to Middle East & North Africa and the world. If Oman's growth was indeed determined by public investment in the oil industry throughout these decades (prior to 2000), why does Oman's growth curve look different from that of these other regions?

Were there particularly different performing regions in the Middle East & North Africa? Or did Oman's economic policy not account for the possibility of such a drastic fall in price of oil?

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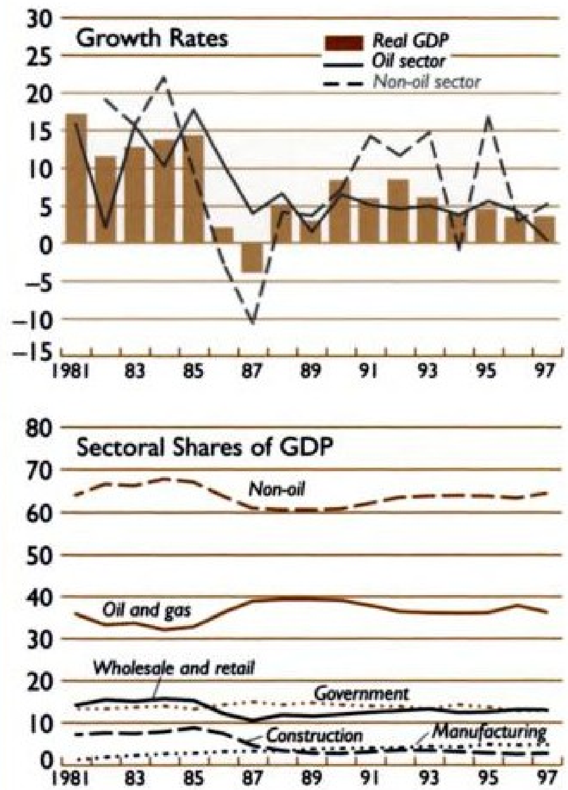
Appendix

Figure 2.1. Growth and Composition of Real GDP
(In percent)



Source: Data provided by the Omani authorities.

Table 2.1. Growth of GDP, the Oil and Non-Oil Sectors, and Real GDP Per Capita
(In percent a year)[1]

Period	Real GDP	Oil Sector	Non-Oil Sector	Real GDP Per Capita
Rapid-growth periods				
1981–85	14.1	12.3	15.1	8.2
1990–93	7.3	5.0	8.6	2.7
Slow-growth periods				
1986–89	1.6	6.3	–0.9	–3.8
1994–97	4.0	3.3	4.3	1.1

Sources: Data provided by the Omani authorities; IMF staff estimates.
[1]Data are annual averages.