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Department of Applied Economics and Management
Cornell University, Ithaca, New York 14853-7801 USA

Oil, Growth and Political Development in Angola

Steven Kyle

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March 2007

Steven Kyle
Cornell University

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Please direct any comments to: Sck5@cornell.edu

Abstract

Angola is more dependent on oil than any other country in Sub Saharan Africa and most other countries as well, apart from a handful of OPEC members. Contributing half or more of GDP, oil revenues condition and distort every other macroeconomic variable in the country, a situation that has existed for decades. Appreciation of the real exchange rate is the main macroeconomic distortion resulting from these inflows of mineral income. The paper demonstrates a marked tendency for the Angolan Kwanza to appreciate in recent years, and continuation of this trend is one of the biggest threats to economic rehabilitation of Angola's war-torn non-oil economy. Resulting economic distortions are quantified using an index of distortion based on Chenery-Syrquin "standard" growth paths of economic structure. Optimal savings and expenditure rates out of mineral income are calculated based on a permanent income approach to optimal expenditure over time. Finally, implications of oil revenue for the future political development of Angola's main parties are discussed.

Oil, Growth and Political Development in Angola

I. Introduction

Angola is more dependent on oil than any other country in Sub Saharan Africa and most other countries as well, apart from a handful of OPEC members. Contributing half or more of GDP, oil revenues condition and distort every other macroeconomic variable in the country, a situation that has existed for decades. While the degree of dependence varies with world oil prices, and has decreased somewhat at times, it will inevitably rise sharply over the next few years as new production comes on line. Angolan reliance on oil income is extreme even when compared to other countries with heavy dependence on mineral exports. Table 1 compares Angola to other mineral economies and shows that oil dependence is greater than in any other country listed, including those in the Persian Gulf.

The long standing nature of oil dependence in Angola together with its extreme nature has led to a severe case of what is commonly called “Dutch Disease” or the “resource curse”, a syndrome common to countries which are the recipients of large (relative to their economies) inflows of foreign exchange. While the source need not necessarily be oil, this is the most common root of the problem in the period since the first oil shock in the early 1970’s. In the Angolan case, the problem is exacerbated to some extent by diamond earnings though these are of secondary importance when compared to oil.

Appreciation of the real exchange rate is the main macroeconomic distortion resulting from large inflows of mineral income. As will be shown in detail below, there is a marked tendency for the Angolan Kwanza to appreciate in recent years, and continuation of this trend is one of the biggest threats to economic rehabilitation of Angola’s war-torn non-oil economy. However, the appreciation tendency has been even more pronounced for the past year and a half due to the “hard Kwanza” policy of fighting inflation by supporting the exchange rate at a more or less constant level.

A second major distortion resulting from the “resource curse” syndrome is a strong tendency toward urban bias and centralization of activities in the capital city. This is particularly pronounced in oil economies where the sole recipient of the revenues in the first instance is the central government. As the center of money and power, Luanda is the focal point of economic activity, and investment in oil-related activities (including rent-seeking) yield a far superior return to anything possible in rural areas. Accordingly, both labor and capital are drawn to the center, to the detriment of rural areas and rural activities. Within cities themselves there is a disincentive to manufacturing production due to competition from low cost imports resulting from the appreciated exchange rate. Service sectors and non traded goods production expand instead.

Table 1
Mineral Income as Percent of Government Revenue and GDP
in Mineral Exporting Countries*

Country	Nonrenewable Resource Revenue as Percent of Total Government Revenue	Nonrenewable Resource Exports as Percent of GDP
Chile	8.6	10.1
Kuwait	59.3	39.7
Norway	14.4	12.1
Oman	77.3	35.9
Papua New Guinea	11.4	27.9
Venezuela	58.2	19.1
Angola	84.0**	48.5***

* All non-Angolan figures taken from Davis, Ossowski & Fedelino Eds. *Fiscal Policy Formulation and Implementation in Oil Producing Countries*, IMF 2003, p. 275

** Average of 1996-2003

*** Average of 2002 and 2003

These common characteristics of mineral economies have been exacerbated in Angola by two other factors:

1. Insecurity in rural areas through the civil war resulted in large portions of the country being virtually cut off from the outside world. Apart from the insecurity, the widespread destruction and deterioration of infrastructure, especially roads, added to the isolation in many areas. Huge migrations of people seeking the relative safety of cities and towns skewed the population toward urban locations far more than would normally have been the case in a country of Angola's degree of development even after accounting for the "usual" resource curse effects.
2. Angola's government has historically been extremely centralized – indeed, the ruling MPLA was originally an avowedly Marxist party espousing a command economy strategy of development. While this is a thing of the past, the MPLA still retains strong centralizing tendencies, a factor which tends to increase the degree of urban bias seen. Though recent changes have moved toward more decentralization of government functions, there is still some way to go in this process.

The next section discusses the recent economic performance of Angola and outlines the

magnitude of some of the resulting distortions. This is followed by a discussion of theoretical issues in resource rich economies and measurements of the extent of economic distortion in Angola. This is followed by a discussion of the optimal path of consumption financed by oil wealth and the possibility of establishing an institutional mechanism for saving oil income. The final section discusses issues of what a sectoral investment program might look like and the political economy of implementing this in Angola.

II. Recent Evolution of the Angolan Economy

During the 1980's and 1990's growth in Angola has been anemic at best, and negative in many years. Only when oil prices and/or production rise does growth rise as well, reflecting the extreme oil dependence of the Angolan economy. This situation was in fact almost inevitable over the many years of conflict, when production in rural areas was virtually impossible.

The dislocations caused by the conflict make even the data that do exist less than completely reliable. The government's statistical network is largely non-existent outside of major cities, with even the size of the population a subject of some debate. Oil production estimates are better known, though the disposition of oil receipts is a major bone of contention between the government and international lending institutions. Allegations of huge diversions have been made but verification of these claims has been difficult.

It is striking that agriculture accounts for only a very small share of GDP even though the majority of the population is employed in that sector. This is a testimony not only to the dominance of oil in the economy but also to the extremely low productivity of much of smallholder production.

The experience of other post-conflict countries indicates that a strong growth rate can be expected during the process of resettlement and reactivation of subsistence production. Indeed, when a family's production starts from zero, as is the case with millions of *deslocados*, any amount of production at all will look large when stated in terms of growth rates. The more difficult task will be the period after resettlement and rehabilitation, when growth depends on the success of rural development policies more generally. In addition, as farmers move beyond subsistence production to selling marketed surplus in cities, the effects of exchange rate distortions and competing grain imports will also have a powerful effect on output growth. Projections currently forecast growth of between 10 and 15% per annum in agriculture over the next 4-5 years as the post-conflict surge in production occurs.

For many years following independence Angola went through a series of hyperinflationary episodes followed by stabilization/control policy packages and then renewed inflation. The root cause of these cycles was monetization of fiscal deficits. Spending fueled by oil receipts would be unsustainable after a period of growth, with declining oil receipts from either production declines or adverse price movements often triggering increased money financing of deficits.

Angola: GDP Composition 2003

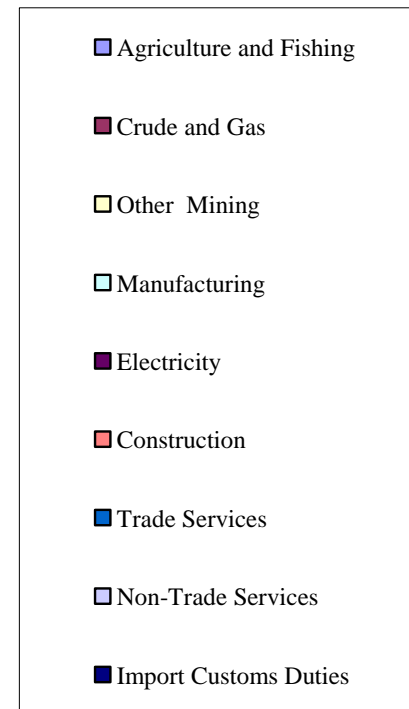
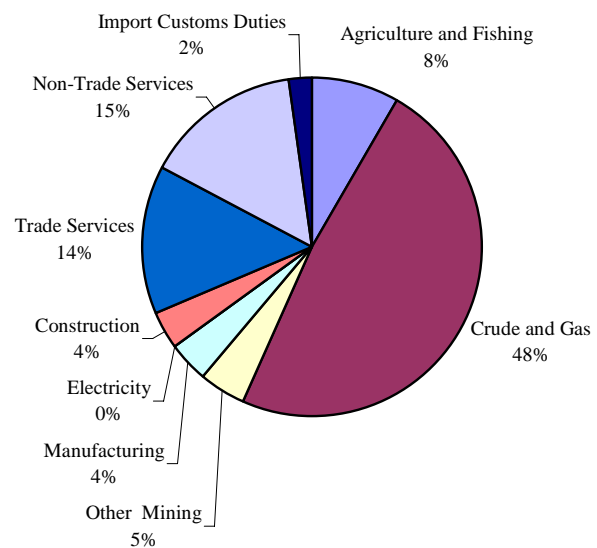
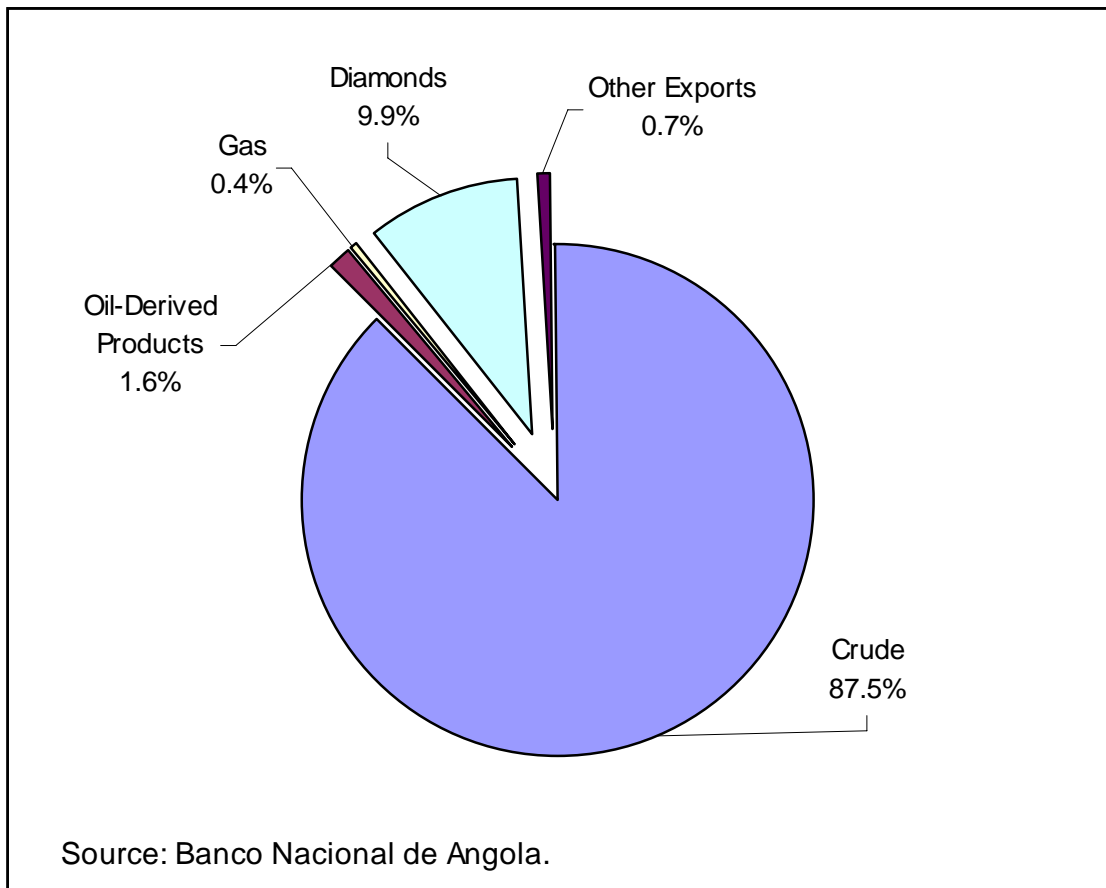


Figure 1

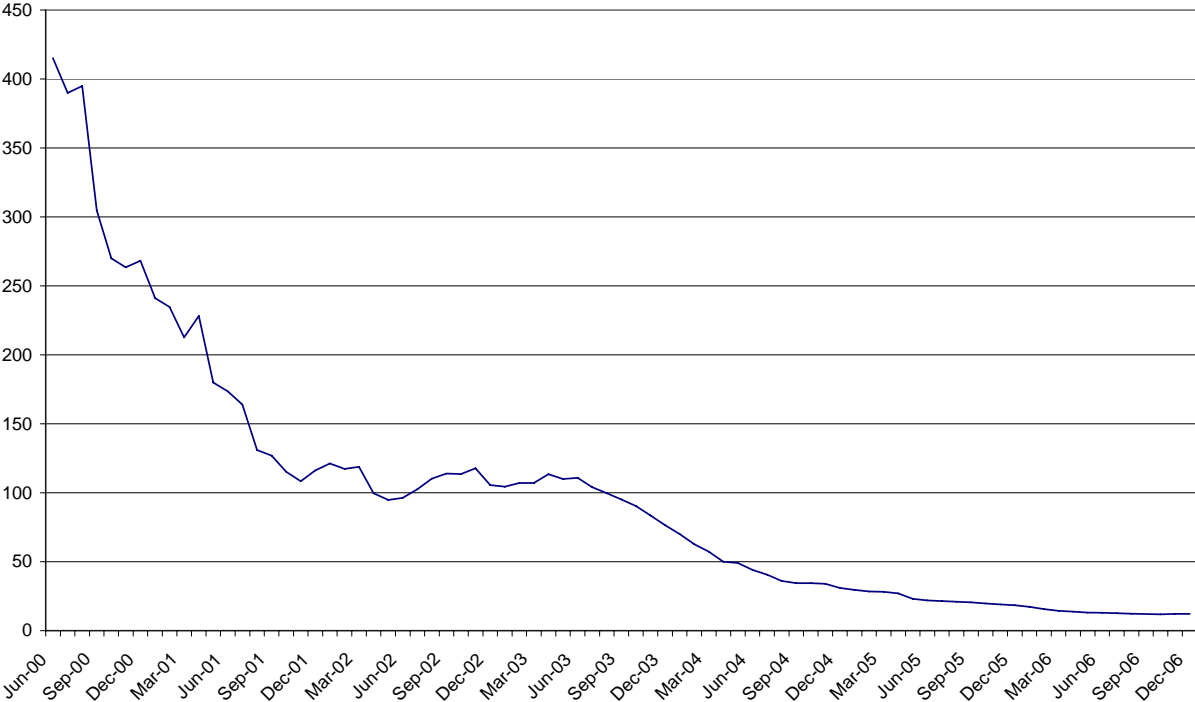
Figure 2: Composition of Exports - Average 2001-2002



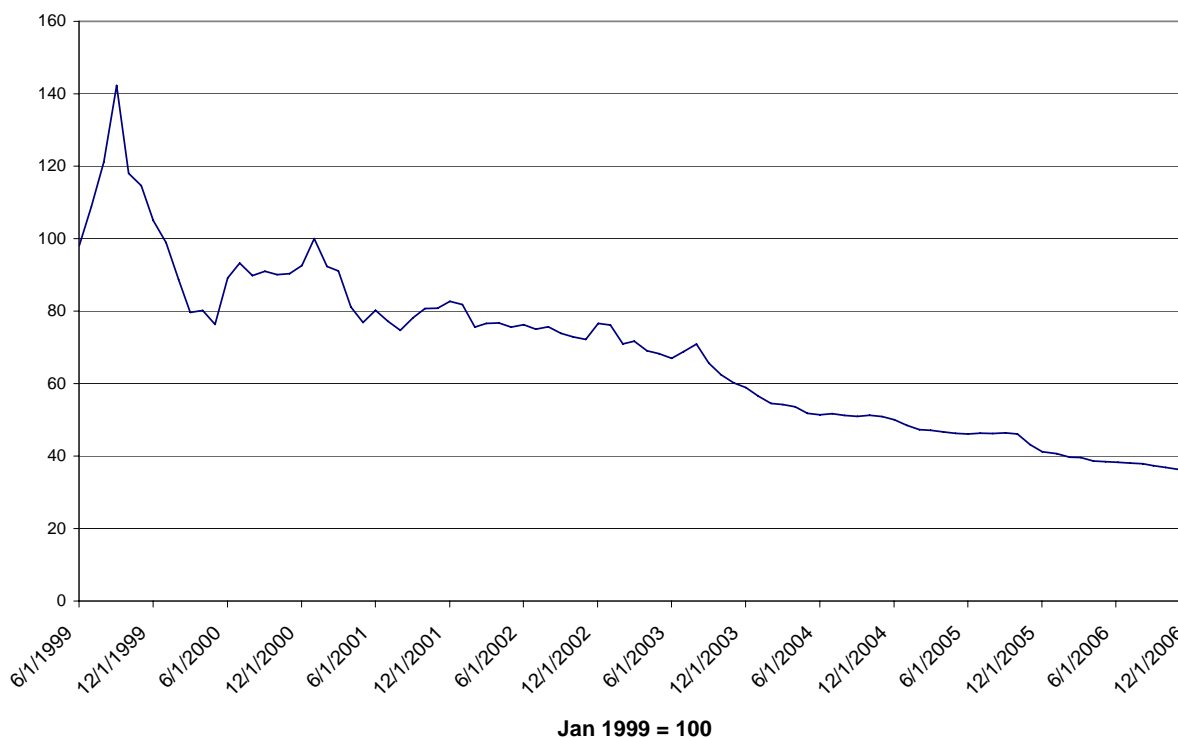
Throughout these cycles the government struggled to come to terms with the various international economic organizations but was unable to consistently adhere to the terms required by the IMF for approval until early in 2006. At this moment, Angola is at the beginning of a period in which very large new oil receipts pose both dangers and opportunities for macroeconomic management. While real exchange rate distortions are an inevitable problem given the size of the foreign exchange inflows, the new revenue also presents an opportunity for the government to establish control over fiscal operations and to try to maintain stability in macro aggregates.

In fact, the government has over the past several years used the opportunity given by the new oil revenue to stabilize inflation and bring the fiscal deficit back from the extreme imbalances it experienced in the past. The improvement is largely due to the government’s avoidance of money creation for deficit finance purposes together with a smaller deficit. The government has used a combination of oil receipts and international borrowing to cover its expenses, and though this creates other problems it has allowed the rate of inflation to be kept low when combined with the policy of using foreign exchange reserves to buy Kwanzas in order to sterilize large oil financed expenditures. Inflation has been brought down to about 1% a month from its formerly very high and very volatile levels. The figure below shows the evolution of inflation in Luanda over the past six years.

Angola: Year on Year Inflation 2000-2006



Real Exchange Rate: Kwanza vs. US Dollar



For virtually all of the 1990's, the official exchange rate was substantially overvalued, with the parallel market premium reaching levels well above 1000% at times. This is one area where the government has been very successful since the year 2000, with the parallel premium usually less than 1%. The Kwanza has stabilized at a level of around 80-90 to the US Dollar for the past year, but it should be noted that this is a period of substantial dollar depreciation vis a vis the Euro, so that the Kwanza has in reality been depreciating somewhat on a trade weighted basis. In spite of this, the Balance of Payments is unlikely to respond to any great degree since virtually all exports are composed of oil and imports are as yet quite price unresponsive, given the lack of domestic substitutes for many of the imports to coastal cities. The figure above shows the evolution of the real exchange rate over the past five years.

It is clear from the chart that there has been a steady appreciation of the real exchange rate over the 1999-2003 period. Since January of 2001 the appreciation has amounted to more than 60%, a very substantial change. As noted above, if the appreciation continues domestic producers will eventually be priced out of the market in coastal demand centers. The case of Nigeria is instructive with respect to this point: real exchange rate appreciation of the Nigerian naira was so extreme that domestic producers were in danger of being priced out of the domestic market altogether and not simply in coastal cities. The same could conceivably occur in Angola if appreciation continues unchecked.¹

¹ A real example can illustrate this: Consider the cost of a ton of maize. The prices measured for a ton of maize in different points in the country in April 2004 in local markets upon delivery by informal truckers from farm areas

III. Overvaluation, Economic Rehabilitation and Growth

A. Economic Policy Response to Oil-Induced Distortions

As noted above, the classical resource curse distortion noted in the economic literature is appreciation of the real exchange rate, which causes stagnation in non-oil traded sectors of the economy.² An alternative explanation focuses on the volatility of the real exchange rate in a relatively non-diversified economy such as Angola's and finds the failure to diversify to be a result of the inability of capital markets to bear the risk inherent in the wide swings in relative prices and profitability. The end result is similar to that in the classic resource curse literature in that there is underinvestment in non-oil traded activities and an inability of the capital structure to adjust when incentives are realigned in favor of these sectors.³

One possible reaction to this problem is to do nothing. From this point of view, since oil yields huge sums of money over long periods of time, dependence is not really a curse at all, and should simply be embraced as a new reality to be lived with. However, there are two problems with this:

1. Angola's current oil receipts are large but oil reserves will eventually be exhausted. Waiting until they run out (or world oil prices fall) is a recipe for disaster in the future since alternative economic income generation sources take many years to develop. Infrastructure planning and construction can take decades so that it is important to plan ahead.
2. The large size of current revenues compared to the economy as a whole is causing distortions which have very adverse consequences for large segments of the population. In fact the poorest segments of society are part of this majority, including the vast majority of rural smallholders who constitute the bulk of the population. Their welfare and incomes are important, which is why policies to address these problems are essential.

Economic theory suggests that one way to deal with the adverse effects of huge inflows

were reported in World Bank 2004 to range from less than \$100/MT in Kuanza Sul to \$184 in Huambo, \$230 in Benguela and more than 300 in Luanda. The prices of imported maize averaged about \$115/ton in 2004 while transport from producing countries to Angola cost approximately \$47.50. If we add \$20 for port costs and taxes (a reasonable estimate) we arrive at a landed price of \$184 per ton. It is immediately obvious that imported maize is cheaper than Angolan maize in the large coastal port cities. However, to arrive at the cost of imported maize in the interior, we must add the cost of trucking from the port to these locations. If we add the reported trucking cost of \$50/MT from Lobito to Huambo to the landed cost of imported maize we get a figure of \$244 which is only \$60 above the local price. This competitive edge can be eroded either by further appreciation of the real exchange rate or alternatively by a drop in the cost of trucking maize from the coast to the interior. This could well mean that Angolan farmers could become uncompetitive with imported product *even in their own province or village*. The same result would occur if international maize prices were to fall.

² One of the best summaries of this literature can be found in Max Corden "Booming Sector and Dutch Disease Economics: A Survey," *Oxford Economic Papers* 36(3), November 1984, pp. 359-80.

³ See Ricardo Hausmann and Roberto Rigobon, "An Alternative Interpretation of the Resource Curse", Chapter 2 in Davis, Ossowski and Fedelino Eds. *Fiscal Policy Formulation and Implementation in Oil Producing Countries*, IMF 2003.

of foreign exchange is to simply reduce the size of the flows by pumping out the oil more slowly. In effect, this strategy is to “save” the money by leaving it in the ground rather than spending it all as fast as possible. A macroeconomically equivalent strategy would be to save the money overseas (e.g. by buying investments in financial assets in other countries) rather than injecting it into the domestic economy.

While the outlines of a savings strategy are discussed below it is nevertheless likely that much if not most of oil and diamond revenue will be spent as it comes in over the near future. Certainly expenditures will remain large relative to the non-oil economy for the foreseeable future.

This implies:

1. Some degree of real appreciation of the Kwanza is virtually unavoidable even if every possible effort is made to keep it to a minimum. This means that there will be some inevitable disincentive effects on trade exposed sectors in terms of output prices, making necessary a strategy that takes this fact into account.

As noted above, the government has been supporting the exchange rate through purchases of excess liquidity with dollars. However, any expenditure of dollars which causes the Kwanza to appreciate also taxes non-oil traded sectors by so doing. Cheap manufactures undercut local producers in large urban markets on the coast. Cheap grain imports reduce the margin which domestic producers can hope to earn on their own output. This is particularly important at the present time, when one of the principal goals of agricultural policy is to reactivate national capacity to supply food needs.

2. Since the object of the strategy is to prevent the stagnation of sectors that will be necessary to sustain growth once the oil runs out, it is essential to reach some conclusion as to which these sectors are.

In economic terms the answer to this question is clear. The root of the problem is that an appreciated exchange rate masks the comparative advantage of those sectors of the economy that would be exporting (or substituting for imports) in a non-distorted environment. So, in terms of developing a sectoral strategy, the primary issue is to determine in which sectors the country has a comparative advantage. While question cannot be answered with any real precision given the dynamic nature of comparative advantage and the inability of direct observation of cost structures in a distorted economy such as Angola's it is nevertheless possible to say with some certainty that there are several areas where efficient import substitution and/or export could be easily achieved given proper investments and incentives.

As noted above, prior to the oil boom and conflicts of the 1980's and 1990's Angola had a strong light manufacturing sector and a large agricultural export sector. Growth in the former is typical of countries in the early to middle stages of structural transformation and the standard nature of the technology involved combined with Angola's low wage structure and the ready availability of raw materials in the form of food and fiber make it extremely likely that such

activities can be efficiently conducted in Angola.

The agricultural sector is more dependent upon each country's natural resource base but here both history and agroclimatic conditions make it clear that Angola has some of the best basic conditions for agriculture to be found in Sub Saharan Africa. While not every crop can be grown profitably the range that can be produced is quite wide and the late colonial history of large grain and other exports points to the capacity of Angola for efficient agricultural production that is competitive on world markets.

B. The problem of agriculture

The analysis above is particularly relevant for the agricultural sector since an appreciated real exchange rate lowers the relative price of those goods which are exposed to international trade while at the same time raising the relative price of so-called "home goods" (or non-traded goods) which are not traded internationally. Agriculture is perhaps the prototypical example of a sector which is trade-exposed. An appreciated exchange rate means lower prices for all of those agricultural outputs which are either exported, or which face competition from imports. Angola's shift from a major agricultural exporter to an importer is a result not only of the civil war, but also of these exchange rate distortions.

It is agriculture which has borne the brunt of these distortions given the fact that Angola enjoys a strong potential comparative advantage in the production of agricultural products. Indeed, prior to independence and the beginning of oil revenue flows, Angola was one of the four largest exporters in the world of coffee, and was also a major exporter of maize, a crop which is produced almost exclusively by smallholders using largely traditional technologies. In addition to major exports, domestic agricultural production also supplied virtually all food needs of Angolan cities both on the coast and in the interior.

Now that the cessation of hostilities has allowed farming populations to return to their farms, Angola is in a position to reclaim its status as a major agricultural producer, but market links between interior producing regions and coastal demand centers and ports remain in poor condition. Angola is now a large food importer, while exports of formerly important cash crops such as coffee have dwindled to virtually nothing. Pervasively low prices for agricultural outputs will contribute to a stagnation of production and in the long run cause a diversion of investment and labor away from this sector and toward other pursuits.

This is particularly troubling in the Angolan case given the very close association of many of the poorest parts of the population with agricultural sources of income. Stagnation in agriculture means stagnation in efforts to alleviate poverty and the growth of major problems such as excessive urban migration and deterioration of traditional society in the countryside. The political economy implications of this are especially noteworthy in the Angolan case given the recent history of conflict between the government and UNITA and are discussed at greater length below.

C. Oil Income, Rents and Corruption

Another line of research in the economics literature points to the propensity of mineral (and especially oil) dependent economies to develop problems of rent seeking and corruption.⁴ The argument is that the existence of oil income results in a scramble for these rents rather than efforts to engage in more productive activities. In addition, these effects can cause institutions to become weak, which will itself have a detrimental effect on growth. Isham et. al. find such a relationship in a cross section of countries⁵ while Sala-i-Martin and Subramanian⁶ study the case of Nigeria.

No observer of the Angolan experience would deny the powerful role that mineral income has played both in prolonging the civil war and in inducing corruption in various institutions of the government. Frynas and Wood have documented direct linkages between oil bonus payments and government offensives during the conflict⁷ while numerous authors have written of the corruption surrounding oil revenue in Angola.⁸ Even casual empiricism confirms the entrenchment of corruption in everyday dealings with the government and few would argue against the corrosive influence of oil money on many of the institutions that deal with it.

The work of Sali-i-Martin and Subramanian on Nigeria is perhaps the most directly relevant to the Angolan case. They argue that corruption and institutional weakness has had a more important effect on Nigeria than has distortion of the real exchange rate. They argue that even though Nigeria invested a large proportion of their windfall, the weakness of their institutions resulted in “bad” investments with very low returns. They further argue against the importance of real exchange rate effects due to the fact that agriculture has remained stagnant even after appreciation has been reversed. Their solution is that oil revenues should simply be distributed to citizens rather than spent by the government and that this would result in an increase in welfare.

While they may be correct in an ex post sense in the Nigerian case, there are reasons to doubt that their result is entirely applicable to the current Angolan situation. First, to say that Nigerian investments were bad is not to say that all government investments will necessarily be bad. Certainly the case of Indonesia provides a counterexample while in Angola there is no question that there are massive investments in public goods that are needed to rehabilitate the damage caused by the war. Second, there are various reasons for the non-reversibility of

⁴ See for example, Mauro, P. (1995) “Corruption and Growth” *Quarterly Journal of Economics* Vol. 90 pp. 681-712, and Leite, C. and M. Weidmann (1999) “Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth, IMF Working Paper WP/99/85.

⁵ See Isham, J, L. Pritchett, M. Woolcock, and G. Busby 2003 “The Varieties of the Resource Experience. How Natural Resources Export Structures Affect the Political Economy of Economic Growth” mimeo, World Bank 2003.

⁶ See Xavier Sala-i-Martin and Arvind Subramanian, “Addressing the Natural Resource Curse: An Illustration from Nigeria” NBER Working Paper 9804, June 2003.

⁷ See Frynas JG, Wood G. "Oil & War in Angola", *Review of African Political Economy* 28(90): 587-606, 2001 for a discussion of this phenomenon.

⁸ See, for example, Ian Gary and Terry Lynn Karl, “Bottom of the Barrel – Africa’s Oil Boom and the Poor”, Catholic Relief Services, June 2003.

agricultural stagnation, among them the fact that most migrants to urban areas were averse to remigration to rural areas, as well as adverse international market conditions for several of Nigeria's former exports. Indeed, it can be argued that the difficulties of reversing agricultural stagnation strengthen rather than weaken arguments for preventing this problem in the first place. Third, distribution of oil proceeds may well result in superior distributional consequences in a static sense, but they ignore intertemporal distribution issues between current and future generations. This is particularly important in Angola given the huge need for public investments in physical infrastructure of all kinds as well as in education to allow the accumulation of human capital.

Nevertheless, Sala-i-Martin and Subramanian make a valid point in emphasizing the importance of institutional weakness in exacerbating economic distortion and stagnation in oil economies. There is no doubt that efforts to promote transparency together with ongoing efforts to improve the formulation and implementation of fiscal policy are key prerequisites for Angola to successfully manage its oil income. At the same time, it will also be important to do whatever is possible to ameliorate the problems of real exchange rate appreciation and the distortions that this can cause.

The next section of this paper discusses the degree of exchange rate appreciation that has occurred, and is followed by a discussion of the extent of sectoral distortion that has resulted, and an intertemporal analysis of Angolan oil income in order to arrive at a judgment as to the amount of consumption that can be financed by oil revenue.

IV. "Equilibrium" Real Exchange Rate

It would be a mistake to imagine that it is possible to estimate exactly where the equilibrium real exchange rate for Angola is. There are several reasons for this:

- There is so much instability in the economy since independence that there is no point which can be considered to be "in equilibrium"
- Regardless of past equilibrium, the structure of the economy has changed so much due to the civil conflict and oil revenue that any past equilibrium is a poor guide to the future. This is true *a fortiori* when we consider even the known changes in store in the next decade including but not limited to large new oil receipts and resettlement and rehabilitation of the war-torn economy.
- Data are insufficient to allow econometric analysis of the issue

Nevertheless, it is instructive to look at the question from the point of view of restoring the value of the real exchange rate to different points in the past. That is to say, if we were to posit a change in the nominal exchange rate that would "undo" the real appreciation that has occurred since various points in the past, how large would that depreciation be?

Figure 4 above and Table 2 below provide the answers to this question. In December of

2006 the real exchange rate index had a value of 36 given a base period of January 2001, and has in fact been stable at about this same level since May of 2004. As noted above, the relative stability of the index for the past seven months shows that nominal depreciation is now keeping pace with inflation but does nothing to address the large built-in appreciation left over from the past. In August of 2003 at the beginning of the “hard kwanza” policy the real exchange rate index had a value of 71. Few observers of the Angolan economy would argue that the Kwanza was undervalued in real terms at that time.

In order to offset the almost 50% real appreciation since that time the nominal kwanza/dollar rate today would need to be 160. Taking other dates further in the past yield larger required devaluations. The period from around April of 2001 to February of 2002 was one of relative stability in the real exchange rate when it fluctuated in a relatively narrow range around a value of 80. Restoration of the real exchange rate index to this level would require a current nominal rate of 180. Going further back to January of 2001, a return of the index to its earlier level would imply a current nominal rate of 224.

Another interesting question is the extent to which future oil-derived foreign exchange inflows can be expected to cause further real exchange rate appreciation. While there is no way to predict this without knowledge of how the money will be spent, it is possible to make some observations:

- The short run effect of the inflows on the real exchange rate depend crucially on whether the money is spent on traded or non-traded goods. To take an extreme case, if all of the money were immediately spent on imported goods there would be little or no impact effect on the real exchange rate since there would be no money spent in the national economy. Conversely, if all of the money were spent on non-traded goods (e.g. construction in Luanda, hiring workers, etc.) then there would be an immediate and large impact. Van Wijnbergen’s econometric estimates of the elasticity of the real exchange rate to foreign aid inflows in a cross section of African countries bears witness to the wide range of possible outcomes. His estimates ranged from a low of 0.20 to a high of 0.87 over the time period studied. His estimates of the elasticity of real wages to aid inflows ranged even higher, with values reaching as high as 2.50⁹

- The long run effect depends on whether the money is spent on consumption or investment goods and in the latter case, on whether the investment is directed toward increasing productive capacity in the traded or non-traded sectors. In the event that a large portion of the aid is devoted to increasing productive capacity, then this can help ameliorate inflationary pressures in the long run even though the short run impact might be inflationary. This could happen if, for example, a large immediate expenditure on roads generated high demand for non-traded goods (from high labor requirements and domestic inputs) though the long run effect was to increase supplies of both traded and non-traded items.

Buffie, et. al. 2004 present a model of capital flows and exchange rates in Africa that

⁹ See Sweder Van Wijnbergen, “Aid, Export Promotion and the Real Exchange Rate: An African Dilemma?” Discussion Paper No. 199, World Bank 1996

demonstrates the different effects that can be expected from different values of the parameters.¹⁰ Their analysis shows that given a credible commitment to low inflation a managed float of the currency is the best policy alternative. This result is strengthened by the presence of large currency substitution effects such as those that exist in Angola. When a large amount of domestic wealth is held in the form of foreign exchange the large capital inflows that can result require a more flexible and ad hoc approach by the authorities than a simple rule (floating, pre-announced crawl, etc.) can permit.

Given all of these considerations it is likely that a minimum requirement for Angola to avoid real exchange rate related problems in the near future is to maintain the recent policy of depreciating in accordance with domestic inflation. In addition, some additional depreciation to make up for the massive past appreciation will also be needed. Management of this transition will, however, need to be conducted carefully since too rapid a move or a move prior to adequate fiscal reform could spark a new round of inflation.

Table 2
Depreciation Needed to Restore Real Exchange Rate Index to Past Levels

In Order to Restore Real Exchange Rate the Level of:	When the Real Exchange Rate Index had a Value of:	The Nominal Kwanza/Dollar Rate of January 2005 Would Need to be Depreciated to:
January 2001	100	224
April 2001 - February 2002	80	180
August 2003 - Beginning of "Hard Kwanza" Policy	71	160
December 2006 (present)	36	80.19 (actual rate)

V. Measuring the Extent of Sectoral Distortion

The result of the syndrome described above is one of sectoral distortion where traded sectors other than those producing mineral revenue shrink while non-traded sectors grow. Measurement of this effect requires a counterfactual since the process of structural transformation in all growing economies results in the growth of some sectors and the shrinkage of others in terms of shares in output. Chenery and Syrquin and various collaborators have analyzed this process exhaustively in various studies¹¹ which define "normal" paths of structural transformation as countries transition from low income per capita to high.

Alan Gelb and associates use this "normal" structure to define a Dutch Disease Index to

¹⁰ Edward Buffie, Christopher Adam, Stephen O'Connell, and Catherine Patillo, "Exchange Rate Policy and the Management of Official and Private Capital Flows in Africa", IMF Staff Papers Vol. 51, 2004

¹¹ See for example Hollis Chenery, Sherman Robinson and Moshe Syrquin, *Industrialization and Growth* Oxford University Press 1986

measure the extent of sectoral distortion in oil producing economies.¹² This index is defined as:

$$DD = (SN_{ag} + SN_{ma}) - (S_{ag} + S_{ma})$$

SN_{ag} and SN_{ma} are the “normal” percentage shares of the traded sectors (agriculture and manufacturing) while S_{ag} and S_{ma} are the shares of these same sectors in the oil exporting countries. Gelb calculates this index for seven different countries in 1981 in the aftermath of the second oil shock in the 1970’s. It should be noted that Gelb modifies the Chenery/Syrquin sectoral classification somewhat to eliminate construction from manufacturing since this is a predominantly non-traded sector which should not properly be considered as part of SN_{ma} in the analysis. The data to perform this decomposition were not available for this analysis, but the results are nevertheless interesting.

Though an exact calculation of the index for Angola cannot be done without decomposing the Chenery/Syrquin benchmarks it is still possible to calculate upper and lower bounds for the value. Since the benchmark measure of the size of the traded manufacturing sector (incorrectly) includes construction, a measure of Angolan manufacturing will overstate the value of the index somewhat if it excludes construction, while including construction will understate the value of the index due to the presumably larger than “normal” size of the non-traded construction sector in the distorted 2003 economy. Accordingly both values are presented here since the true value lies somewhere between the two extremes.

Tables 3 and 4 show details of the calculation for Angola and the values of the index obtained by Gelb for his sample countries. Following Gelb, the Angolan per capita GDP of \$950 in that year is deflated (using the US GDP deflator) to 1970 dollars as used in Chenery, Robinson and Syrquin’s 1986 computation of the “standard solution” at an income level of \$140 per capita. This corresponds fairly closely to 2003 Angolan non-oil GDP of \$128 in 1970 prices. Since Chenery and Syrquin chose this benchmark because it marks an income level before the onset of structural transformation, it is safe to use these same output shares at a slightly lower per capita income since their analysis indicates that no significant difference is observable at levels lower than this.

Angolan results are presented both with and without construction included in S_{ma} since as noted above it was not possible to disaggregate SN_{ma} to exclude construction from the “standard solution”. In either case it is clear that Angola is at the extreme of sectoral distortion observed in Gelb’s sample. The index value of 29 is higher than any reported by Gelb, while the value of 21 is higher than all but one. It is interesting to note that on a sectoral basis both Angolan agriculture and manufacturing account for about half as large a share in non-oil GDP as would be expected in a non-mineral country at the same income level. It is safe to conclude that regardless of small differences in computation, Angola ranks among the most extremely distorted in terms of sectoral production shares of any oil exporting country outside of the Persian Gulf region.

The distortion in the index results primarily from the extremely small share of GDP

¹² Alan Gelb *Oil Windfalls, Blessing or Curse?* Oxford University Press 1988.

produced in the agricultural sector in Angola at the present time. While much of this can be attributed to the dislocation caused by the long period of hostilities, the distortions caused by exchange rate overvaluation will impede the reactivation that would ordinarily be expected after the end of the conflict. The clearly inflated size of the non-tradables sector is all the more notable given the exclusion of construction from that sector in the Angolan figures. Were they included, the 74% share of nontradables in non-oil GDP would far outweigh the 47% in the benchmark standard solution.

Table 3 Dutch Disease Index and Sectoral Shares in GDP : Chenery/Syrquin “Standard Solution” vs. Angola in 2003

Sectors	Chenery/Syrquin Standard Soln.	Angola 2003	Angola 2003
		% of total	% of non-oil
Primary	38	61	
of which			
Agriculture	37	8	17
Mining	1	53	
Manufacturing	15	3.8	8
of which			
Food	5		
Consumer Goods	6		
Producer Goods	3		
Machinery	1		
Construction		3.6	8
Nontradables	47	31	66
of which			
Social overhead	11		
Services	36		
DD index	ex. Construction		29
DD index	incl.Construction		21

Chenery/Syrquin figures from Chenery, Robinson & Syrquin op. cit. p. 49. Angola figures from 2004 IMF Article IV consultation report.

Table 4
Dutch Disease Index – Various Countries

Country	Dutch Disease Index
Algeria	11.2
Ecuador	2.1
Indonesia	-1.5
Iran	8.4
Nigeria	17.2
Trinidad	24.7
Venezuela	12.6
Angola (lower bound)	21
Angola (upper bound)	29

Source: Angola from Table 3. Other countries from Gelb 1988 p. 88.

VI. Oil Revenue and Optimal Expenditure

This section presents the results of an analysis aimed at answering the following question: What is the optimal annual level of consumption out of Angolan oil income now and in the future? The answer depends on both on the size of the revenue that can be expected from oil in the future, the rate at which we discount these values to the present, and the relative weights we attach to future vs. present generations.

A. Projections of Oil Income

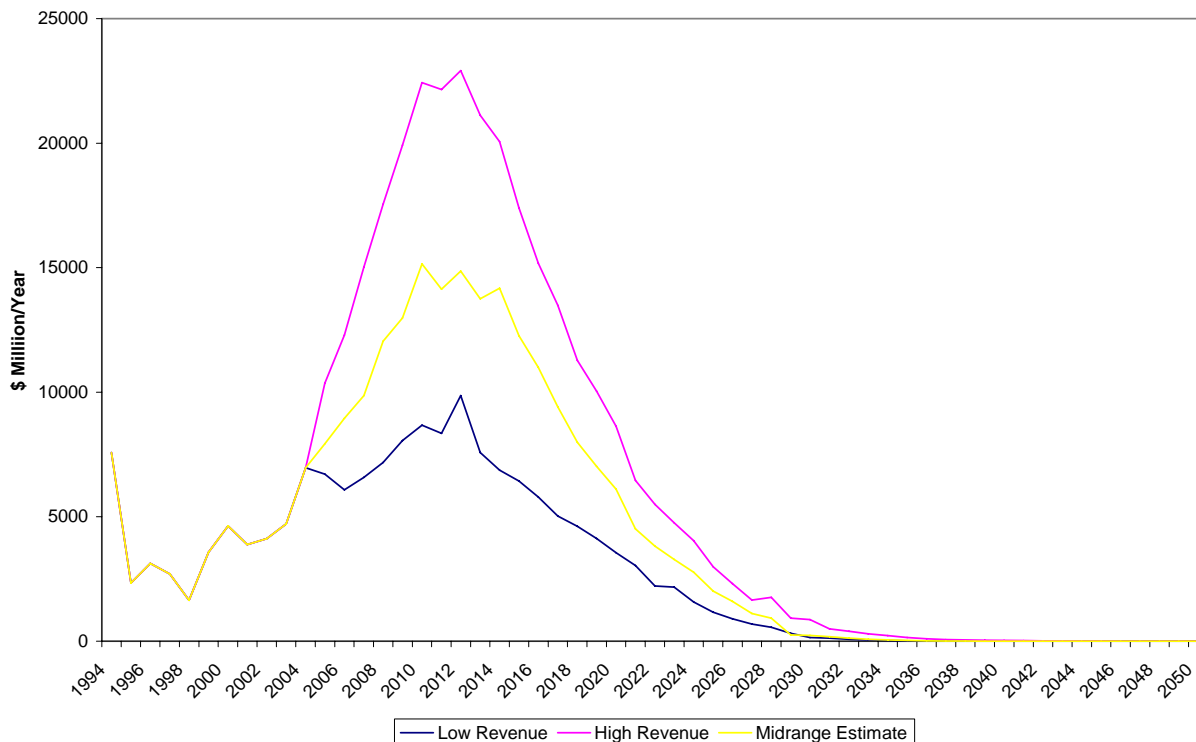
Figure 6 shows hypothetical projections of oil revenue inflows to the Angolan economy through the year 2030 based on extrapolations of currently available information on oil production¹³. It is apparent that based on currently proven reserves that production will peak in around six to seven years and decline gradually thereafter. An important component of the projection of future oil revenue is the oil price. The estimates assumes a price of approximately \$35/bbl for the base case scenario. Alternative scenarios ranging from \$30 to \$40 are also considered. It is clear from an inspection of Figure 6 that oil revenue will peak at some point between 2011 and 2013 and will decline thereafter. Naturally, this decline could be tempered somewhat by oil price spikes in the future, but the underlying physical production would soon reassert itself, returning the revenue stream to its downward trend.

Exhaustion of oil reserves is an asymptotic process with production declining toward zero but not actually reaching it for many years. Nevertheless, according to even the high revenue projections oil revenue becomes negligible in macroeconomic terms by the year 2038. Barring

¹³Figures from 2005 through 2030 are taken from estimates based on differing assumptions for future oil prices.

further massive discoveries, this means that children born today will see the end of large oil financed inflows by about the middle of their lives.

Figure 6 - Oil Revenue Scenarios



B. Theory of Optimal Expenditure

The theoretical issue from an economic point of view is the following question: What is the level of consumption that is sustainable from a given quantity of oil? If we take the position that all citizens of Angola are equally deserving, both now and in the future, then we must take an intertemporal approach which allows each citizen of a growing population to share equally in the oil wealth.¹⁴ Given that in any future year there will be a larger population, this means that larger absolute amounts must be consumed in each future year. At the same time, oil revenue which is invested rather than consumed now will earn interest (or returns on physical investment) which will increase the amount available for consumption in the future.¹⁵ Accordingly, the

¹⁴ It should be noted that this is the “purist” approach in the categorization of expenditure strategies laid out in Katz et. al. 2004. This approach is intermediate between the “going on a binge” approach of spending oil income as it is earned and the “bird in hand” approach of saving the income and consuming only what can be financed by interest income in the current period.

¹⁵ It is important to note that there are at least two distinct alternatives - Savings in financial form vs. investing in productive capacity domestically. Strictly from the point of view of portfolio choice the option with the higher return should be chosen. While the return to financial investments is quite clearly the rate of interest the rate of return on physical investments is much less clear. Given the ultimate goal of promoting growth in GDP it is reasonable to choose physical investments insofar as they are capable of generating additional GDP growth that implies a higher return than alternative financial investments. However, it is likely that such financial investments

problem has two distinct parts. One is to estimate the value of the oil wealth while the second is to allocate the split between consumption and savings of this wealth in each year.¹⁶

It should be noted that the important variable for projections is the revenue stream that accrues to Angola as a result of oil sales. It is irrelevant from an analytical point of view whether any increases come from additional production or higher prices - either will generate additional revenue. In either case, calculation of an optimal split between consumption and savings requires the calculation of the Present Discounted Value of the given oil revenue stream. This amount is given by:

$$PDV = \sum_{t=1}^{\infty} P_t Q_t (1 + r)^{-t}$$

where P_t is the oil price in year t , Q_t is the amount of oil sold in year t , and r is the interest rate.

In order to maximize the sum of the discounted utilities of all generations and if the discount rate is taken to be equal to the market rate of interest¹⁷, then the following expression yields the value of the constant level of per capita consumption that can be sustained indefinitely:

$$C = (r - n) * PDV / POP_1$$

where C is the level of per capita consumption that can be sustained indefinitely, POP_1 is the initial level of population in year $t=1$ and n is the rate of growth of the population.

Taking the difference $P_t Q_t / POP_t - C$ in any future year will give the amount of savings per capita (out of oil wealth) in that year, while $P_t Q_t - C * POP_t$ will give the total amount of aggregate savings (out of oil wealth) in that year. It should be noted that in all of the projections below it is assumed that the additional expenditure financed out of oil income is in fact channeled through the government's budget. That is to say, these flows can be regarded as a direct source of financing to the fiscal policy of the state.

C. Projections for Angola

Estimates of the maximum level of per capita consumption that can be sustained from Angola's oil wealth were calculated based on the analysis derived in the previous section. The

can be regarded as being closer to a "risk free" investment than can domestic alternatives, which implies that a mix of the two would be appropriate.

¹⁶ This section applies the analysis developed in World Bank 2003.

¹⁷ It should be noted that this assumption can be modified, and indeed has obviously been modified in actual execution of economic policy in the past in Angola. A rate of time preference higher than the market rate of interest reflects "impatience" or a desire for present consumption that has obvious real-world examples in the Angolan case. In particular, when the government was engaged in fighting a war there was little choice but to do whatever was necessary to prevail; this corresponds to a very high rate of time preference and explains the fact that current consumption in war years far exceeded the "optimum" calculated here. This exercise is not intended as a critique of this imperative but rather as an exercise designed to illuminate what optimal policy could have been under more favorable circumstances. It is precisely those more favorable circumstances that the country now faces, thus motivating these calculations.

most important input into the calculation were, of course, estimates of the total amount of revenue that can be derived in the future from oil extraction. As noted above, the amount of oil revenues actually accruing to the government from a given amount of extraction is conditioned by the revenue sharing arrangements pertaining to each oil exploration block leased. Even historical figures must be built up from the micro level given the wide variation in arrangements that exist for different companies and different zones.

The “base case” scenario assumes the following:

- Oil revenue: In order to construct the “base case” for this analysis, Reading’s figures were used for the period from 1994 - 2004 where these were necessary. From 2005 the base case was taken as the mid-range estimate produced by Wood Mackenzie.

- Oil price: Assumed to be \$35/barrel (Brent)

- Interest rate: 5%

- Rate of time preference: 5%

- Population growth: 2.9% per year (in line with recent historical trends)

- Projection horizon: 2050

The interest rate assumption was varied to get an idea of the sensitivity of the results, as was the oil price. In all cases, the analysis above was used to generate a Present Discounted Value of oil wealth, together with an estimate of the level of per capita consumption that could be sustained indefinitely based on this wealth. It should be noted that in all of the following discussion the figures refer to the additional consumption that can be financed out of oil revenue or investment proceeds from saved oil revenues. Implicit in the construction of the model is the idea that oil income can be saved to build up financial wealth which will generate interest in future years to finance consumption after oil has been depleted.

Figure 7 shows the path of per capita oil related budget balance and interest income that can be sustained under the assumptions of the calculation. In early years a large positive budget balance is run as oil wealth accumulates while interest income is still low, given the small amount of financial investment that has taken place. As years go by, per capita budget surpluses decline as oil extraction goes down, but interest income rises as financial savings are built up. Eventually these converge to a steady state level reflecting the level of consumption that can be financed in perpetuity.

Figure 8 shows the counterpart of Figure 7 in total amounts per annum rather than per capita terms. In other words, this figure shows the national level figures for savings and consumption. In terms of consumption it can be seen that the total level rises smoothly over the projection period reflecting the maintenance of constant consumption per capita in an economy where the population is assumed to be growing at 2.9% annually. In order to finance this growing amount it is necessary to save annual oil income each year in order to build up financial

reserves to sustain per capita consumption levels after oil revenues cease. Thus, annual savings are positive in early years but become negative after oil revenues decline and the total amount of consumption financed is greater than the total amount of current income from oil. However, by this point financial reserves have been built up enough that the total of savings plus interest on accumulated savings suffices to finance consumption at the same time that total invested wealth continues to rise enough to finance future consumption. Eventually, annual (dis)savings are a mirror image of annual consumption, while total savings plus interest exceed this amount by enough to maintain the value of total savings plus enough to finance the additional 2.9% population growth each year.

Tables 5 and 6 shows the results of various scenarios. Each scenario is evaluated in terms of the PDV of oil wealth under the assumptions of the scenario and the amount of consumption (both in 2005 and in per capita terms) that can be sustained. These figures are also expressed as a percentage of 2003 non-oil GDP in Table 5 and total GDP in Table 6 in order to give some context to the magnitudes involved. As noted above, various scenarios were considered in addition to the base case and the results from several of these are shown in the table.

The assumptions of the base case scenario generate a PDV of oil wealth in 2005 of 136% of GDP and a level of sustainable consumption of \$186 per person, or a total of 20.7% of 2003 GDP. Expressed as a proportion of non-oil GDP in 2003 this figure is 40.0%. Variations of the interest rate alter these figures; the table shows the result of a 1% decrease in the interest rate, which generates a higher PDV of oil income since future extraction is discounted less, but also a lower sustainable consumption since a lower interest rate means a lower per capita income in the long run when oil has been depleted and financial investments are the only source of financing for the consumption. Raising the oil price to \$40 (high revenue case) and even \$50 raises both the PDV and the value of sustainable consumption.

Of particular interest is the fact that in none of the scenarios does sustainable consumption rise above about 38% of 2003 GDP or 74% of non-oil GDP, even in the case of the high oil price scenario of \$50/bbl. In every case, optimal sustainable consumption is less than actual consumption has been or is currently.

The final row of Tables 5 and 6 present the results of the analysis using 1994 as the base year rather than 2005. In other words we are asking the question “If the government had estimated the optimal level of sustainable consumption in 1994, given the same base case assumptions as used in the 2005 calculations, what would the results be?” The table shows that the PDV of oil wealth is somewhat lower, since the large finds of the present and near future are discounted more than with a later base year, but that the optimal level of consumption per capita is much higher in 1994 due largely to the smaller population at that time. The total sustainable consumption as a percent of GDP is also higher due to the much lower GDP in 1994.

Figure 7: Per Capita Oil Related Budget Balance and Interest Income - Base Case



Figure 8: Total Annual Savings and Consumption - Base Case

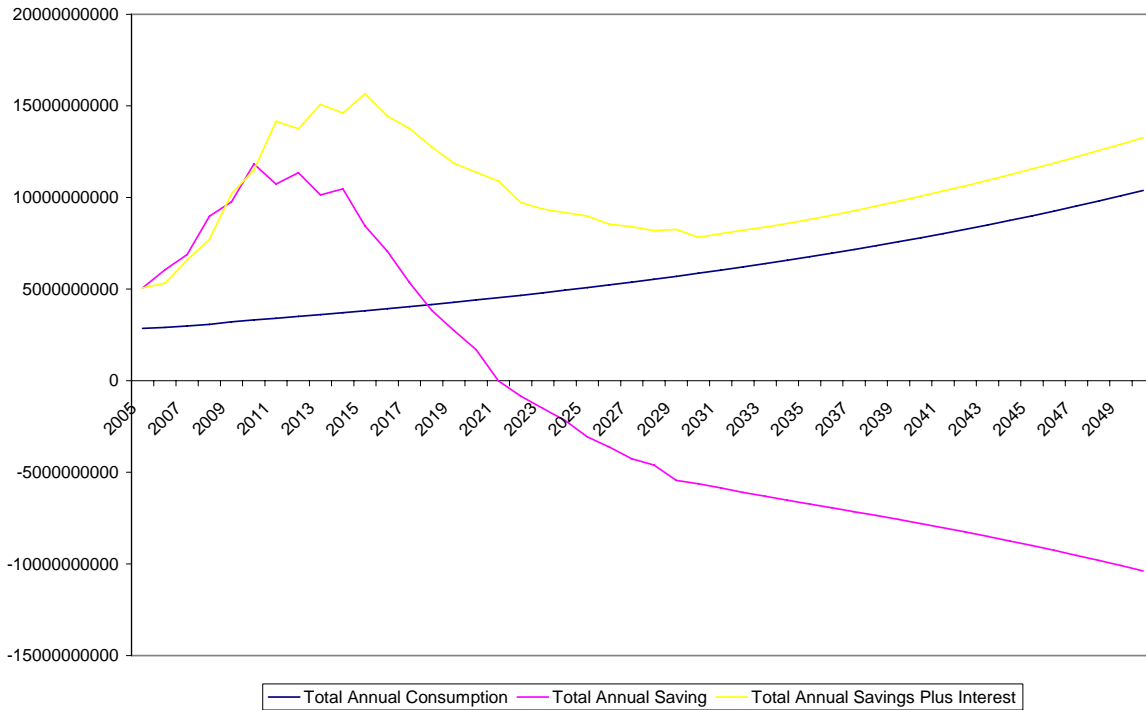


Table 5: Sensitivity Analysis Around Base Case Scenario - Oil Wealth Relative to Non-Oil GDP

	PDV of Future Oil Extraction		Optimal Consumption of Oil Proceeds		
	Total in \$ Billion (2005)**	As % of 2003 Non-Oil GDP	Total in \$ Billion (2005)**	Per Capita	As % of 2003 Non-Oil GDP
Base Case*	136.3	1,906%	\$2.86	\$186	40.0%
Low Revenue	82.6	1,155	1.73	113	24.2
High Revenue	200.2	2,800	4.20	273	58.7
Oil at \$50	250.2	3,499	5.26	341	73.6
Interest Rate 4%	146.0	2,042	1.61	104	22.5
Interest Rate 6%	127.7	1,786	3.96	257	55.4
With 1994 as Base Year***	109.6****	1,534	2.30****	205****	93.6%****

** 2005 population = 15.4 million; 2003 GDP \$13.83 billion; 2003 Non-Oil GDP \$7.15 billion

* Calculating Optimum from 2005, Oil Extraction Declines After 2011, Price \$35/Bbl, Interest Rate 5%

*** Calculating Optimum from 1994, Oil extraction at historical figures through 2004 and as in Base Case thereafter. Actual prices through 2004 and as in Base Case thereafter. Interest rate 5%

**** In 1994 in 2005 dollars

Table 6: Sensitivity Analysis Around Base Case Scenario - Oil Wealth Relative to Total GDP

	PDV of Future Oil Extraction		Optimal Consumption of Oil Proceeds		
	Total in \$ Billion (2005)**	As % of 2003 GDP	Total in \$ Billion (2005)**	Per Capita	As % of 2003 GDP
Base Case*	136.3	986%	\$2.86	\$186	20.7%
Low Revenue	82.6	597	1.73	113	12.5
High Revenue	200.2	1,448	4.20	273	30.4
Oil at \$50	250.2	1,809	5.26	341	38.0
Interest Rate 4%	146.0	1,056	1.61	104	11.6
Interest Rate 6%	127.7	923	3.96	257	28.6
With 1994 as Base Year***	109.6****	793	2.30****	205****	48.4%****

VII. An Oil Revenue fund

The calculations presented in the previous section are a numerical exploration of one of the standard responses to a transitory boom: to smooth the expenditure of the income over time. That is, rather than spending all of the money as it comes in, some is saved both to avoid the distortions that can result from excessive current expenditures of foreign exchange, but also in order to preserve some wealth for the future and to maximize the long run level of welfare that can be gained from the exhaustible resource. In the past, Angola's pressing needs for expenditures for defense have precluded deferring expenditures, but the obvious signs of Dutch

** 2005 population = 15.4 million; 2003 GDP \$13.83 billion

* Calculating Optimum from 2005, Oil Extraction Declines After 2011, Price \$35/Bbl, Interest Rate 5%

*** Calculating Optimum from 1994, Oil extraction at historical figures through 2004 and as in Base Case thereafter. Actual prices through 2004 and as in Base Case thereafter. Interest rate 5%

**** In 1994 in 2005 dollars

Disease type distortions in the economy together with the end of the civil conflict make the idea of saving some of the oil income an idea that should be revisited. While the analysis above gives a macro view of the amounts that could be saved and consumed in order to achieve desired results, the mechanics of how in institutional terms to actually save the income remains to be explored. Recently, the newly independent country of East Timor has addressed exactly this same issue, and has proposed the creation of a Petroleum Fund.

A. The Example of East Timor

In a recent report¹⁸ the Government of Timor-Leste describes a proposal for the creation of a Petroleum Fund that would be used as a device to allocate oil revenues both across the economy and through time. The forward to the report is written by the Prime Minister of Timor-Leste and poses three questions that are key to any country facing large but less-than-permanent inflows of foreign exchange from oil or some other source:

- How much of the petroleum wealth should be spent now on infrastructure and human development, and how much saved for the future?
- How should the Fund be designed and managed?
- How can transparency and public support for the management of oil income be ensured?

The proposed Timorean answer to these questions rests on a Petroleum Fund modeled on that used in Norway. In essence the Fund is designed so that all petroleum revenues are paid into it and it is set up to pay whatever amount is necessary to finance the regular government budget's non-oil deficit. Thus, the decisions on how much oil revenue to spend and what to spend it on are incorporated directly into the normal budgetary process. In addition, the budgetary process also is responsible for the decision on how much of the oil revenue to "save" through investments in physical and human capital and how much to save in the form of financial assets.

It should be noted that international experience suggests a variety of alternative rules for the percentage of revenue to be consumed vs. saved. Davis et. al. (2004)¹⁹ detail the experience of nine countries and states that have established Nonrenewable Resource Funds. Several use a fixed percentage of revenue as a rule for consumption while several others in effect incorporate the decision into the general budget process and invest whatever residual remains. Still others rely on reference values related to the world prices of the mineral concerned. Many have changed the rules as time passed. The previous section of this paper proposed a rule based on smoothing consumption which results in a fixed real amount of expenditure per capita rather than a rule directly governing the proportion of each year's revenue to be saved or spent.

¹⁸ See "Establishing a Petroleum Fund for Timor-Leste", Public Consultation Discussion Paper, Ministry of Planning and Finance, October, 2004.

¹⁹ See Jeffrey Davis, Rolando Ossowski, James A. Daniel and Steven Barnett, "Stabilization and Savings Funds for Non Renewable Resources: Experience and Policy Implications", Ch. 11 in Davis, Ossowski and Fedelino Eds. *Fiscal Policy Formulation and Implementation in Oil Producing Countries*, IMF 2003.

To the extent that oil revenue is saved in financial form, the proposal is that they be invested abroad in low risk financial assets. This has the benefits of both diversification across many assets on a global scale and the avoidance of economic distortions arising from bringing large flows of financial capital into the domestic economy. It is also in line with international experience such as that cited in Davis et. al. wherein all examples except two (the Canadian province of Alberta and Papua New Guinea) invested mostly or exclusively in foreign assets.

Management of the Fund is to be done by the Timorean Banking and Payments Authority, which is the Central Bank of Timor-Leste, which will operate under the responsibility of the Minister of Planning and Finance. All of these entities are to regularly publish the activities of the Fund so as to assure maximum transparency and government accountability.

B. A Petroleum Fund for Angola?

It is clear that Angola faces the same issues of timing of oil revenue expenditure and economic distortions that can be addressed by Petroleum Funds in countries such as Timor-Leste and Norway. However, there are numerous considerations which must be addressed (as indeed some of them already are being addressed) if a Petroleum Fund is to be successfully implemented in Angola. The following list details some of these problems/issues together with potential solutions:

1. Savings/Investment Decision - Perhaps the biggest decision is the extent to which revenue should be saved in financial form as opposed to spent. While some writings implicitly assume that this expenditure will be in the form of investment in physical or human capital, it is also the case that at least some of this expenditure will come in the form of additional consumption. Not only is this the obvious end goal in any case, but politics dictate that at least some of the inflow will be distributed in non-investment categories.

However, even this is difficult in a budget process not set up to explicitly distinguish between capital and recurrent expenditures. While such a distinction is theoretically possible (and will be even more feasible after the new Angolan budget procedures are fully implemented) it is not yet reasonable to expect that it can be done. This is particularly the case since some expenditures which we typically think of as investments in “human capital” are not usually included in capital budgets. This is especially true with, e.g. some expenses related to education. Of fundamental importance is not only the technical capacity to track expenditures in terms of capital vs. recurrent budgets, but the analytical and political ability to evaluate and understand these tradeoffs.

Nevertheless, these issues are capable of being resolved. A larger issue in the Angolan case is the fact that so much of current revenue has been mortgaged in the form of oil-backed loans. While accurate figures on oil backed loan service were not available for this report, the fact that such payments are scheduled to require more than 75% of revenue in the near future implies that this concern is not a merely academic one. Accordingly, the ability to fund a Petroleum Fund at all in the near future is an issue subject to debate.

Empirical results reported in Davis et. al. 2003 suggest that petroleum funds have been ineffective as vehicles for restraint in current spending of mineral income. No significant relation between establishment of a fund and a change in the path of government expenditure could be found in their sample of nine examples. There was some evidence, however, of dampening of expenditure volatility in the face of uneven mineral revenues.

2. Transparency and a Petroleum Fund - Transparency has for many years been a virtual mantra in dealings between the IMF, the World Bank, other donors and the Angolan Government. It is in fact an area where substantial progress is being made at the present time though it is fair to say that all parties involved agree that there is some distance yet to go. It is also an area of crucial importance for a Petroleum Fund. Indeed, such a fund could be a key tool used to ensure transparency since it would unify revenue management under a single easily-identifiable roof.

The Petroleum Fund proposal for Timor-Leste emphasizes the importance of transparency at several important points: in the payments by oil companies to the government; in the planning and execution of government budgets; in the management of financial savings by the Fund; in the operations of the Fund. The first two of these are being addressed directly by initiatives currently under implementation in Sonangol, the BNA and the Ministry of Finance. The third and fourth would be key elements of the structure of any future Petroleum Fund itself.

However, far and away the most important element with respect to transparency is the human element. As in the case of making political decisions regarding capital vs. recurrent spending, the success of initiatives to promote transparency and accountability depend on the political will of those operating the systems. Thus, the success of the efforts to systematize and make more transparent the budgetary processes of the Orcamento Geral do Estado will depend not only on the technical adequacy of the systems constructed, but also on the desire of the politicians and bureaucrats involved to make sure that they work as designed. Given the history of acknowledged corruption and non-transparency in Angola, this will be an area where achieving a perception of good management will require a very high degree of scrupulousness on the part of all concerned. In particular, the maintenance of large amounts of funds invested in off-shore assets may well benefit from outside auditing on a regular basis to ensure that the perception of good governance can be achieved.

3. The time profile of oil revenue

The East Timorean and Norwegian reserves of oil are much smaller compared to their respective economies than is the case in Angola. Angolan oil revenues have typically accounted for 50% or more of GDP over recent years, a figure that will climb rapidly in the near future both because of new production and because of the expectation of high oil prices. These factors mean that Angola's expected revenue will be much higher (in relative terms), and will peak later than will those for other countries that have implemented or are thinking of implementing Petroleum Funds.

This is somewhat paradoxical given that the higher relative income flows from oil and the fact that, though large, the reserves are nevertheless finite means that both the current oil-induced distortions and the post-boom economic problems will be all the more severe without some attempt to address them. However, from a political point of view the large size of the flows means that the need to save is less obvious in the short term since an argument can be made that pressing needs outweigh concerns for the future.

For this reason it is very important to publicly emphasize two facts: First is that the oil revenues are not permanent - they will eventually decline and cease. Second is that many of the current economic problems can be traced to excessively rapid expenditure of oil revenues. While the economics underlying this are clearly not easily communicated to many, the basic idea that oil revenues have been accompanied by big economic problems is one that most Angolans can easily believe.

4. The perils of instability - Oil revenues are famously unstable and unpredictable. This can be seen in Figure 9 which shows the evolution of crude oil prices over the time since Angola's independence. The volatility is clear as is the lack of any tendency for the price to revert to average or stable level. This characteristic of oil prices (noted by Barnett and Vivanco 2003²⁰) means that there is no way to choose an "average" level of revenue based on historical information. Any level chosen would of necessity be purely speculative. Hence the buffering function of a Petroleum Fund would be particularly important since sharp swings in oil revenue could be gradually phased in as they affected the present value of long run wealth. The problem for Angola would be in refraining from rapid adjustments in the event of quick price increases as has happened in the past year.

²⁰ Steven Barnett and Alvaro Vivanco "Statistical Properties of Oil Prices: Implications for Calculating Government Wealth" Chapter 5 in Davis, Ossowski and Fedelino eds. *Fiscal Policy Formulation and Implementation in Oil-Producing Countries*, International Monetary Fund 2003.

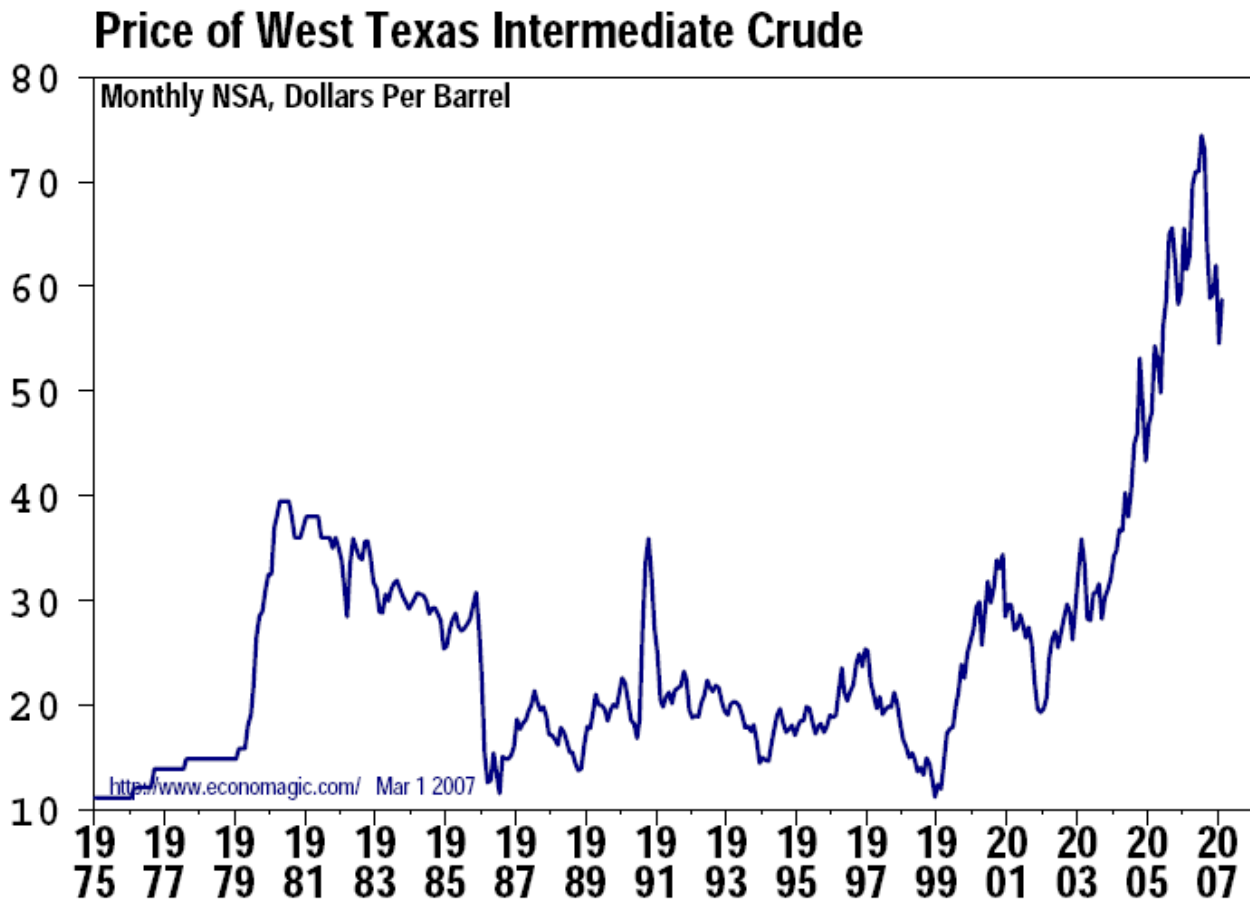


Figure 9

C. What Would a Petroleum Fund Look Like in Angola?

The basic structure of such a fund would be similar to that in other countries. Namely, day to day management of the fund would be carried out by the BNA which houses the country's existing expertise in off-shore financial asset management. The new entity would then be the recipient of oil revenues from Sonangol or foreign oil companies rather than existing government accounts as is the case at the present time. These accounts would then be used to make transfers to the OGE or for purchases of low risk off-shore assets.

Issues of transparency are no different from those currently being addressed under the existing arrangements for oil revenue payment and accounting. The main difference would be the maintenance of a separate accounting for oil-derived revenues over the long term in order to ensure the optimal use of these resources as indicated by calculations such as those above. As has already been done in the case of Sonangol, an outside accountant could be used if desired to ensure the perception of transparency by all.

Management of the Fund could be overseen by a committee comprised of the Ministers of Finance and Planning together with the Governor of the BNA and whichever other officials were deemed necessary by the President of the Republic. This group would be responsible for ensuring regular auditing and publication of accounts.

The biggest hurdle to adequate operation of the Fund would be in its incorporation into the regular budgeting process. As has already been noted above, the decisions on how much to spend and where to spend it would be resolved within this process, with the resulting deficit being funded from the Petroleum Fund. Regular updating of estimates of total mineral wealth as performed in this report would help keep budgetary totals in line with what can be optimally funded from oil and diamond income. Accurate budgeting for investments in physical and human capital are outcomes which the current budget procedure update and modernization can hope to achieve, though complete implementation is still way off in the future.

VIII. Investment and the Political Economy of the Resource Curse

The sections above have outlined the economic theory relating to common distortions in oil economies, measured the extent of these distortions in Angola, and presented a numerical analysis of optimal sustainable consumption of oil proceeds under different scenarios. This analysis also permitted a calculation of the extent to which past oil-financed consumption has exceeded the levels that can be sustained over the long term. The possible structure of an oil stabilization fund in Angola was then discussed using the example of other countries which have recently confronted similar issues. A remaining question is this: What would an “optimal” program of public investment look like in Angola? While no exact answer to this question is possible, the theory of oil-boom economies does give some important considerations which are relevant to these issues.

This section first addresses the question of what the sectoral composition of an investment program might look like. It is followed by a discussion of how the interaction of the distortions caused by the resource curse with the overall political economy of the country contributes to the difficulties of addressing the problem. The discussion centers on three major pre-existing axes of polarization in Angola: Port vs. Interior; Rural/Agricultural vs. Urban/Industrial; MPLA vs. UNITA. This section also discusses the role of external geopolitical influences in reinforcing internal political divisions.²¹

A. Investment in Productive Capacity - Traded vs. Non-traded Sectors

Section III above noted that there are two possible ways to spend oil income: It can be consumed, or it can be saved and invested. The following sections discussed the split between consumption and savings that could be considered optimal. An important question then is what exactly a government investment program should invest in. As noted in Buffie et. al. 2004 (cited above) a crucial question is whether investment in productive capacity is devoted toward

²¹ See “The Political Economy of Long Run Growth in Angola - Everyone Wants Oil and Diamonds but They Can Make Life Difficult” (Steven Kyle) Department of Applied Economics and Management [Working Paper No. 2002-07](#), April 2002.

increasing capacity in the traded goods sector or the non-traded goods sector. There are a variety of considerations in each as well as considerations of long term vs. short term needs.

In the short run, the problems of excess demand in non-traded sectors generate inflationary tendencies which cause appreciation of the real exchange rate. This creates an incentive to try to mitigate these pressures by investing in non-traded goods production so that the excess demand can be accommodated without price increases. On the other hand, the long run needs of the economy lie in the preservation of the capacity for traded goods production since these are what will have to be relied on when oil income eventually declines and the economy has to rely on non-mineral exports to finance needed imports while at the same time substituting for these imports to the extent that efficiency considerations permit.

Clearly, there are some investments which can satisfy both targets. Human capital is perhaps the most fungible of all, and increases in urban wages are at the core of inflationary tendencies in Angola as in other oil boom economies. This means that investments in education would be a major part of any investment program, and should be implemented as broadly as possible in terms of national coverage. Given the long lead times needed to “produce” an educated worker, such investments should be considered a priority.

Angola’s recent emergence from a long period of civil conflict and destruction makes several other investment areas conducive to both non-traded and traded production capacity. Most obvious is the widespread destruction of infrastructure in both transport and communications that have prevented circulation of both people and goods through the country for periods of time that almost amount to decades in some areas. Rehabilitation of major transport and communications routes between the most important economic and population centers thus constitutes a priority of the first order. Initially, this rehabilitation will benefit all production, both traded and non-traded. Within traded goods, there is a large amount of efficient import substitution that can be expected in a relatively short time given the virtual enclave nature of coastal cities that existed throughout the war period. In addition a variety of non-traded activities can also be expected to be facilitated including most importantly construction.

In terms of traded goods, both history and national agroclimatic conditions show that agriculture is a sector which would figure prominently in Angola were it not for the distortions caused by mineral income. In addition to its macroeconomic importance as a traded sector in the eventual decline of oil revenue it is of major importance as the source of income for a majority of the population, including the poorest. The importance of rehabilitating the feeder road network in order to provide a vent for surplus production cannot be overemphasized. Improved roads provide both higher farmgate prices to smallholders as marketing margins are narrowed, as well as lower farmgate prices for inputs. Roads and bridges suffered enormously during the years of conflict, both through lack of maintenance as well as purposeful destruction including extensive demining of primary, secondary and tertiary roads. In addition to this, investments in improving productivity at the farm level must also be considered a priority. After decades of isolation relatively small investments can result in large gains in areas with a good resource base and proximity to markets.

As noted above, Luanda has become a virtual enclave economy, both by virtue of the resource curse distortions and because of war-induced physical isolation from the rest of the country. The exchange rate overvaluations that are at the heart of the oil-induced distortions made imported foodstuffs and fiber artificially cheap. Accordingly, there has been a virtual flood of such imports (in addition to numerous other imported items) that have effectively made Luanda an island unto itself vis a vis the rest of the country, at least in economic terms. Reinforcing this situation has been the physical isolation that resulted from a combination of extreme insecurity in the countryside outside of the city together with literally impassable roads between the coast and the interior. A road system which at one time was quite well developed by African standards deteriorated through lack of maintenance, land mines, and intentional destruction to the point where most of the rest of the country had no outside contact of any kind for long periods of time.

The reestablishment of primary links between coastal cities and central marketing hubs in agricultural districts is a matter of high priority. Without the ability to physically reach the coast with product, latent comparative advantage will remain just that - latent. Reestablishment of these links must be understood to include adequate security on roads to enable confidence in the ability to pursue commercial activities on a regular and reliable basis. To take one example, prior to the conflict the haul between Luanda and Huambo could easily be done in a single day with little worry regarding security. Reestablishment and maintenance of this ability is a basic prerequisite for well functioning marketing links between the capital and the main food growing areas. Secondary roads also require substantial work within agricultural areas.

Regarding manufacturing there are similar considerations to those affecting agriculture, but there are also several near-term obstacles. Most manufacturing capacity exists in coastal cities where it is directly exposed to competition from imports. (Interior capacity suffered much more destruction over the past decades.) This means that in a context of exchange rate overvaluation this manufacturing of traded goods is likely to suffer most from the implicit taxation that this imposes. Manufacturing has also suffered greatly from deterioration and destruction of public utilities in the non-traded sector such as water and electricity.

However, even given a major appreciation of the exchange rate there are nevertheless various manufacturing sectors that can be expected to be profitable if appropriate investments are made. Among these are food processing and related light manufactures which cater to the large consumer market in urban areas but which in recent years has been supplied almost exclusively via imports. Investment in such sectors and in the public services which enable them is likely to prove cost effective not only in coastal cities but also in interior cities which benefit from a degree of de facto protection from imports due to transport costs from the coast.

One important factor to note is that in all of these sectors (as in any economic activity) there is a degree of dynamic advantage that must be taken into account. That is to say, not only does production efficiency improve through time if exposed to competition, but there is a large inertial component in the capital stock (physical, institutional and human) of a country which makes an early start important. When oil revenue begins to decline in twenty years it will be too late to begin building the capital stock in the sectors indicated at that late date. By that time the

public investments needed must already have been made, and institutional development must already have occurred if these sectors are to be expected to fill the gap left by falling mineral income.

In terms of physical capital there are lead times of many years for such major investments as roads, power production and water control. Even privately owned capital in manufacturing and agriculture takes years between planning and full production. Institutional capital such as marketing systems and transport companies, not to mention legal systems, take at least as long. Human capital, as noted above, necessarily takes at least 15-20 years to “produce”.

These considerations imply that there is a role for government assistance to ensure that the needed investments can be made. The largest role for the government is in investment in public goods (roads, communications, education, etc.) that cannot be undertaken by the private sector. However, it will also be important to explore mechanisms whereby the transient effects of oil-induced distortions (“Transient” in this sense meaning that though the distortions may last decades, they can with reasonable certainty be foreseen to end in the future.) can be ameliorated to the extent necessary to facilitate private investment.

B. Political Economy, Pre-existing Issues of Polarization, and the Resource Curse

As noted in the introduction to this section, the political economy of Angola has particular implications for growth in a context of resource curse distortions. The basic issue is that Dutch Disease creates tensions between traded and non-traded activities. These tensions can and should be addressed but it must also be recognized that there are other social and political dynamics which can complicate these efforts. The following discussion focuses on some of the most important of these.

1. Port vs. Interior

In any part of the world, those who control coastal areas and/or ports exercise a degree of control over interior landlocked areas by virtue of their ability to control or charge for access to outside markets. Indeed, major conflicts in world history have revolved around just such access to the sea - one need only look at the centuries-long Russian goal to control the Dardanelles, which constitutes a choke-point for its warm water southern ports, or the long running European debates over the “Polish Corridor” and the status of the port of Gdansk (Danzig). In the developing world, just such considerations motivate the long term tension between landlocked Bolivia and Chile, which wrested Bolivia’s coastal provinces away in the latter half of the 19th century.

There is a real economic foundation for these conflicts: whoever controls access to outside markets can charge a price for the privilege. That means a markup on every import item transhipped to the interior and a tax on every export item that exits the country through the port. The importance of free access to a port has been shown empirically by Bloom and Sachs (1998)

who analyzed the growth records Sub-Saharan African countries and found that geographical access to a port was a significant determinant of growth prospects.²² The same logic applies to landlocked areas within a country, particularly when the country in question is composed of provinces which have some degree of de facto autonomy, or the central government apparatus uses control of ports to generate revenue for its own use.

This is no different in Angola than it is elsewhere, with the major ports of Luanda and Lobito/Benguela playing the most important role, but also to some extent the lesser ports of Namibe, Porto Amboim, Ambriz and others. In colonial times as well as more recently, the central government (be it Portuguese or Angolan) has explicitly and implicitly taxed both agricultural exports (particularly coffee through the government marketing board) and imports of all descriptions, through tariffs and import quotas.

These direct controls and taxes have been supplemented with indirect methods such as foreign exchange controls which have over various periods been used to deny foreign exchange to disfavored individuals or activities, surrender requirements which have forced exporters to exchange foreign currency for domestic currency, and exchange rate overvaluation, which penalizes exporters and importers who cannot get access to foreign exchange in favor of those who the government chooses to give access to its limited supplies. In Angola this category has most often been comprised of government officials and coastally based trading, processing and manufacturing activities which have operated to the benefit of coastally based people.²³

2. Rural/Agricultural vs. Urban/Industrial

²² See David E. Bloom and Jeffrey D. Sachs, "Geography, Demography, and Economic Growth in Africa", *Brookings Papers on Economic Activity*, Vol. 1998, No. 2. (1998), pp. 207-273.

²³ Historically, the importance of controlling access to foreign markets first arose after the arrival of the Portuguese in the late 15th century. This is due to the fact that prior to this time the most important trading routes in Angola and the Congo Basin in general were overland trade routes to the East rather than seaborne trade, as was the case in other parts of Africa. The arrival of the Portuguese signaled the opening of these areas to international trade. The earliest records of the Portuguese occupation of Angola bear out the observation that conflict between the coast and the interior has been recorded as early as 1506 when the outward-oriented future King Afonso of the Kongo defeated the reigning monarch and initiated a period of active participation in the slave trade which dominated European/Kongo relations throughout the early colonial period. The rapid growth of the slave trade had terrible consequences for the interior of the country. By the 1560's the hinterland of the coastal slave ports had become so depopulated and weakened that it was relatively easy for invading hordes of primitive and reportedly cannibalistic tribal peoples called Jagas from the east to topple the King and, at least temporarily, put a halt to the previous royal trading structure. The Portuguese response was to attempt to establish direct military control over the interior. This proved more difficult than had been foreseen, and it was more than 50 years before any progress at all was made in penetrating the interior of the country - this was eventually accomplished not as conquerors, but as traders working with coastal allies. This pattern of coastal control by the Portuguese, and domination of external trade with interior regions which they could not control directly was to continue for the next three centuries - It was not until the end of the 1890's and the emphasis on direct control in the Scramble for Africa among the various competing European colonial powers that Portugal could be said to have truly "occupied" the Angolan hinterland. This history bears out the longstanding nature of coast/interior tensions that date back at least to the 1600's, if not earlier. The monopolization of trade with the exterior by the Portuguese on the coast was a fundamental basis of their ability to expropriate economic surpluses, something that has continued in post-colonial times by the Portuguese speaking coastal elites who have replaced the colonialist Portuguese themselves. (See Kyle 2002 for a more complete discussion)

In Angola, the coast is not only a gatekeeper, as described in the section above, but it is also the location of the major urban/industrial centers, particularly Luanda, while the interior is also the location of the most productive agricultural areas, particularly the central planalto where the principal grain supplies of the country are (or could potentially be) grown. Even in countries where this alignment of coast with cities/industries and interior with agriculture doesn't exist there remains the tension of agricultural interests versus urban/industrial ones by virtue of the fact that what one party buys, the other one sells and vice versa.

To be specific, urban/industrial interests depend on two agricultural outputs:

- a. Food is the primary determinant of urban/industrial real wages since it constitutes the bulk of expenditures for poor working class people. Indeed, food prices have often been cited as the most important single determinant of welfare and income distribution in a country.²⁴
- b. Industries, and particularly the early developing light industries of textiles and food processing, need agricultural raw materials as inputs.

Rural/agricultural interests depend fundamentally on urban/industrial outputs in two ways:

- a. Rural populations buy consumption items that they cannot produce themselves from the manufacturing sector. In all but the most primitive subsistence economies, this will include items such as clothing, fuel, utensils, transportation, etc.
- b. Farms that have advanced beyond the earliest self sufficient shifting cultivation will typically by inputs and implements from the manufacturing sector, beginning with such items as hoes, scythes and plows, but progressing to more complex machinery such as tractors, pumps, etc. In addition, to the extent that fertilizers or other purchases inputs such as pesticides are used, these too will come from manufacturing sectors.

The position of the central planalto (including the provinces of Huambo, Bie, parts of Benguela, Cuanza Sul and Huila) as the "breadbasket" of Angola is well documented historically, and has been also demonstrated in various analyses of comparative advantage in the country.²⁵ It is from this area that pre-independence grain export surpluses were taken, and where most of agricultural GDP originates. While there are certainly some agricultural activities that can be pursued in coastal areas, the generally arid conditions in these areas are a barrier to major agricultural development.

²⁴ See, for example, Maurice Schiff and Alberto Valdes *The Political Economy of Agricultural Pricing Policy* Vol. 4: A Synthesis of the Economics in Developing Countries Johns Hopkins University Press 1992.

²⁵ See Steven Kyle "Development of Angola's Agricultural Sector" *Agroalimentaria* No. 4, June 1997, pp. 89-104 for a discussion of the relative comparative advantages of coastal vs. interior areas. See also "Angola: Strategic Orientation for Agricultural Development - An Agenda for Discussion", World Bank, June 1994

The observation that the principal geographical location of agricultural comparative advantage lies in the interior has a very important corollary: In order to maximize the return to this comparative advantage it will be necessary to invest in this area. While it is not the purpose of this paper to enumerate the investments necessary for Angolan agricultural investment, it is safe to say that the needs (as in any country at a similar level of per capita income) are large and include both on-farm investments that are properly the province of the private sector and large public sector investments such as roads, extension systems and research.

These investment needs have the potential to be contentious since at first blush the money would be going to one area of the country seemingly at the expense of other zones. However, the experience of many other countries has demonstrated that to attempt to pursue industrialization without investing in increased agricultural productivity is a self limiting strategy. As the urban/industrial needs for agricultural outputs grow, the agricultural sector must be able to keep pace since the alternatives are either higher agricultural prices and stagnation or else ever increasing imports to supply what domestic producers cannot. Thus, investment in agriculture is a prerequisite for success for all regions, and not just the agricultural sector alone.

Tension between agricultural interests and urban/industrial interests are part and parcel of the politics of countries transitioning from low per capita income to high per capita income. Every country which has undergone the structural transformation involved has confronted these issues, including those countries which are currently classified as “developed”. Examples include the period in Britain when the “Corn Laws” were debated by David Ricardo and others, or the United States during the populist era when William Jennings Bryan, representing agricultural interests, campaigned on his famous slogan “Don’t crucify us on a cross of gold”.

Both of these examples reflect the tension over rural/urban terms of trade and issues of national policy which pit one set of interests against the other. They are inevitable when a country moves from a low income, predominantly agricultural economy with 75% or more of the labor force located on farms, to a higher income, predominantly urban economy with 25% or less of the population on farms. In Angola, these natural tensions are exacerbated because the agricultural interests are at the same time located in the interior, while the urban/industrial interests are primarily located on the coast, and particularly in Luanda. In addition, these agricultural interests are also aligned with one of the main ethnic divides in Angola, which is the topic of the next section.

3. MPLA vs. UNITA

Perhaps the best documented “axis of polarization” is that between the MPLA, the current ruling party which was formerly a Marxist ally of the USSR, and UNITA, now in opposition but long a client of the US, South Africa and their allies. On closer inspection, however, this axis may well be artificial to some extent, though it is (or at least has been) no less real for having been fueled by external considerations.

The MPLA is today no longer an avowedly Marxist party, though its command and control tendencies continue to influence the economic policies of the government. That these tendencies may have more to do with a desire to control mineral income than with any real ideological basis is shown by the relatively seamless transition from “Marxism” to “free market capitalism” in the 1990's, a transition that was marked less by fundamental economic change than by fundamental change in political alignments with the US and other large Western powers.²⁶

UNITA has an even more opportunistic history, as its leader shifted from a one-time alliance with Communist China to a more lasting alignment with the US and South Africa as it became entrenched as the principal opposition to the MPLA in the 1970's. While paying lip service to free market doctrine it engaged in even stricter control of subject populations than did the MPLA, and can hardly be seen as an exemplar of democratic or liberal economic principles.

Nevertheless, the fact that these ideological splits, however convenient, did exist provided a basis for geopolitical interference that was at its roots fueled by the desire to control oil and diamond sources and to deny them to the other side. This consideration has led to a level of superpower interest in the Angolan conflict that has been absent from other African civil wars. Indeed, it has been argued by Munslow (1999) that this interest has been responsible for the inability of the international community to reach a consensus regarding a way out of the Angolan impasse.²⁷

Entirely apart from ideological or geopolitical concerns, the political issues inherent in the MPLA/UNITA split are fundamental to any long term view of the Angolan political situation. First, is the problem of maintaining a viable democracy, as urged by outside powers, in a situation where the two main parties have such a strong regional base. Any victory at the national level by one side or the other must be carefully managed to avoid it being seen by the loser as a “conquest” as much as an electoral loss. Indeed, given the mutually opposing economic interests outlined above, it is likely that the major political parties will evolve to represent and advocate accordingly.

Such a situation would seem to support the notion that some sort of federal system, where a great deal of power is devolved to the provincial level, would be one possible recipe for long term political accommodation. Indeed, the recent government moves toward decentralization are precisely in line with this observation. However, there are two main problems with this: First is the historical tradition of a unified state under strong central control that is an historical legacy from colonial times and which has been adhered to by both political parties ever since. There is no tradition of power sharing or of division of power in Angola and no political culture of such accommodations upon which to build. The reluctance of central authorities to cede budgetary authority to lower levels even while promoting decentralization is evidence of the difficulty of

²⁶ While there are no doubt legitimate roots to the MPLA's original Marxist character, it is also true that in fomenting rebellion against a NATO member, Portugal, the MPLA placed itself firmly on the “wrong” side of the great geopolitical divide of the time. That this was more a marriage of convenience than conviction is shown by the fact that the MPLA did not hesitate to use capitalist oil companies to extract its oil, nor did it seriously alter its basic outlook when it switched sides thereafter.

²⁷ See Munslow, Barry, Angola : The Politics of Unsustainable Development, *Third World Quarterly* 1999 20(3).

such change. Second is the fact that the main prize in the political competition - the billions of dollars of annual mineral income - is not easily divided territorially. In fact, neither the oil, which is located mostly offshore, nor the diamonds, which are located primarily in the northeast provinces of the Lundas, are physically located in the “home turf” of either political party.

Dutch Disease and the Axes of Polarization

Over the long run, there are two important areas of potential problems in achieving a national consensus on a macro strategy for growth and development. The first is the issue of mineral rents from oil, diamonds and other sources, and the decision as to how and when to spend the income. The second is the difference in economic interests between agricultural regions and urban populations. However, on closer inspection it appears that these are really just different facets of the same issue.

The Dutch Disease diagnosis has clear implications for investment and growth over the long term - Given a disease which causes trade exposed sectors in which the country has a potential comparative advantage to stagnate and wither, the prescription for addressing this problem is to invest in these areas so as to prevent their atrophy. The underlying rationale is clear: If Angola is not to place all of its eggs in one (oil) basket, then it is essential that it retain its ability to produce in those other sectors which historically have provided it with the bulk of its exports since these same sectors will constitute the main economic fall back if and when oil revenues decline in the future. In Angola it is obvious that these sectors are found in agriculture and related processing activities.

Additional benefits from such an agriculturally driven investment strategy would be found in the areas of income distribution and poverty alleviation. Development of rural areas would at the same time promote income growth for the poorest segments of Angolan society, discourage urban migration, and help to reduce and eventually eliminate the huge food import bills currently incurred by the large coastal population centers. Unfortunately, it is precisely these characteristics which present some of the biggest potential obstacles to implementation of this plan.

The problem is this: If an investment strategy geared toward non-oil traded sectors such as agriculture is to be successful, then it must focus on the areas of highest agricultural potential, i.e. the agricultural breadbasket of the central planalto, which is at one and the same time an *interior agricultural* region whose core is the center of *UNITA* support. In short, this strategy would require the MPLA to focus investment directly on their erstwhile opponents rather than on their own supporters, who live in areas which are largely much less favorable in agroclimatic terms than is the central planalto. Indeed, the coastal regions where MPLA control has been strongest are precisely the areas with the least agricultural potential, having insufficient rainfall to support large scale rainfed agriculture.

IX. Summary of Implications for Macroeconomic Policies

The analysis presented in this paper demonstrates the profound effects oil revenue has had on the Angolan economy over the past decades. Measurements of the common distortions associated with large oil financed inflows show that Angola is at the extreme end of the spectrum of experience, having both the typical real exchange rate distortions as well as sectoral distortions that are extreme even compared to other oil exporting countries. In the Angolan case these sectoral shifts have been magnified by the long civil war and its associated dislocations but this should not obscure the fact that such a result is to not unexpected even without accounting for the war - as was documented in the introduction to the paper, Angola's degree of oil dependence is extremely high and extremely high measures of distortions are therefore no surprise.

However, the fact of the civil war and the destruction it has left behind provide some imperatives for the Angolan government that will inevitably influence its decisions regarding the pace and nature of oil financed expenditures in the future. The numerical analysis presented above provides a useful baseline for considering intergenerational equity considerations, but these considerations are also clearly subject to judgments regarding the relative need of present and future generations (who presumably will benefit from an expanded non-oil economy). The needs for reconstruction and poverty alleviation in the wake of the war are so great that a case can be made for maximizing the extent to which these activities are pursued in the near term. However, there are some clear constraints to such a course posed by the very nature of the macroeconomic distortions and imbalances that accompany large inflows of oil revenue. In short, reconstruction and poverty alleviation should not be pursued at a speed or in a manner which would rekindle the imbalances and boom-bust cycles of the past decade.

What are the main considerations that should inform the ultimate decision as to the pace and speed of oil financed expenditure? This paper has argued that the following issues are fundamental to this decision:

1. Equity - The numerical analysis of Section VI indicated that strict intergenerational equity dictates that current expenditures be limited to a level of approximately 38% of GDP, even under optimistic assumptions. This strict application of the Permanent Income Hypothesis implies a more than one third increase in per capita income for the average Angolan and an even greater percentage increase for those at the lower end of the income spectrum (assuming an egalitarian distribution across the society. A poverty oriented growth plan would imply a skewing of this cross sectional profile of income gains toward the lower end, which is precisely what has been suggested in the government's Estrategia para Combate a Pobreza.

Clearly, therefore, even without taking into account the greater need of present vs. future generations there is a very large potential for expenditure at the present time. Even so, it can be argued that these needs justify the fact that expenditures are presently in excess of those indicated as "optimal" under the application of the Permanent Income Hypothesis presented in this paper. However, the extent to which expenditures can or should be shifted forward to the present must be judged in light of other factors, most notably the next on this list, stability.

2. Stability - The analysis in sections III, IV and V show that the large size of the expenditures in the past and present are contributing to imbalances in the macroeconomy which endanger the stability and sustainability of Angola's growth path and reconstruction efforts. Two major policy goals generate a tradeoff which constitutes the fundamental dilemma confronting policy makers today.

On the one hand, expenditure to promote reconstruction and rehabilitation is the only way Angola can hope to realize its inherent non-oil comparative advantages and reduce the extreme import dependence that has characterized its coastal urban economy since the beginning of the civil conflict. On the other hand, excessive expenditure generates inflationary pressures which result in either a mutually reinforcing cycle of inflation and depreciation or, as is currently the case, serious real appreciation of the exchange rate.

Neither of these outcomes is favorable, which means that the government must walk a narrow path between instability and excessive appreciation. This paper has stressed the danger of the latter path largely because it is what is resulting from the current policy mix. Real appreciation that results in the complete elimination of profit margins for trade exposed sectors eliminates the ability of the economy to reduce inflationary pressures from the supply side. This would result in a truly constricted set of policy choices in which the only real options consisted of the relationship between government expenditure, money emission, the extent of depreciation to allow, and the effect of these three on the price of imported goods, which in the most extreme case would constitute virtually the entirety of the goods in the urban consumption basket.

Accordingly, the most likely "optimal" policy mix for the government would be something along the following lines:

1. In terms of the *size* of the government fiscal expenditure program, the extreme needs of the current generation dictate that it should be as large as it can be consistent with continued macroeconomic stability. Every effort should be made to reduce the non-oil fiscal deficit so as to eliminate the root cause of the imbalances currently afflicting the economy. In this way, the need to resort to the "sterilization" policy of the present can be reduced and eventually eliminated. To the extent that oil revenue exceeds the level that can be absorbed in the domestic economy without causing instability, this paper proposes use of an offshore Oil Revenue fund as a savings mechanism. It is likely that the maximum "absorbable" amount is not far in excess of the intergenerational equity derived numbers calculated in this paper. However, to the extent that the non-oil fiscal deficit can be contained (preferably through revenue generation) then the great need for current investments supports an expansion of oil financed expenditure consistent with stability concerns.

2. In terms of the *composition* of the government expenditure program, the analysis in this paper supports a policy of directing it to the extent possible toward infrastructure and other public goods supporting reducing production costs in traded goods production. Given the need for social expenditures (e.g. health, education) which are economically productive only after a

considerable lag, it is extremely important to eliminate as quickly as is politically feasible all non-productive expenditures.

3. Monetary policy is currently directed toward inflation reduction. Expansion of the domestic money supply is controlled through open market operations conducted with foreign exchange. As noted above, it is recommended that this policy be phased out in favor of one in which the need of the government to resort to this type of financing is reduced, thereby reducing the need to make such open market purchases. Eventually, a credible return to economic stability can open other options to the government as the domestic financial market continues to develop and grow, but sustained stability over time is needed for this to occur. As noted at some length in Section II the current policy regime is resulting in a massive real appreciation which will have very adverse effects on the ability of the economy to be successfully rehabilitated, which is a very strong reason to look for alternatives in the very near future.

4. Exchange rate policy is currently not directly targeted by the government according to statements by various policy makers. However, this paper has emphasized the need to avoid further real appreciation of the Kwanza as well as a need to reverse at least some of the accumulated appreciation of the past. This supports a recommendation that the nominal exchange rate be depreciated in the near term by an amount that can restore some degree of competitiveness to traded sectors and be allowed to depreciate *pari passu* with inflation thereafter. The extent of the initial depreciation would be sufficient to make a real difference but not so large as to endanger either government credibility or cause a renewed bout of inflation. Ultimately, this would of course be a subject of negotiation between the government and the IMF in the process of reaching agreement on a program.

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