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"Semi Official" Quarterly National Accounts

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Introduction

Caribbean econometricans have long identified "data deficiency" as a serious constraint to their work. Watson (1995), notes that the data available for macroeconomic model building in the Caribbean not only suffer from the "quality" or measurement problems identified by writers like Griliches (1986) and Hendry (1980), but perhaps more importantly are also deficient from a quantity stand point. Watson notes that in many cases the macroeconomic aggregrates required for model building are either "non existent, plagued by missing values, too short, or of an inappropriate frequency". These problems are particularly acute in the area of the National Income and Expenditure accounts which form the core of the data requirements of any macroeconomic model.

While the major concern of this paper is the issue of inadequate periodicity, it is worth noting some of the other problems of the official Nationals Accounts data. Most CARICOM countries emphasize the output approach to national income accounting, and data on expenditure, especially in the areas of consumption and investment are particularly weak and estimated at a very aggregrated level. Additionally, with the exception of Trinidad and Tobago and Jamaica, data are either not available on expenditure at constant prices, or if available, only with a significant lag. Forde (1989), noted that for the Trinidad and Tobago data, the most serious concern is probably the question of the consistency or reliability of the data over time. Not only are the revisions large, but the dispersion of the revisions are chaotic.

In other words, it seems that the National Statistical Agencies (NSOs) in the CARI-COM region are barely coping with the challenge of producing an acceptable stream of annual data, and in the medium term, are unlikely to devote significant resources to the production of timely quarterly national accounts. This paper contends that semiofficial statistical agencies like Central Bank research departments should play the leading role in producing such data. After all, it is these kinds of institutions that have a compelling need for up-to-date statistics for short-term economic analysis, forecasting and modelling. Indeed, this has been the pattern in the developed coun-

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authors and not the Central Bank of Trinidad and Tobago.

tries. For example, quarterly national accounts for the United States were first produced by the National Bureau of Economic Research in the 1930s, while closer to home, the Central Bank of Trinidad and Tobago has been publishing a quarterly real GDP series since 1987. The paper demonstrates that while the compilation of quarterly national accounts is not a trivial exercise, most of the data required is readily available, and is collected, compiled and presented in the routine publications issued by most regional Central Banks. The rest of the paper is set out as follows: in the next section, the relationship between quarterly and annual accounts is established. This is followed by a discussion of the approach that should be adopted to the production of quarterly national income data in the typical CARICOM country. The issue of technical and operational feasibility of such an undertaking is then discussed. This is followed by a practical example using Trinidad and Tobago's data. The issue of quality assurance is then introduced and finally, the paper is concluded.

Quarterly vs Annual National Accounts

The compilation of the full set of National Accounts as set out in the System of National Accounts 1993, imposes an enormous burden on even the most sophisticated statistical offices. As such, no country establishes the full system including the balance sheet on a quarterly basis. In fact, only in a relatively small number of cases are the data on important annual flows (such as, consumption, investment and so on) generated directly from the aggregration of quarterly flows. In most countries, the annual estimates are generated directly from annual surveys and are not derived as the sum of quarterly accounts. Quarterly national accounts data are then derived using the indicator series methodology. In this methodology, extensive use is made of short term indicator series to establish a quarterly growth path and the annual series are simply moved along this growth path. An important part of the methodology is the process of reconciling the annual outturn obtained from the indicator based movements with the true estimate based on the annual data. Such a process of reconciliation also obtains even where the annual estimates are obtained directly by aggregrating the quarterly flows and it is common practice to revise these estimates in the light of more complete data derived from annual sources such as input-output tables.

Aside from the reducing problem of the estimation burden, there are a number of arguments in favour of the indicator series methodology. Much of the data utilized, for example, accounting data are available only on an annual basis. Where available at higher frequencies, they are generally not reliable and are subject to large revisions. Moreover, annual estimates based on quarterly data may differ markedly from those based on annual surveys where establishments and products are better covered. As such, the SNA 1993 warns against too heavy reliance on the analysis of short term indicators since their lack of consistency means that economic interrelationships are not easily understandable through them. Indeed the SNA 1993, notes that the major contributions of quarterly accounts to the development of a national accounting methodology, lie in the provision of a basis for understanding the relationship between the annual indicators and the short-term economic indicators. Thus, SNA 1993 advises that it is wise to base the analysis of the longer term on data derived from the annual sources, and only adopt data derived from quarterly indicators for the short run or the current period.

These considerations, taken together with the other factors, such as, an institutional environment that may be considered hostile to business surveys, the need for the

General Methodology

quarterly data to be available on a very timely basis, resource constraints and so on, suggest that the most efficient course for the potential compiler of quarterly national accounts in the CARICOM region, is to adopt the indicator series methodology. Indeed, the production of quarterly and annual national accounting estimates should always be viewed as complementary activities, and the quarterly data should not be viewed as a substitute for the annual estimates. Once, this position is understood several of the hazards which confront the compiler of quarterly estimates can be addressed in a systematic fashion. One of the first of these is the issue of credibility. Once a semioffical statistical agency enters into the business of the compilation of quarterly national accounts it will find that it is regarded as an unwelcome competitor by its NSO, which after all, produces the "official data". Quarterly estimates that produce annual movements which differ from the "official" estimates even also leads to confusion (whether real or imagined) among the user community. This is true even where the quality of the quarterly estimates is acknowledged to be higher than the corresponding annual data, or the variance between the two sets of numbers are insignificant. Adopting the recommended methodology eliminates this problem, since an effort is made to reconcile the annual and quarterly changes based on the indicator series. It should be noted, however, that such reconciliation should only be done after a comprehensive review of the reasons for the variance between the two series. Indeed, such a regular quality assurance review, in which the representatives from both agencies participate is likely to improve the quality of the annual estimates.

Moreover, the indicator series methodology legitimizes the use of less reliable quarterly indicators on the basis that these are being used only to track short run movements and these estimates are likely to be replaced with higher quality data derived from the annual estimates. Thus armed, the compiler may make excursions into areas like producing quarterly expenditure estimates, where the quality of the quarterly indicator data is generally so weak that independent quarterly estimates would be difficult to defend. In fact, in some of the more challenging areas (inventories, value added) indicator series may not be available and it is legitimate to make an estimate of the annual change and allocate it on a quarterly basis using techniques such as Lisman-Sandee or the Cubic Spline

General Methodology

Figure 1 is a ring diagram which illustrates in a conceptual manner the indicator series methodology. The diagram also illustrates the relationship between the different data set used in the estimation of the quarterly data. At the core is the annual data produced by the NSO. This database determines the kind of quarterly estimates that can be produced. For some countries it may be possible to produce value added and expenditure accounts at both constant and current prices. In other cases, the annual data base is more deficient and it may only be possible to produce real value added at constant and current prices. Since the indicator series methodology involves the periodic benchmarking of the quarterly indicator series against the annual statistics, the quality and stability of the quarterly data will be determined by the relevance, accuracy, timeliness and revision performance of annual estimates. Thus, an essential requirement for the compiler of quarterly national accounts is the need to effectively interface with the NSOs and exert a positive influence on the quality of the official data.

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The official annual data also determines the potential level of disaggregration that is possible. However, this is also determined by the availability of short run indicators which form the second ring in the diagram. A number of such indicators are readily available from the NSOs; these include the retail price index, the indices of retail sales and producer prices, data on exports and imports of goods and services collected for balance of payments purposes, income and outlay data collected in the course of monetary surveys and data on government revenues and expenditure.

Quarterly
Expenditure at Current Prices

Quarterly Nominal
Value Added

Quarterly Roal Value
Added

Indicator Series

Quarterly Annual

Quarterly Roal Value
Added

FIGURE 1. Circle Chart: Indicator Series Methodology.

However, some important kinds of data, such as, data on the value and volume of production of goods and services by industrial sector, are often not as readily available from secondary sources. In some of the larger countries, such as, Trinidad & Tobago, Jamaica and Barbados, indices of production are available, but closer examination reveals that these indices are often not suitable for use as an indicator series. For example, in the case of Trinidad & Tobago, the base year of the Index of Production is 1979 and it is often released with a lag of two or even three quarters. Moreover, the industrial classification system utilised is the Trinidad and Tobago Industrial Classification System which is incompatible with the Trinidad & Tobago System of National Accounts used in national accounting, Fortunately, these problems can be easily remedied by implementing in-house production surveys. This task is not as burdensome as it may appear, since the production structures in most CARICOM countries are highly specialized and most of the value added is generated in a few sectors such as tourism for Barbados or oil production for Trinidad. This gives the designers of these kinds of surveys the opportunity to concentrate their energies on those areas where most of the value added is generated. Indeed, much of the raw input is regularly collected, tabulated and presented in the monthly or quarterly bulletins published by almost every Central Bank in the region. However, the designers of such surveys should take cognisance of such institutional factors as respondent burden and the reluctance of respondents to disclose information on income and outlay; for instance in a sector like wholesale distribution, where practices such as price discrimination and discounting are prevalent respondents are generally reluctant to provide details on the pricing of output.

Of course, data availability considerations play an important role in determining the structure of the outer rings in Figure 1 which essentially follows from the approach adopted by the by most CARICOM NSOs, in the calculation of the annual estimates. At Level 3, quarterly Real Value Added is estimated using a combination of production indices, the deflation of sales or turnover statistics, physical quantity indicators, employment indicators and when all else fails even trend extrapolation or econometric methods. These indicators can then be inflated by appropriate price indices or where available, directly estimated using current price indicators of sales or turnover to obtain quarterly Value Added at current prices. In circle 5 Gross National Product at current prices is obtained in much the same manner as the value added series (of course the indicator series utilized will differ). The issue of the "independent" value added and expenditure estimates is not relevant in circle 5 since the aim is simply to replicate the quarterly growth path of the "official" annual estimate. If the official methodology involves the estimating of sectors like consumption or investment then this may provide a motivation to utilize this method. However, from a quality assurance point of view it may be valuable to track with the short run indicators the growth path of any of the annual "official" series obtained as residuals. The major indicator series utilized include indices of retail sales, government revenue, and imports and exports of goods and non-factor services from the balance of payments and imports by economic end use. It is likely that there will be the temptation to extensively utilize econometric methods given the high level of data deficiency in this area. This temptation should be resisted since it is likely to impact negatively on the credibility of the numbers. In circle 6 the constant price series are obtained mainly from the deflation of the current expenditure series. In most CARICOM countries the retail price index is the most assessable deflator, however, it should be utilized judiciously and the arbitrary use of "All-Items" section of the RPI to deflate series that have nothing to do with its major components should be avoided.

Finally circle 7 is concerned with reconciliation of the quarterly series obtained from the lower levels with the annul data at the core of the methodology. Whenever, the quarterly flows are based on related quarterly series, there will always be a difference between the sum of the quarters and the annual outturn. At the most basic level these series can be adjusted to the annual level on a prorata basis. However, while this will leave the period to period percentage changes unaffected, it will affect the year to year percentage changes, since there is a discontinuity between the fourth quarter of the preceding year and the first quarter of the current year. This is sometimes known as the step problem and several methods have been devised to deal with it. The earliest of these is due to Bessie (1958), who obtained quarterly correction factors by hypothesising that the correction factor was a function of time and and minimizing this function subject to a number of simple conditions. Other solutions have been suggested by Vangrevelinghe (1958) and Ginsberg (1973). More recently, Arima models have been proposed and in some cases the problem may be ignored on the ground that the data are going to be seasonally adjusted and all the major packages contain algorithms to deal with such problems. More importantly, the main point to note here is that there is no reconciliation technique that can ameliorate the problems caused by poor indicator series. An indicator series that tracks the quarterly growth path in the annual estimates will need very little reconciliation, while the reconciliation of an indicator based series that is completely orthogonal to

the growth path in the annual series will always cause problems. In such cases it may be best to devote attention to the search for better quality indicators, or to identifying the biases in the indicator series and adjusting these series for known biases during the extrapolation period

A Practical Example - Trinidad & Tobago Data

To illustrate the indicator series methodology, quarterly value added by industrial sector at constant and current market prices were calculated for Trinidad and Tobago over the period 1985 to 1995. Appendix 1, details the major data sources and methods utilized to obtain the estimates presented in Table 1 and Table 2. However, extensive use was made of the production indices which are at the core of the Central Bank of Trinidad and Tobago Index of Quarterly Real Value Added which is published on a quarterly basis in the Quarterly Economic Bulletin (see Forde and Coker 1989 for a discussion of this Index). In what follows we survey some of the issues raised in the estimation of quarterly value added for some key sectors of the Trinidad and Tobago economy.

Agriculture

At first glance finding an indicator series for the Agriculture sector seems to be quite strait forward. The annual estimates for gross output are largely obtained from production data, so that the logical approach would be to use quarterly production data as an indicator series for the sub-sectors in agriculture. However, the correct measurement of quarterly output requires that consideration be given to work in progress. This implies that indicators based on quarterly production data will understate value added outside the harvest period when all the preparation is done and attribute this to the periods when the crop is harvested. The bias will increase with the length of the gestation period of the crop but it will only disappear if the crop is harvested every quarter. In contrast, for major crops like sugar, rice, cocoa and coffee there are usually one or two established reaping periods. The correct approach is to allocate the expected annual outturn to each quarter based on the work done in each quarter. This kind of data is difficult to obtain and the usual approach is to obtain estimates from expert sources on the "typical" distribution of work in progress during the year. This approach was utilized to obtain the estimates presented in the paper. However, other methods such as trend extrapolation or the application of distribution techniques like Lisman-Sandee are also popular. An important point to note here is that the quarterly data obtained by using any of these techniques should not be subjected to further seasonal adjustment as this is likely to introduce an element of spurious seasonality into the data.

Manufacturing

Although Trinidad and Tobago has a relatively small manufacturing sector the data requirements for the sector are quite intense. Data on production is obtained from a quarterly survey of about 50 of the largest manufacturing establishments in the country. The survey has been in operation since 1989 and the base year for the production index is 1985. Over the years the protectionist barriers accorded to this sector have been gradually dismantled. This coupled with a prolonged depression has resulted in the high mortality of firms in the survey. The surviving firms have generally responded to the crisis by diversifying their production lines, downsizing or by placing more emphasis on distributive activities. These kinds of responses has made data collection for the sector quite difficult. In an effort to respond to these challenges a number of stratergies were attempted. For example, the size of the sample was reduced from 88 firms in 1989 to the 55 firms which accounted from the bulk of pro-

A Practical Example - Trinidad & Tobago Data

duction in the sector. This has resulted in higher response rates and less reliance on imputed data. The firms in the survey are also being surveyed more intensely; the frequency of the survey has been increased to monthly and questions have been included on the value of gross output, stocks and so on. This additional data will allow for better quality current price indicators. The current price indicators utilized in this paper have been obtained by inflating the constant price production indices. In general the tracking performance of the indicator based series is quite good and annual movements are generally quite close to the changes obtained from the "official" annual data

Finance, Insurance and Real Estate

The estimation of value added at current prices in the financial sector generally poses no special practical problems. Data on income and outlay for financial intermediaries (Central Bank, Commercial Banks and NFI) and insurance companies is relatively easy to obtain. Data on activity in the Real Estate sector is more difficult to obtain especially since the bulk of the activity may take place by own account transactors. However, since the majority of value added is generated by the financial intermediaries and insurance companies, data on these activities form the basis for the indicator index utilized in this paper. At the conceptual level, the problem of the "imputed service charges" must be addressed. These arise because traditionally financial intermediaries do not level explicit charges for their intermediation services. A similar problem arises for insurance companies where it is usually difficult to disentangle the various elements involved in transactions between insurance companies and their policy holders. For practical reasons, these problems are best addressed in the context the annual accounts and indicators such as fee income, premium income and so on can be utilized for the short run. The imputed service charge is then allowed to grow along the path established by the overall financial sector.

In contrast, serious problems are encounted in the generation of constant price numbers. The main problem is the lack of suitable price deflator. Clearly, the retail price index is inappropriate since there is no coverage of the "price" of financial intermediation services. Moreover, even our cursory discussion above should make it clear that the construction of a specialized index is a difficult if not impractical task. Most practitioners choose to go the way of either input measures like employment or activity measures like the number of deposits or cheques cleared. In the context of rapid technological change and "financial innovation", the weaknesses of either approach are obvious. The constant price estimates utilized in this paper are based on an employment index with a notional adjustment for productivity.

Government

The difficulty encountered here is the fact that the major products produced by the public administration industry are either public or quasi-public goods. In other words there exists no independent price vector to measure the value of these services. While this can be easily treated within the context of the nominal accounts through the use of government expenditure on wages and salaries including non contributory pensions, problems arise with the the calculation of the constant price estimates. The quarterly estimates presented in the paper utilize the government wage bill for the nominal estimates and a a wage index deflator for the constant price numbers. However, this deflator must continually be adjusted for the biases introduced by outliers such as "voluntary separation plans".

Personal Services

The main problem encountered here is the small size many of the firms in the sector and the fact that a substantial number of these firms operate within the context of the informal sector. The compilers of annual accounts have the the luxury of reviewing developments in the sector over a substantial period and experimenting with data

from a number of sources. In contrast, compilers of the quarterly indicators must work with a limited array of short term indicators. Unlike some of the sectors discussed above the problems are encountered in finding a suitable indicator for series for the nominal value added. The quarterly path of constant price estimates can usually be easily followed through the use of employment indicators based on labour force surveys or simple trend extrapolation (the methodology utilized in this paper). However, because of the informal nature of much of activity in the sector it is usually difficult to to find indicator series that closely track the evolution of nominal value added. Consequently these estimates have been generated using an indicator obtained by inflating the constant price indicator by the personal services section of the index of retail prices.

Quality Assurance

Reliable national accounting information can only be obtained if rigorous quality control measures are implemented. This applies to the production of both quarterly and annual accounts. An important drawback of the indicator series methodology is the fact that the most important determinant of data quality, that is, the quality of the "official" annual estimates is outside the control of the compiler of the quarterly accounts. As such, it is important for the compiler of the quarterly accounts to insure that the annual movements are consistent and that the annual data are not subject to unstable revisions. Notwithstanding their reliance on the annual estimates, producers of quarterly national accounting data must still make every effort to ensure that the indicator series utilized are relevant, reliable and closely track the official annual estimates. This is complicated by the fact that the the quarterly national accounting data has an extremely short "shelf-life" and should be available with as short a lag as possible. Since much of the data utilized in the indicator series is collected from surveys or secondary sources, it is important to have reliable methods to deal with the problem of non-response. Fenngali and Holt (1986) have made a strong case for ARIMA techniques in the imputation process. Unfortunately in the CARICOM context the application of such techniques is limited by the short span of the the indicator series. While the utility of formal time series methods is limited it is important not to rely solely on judgment for making imputations. In this paper, use is made of a weighted average of the year- on- year growth rates of the latest three periods to impute for non response. This simple technique can also be used to make simple projections of the annual outturn which may be useful to policy makers and even to the compilers of the "official" data.

There are an number of other measures that the producers of quarterly accounts can put in place to improve the quality of their estimates. Clearly, the data should be seasonally adjusted as this will serve to distinguish trends from seasonal fluctuations. The data should then be reported on a regular basis so that policy makers and analysts can access its relationship to other short run indicators. Finally, serious consideration should also be given to the development of an input-output model as this would provide compilers with the kind of framework necessary to access the consistency of the estimates.

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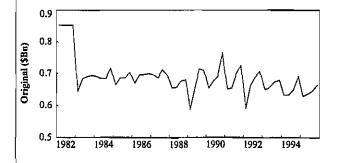
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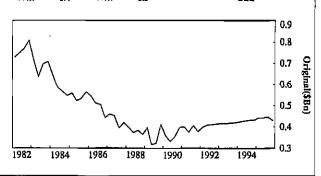
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G.D.P At Market Prices by Industry

		Cons	At I VIAFKE tant Prices - Mil	ions of 1985 Dollars	ĺ
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1990 III 1991 I III IV 1992 I III IV 1993 I III IV 1994 I III IV 1995 I III IV	1,112.4 2.6 1,096.7 2.3 1,096.2 1.1 1,111.0 2.5 1,1096.2 -1.5 1,102.4 0.5 1,107.0 1.0 1,100.7 -0.9 1,018.6 -7.1 1,002.2 -9.1 975.1 -11.9 970.1 -11.9 970.1 -11.9 970.1 3.0 1,075.6 10.3 1,075.6 10.9 1,059.0 10.3 1,076.9 4.3 1,107.6 4.3 1,103.3 5.4 1,1191.8 4.0	1.107.6 2.6 1,093.1 2.3 1.105.5 1.0 1,110.1 2.7 1,091.4 -1.5 1,098.7 0.5 1,116.4 1.0 1,099.9 -0.9 1,013.8 -7.1 998.5 -9.1 984.4 -11.8 969.2 -11.9 955.1 -5.8 1,028.5 3.0 1,084.9 10.2 1,074.7 10.9 1,054.2 10.4 1,073.2 4.4 1,109.8 2.3 1,132.4 5.4 1,096.9 4.1	1,095.5 1.8 1,100.5 2.0 1,102.0 1.6 1,100.7 0.9 1,102.8 0.7 1,102.9 0.2 1,091.9 0.9 1,069.7 -2.8 1,040.6 -5.6 1,007.8 -8.6 984.1 -9.9 980.6 -8.3 996.9 -4.2 1,022.6 1.5 1,048.2 6.5 1,048.2 6.5 1,049.7 7.8 1,085.2 6.1 1,097.7 4.7 1,098.6 3.0	317.3 1.4 316.9 1.4 317.2 324.9 4.8 326.7 4.8 327.5 340.0 12.8 338.5 12.9 337.1 350.0 14.5 350.2 14.5 344.0 349.4 10.1 349.8 7.1 348.8 348.0 7.1 349.8 7.1 348.8 349.5 2.8 348.0 2.8 348.4 346.2 -1.1 346.3 -1.1 349.2 350.2 0.2 349.7 0.2 349.5 353.4 1.6 355.2 1.5 348.3 347.3 -0.6 342.5 338.1 -2.3 332.3 312.0 -10.9 311.5 -10.9 329.1 310.7 -12.1 312.4 -12.0 335.0 363.9 4.8 362.4 4.8 346.5 369.0 9.1 369.1 9.1 362.7 373.3 19.7	2.1 III 1990 6.2 IV 9.4 I 1991 10.8 II 9.7 III 6.5 IV 3.3 I 1992 1.5 II 0.4 III -0.1 IV -1.7 I 1993 -4.8 II -3.8 IV 1.2 I 1994 9.1 II 14.9 III 17.2 IV 17.4 I 1995 14.8 II 17.2 IV 17.4 I 1995 14.8 II 17.2 IV 17.4 I 1995 14.8 II 17.1 III 17.2 IV 17.4 I 1995 14.8 II 17.1 III 17.2 IV 17.4 I 1995 18.1 II 18.1 III 18.1 III 18.1 III 18.1 III 1996
1.3 1.2 (ugs) remistro 1.0 0.9 1982	1984 1986	1988 1990	1992 1994	1982 1984 1986 1988 1990 19	0.8 Original (\$Bn) 0.4 0.2

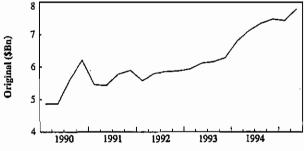
			G			Marke Prices - 1					stry	•			
	Origi	لده	gricultu: Adjust	re ed	Trenda	Cycle		Origi	nel	M Adju	anufac	Trend	-Cycle		
1990 1991 1992 1993 1994	553.2 568.6 553.3 568.2 593.8	18.1 2.8 -2.7 2.7 4.5	Lovel '	<u>Kt/Xt.</u>	Level_	<u> </u>	1,3 1,3 1,3	282.7 344.2 341.0 196.0	1.6 4.8 -0.2 -3.4 3.5	<u>Level</u>	<u>Y./Yr.</u>	Level	<u>Yt/Yt</u>	Perio 199 199 199 199 199	0 1 2 3
1990 III IV 1991 I III IV 1992 I III IV 1993 I III IV 1994 I III IV 1995 I II III IV 1995 I II III IV	121.8 143.6 143.6 122.1 168.7 124.2 142.6 121.7 167.9 121.1 148.1 127.0 169.6 123.4 151.6 140.1 171.9 130.3 150.3 141.5	23.6 20.5 3.8 3.9 1.7 2.0 -0.7 -7.9 -0.5 -2.5 3.9 1.0 1.0 1.9 2.3 10.3 1.3 5.5 -0.8 1.0 -2.0	151.8 138.4 145.2 127.9 154.6 140.8 144.1 117.5 153.9 137.8 149.7 122.9 155.6 140.1 153.1 153.9 157.8 146.9 151.9 157.3 154.4	26.3 17.6 3.7 4.0 1.9 1.8 -0.5 -2.2 3.9 4.5 1.1 1.7 2.3 10.6 1.5 4.9 -0.8 1.0 -0.5	138.9 140.2 141.2 141.8 142.0 140.6 139.2 138.7 139.0 140.4 141.8 142.5 144.5 146.5 147.6 148.3 148.3 148.3 148.3	15.9 13.1 9.3 4.5 2.2 0.3 -1.4 -2.2 -2.1 -0.1 1.5 2.2 2.5 3.0 3.7 4.1 4.1 2.6 1.1 -0.2		114.3 135.3 103.7 129.6 158.5 152.4 152.8 229.1 124.6 34.4 111.8 125.5 124.7 124.7 144.3 113.5 116.1 150.2 141.4	1.8 3.4 0.3 -0.2 14.1 5.1 16.2 -9.5 -5.1 -1.1 -0.1 0.0 4.2 10.3 6.2 -6.3 -2.7 -2.4 -0.8	313.8 330.9 313.7 324.5 358.0 348.0 322.0 324.1 330.0 321.8 320.4 323.7 330.1 334.8 343.8 343.8 343.8 345.2 340.9	1.8 3.5 0.3 -0.3 14.1 5.2 15.7 -0.2 -9.5 -5.2 -11.1 -0.1 0.0 4.0 10.4 6.2 -6.4 -2.4 -0.8	320.8 320.8 326.2 333.9 344.2 348.3 334.5 330.1 324.5 324.0 325.6 331.4 338.0 334.3 332.1 338.5	2.2 2.8 4.6 6.7 8.6 5.4 1.1 -3.5 -6.8 -4.0 -1.4 2.1 4.3 2.7 0.2 -2.2	III 199 IV 1 199 III 199	1 2 3
0.2 0.2 0.1 0.1 0.1 0.1	32 1984	1986	1988	1990	1992	1994		N^	1984	1986	1988	1990	1992	\\\ \	0.5 0.4 Original(\$Bm) 0.4 0.3
198	G	eneral	Governn	nent			1.		Fina	ance, In	surance	e & Real	Estate		
Period	Orig Leyei	Yr/Yr	Adju <u>Levei</u>	sted Yr/Yr	Level	l-Cycle Yr/Yr_		Origi eyel	Yr/Yr	Adju Leyel	Yr/Yr	Trend Level	Yr/Yr	Perio	_
1990 1991 1992 1993 1994	2,792.4 2,738.1 2,657.7 2,662.4 2,608.5	4.6 -1.9 -2.9 0.2 -2.0					1,5 1,6 1,6	43.3 54.4 30.6 68.8 13.2	-0.3 7.7 4.9 2.3 2.7					199 199 199 199 199	1 2 3
1990 III IV 1991 I II IV 1992 I III IV 1993 I III IV 1994 I III IV 1995 I III IV 1995 I III III	766.5 652.3 655.5 703.5 726.8 592.9 664.7 690.8 709.3 651.1 657.3 679.8 632.3 633.5 632.3 633.5 630.5	-3.2 7.9 -0.4 -3.3 1.5 -5.2 -9.1 1.4 -1.8 -2.4 9.8 -1.1 -2.4 -4.2 -2.9 -3.6 -3.5 1.8 -0.5 -0.6	680.6 734.5 686.4 666.0 694.8 626.9 675.2 677.3 685.1 667.8 665.7 647.8 666.4 644.8 644.9 644.9 645.0 645.1 645.1 647.8 645.1	-3.2 8.3 -0.4 -3.2 1.5 -5.4 -8.7 1.4 -1.8 -2.5 9.3 -1.1 -2.5 -4.3 -2.7 -3.6 -3.6 1.9 -0.5 -0.6	697.8 694.6 693.2 689.5 677.1 670.8 670.4 666.6 671.7 678.1 675.0 669.3 657.9 652.0 650.6 651.7 651.7 651.7	3.3 1.1 0.9 -0.2 -3.0 -3.4 -3.3 -0.8 1.1 0.7 0.4 -1.3 -3.0 -3.4 -2.8 -1.7 -1.0 -0.1	3 3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	53.9 97.8 98.8 73.6 05.2 76.8 98.5 10.2 14.4 15.7 14.9 23.4 27.7 30.2 31.9 42.9 43.8 44.7	9.5 -3.2 10.8 12.7 14.5 -5.3 -0.3 9.3 1.2 10.0 4.6 1.3 1.8 3.1 2.9 2.9 4.6 3.8 3.4	356.9 386.4 392.5 388.3 408.2 365.5 391.1 423.2 403.1 409.4 429.3 442.3 442.3 433.2 420.6 436.6 447.7	9.4 -3.3 11.0 12.1 14.4 -5.4 -0.3 9.0 1.2 10.3 4.7 1.5 2.0 1.4 1.9 3.0 2.8 2.9 4.7 3.3	365.7 375.8 387.4 391.2 388.4 392.6 397.6 402.9 413.0 414.8 416.5 420.7 423.8 420.7 423.8 420.7 423.8 420.7 435.2 430.7	2.3 6.0 7.5 7.9 6.2 4.5 2.6 3.0 5.5 5.2 4.3 3.4 2.9 2.2 2.5 3.0 3.4 3.6 3.2	III 199 IV I 199 III IV III	1 2 3

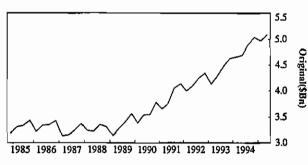




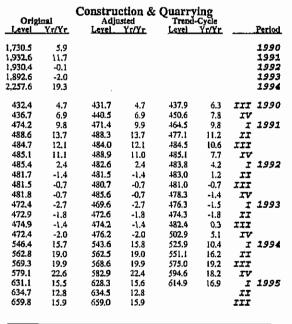
G.D.P.At Market Prices by Industry

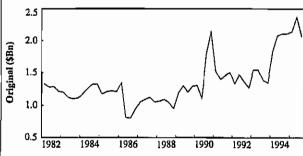
Pertod		Origin <u>Level</u>	nal <u>Yr/Yr</u>	al G.D.P Adjus <u>Level</u>		Trend-C		Origin Level	ai <u>Yr/Yr</u>	Adjus <u>Level</u>	Non Oil ted <u>Yr/Yr</u>	Trend-(Pertoc
1990 1991		21.538.9 22,558.6	4.7					14,243.5 15,600.9	6.5 9.5						1990 1991
1992 1993		23,118.8 24,519.4	2.5 6.1					16,686.1 17,531.1	7.0 5.1						199: 199:
1994		28,733.7	17.2					19,274.6	9. 9						1994
1990	III IV	5.604.0 6,203.3		5,555.1 6,091.4		5,458.7 5,602.5		3,542.2 3,779.6	4.2 6.1	3,504.1 3,675.1	4.2 6.3	3,595.6 3,6 57. 3	6.5 6.4	III	
1991	I II	5,454.3 5,427.3	12.2 11.5	5,572.1 5,470.3	11.9 11.4	5,693.8 5,677.5		3,659.3 3,756.0	8.2 6.1	3 .754.5 3,803.3	8.0 6.0	3,74 7.5 3,855.5	7,4 9.1	I	199
	III IV	5,776.9 5,900.1	3.1 -4.9	5,728.0 5,788.2	3.1 -5.0	5,655.1 5,718.2	3.6 2.1	4,048.3 4,137.3	14.3 9.5	4,010.3 4,032.8	14.4 9.7	3,942.6 4,027.5	9.7 10.1	III IV	
1992	II	5,577.7 5,809.0	2.3 7.0	5,69 5.5 5,8 52.0	2.2 7.0	5,775.9 5,782.8	1.4 1.9	3,998.5 4,095.8	9,3 9,0	4,093.7 4,143.2	9.0 8.9	4,095.1 4,145.9	9.3 7.5	I	199
	III	5,856.4 5,875.7	1.4 -0.4	5,807.5 5,763.8	1,4 -0.4	5,825.0 5,909.0	3,0 3,3	4,249.5 4,342.3	5.0 5.0	4,211.4 4,237.7	5.0 5.1	4,188.2 4,228.9	6.2 5.0	III IV	
1993	I	5,940.4 6,118.2	6,5 5,3	6,058.2 6,161.2	6.4 5.3	5,987.1 6,078.2	3.7 5.1	4,131.7 4,288.3	3.3 4.7	4,226.9 4,335.6	3.3 4.6	4,282.3 4,347.2	4.6 4.9	I	199
	III	6,172.0 6,288.8	5.4 7.0	6,123.1 6,176.9	5.4 7.2	6,238.0 6,468.8	7.1 9.5	4,484.2 4,626.9	5.5 6.6	4,446,2 4,522,4	5.6 6.7	4,448.1 4,563.7	6.2 7.9	III	
1994	I II	6,805.3 7,100.1	14.6 16.0	6.923.1 7.143.1	14.3 15.9	6,737.8 7,033.8	12.5 15.7	4,654.0 4,690.7	12.6 9.4	4.749.2 4.738.0	12.4 9.3	4,665.4 4,767.8	8.9 9.7	I	199
	III	7,342.1 7,486.2	19.0 19.0	7,293.2 7,374.3	19.1 19.4	7,262.4 7,428.5	16.4 14.8	4,896.1 5,033.8	9,2 8.8	4,858.1 4,929.2	9.3 9.0	4.856.9 4.944.8	9.2 8.4	III	
1995	I II III	7,437.0 7,796.8	9.3 9.8	7,554.8 7,839.8	9.1 9.8	,,		4,960.4 5,086.9	6.6 8.4	5,055.6 5,134.3	6.4 8.4		0.7	III III	199

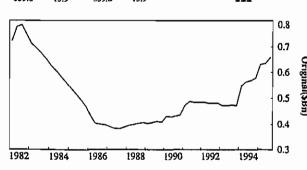




		Pe	troleum						
	Origi		Adjus		Trend-				
Period	_Level	Yr/Yr	Level	Yr/Yr	Level Yr/Yr				
****		22.4							
1990	6,368.8	27.4							
1991	5,903.2	-7.3							
1992	5,464.1	-7.4							
1993	5,825.2	6.6							
1994	8,154.1	40.0							
1990 III	1,804.9	49.6	1.804.3	49.6	1.619.3	28.1			
IV	2.150.9	65.8	2.146.6	66.0	1.683.5	34.3			
1991 I	1,524,3	16.6	1.508.9	16.8	1.678.1	28.7			
II	1.401.9	26.8	1.422.3	26.3	1.555.8	4.7			
III	1.465.7	-18.8	1.465.1	-18.8	1,452.7	-10.3			
IV	1.511.2	-29.7	1,506.9	-29.8	1,439.2	-14.5			
1992 I	1.339.7	-12.1	1,324.3	-12.2	1,436.2	-14.4			
rr	1,478.1	5.4	1,498.5	5.4	1,394.9	-10.3			
III	1,365.7	-6.8	1,365.1	-6.8	1,391.7	-4.2			
IV	1.280.5	-15.3	1.276.2	-15.3	1,425.9	-0.9			
1993 I	1.545.3	15.3	1.529.9	15.5	1,437.0	0.1			
II	1,546.4	4.6	1,566.7	4.6	1.447.9	3.8			
III	1.385.6	1.5	1.385.0	1.5	1.492.6	7.2			
IV	1.347.9	5.3	1,343.6	5.3	1.596.3	11.9			
1994 I	1.835.8	18.8	1.820.4	19.0	1.754.7	22.1			
rr	2.084.9	34.8	2,105.2	34.4	1.942.1	34.1			
XII	2.114.4	52.6	2.113.8	52.6	2,077.8	39.2			
IV	2,119.0	57.2	2,114.7	57.4	2.153.8	34.9			
1995 T	2,149.7	17.1	2,134.3	17.2	2,185.2	24.5			
II	2,379.1	14.1	2,399.5	14.0					
xir	2,071.5	-2.0	2.070.9	-2.0					
			_						







G.D.P At Market Prices by Industry

1					Curren	+ Prices	t Prices - Millions	sf Ďali	279	•				- 1
	Origin	<u>ומ</u> ו	gricultuı Adjust	re ed	Trend-(Orig	ien	Ma Adju	anufact	uring Trend- <u>Leyel</u>	Cycle		
Period 1990 1991 1992 1993 1994	546.9 558.8 586.2 583.6 625.3	21.5 2.2 4.9 -0.4 7.1	Level	Yr/¥c	<u>Level</u>	<u>Yr/Yr</u>	1,859.7 2,062.4 2,126.0 2,218.5 2,401.3	5.6 10.9 3.1 4.4 8.2	Level	_Yr/Yr.	<u>Level</u>	<u>Xt/Xr.</u>	Period 1990 1991 1992 1993 1994	·
1990 III IV 1991 I III IV 1992 I III IV 1993 I III III IV 1994 I III III IV 1995 I III IIII IV 1995 I III IIII IIII IIII IIII IIII IIII	162.8 121.2 141.4 129.9 165.6 121.9 151.1 128.9 178.0 128.2 153.0 129.6 176.0 125.1 160.0 146.4 184.2 134.7 165.2 154.8	26.5 24.8 3.3 3.0 1.7 0.6 6.9 -0.8 7.5 5.2 1.3 0.6 -1.2 -2.5 4.6 4.7 7.7 3.3 5.7 1.5	148.4 139.6 142.3 124.9 151.2 140.4 152.0 123.9 163.6 146.7 154.6 161.5 143.5 160.8 153.2 169.8 153.2	29.8 20.8 3.3 3.1 0.5 6.8 -0.8 8.2 4.5 1.3 -2.1 4.5 13.5 5.1 6.7 3.2 5.9 1.7	137.3 138.3 139.2 139.6 140.9 142.0 143.4 145.8 147.1 146.9 146.3 146.8 149.7 152.9 155.1 157.0 158.7 160.1	18.7 14.8 10.0 4.4 2.6 2.6 3.1 4.2 3.6 2.5 0.4 -0.0 1.8 4.0 6.0 7.0 6.0 4.7 3.8	457.6 483.5 462.8 507.3 553.4 538.9 559.3 520.7 516.5 529.5 505.9 532.3 580.5 599.8 613.2 638.4 606.2 543.5 517.5 581.5	5.8 5.2 5.6 5.6 5.6 20.9 11.5 20.8 2.6 6.7 -1.7 -9.5 2.2 12.4 13.3 21.2 19.9 4.4 -9.4 -15.6 -8.9 -7.2	457.2 484.3 469.7 500.1 552.9 539.7 566.1 513.5 516.1 530.3 512.8 525.0 600.7 620.0 631.1 605.7 544.4 524.3 574.2 561.8	5.8 5.2 5.6 5.7 20.9 11.4 20.5 2.7 -6.7 -1.7 -9.4 2.2 12.4 13.3 20.9 20.2 4.4 -9.4 -15.4 -9.0 -7.2	468.0 474.5 489.8 508.7 527.7 541.4 538.5 532.7 524.8 519.6 529.0 545.8 568.0 594.7 611.2 607.4 588.4 569.3 556.7	6.2 7.5 10.1 12.7 14.1 9.9 4.7 -0.5 -1.0 -1.7 2.5 8.2 14.5 15.5 11.3 3.6 -4.3 -8.9	III 1990 IV	
0.2 0.2 0.2 0.1 0.1 0.0 1982	2 1984	1986	1988	1990	1992	1994	1982	1984	1986	1988	1990	1992	000000000000000000000000000000000000000	.4 (\$Bn)
Booled		eneral (~ ava====	nent				Et	ance Inc	nronaa	& Real	Feteto		
	Origin	ne!	Adju	sted	Trend	Cycle	Orlgi	រាន្ត្រ	Adju	sted	Trend-	Cycle		-
1990 1991 1992 1993 1994	2,298.1 2,499.9 2,734.8 2,800.9 2,961.6		Adju		Trend- <u>Levei</u>	-Cycle -Yr/Yr	Origi Level 2,294.9 2,694.9 3,171.0 3,185.0 3,467.8			sted		Cycle	Period 1990 1991 1992 1993 1994	•
1990 1991 1992 1993	2,298.1 2,499.9 2,734.8 2,800.9	4.7 4.7 8.8 9.4 2.4	Adju	sted	581.6 593.7 607.8 620.9 626.8 639.3 658.5 675.4 693.0 703.3 704.1 702.1 704.3 711.9 711.9 711.6 741.7 745.4	4.7 5.1 7.6 9.2 7.8 7.7 8.3 8.8 10.6 10.0 6.9 3.9 1.6 1.2 2.1 4.2 5.3 4.7	2,294.9 2,694.9 3,171.0 3,185.0	10.7 17.4 17.7 0.4	Adju	sted	Trend-	Cycle	Period 1990 1991 1992 1993	