

**Trends and Changes of GDP and Budget-Expenditure in PNG:  
Has Economic Development also been taking place?**

**Part 1 Long-term trends and changes of GDP  
and Budget-Expenditure**

# Long-Term Trends and Changes of GDP and Budget-Expenditure

Table 1 Estimates of PNG's Gross Domestic Product, Government Budget-Expenditure, Expenditure Elasticity and Expenditure Propensity 1977 to 2006										
Year	GDP (In 1988 prices (K Million))	Average GDP	Change of GD Avearge GDP	Change of GDP	Expenditure (K Million)	Average Expenditure	Change in Exp/ Average Exp	Change of Expenditure	Expenditure Elasticity	Expenditure Propensity
1977	1732	0	0	0	241	0	0	0	0	0
1978	1835	2779	0.036846	102	489	773	0.320434839	248	0.11498687	0.421158773
1979	1889	2824	0.019191	54	568	883	0.089165335	79	0.21522866	0.467271957
1980	1871	2817	-0.006461	-18	630	960	0.065057756	62	-0.09931533	0.513214305
1981	1892	2857	0.007524	22	660	1015	0.029521022	30	0.25488016	0.536343938
1982	1930	3003	0.012720	38	710	1104	0.045006115	50	0.28262776	0.571824492
1983	2146	3208	0.067058	215	788	1239	0.063456438	79	1.05676335	0.577322302
1984	2124	3225	-0.006574	-21	901	1407	0.07986612	112	-0.08231722	0.662444099
1985	2201	3363	0.022718	76	1013	1576	0.071321824	112	0.31853012	0.716051711
1986	2325	3519	0.035181	124	1125	1744	0.064430138	112	0.54603249	0.750428049
1987	2389	3618	0.017799	64	1238	1913	0.058721591	112	0.30311504	0.800755578
1988	2458	3670	0.018937	70	1350	2082	0.054021724	112	0.35054071	0.846717377
1989	2423	3599	-0.009725	-35	1463	2250	0.04994767	112	-0.19471307	0.928511595
1990	2351	3639	-0.019953	-73	1575	2419	0.046466342	112	-0.42941356	1.028900800
1991	2575	4041	0.055578	225	1687	2587	0.043438687	112	1.27946407	1.004630349
1992	2932	4664	0.076350	356	1800	2756	0.040781448	112	1.87217368	0.940102337
1993	3465	7332	0.072779	534	1912	2896	0.038803342	112	1.87559489	0.835877752
1994	7733	11467	0.372227	4268	1968	2981	0.018854631	56	19.74195497	0.385437006
1995	7467	11446	-0.023291	-267	2025	3044	0.018461336	56	-1.26161312	0.407703537
1996	7960	11687	0.042167	493	2039	3261	0.004477498	15	9.41754874	0.409667693
1997	7455	11357	-0.044450	-505	2443	3809	0.106039722	404	-0.41918551	0.510946115
1998	7804	11778	0.029624	349	2732	4222	0.068352182	289	0.43339551	0.541064381
1999	7948	11825	0.012245	145	2981	4631	0.053855041	249	0.22737413	0.582626692
2000	7753	11628	-0.016787	-195	3300	5109	0.062362371	319	-0.26918581	0.658934375
2001	7750	11702	-0.000308	-4	3618	5587	0.057027789	319	-0.00539442	0.720908176
2002	7905	12032	0.012949	156	3937	6065	0.052533947	319	0.24649269	0.767152832
2003	8252	12402	0.027979	347	4256	6543	0.048696609	319	0.57456713	0.792805729
2004	8299	12612	0.003703	47	4574	7020	0.045381706	319	0.08159479	0.845929077
2005	8625	13037	0.025014	326	4893	7498	0.042489348	319	0.58870998	0.869353754
2006	8823	13357	0.014817	198	5211	7961	0.04001859	319	0.37024405	0.90232458
2007	9067	13817	0.017652	244	5500	9276	0.031123329	289	0.56716836	1.023050623
2008	9500	14278	0.030327	433	7552	10896	0.188325991	2052	0.16103692	1.146947368
2009	9555	14805	0.003715	55	6688	10735	-0.080488146	-864	-0.04615538	1.123443223
2010	10500	16300	0.057975	945	8093	12779	0.109950307	1405	0.52728784	1.21700000
2011	11600	17700	0.062147	1100	9371	14395	0.088783911	1278	0.69997922	1.240905172
2012	12200	18750	0.032000	600	10047	15983	0.042294938	676	0.75659172	1.310081967
2013	13100	20350	0.044226	900	11872	17858	0.102195095	1825	0.43276093	1.363206107
2014	14500	17557	0.079740	1400	11972	13725	0.007286017	100	10.94427278	0.946546162
<b>Average</b>	<b>6114</b>	<b>9159</b>	<b>0.0311484</b>	<b>336</b>	<b>3506</b>	<b>5289</b>	<b>0.05969638</b>	<b>309</b>	<b>1.353516425</b>	<b>0.772831315</b>

Source: Bank of PNG quoting National Statistical Office, Various periods

For Government expenditure, data from 1977 to 1983 and from 1995 to 1999 and 2007 to 2013 are actual.

The rest are estimates by interpolation. For National income data from 1977 to 2006 are actual. The rest are estimates

# A summary of Data Analysis

‘What has been PNG’s long-term trends and changes of PNG’s Gross Domestic Product and Budget-Expenditure?’

# The 1<sup>st</sup> Finding

**Expenditure Elasticity:** In general, in 38 years, a 1% change in PNG Central Government's Budget-Expenditure has resulted in less than 1% change in GDP.

In other words, it appears that in 38 years much of the Central Government Budget-Expenditure might have been used **inefficiently**.

# Implications of the 1<sup>st</sup> Finding

The 1<sup>st</sup> Finding has important implications for real 'Economic development' in PNG.

It appears that Budget-Expenditure was efficiently used in 6 of the 38 years: 1983, 1991, 1992, 1993, 1994 and 2014; which implies that it seems Budget-expenditure was used **inefficiency** for 32 years.

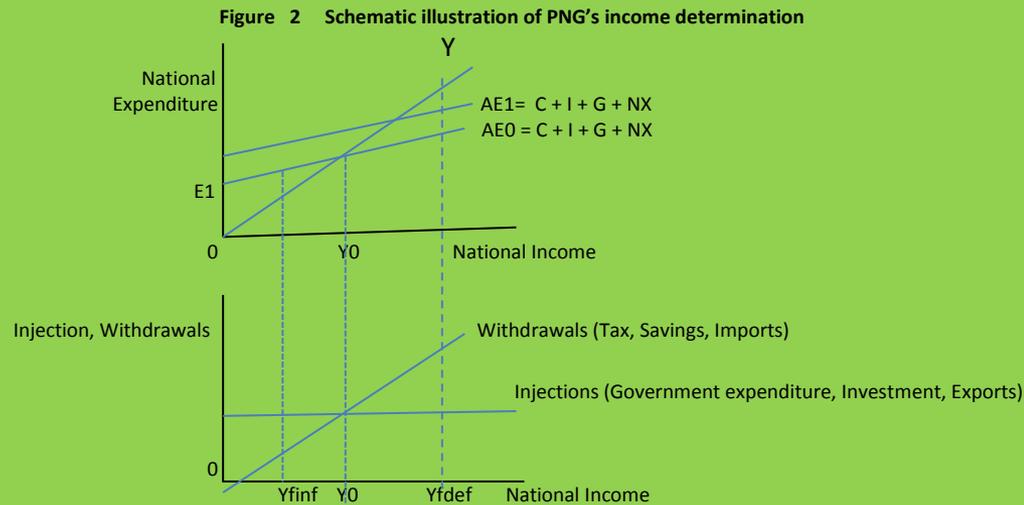
# The 2<sup>nd</sup> Finding

**Expenditure Propensity:** In 29 of the 38 years the Central Government incurred **low** expenditure propensity. In 9 years there has been **high** expenditure propensity.

It is a considered view of the researcher that the trends and/or changes probably to reflect certain policy practices for most of the 38 years of the study.

# Income-determination in theory

Income determination for a three-sector economy would be shown as:  $AE = C + I + G$  (See Figure 2).



Source: Drawn by Gipe G J

# Income-determination in practice

## Simple questions and answers

1. **Question:** Since 1977 what has been PNG's National Government Expenditure Multiplier?

With respect to overall calculations, the concept involves calculations of the change of annual PNG Government expenditure divided by change of PNG annual GDP over 38 years.

**Answer:** It is estimated to be about **0.91877942**. Therefore Marginal Propensity to Consume Domestically produced goods and services in PNG is estimated to be **0.91877942**

The Multiplier is calculated as  $1/1-MPC_d$ . Where  $Mpc_d$  in our case is 0.0800. Therefore PNG Central Government's Expenditure Multiplier is estimated to be **12.5**.

# Question: What is the Tax Multiplier?

The Figure for Tax Multiplier is **1.0** less than the Government Expenditure Multiplier and is negative.

Therefore the Tax Multiplier is, **-11.5**.

## What is the estimated Full-Employment level?

For the formal sector, it is presumed that PNG's full employment in the formal sector is achieved at **K5,220** Million

(Assumptions: the figure represents average income and expenditure for 38 years, give and take about 10%).

**Question: Give the presumed level of full employment income, is there a deflationary gap or an inflationary gap? What is the level?**

It is again presumed that PNG's Equilibrium National Income was **K2, 572 Million**.

(Assumptions: The figure represents the period in PNG's history in which the closest she came to reach theoretical requirement for equilibrium income, which is  $AE=Y_0$ ). The National income is K2, 648 Million below full employment national income.

Therefore with a Multiplier of 12.5 there is a deflationary gap estimated as follows;  $K2, 648/12.5 =$  **K211.84 Million**.

**Question: By how much would PNG government expenditure have to be changed in order to close the gap? (Assuming no shift in other injections or withdrawals).**

**Answer: Government expenditure would have to increase by **K211.84** Million in order to close the gap.**

**Question:** Alternatively by how much taxes would have to be changed in order to close the gap? (Again assuming no shift in other injections or withdrawals)

**Answer:** With a Tax Multiplier of **-11.5**, taxes would have to be reduced by  $K211.84/11.5 =$  **K18.42 Million.**

**Question: Alternatively assuming that there were initially a balanced budget, and that the government wanted to maintain a Balanced Budget, by how much would both Government expenditure and taxes have to be changed in order to close the gap?**

**Answer: The Balanced Budget multiplier is 1.0.**

**Therefore to raise National income by K211.84 Million both government expenditure and taxes would have to be increased by K211.84 Million.**

## Part 2 Has 'Economic Development' also been taking place in Papua New Guinea?

### What do we mean by the term 'Economic Development?'

Generally the term 'Economic development' is defined as a general improvement of the living standards of the majority of people of a country over time. It is usually measured by increases in real Gross National Product (GNP) or Gross Domestic Product (GDP) over time. The difference between GNP and GDP is Net Factor Payment Abroad.

Thus, for example, PNG's GDP includes income of PNG citizens who are working in overseas countries, such as in Australia or New Zealand, or other countries.

More specifically 'Economic Development' is defined as; **a 'process whereby real per capita income increases of the masses of the people over time, subject to the stipulation that the number of persons below poverty line does not increase and the distribution of income does not become more pronounced'. (2).**

# PNG's income inequality indices, 1967-1990

Table 2

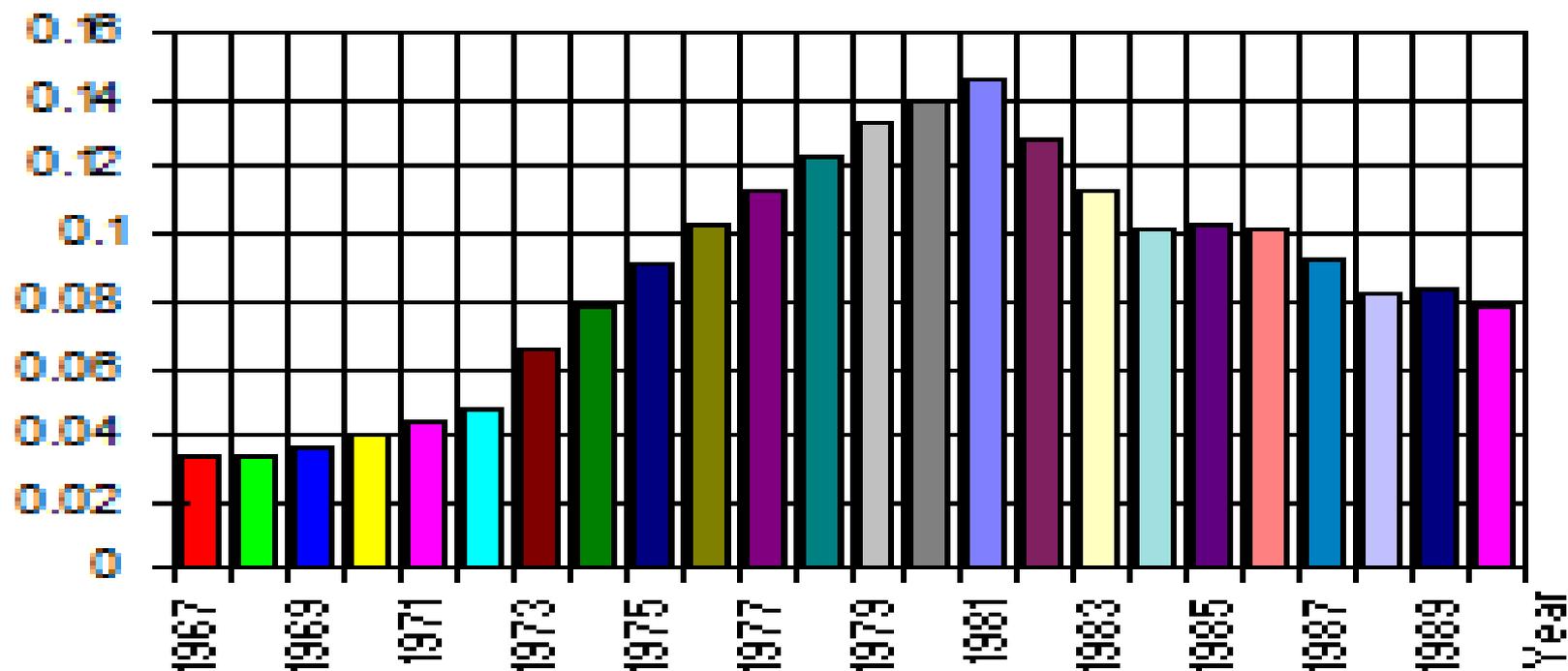
Income inequality index,  
PNG,1967-1990

1967	0.032960255
1968	0.033258193
1969	0.035559092
1970	0.039404624
1971	0.043682977
1972	0.048271734
1973	0.065867809
1974	0.078483063
1975	0.091139104
1976	0.10280654
1977	0.11205058
1978	0.122990278
1979	0.132465699
1980	0.139545559
1981	0.145166896
1982	0.127764024
1983	0.112806563
1984	0.102080985
1985	0.102961192
1986	0.101810385
1987	0.092791057
1988	0.08277593
1989	0.083816127
1990	0.079228626

# PNG's pattern of income inequality, 1967-1990

Figure 1 Overall inequality index, PNG, 1967-1990

Theil Index



# Symptom 1 Growth of Gross Domestic Product

Table 3 Estimate of Agriculture as a component of PNG's recent GDP

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
GDP (K Mill)	2201	2324	2389	2458	2423	2351	2575	2932	3323	3459	3428	29,862
Agric. (K Mill.)	395	407	380	353	366	285	295	372	680	869	948	2,715
Agric.. as per cent of GDP	18%	18%	16%	14%	15%	12%	11%	13%	20%	25%	28%	9%

# Symptom 2 Growth in Urbanization

## What do the facts say about PNG?

The earliest survey in PNG which we have are about Urban household survey of 1973/1974 and the Rural survey of 1974/1975. Other surveys have been conducted in recent years. These data can be combined with the data from the vary censuses to derive some pattern of urbanization in the country.

In PNG migration from rural into urban areas appears to be increasing. For example, between 1966 and 1971 the urban population grew at the rate of 17% per annum (Garnaut, Wright and Curtain, Employment incomes and Migration in PNG towns, IASER Monograph 6, 1977:3). In 1995 about 16% of PNG's population lived in urban areas, compared with 10% in 1970 (AUSAID, Economic survey of PNG, AUSAID, August 1997:10)

Whether this is due to increasing development or due to factors other than economic development, it remains to be established in due course. Also due to a lack of relevant data the rate of urbanization in 1990s cannot be conclusively determined.

# Symptom 3 Declining population

## What are the facts for PNG?

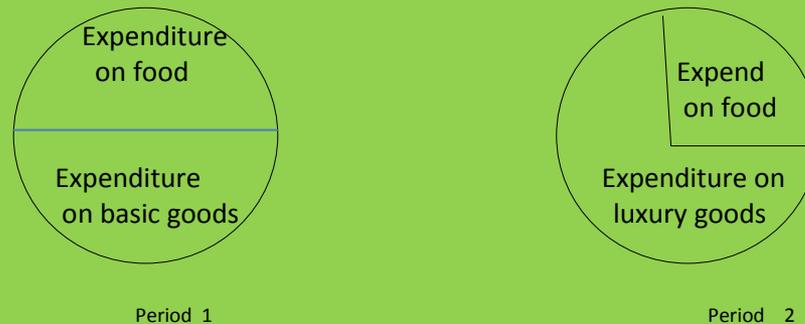
To date PNG has had five National Censuses to date, in 1966, 1971, 1980, 1990 and 2011 (Gipe, Population growth estimates). When we made a casual study of the growth rates of PNG, we found that the growth rates have tended to rise over time.

For example. Between 1980 and 1990 PNG's population growth was 2.3% per year. At that time this was one of the highest growth rates in the world. The 2011 census gives PNG a higher estimate—total population is growing at nearly 3% per year.

The Message to PNG Leaders is; 'Generally speaking, the higher is the population level the lower would be the GDP per capita'.

# Symptom 4 Share of income of majority of people spent on food items declines over time

Figure 4 Component of expenditure spent on food



## What are the facts for PNG?

We don't have up-to date relevant statistics to be able to measure the extent to which income of the majority of the people are spent on food over time. However we can hypothesis that at this stage of PNG's economic development, the proportion of income spent on food is likely to be at least 50% or more.

## Symptom 5 Peoples' participation in economic development increases

What are the facts for PNG?

It presumed that between 80 to 85% of the total population of PNG are engaged in subsistence agriculture. Or traditional sector.

The theory says that many of these people should, over time, become involved with economic development in the modern or formal market economy.

It is our view that this is not happening, due mainly to no or little of choices and opportunities being given to the people to participate under the constitution of PNG.

# SUMMARY

- (1) In most of 38 years (1977-2014) the Central Government of PNG has apparently used the Budget-Expenditure **inefficiently**. There also been **low** Expenditure propensity in most of the years.
- (2) In recent years many formal PNG academic discussions in seminars or conferences, have concentrated on **annual budgets** and have tended to either omit or neglect discussions about the more serious questions such as : **Has Economic Development also been taking place?**
- (3) This paper has shown that PNG needs to **open up** the discussions into wider questions or issues about economic development.
- (4) The paper asks raised **5 hypothesis** relating **to symptoms** of 'real economic development' in PNG and which need to be followed-up by the Central Government and donors.
- (5) The paper also quoted views of a senior business personal in PNG. One implications is that the concerns or views of some senior business people are probably not taken too seriously by the different parties including PNG Central Government which/who finance economic development in PNG.

# CONCLUSIONS

It is **concluded** that there has been adverse trends and/or changes with respect to the relationship between real GDP and Budget-Expenditure of the Central Government of PNG, between 1977 and 2014.

There needs to be **some serious re-thinking** about the manner Central Government Budget-expenditure is administered by the government, working through the Public service machinery. Not to do so may imply that PNG's Central Government is not really serious about the scarce resources and more so about real economic development in PNG.

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6. The author has read and digested a number of books or papers for the purpose of this paper. Care was taken in rendering their views correctly. All Errors of facts and judgment are mine.

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