“The Budgetary Process and Economic Growth in Jamaica: Some Empirical Evidence from 1960 to 2004.”

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Motivation:

(a) To empirically test the existence of Wagner's Law or Keynesian Fiscal Policy for Jamaica

(b) To test the causal relationship between government spending and tax receipts

(c) To propose policy from the results to tackle the creeping deficit and burgeoning debt in the country

Presentation: The sections are discussed as follows:

(1) Introduction

(2) Literature Review of Wagner's law and the causal nexus between taxes and spending

(3) The Model

(4) Empirical Evidence

(5) Summary and conclusion

Wagner's law: Is known as a 'law of increasing extension of state activity' - around the late 1870s.

As nations develop the size of their government increases even faster than their economic growth.

Income elasticity of government expenditure on public goods exceeds unity

This means the private sector becomes a casualty

The growing deficits problem

- A burden for future generation
- Crowding out effect and its consequences
- Difficulty in accessing external market
- Reduction in standard of living due to high interest rates

The five views of spending and taxes nexus:

Buchanan-Wagner's view
Friedman's view
Barro's view
Concurrent relationship
Independent relationship

Milton Friedman cautions policymakers not to be overly concerned about

(1) balancing the budget or (2) deficit issues

He advises policy makers to target government spending because it is the true cost of government activities not taxes.

Figure 1: Primary Budget Deficit as a Ratio (PBDR) of GDP

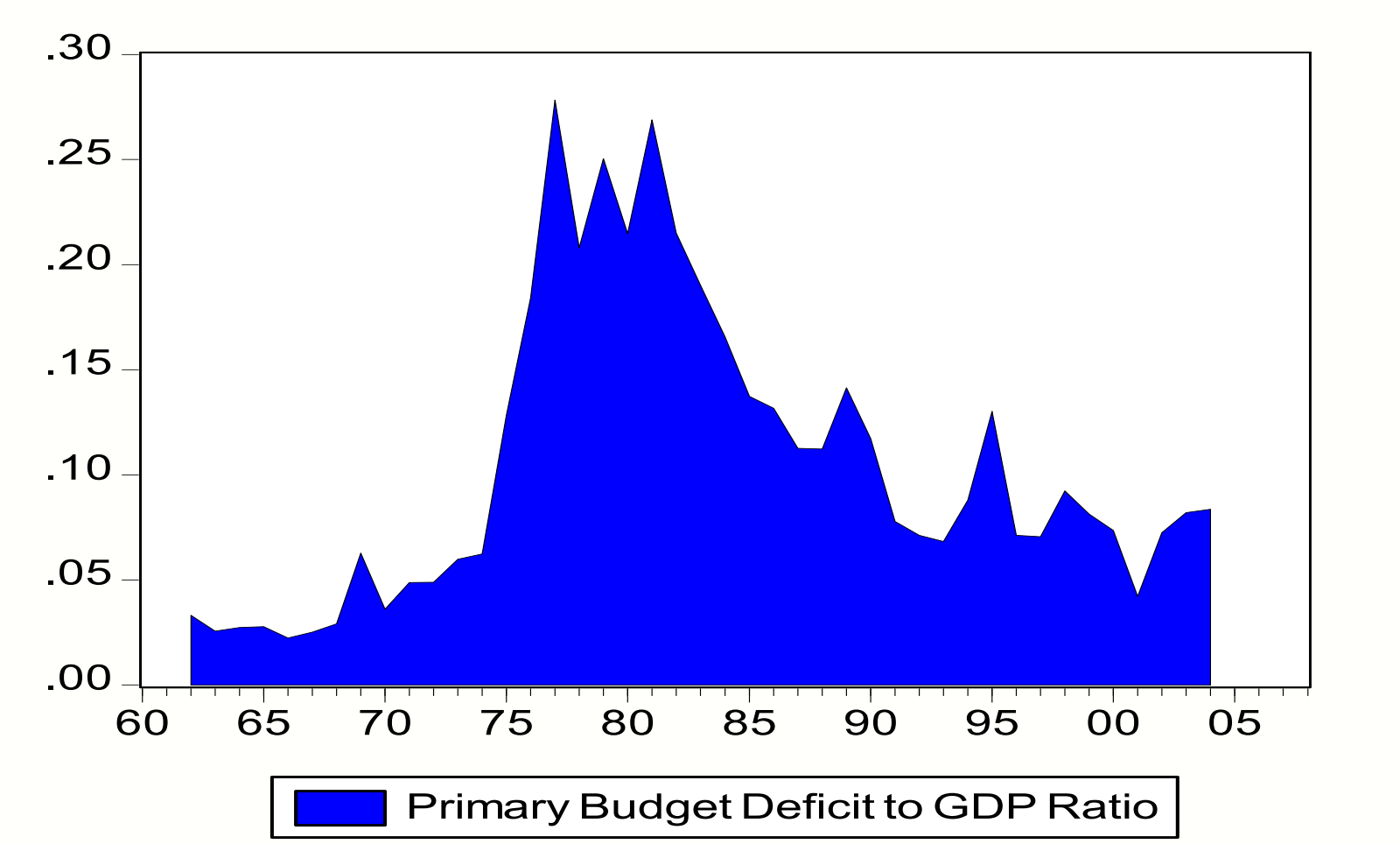
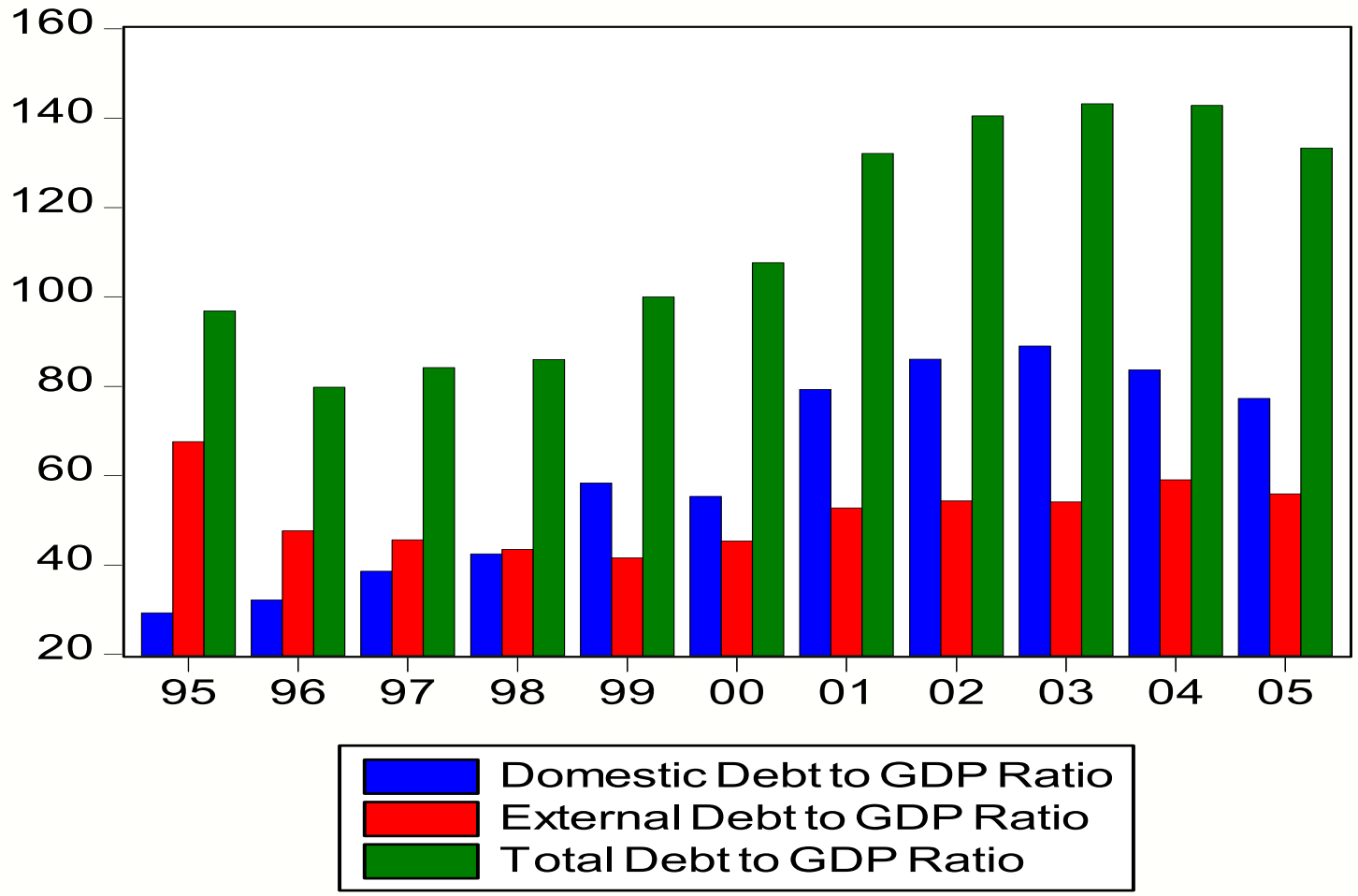


Figure 2: Composition of Debt as a Ratio of GDP



- Peacock-Wiseman's version:
- $\ln G = \alpha_1 + \alpha_2 \ln Y + u_1$ (1.1)

Own versions modified from the existing models are as follows:

- $\ln(G/P) = \alpha_3 + \alpha_4 \ln(Y/P) + u_2$ (1.2)
- $\ln(G/(PxN)) = \alpha_5 + \alpha_6 \ln(Y/(PxN)) + u_3$ (1.3)
- where, G = government expenditures, Y = GDP or incomes, N = population, P = consumer price index.

Assuming that $-1 < \theta < 0$ which implies that the long-run relations are stable, Pesaran and Shin's (1999) ARDL error-correction model is as follows:

$$\Delta g_t = \theta[g_{t-1} - \lambda'(y_{t-1} \text{ or } \tau_{t-1})] + \sum \varphi_i \Delta g_{t-i}$$

$$+ \sum \gamma_j \Delta(y_{t-j} \text{ or } \tau_{t-j}) + \zeta_t,$$

$$\forall \; i = 1, \ldots, k-1; \; j = 0, \ldots, k-1$$

Table 1: Unit Roots Tests

	Level Form		First Difference-form	
ADF	Without Trend	With Trend	Without Trend	With Trend
Gov't Spending	0.113(.963), k=2	-2.578(.292),k=1	-3.176(.03), k=1	-3.128(.11), k=1
Prices	0.153(.967),k=1	-2.734(0.23),k=1	-3.312(0.02),k=0	-3.312(0.08),k=0
Population	-3.881(0.00),k=1	-0.641(0.97),k=1	-8.584(0.00),k=0	-10.629(0.0),k=0
Income, GDP	0.113(0.96), k=2	-2.578(0.29), k=1	-3.176(0.02),k=1	-3.128(0.11),k=1
Taxes	-0.002(.953),k=0	-2.480(.336),k=1	-5.717(0.0),k=0	-5.643(0.00),k=0
KPSS				
Gov't Spending	0.806	0.163	0.221	0.114
Prices	0.821	0.153	0.255	0.146
Population	0.832	0.221	0.667	0.017
Income, GDP	0.805	0.163	0.221	0.114
Taxes	0.865	0.076	0.091	0.088

Notes: The KPSS asymptotic critical values are: 1% is 0.739, 5% is 0.463 and 10% is 0.347 for the case of a constant excluding trend; and 1% is 0.216, 5% is 0.146 and 10% is 0.119 for the case of a constant and a trend. All variables are expressed in logarithmic form.

Table 2: Johansen's Cointegration Results

H_0	H_1	Λ-Max	H_1	Λ-Trace
G and Y				
r = 0	r = 1	54.894*	r ≥1	60.787*
r ≤ 1	r = 2	5.893	r = 2	5.893
g and y				
r = 0	r = 1	15.587*	r ≥1	16.376*
r ≤ 1	r = 2	0.789	r = 2	0.789
gn and yn				
r = 0	r = 1	10.682	r ≥1	10.741
r ≤ 1	r = 2	0.059	r = 2	0.059
G and T				
r = 0	r = 1	35.099*	r ≥1	36.192*
r ≤ 1	r = 2	1.094	r = 2	1.094
g and t				
r = 0	r = 1	4.657	r ≥1	7.069
r ≤ 1	r = 2	2.413	r = 2	2.413
gn and tn				
r = 0	r = 1	4.728	r ≥1	6.241
r ≤ 1	r = 2	1.513	r = 2	1.513

Notes: * denotes 95% critical values which are 11.03 and 4.16, respectively for λ-Max, and 12.36 and 4.16, respectively for λ-Trace, of the stochastic matrices

Table 3: Selection of Optimum Lag Length using the Schwarz-Bayesian Criterion

K	1	2	3	4
G	11.4914	9.9218	8.7421	6.2906
ΔG	5.5693	7.5151	5.0637	3.5703
Y	33.3068	46.5977	45.4401	42.9253
ΔY	46.7575	44.0959	43.4066	40.0167
T	11.5411	10.8832	8.9840	7.5546
ΔT	7.9372	8.1358	8.0327	5.7492
g	9.2206	6.6881	4.2898	2.5051
Δg	8.3030	6.1138	4.1300	2.1799
y	58.5441	57.4410	55.6187	51.8550
Δy	58.0880	56.9377	53.2260	49.8028
t	11.9736	10.3546	7.7462	5.6661
Δt	11.2806	8.6935	6.9029	4.4996
gn	9.2453	6.6929	4.2427	2.5348
Δgn	7.9758	5.6338	3.7785	1.6650
yn	56.4798	53.8573	52.3997	48.7956
Δyn	55.2391	54.0337	50.4817	47.0980
tn	11.8899	10.0960	7.5362	5.4503
Δtn	11.3991	8.7889	6.9084	4.5457

Table 4: Traditional Short-run Granger Causality Tests

Cont. Vars.	Vars.	Wald Stats.	F-Stats	LR-Stats	Causal Direct.
ΔG(4)	ΔY(4)	13.04[0.01]*	3.26[0.02]**	13.71[0.01]*	ΔY ⇨ΔG
ΔY(4)	ΔG(4)	0.52[0.97]	0.13[0.97]	0.65[0.96]	ΔG ⇏ΔY
Δg(4)	Δy(4)	3.53[0.47]	0.88[0.49]	4.23[0.38]	Δy ⇏ Δg
Δy(4)	Δg(4)	2.21[0.70]	0.55[0.70]	2.70[0.61]	Δg ⇏ Δy
Δgn(4)	Δyn(4)	2.98[0.56]	0.74[0.57]	3.60[0.46]	Δyn ⇏Δgn
Δyn(4)	Δgn(4)	3.21[0.52]	0.80[0.53]	3.87[0.42]	Δgn ⇏ Δyn
ΔG(4)	ΔT(4)	2.33[0.60]	0.58[0.68]	2.82[0.59]	ΔT ⇏ ΔG
ΔT(4)	ΔG(4)	3.84[0.43]	0.96[0.44]	4.54[0.34]	ΔG⇏ΔT
Δg(4)	Δt(4)	3.65[0.46]	0.91[0.47]	4.34[0.36]	Δt ⇏ Δg
Δt(4)	Δg(4)	5.70[0.22]	1.42[0.25]	6.58[0.16]	Δg ⇏ Δt
Δgn(4)	Δtn(4)	3.53[0.47]	0.88[0.49]	4.23[0.37]	Δtn ⇏ Δgn
Δtn(4)	Δgn(4)	6.44[0.17]	1.61[0.20]	7.39[0.12]	Δgn ⇏ Δtn

Notes: P-values are reported in square brackets, and lag lengths are in parentheses; *, ** and *** denotes 0.01, 0.05 and 0.10 significant levels, respectively. ⇨ denotes causality. Results are obtained from MICROFIT 5.0. Wald statistics and Lagrange Ratio (LR) statistics have χ^2 distributio

Table 5: Long-run Causality Results and Elasticities from ARDL ECM

	ARDL	Coefficient of EC term	Long-run Elasticities Coefficient	F-stats.	R^2	DW/Dh	Causal Direction
G, Y	(1,1)	-0.13[0.00]*	0.92[0.00]*	11.31[0.00]*	0.20	2.16	Y ⇨ G
Y, G	(3,0)	0.00[0.98]	-13.79[.98]	15.97[0.00]*	0.54	1.83	G ⇏Y
g, y	(1,1)	-0.16[0.02]**	0.83[0.00]*	17.21[0.00]*	0.28	2.02	y ⇨ g
y, g	(2,1)	0.01[0.63]	1.09[0.00]*	8.99[0.00]*	0.28	2.02	g ⇏y
gn, yn	(1,1)	-0.16[0.02]**	0.81[0.00]*	17.26[0.00]*	0.29	2.01	yn ⇨ gn
yn, gn	(1,1)	0.02[0.28]	1.21[0.00]*	11.48[0.00]*	0.20	1.52	gn ⇏yn
G,T	(1,1)	-0.04[0.50]	1.09[0.00]*	69.13[0.00]*	0.62	2.00	T ⇏G
T,G	(1,1)	-0.09[0.15]	1.01[0.00]*	75.32[0.00]*	0.64	1.83	G⇏T
g, t	(1,1)	-0.14[0.09]***	1.09[0.00]*	91.37[0.00]*	0.70	1.99	t ⇨ g
t, g	(1,1)	-0.09[0.26]	0.93[0.00]*	85.26[0.00]*	0.68	1.82	g ⇏t
gn, tn	(1,1)	-0.14[0.07]***	1.11[0.00]*	93.16[0.00]*	0.70	1.99	tn ⇨ gn
tn, gn	(1,1)	-0.10[0.24]	0.91[0.00]*	86.62[0.00]*	0.68	1.83	gn ⇏tn

Notes: P-values are reported in square brackets. EC is error-correction, DW is Durbin-Watson statistic, and Dh is Durbin-h statistic.

Conclusion:

Wagner's law holds in Jamaica

Income causes Government Spending

Changes in Taxes cause Changes in Spending over the short-term

Government spending cannot lead or stimulate economic growth.

Government spending can only facilitate economic growth.

Keynesian-type fiscal expansion may crowd out private business.

Economic growth should be the source of expanding the activities of the government

(a) Government revenue and expenditure are independent over the short-term

(b) Budgetary allocations are disbursed along either an antagonistic party lines or to maximize election votes considering that the country has a parliamentary system of government.

(c) Over the long-run taxes are found to slightly cause government expenditure when inflation and population are taken account of.

(d) These findings along with the fact that the primary budget deficit is persistent while economic growth lags behind interest rates imply that:

(e) National debt is clearly not a net wealth, and is unstable, as the debt to GDP ratio is explosive and non neutral. See Barth, Iden and Russek (1986).

(f) Concerns about financing the primary budget deficit force the government to find revenue before it spends, hence taxes mildly causes government expenditure when prices and population are taken into consideration.

(g) Friedman's proposal concerning government expenditure as the 'true' cost of government activities holds, which suggests that containing government spending will improve the primary deficit over the long-run.

(h) Policymakers must be cautioned that any attempt to monetize the debt can destabilize the modest macroeconomic gains of feeble stable prices and exchange rates, and exacerbate the growth in national debt.