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Khorshed Chowdhury
University of Wollongong

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Australia's External Debt: Is it a Symptom or a Cause of Economic Slowdown?

Khorshed Chowdhury
Department of Economics
University of Wollongong

Abstract

Amidst the debate surrounding the 'debt problem' in Australia, the key analytical issue of whether external debt is a symptom *or a* cause *of economic slowdown has been ignored. Sachs (1990) and Kenen (1990) argued that the external 'debt overhang' is a primary cause of economic slowdown and acts as an obstacle to economic growth. The second view is by Bulow and Rogoff (1990) who argue that the external debts are a symptom of poor economic management and performance rather than a primary cause of stifled economic growth. The statistical tests of causal relationships between the GDP growth rate and the external debt accumulation rate suggest* unilateral *causation flowing from gross external debt (GED), net external debt (NED) and non-official external debt (NOD) to GDP. The long-term impact of these categories of debt on GDP growth is small but positive. Secondly, gross official external debt (GOD) rate and GDP growth rate are statistically independent (neutral) over the sample period. Thirdly, in this study we have found* no *evidence of Bulow-Rogoff and Kenen-Sachs propositions.*

Keywords: Australia, Economic Growth, External Debt, Kenen-Sachs and Bulow-Rogoff Propositions

JEL Classification No(s): H63; O56

Introduction

Since the late 1980s the external debt problem has become a moot topic of policy debate in Australia. The issue of Australia's growing external debt featured prominently in the 1996 federal election alongside other singular issues relating to the economy, viz, unemployment, inflation, tax reform, etc. During the election campaign the federal coalition was drumming up support over the alarming spectre of external debt by parading a 'debt truck' in marginal Labor electorates. On the other hand, the ruling Labor Party was playing down the consequences of Australia's external debt on the economy by

labelling the truck as a 'garbage truck'. Such a dismissal of Australia's external debt issue seemed to have been casual, premature and cavalier especially at a time when the influential Economist newspaper of 4 November 1995 was finding a striking resemblance of an 'Antipodean Mexico'.

While the politicians were debating the issue, researchers and economists were also divided on the 'debt problem' of Australia. Cumberworth and Milbourne (1995) provide a neat schematic way of classifying three schools of thought on the causes (and resulting policy responses) and consequences of the rise of Australia's external indebtedness. These schools of thought are: (1) Poor trade balance (2) Internal imbalance, and (3) Savings-investment and inter-temporal choice. Within each school of thought there are proponents and opponents who are visibly divided on the modus operandi of policy proposal.

Without debating the relative strengths and weaknesses of each of these schools of thought, two divergent views have emerged regarding the consequences of Australia's external debt. One view, notably by Arndt (1989) and Access Economics (1990), adopts a doomsday scenario for Australia's present and future generations. The second view (Makin 1990; Pitchford 1990; Sjaastad 1989) is one of indifference which reassures every one that external debt really does not matter and in a related way external debt should be 'welcomed' in so far as it increases the nation's productive capacity. The above view is also shared by the Treasury which asserts that debt-based growth of nation's productive assets will ultimately stabilise or reduce external debt levels in the future.

Amidst the debate surrounding the 'debt problem', one key analytical issue seems to be missing or has been ignored completely by researchers. The most immediate concern in this debate should be whether external debt is a *symptom* or a *cause* of economic slowdown in Australia. Significant declines in real GDP occurred during the early 1980s and 1990s in Australia and the declines took place alongside burgeoning external debt. In terms of real GDP per person, Australia has lost its advantages over other nations. Spectacular expansions have occurred and continue to occur in North America and in Asia. As a result, the US and Canada have forged ahead of Australia, while in the cases of Japan and Hong Kong the gap has closed. A resolution of the growth implications of external debt on the Australian economy will help us in addressing the 'debt problem' adequately and objectively.

The precise growth-debt nexus is polemical and is highlighted in the 'Symposium of New Institutions for Developing Country Debt' which was

published in the Journal of Economic Perceptives (1990). In a neat analytical framework Sachs (1990) and Kenen (1990) argued that the external 'debt overhang' (the contractual value of external liabilities exceeds expected debt-service capacity) is a primary cause of economic slowdown and acts as an obstacle to economic growth. Kenen-Sachs argument is based on two factors: (1) the required debt service payments for some countries are so large that the prospects for a return to a normal growth path are poor; and (2) the presence and persistence of a large debt overhang inhibits private investment and government adoption of adjustment programmes because of the uncertainty and adverse incentive effects they create along the way.

This debilitating effect of external debt on economic growth was argued by Krugman (1989) who pointed out that high governmental debt service payments require high tax rates which in turn discourage capital formation. The above view is also endorsed by Dornbusch (1988). Empirical evidence shows that highly indebted countries have registered a decline in GDP growth rate (Fischer and Husain, 1990), hence, Kenen-Sachs argue that there is an urgent need for debt reduction and international debt relief facility.

The second view is presented by Bulow and Rogoff (1990) who argue that the external debts of developing countries are a symptom of poor economic management and performance rather than a primary cause of stifled economic growth. They argue that bad domestic economic (micro and macro) management creates distortions in the economy and scare away private investment.

The objective of this paper is to test the conflicting hypotheses about the causal relationships between GDP growth rate and the external debt's accumulation rate in Australia. It may be mentioned that no critical research has been done along these lines for the Australian economy. In order to shed more light on the 'debt-growth' controversy in Australia, it is imperative and useful to subject the issue to rigorous statistical tests.

The structure of the paper is as follows: Section II analyses the composition and growth of external debt in Australia for the period 1976-1997 over which consistent date is available. Section III outlines the methodological framework adopted for evaluating the Kenen-Sachs proposition and Bulow-Rogoff proposition on external debt and economic growth. In Section IV Granger causality tests are conducted on GDP and external debt for the period 1976-1997. Granger tests provide a unique and robust framework for testing the competing hypotheses concerning debt and growth. The results of the

statistical tests are reported in this section. Finally, Section V concludes the paper with a summary of the findings of this paper.

Analysis Of Australia's External Debt

In this study we consider different categories of external debt. Australia's statistics make a clear distinction between gross and net external debt. Griffin-Warwick (1992, p. xi) defines these concepts as: 'Gross foreign debt is the total amount of borrowing from non-residents. Net foreign debt is equal to gross foreign debt minus official reserve assets and lending by residents of Australia to non-residents. Official reserve assets are held by the Reserve Bank of Australia and include monetary gold, foreign exchange holdings, special drawing rights and Australia's reserve position in the International Monetary Fund. Examples of financial obligations that are included in the categories borrowing/lending are deposits, loans, finance leases, bonds, bills, IMF credit and Bank for International Settlements placements.' A third category of debt that is considered in this analysis is gross official external debt (GOD) — which includes 'investment in Central Government Securities (CGS), borrowings by state governments' central borrowing authorities and deposits by non-residents with the Reserve Bank of Australia'. A fourth category of debt is due to borrowings by 'non-official' sources consisting of borrowings by private financial enterprises and private trading enterprises (NOD). The sum of debt of these entities constitutes the gross external debt (GED) of Australia. The data for these categories of debt are reported in Table 1.

Gross external debt (GED) includes the borrowings of both the private (NOD) and government (GOD) sectors. The debt category (GOD) is obviously a sovereign debt with an obligation to pay interest and/or repay principal while NOD can be either repaid or defaulted. Net external debt (NED) represents net international investment position and indicates whether Australia is a net supplier of funds (debt and equity) to the rest of the world, or a net user of funds from overseas.

The mix of external obligations is important for the debtor country because it not only spreads the risk of debt overhang, but also diminishes the economic/political pressure of the creditor that often pervades the bilateral debt inflow. A closer look at the external debt profile of Australia reveals that the bulk of gross external debt (GED) is due to the borrowings by private entities (NOD). The proportion of debt incurred by the private sector ranged between 55 percent in 1979 to nearly 80 percent in 1984. The mean of

NOD/GED stood at 71 percent over the sample period. On the other hand, GOD/GED ranged between 20 percent and 45 percent and the mean over the period is about 29 percent.

In Table 2 we have calculated the ratios: GED/GDP, GOD/GDP, NOD/GDP and NED/GDP as measures of debt service capacity of the economy. Other indicators of debt service capacity viz Debt/Exports, Interest/Exports, Interest/GDP etc, are not calculated here. Gross external debt as a ratio of GDP increased from 7 percent in 1976 to around 48 percent in 1997 with a mean of nearly 30 percent over sample period. The ratio GOD/GDP rose from 1.6 percent in 1976 to 15.6 percent in 1997, while NOD/GDP climbed steadily from 5.2 percent to nearly 32.4 percent over the same period. The mean of GOD/GDP and NOD/GDP was 8.3 and 21.3 percent respectively. The ratio NED/GDP also rose from 2.75 percent in 1976 to nearly 38 percent with a mean of 22.6 percent over the sampled period.

Table 1: Composition of Australia's External Debt

	(GED) $m	(GOD) $m	(NOD) $m	(NED) $m	GOD/GED %	NOD/GED %
1976	5978	1403	4575	2399	23.47	76.53
1977	7812	2325	5487	3888	29.76	70.24
1978	10133	4228	5906	6155	41.73	58.28
1979	12672	5740	6932	7951	45.30	54.70
1980	13498	5687	7811	6863	42.13	57.87
1981	15219	4816	10402	8553	31.64	68.35
1982	24350	5692	18658	16547	23.38	76.62
1983	35891	7682	28209	23383	21.40	78.60
1984	44101	8874	35228	29893	20.12	79.88
1985	67473	14883	52590	51208	22.06	77.94
1986	92550	23609	68942	75544	25.51	74.49
1987	107417	30362	77055	86138	28.27	71.73
1988	123122	33128	89993	96248	26.91	73.09
1989	146717	36837	109880	117298	25.11	74.89
1990	162770	39443	123328	131654	24.23	75.77
1991	178774	41930	136844	142055	23.45	76.55
1992	192148	46288	145860	154021	24.09	75.91
1993	210615	60741	149874	169211	28.84	71.16
1994	206917	62607	144308	164256	30.26	69.74
1995	223681	75037	148643	181477	33.55	66.45
1996	236012	78251	157759	187535	33.16	66.84
1997	254687	82671	172016	202024	32.46	67.54
Mean					***28.95***	***71.05***

Source: DX Data

Table 2 External Debt as a Proportion of GDP

	GED/GDP %	GOD/GDP %	NOD/GDP %	NED/GDP %
1976	6.82	1.60	5.22	2.74
1977	8.20	2.44	5.76	4.08
1978	9.34	3.90	5.45	5.67
1979	10.28	4.66	5.62	6.45
1980	9.60	4.04	5.55	4.88
1981	9.59	3.03	6.55	5.39
1982	14.12	3.30	10.82	9.59
1983	18.33	3.92	14.40	11.94
1984	20.31	4.09	16.22	13.77
1985	28.06	6.19	21.87	21.29
1986	34.98	8.92	26.06	28.55
1987	35.85	10.13	25.72	28.75
1988	36.23	9.75	26.48	28.32
1989	39.50	9.92	29.58	31.58
1990	42.75	10.36	32.39	34.58
1991	45.90	10.77	35.14	36.47
1992	47.10	11.35	35.75	37.75
1993	48.70	14.05	34.66	39.13
1994	44.95	13.60	31.35	35.69
1995	45.45	15.25	30.21	36.88
1996	45.71	15.16	30.56	36.32
1997	48.03	15.59	32.44	38.10
Mean:	***29.54***	***8.27***	***21.26***	***22.63***

Note: Calculated from DX Data

In Table 3 we provide the average annual growth rates of GED, NED, GOD, NOD, Per Capita GDP and GDP. The mean growth rates of these variables are 17.87, 21.11, 19.41, 17.27, 1.65 and 3.04 percent respectively. It is evident from Table 3 that all categories of debt increased sharply over the years while growths in per capita GDP and GDP have remained low for Australia. Hence, there is a need to have a closer look at the issue whether increasing debt is the cause of slow GDP growth or is it merely a symptom of economic slowdown.

Table 3: Growth Rates of External Debt, Per Capita GDP and GDP of Australia

	Average Annual Growth of GED	Average Annual Growth of NED	Average Annual Growth of GOD	Average Annual Growth of NOD	Average Annual Growth of Per capita GDP	Average Annual Growth of GDP+
	%	%	%	%	%	%
1977	26.76	48.28	50.51	18.18	0.089	1.2
1978	26.01	45.94	59.80	7.36	3.809	5.1
1979	22.36	25.60	30.57	16.02	1.201	2.3
1980	6.31	-14.72	-0.93	11.94	2.551	3.8
1981	12.00	22.01	-16.62	28.65	0.886	2.5
1982	47.00	65.99	16.71	58.43	-3.836	-2.1
1983	38.80	34.58	29.98	41.34	4.677	6.1
1984	20.60	24.56	14.42	22.22	3.580	4.8
1985	42.52	53.83	51.71	40.07	2.959	4.4
1986	31.60	38.88	46.14	27.07	0.735	2.4
1987	14.90	13.12	25.16	11.13	3.192	4.8
1988	13.65	11.10	8.72	15.52	2.288	4
1989	17.53	19.78	10.61	19.97	1.410	3.2
1990	10.38	11.55	6.84	11.55	-2.222	-0.7
1991	9.38	7.60	6.11	10.40	-0.864	0.4
1992	7.21	8.09	9.89	6.38	2.082	3.3
1993	9.18	9.41	27.17	2.71	3.844	4.9
1994	-1.77	-2.97	3.03	-3.78	3.676	4.8
1995	7.79	9.97	18.11	2.96	2.624	3.9
1996	5.37	3.28	4.19	5.95	1.631	3
1997	7.62	7.44	5.49	8.65	0.447	1.7
Mean(1976-97)	17.87	21.11	19.41	17.27	1.655	3.04
Mean (1976-80)	20.36	26.28	34.99	13.37	1.913	3.10
Mean (1981-85)	32.18	40.20	19.24	38.14	1.653	3.14
Mean (1986-90)	17.61	18.89	19.49	17.05	1.080	2.74
Mean (1991-97)	6.40	6.12	10.57	4.75	1.920	3.14

Note: Calculated from DX Data

Methodology

In this paper we adopt the familiar concept of causality as proposed by Granger (1969).

Specification of the model and hypotheses

We adopt the following equation specifications for t = 1, 2,…. , T :

$$y_t = \sum_{i=1}^{m} \alpha_i y_{t-i} + \sum_{j=1}^{n} \beta_j x_{t-j} + \varepsilon_{1t} \quad (1)$$

$$x_t = \sum_{i=1}^{p} \gamma_i y_{t-i} + \sum_{j=1}^{q} \delta_j x_{t-j} + \varepsilon_{2t} \quad (2)$$

where, y_t denotes GDP and x_t denotes external debt at time period t. Formally we test the hypotheses:

$H_0^1 : \beta_j = 0 \qquad \forall_j = 1, 2, \ldots, n$

$H_0^2 : \gamma_i = 0 \qquad \forall_i = 1, 2, \ldots, p$

These tests give the following situations:

Case 1: Uni-directional causality from y to x occurs if:

$\beta_j = 0 \quad \forall_j = 1, \ldots, n$ *and* $\gamma_i \neq 0 \quad \forall_i = 1, \ldots, p.$

Case 2: Uni-directional causality from x to y occurs if:

$\beta_j \neq 0 \quad \forall_j = 1, \ldots, n$ *and* $\gamma_i = 0 \quad \forall_i = 1, \ldots, p.$

Case 3: Feedback or mutual causality occurs if:

$\beta_j \neq 0 \quad \forall_j = 1,\ldots, n$ *and* $\gamma_i \neq 0 \quad \forall_i = 1,\ldots., p.$

Case 4: Independence occurs if:

$\beta_j = 0 \quad \forall_j = 1,\ldots., n$ *and* $\gamma_i = 0 \quad \forall_i = 1,\ldots., p.$

Determination of the Optimal Lags

(a) Search procedures

Given the above specifications of the model and hypotheses, we now wish to consider how the four lag lengths (m, n, p and q) are determined. This is very important since it has been shown that the results from the Granger approach are sensitive to these lag lengths.

A popular procedure suggested by Hsiao (1981) involves a two-stage conditional sequential search.[1] For example, in equation (1) above, the first stage estimates the autoregressive relationship in y_t only. This is repeated for different lag lengths until the value m* is found that minimises a selected criterion, which is usually a function of the residual sum of squares (RSS). In the second stage the optimum lag length n* is found for x_t by minimising the same criterion, conditional on the optimum lag length m*.

(b) Model selection criteria

Of the numerous model selection criteria[2] which can be used to obtain the optimum lag lengths m*, n*, p* and q* we will only consider two in the interest of parsimony. They are Akaike's (1969, 1970) Final Prediction Error (FPE) which is equivalent to Amemiya's (1980) prediction criterion (PC):

$$\text{FPE} = \left(\frac{\text{RSS}}{\text{T}}\right) \left(\frac{\text{T+k}}{\text{T-k}}\right)$$

1 The procedure is detailed in the cited work and is mentioned here in the barest outline.

2 In recent years several criteria for choosing among models have been proposed and Ramanathan (1992) provides an excellent summary of these criteria.

And Hocking's Sp criterion:

$$Sp = (RSS/T\text{-}K)((1 + (k/T\text{-}k\text{-}1))$$

as detailed in Breiman and Freedman (1983). Judge et al. (1985, p. 869) clearly show how the most common criteria not considered here are variations of one another and are asymptotically equivalent, whilst Maddala (1992, pp. 496-502) shows how they are all flawed to varying degrees.

We will restrict our comments to the FPE which is popular despite using an upwardly biased estimate of the variance of the regression and generally over-estimating the order of the lags (k = m + n). It also assumes that one of the nested models is the true model and the regressors are nonstochastic. Hocking's Sp criterion, on the other hand, does not assume a correctly specified model exists and as such is more robust to mis-specification of the model.

Model Transformation

Following a widely accepted approach we assume that the GDP's time series can be approximated by an exponential growth equation $y_t = y_o \exp(gt + \varepsilon_t)$ where g denotes the GDP growth rate and ε is white noise (ie, it is identically and independently distributed random disturbance with zero mean and finite variance σ_1^2). Similarly, we assume that the time series of external debt (x_t) conforms to the exponential equation $x_t = x_o \exp(ht + \eta_t)$, where h denotes the accumulation rate of external debt and η is a white noise with zero mean and finite variance σ_2^2.

The regressors are assumed to be stochastic which is important here since we have lagged dependent variables in each regression and we expect autocorrelation as each of the time series has been made covariance-stationary by lag linearisation to give:

$$\ln y_t = \ln y_o + gt + \varepsilon_t$$
$$\ln x_t = \ln x_o + ht + \eta_t$$
$$\therefore \Delta y_t = \ln y_t - \ln y_{t-1} = g + u_t$$
$$\therefore \Delta x_t = \ln x_t - \ln x_{t-1} = h + v_t$$

where, $u_t = \varepsilon_t - \varepsilon_{t-1}$ (3)

is a white noise having zero mean and $2\sigma_1^2$ variance, and

$$v_t = \eta_t - \eta_{t-1} \quad (4)$$

is a white noise having zero mean and $2\sigma_2^2$ variance.

It is important to note that Δy_t and Δx_t denote the current annual growth rate of GDP and the current accumulation rate of external debt, respectively.[3] These oscillate around the secular annual growth rates 'g' and 'h' of the original time series GDP and external debt.

The hypotheses tests are usually performed using the statistic:

$$F = \frac{(RRSS - URSS)/n}{URSS/(T - K)}$$

where:

K = m + n
RRSS = Restricted Residual Sum of Squares.
URSS = Unrestricted Residual Sum of Squares.

Estimation

The estimation of growth rate and external debt accumulation rate and the regression analysis in various steps of the causality tests employ the logarithmic transformations of the time series of GDP and the various measures of external debt. The data are obtained from DX (1999) data base for the period 1976-1997 for which data on relevant variables are available on a consistent basis. The sample period includes nine years of Coalition in power (1976-1983 and 1996-1997) and thirteen years of Labor government (1983-1996). Nominal external debt measures (GED, NED, GOD, NOD) are deflated by the implicit price deflator with base 1989/90 = 100. In view of the potential autocorrelation problem the Cochrane-Orcutt estimation procedure is applied.

Following Granger's procedure and Akaike's (1969, 1970) finite prediction error (FPE) criterion, the test of causal relations between GDP growth and external debt accumulation comprises three stages. The first stage is a search for the autoregressive equations of these variables that have the minimum FPE. The second stage selects the optimal number of lags of the other variable of interest to be added to the autoregressive equation obtained in stage one in

3 Log differencing of the data not only gives a nice interpretation of the data, but also removes the potential 'non-stationarity' of the data.

order to minimise the FPE. Finally, in stage three we conduct an F-test of the hypothesis that the set of all additional lags introduced in stage two has no contribution to predicting value of the variable under consideration. As an alternative to the FPE model selection criterion, we shall also apply Hocking's Sp criterion for comparison.

Vital information on the determination of optimal lags obtained through the search procedure based on the FPE criterion are shown in Table 4 and the result from Granger tests are summarised in Table 5. Here we hypothesise the accumulation of external debt *does not* affect the GDP growth rate and is denoted by H_0^1; and the hypothesis that GDP growth rate *does not* affect the accumulation of external debt by H_0^2.

Table 4 Optimal Lags and Results of Granger Test

Variables	Lags m*	Lags n*	F computed	F critical at 5% level of significance	Lags q*	Lags p*	F computed	F Critical at 5% level of significance
1. GDP-Gross External Debt	1	3	5.61	3.29	6	1	2.39	5.12
2. GDP- Net External Debt	1	4	5.16	3.18	6	1	3.34	5.12
3. GDP-Gross OfficialExternal Debt	1	2	2.56	3.59	7	1	1.21	5.59
4. GDP- Gross Non-official External Debt	1	3	5.93	3.29	6	1	3.23	5.12

From Table 4 we see that a unilateral causation flows from all categories of external (except Gross Official Debt) to GDP growth in Australia. The computed F values are greater than their critical values and hence the null hypothesis H_0^1 is rejected for three of the four categories of external debt while null hypothesis H_0^2 is not rejected. GDP and gross official external debt do not influence each other since both null hypotheses H_0^1 and H_0^2 are not rejected by the statistical tests.

The long-term multiplier effect[4] of gross external debt accumulation rate on the GDP growth rate is found to be positive. It is found that an increase of one percent in gross external debt increases the GDP growth rate by nearly 0.17 percent in the long-run, other things being equal. The long-term multiplier effect of net external debt accumulation rate on the GDP growth rate is found to be positive also. It is found that an increase of one percent in net external debt increases the GDP growth rate by nearly 0.16 percent in the long run, other things being equal. The long-term multiplier effect of gross non-official external debt accumulation rate on the GDP growth rate is also found to be positive. It is found that an increase of one percent in gross non-official external debt increases the GDP growth rate by nearly 0.17 percent in the long run, other things being equal. The magnitude of impact of the different categories of debt on GDP growth is small and approximately equal. The usual plausible explanation for this is that external debt leads to additions of capital stock and thereby productivity, leading to increases in GDP.

4 The computation of the long-run multiplier effect of x on y (LRMxy) is based on the regression equation selected in the second stage of the causality tests. For instance, if the selected equation is of the form:

$$yt = \sum_{i=1}^{I} \square i\ yt\text{-}i + \sum_{j=i}^{J} \square j\ xt\text{-}j + \text{residual}$$

Then the long-run effect of x on y is given by:

$$LRMxy = \sum_{j=i}^{J} \square j\ /\ (1\text{-} \sum_{i=1}^{I} \square i).$$

The long-run multiplier of y on x is calculated in an analogous way.

Table 5 Hypothesis Testing: Kenen-Sachs vs Bulow-Rogoff Proposition

Variables	Test of Significance		Long-Run Multiplier	
	H_0^1	H_0^2	Debt on GDP	GDP on Debt
1. GDP and Gross External Debt	Reject	Do not reject	0.1732	—
2. GDP and Net External Debt	Reject	Do not reject	0.1567	—
3. GDP and Gross Official External Debt	Do not reject	Do not reject	—	—
4. GDP and Non-Official External Debt	Reject	Do not reject	0.1691	—

Our statistical analysis does not support either the Kenen-Sachs proposition or the Bulow-Rogoff proposition. The critical conditions for these propositions are as follows:

> Kenen-Sachs proposition that external debt is a cause of economic slowdown requires us (1) to reject H_0^1 and not to reject H_0^2; and also (ii) the LRM_{xy} must be negative.
>
> Bulow and Rogoff proposition that external debt is a symptom of poor economic management requires us (i) not to reject H_0^1 and to reject H_0^2; and (ii) the LRM_{yx} must be negative.

The above conditions of the two propositions are not supported by our statistical tests. Similar results are achieved by the Hocking's Sp model selection criterion and they are reported in Tables A1 and A2 in the Appendix. In terms of the lag lengths, both FPE and Sp criteria revealed the same order of the autoregressive distributed lag models. However, based on the test of hypothesis, we found statistical independence based on the results of the Sp criterion.

Conclusion and Summary

This paper employs a new theoretical framework that has considerable appeal in terms of modelling the growth-debt nexus. The statistical tests of causal relationships between the GDP growth rate and the external debt accumulation rate suggest *unilateral* causation flowing from GED, NED and NOD to GDP. The long-term impact of these categories of debt is small but positive. Secondly, gross official external debt (GOD) rate and GDP growth rate are statistically independent over the sample period. Thirdly, in this study we have found *no* evidence of Bulow and Rogoff's proposition that external debt is just a symptom of economic slowdown. Moreover, the Kenen-Sachs' proposition that accumulation of external debt leads to economic slowdown is not substantiated by the statistical results.

In view of these findings, Makin and Pitchford are probably right in showing supreme indifference to the issue of external debt. Corden (1991) cogently argues that the rising current account deficit and the subsequent accumulation of external debt in Australia over the past decade are primarily caused by an 'investment boom'. By observing the trends in the composition of imports one can immediately see the link between domestic investment activity and the demand for imported capital goods. Daniels (1992, p. 22) writes 'If capital goods correctly represent productive assets, the concomitant growth in capital imports and foreign borrowings during these periods may well be interpreted as lending some support for the 'massive modernisation' of the Australian economy. Indeed, capital import levels have remained relatively high (by standards for the decade) since 1986, while other industrial supplies have continued to grow.' Hence, the high level of capital import represents a net resource transfer in the Australian economy. The policy implication of the findings of this study is to encourage more external borrowing since it enhances economic growth by expanding productive capacity.

The findings of this study, most importantly, can allay fears of the public about apocalyptic predictions regarding external debt. Gross official external debt, both in absolute and relative terms, is declining due to prudent fiscal management by the Coalition government and also through the sale of government assets. It is totally unnecessary to categorise Australia as 'Antipodean Mexico' nor is it essential to flag the size of its external debt as a sign of impending disaster. So long as Australia remains internationally competitive via micro and macro economic reform, there is hardly any cause for concern. Economic theory and economic history has got no ready answer to the question 'How much external debt is too much?' for a particular

country, so long the debt is sustainable. The conditions for sustainability of debt are clearly known in the literature.

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Appendix

Table A1 ***Optimal Lags Based on Hocking's Sp Criterion***

Variables	Lags m*	Lags n*	F-Sp computed	F critical at 5% level of significance	Lags q*	Lags p*	F-Sp computed	F Critical at 5% level of significance
1. GDP-Gross External Debt	1	3	2.29	3.29	6	1	2.25	5.12
2. GDP- Net External Debt	1	4	2.42	3.18	6	1	2.25	5.12
3. GDP-Gross Official External Debt	1	2	2.18	3.59	7	1	2.33	5.59
4. GDP- Gross Non-official External Debt	1	3	2.28	3.29	6	1	2.25	5.12

Table A2 ***Hypothesis Testing: Kenen-Sachs vs Bulow-Rogoff Proposition Based on Hockings Sp Criterion***

	Test of Significance		Long-Run Multiplier	
Variables	H_0^1	H_0^2	**Debt on GDP**	**GDP on Debt**
1. GDP and Gross External Debt	Do not reject	Do not reject	—	—
2. GDP and Net External Debt	Do not reject	Do not reject	—	—
3. GDP and Gross Official External Debt	Do not reject	Do not reject	—	—
4.GDP and Non-Official External Debt	Do not reject	Do not reject	—	—