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SIZE IN AUSTRALIA

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I. Introduction

Since 1950, the size of the Australian public sector (defined as total government outlays as a percentage of GDP) has increased by approximately 50 percent. This pattern of public sector growth is repeated in most of the major western industrialized economies. Explanations for this growth have included such factors as income elasticity of voter demand for public goods (i.e. Wagner's Law); relative price changes; threshold effects (e.g. wars or depressions); interest group demands; and redistributive motivations [see Baumol (1967), Beck (1982), Buchanan (1977), Meltzer and Richards (1981), Musgrave and Musgrave (1984) and Peltzman (1980) among others for discussions of specific or general causes of public sector growth].

Recently, Brennan and Buchanan (1980) suggested an additional factor determining public sector size—government structure; that is, centralization of government activity as opposed to decentralization or federalism. The impact of the structure of government on public sector size is considered in the context of their model of revenue-maximizing governments. It is argued decentralization of government taxing and spending powers may serve to constrain the size of the public sector, the more so the more mobile are voters and the extent to which public goods are local in nature. In this Tiebout-type world, any attempt on the part of one jurisdiction to exploit its citizenry would result in instantaneous and complete migration on the part of the citizenry to an alternative,

nonexploitive jurisdiction. This competition among jurisdictions for the patronage of the citizenry limits the extent of fiscal exploitation possible to the locational rents received by economic resources in a jurisdiction and, as such, limits the size of the public sector. Brennan and Buchanan noted, however, that "[W]ithin a constitutionally designed federal structure, one would predict that there would be constant pressure by competitive lower-level governments to secure institutional rearrangements that would moderate competitive pressures" (p. 182). These institutional rearrangements would take the form of collusive agreements between the central and lower-level governments to assign to the central government what were previously revenue raising powers of the lower-level governments subject to a portion of the revenue being returned by some means such as intergovernmental grants. These collusive agreements permit the many lower-level governments to act with the central government and maximize revenues collected.

Attempts to test Brennan and Buchanan's hypotheses for the United States have generated mixed results [see Grossman (1988), Marlow (1988), Nelson (1986, 1987) and Oates (1985)]. Oates and Nelson find little evidence or evidence contradictory to the hypothesis that fiscal centralization, measured as concentration of revenue and expenditure powers at the state level, serves to constrain the public sector. Nelson (1987), however, did find significant evidence that centralization, as measured by population per multi-function (nonspecial purpose) government, has a constraining effect.

Marlow criticized the approach of Oates and Nelson, in that they tested the hypothesis for only a subset of total public activity (state

and local versus federal, state, and local) and measured centralization using revenues rather than expenditures. Since expenditures are always balanced by total finances (taxes and debt), "...government expenditure measures provide more meaningful measures of public sector size by concentrating on a more complete measure of total resource absorption by government" (p. 264). Marlow, after correcting for these flaws, found a positive and significant correlation between the level of fiscal decentralization and public sector size.

Finally, Grossman considered the impact of intergovernmental collusion represented by intergovernmental grants from the central government to lower-level governments. He argued that, grants affect the size of government by concentrating taxing powers in the hands of the central government, expanding the range over which the central government can apply its monopoly power, and by weakening the fiscal discipline imposed on governments forced to self finance their expenditures. Grossman found that intergovernmental grants do serve as a means of circumventing the discipline of fiscal federalism and do contribute to the size and growth of government.

In this paper, we examine the questions of fiscal decentralization and intergovernmental collusion for Australia. Data for the period 1950-84 is scrutinized for evidence supportive of the findings for the United States. In the next section, the Australian experience is reviewed briefly and the hypotheses to be tested put forward. Section III offers the results of the tests of these hypotheses. Section IV provides some post-mortem analysis of the results and Section IV summarizes the paper.

II. Growth in the Australian Public Sector, 1950-84

Since 1950, the Australian public sector (SIZE), defined as total public sector outlays as a percentage of GDP, grew from 28.2 percent to 41.5 percent in 1984 (see Figure 1).¹ This reflects an average annual growth rate of 1.1 percent. After a sharp jump and then a decline between 1950 and 1954, the Korean War years, SIZE experienced a slow but steady growth, from 27.4 percent in 1954 to 31.3 percent in 1969. Between 1969 and 1974, public sector size was a relatively stable 31 percent of GDP. This stability was interrupted by a sharp jump to 36.5 percent in 1975, the last year of the Whitlam government. For the remainder of the 1970s there was a return to relative stability in SIZE. Finally, the early 1980s were years of vigorous expansion; SIZE increased from 37.0 percent in 1980 to 41.5 percent in 1984.

Over this same period, there has been a slow decline in the importance of the state and local sector (see Figure 2). State and local government outlays financed by own-source revenues (that is, total state and local outlays less Commonwealth grants) as a percentage of total government expenditures (DEC) declined from 28.7 percent in 1950 to 24.0 percent in 1984. This decline was erratic rather than smooth. Between 1950 and 1959, DEC experienced a moderate increase, from 28.7 to 32.7 percent, before suffering a dramatic drop to 24.1 percent in 1960. The 1960s was another period of moderate growth with DEC recovering to 27.4 percent by 1969. The 1970s began, as did the 1960s, with a significant drop in DEC to 21.6 percent. The 1970s and early 1980s saw a return to moderate growth in DEC. By 1984, DEC had recovered to only 24.0 percent.

Brennan and Buchanan's hypothesis, that greater fiscal decentralization would serve as a constraint on the growth of the public sector, would suggest that this decline in the state and local sector would be inversely correlated with the growth of total public sector size. As the state and local sector becomes economically more relevant, the competition among lower-level governments minimizes the fiscal exploitation of resident taxpayers.

As a caveat to their hypothesis, Brennan and Buchanan argued that lower-level governments would try to circumvent the discipline of fiscal decentralization by colluding with the central government. Lower-level governments would cede to the central government taxing powers which the central government could then levy across all governments at a uniform, revenue-maximizing rate. The revenues would then be shared among the governments with the lower-level governments' share being provided in the form of intergovernmental grants.

In Australia, intergovernmental grants are a major source of state and local finances. Grants as a percentage of total state and local finances (GRT) have increased from 46.5 percent in 1950 to 51.3 percent in 1984 (see Figure 3). (Figure 4 graphs SIZE, DEC, and GRT all in one figure.) This relatively small change for the total period masks more dramatic changes during sub-periods. Between 1952 and 1960, the relative importance of grants declined steadily to approximately 34 percent of total state and local finances. Over the next ten years, GRT changed little, increasing to only 35.8 percent. The period 1970 to 1976 was one of rapid growth in GRT. By 1976, GRT had increased to 50.0 percent. Over the remaining years till 1984, GRT remained stable.

The impact of grants on public sector size is felt in two ways. First, grants tend to weaken the discipline imposed on competing lower-level governments forced to finance expenditures from own-source taxes. By breaking the bond between taxing and spending powers, grants encourage greater total government spending. Second, by concentrating the powers of taxation in the hands of the central government, grants serve to expand the range over which the central government can apply its monopoly power. The greater the range of economic activity over which the central government has taxing powers, the more potent its taxing powers are likely to be and the greater will be total public sector size.

If taxing powers over economic activities are divided between the central government and the lower-level governments, taxes levied by the central government may be avoided by changes in the economic activities the taxpayer undertakes. For example, if labor income is a central government tax base while consumption expenditures are a lower-level government tax base, then income taxes levied at the revenue-maximizing rate by the central government may be avoided if the taxpayer consumes more leisure and fewer other goods and services. If the central government had taxing powers over both tax bases then taxes could be levied on goods complementary to leisure, thereby offsetting the effect of tax avoiding changes in economic activity on the part of the taxpayer. The potency of the central government's revenue-maximizing powers is likely to increase disproportionately with increases in the tax bases available to it.

III. Empirical Tests of the Hypotheses

In this section, we present the results of empirical tests of the hypotheses:

- (1) That the decline in the level of fiscal decentralization, DEC, experienced in Australia between 1950 and 1984 has contributed to the increase in public sector size, SIZE; and
- (2) That the increase in intergovernmental collusion, GRT, has also contributed to growth in SIZE.

The following equations are estimated:

- (1) $SIZE_t = a_0 + a_1 DEC_t + a_2 GRT_t + a_3 X_t + e_t$
- (2) $SIZE'_t = a_0 + a_1 DEC'_t + a_2 GRT'_t + a_3 X'_t + z_t$
- (3) $SIZE^*_t = a_0 + a_1 DEC^*_t + a_2 GRT^*_t + a_3 X^*_t + u_t$

where $SIZE_t$, DEC_t , and GRT_t are the actual values of the variables, as previously defined, in time t and

X_t = actual value of the control variables in time t ,

$SIZE'_t$ = growth rate of $SIZE_t$,

DEC'_t = growth rate of DEC_t ,

GRT'_t = growth of GRT_t ,

X'_t = growth rate of X_t ,

$SIZE^*_t$ = first-difference of $SIZE_t$,

DEC^*_t = first-difference of DEC_t ,

GRT^*_t = first-difference of GRT_t ,

X^*_t = first-difference of the control variables, and

e_t , z_t , u_t = random disturbance terms.

Three control variables are considered. Y_t is real (1981 dollars)

disposable income per capita. Y_t controls for the Wagner's Law influence on demand for public sector outlays. P_t , population in millions, acts as a scale variable. Finally, changes in relative costs of the public and private sectors are controlled for by RC_t , defined as the ratio of the price deflator for public consumption to the price deflator for private consumption. Goods and services provided by the public sector are characterized by low rates of productivity growth relative to privately provided goods and services. Forced to compete with the private sector for inputs, government sees the cost of providing its goods and services continually rising. Coupled with a low price elasticity of demand for public sector goods and services, this will lead to growing expenditures on public sector output. Thus, RC_t and $SIZE_t$ are hypothesized to be directly correlated.

All data are drawn from either Norton and Kennedy (1986) or Butlin (1977).

Table 1 reports the results for the test of the fiscal decentralization hypothesis. Equations (1.1) - (3.1) are the results for the simple regression of $SIZE_t$ on DEC_t , $SIZE''_t$ on DEC'_t , and $SIZE^*_t$ on DEC^*_t , respectively. Equations (1.2) - (3.2) include the three control variables but not the respective GRT variables. Of the six equations, (1.1), (1.2) and (3.2) were subject to significant serial-correlation (at the 10 percent level of significance) and the results reported for these equations are for the equations adjusted using the Cochrane-Orcutt technique.

The evidence reported in Table 1 offers no support for Brennan and

Buchanan's decentralization hypothesis. The coefficients for DEC_t , DEC''_t , and DEC^*_t are positive, contrary to expectations, and insignificantly different from zero. The results suggests that increased fiscal decentralization does not generate the Tiebout-style competition among state and local governments as envisioned by Brennan and Buchanan. These results are dramatically different from those reported for the United States by Marlow (1988). Marlow found DEC_t to have a negative and significant impact on public sector size in each of his corresponding equations.

Of the control variables, only the PY variables are significant, and then only in equations (2.2) and (3.2). The negative coefficients for the PY variables suggest that public sector size is an income-inferior good. The estimated coefficients for the control variables are likely to be highly imprecise due to a high degree of multicollinearity among the variables.

Table 2 reports results for regressions including the GRT variables. Equations (1.3) - (3.3) report the results of the regressions excluding the control variables, while equations (1.4) - (3.4) are for the complete equations. Of these six equations, equations (1.3), (1.4), and (2.4) were subject to significant serial-correlation and the results reported are for the Cochrane-Orcutt technique-corrected regression.

With the inclusion of the GRT variables, the explanatory power of the equations, with the exception of (2.3), is now significant at the 5 percent level. Inclusion of GRT_t , GRT''_t , and GRT^*_t in their respective equations does nothing, however, to improve the explanatory power of the respective DEC variables. The coefficients of DEC_t

DEC_t , and DEC^*_t are still positive and continue insignificant providing further support for the conclusion that Tiebout-style competition is nonexistent at the state and local level in Australia. The positive coefficients for the GRT variables, however, provide strong evidence in support of the intergovernmental collusion hypothesis. The evidence suggests that grants do enhance the Commonwealth's monopoly power while also encouraging fiscal irresponsibility at the state and local level. This finding is supportive of those reported by Grossman (1988) for the United States. Thus, efforts to shift economic power from the Commonwealth to the state and local governments would not reduce the size or slow the growth of the public sector through Tiebout-style competition. However, it would have these effects due to a reduction in the monopoly power of the Commonwealth government as revenue raiser and by imposing greater fiscal discipline on state and local governments.

The signs of the coefficients for the control variables are unaffected by the inclusion of the GRT variables. However, the coefficients for P^*_t and RC^*_t in equation (3.4) are now significant. The positive sign of the coefficients for the RC variables suggests that the lower relative productivity of the public sector has resulted in the public sector commanding an increasing proportion of the economy's total resources.

IV. Post-Mortem Analysis

In light of the contradictory evidence regarding the impact of fiscal decentralization on public sector size reported by Marlow for the United States and that reported in this paper for Australia, it is worthwhile considering what differences exist between the two countries that might

explain the results observed. Three possible explanations come to mind.

(1) Number of Lower-Level Governments

The Brennan and Buchanan fiscal decentralization hypothesis argues that it is competition for the patronage of voters that will serve to constrain the revenue-maximizing instincts of the governments. But for there to be competition, there must be a range of viable choices open to the voter. The importance of choice is supported by evidence reported by Nelson (1986, 1987). In his two studies, Nelson reported a strong and positive correlation between public sector size and population per multi-function government. That is, the more decentralized is the population the smaller is the public sector. One would expect that the greater is the range of viable locational choices, the more decentralized would be the population.

In Australia, the range of choices, relative to that in the United States, is small. At the state level, Australia has only six states plus the Northern Territory versus the fifty states and the District of Columbia in the United States. At the local level, Australia had 840 local government authorities in 1983 [Australian Bureau of Statistics, (1986)]. This compares with more than 22,000 multi-function governments in the United States in 1982 [U.S. Department of Commerce (1986)]. Furthermore, population per multi-function local government in Australia is twice that for the United States. Thus, the the range of choice and the scope for competition is much greater in the United States than in Australia. In addition, the small number of lower-level governments in Australia enhances the ability of the governments to form collusive agreements among themselves.

(2) The Economic Insignificance of Local Governments

Although a sufficient number of local government units may exist to foster competition, their economic importance is slight. In 1984, local government own-source financed expenditures accounted for approximately 13 percent of total state and local receipts. As a percentage of total government outlays, local governments accounted for approximately 5 percent. In the United States, the corresponding figures are approximately 60 and 25 percent, respectively. The economic insignificance of local governments is mirrored in the limited range and relative unimportance of functions local governments have responsibility for. For example, education, police, and fire services, functions that are major determinants in voters' location decisions, are local functions in the United States but state functions in Australia. This factor may actually serve to enhance the ability of local governments to reach intergovernmental collusive agreements. Thus, though there may be a sufficiently large number of local governments to encourage effective fiscal competition, their economic insignificance is likely to make their impact only marginal.

(3) Mobility of the Citizenry

The fact that Australia is geographically the size of the continental United States but with less than 5 percent the number of lower-level governments implies that the average size of the geographical area served by a governmental unit is relatively quite large. In addition, Australia is a highly urbanized country with 61 percent of its 1984 population living in the immediate metropolitan areas of the six capital cities and the capital of the Northern Territory. An additional 9 percent live in

the six other major cities of 100,000 or more persons. This concentration of population combined with the relative geographical isolation of the major metropolitan areas does little to enhance the mobility of the citizenry, but rather increases the locational rents that the governments can extract. Though there may be scope for Tiebout-style competition at the local level this is likely to be marginal due to the relative economic insignificance of local governments as previously noted.

The combination of these factors serves to limit the fiscal discipline imposed by decentralization of government taxing and spending powers. At the same time, these factors enhance the ability of lower-level governments to collude amongst themselves and to exploit their locational advantages.

V. Conclusion

Studies of the United States have found an inverse correlation between fiscal decentralization and public sector size and a positive correlation between the extent of intergovernmental collusion and public sector size. This paper has examined the impact of fiscal decentralization and intergovernmental collusion on the size of the public sector in Australia. The evidence for Australia is only in part consistent with the United States findings. Fiscal decentralization, defined as state and local own-source financed expenditures as a percentage of total public sector expenditures, is found to be positively correlated with public sector size, though the correlation is not statistically significant. Intergovernmental collusion, defined as the ratio of Commonwealth grants to state and local governments to total state and local finances, is, as

expected, positively and significantly correlated with public sector size.

Examination of the institutional framework of Australia relative to the United States offers some explanation for the unexpected findings regarding decentralization. Australia has, relative to the U.S., few lower-level government units. This factor would serve to lessen the competitive pressures on lower-level governments to limit their fiscal exploitation of their voters. Furthermore, local governments in Australia are economically insignificant, accounting for approximately 5 percent of total public sector outlays. Finally, the geographical isolation of the small number of major metropolitan areas and the degree of concentration of population in these areas do little to enhance the mobility of voters. This limited and costly mobility increases the ability of lower-level governments to extract locational rents.

FOOTNOTES

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1. All years refer to fiscal years.
2. Between 1950 and 1984, the share of Australia's total population residing in the six capital cities plus Canberra, Gold Coast, and Townsville—the only cities with 1984 population in excess of 100,000 persons for which consistent historical series were available—increased from 51.5 percent to 64.9 percent. Figures are from unpublished data provided by the Australian Bureau of Statistics.

TABLE 1

REGRESSION RESULTS FOR TESTS OF THE FISCAL DECENTRALIZATION HYPOTHESIS

Variable	Estimated Coefficients					
	(1.1)ad	(1.2)ad	(2.1)b	(2.2)b	(3.1)c	(3.2)cd
DEC _t	0.114 (0.94)	0.165 (1.19)	0.092 (0.95)	0.079 (0.69)	0.135 (1.16)	0.159 (1.31)
PY _t	... ...	-0.002 (1.27)	... ...	-0.400* (2.06)	... ...	-0.004* (2.70)
P _t	... ...	1.460 (1.23)	... ...	-1.168 (0.81)	... ...	-3.867 (0.89)
RC _t	... ...	0.152 (1.11)	... ...	0.382 (0.86)	... ...	0.200 (1.55)
CONSTANT	30.772* (5.82)	4.799 (0.62)	0.012 (1.36)	0.035 (1.29)	0.408 (1.45)	1.302 (1.34)
R ²	0.845	0.878	0.027	0.159	0.041	0.226
F-stat	...	...	0.899	1.369	1.357	...
D.W.	1.635	1.401	1.859	1.578	1.864	1.824
RHO	0.955	0.805	...	...	...	0.249

Notes: a - Regressions are for actual values of variables.

b - Regressions are for growth rates of variables.

c - Regressions are for first-differences of variables.

d - Results reported are for regression corrected for
serial-correlation using the Cochrane-Orcutt technique.

Absolute value of t-statistic in parentheses.

* - Significant at the 5 percent level, two-tailed test.

TABLE 2

REGRESSION RESULTS FOR TESTS OF THE FISCAL DECENTRALIZATION AND
INTERGOVERNMENTAL COLLUSION HYPOTHESES

Variable	Estimated Coefficients					
	(1.3)ad	(1.4)ad	(2.3)b	(2.4)b	(3.3)c	(3.4)cd
DEC _t	0.039 (0.33)	0.083 (0.63)	0.058 (0.62)	0.052 (0.50)	0.085 (0.77)	0.114 (1.10)
GRI _t	0.313* (2.67)	0.285* (3.00)	0.324* (2.24)	0.393* (2.78)	0.269* (2.35)	0.417* (3.58)
PY _t	... ...	-0.002 (1.60)	... ...	-0.423* (2.42)	... ...	-0.004* (3.46)
P _t	... ...	1.55 (1.51)	... ...	-2.269 (1.67)	... ...	-12.373* (2.83)
RC _t	... ...	0.121 (0.97)	... ...	0.499 (1.24)	... ...	0.274* (2.46)
CONSTANT	18.207* (3.00)	-1.820 (0.27)	0.011 (1.30)	0.053* (2.09)	0.364 (1.37)	2.978* (3.16)
R ²	0.866	0.905	0.162	0.340	0.186	0.469
F-stat	...	...	3.006	2.888	3.539	...
D.W.	1.728	1.652	2.110	1.693	2.159	1.880
RHO	0.903	0.702	...	...	...	0.223

Notes: a - Regressions are for actual values of variables.

b - Regressions are for growth rates of variables.

c - Regressions are for first-differences of variables.

d - Results reported are for regression corrected for
serial-correlation using the Cochrane-Orcutt technique.

Absolute value of t-statistic in parentheses.

* - Significant at the 5 percent level, two-tailed test.

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