Fiscal Federalism in Australia: Equity/Efficiency Versus Public Choice Approaches in Explaining Intergovernmental Grants

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August 1995

UNE Working Papers in Economics No. 20

Editor

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ISSN 1321-9081

ISBN 1 86389 262 1

Fiscal Federalism in Australia: Equity/Efficiency Versus Public Choice Approaches in Explaining Intergovernmental Grants

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Abstract. Intergovernmental grants have been conventionally explained on the basis of either equity/efficiency and/or institutional considerations. As a result empirical approaches to grants have usually examined the impact of these transfers on recipient government expenditures, rather than evaluated the impact on the donor government and/or its political agents. The alternative public choice approach analyses intergovernmental grants within a model of political expediency; that is, grants are used by federal government politicians to purchase political capital, thereby enhancing their own probabilities of reelection. In this paper the public choice model is tested for six Australian states for the period 1981-82 to 1991-92 using unsystematic grant transfers. The results provide some support for the public choice approach to grant determination

The theory of intergovernmental grants now has a well-established literature (Oates, 1972; Gramlich, 1977) and the empirical application of this body of thought proceeds apace (Oates, 1979; Winer, 1983; Logan and O'Brien, 1989). Whilst interest has largely focussed on the impact of grants on recipient government expenditures and the theoretical justification for grants on social welfare grounds, until recently the literature has tended to ignore "...the realities of the political marketplace in which governments must operate" (Grossman, 1987: 1). Accordingly, the present paper attempts to apply a public choice model to the empirical analysis of intergovernmental grant determination in the Australian federal system over the period 1981-82 to 1991-92.

The paper itself is divided into five main areas. Section I provides a brief review of the literature of the traditional equity/efficiency approach to grant determination and the more modern public choice explanations offered by Breton and Scott (1980), Grossman (1987; 1994) and Leyden (1992). Section II outlines the institutional peculiarities of the Australian federal grants system and the difficulties posed by the principle of fiscal equalisation for the empirical testing of public choice theories. Models and hypotheses for the analysis of intergovernmental grants in Australia for the period 1981-82 to 1991-92 are discussed in Section III, whilst the results are scrutinised in Section IV. The paper ends with some brief concluding remarks in Section V.

I. Political Factors in the Grants Process

Intergovernmental grants are usually justified on the basis of what may be referred to as traditional "equity/efficiency" type criteria (Bungey, Grossman and Kenyon, 1991; Grossman, 1994). These criteria generally regard intergovernmental grants as the necessary transfer of funds in a federation,

either from a central government or from another constituent state, to a fiscal jurisdiction in order to satisfy some concept of economic efficiency and/or equity (Oates, 1972). Various reasons for this have been advanced, including the presence of spillover or external effects (Oates, 1972; Gramlich, 1977); considerations involving the distribution of income (Gramlich, 1977); issues of economic stabilisation (Gramlich, 1977); the uniform provision of public services (Bungey, Grossman and Kenyon, 1991); and by viewing lower-level governments "as agents, or contractors, for the central government" in carrying out selected tasks, usually classified as an institutional justification (Gramlich, 1977: 222). All of these rationale are commensurate with "a government committed to maximising a nationwide social welfare function" (Grossman, 1994: 295).

An alternative public choice perspective to the traditional Pigouvian model of "benevolent government" (Bungey, Grossman and Kenyon, 1991: 659) holds that political agents use the grants process to further their own interests.¹ As Grossman (1994: 296) has observed "...it is widely accepted that federal politicians allocate own-purpose expenditures for the purpose of enhancing their reelection chances...it seems consistent to assume that grants are allocated to the same end". Accordingly, the public choice designation of grants as being motivated by "political expediency" (Grossman, 1994: 296) rather than simply on equity and efficiency grounds has strong intuitive appeal.²

Despite the instinctive appeal of intergovernmental grants being used to purchase political capital for donor politicians, a number of conceptual problems remain. Firstly, "...intergovernmental grants increase the level of activities provided by recipient governments. As a result...individuals are willing, *ceteris paribus*, to provide a greater level of political support" (Leyden, 1992: 325). However, it would appear that the increment in political support is directed to recipient government politicians, rather than those of the donor government. Secondly, the process of funding grants "involves either increases in own-source taxation, reductions in own-purpose outlays, or both. Such actions involve direct costs to the federal grant-giver in the form of lost votes" (Grossman, 1994: 295). Bearing this in mind, it seems that a positive net political benefit might accrue to the recipient politician, with a negative net benefit falling on the donor politician. Since it would appear that these grants which "are extraordinarily valuable to the donee government [but] seem to have little political payoff to the donor government" (Hartle, 1976: 96), the problem now becomes one of reconciling the Downsian donor politician, the provision of grants, and indirect or obscure political benefits.

Various efforts have been directed towards resolving this problem, including Breton and Scott (1980), Grossman (1987; 1994) and Leyden (1992). Breton and Scott (1980: 11) argue that the grants system is characterised by an active market in functions - referred to as "...the power, responsibility, and authority that the government of a jurisdiction possesses to make decisions, to pursue policies, and to undertake activities in a particular area". The principal "traders" in these functions are generally regarded as federal governments (buyers) - given surplus taxation receipts -

and state governments (sellers) - with deficit taxation receipts. This would appear to be consistent with federations characterised by vertical fiscal imbalances.³ A "trade" is signalled when donor politicians have a greater desire for centralisation, due to either their own preferences for centralisation or for political purposes, and the function is exchanged for "lump-sums, debt transfers or block grants" (Breton and Scott, 1980: 151).⁴ The real objective for both sellers and buyers of functions is the acquisition of "...degrees of freedom (their probabilities of reelection)" (Breton and Scott, 1980: 152) - an outcome dependent on "relative financial strengths...the historical features of the function, together with the political fortunes, political views and current political vulnerability of each transacting government" (Bungey, Grossman and Kenyon, 1991: 661).

Grossman (1987; 1994) accepts the basic argument that in the first instance the political benefits of intergovernmental grants are received by the recipient government. In this regard, "local governments gain the capability to provide increased own-purpose services with no attendant increase in own-source taxation with no reduction in own-purpose service levels" (Grossman 1987: 2). As we have seen this is more than likely to engender voter support for recipient government politicians rather than donor politicians. However, Grossman (1987: 7) also argues that grants buy "...the loyalty and political support of the local politician, since for each local politician, the grant[s] [are] seen as funded in large measure from taxes on other localities".⁵ In an attempt to "export their tax burden" recipient government politicians will gladly trade - as representatives of "...the special interest group comprised of a specific locality's voters" - "...his/[her] political endorsement and the votes of his/[her] local supporters" (Grossman, 1987: 7). Moreover, the attempts by recipient government politicians to trade "political support" for "tax burdens" are not contingent upon either actual tax exporting, nor upon the perception of such activity. Grossman (1987: 7) observes that it takes only a limited number of "...politicians in a few localities to attempt to export their tax burden for all to be forced, out of self-preservation motives, to act accordingly". Thus, the return to the donor politician from "...this political endorsement and its attending votes may more than offset the vote loss arising from increased taxation" (Grossman, 1987: 7).

Leyden (1992) has attempted a synthesis of the equity/efficiency model of grant determination with that of political self-interest in the context of general and categorical grants. His model examines the relationships between spillover effects - when the activity levels of one recipient jurisdiction affect another, fiscal illusion - where there is the overestimation of grant benefits or the underestimation of donor government taxes, and political asymmetry - referring to an imbalance in federal/state political influence. Firstly, in the absence of spillover effects, there will be "...no political benefit to the dominant party in providing grants to nonmember districts" (Leyden, 1992: 331). As a result, the grants process will be characterised by a public choice model of political self-interest. However, as the dominant party's strength increases, the administrative costs begin to outweigh the revenue gains of this policy, and the grant-based purchase of political capital will be

discontinued. Secondly, in the presence of fiscal illusion there are benefits to the donor politician in providing grants, either because the tax costs are underestimated, or the benefits of the intergovernmental grant are overestimated. In particular, it is in the donor government's interest to direct grants at activities where the illusionary influence is the greatest. Finally, where political asymmetry exists at the recipient level, the group that "dominates the recipient government's decision-making process will be different to that which provides support to the donor government representative" (Leyden, 1992: 333). Accordingly, the grants process will be dominated by categorical grants aimed at rewarding political patronage. In Leyden's (1992) approach categorical grants, which are more common in models of political patronage, are evident where spillover effects, fiscal illusion and political asymmetry predominate. Furthermore, the ability to use grants to "purchase" political capital is contingent upon the ruling coalitions strength relative to both alternative state coalitions and other jurisdictional levels. However, "...as the size of the dominant party's coalition increases, the likelihood this condition will hold decreases" (Leyden, 1992: 331).

It is apparent from this work (Breton and Scott, 1980; Grossman, 1987, 1994; Leyden, 1992) that the public choice argument of politically determined grants may thus have some substance, notwithstanding the conceptual difficulties outlined above. Despite some differences, all three approaches have the initial concept of trading or acquiring the political patronage of recipient government politicians, rather than appealing directly to voters themselves - though Leyden (1992) does examine this possibility in regard to fiscal illusion. To some extent, the ability to trade and/or purchase support is a function of relative political power, bargaining opportunities, ideological similarity and rational, vote-maximising behaviour on the behalf of recipient and donor government politicians alike.

II. The Australian Federal Grants System

All federal systems are to some extent characterised by the presence of fiscal imbalances. These fiscal imbalances, whether vertical - that different levels of government have differing capacities to raise revenues to match spending - or horizontal - that a federation's constituent states likewise have diverse capacities and costs in the provision of public services - tend to dominate the choice of a grants structure (CGC, 1993 Vol. 1: 5).⁶ Despite this, and with due regard for institutional constraints, a diversity of international solutions have arisen to address the issue of fiscal imbalance, whether by means of tax-sharing and/or fiscal equalisation (Matthews, 1982: 3). In general, whilst most federal countries, such as Germany and Canada, have availed themselves of highly developed informal or formal tax-sharing systems (Matthews, 1982: 3), Australia has "...chosen to pursue a policy of horizontal fiscal equalisation...during the course of the transfer of funds from the Commonwealth to the states (Thomson, 1986: 172). Given that "...in the case of fiscal equalisation...Australia has developed the most sophisticated arrangements of any federal

country" (Matthews, 1982: 3), some mention should be made of this unusual solution to the issue of fiscal imbalance.

The basic principle of fiscal equalisation in Australia is that "...each State should be given the capacity to provide the same standard of State-type public services as the other States, if it makes the same effort to raise revenues from its own sources and conducts its affairs with an average level of operational efficiency" (CGC, 1993 Vol. 1: 6). Put differently, it is the role of fiscal equalisation to standardise a state's public good capacity, with due regard to expenditure needs and revenue sources (and the state's own efforts to help itself).⁷ In practise, fiscal equalisation "...usually takes the form of vertical grants from the federal government to the states, but [it] may also consist of horizontal grants from states with high fiscal capacity to states with low fiscal capacity" (Matthews, 1994: 5).⁸

In examining the process of fiscal equalisation in Australia, we can identify several key stages. Firstly, in light of the "chronic and acute vertical imbalance[s]" (Matthews, 1994: 6) that exist, all Australian states have required federal grants (known as general revenue or financial assistance grants) to fund their deficits. In order to cover these state deficits, and not reward excessively parsimonious or prolifigate state governments, state revenues and expenditures (and accordingly state deficits) are standardised in line with the principles of fiscal equalisation. Standardisation procedures seek to eliminate the "effects of policy or efficiency differences among the States" (Matthews, 1994: 5). Secondly, applying the process of standardisation depends on the measurement of fiscal disabilities (CGC, 1993 Vol. 1: 7). These fiscal disabilities, whether revenue or expenditure (known as needs), are defined as the differentials that exist between the Australian average standard of public good capacity, and the standardised revenues and expenditures of a given state.9 For example, expenditure needs are the differential costs, relative to standard, that a state needs to provide a standard level of services, whilst revenue needs are the differential revenues a state would raise if the standardised revenue effort was applied to its revenue base (Matthews, 1994: 5).¹⁰ Some characteristics of the disabilities (or disadvantages or advantages in the provision of public services) taken into account are input costs, administrative scale, urbanisation, physical environment, socio-economic composition and other demographics (CGC, 1993 Vol. 1: Sect. 3).¹¹ Finally, and most importantly, "...the assessment of State expenditure and revenue needs and hence of general revenue grants relativities is undertaken by the independent Commonwealth Grants Commission" (Matthews, 1994: 7) (emphasis added). Accordingly, it has been argued that the whole process of evaluating disabilities and determining relative grant sizes in Australia takes place in "[an] open, flexible and accountable system...free from political and bureaucratic bias" (Matthews, 1994: 16).¹²

From the above discussion it would seem that little *prima facie* evidence exists in Australia for the potentially fruitful analysis of political factors in grant determination. Moreover, it would seem that the principle of fiscal equalisation, and the existence of an independent statutory authority in the

form of the Commonwealth Grants Commission (CGC), has produced a system almost wholly based upon the "equity/efficiency" (Oates, 1972; Gramlich, 1977; Bungey, Grossman and Kenyon, 1991) model of grant determination. Moreover Bungey, Grossman and Kenyon (1991: 663) have observed that "...by and large, general purpose grants have been arrived at through the application of formulae, and institutional arrangements that have kept political factors at least at arm's length remove from the process". Similarly, "the capacity for political factors, particularly those stressed in the public choice approach to intergovernmental grants, to determine the size and direction of general purpose grants [in Australia] is somewhat attenuated" (Bungey, Grossman and Kenyon, 1991: 663).¹³ However, whilst the opportunity to examine political factors in regards to general revenue, or financial assistance grants (FAGs) appears limited, there is nonetheless scope to investigate specific purpose payments (SPPs) from a public choice perspective. These transfers from the Commonwealth to the states, whilst acknowledged by the CGC, are generally made outside the scope of fiscal equalisation and thus may well be subject to political manipulation. Indeed, the CGC itself admits that "SPPs are distributed on all sorts of criteria - but very few on equalisation as the Commission understands it" (CGC, 1993 Vol. 1: 16).14 Moreover, the Commission has also advocated "...that any trade-offs between fiscal equalisation and other policy objectives should be open and transparent" - indicative of possible conflicts in its position of statutory independence (CGC, 1993 Vol. 1: 16). It would seem that such grants distributed to any state "on such terms and conditions as the Commonwealth sees fit permits a far more likely avenue for intergovernmental political bargaining and trading" (Bungey, Grossman and Kenyon, 1991: 663).

III. Models and Hypotheses

In broad terms, research methodology usually employed in estimating the impact of political factors at the level of the state involves regressing sets of equity/efficiency and public choice variables against grants, where significant coefficients on the latter may indicate *prima facie* evidence of political activity (Wright, 1974; Grossman, 1987; 1994).¹⁵ An alternative procedure was pursued by Bungey, Grossman and Kenyon (1991) where the equity/efficiency and public choice models form non-nested hypotheses (models), even though strong theoretical reasons exist for believing that both equity/efficiency and public choice variables belong in the same regression.¹⁶ Both procedures are followed below.

Table 1 outlines the models and variables used in the pooled time-series, cross-sectional analysis of six Australian states in the period 1981-82 to 1991-92.¹⁷ A pooled data set is employed given the lack of sufficient cross-sectional observations and the requirement to monitor the longitudinal behaviour of grant parameters.¹⁸ An analogous approach using pooled data has been pursued by Bungey, Grossman and Kenyon (1991). The time period 1981-82 to 1991-92 is intended to eliminate the long-run structural modifications in the Commonwealth-state grants nexus. The

framework initially employed for the pooled analysis used the dummy variable approach described in Judge, Hill, Griffiths, Lütkepohl and Lee (1988) and White (1993).¹⁹ Anticipating the results of diagnostic tests in Section IV, the Kmenta (1986) technique of pooling time-series and crosssectional data is also applied.²⁰

The dependent variables in these specifications are (1) real per capita education special purpose payments SPPs (RES), (2) real per capita health SPPs (RHS), and (3) real per capita social security and welfare SPPs (RWS). As noted above these categorical grants are listed separately from the general revenue, or financial assistance grants (FAGs), and usually carry with them "reasonably complicated conditions" (Bungey, Grossman and Kenyon, 1991: 663). Accordingly, "...the scope for political intervention in the process of determining the size and conditions under which such grants are made seems far greater than is the case for general purpose grants" (Bungey, Grossman and Kenyon, 1991: 664).

The equity/efficiency model of grant determination is covered by proxy ratios for the objective of fiscal equalisation. These independent variables are (1) the education expenditure disability ratio (EED), the health expenditure disability ratio (HED), and the social security and welfare expenditure disability ratio (WED).²¹ All three measures are intended to account for the objective measurement of disabilities in the provision of state public services. The advantage of these proxies is that rather than using the *ad hoc* application of presumed disability factors, such as per capita income, unemployment levels, and educational level, amongst others (Bungey, Grossman and Kenyon, 1991; Grossman, 1994), the ratios directly account for the mechanical and objective application of formulae under the principal of fiscal equalisation.²² These ratios are expected to be positively related to the level of SPPs in each category, indicating the requirement for grant provision on equity/efficiency criteria. The variation in intercepts (STAT) provided under the dummy variable pooling technique (Judge *et.al.*, 1988) are also included to account for any unmeasurable equity/efficiency variables for the cross-sectional units (NSW, VIC, QLD, WA, SA, TAS).

Seven political variables are included in the model to reflect the public choice approach to grant determination. These are intended to account for the purchase of political capital from state political agents in order to influence the voting decisions of state residents (Grossman, 1994: 296). However, given that the "...ability of recipient government politicians to deliver votes and the value of this to the grantor government politician...cannot be measured directly" there is the requirement that some proxy be employed to account for the distribution and value of political capital in a federation (Grossman, 1987: 14). A measure widely employed (Grossman, 1987; 1994; Bungey, Grossman and Kenyon, 1981), and also adopted in this study, is that political party affiliation adequately proxies such concerns. All other things being equal, "...grants go to those states with political agents with the most - and most valuable - political capital to sell", as indicated by party similarity (Grossman, 1994: 297).

| | TABLE 1. | |
|------------|-----------------------------------|--|
| Models and | Variables for Grant Determination | |

| Models | | | |
|--|--|---|---------------|
| (1) Non-ne RES/RHS/ β6PREFPj | ested Cox and J-tests - H0: I $(RWS_{jt} = \beta_0 SEAT_{jt} + \beta_1 SI_t)$ t + vjt | RES/RHS/RWSjt = β_0 STAT + β_1 EED/HED/WED _{jt} + ujt HP _{jt} + β_2 SAMEj t+ β_3 ELSjt + β_4 ELFjt + β_5 MARPjt + | H1: |
| (2) Full re β ₄ SAMEj | gression - RES/RHS/RWS _{jt} t+ β5ELSjt + β6ELFjt + β7 | $f_2 = \beta_0 \text{STAT} + \beta_1 \text{EED/HED/WED}_{jt} + \beta_2 \text{SEAT}_{jt} + \beta_3 \text{SHF}_{jt}$ MARPjt + β8PREFPjt + ujt | ' jt + |
| Variables | Details | Data Sources(s) | Sign |
| RES RHS RWS | Real Education, Health and Social Security and Welfare Special Purpose Payments per capita in the j-th state in the t-th period | Commonwealth Grants Commission Report on General Revenue Grant Relativities (Tax-Sharing Relativies), 1981-1992, AGPS, Canberra. Australia: Year Books 1981 - 1992, ABS Catalogue No. 1301.0 | |
| STAT | Cross-sectional variable for each state. | NSW (NSW), Victoria (VIC), Queensland (QLD), Western Australia (WA), South Australia (SA), Tasmania (TAS). | + or - |
| EED HED WED | Education, Health and Social Security and Welfare expenditure disability ratios for the j- th state in the t-th period. | Commonwealth Grants Commission Report on General Revenue Grant Relativities (Tax-Sharing Relativies), 1981-1992, AGPS, Canberra. | + |
| SEAT | Number of federal seats in the j-th state in the t-th time period. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | + or - |
| SHP | Proportion of seats in j-th state held by federal government in the t-th period. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | - |
| SAME | Dummy if state and federal government of same party. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | + |
| ELS | Dummy for state election held. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | + |
| ELF | Dummy for federal election held. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | - |
| MARP | Proportion of marginal federal seats in j-th state in t-th period. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | + |
| PREFP | Proportion of federal seats decided on prefernces in j-th state in t-th period. | Parliamentary Handbook of the Commonwealth of Australia, AGPS, 1981-1992. Macintyre, C. (1991) Political Australia: A Handbook of Facts. | - |

Firstly, the number of total federal seats in each state (SEAT) are included (Wright, 1974; Bungey, Grossman and Kenyon, 1991; Grossman, 1994). This measure, which merely corresponds to the voting population in each state, is incorporated to indicate the ability of federal politicians to

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purchase political capital in small and large states.²³ In a sense, two competing forces are at work; all other things being equal, a state with a larger population has more significant political capital available (in terms of seat numbers), but in a smaller state "...the political benefits from a marginal dollar of increased grants are greater since the benefits are concentrated on a smaller number of beneficiaries (the per capita impact is greater)" (Grossman, 1994: 298). As a result, the variable SEAT may exhibit a positive or a negative sign, depending on which effect predominates.

Secondly, the proportion of federal seats held by the Commonwealth government in each state (SHP) is included (Bungey, Grossman and Kenyon, 1991; Grossman, 1994). The rationale for this is straightforward: "In states where the federal government is strong the need to buy votes is low. However, in states where the federal government is not well represented, the purchase of political support is paramount" (Bungey, Grossman and Kenyon, 1991: 662). This accords with Grossman's (1994: 297) view "...that a state politician's or state political party's ability to deliver votes is greater the greater is that individual's or party's popularity". As a measure of political power, the variable SHP should exhibit a negative coefficient in relation to grants.

Thirdly, SAME, a qualitative (dummy) variable if the state and federal governments are of the same political party, is also included. Both Leyden (1992) and Grossman (1994: 297) agree that the "...ability to deliver votes is of greater value to the federal politician if all are of the same party". This is especially the case in Australia, where "local party machines...and state governments [have] a strong influence if not total formal control over seat endorsements, position on party voting tickets...[and] can be expected to provide staunch support, and a springboard for effective federal campaigning" (Bungey, Grossman and Kenyon, 1991: 662). Moreover, "party differences between state and federal politicians...would serve to reduce the likelihood or value to the federal politician of the state politician's endorsement and support, and therefore reduce the magnitude of grants (Bungey, Grossman and Kenyon, 1991: 662). As a result, SAME will *ex ante* exhibit a positive sign, indicating an increase in per capita grants for years when the state and federal governments are of the same party.

Fourthly, two qualitative (dummy) variables for elections, state (ELS) and federal (ELF), are included in order to account for time-periods when the ability to purchase political capital may vary from the norm. *Ceteris paribus*, we would expect that resources (grants) diverted to state politicians in a state election year would be more productive, given the heightened awareness of policies, funds available for campaigning and pressing time-horizons. It may also be that relative bargaining strengths are altered in favour of state or federal politicians during election years, contingent on measures such as federal strength in that state (SHP). However, in the case of federal elections, the returns from purchasing political capital in this manner may be off-set by direct political benefits to federal politicians from substituting federal direct expenditure for the indirect political benefits of grants. In line with the "efficiency of capital" and "return on direct expenditure" type-arguments,

state election years (ELS) should *ex ante* exhibit a positive coefficient with grants and federal election years (ELF) should display a negative coefficient.

Finally, in addition to "absolute" political power indicators such as SHP, two measures of "political safety" (Bungey, Grossman and Kenyon, 1991: 662) are included.²⁴ These are, MARP, the proportion of federal seats in the state held with a less than five percent two-party preferred margin, and PREFP, the proportion of federal seats in a state decided on preferences (Bungey, Grossman and Kenyon, 1991). It is anticipated that *ceteris paribus*, that a state with more "closely fought seats" should receive a larger per capita distribution of grants, and we would expect a positive coefficient on MARP. However, it may also be that deals brokered with smaller parties and independents, on whom the two main parties may depend, may not be adequately specified in the Commonwealth-state grants nexus.²⁵ Accordingly, the more federal seats which rely on preferences, the more likely political capital will be purchased by alternatives to grant patronage: it follows that a negative *ex ante* coefficient with respect to grants is indicated.

IV. Results

The three models detailed in Table 1 were composed of per capita special purpose education grants (Models 1A and 1B below), per capita special purpose health grants (Models 2A and 2B below) and per capita special purpose social security and welfare grants (Models 3A and 3B below). Models 1A, 2A and 3A follow the pooling technique discussed in Judge et. al. (1988: Sect. 11.4), whilst models 1B, 2B and 3B follow the procedures outlined by Kmenta (1986: Sect. 12.2).

Model 1A in Table 2 presents the results of a regression of various public choice and equity/efficiency variables against per capita special purpose education grants (RES). A joint test for the inclusion of variable cross-sectional intercepts rejects the null hypothesis of coefficient equality. The coefficient for the equity/efficiency variable (EED) is significant and conforms to the expected sign on the coefficient. In terms of the public choice variables, the coefficients for SHP, SAME, ELS, ELF, MARP and PREFP conform to the expected sign on the coefficient, though only PREFP is significant. The coefficient for SEAT is insignificant, although it does correspond to the sign expected under the hypothesis that "...political benefits from...a small state are greater than a large state" (Grossman, 1994: 298). In general, the results indicate tantalising support in respect of expected signs on coefficients, but with low levels of significance (Bungey, Grossman and Kenyon, 1991).

In terms of the econometric suitability of the competing equity/efficiency and public choice models, the non-nested Cox test rejects both the equity/efficiency model and the public choice model (Doran, 1991; White, 1993). A J-test (Davidson and MacKinnon, 1981) however, rejects both singular models in favour of the augmented form, encompassing equity/efficiency and public choice approaches (see also Kennedy, 1992). When examining the combined model as in 1A, tests

for autocorrelation using the Durbin-Watson test (DW) and Lagrange multiplier test (LM) both reject the null hypothesis of no positive autocorrelation, whilst a Box-Pierce test fails to reject the null hypothesis. In terms of tests for heteroskedasticity, the Breusch-Pagan-Godfrey (BPG) [1979], ARCH [1982], Harvey [1976] and Glejser [1969] tests all reject the null hypothesis of homoskedasticity. Additionally, a Ramsay RESET [1969] test fails to reject the null hypothesis of no misspecification.²⁶ Accordingly, Model 1A is reestimated using the technique developed by Kmenta (1986) to correct for heteroskedasticity and autocorrelation following Bungey, Grossman and Kenyon (1991: 663). Model 2A details the results of this approach. The signs on all coefficients are identical to those found prior, with the levels of significance improving on the equity/efficiency variable STAT and the public choice variables of SHP, SAME and ELF. Tests of joint significance for the equity/efficiency variables, and then the public choice variables, reject the null hypotheses of joint insignificance in both instances. An LM test for normality of the regression's residuals fails to reject the null hypothesis of normal residuals. In general, the results offer tentative support for a public choice model of grant determination, at least in regards to education, as against that of Bungey, Grossman and Kenyon "...where the public choice model added nothing to the efficiency, equalisation model" (1991: 666).

Model 2A illustrates the results of a regression with independent public choice variables identical to that presented in Model 1, though with the dependent variable now per capita health grants (RHS), and the equity/efficiency model represented by the health expenditure disability ratio (HED). All coefficients on the public choice variables are identical to the education model except MARP and PREFP. In the case of the public choice variables, SEAT and SHP are significant and conform to the hypothesised sign; SAME, ELS and ELF are insignificant, though they do conform to the hypothesised sign; whilst MARP (significant) and PREFP (insignificant) do not conform to *a priori* expectations. The non-nested Cox test rejects both models, whilst the J-test rejects only the equity/efficiency augmented model. Mixed results are obtained on the tests for heteroskedasticity, autocorrelation and functionally misspecification. The alternate Kmenta (1986) technique detailed in Model 2B, improves the level of significance for ELF and the STAT intercepts. Tests for joint significance reject the null hypothesis of joint insignificance for both the equity/efficiency and public choice variables.

Finally, Model 3A represents variable sets identical to Models 1 and 2, except that the dependent variable is now real per capita social security and welfare grants (RWS), and the equity/efficiency model is represented by the social security and welfare expenditure disability ratio (WED). Unlike the models for education and health, the proxy for expenditure disability (WED) is insignificant, although it does conform to the expected sign. It seems probable that considerations of welfare are more likely evaluated at the national level rather than that of the state. In terms of the public choice variables, SEAT is significant and conforms to the hypothesis that political support is more profitably sought in larger states, at least via welfare grants. The variables SHP, MARP and PREFP

are significant and conform to the hypothesised sign, ELS is insignificant and does not accord with *a priori* expectations, and SAME and ELF do conform but are insignificant. In terms of econometric suitability, the non-nested Cox test rejects both models of grant determination, whilst the J-test rejects the equity/efficiency augmented model. Once again, autocorrelation and functional misspecification is indicated, though tests for heteroskedasticity fail to reject the null hypothesis of homoskedasticity. The alternative estimation technique (Model 3A) only slightly modifies the results found before.

| Variable | Model 1 - | Education | Model 2 | - Health | Model 3 | - Welfare |
|--|------------|------------|------------|----------------|------------|------------|
| | A | В | Α | В | A | В |
| NSW | 111.41** | 81.673*** | 422.02*** | 421.66*** | -80.155*** | -65.340*** |
| | (47.102) | (31.342) | (83.799) | (75.970) | (20.350) | (16.276) |
| VIC | 106.50*** | 85.479*** | 341.77*** | 345.61*** | -64.670*** | -54.220*** |
| | (36.943) | (26.265) | (70.503) | (64.688) | (16.126) | (13.418) |
| QLD | 97.118*** | 86.231*** | 245.14*** | 249.72*** | -40.464*** | -34.844*** |
| - | (25.743) | (16.953) | (55.497) | (51.769) | (10.916) | (9.777) |
| WA | 58.946*** | 57.283*** | 117.90* | 134.68** | -16.151 | -12.418 |
| | (20.511) | (13.412) | (60.060) | (56.939) | (9.993) | (10.031) |
| SA | 57.397* | 56.791*** | 94.456 | 108.68** | -16.403 | -11.299 |
| | (19.006) | (13.349) | (58.941) | (55.117) | (10.325) | (10.618) |
| TAS | 34.930*** | 37.461*** | 115.35** | 130.48** | -26.571** | -24.271*** |
| | (19.771) | (12.189) | (56.742) | (53.702) | (8.821) | (9.056) |
| EED | 35.880*** | 28.031*** | | | | |
| | (11.922) | (8.511) | | | | |
| HED | | | 129.87** | 117.73** | | |
| | | | (57.109) | (52.526) | | |
| WED | | | | | 8.917 | 2.597 |
| | | | | | (8.199) | (8.621) |
| SEAT | -1.461 | -0.691 | -8.5359*** | -8.213*** | 1.461*** | 1.183*** |
| | (0.910) | (0.616) | (1.612) | (1.412) | (0.380) | (0.283) |
| SHP | -11.952 | -12.670* | -97.667*** | -102.18*** | 12.002* | 18.640*** |
| | (14.142) | (7.566) | (29.268) | (22.565) | (6.461) | (5.122) |
| SAME | 7.500 | 6.410** | 13.154 | 10.239 | -2.255 | -1.159 |
| | (5.169) | (2.737) | (9.407) | (7.504) | (2.186) | (1.628) |
| ELS | 4.218 | 0.982 | 1.446 | -0.633 | 0.085 | -0.439 |
| 1 | (3.451) | (1.586) | (5.862) | (4.279) | (1.437) | (0.966) |
| ELF | -2.260 | -2.675* | -8.165 | -8.221** | -1.261 | -1.306 |
| | (3.172) | (1.447) | (5.432) | (3.842) | (1.330) | (0.885) |
| MARP | 3.344 | 9.609 | -240.61*** | -246.32*** | 44.232*** | 52.962*** |
| | (19.784) | (9.781) | (36.594) | (30.219) | (9.196) | (8.298) |
| PREFP | -72.888*** | -71.737*** | 1.2608 | 8.297 | -17.736*** | -19.759*** |
| | (11.531) | (6.354) | (24.321) | (21.175) | (4.920) | (4.756) |
| R2 | 0.670 | | 0.772 | | 0.676 | |
| R2 Adjusted | 0.587 | | 0.715 | | 0.595 | |
| BUSE R2 | | 0.818 | | 0.766 | | 0.525 |
| Raw R2 | | 0.978 | | 0.8578 | | 0.879 |
| d.f. | 52 | 52 | 52 | 52 | 52 | 52 |
| Values in parentheses are the corresponding standard errors. Asterisk(s) represent the level of | | | | t the level of | | |
| significance: $* - 90\%$, $** - 95\%$ and $*** - 99\%$. The ordinary R ² is the preferred measure of goodness | | | | | | |
| of fit for the Judge et. al. (1988) models, whilst the BUSE measure is appropriate for the Kmenta | | | | | | |
| (1986) technique | | | | | | |

TABLE 2.Results of Regression Estimation for Combined Models

In general, modelling the public choice approach to intergovernmental grant determination provides mixed results. For both education and health grants, there would appear to be strong support for a

public choice augmented model of grant determination. The most crucial elements in this process of purchasing political capital would appear to be a state's number of federal seats (SEAT), the share of those seats held by the federal government (SHP) and the incidence of federal elections (ELF). Similarity of political persuasion (SAME) would also appear to be instrumental, at least in regards to educational payments. Moreover, the proxies for political safety (MARP and PREFP) perform well for education and welfare, though inconsistently for health. In terms of welfare, the results which strongly favour a public choice model of grant determination seem to offer little support for traditional equity/efficiency criteria. Overall, at the level of specific purpose payments (SPPs), the results tend to support the findings of Grossman (1994: 301) that "...grants are greater to states whose officials...have significant political capital", though there are some concerns, similar to Bungey, Grossman and Kenyon (1991: 667) observation "...that the specification of the public choice model ...does not capture the realities of Australian political economy".

V. Conclusion

This paper examines the theoretical assertion that intergovernmental grants are not made exclusively on the basis of traditional equity/efficiency-type criteria (Oates, 1972; Gramlich, 1977), but also on a model of public choice-type political expediency (Bretton and Scott, 1980; Grossman, 1987; 1994; Leyden, 1992). With respect to the latter, the grants process is apparently exploited by Downsian donor government politicians to purchase political capital in the federal "marketplace", thereby enhancing their probabilities of reelection. The empirical assessment of this process in Australia, with due regard for the existing institutional framework, finds that factors affecting the "market for political capital" do impact upon the distribution of grants in a federal system. However, the results do not support either the equity/efficiency or public choice-type models to the absolute exclusion of the alternative.

¹ The public choice argument of utility maximising political agents forms an alternative to the equity/efficiency approach, but not necessarily to the extent of their being entirely mutually exclusive.

² The federal/state grants nexus has attracted the attention of public choice theorists in the past, but largely in terms of the impact of intergovernmental grants on recipient and/or donor taxation and expenditure, "...rather than devising a rationale for grants" (Bungey, Grossman and Kenyon, 1991: 661). For examples of recipient impact, see Cournot, Gramlich and Rubinfeld (1979), Oates (1979), Winer (1983), Logan and O'Brien (1989), Grossman (1990) and for impacts upon donor outcomes, see Logan (1986), Hammes and Wills (1987) and Dollery and Worthington (1995).

³ Breton and Scott (1980: 97) conjecture that the drift of functions will be from the jurisdictional level with the less productive tax base to that level with the more productive tax base. In general, the buyers will be the jurisdictional "...level which has, at some time in the past, been assigned the more productive tax base" (Breton and Scott, 1980: 97).

⁴ The sensible appearance of these trades would be of a grant with its own characteristics and purpose, rather than "a contractual payment for a traded function" (Bungey, Grossman and Kenyon, 1991: 661).

⁵ The tendency of recipient government voters, rather than politicians, to view the tax burden of grant programs falling disproportionately on other jurisdictions is well documented in the fiscal illusion literature (Winer, 1983; Logan, 1986).

⁶ Australian federalism is characterised by both large vertical and horizontal fiscal imbalances. In terms of the vertical imbalance, the Commonwealth (federal) government accounts for some 80% of total governmental revenues, but only 49% of expenditure, the figures for the states including local government being 20% and 51% respectively (Thomson, 1986: 170). Turning to horizontal imbalances, some 10% of general revenue or financial assistance grants made by the Commonwealth to the States are directed at compensating for variation in capacity (CGC, 1993 Vol. 1: 5).

⁷ It is important to emphasise that fiscal equalisation in the Australian context applies to capacity, rather than performance. "It [fiscal equalisation] does not guarantee to equalise outcomes; nor do we necessarily want this in a federation of states. Each state (through its voters and legislators) can choose how much or how little it wants by way of a state public sector and it is not the intention to overcompensate states which tax too little or spend too much relative to states that either tax heavily or keep a close rein on their public expenditure" (Thomson, 1986: 173).

⁸ Bearing in mind previous misspecified empirical studies, it is not the objective of general revenue grants in Australia to ensure individual equity, even though they contribute to a state's capacity to provide it (CGC, Vol. 1 1993: 7). "They do not achieve interpersonal vertical equity; they do not make Commonwealth and State taxation systems fairer; they do not overcome shortcomings in the social security system...they do not reduce waiting times for hospital treatments or provide a cure for AIDS...They do none of these things because they are not intended to be the sole means of achieving interpersonal horizontal equity" (Matthews, 1988: 2)

⁹ Prior to 1978, the standard or "benchmark" by which states were evaluated was usually one of the largest (in terms of population) states of NSW or Victoria (Thomson, 1986: 177). Since then the standard has been calculated using a six-state weighted average. The advantage of this system is that "...both policy and financial standards are thus internal...obviating any need for the Commission to make value judgements [concerning standards]" (CGC, 1993 Vol. 1: 13).

¹⁰ The discussion of expenditure disabilities, and more particularly relative expenditure disabilities, is particularly important to the empirical analysis contained in Section III.

¹¹ The term "disabilities" should be taken to infer that both positive and negative disabilities may exist for both revenues and costs. A positive differential or disability in costs would be a higher per capita cost of provision than the standard, whilst a negative disability would be a lower per capita cost of provision. A positive disability for revenues would be a revenue disadvantage, a negative disability a revenue advantage.

¹² Readers are referred to Thomson (1986), Matthews (1983) and Else-Mitchell (1983) for a more detailed discussion of the Commonwealth Grants Commission's procedures. The principles, costs and benefits of fiscal equalisation are discussed at length in Matthews (1994).

¹³ This statement is only strictly true for the period after 1981. Prior to the establishment of the CGC in 1933, the distribution of grants to the states lacked a "systematic basis" (Matthews, 1982: 2) and was largely "ad hoc" (Grover, 1989: 30). In fact, Matthews (1994) identifies secession movements in three states which resulted from dissatisfaction with politically determined grants, as the major factor in the establishment of the Commission. In the period 1933-1981, the CGC acted as an independent advisory body to the states recommending "special grants to supplement the large quantum of untied assistance already being paid to a state" (Grover, 1989: 31). It was during this time that "political decisions [on grant claimancy] ...and other political arrangements" dominated the distribution of grants (Grover, 1989: 31). It was only after 1981 that the whole of the untied assistance to the States was "...referred to the CGC for it to recommend relativities" under the principle of fiscal equalisation (Grover, 1989: 31)

¹⁴ The issue of SPPs has attracted some controversy in Australia as to their compatibility with, or treatment within, fiscal equalisation. "The principle of equalisation requires that all recurrent sources of funding available to a State be taken into account before calculating its need for general revenue assistance" (CGC, 1993 Vol. 1: 15). However, including SPPs would therefore override the agreements reached by governments for their very existence, subordinating them to fiscal equalisation objectives (Grover, 1989: 39).

¹⁵ Following Grossman's (1987; 1994) model of federal intergovernmental grants:

V - Voter support T - Total federal revenue E - Federal direct expenditure s_1 - Subsistence quantity of E

G - Intergovernmental grants s₂ - Subsistence quantity of G

X - Matrix of political characteristics

| | Maximise (1) | $V = \alpha \log(E - s_1) + \sum_{i=1}^{N} (a + bX_i) \log(G_i - s_2)$ |
|--------------|---------------------------------------|--|
| | | Federal politician preferences are defined by a Stone-Geary function (Grossman, 1994: 296) |
| | Subject to (2) | $E + \sum_{i=1}^{N} G_i = T$ |
| | | Where $\alpha + \Sigma(a+bX_i)=1$. X_i is "a matrix of political characteristics measuring the amount and effectiveness of political capital state politicianshave to sell" (Grossman, 1994: 297) |
| M w ar | Maximising (1) | $G_i = s_2 + (a + bX_i)(T - s_1 - Ns_2)$ |
| | with respect to E and G_i gives (3) | Gi is determined by (3). For any one year T, s_1 and s_2 are assumed small and $(T-s_1-Ns_2)=Z>0$ (Grossman, 1994: 297) |
| | Rewriting (3) gives (4) | $G_i = A + BX_i$ |

Where $A=(s_2+aZ)$ and B=bZ.

¹⁶ The hypotheses (models) are non-nested in the sense that one cannot be derived as a restricted version of the other.

¹⁷ The six Australian states employed are New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania. The Northern Territory and the Australian Capital Territory have been excluded since they have, at least during the period in question, been in receipt of special developmental and promotional allowances in the first instance, and national capital, transitional and special fiscal needs allowances in the second instance (CGC, 1993 Vol. 1: 34).

18 Other benefits attributed to panel (pooled times-series, cross-sectional) analysis are: the ability to discriminate between competing economic hypotheses; the elimination or reduction of estimation bias; and the reduction of problems arising from data multicollinearity (Hsiao, 1986: 213-219).

¹⁹ The dummy variable model is of the form $y_{it} = \sum_{j=1}^{N} \beta_{1j} D_{jt} + \sum_{k=2}^{K} \beta_{k} X_{kit} + e_{it}$ where there are i=1,2...N cross-

sectional observations, and t=1,2...T time-series observations. The dummy variables D_{jt} are intended to capture differences in cross-sectional units when pooling by OLS (Judge *et. al.* 1994: 468).

20 The assumptions of the Kmenta (1986) model are $E(\varepsilon^2 it) = \sigma^2_1$ (heteroskedasticity), $E(\varepsilon_{it}\varepsilon_{jt}) = 0$ (cross-sectional independence), and $\varepsilon_{it} = \rho_i \varepsilon_i$, t-1+v_{it} (autoregression) (White, 1993: 241). The model is estimated using a GLS procedure; after transformations designed to remove autoregression and heteroskedasticity, ordinary least squares is applied to the data (Kmenta, 1986: 511).

21 The disability ratios are calculated by dividing the state's standardised per capita expenditure in that category by the national per capita standard. As a state's per capita expenditure disability rises relative to the national standard - that is, the per capita cost of providing the service becomes relatively high - the ratio will rise above unity signalling the application of equity/efficiency-type grants.

²² The assessment of fiscal disabilities takes into account a "common pool" of factors such as administrative scale, urbanisation, input costs, physical environment; as well as factors specific to the category of expenditure. Some examples are; the lack of private hospital facilities in health, the presence of non-government schools in education, and socio-economic composition (poverty) for social security and welfare (CGC, 1993 Vol. 1: Sect. 3).

²³ In 1992 the populations and total federal seats for the six states were: NSW 5.95 million (51 seats), VIC 4.44 (38), QLD 3.03 (24), WA 1.65 (14), SA 1.45 (13) and TAS 0.46 (5) (Estimated Resident Population of Australian States and Territories, Australian Bureau of Statistics, Cat. No. 3201.0, 1993).

²⁴ Kirchgässner and Schimmelpfennig (1992: 297) have argued that closeness counts, in terms of elector turnout, "...only if it is relevant for electoral victories or defeats". In the Australian context, the system of compulsory voting ensures high voter turnout with no significant variation across electorates. 26 For a description of the diagnostic tests employed, see White (1993: Ch. 14).

²⁵ During the period in question, all state Legislative Assemblies and the federal government's House of Representatives (lower houses) were dominated by either the Australian Labor Party or Liberal/National Party Coalitions. However, the Australian Democrat Party, independents and small niche parties often hold the balance of power in the state Legislative Councils and the federal government's Senate (upper houses). The results of lower house elections are becoming less predictable, given the growth in numbers of independent and small party candidates, and the existing compulsory, preferential voting system.

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