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**FISCAL ILLUSION AND THE GRANTOR
GOVERNMENT IN AUSTRALIA
AN INDIRECT TEST OF
THE FLYPAPER HYPOTHESIS**

**Brian E. Dollery
and
Andrew C. Worthington**

No. 25

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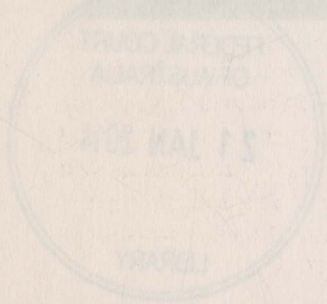
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FISCAL ILLUSION AND THE GRANTOR GOVERNMENT IN AUSTRALIA

AN INDIRECT TEST OF THE FLYPAPER HYPOTHESIS

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Despite the fact that there are *a priori* grounds for presuming that the intergovernmental grants characteristic of fiscal federalism in Australia may generate fiscal illusion, no empirical effort has been directed at this line of inquiry. The present paper seeks to go at least some way towards remedying this deficiency by evaluating the flypaper variant of the fiscal illusion hypothesis using a time series analysis of Australian Commonwealth expenditures for the period 1981 to 1992. The results of these estimations provide some tentative empirical support for the existence of a flypaper effect on public expenditure in Australia for the period under review.

1 INTRODUCTION

The literature on fiscal federalism has repeatedly identified the absence of close links between revenue-raising and expenditure as the worst economic feature of Australian federalism (Gramlich, 1985; Walsh, 1988). The resultant vertical imbalance has left states heavily dependent on financial grants from the federal government, and has been blamed for various ills, not least a lack of accountability, allocative inefficiencies, and excessive reliance on economically inefficient taxes. It is thus surprising that the potential impact of fiscal illusion on state expenditure has been largely overlooked, especially since one variant of this general hypothesis holds that financial grants between fiscal jurisdictions will affect public expenditure in recipient jurisdictions. This specific type of fiscal illusion, known as the flypaper effect, forms the subject matter of the present paper.

The paper itself is sub-divided into four main areas. Section 2 attempts to clarify the meaning of the flypaper effect and reviews previous empirical analysis of this form of fiscal illusion. The models and variables employed in the present context are set out in section 3, together with *a priori* theoretical expectations. The results of these statistical exercises are discussed in section 4. The paper ends with some brief concluding remarks in section 5.

2. EMPIRICAL ANALYSIS OF THE FLYPAPER EFFECT

In essence, the flypaper effect refers to the hypothesised ability of lump-sum grants to increase public expenditure by more than an equivalent increase in income from other sources (Dougan & Kenyon, 1988, p. 159). Developed by Courant, Gramlich and Rubinfeld (1979) and Oates (1979) the argument holds that budget-maximising politicians and bureaucrats use lump-sum grant revenues to expand public expenditure rather than return these revenues to taxpayers, either directly via rebates or indirectly through reduced taxes. Oates (1988, p. 77) has postulated that this is accomplished by fostering the illusion that not only are actual average tax rates falling, but the marginal tax-price(s) of public goods are also lower. As a result the electorate may be willing to support a higher level of spending than would have been the case had the fiscal parameters been accurately assessed.

Not all theorists agree on the conceptualisation of the flypaper effect. Indeed, Brennan and Pincus (1993, p. 2) argue that the orthodox view of the flypaper effect is anomalous since "... standard models of intergovernmental grants *in a federal system* have no features which distinguish them from models of resource transfers between entirely autonomous states...[these] models are models of *international aid* — not of *federal grants*" (original emphasis). Within a federation grants contingent upon transfers to some jurisdictions must be offset by losses to other fiscal jurisdictions so that no net positive income effect can exist. Thus any empirical evidence which does point to the existence of a flypaper effect provides a refutation of the orthodox view. This follows since "... if there is no increase in state income on average associated with increased federal grants, we should on the standard analysis expect no increase in state public spending; therefore any increase at all that is detected empirically represents a challenge to the prevailing orthodoxy" (Brennan & Pincus, 1993, p. 3) (original emphasis). However, whilst by definition this argument must hold, it is by no means clear that it applies to the flypaper effect as a form of fiscal illusion, since only a *perceived*

income effect and not necessarily a *real* income effect is the relevant behavioural variable.

Three general approaches have been pursued in the empirical analysis of the flypaper effect. Firstly, some researchers have included intergovernmental grants as one of many potential sources of fiscal illusion in regression exercises, and have found that grants are indeed an important determinant in the level of public good expenditure (Oates, 1975; Wagner, 1976; Goetz, 1977; Munley & Greene, 1978; Craig & Heins, 1980; Dilorenzo, 1982a; 1982b; and Breeden & Hunter, 1985).

Secondly, some writers like Courant, Gramlich and Rubinfeld (1979) and Oates (1979) argued that grants reduce the average price of public goods, and voters base their decisions on this price rather than the actual marginal tax-price. Both Grossman (1990) and Marshall (1989; 1991) represent recent examples of this empirical approach to the flypaper effect. Grossman (1990) posited that the degree of illusion caused by grants was a function of the level of indirectness. A federal grant, for example, would be more indirect or remote than a state grant in terms of local government finance, and as a result have a greater effect on the level of local expenditures (Grossman, 1990, p. 314). Grossman (1990) regressed various socio-economic variables and categories of grants, both federal and state, conditional and unconditional, against expenditures for local government areas. The results vindicated earlier studies (Courant, Gramlich & Rubinfeld, 1979; Oates, 1979) in supporting the stimulative effects of grants, and Grossman's (1990, p. 325) own hypothesis that "... federal unconditional grants generate, at the minimum, approximately twice the increase in local expenditures as do state unconditional grants".¹ In a slightly different approach, Marshall (1989; 1991) used an exogenous illusion variable, tax-windfalls, to analyse the flypaper illusionary hypothesis.² Using a set of socio-economic indicators (including the tax windfall) and a level of state

¹ Not surprisingly, the effect of unconditional grants at both state and federal level are more stimulatory than tied grants. This may reflect the ability of political agents to more easily obscure lump-sums of an indeterminant nature.

² Several authors (Oates, 1988; Marshall, 1989; 1991) have argued that the use of intergovernmental grants are prone to simultaneous equation bias in the sense that grant-matching is prevalent at the recipient level. The testing of such a hypothesis has usually called for the usage of the two-stage least squares approach. Marshall (1989; 1991, p. 1336) reasoned that the tax-windfalls in her study were the "... unintended by-product of national legislative action, independent of the states decisions concerning the level of expenditure" and were thus free of simultaneity.

expenditures, Marshall (1991, p. 1343) found results consistent with "... the absence of any systematic effect of the tax windfalls upon the level of state expenditure".³

And thirdly, researchers like Winer (1983) and Logan (1986) argued that intergovernmental grants may induce voters to believe that their tax burden is being transferred to other fiscal jurisdictions. Winer (1983, p. 127) began his study by observing that "... there is an obvious temptation for politicians to foster the belief that the cost of public services will fall disproportionately on someone else". In so doing he provided the rationale for the analysis of a federal system in which spending and taxation decisions are separated, and may therefore have a systematic and biased effect on the level of expenditures.⁴ Utilising Canadian provincial data, Winer (1983, p. 127) reasoned that since federal taxation is levied nationally, federal grants-in-aid may induce a belief among recipient province's voters that public services are being financed by non-residents. Consequently grants, and especially unconditional grants, reduce the perceived tax-price of provincial public goods and may well bias expenditures upward. This may be the case even if it is not possible to shift the taxation burden externally. As shown in Table 1, Winer's analysis regressed provincial income, federal grants and interprovincial grants against net provincial expenditures. He also included dummies for the different categories of recipient and donor provinces. Winer (1983, p. 137) found that the results indicated "... that the separation created by the grant system did reduce perceived tax-prices and increase expenditures" and that the "impact elasticity of grants with respect to expenditure for the poor Atlantic provinces (recipient) is about twice as large as that for the rich provinces (donor)".

³ A central proposition of Marshall's (1989) thesis is that various forces limit the ability of fiscal illusion to impact upon the level of expenditures of the public good. The empirical analysis yielded a positive, though insignificant, coefficient supporting such a hypothesis. Marshall (1991, pp. 1342-3) posited that rigidities in state decisions and uncertainty as to the nature of the windfall may have been instrumental.

⁴ A federal structure is prone to fiscal illusion of this form, regardless of whether the voter is aware of aid, or of the status of the local government (donor or recipient). If the voter is unaware of aid he may perceive a reduction in costs because of a higher portion of government spending in financing expenditures. If the voter is aware of aid, illusion may still prevail since the voter may well be unaware of his own provincial status (grantor tax share > local tax share) or that all communities in some sense finance a portion of aid to other provinces (intergovernmental-complexity) (Logan, 1986, p. 1310).

TABLE 1
SUMMARY OF THE MAJOR STUDIES OF THE FLYPAPER EFFECT

Author(s)	Data (a)	Method (b)	Dependent Variable	Independent Variables (c)	Major Findings
Winer (1983)	10 Canadian provinces, pooled time-series, cross-sectional. (panel) 1952/53 1969/70	TOLS	Net provincial expenditure	Per capita income (+ lagged income), <i>federal grants (+ lagged grants)</i> , <i>grants to other provinces (+ lagged other grants)</i> , dummies for population and provincial groups (donor and recipient)	Expenditure separation reduces perceived tax prices and increases expenditures. Grant elasticity higher in recipient provinces.
Logan (1986)	US national Time-series 1947-1983	OLS (linear and non-linear)	Per capita federal direct not-aid expenditure	<i>Per capita income, per capita total federal aid to state and local expenditure, per capita total state and local expenditure, unemployment rate, dummy for war.</i>	Study of fiscal illusion on grantor government. Grants expected to reduce perceived price of recipient government goods and raise price of grantor government goods leading to a fall in non-aid expenditure at grantor level.
Hammes & Wills (1987)	Canadian national Time series 1962-1984	OLS (log-linear and non-linear)	Real per capita federal non-aid expenditures Real per capita recipient government expenditures	<i>Perceived price of grantor (federal) expenditures, per capita national income, perceived price of recipient (provincial and local) expenditures.</i> <i>Perceived price of grantor (federal) expenditures, per capita national income, perceived price of recipient expenditures.</i>	Results similar to that of Logan (1986) in the modification of public good prices at grantor and recipient level. Support for hypothesis of "flypaper effect".
Marshall (1989;1991)	US states Cross-sectional 1986	TOLS	Expenditure per capita	Per capita income, estimated per capita tax windfall, per capita intergovernmental revenue, <i>price of public goods (employee salaries)</i> , <i>population, state share of final expenditure on public goods</i> , percentage urban population, population density.	Windfall revenue positive though insignificant in the effect on expenditure in line with competitive pressures limiting the effect of fiscal illusion.
Grossman (1990)	Virginian localities Cross-sectional 1982 and 1983	TOLS	Three expenditure categories; education, public safety and general government.	<i>Federal + state unconditional grants, state unconditional grants, federal + state categorical grants, median household income, tax price (local) share, percentage urban population, percentage black</i>	Unconditional grants are positive and significant in increasing the level of expenditure

Notes: a) Singular dates represent cross-sectional studies, intervals time series. Where two dates are given, different years for some cross-sectional variables have been used.

b) OLS/GLS/SLS — Ordinary Least Squares, Generalised Least Squares and Two-Stage Least Squares respectively.

c) Italicised independent variables indicate significant values at 90% or more.

Logan (1986), and later Hammes and Wills (1987), modified Winer's (1983) "partial equilibrium" approach by incorporating the effect of fiscal illusion on the grantor governments tax-price as well as that of the recipient. Logan based such an analysis on the fact that although voters were subject to incomplete information they were still rational, and that they were faced with the perception that federal taxes were rising but services were not, and that state taxes were falling but services were not (Logan, 1986, p. 1306). From this he surmised that the contrasting effects of misperceived tax-prices would mean an upward bias of recipient expenditures, and a downward bias of donor expenditures exclusive of grants. Table 1 shows that Logan (1986) regressed per capita measures of income, federal aid, state expenditure and unemployment against per capita federal non-aid expenditure for a US national time-series. The results indicated that a negative relationship did indeed exist between the level of federal expenditures on aid, and the level of federal non-aid expenditures: proof that modification of tax-prices occurred at the donor level (Logan, 1986, p. 1317). Such results inferred *per se* that tax-prices were changed in the opposite direction for recipient expenditures, which supports the fiscal illusion hypothesis (O'Brien & Shieh, 1990, p. 201). Hammes and Wills (1987) used an identical analysis for Canadian data and arrived at a similar conclusion.⁵

Despite empirical support for the flypaper effect, several alternative hypotheses have been developed. Romer and Rosenthal (1979) argue that where the public budgetary agenda is dominated by political agents, the outcome may be determined by threat tactics. In this manner an upward bias in expenditures need not infer any systematic illusion such as the flypaper effect. Dougan and Kenyon (1988) explain the flypaper effect as the result of lobbying by local pressure groups. As a result the stimulative effect of grants need not be the outcome of a widespread tax-price illusion but rather the alteration of the relative wealth positions of various pressure groups (Dougan & Kenyon, 1988, p. 169). Oates (1988) has drawn on both Romer and Rosenthal (1979) and Dougan and Kenyon (1988) to argue that normal political budgetary processes may fulfil the

⁵ Hammes and Wills (1987) argued that the issue of whether fiscal illusion existed or not in terms of the flypaper effect depended on the transfer of income. If *a priori* reasoning indicated that a transfer of income from donor to recipient voters did indeed take place then a higher level of recipient government expenditure was the result of fully-informed rational actors and not fiscal illusion. If such *a priori* reasoning was not forthcoming then illusory influences must be in play (Hammes and Wills, 1987, p. 713).

theoretical role of fiscal illusion in biasing expenditures upwards, and that the stimulative effect of grants is incorrectly attributed to the flypaper illusion.

3. MODELS AND HYPOTHESES

As we have seen, much previous empirical analysis of the flypaper effect has focused on the effects of federal transfers on recipient jurisdictional expenditures. This approach accepts the basic proposition underlying the flypaper effect that intergovernmental grants lower the perceived tax-price of recipient expenditures.⁶ Moreover, Logan's (1986, p. 1306) "dual-illusion hypothesis" holds that a similar but reversed illusion will affect voter's perceptions of grantor expenditures. Within a grantor/recipient model, increases in grants will lower the perceived price of recipient expenditures, but will increase the price of grantor expenditures, and therefore make federal expenditures more expensive. Accordingly, "... when a government unit increases its level of intergovernmental grant disbursements, the demand for its services falls" (O'Brien & Shieh, 1990, p. 201).⁷ In general, a reduction in grantor "own" expenditures as a result of modifications in the perceived prices of grantor and recipient expenditures should offer alternative *prima facie* evidence of fiscal illusion.

Table 2 shows the models and variables used for analysing the effect of fiscal illusion on federal expenditures. The reduced form expenditure equations are adapted from Logan (1986) and Hammes and Wills (1987), and will be evaluated in both (1) linear and (2) log-linear forms. In common with the two previous approaches, regression analysis is used to evaluate the significance of time-series modifications in perceived prices on non-grant expenditure.

⁶ Oates (1979) and Courant, Gramlich and Rubinfeld (1979) posit that the flypaper effect occurs when the perceived fall in recipient public good prices increases the demand for recipient expenditures. The illusionary effect occurs since the increase in grantor government taxes reduces voter's incomes. Winer (1983) argues that the fall in the perceived price of recipient expenditures occurs because voters believe the burden of taxation falls on other jurisdictions. Both approaches may be modelled in the manner of Logan (1986) and Hammes and Wills (1987).

⁷ The hypothesis states only that total grantor expenditure inclusive of grants could be higher, but grantor "own" expenditure will fall (Logan, 1986, p. 1306).

TABLE 2
MODELS AND VARIABLES FOR FEDERAL EXPENDITURE AND FISCAL ILLUSION

Method			
Times series analysis of Australian Commonwealth expenditures 1981-1992			
Models			
(1) $Eg_t = \beta_0 + \beta_1 (1/Pg')Y_t + \beta_2(Pr'/Pg')_t + \beta_3(1/Pg')_t + \beta_4U + u_t$			
(2) $\ln Eg_t = \ln \delta_0 + \ln \delta_1 (1/Pg')Y_t + \ln \delta_2(Pr'/Pg')_t + \ln \delta_3(1/Pg')_t + \ln \delta_4U + v_t$			
Variables	Details	Data Source(s)	Expected Sign
Eg	Real per capita federal direct (non-grant) expenditures in the t-th period.	<u>Australian National Accounts: National Income, Expenditure and Product 1981-1992</u> (ABS) Cat. 5204.0 <u>Australian National Accounts: State Accounts 1981-1992</u> (ABS) Cat. 5220.0	
Pg'	Perceived price of grantor (federal) expenditures in the t-th period.	<u>Australian National Accounts: State Accounts 1981-1992</u> (ABS) Cat. 5220.0	-
Y	Real per capita national income in the t-th period.	<u>Australian National Accounts: National Income, Expenditure and Product 1981-1992</u> (ABS) Cat. 5204.0	+
Pr'	Perceived price of recipient (state and local) government expenditures in the t-th period.	<u>Australian National Accounts: State Accounts 1981-1992</u> (ABS) Cat. 5220.0	+
Rr	Real per capita recipient (state and local) government expenditures in the t-th period.	<u>Australian National Accounts: State Accounts 1981-1992</u> (ABS) Cat. 5220.0	+
U	Unemployment rate as a proxy for institutional constraints in the t-th period.	<u>Australian Year Book 1989, 1990, 1991, 1992</u> (ABS) Cat. 1301.0	+
(1/Pg')Y	Fraction of income directed to grantor government expenditures	As for above components	-
(Pr'/Pg')	Relative perception of grantor and recipient public good prices in the t-th period.	As for above components	-
(1/Pg')	Relative importance of federal grants in total federal expenditure in the t-th period.	As for above components.	-

Such an approach is not without criticism. As Logan (1986, p. 1317) has noted "... it is a very simple framework for describing expenditure determination in a federal system ... the model can be regarded as a simple expository tool for a first attempt at analysing grants in a more general context". In particular, the model employed identifies only that a modification in grantor prices has occurred, not the source of this modification. Given that the flypaper hypothesis states that illusion exists only if a transfer of income by the federal system to the median voter has not occurred, the model is unable to differentiate between rational, informed actions and those exhibiting illusionary behaviour. At best "... it may be fruitful to analyse general equilibrium grant effects with other models of grantor/recipient expenditure determination" (Logan, 1986, p. 1317).

The dependent variable is real per capita federal non-grant expenditures (E_g). Expenditure is an imperfect proxy for actual public good output, although it has been accepted in the absence of a more suitable measure (Logan, 1986; Hammes & Wills, 1987). The level of expenditure net of grants is used, given that the flypaper effect hypothesis predicts that non-grant federal expenditures will fall, even though total expenditures may well increase.

The first composite independent variable $(1/P_g')Y$ represents the fraction of income directed to grantor government expenditure under the perceived price of grantor services (P_g'). Since P_g' is not directly observable, a proxy used by Logan (1986) and Hammes and Wills (1987) is the ratio of federal grants to federal direct (non-grant) expenditures. Given that "... grantor aid lowers the perceived price of recipient government expenditures and raises the perceived price of grantor government expenditures ... the coefficient on income falls ... as the perceived relative price changes encourage voters to spend a larger fraction of income on recipient government expenditures" (Hammes & Wills, 1987, p. 709).

The second variable (Pr'/P_g') represents the perceived relative prices of grantor (federal) and recipient (state/municipality) expenditures. In order to calculate this measure, a proxy for Pr' has also been derived, being the ratio of total federal grants to total state and municipal expenditures (Logan, 1986, p. 1312; Hammes & Wills, 1987, p. 709). The coefficient on the measure (Pr'/P_g') should be negative, indicating that as the perceived price of recipient expenditure falls relative to the perceived price of grantor expenditures, federal non-grant expenditures will fall.

The next variable is $(1/P_g')$, which is the relative importance of federal grants in terms of total federal expenditure, direct and indirect. As this measure increases, the concentration of disbursements upon grants should further contract expenditures of the recipient government.

Finally, Logan (1986) and Hammes and Wills (1987) have supported the inclusion of an institutional constraint designed to measure automatic variations in grantor expenditures. This has been proxied by the unemployment rate (U) given that there are likely to be "... automatic variations in federal government expenditures during times of higher unemployment" (Hammes & Wills, 1987, p. 709). As an alternative, Logan (1986) used both unemployment and a qualitative variable for war for these unobservable institutional constraints. The expected coefficient on unemployment when regressed against federal non-grant expenditures should be positive.

4. RESULTS

The model of federal expenditure and fiscal illusion in Table 2 allowed for the analysis of the dual hypothesis of the flypaper effect. In this approach, the grant system provides a distortion of the tax-price of the public good for both the recipient and donor, so that the relevant perceived tax-price of the public good falls and increases respectively (Winer, 1983; Logan, 1986; Hammes & Wills, 1987; Logan & O'Brien, 1989; O'Brien & Shieh, 1990). Moreover, evidence of a decrease in donor (federal) non-grant expenditures as a result of an increase in the tax price of federal expenditures would provide *prima facie* evidence of fiscal illusion at the level of the recipient (state). The results of the time-series analysis of Australian Commonwealth expenditures 1981-1982 presented in Table 3, correspond directly to the linear and log-linear models presented in Table 2.

Model 1 in Table 3 details the results of a linear regression of four composite independent variables on the dependent variable of real per capita non-aid grantor expenditures. The coefficient for the variable $(1/P_g)Y$, which represents the fraction of income directed to grantor expenditures, is positive and significant, conforming to *a priori* expectations. The coefficient for the second variable (Pr/P_g') , representing the perceived relative price of grantor (federal) to recipient (state) expenditures, is also significant and conforms to the expected sign. The third variable's coefficient representing the relative importance of the grant role in the federal structure $(1/P_g')$ also corresponds to the *a priori* sign and level of significance. Finally, the coefficient for the institutional constraint U (unemployment) is positive and significant, indicating that an increase in institutional obligations is associated with an increase in federal non-grant expenditure. The coefficients obtained correspond with the Canadian study of Hammes and Wills (1987) which supported the

fiscal illusion hypothesis, but run counter to the US evidence of Logan (1986).⁸ However, it has been argued that to some extent the Logan (1986) results are also supportive of fiscal illusion, the divergence in implications coming from "... certain institutional differences which may change the interpretation placed upon the similar numerical results" (Hammes & Wills, 1987, p. 712).

In terms of the econometric suitability of the model, the DW statistic (2.14812) lies above the inconclusive range (0.339–1.913), indicating the absence of autocorrelated errors. Additional tests for autocorrelation, the Lagrange multiplier and Box-Pierce-Ljung methods, also support this finding. However, a Ramsay RESET model specification test indicates that the linear model is functionally misspecified, similar to the procedure and results observed by Logan (1986) and Hammes and Wills (1987).

In accordance with the above, and the studies of Logan (1986) and Hammes and Wills (1987), a log-linear specification was employed in Model 2. The signs on the coefficients are unaltered, as are the levels of significance. This accords with earlier work; "... the estimated coefficients for the alternative were found to be significant (and virtually identical to the estimated coefficients in [the linear model])" (Logan, 1986, p. 1317). The DW statistic (2.3278) once again fails to reject the null hypothesis of no autocorrelation, similarly for the alternative tests. However, the Ramsey RESET specification tests fail to reject the null hypothesis of model correctly specified and we may conclude that the log-linear form is functionally superior to that of Model 1. A test employed to select between linear and log-linear formulations also supports this notion. These results confirm those of Logan (1986, p. 1317) where "the nonlinear specification ... does seem to do a better job of explaining the data. Both rounds of the test indicate a strong preference for this model", and are stronger than the Hammes and Wills (1987, p. 713) outcome that "... the results are ambiguous".

⁸ Hammes and Wills (1987, p. 710) maintain that "... the differences in the US and Canadian grant systems are important" in explaining the contrasting results (as presumably with Australia, the US and Canada). Logan (1986, p. 1317) argues in turn that there is no reason why the US evidence is unassailable; "... perhaps a look at data from other countries would be useful to see if this effect [the observed negative relationship between grantor expenditure and perceived prices] is widespread".

TABLE 3
RESULTS OF REGRESSION ESTIMATIONS FOR FEDERAL
EXPENDITURE AND FISCAL ILLUSION

Variable	Model 1	Model 2
CONSTANT	0.012374*** (0.00182)	-21.503*** (2.5875)
(1/Pg')Y	0.222E-02*** (0.39301E-07)	1.5893*** (0.24510)
(Pr/Pg')	-0.739E-02*** (0.1147E-02)	-1.7724*** (0.29833)
(1/Pg')	-0.604E-02*** (0.9075E-03)	-2.2219*** (0.29017)
U	0.4569E-04** (0.21358E-02)	0.11077** (-0.038323)
ESS	0.40744E-07	0.22582E-02
R2	0.9785	0.9829
R2 adjusted	0.9662	0.9732
DWSTAT	2.14812	2.32728
FPE	0.8245E-08	0.45701E+03
LOG AIC	-18.668	-7.7448
LOG SC	-18.465	-7.5427
GCV	0.9978E-08	0.55302E-03
HQ	0.7249E-08	0.40179E-03
RICE	0.2037E-07	0.11291E-02
SHIBATA	0.6224E-08	0.34500E-03
SC	0.9561E-08	0.52995E-03
AIC	0.7812E-08	0.43300E-03

Values in parentheses are the corresponding standard errors. Asterisk(s) represent the level of significance; * -90%, ** -95% and *** -99%. Bold diagnostic test denotes the model that is "best" for the criterion. Diagnostic tests may only be valid for unrestricted OLS regressions.

The methodology employed and the results obtained in the "dual-illusion" hypothesis above are consistent with the US findings of Logan (1986) and the Canadian study of Hammes and Wills (1987). In these studies, "... federal non-aid direct expenditure [is] inversely correlated

with federal grant aid to the provincial and municipal governments" (Hammes & Wills, 1987, p. 712) as a result of modifications in the perceived relative prices of grantor and recipient expenditures. By itself this would appear to lend support for the distortionary effect of grants at the grantor level, and thereby the fiscal illusion hypothesis of the flypaper effect. However, as noted previously, the limitations of the model are readily apparent, and it is "... a very simple framework ... a simple expositional tool for a first attempt at analysing the effects of grants in a more general context" (Logan, 1986, p. 1317).

5. CONCLUDING REMARKS

To the best of our knowledge the present paper represents the first attempt at the empirical analysis of fiscal illusion in Australia caused by the existence of intergovernmental grants between the states and the federal government. The results from the estimation procedures employed provide some support for the existence of the flypaper effect in Australia. However, given the inherent limitations in the model underlying these estimations, the results obtained should be treated with caution. Further empirical work on the flypaper effect in the Australian constitutional milieu is necessary to confirm this tentative finding.

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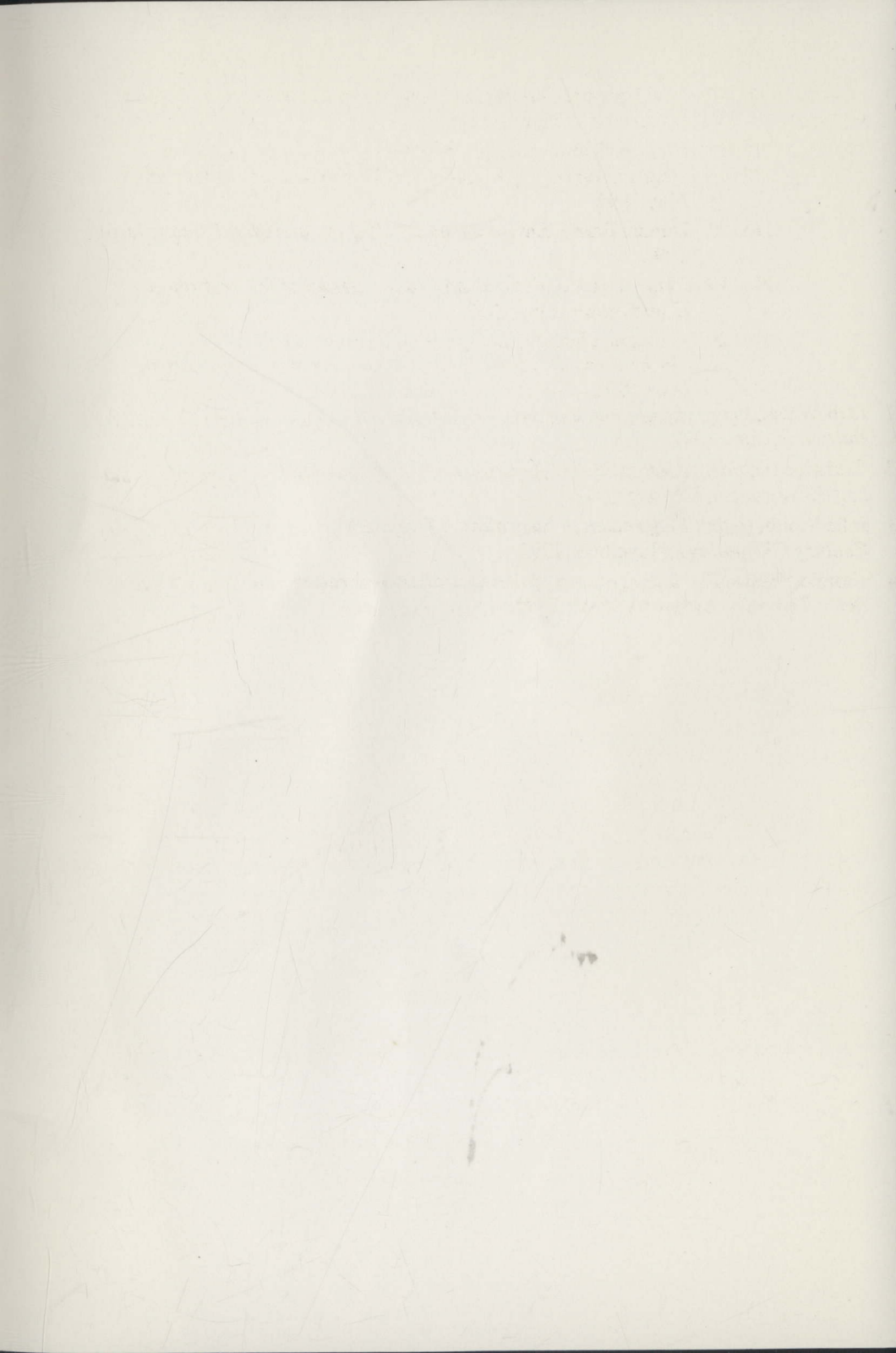
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