

# A Paretian Approach to Fiscal Decentralisation and Economic Growth: a Preliminary Investigation of the Australian Experience

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*Abstract:* Even though important analytical concepts named after Vilfredo Pareto were, and still are, employed in public finance theory, Pareto was actually a harsh critic of the Italian public finance tradition, especially the classic studies on public goods and the reliance on the benefit principle when analysing fiscal activity. Instead, he considered the primary feature of the fiscal phenomenon to be the redistribution of economic goods resulting from taxes, expenditure and debt, and suggested that this phenomenon was more amendable to sociological analysis than pure economic analysis. A largely overlooked aspect of Pareto's *Trattato di Sociologia Generale* is the discussion of the relationship between social equilibrium and long period growth. This study is an exploratory 'fiscal sociology' that extends Pareto's proposition on the relationship between economic growth and social equilibrium by developing a range of 'economic' and 'sociological' propositions on the long period relationship between fiscal decentralisation and economic growth. These propositions are investigated with reference to Australian fiscal federalism in the twentieth century.

*Key Words:* *Economic Growth, Fiscal Decentralisation, Fiscal Sociology, Gino Borgatta, Vilfredo Pareto.*

*JEL Codes:* *A14, B41, H10, H70*

*Who determines the correct equilibrium between State's rights and individual rights?*

Vilfredo Pareto: *Trasformazione della Democrazia* (1921[1984], p.30)

## 1) Introduction

The study of fiscal decentralisation has progressed from theoretical modelling to empirical testing of the dynamic relationship between fiscal decentralisation and economic growth. From static theory that recognised the local character of sub-nationally provided services, such as Oates' decentralisation theorem (Oates 1972), a strong case has developed for the view that fiscal decentralisation enhances efficiency. Subsequent to this, an expectation has emerged that decentralised political and fiscal constitutions will lead to increases in structural reform at the regional level that encourages innovation by the various levels of government, resulting in enhanced rates of economic growth (Feld, Zimmermann, and Döring 2004).

However, empirical studies on the relationship between fiscal decentralisation and growth are somewhat equivocal. Fritz Breuss and Markus Eller (2004) highlight the mixed results, which they attribute to: misspecification related to omitted variable bias, problematic measurement of fiscal decentralisation; and bi-directional causality. Their concern with bi-directional causality suggests that fiscal decentralisation may be more highly related to growth for societies with relatively higher per capita incomes because higher per capita income is not only a result of growth, but it also provides the capacity to fund the additional costs of public administration associated with greater fiscal decentralisation. As a consequence, the relationship may alter with the economic context of society; with the cost of administering a constitutionally and fiscally decentralised system (duplication, lower economics of scale) possibly exceeding benefits in the case of relatively low income societies.

A more general issue to consider is whether the relationship between fiscal decentralisation and growth is influenced by the prevailing social state, and *vice versa*. Within the Paretian system, the central issue is whether the social consequences of the fiscal framework are mainly economic or sociological. If the economic effects dominate, fiscal decentralisation can be expected to be positively related to economic growth under all social states. However, if sociological effects dominate, then fiscal decentralisation and growth may be positively related to economic growth under some social states and negatively related in other social states. This is an issue for fiscal sociology, the sub-discipline that considers the relationship between fiscal and social phenomena. While there are many approaches to fiscal sociology (McLure forthcoming), this exploratory study adopts a Paretian perspective where the social state is considered with respect to forces that pull society towards a centralised ‘social equilibrium’ and forces that push society towards a decentralised ‘social equilibrium’.

Section 2 provides an overview of the Pareto’s synthetic notion of ‘social equilibrium’ and his proposition on the relationship between growth and social equilibrium. It notes the relationship between fiscal activity and growth specified by Gino Borgatta, a direct follower of Pareto, and considers how this can be modified to consider the relationship between fiscal decentralisation, social equilibrium and economic growth. Competing hypothetical propositions are developed, firstly on the presumption that economic effects are the dominant aspect of fiscal events and then on the presumption that sociological effects are dominant. In all cases, the hypothetical propositions are specified with reference to the state of social equilibrium. Section 3 examines fiscal federalism in Australia since Federation (1901). An index of fiscal decentralisation, based on Vo (2005), is estimated for Australia and five distinct fiscal periods are identified. Section 4 is a descriptive investigation of whether *prima facie* evidence from the history of Australian fiscal federalism supports the economic or sociological propositions on the relationship between fiscal decentralisation and growth. The results provide tentative support for the view that the relationship between fiscal decentralisation and economic growth is influenced by the state of social equilibrium, but, at this stage it is unclear whether the dominant relationship is economic or sociological. Section 5 details the way forward for future research by providing a formal specification of the relationships economic growth, fiscal decentralisation and the state of social equilibrium which will permit researchers to test the economic and sociological propositions against data for Australian fiscal federalism. Section 6 concludes by highlighting the importance of fiscal sociology and the need for more research on fiscal decentralisation using this approach.

## **2) Paretian ‘Social Equilibrium’, Growth and Fiscal Decentralisation**

As Pareto’s works, and the Italian fiscal sociology that he inspired, have been of exclusively historical interest for more than 50 years, a paper purporting to use the Paretian approach to

investigate the relationship between fiscal decentralisation and growth will no doubt take modern public finance scholars by surprise, and may well be received with a considerable degree of scepticism. It is therefore necessary to preface this Section with some general observations on why the Paretian approach may still be relevant to studies of the particular relationship between fiscal decentralisation and growth.

### *2.1 Current Relevance of the Proposed “Paretian Approach”*

The approach taken in this study has contemporary relevance for three main reasons.

First, while the study is ‘Paretian’, it does not rely on Pareto’s analytical instruments. Rather, it considers and develops hypothetical propositions that derive directly from the Paretian tradition in fiscal sociology. There is no doubt that the tools of Paretian fiscal sociology are outdated, especially when dealing with the impact of specific fiscal decisions. In fact, attempts to apply Paretian fiscal sociology to detailed fiscal arrangements achieved only limited success, which goes some way to explaining the demise of this approach in Italy during the first half of the last century (McLure 2005a).

Second, Pareto’s view of society is particularly relevant to this issue because the notions of centralisation and decentralisation in the social state accurately characterise his understanding of social dynamics and economic growth. For example, the sociological analysis in the *Trattato di Sociologia Generale* (Pareto 1916 [1935]) is based on an analogy with rational mechanics and observations of social movement are interpreted in terms of a stable or unstable ‘social equilibrium’. Pareto’s application of this sociological analysis to contemporary society in *Trasformazione della Democrazia* (Pareto 1921[1984]) discusses movement to new equilibria as a response to the net effect of centrifugal (or decentralising) and centripetal (centralising) social forces.<sup>1</sup> When dealing with substantive long run issues related to centralisation and decentralisation, the general Paretian approach still appears to offer considerable insight, particularly concerning how the relationship between fiscal decentralisation and growth may be influenced by the state of social equilibrium.

Finally, preliminary data are now available to undertake exploratory investigations into Paretian hypothetical propositions on the relationship between fiscal decentralisation and growth, at least in the case of Australia. This was not the case when fiscal sociology was in its formative years in the early twentieth century.

### *2.2 Non-logic, Endogenous Preferences and Public Finance*

When considering the economic state in a purely static context, Pareto was well satisfied with Walrasian general equilibrium. Indeed, his contributions in that tradition are of great historical significance. However, when considering dynamic issues, particularly economic growth and fiscal decisions, he relied extensively on his general sociology, mainly focusing on ‘social equilibrium’ or the interdependencies between the economic, political and socio-behavioural states. Italian followers of Pareto, most notably Gino Borgatta (1920) and Guido Sensini (1932), extended his sociological observations on the relationship between fiscal events, social equilibrium and growth into a sub-discipline known as fiscal sociology.

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<sup>1</sup> This is discussed in some detail in McLure (2001, pp. 155-178). However, it should be noted that this interpretation, or more correctly the emphasis to various writings when arriving at this interpretation, is not without its critics. Most notably, Warren Samuels characterized McLure’s work as “Pareto in modern mode” (Samuels). The relative interpretative positions of McLure and Samuels are discussed in McLure (2005b).

Perhaps the main reason why Pareto treated dynamic issues in sociological context is that he was unwilling to treat sentiment (values, beliefs) as a purely constant influence on human conduct in the same objective circumstances. For conduct related to the political state, he regarded subjective intent as interdependent with the objective phenomena: action toward an objective goal in response to a particular subjective end modifies the subjective intent, and vice-a-versa. The resulting conduct is not illogical; it is just that the interaction between reason and sentiment is a fundamental attribute of human conduct, so utility is endogenous. Unlike the modern approach to endogenous preferences, where they are determined subject to an overarching concept of inter-temporal logic, the Paretian notion of non-logical conduct does not presume logic in social and political choices on issues related to current and future costs and benefits.

Consequently, while modern economists may instinctively associate the Paretos' perspective with what is often referred to as Paretian welfare theory<sup>2</sup>; this is not how Pareto generally approached fiscal and public policy issue. He criticised many aspects of the Italian tradition in public finance<sup>3</sup>, especially the extension of analysis of voluntary market exchange to involuntary exchange and the notion of "public needs" (expressed by Mazzola, and other Italian economists, in a manner consistent with Samuelsonian public goods) because this approach did not explain the forces that lead governments to make fiscal decisions. His approach is also inconsistent with the Pigou's notion of externalities and social returns<sup>4</sup> because the impact of political and fiscal events on non-logical conduct (endogenous preferences) was fundamental to Pareto's analysis of public policy and his methodology was predicated on experimental observation of force that determine 'what is', not arguments for what could be.<sup>5</sup>

Paretian fiscal sociology eventually emerged as a distinct approach to public finances, but one that complemented public economics. When the presumption of logical conduct provided a reasonable approximation to the observed fact, Borgatta, Sensini and others applied the orthodox economic approach to fiscal issues. However, they embraced sociological analysis when the assumption of logical conduct was inconsistent with observed reality. This study is undertaken in the same mode. That is, there is no attempt to reject various economic approaches to the study for fiscal decentralisation and growth. Rather, this is an exploratory study to determine whether the sociological approach can add any new insights into this relationship.

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<sup>2</sup> The adjective "Paretian" is used with some justification in reference to the first two fundamental welfare theorems, and also in discussion of economic criteria used in the Bergson-Samuelson and Arrow social welfare functions.

<sup>3</sup> The Italian tradition in public finance is reviewed and assessed in Bellanca (1993).

<sup>4</sup> The approach to welfare economics and public finance advocated by A. C. Pigou, which came to dominate much discussion on public policy issues, is quite distinct from the approach to policy analysis advocated by Pareto. Welfare economics is also sometimes called Pigovian, which is appropriate when welfare implications are considered in the context of non-paretian notions such as externalities and social returns.

<sup>5</sup> Pareto used comparative statics in economics to investigate what could be (e.g. demonstrating downward sloping demand curve and welfare gains from free competition), but he limited this to the case where he regarded exogenous preferences as a reasonable approximation to reality, such as the state of economic equilibrium. When conduct is non-logical (preferences are endogenous) and analysed as if it were logical, Pareto did not see economic analysis of normative possibilities as necessarily representing real alternative real states. Pareto advocated the sociological approach to the treatment of fiscal issues because he regarded the non-logical element as dominant in political and fiscal arrangements.

### 2.3 Social Equilibrium and Growth

Pareto's *Sociologia* is a general theory of social equilibrium. It was constructed on the synthetic union of equilibria for three distinct, but related, social states: the economic state; the political state; and the socio-behavioural state.

Within this system, the economic state has two elements: a logical element and a non-logical element. The logical element is the subject of the pure theory of economic equilibrium, which is concerned with market forces associated with a given initial distribution of resources. The non-logical element is the subject of sociological analysis. While Pareto's pure theory of economics provides the first approximation to the economic phenomenon, it is a static theory. General sociology, however, considers the long period implications of economic dynamics and variations in the distribution of resources related to purely historical, and essentially non-logical, processes. In particular, in some periods of history, access to resources may be dominated by high-risk economic entrepreneurs and workers without secure employment but who benefit from high risk economic activity (or 'speculators' in Paretian terminology); while in other periods of history low-risk entrepreneurs and workers who have secure employment (essentially 'rentiers' in Paretian terminology<sup>6</sup>) may dominate. The variations in their respective access to resources are not fully explained by the marginal theory of distribution in light of risk profiles of heterogeneous savers and investors. To a considerable extent it is due to historical factors influenced by endogenous non-logical conduct<sup>7</sup>.

In regard to very long period relationships, the relative control of resources by rentiers and speculators is important because changes in the prevailing economic sentiment may change activity levels and impact on the potential for economic growth. In view of this, Pareto sometimes divided the economic phenomenon in two parts: 'the economic part', for when the struggle between speculators and rentiers is benign and conduct is logical; and the 'sociological part', for when the dynamic struggle between rentiers and speculators influences the distribution of economic good and conduct is non-logical (Pareto [1918] 1980, p.733).

The political state concerns the balance between individual and collective rights associated with the actions of governing elites and their opponents. This balance is political and constitutional in character, but for the purpose of this study it is important to recognize that the degree of fiscal decentralisation provides an indicator of the degree of individuality accommodated by the political equilibrium. In this regard, a heavily decentralised fiscal constitution will be more conducive to political activity that is responsive to the will of individuals than a heavily centralised fiscal constitution, which is more likely to act in favour of some perceived collective need. However, this relationship is constrained by the strategic need of political elites to form alliances with the economic elite. Consequently, even under a fiscal decentralized constitution, the political state is likely to be less individualistic (i.e. less responsive to public demand) when the economic elite is dominated by low risk rentiers than when it is dominated by high risk speculators.

The socio-behavioural state observed in the broader society considers the degree of conformity in general social conduct. More specifically, it considers the balance between conformist and non-conformist behaviour relative to the prevailing social precepts in a given

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<sup>6</sup> Rentiers in this context are not simply 'savers'. Savings are borrowed by investors who may have speculator attributes (high discount rate, variable income flow, high risk) or rentier attributions (cautious, secure income flow, low discount rate, low risk). Savers may also exhibit speculator and rentier attributes.

<sup>7</sup> Even when the issue of non-logical conduct aside, Pareto still had serious reservations about the marginal approach to production theory (Schultz 1929).

society at a given time. This balance reflects the satisfaction that individuals experience from different forms of social conduct, which is substantively a reflection of human sentiments (which Pareto treated in through his theory of ‘residues’).

All of these social states have a centralisation-decentralisation dimension. Social centralisation is mostly strongly linked to a low risk economic state, a political state that emphasises the “collective” need over individuality and a socio-behavioral balance that emphasises conformity. These states are associated with centripetal forces. Social decentralisation is most strongly associated with a high risk economic state, a political state that emphasises “individual” needs over the collective and a socio-behavioural balance that emphasises diverse, or non-conformist, conduct. These states are associated with centrifugal forces. Paretian study of social equilibrium is essentially a study of the stability and change in the economic, political and socio-behavioral states.

Importantly, at any given point in time, a stable social equilibrium requires the economic and political equilibria to be accommodated within the prevailing socio-behavioural balance. Conformists and non-conformists may be persuaded<sup>8</sup> by economic and political elites to alter the form of their conduct without threatening the stability of social equilibrium, but they are unlikely to make the substantive switch from being a conformist to being a non-conformist. Consequently, the Paretian association of the economic and political states with the conduct of economic and political ‘elites’ should not be confused with C. Wright Mills’ (1956) notion of the ‘power elite’, where social authority is interpreted as laying almost entirely within the hands of elite networks, leaving the masses at the mercy of elites. In Paretian social theory, elite authority is always conditional on mass sentiment: there is no suggestion that interconnected elites exert unconditional power over the masses. The phrases ‘enterprise’ and ‘government and political parties’ could be respectively substituted for Pareto’s notion of economic and political elites without doing too much violence to his conception.

Over the longer period, Paretian social equilibrium is not stable, it is cyclical. Social movement results in a succession of new political and economic elites that replace the elites in demises. These cycles represent the dynamics by which the economic and political states change, with enterprise becoming more or less inclined to risk and political elites more or less inclined to support individual or collective need. The succession of elites changes the social and economic states, and the consequent potential for growth, but movement in the socio-behavioural balance is less susceptible to the influence of volatile cycles.

#### *2.4 Pareto’s Sociological Proposition on Economic Growth*

In regard to the relationship between the economic and political states, Pareto tended to highlight patron-client relationships. When the dominant sentiment of the economic state emphasised high risk, this tended to be accommodated by the prevailing political sentiment through strategic interaction. On the particular question of economic growth, Pareto argued that growth was positively linked to a large portion of speculators in the economic elite (high risk investment sentiment) in circumstances where the socio-behavioural balances of the working masses are conformist:

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<sup>8</sup> Persuasion can take the form of quasi-logical explanation mixed with sentiment. Pareto termed such explanations as ‘derivations’ because rationalised social propositions derive from sentiment, giving an ethical principle or social doctrine the appearance of being established through reason. Alternatively, persuasion can be achieved through the exercise of direct force, such as through criminal codes and consequent punishment.

“ ... the enormous development of economic production, the spread of civilisation to new countries, the remarkable rise in the standard of living among all civilized peoples, are in large part the work of speculators. But they have been able to do that work because they came from populations in which class II residues were numerous and strong ...”

(Pareto[1916] 1935: 1578)

Speculators are not limited to the financial sector in Pareto's analysis. Speculators are also members of the economic elite in the real sector who similarly have high discount rates: they take large commercial risks and their activities are the source of economic innovation and increased productivity. However, he argues that this only advantages growth when significant access to capital by high risk-taking speculators is balanced by a broad population mass that has low risk in the form of rentier savers and working masses with conformist views because they hold strong sentiments in favour of preserving the economic and social state (i.e. class II residues). Henceforth, this is referred to as “Pareto's sociological growth proposition”.

The presumption here is that adventurous risk takers are economically beneficial to the collective when their activities are underwritten by the timid and risk averse who seek security in income flows, either through secure investments or secure employment. Speculators may lose their money, but more importantly they also lose other people's money. Growth maximising is not achieved automatically, in part because individuals' risk profiles are linked to their personality, so the growth outcome depends on the composition of the population. Moreover, there is no presumption that voluntary decisions maximise growth subject to constraints related to the composition of the population and its associated risk profile. This is because non-logic plays a role in the composition of prevailing elites (the governing political elite may be relatively collectivist while the alternative may be relatively individualist, which may impact on the composition of economic elites). Non-logical factors may also act as a variable influence on individual's decisions on risk matters.

### *2.5 Fiscal Decentralisation, Social Equilibrium and Growth*

Pareto's growth proposition was taken up most forcefully in fiscal sociology by Gino Borgatta (1920). He hypothesised a causal link between economic growth and growth in public expenditures. In short, he accepted Pareto's contention that the basic result of fiscal decisions was a redistribution of economic goods, but suggested that the consequent static economic welfare loss, or what Pareto and Borgatta referred to as the “destruction of wealth”, is more than compensated for by the improved use of capital resulting from fiscal redistribution. In this regard, speculators were presented as the typical net beneficiaries of fiscal activity, because they have an above average capacity to avoid tax (or the burden of debt when taxes are used to finance debt) and benefit from government related business undertaking.

“... the indisputable fact of the great increase in private wealth over the last 150 years is indirect, but sufficient, empirical evidence that the destruction of wealth resulting from the rise of new governing groups in modern democracies has been compensated, and been superseded, by favourable repercussions from factors that create wealth to which such movement has undoubtedly contributed. The most important explanation of this fact must be found, it seems, in the economic capabilities of groups in which wealth is concentrated as a consequence of fiscal policy and the opportunity this gives to their more active, ingenious, resourceful elements, to organise new efforts and enterprises, to create large industry, ....”

Borgatta's position is discussed in some detail in McLure (2004). For the purpose of this study it suffices to recognise that Italian fiscal sociology linked fiscal activity, and consequent net benefits for 'speculators', to Pareto's growth proposition. However, no attempt was made to link fiscal decentralisation to Pareto's growth proposition. This is, perhaps, surprising because the notions of centralisation and decentralisation were important elements of Paretian social equilibrium. The contribution of this study, then, is to develop hypothetical propositions on the relationship between fiscal decentralisation and economic growth from Pareto's *Sociologia* and Borgatta's contention that redistribution for fiscal activity largely benefits high risk-taking speculators.

In relation to the question of fiscal decentralisation, the fundamental question is whether the economic impact of fiscal redistribution (destruction of wealth) is more than, or less than, offset by the sociological impact of fiscal redistribution on economic growth. If the economic impact dominates the sociological, then fiscal decentralisation will lead to less destruction of wealth and the potential for economic growth will be greater for all states of social equilibria. However, if the sociological impact dominates, then the relations between fiscal decentralisation and growth will vary, depending on the state of social equilibrium. As fiscal redistribution is likely to be greatest in a centralised fiscal arrangement due to the weaker link between community demands and the responsiveness of governments, economic growth and fiscal centralisation will be most significant when the economic state characterised by high risk-taking and the socio-behavioural balance is relatively conformist. In contrast, fiscal decentralisation will be linked to economic growth when the economic state is characterised by low risk, suggesting that the economic goods subject to fiscal redistribution may not contribute significantly to economic output, and the socio-behavioural balance is non-conformist, suggesting that the community demands for public services is diverse.

Consequently, two sets of competing hypothetical propositions emerge: the economic proposition and the sociological propositions: These may be summarised as:

*Economic proposition (E1):* the long term rate of growth in real per capita GDP is greater when fiscal arrangements are decentralised for all states of social equilibria.

*Sociological proposition (S1):* when the prevailing social equilibrium is characterised by a 'high risk' economic state and a 'conformist' socio-behavioural balance, then long term rate of growth in real per capita GDP is greatest when fiscal arrangements are centralised.

*Sociological proposition (S2):* when the social equilibrium is characterised by a low risk economic state and a 'non-conformist' socio-behavioural balance, then long term rate of growth in real per capita GDP is greatest when fiscal arrangements are decentralised.

*Sociological proposition (S3):* the long term rate of growth in real per capita GDP is greater in sociological proposition 1 (for fiscal centralisation) than in sociological proposition 2 (for fiscal decentralisation)

*S1* is predicated on the view that fiscal centralisation strengthens the strategic alliance between political and economic elites, increasing potential sociological benefits from fiscal



redistribution and Pareto's sociological growth proposition. High fiscal decentralisation reduces this potential benefit. In the case of *S2*, fiscal decentralisation acts as a counter to the desire of political elites to emphasise collectivism (because of their alliance with low risk economic elites) and, as such, acts as a force to increase political responsiveness to the non-conformist socio-behavioural state of the masses. This represents a transmission of the masses' preference for individualism to political elites, increases risk and innovation in the activities of governments and their economic enterprises. It should partially offset the low growth attributable to excessively risk averse stance of (non-government) economic elites. When the social equilibrium is characterised by low economic risk with non-conformist behaviour, fiscal decentralisation will act indirectly on growth. It makes a bad situation better. In contrast, when fiscal centralisation is associated with a social equilibrium characterised by high economic risk and conformist behaviour, the fiscal scheme directly complements Pareto's growth proposition. It makes a good situation better. *S3* is a consequence of this relationship.

The task ahead is twofold: to confirm whether the state of social equilibrium significantly influences the relationship between fiscal decentralisation and economic growth; and if so, to determine whether the above sociological propositions hold, in which case the economic effects would be secondary, or whether the economic proposition holds, relegating the above sociological propositions to secondary arguments.

### 3) Fiscal Decentralisation in Australia

The hypothetical propositions outlined in Section 2 must be explored with reference to real events for a preliminary understanding of their relevance. This Section presents an index of fiscal decentralisation for Australia since 1901-02, the first full year of the Commonwealth of Australia (which was established under a federal constitution in 1901), and identifies periods of distinct levels of fiscal decentralisation in Australia. It is intended as a prelude to exploring the relevance of the hypothetical propositions outlined above in light of the Australian experience (Section 4).

A number of attempts have been made to measure the degree of fiscal decentralisation in empirical research (Breuss and Eller 2004). However, the measures utilised have not captured all the key elements reflected in the theoretical literature. Vo (2005) has investigated this issue, and proposed an index of decentralisation that redresses many of the shortcomings in existing measures by accounting for the two key attributes of fiscal decentralisation: (i) the degree of autonomy that sub-national government have over fiscal matters; and (ii) the relative size of sub-national fiscal activity relative to all fiscal activity. In the Australian context this index is:

$$FDI = \sqrt{\left( \frac{OSR_{\Sigma SNG}}{OE_{\Sigma SNG}} a \right) \left( \frac{OE_{\Sigma SNG}}{(OE_{\Sigma SNG} + OE_{CG})} \right)}$$

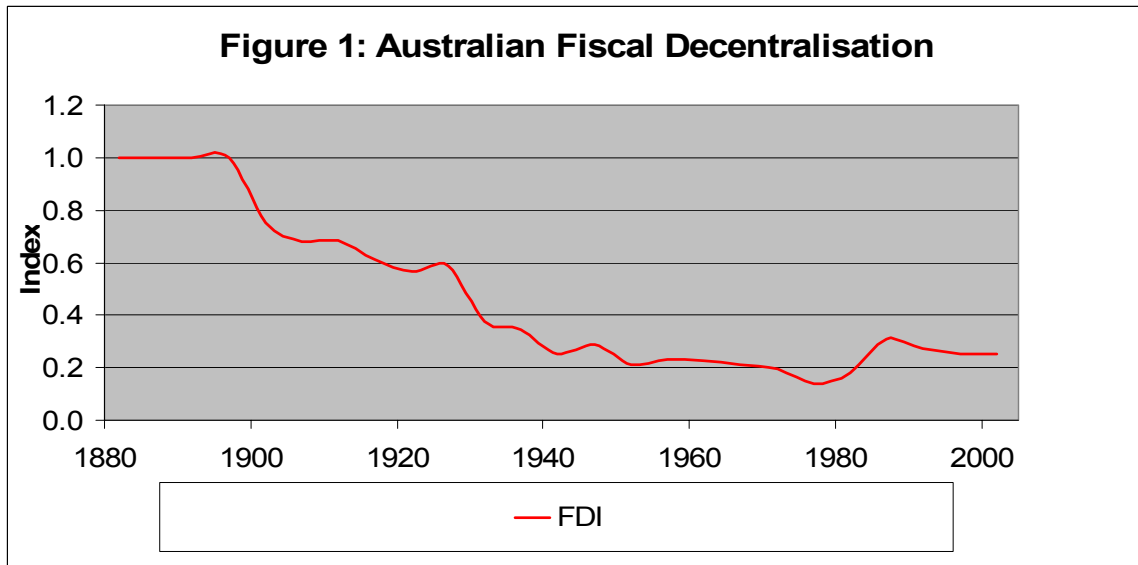
- FDI*: fiscal decentralisation index
- OSR*: own source revenue
- OE*: own expenses/expenditure
- a*: adjustment for factors other than revenue raising powers that influence fiscal autonomy
- subscript  $\Sigma SNG$ : sum of all sub-national governments

subscript: *CG*: Central Government

This is effectively the geometric mean of sub-indices for sub-national fiscal autonomy and fiscal importance. For the purposes of this study, the above Equation has been revised slightly to ensure that the index value is 1 when there is no central government, sub-national governments raise all their own revenue and have full fiscal autonomy. Specifically, the right hand side of the Equation has been modified by adding commonwealth own expenditure to the denominator of the first bracketed term, so that an index value of 1 corresponds to a fully decentralised fiscal system and an index value of 0 indicates a fully centralised fiscal system (the Central government controlling all fiscal activity). In addition, the index is influenced by a data limitation. Specifically, Vo's index cannot be directly applied to Australia from 1901-02 because of data limitations relating to local government finances for most of the 20<sup>th</sup> Century. As a consequence, the index has been modified to exclude the, relatively small, local government sector. The revised index is therefore

$$FDI = \sqrt{\left( \frac{OSR_{\Sigma SG}}{(OE_{\Sigma SG} + OE_{CG})} a \right) \left( \frac{OE_{\Sigma SG}}{(OE_{\Sigma SG} + OE_{CG})} \right)} \quad \dots (1)$$

Vo (2005) discusses a range of factors to consider when calculating *a*, the adjustment for factors other than revenue raising powers that influence fiscal autonomy. However, for the purpose of this study, *a* is limited to the square root untied grants as a share of total grants. The presumption being that ‘tied’ grants are the dominant effective means through which the Commonwealth Government acts to constrain the autonomy of the states. Using Equation (1), the fiscal decentralisation index for Australia has been calculated in *Appendix 1*. This information is summarised graphically below in Figure 1.



From the fiscal decentralisation index in Figure 1, five periods of Australian fiscal decentralisation are of interest: *Period A* the first quarter of the 20<sup>th</sup> century, where the very dramatic decline in fiscal decentralisation in the first 10 years of federation slowed in the early 1920s; *Period B* the period from the mid 1920s to the early 1950s when the dramatic decline in fiscal decentralisation resumed; *Period C* the period from the early 1950s to the

early 1970s, when the degree of fiscal decentralisation was largely unchanged at around 22%; *Period D* the period from the early 1970s to the early 1990s which is marked by significant cyclical fluctuation in the degree of fiscal decentralisation, falling in the mid 1970s to its century low of 14% fiscally decentralised in 1977 and then progressively rising to the post World War II high of 31% fiscally decentralised in 1987; and *Period E* the period from the 1990s to the early 2000s, when the degree of fiscal decentralisation returned to a new, relatively stable, rate of around 26%.

An additional period may need to be added to the above for studies of future data in light of the introduction of Australia's "A New Tax System" from 1 July 2000, which will progressively increase fiscal centralisation. The new system did not notably change fiscal decentralisation in 2001-02 because the abolition of state taxes under the new system is to be phased in between 2000 and 2005 (e.g. financial institutions duty, debits tax and a range of stamp duties). Also, revenue from the new *Goods and Services Tax* (GST) is currently distributed to the states as an untied Commonwealth grant, resulting in an increase in the share of untied grants to the states.<sup>9</sup> If the experience of the 20<sup>th</sup> Century provides an indication of future events, there is a strong probability that some future Commonwealth Government will point to its own budgetary stresses and/or the benefits of 'national' social reforms as a justification for retaining some GST revenues or for imposing conditions on the states' use of GST revenues.

The dramatic decline in fiscal decentralisation in *Period A* is associated with a number of factors. Prior to federation, the colonies main revenue source was customs duties. When the Commonwealth of Australia was proclaimed in 1901, the States had some constitutional protection. In particular, the Commonwealth Government was obliged, under Section 87 of the Constitution, to return three quarters of customs and excise duties to the states for a period of ten years. Related provisions of the constitution also required the Commonwealth Government to pay its surplus revenues to the states. However, by 1908 the Commonwealth passed the *Surplus Revenue Act* allocating surplus customs and excise revenue to its own trust funds to avoid paying the surpluses to the states (Smith 2002, p.296). The result was that within the first 10 years of federalism, states lost access to surplus revenues. Moreover, the requirements of Section 87 lapsed after 10 years, and the Commonwealth Government was quickly able to allocate all customs and excise revenue to fund its own purpose expenditures. From 1910 to 1927, the process of fiscal centralisation continued, although at a slightly reduced rate. The Commonwealth Government: (i) allocated grants to the states in a manner that freed up resources for its own expenditures; and (ii) exercised taxing powers that had previously been the preserve of the states. Grants to the states were being eroded by inflation and grew at a slow rate and the Commonwealth introduced land tax in 1910 and income tax in 1915. While total government revenue more than doubled between 1909-10 and 1918-19 the proportion of revenue accruing to the states fell by 55% (Commonwealth Grants Commission, cited in Dollery 2002, p.13). While the Commonwealth was able to use these arrangements to, among other things, service its World War I related debts, the states were unwilling or unable to constrain growth in their outlays in the 1920s, which partially explains the reduction in the rate of decline in fiscal decentralisation in the second half of the period. The result was a debt crisis which was resolved by the 1927 Financial Agreement when the Commonwealth took over the management of most state debt.

In *Period B* the Commonwealth Government continued to encourage fiscal centralisation. It introduced the sales tax in 1930, but the biggest single event to reduce the

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<sup>9</sup> State states do not have the constitutional authority to introduce a GST, as the Australian High Court has previously ruling that taxes that affect the price of goods are excises, and the Commonwealth has exclusive power to levy customs and excise duty.

degree of fiscal decentralisation in Australia's fiscal history occurred during World War II, when the States agreed to vacate the income tax field in 1942 to enable the Commonwealth Government to fund its war initiatives. However, this war power has remained ever since, with the Commonwealth taxing income and the states refraining from re-entering the income tax field.

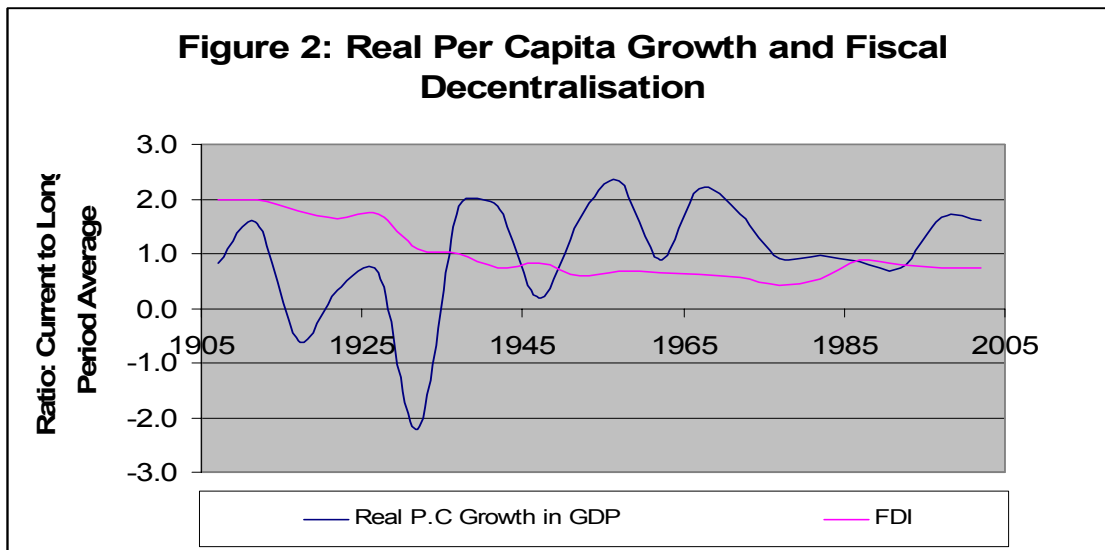
*Period C*, from the 1952 to the 1972, was notable for the relative stability of the degree of fiscal decentralisation. On the face of it, this is a little surprising, because in 1971 the Commonwealth abandoned its payroll tax, and assigned it to the states. However, this did not cause an immediate change because, at the time, payroll tax was a relatively modest tax. It also marks the start of increased emphasis on tied grants, which offset much of the increase in states' autonomy from taking over payroll tax.

*Period D*, from 1972 to 1992, was marked by cyclic change in the degree of fiscal decentralisation. The down phase (or reduction in fiscal decentralisation) in the mid-1970s primarily coincided with the first Labor Government (1972-1975) which, after more than 20 consecutive years of conservative rule, increased its control of expenditure in social policy areas, largely through greater use of tied grants to the states. With the change in Commonwealth Government in 1975, the pendulum shifted the other way, not because the Commonwealth wanted to make significantly less use of tied grants, but because it reduced growth in states' grants and because the states made greater use of relatively new taxing powers, with increases in business franchise fee (introduced in 1973) and their introduction of the financial institutions duty (a tax on credits to accounts with financial institutions).

*Period E*, from 1992 to 2002, is similar to *Period C* in that the degree of fiscal decentralisation also stabilised. However, the cyclical disturbances observed in *Period D* had the net effect of increasing the degree of fiscal decentralisation associated with the new stable state. Specifically, the cyclical disturbances increased the stable fiscal decentralisation from its average of 22% for the period 1952 and 1972 to an average of 26% for the period 1992-2002. The stability has been achieved even though the Commonwealth transferred its debits tax (a tax on debits to cheque accounts with banks) to the states in 1991, as this increase in states fiscal autonomy was largely offset in 1991 when the High Court ruled the states' business franchise fees were unconstitutional (because they were 'excises', which, together customs duty, are exclusively Commonwealth taxing powers).

#### **4) The Hypothetical Propositions in Light of the Australian Experience**

The relationship between real per capita growth and fiscal decentralisation in Australia since federation is graphed in Figure 2. These series have been plotted on the same y axis by showing the ratio of current values to the long period average for growth and for fiscal decentralisation. Consequently, a value of 1 for growth indicates that growth is at its long period average (of 1.7% for growth in real per capita GDP). Similarly, a value of 1 for fiscal decentralisation indicates that fiscal decentralisation is at its long period average (34%). The long period covers 1901-02 to 2001-02, calculated over 5 year intervals. A value above 1 for either of these series indicates that the series is currently above its long period average and a value below 1 indicates that it is currently below the long period average. The growth rate shown on the graph is the average annual growth in real per capita GDP (also calculated over the five year intervals).



*Prima facie*, the Australian experience does not support the hypothesis that growth is positively related to fiscal decentralisation. The long period decline in fiscal decentralisation is not directly associated with a long period decline in real per capita growth in GDP. In fact, the opposite would appear to be the case, as growth is almost always below its long term average when the fiscal decentralisation index is above its long period average. However, care is required when interpreting this descriptive data because fiscal decentralisation will not be the only factor to potentially influence growth. Other influences also need to be accounted for. This study looks for these ‘other’ influences in terms of the hypothetical propositions outlined in Section 2 and the key elements of Paretian social equilibrium, especially the economic state (degree of risk-taking) and socio-behavioural state (degree of non-conformity in mass conduct).

#### 4.1 The Economic State

The degree of risk associated with enterprise is the defining characteristic of the economic state. For this study, the distribution of above mean income is adopted as the indicator of risk associated with the economic state on the basis that the lower the dominant sentiment on risk, the less variation in the distribution of income. As is well known, Pareto was a pioneer in the study of income distribution, specifying three income distribution functions (Pareto [1896-97] 1971, pp975-988). The simplest, which Pareto provisionally accepted as an empirical regularity is now usually referred to as the Pareto distribution:

$$N_x = \frac{A}{x^\alpha}$$

- $x$  annual income value
- $N_x$  number of people with an annual income that is greater than or equal to  $x$
- $A$  estimated parameter
- $\alpha$  estimated parameter which is indicative of the distribution of income at a particular time and across a given population.

There has been considerable controversy about the so called “Pareto’s Law”, or the proposition that  $\alpha$  is fixed universally.<sup>10</sup> Pareto’s empirical studies found that  $\alpha$  was generally

<sup>10</sup> A diverse literature on Pareto’s law is collected in volume 3 of Vilfredo Pareto: Critical Assessments (Wood and McLure 1999)

constant at around 1.5. This was a controversial conclusion because altering the distribution of income would generally alter  $\alpha$ , so a fixed  $\alpha$  suggested that there was virtually no scope for governments to alter the distribution of income to reduce inequality. While there is no doubt that Pareto stressed the empirical regularity of his result, it should be noted that he did not treat  $\alpha$  as fixed. As Tarascio (1973) has highlighted, Pareto's own discussion on the relationship between inequality of income distribution and growth depended on variations to  $\alpha$ .

In this study, the lower  $\alpha$  is, the more homogeneous the distribution of income and the lower the presumed risk-taking in economic activities. Conversely, the higher  $\alpha$  is, the greater the variation in the distribution of income and the greater the risk-taking in economic activities. However, the Pareto distribution cannot apply to the full range of income distribution, as the distribution indicates that as  $x$  falls, the need for some minimum level of substance suggests that the number of people with an income of  $x$  will eventually be greater than the number of people with an even lower income of  $x - 1$ . Pareto dealt with this issue by truncating his distribution at some minimum income level. However, it is now generally agreed that the distribution only holds for incomes well above the minimum level.

In view of this,  $\alpha$  for the fiscal periods outlined in Section 2 have been calculated for the distribution of above mean incomes (and for the cohort in which mean income is categorised). Income data is from taxation sources, so income is measured as 'taxable personal income'. The  $\alpha$  values have been calculated using the double log version of the above Equation, as shown in Equation (2) below:

$$\log N_x = \log A - \alpha \log x \quad \dots(2)$$

In this form, the  $-\alpha$  indicates the slope of the log distribution function. The distribution becomes steeper as the absolute value  $|\alpha|$  rises, indicating that there is an increasing proportion of taxpayers with relatively high incomes. The distribution becomes flatter as the absolute value  $|\alpha|$  falls, which means that there is a reducing proportion of individual taxpayers with relatively high incomes. An above average " $\alpha$ " is taken to indicate that the economic state is associated with 'high' risk and below average " $\alpha$ " indicates that the economic state is associated with 'low' risk. The estimated " $\alpha$ " from Equation 2 for most of the fiscal decentralisation periods outlined in section 2 is shown in Table 1. The " $\alpha$ " values for each 5 year interval is shown in *Appendix 2*.

**Table 1: The Economic Balance and Fiscal Decentralisation**

Period	From	To	$\alpha$ Economic State	<i>FDI</i>
A	1901-02	1926-27	n.a.	0.65
B	1926-27	1951-52	1.87 (a)	0.34
C	1951-52	1971-72	2.53	0.22
D	1971-72	1991-92	3.26	0.22
E	1991-92	2001-02	2.91	0.26
Average to 2001-02			n.a.	0.34

(a) The average " $\alpha$ " for the period 1926-27 to 1951-52 is only based on data between 1939-40, 1945-46 and 1951-52. Data are not available for earlier years.

Since  $\alpha$  is estimated for above mean incomes only, the values for  $\alpha$  are above the average 1.5 identified by Pareto. On the assumption that  $\alpha$  is an indicator of the economic

state, the level of risk associated with Australian economic activity has increased until the late 1980s, it then declined moderately in the 10 years to 2002-03.

#### *4.2 The Socio-behavioural State*

In the last 25 years, there have been a range of cross-cultural studies that consider issues related to the dual between conformity and non-conformity. Formative studies in the area were undertaken by Hofstede (1980) and Triandis (1995). Hofstede developed a number of 'dimensions of culture', many of which are presented as dualisms such as collectivism-individualism and masculinity-femininity (an analogy intended to contrast achievement and action with nurture and empathy). Triandis (1995) undertook further studies of the collectivism-individualism divide. However, these studies are intended to emphasise cross country comparisons at a particular point in time so that distinct national cultures on economic and social progress can be considered.

In this study, however, an historical series of changes in the degree of conformity in one country is required. That is, data must be historical rather than contemporary, and they are only required for Australia as there are no cross country cultural comparisons. Unfortunately, no such historical index is currently available, so a provisional index of nonconformist was constructed based on the following principles:

1. The degree of conformist conduct increases with increases in the:
  - (a) enforcement of uniformity in social conduct;
  - (b) declarations of social or institutional commitment; and
  - (c) public provision of social services and services for the 'national good'.
2. The degree of conformist conduct decreases with increases in:
  - (a) share of the population not subscribing to commonly held values or beliefs.

In regard to 1, the combined number of serving military personnel and police officers were used to indicate "enforcement of uniformity in social conduct". These people not only use force to enforce some degree of conformity, they also wear uniforms, which is also a symbol of social uniformity. The rate of marriage per 1000 less the rate of divorce per 1000 was used to indicate "declaration of social or institutional commitment". To the extent that net marriage is a social institution, marriage involves some subjugation of individuality by both parties. However, it is a very imperfect indicator. Association and declaration of support with broader community institutions may better emphasise conformity but data on individuals association with broad community institutions are not available over the long term. Own purpose outlays by the Commonwealth Government have been unitised as an indicator of "public provision of social services and services for the national good". This is because, in Australia, the Federal Government is responsible for the social security system and administering laws and regulations which are designed to protect the national good.

In regard to 2, the number of census respondents per 1000 who declared that they had no religious affiliation or refused to declare their affiliation is used to indicate "share of the population not subscribing to commonly held values or beliefs". There is no doubt that this is a partial indicator, as variations in social conformity related to social belief may not be in unison with variations in religious belief. Nevertheless, religion in Australia (at least) acts to increase social conformity and should provide a reasonable first approximation. Census data are also available on this issue.

To estimate the index of conformist conduct, values for each indicator were normalised to 1 for 1900-01, and the index was calculated as the geometric mean of the normalised indicator series. These are summarised in Table 2 for the fiscal periods noted in Section 2, although Period A has been left out because there is no data for  $\alpha$ . Details on the calculation of the index of conformist conduct are shown in *Appendix 3*.

**Table 2: The Socio-behavioural Balance and Fiscal Decentralisation**

Period		FDI	Real annual per capita growth	" $\alpha$ " economic state (i)	"conform" Socio-behavioural Balance (ii)	"Interaction" <sup>11</sup> between " $\alpha$ " and "conform" (i) (ii)
B	1927 to 1952	1.37 (b)	0.58	0.78	1.02	0.80
C	1952 to 1972	0.86(c)	1.53	0.92	1.14	1.04
D	1972 to 1992	0.88(d)	0.91	1.18	0.97	1.15
E	1992 to 2002	1.04(c)	1.17	1.06	0.86	0.90
Average:	1927 to 2002	1.00	1.00	1.00(e)	1.00	1.00

The index shows that the degree of conformity of social conduct has varied moderately in comparison to variations in the economic state ( $\alpha$ ) and variations in the fiscal decentralisation index itself. This relatively stability in the socio-behavioural balance is consistent with Paretian theory, which predicts greater variability in the economic and political states than in the socio-behavioural balance. However, the degree of conformity associated with the socio-behavioural balance is not fixed. In relative terms, the twentieth century was associated with a half a cyclical phase: the degree of conformity increased in the first half of the twentieth century and fall in the second half of the century.

#### 4.3 The Hypothetical Propositions

To consider the 'economic' and 'sociological' propositions outlined in Section 2 with reference to the Australian experience, it is helpful to render comparable the indicators for the economic and socio-behavioural states. This is again done by focusing on averages, with the relative state of a fiscal system if referred to as: 'decentralised' when the degree of fiscal decentralisation is above the long period average; and 'centralised' when it is below the long period average. Similarly, the relative economic state is referred to as 'high' risk when the degree of risk associated with enterprise is above its long term average and 'low' risk it is below its long term average. The relative state of the socio-behavioural balance is referred to as 'conformist' when the degree of conformity in social conduct is above the long period average; and 'non-conformist' when the degree of conformity is below the long period average. Again, as no data on  $\alpha$  prior are available for Period A, the long period average benchmarks for this part of the study have been calculated across Periods B to E inclusive.

The results are summarised in Table 3. The "interaction" column considers the compound effect of the economic state and social-behavioural balance suggested by Pareto's growth proposition. It is labelled relatively "high risk conformist" when the product of " $\alpha$ " and "conform" for a given period is above the long period benchmark average product of these terms and relatively "low risk non-conformist" then the period product of these variables is below the long period benchmark average product.

<sup>11</sup> Interaction is represented as " $\alpha$ " multiplied by "conform" in table 3.



**Table 3: Fiscal Decentralisation, Economic Growth and Social Equilibrium**  
Period Classifications

Period		Index of Fiscal Decentralisation	Real annual per capita growth	" $\alpha$ " economic risk (i)	"conform" Socio-behavioural Balance (ii)	Compound " <i>Interaction</i> " between " $\alpha$ " & " <i>conform</i> " (i) x (ii)
B	1927 to 1952	Decentralised	Low	Low risk	Conformist	Low risk Non-conformist
C	1952 to 1972	Centralised	High	Low risk	Conformist	High risk Conformist
D	1972 to 1992	Centralised	Low	High risk	Non-conformist	High risk Conformist
E	1992 to 2002	Decentralised	High	High risk	Non-conformist	Low risk Non-conformist

Importantly, the descriptive data in table 3 provide some provisional support for the view that the relationship between fiscal decentralisation and economic growth is influenced by social equilibrium. This is because fiscal decentralisation is associated with relatively high growth and low growth under different social equilibria. Similarly, fiscal centralisation is associated with high and low growth under different social equilibrium. The result is, of course, provisional because the analysis is descriptive only and because of the potential for omitted variable bias.

Unfortunately, the results are too fragmented to determine whether the economic proposition dominates the sociological propositions, or not. Periods D and E support the economic proposition *E1*, whereas sociological proposition *S1* and *S2* have some support from periods B and C, at least when considered with reference to the compound effect of interaction between " $\alpha$ " and "*conform*". Clearly, the matter will need to be resolved in future research using more systematic and formal procedures to establish the significance of these relationships.

## 5) Future Research

To determine whether the economic or sociological influences dominate the long period relationship between fiscal decentralisation and economic growth, it is clear that a more formal econometric specification of the fundamental relationship is required.

### 5.1 Specifying the Relationship between Economic Growth and Fiscal Decentralisation

The equation to test this fundamental relationship may take the following form:

$$g = \delta + \beta \ln(\text{FDI}^*) + \gamma \ln(\alpha^*) + \lambda \ln(\text{"conform"}^*) \dots (3)$$

$g$	growth rate: proportionate change in real per capita GDP
$FDI^*$	scaled FDI: $0 < FDI \leq 2$ , $\mu_{FDI} = 1$ , $\sigma_{FDI} = 0.3$
$\alpha^*$	scaled indicator of economic state: $0 < \alpha \leq 2$ , $\mu_{\alpha} = 1$ , $\sigma_{\alpha} = 0.3$
“conform*”	scaled indicator of socio-behavioural state: $0 < \text{“conform”} \leq 2$ , $\mu_{\text{“conform”}} = 1$ , $\sigma_{\text{“conform”}} = 0.3$
$\ln$	natural log
$\delta, \beta, \gamma, \lambda$	parameters to be estimated

The scaling of the independent variables in the manner proposed for Equation (3) will ensure that their natural log values are positive when the values for the independent variables are above mean and negative when they are below mean. The natural log specification of independent variable is also appropriate when the rate of economic growth is the dependent variable.

Equation (3) has a number of important properties. Firstly, the parameter  $\delta$  equates to the real per capita rate of growth in GDP when all the dependent variables are at their mean value. That is, the long term average growth rate given an average state of social equilibrium because the scaling of each independent variable is such that  $FDI^*$ ,  $\alpha^*$ , and “conform\*” will each have a mean value of 1, resulting in  $\beta \ln(FDI^*) + \gamma \ln(\alpha^*) + \lambda \ln(\text{“conform”}^*)$  summing to zero.

## 5.2 Testing the Economic and Sociological Propositions

To test the economic proposition *E1*, data over the course of the Australian federation should be used to undertake regression analysis based on Equation (3). *E1* will require a positive and significant parameter for  $\beta$ , with no expectation concerning the sign of  $\gamma$  and  $\lambda$  positive.

If *E1* is supported and the results show that  $\beta$  is positive but  $\alpha^*$  and “conform\*” are not significant, the relationship between fiscal decentralisation and economic growth would contrary to the Paretian position, be independent of the state of social equilibrium. This is not an expected outcome, but in such as case Equation (3) could be re-estimated to improve the accuracy of estimates of  $\beta$  by replacing indicators of the social state ( $\alpha^*$  and “conform\*”) with a range of economic ratios, which would also need to be scaled such that  $\mu_i = 1$ ,  $\sigma_i = 0.3$ . Examples include investment as a share of GDP, international trade as a share of GDP, and / or lagged expenditure on education as a share of lagged GDP.

To test for the three sociological propositions, the data set will need to be divided into two subsets: (i) when the social equilibrium is relatively “high risk and conformist”, defined by the requirement that the period product of “ $\alpha$ ” and “conform” be above the long term average product of these terms; and (ii) when the social equilibrium is relatively “low risk and non-conformist”, defined by the requirement that the period product of “ $\alpha$ ” and “conform” be equal to or below the long term average. Given the scaling of independent variable in Equation (3), the product of “ $\alpha$ ” and “conform” will be greater than one for the relatively “high risk and conformist” case and less than or equal to one for the relatively “low risk and non-conformist” case.

Equation (3) should then be estimated separately for the two data subsets of data. For sociological proposition *S1* to hold, the  $\beta$  should be negative and  $\gamma$  and  $\lambda$  should be positive

for data in subset 1. For sociological proposition *S2* to hold,  $\beta$  should be positive and  $\gamma$  and  $\lambda$  should be negative for data in subset 2. For sociological proposition *S3* to hold, the estimated growth rate from data subset 1 should be greater than the estimated growth rate for subset 2.

The author is currently collecting annual data to undertake the above analysis, but the hypothetical sociological propositions can be illustrated through a purely ‘notional’ numeric example, such as that represented by Table 4.

**Table 4: Notional Numeric Illustration of Sociological Propositions**

Case	Description			Notional Values for Scaled Indices and Parameters		
	FDI*	$\alpha^*$	“conform*”	FDI*	$\alpha^*$	“conform*”
1	Centralised	High risk	Conformist	0.75	1.25	1.25
2	Decentralised	High risk	Conformist	1.25	1.25	1.25
3	Centralised	Low risk	Non-conformist	0.75	0.75	0.75
4	Decentralised	Low risk	Non-conformist	1.25	0.75	0.75
Subset 1	$\beta$	$\gamma$	$\lambda$	-0.02	0.01	0.01
Subset 2	$\beta$	$\gamma$	$\lambda$	0.01	-0.01	-0.01

Cases 1 and 2 relate to data subset 1. Cases 3 and 4 relate to data subset 2. When the notional index and parameter values for subset 1 shown in Table 4 are introduced into Equation (3), and the long term average growth in real per capita GDP given the average state of social equilibrium ( $\delta$ ) is assumed to be 2%, the estimated value of  $g$  is: 3.0% in case 1 and 2.0% in case 2. This would support sociological proposition *S1*. When the notional index and parameter values for subset 2 shown in Table 4 are introduced into Equation (3) and ( $\delta$ ) is again assumed to be 2%, the estimated value of  $g$  is: 2.3% in case 3 and 2.8% in case 4. This would support sociological proposition *S2*. As notional growth under case 1 is notionally higher than under case 4, this would be consistent with sociological proposition *S3*.

## 6) Conclusion

The Australian experience with fiscal federalism provides some provisional support for the Paretian view that the state of social equilibrium impact on the relationship between fiscal decentralisation and economic growth. This suggests that fiscal sociology may provide a basis for the study of the relationship between the fiscal constitution and economic growth.

However, the descriptive investigation of twentieth century fiscal federalism in Australia has failed to establish whether economic or sociological effects have dominated the relationship between fiscal decentralisation and economic growth. More research, of the type advocated in Section 5, is required before this important question can be properly considered.

### Appendix 1: Provisional Fiscal Decentralisation Index for in Australia

	Sum of All States: \$ million					States' Autonomy Adjustment [(v)/(i)] <sup>1/2</sup>	Commonwealth		State + C'wealth		Indices		
	Grants Received	Total Revenue	OSR	Total Expense	Untied Grants		OSR	Total Expense	Expense	OSR	State Fiscal Autonomy (iii)/(x)*(vi)	State Fiscal Importance (iv)/(ix)	Fiscal Decentralisation [(xi)(xii)] <sup>1/2</sup>
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)	(xiii)
<b>1902</b>	15	56	41	58	15	1.00	23	8	66	64	0.62	0.90	0.75
<b>1907</b>	16	45	30	63	16	1.00	26	10	73	55	0.41	1.13	0.68
<b>1912</b>	12	83	71	82	12	1.00	41	29	111	112	0.64	0.73	0.68
<b>1917</b>	12	102	90	106	12	1.00	68	56	162	158	0.56	0.67	0.61
<b>1922</b>	14	170	156	175	14	1.00	127	128	303	283	0.51	0.62	0.56
<b>1927</b>	16	222	206	222	16	1.00	152	146	368	358	0.56	0.62	0.59
<b>1932</b>	24	199	175	242	4	0.41	143	143	385	318	0.19	0.76	0.38
<b>1937</b>	30	236	206	238	4	0.37	166	162	400	372	0.19	0.64	0.35
<b>1942</b>	28	305	277	299	4	0.38	420	420	719	697	0.15	0.43	0.25
<b>1947</b>	128	346	218	350	254	1.41	863	863	1213	1081	0.25	0.32	0.29
<b>1952</b>	324	777	453	783	240	0.86	2034	2034	2817	2487	0.14	0.31	0.21
<b>1957</b>	488	1154	666	1168	348	0.84	2624	2624	3792	3290	0.15	0.36	0.23
<b>1962</b>	852	1609	757	1617	609	0.85	3283	3283	4900	4040	0.13	0.40	0.23
<b>1967</b>	1183	2286	1103	2286	827	0.84	5228	5228	7514	6331	0.12	0.36	0.21
<b>1972</b>	2395	4035	1640	4050	1441	0.78	8688	8688	12738	10328	0.10	0.39	0.20
<b>1977</b>	7648	9796	2148	9790	3696	0.70	21436	21436	31226	23584	0.05	0.42	0.14
<b>1982</b>	13153	19742	6589	19799	6936	0.73	40593	40593	60392	47182	0.08	0.42	0.18
<b>1987</b>	20738	48747	28009	54787	13843	0.82	73567	76361	131148	101576	0.17	0.54	0.31
<b>1992</b>	25701	58701	33000	62458	15201	0.77	93982	105565	168023	126982	0.15	0.49	0.27
<b>1997</b>	31188	74686	43498	70812	17492	0.75	129845	135126	205938	173343	0.16	0.41	0.25
<b>2002</b>	50752	106702	55950	104140	33000	0.81	189759	193406	297546	245709	0.15	0.42	0.25

Data: Australian Bureau of Statistics: (i) Year Books from 1901(ii) catalogue 5512.0

## Appendix 2: The Economic State

	$\alpha$	R <sup>2</sup>
<b>Before 1940</b>	<b>n.a.</b>	n.a/
<b>1940</b>	<b>2.05</b>	0.9959
<b>1946</b>	<b>2.32</b>	0.9974
<b>1951</b>	<b>2.10</b>	0.9920
<b>1956</b>	<b>2.18</b>	0.9705
<b>1961</b>	<b>2.65</b>	0.9979
<b>1966</b>	<b>2.87</b>	0.9995
<b>1971</b>	<b>2.86</b>	0.9917
<b>1976</b>	<b>3.25</b>	0.9985
<b>1981</b>	<b>3.48</b>	0.9960
<b>1986</b>	<b>3.35</b>	0.9940
<b>1991</b>	<b>3.37</b>	0.9962
<b>1996</b>	<b>2.75</b>	0.9916
<b>2001</b>	<b>2.61</b>	0.9941
<b>Average</b>	<b>2.76</b>	-

Data: (i) Australian Bureau of Statistics, Year Books from 1940  
(ii) Australian Taxation Office: *Taxation Statistics* (1990-91, 1997-98, 2000-01)

## Appendix 3: The Socio-Behavioural Balance

	Unadjusted Data				Adjusted Data				Index of Conformist Conduct [[v)(vi)(vii)(viii)] <sup>1/4</sup> (ix)
	Net Marriage rate per 1000(a)	Soldier / Police per 1000 (b)	Real P.C. C'wealth Own Outlays \$m (c)	Populat'n. Share with no religious Affiliation (d)	Series (i) with 1901 set to 1	Series (ii) with 1901 set to 1	Series (iii) with 1901 set to 1	Reciprocal of series (iv) with 1901 set to 1	
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
<b>1901</b>	7.26	9.13	117.3	2.4%	1.00	1.00	1.00	1.00	<b>1.00</b>
<b>1906</b>	7.34	6.78	129.5	2.8%	1.01	0.74	1.10	0.85	<b>0.92</b>
<b>1911</b>	8.75	7.30	183.3	3.3%	1.21	0.80	1.56	0.73	<b>1.02</b>
<b>1916</b>	8.05	18.31	324.6	2.8%	1.11	2.00	2.77	0.86	<b>1.52</b>
<b>1921</b>	8.35	26.37	641.9	2.4%	1.15	2.89	5.47	1.00	<b>2.06</b>
<b>1926</b>	7.76	11.04	615.2	5.3%	1.07	1.21	5.24	0.46	<b>1.33</b>
<b>1931</b>	5.78	7.65	778.1	13.1%	0.80	0.84	6.63	0.18	<b>0.95</b>
<b>1936</b>	8.21	8.15	727.3	12.7%	1.13	0.89	6.20	0.19	<b>1.04</b>
<b>1941</b>	10.04	48.65	1533.9	11.8%	1.38	5.33	13.07	0.20	<b>2.11</b>
<b>1946</b>	9.26	14.97	1823.3	11.4%	1.28	1.64	15.54	0.21	<b>1.62</b>
<b>1951</b>	8.21	9.91	2830.8	10.7%	1.13	1.08	24.13	0.22	<b>1.61</b>
<b>1956</b>	6.82	15.87	2594.9	10.0%	0.94	1.74	22.11	0.24	<b>1.72</b>
<b>1961</b>	6.57	9.14	2487.6	11.1%	0.90	1.00	21.20	0.22	<b>1.43</b>
<b>1966</b>	7.36	10.60	3133.3	11.1%	1.01	1.16	26.70	0.22	<b>1.61</b>
<b>1971</b>	7.93	10.45	3710.1	12.9%	1.09	1.14	31.62	0.19	<b>1.65</b>
<b>1976</b>	3.31	8.25	4522.5	18.2%	0.46	0.90	38.54	0.13	<b>1.20</b>
<b>1981</b>	4.82	8.54	5081.3	22.2%	0.66	0.93	43.31	0.11	<b>1.31</b>
<b>1986</b>	4.68	8.08	6247.9	25.1%	0.64	0.88	53.25	0.10	<b>1.31</b>
<b>1991</b>	5.68	8.23	6430.7	23.4%	0.78	0.90	54.81	0.10	<b>1.41</b>
<b>1996</b>	2.93	6.30	7385.8	25.6%	0.40	0.69	62.95	0.09	<b>1.13</b>
<b>2001</b>	50752	106702	55950	27.2%	0.34	0.63	72.52	0.09	<b>1.08</b>

Data: (a) McDonald, Ruzicka and Pyne (1987) and Australian Bureau of Statistics *Year Books* from 1901; (b) McKernan (1987), Mukherjee (1987) and Australian Bureau of Statistics *Year Books*; (c) Australian Bureau of Statistics: *Year Books* from 1901 and Catalogue 5512.0; and (d) Phillips (1987) and Australian Bureau of Statistics *Year Books* from 1901.

**Caveat:** the data entered in Appendices 1, 2 and 3 and the growth data used in the text are provisional - they need to be checked. Check with the author to determine whether the data have been updated.

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