3.0 Theoretical Framework

3.1 Private and Public Goods

The theories of public expenditure rest on the concept of private goods and public goods. The distinction between public goods and private goods is grounded on the notions of nonexcludability and nonrival consumption. Private goods are those which are subject to the exclusion principle (Musgrave & Musgrave, 1984, p.49). This means that a good or service can be practically provided to a consumer willing to pay, to the exclusion of those who do not pay. Nonrival consumption is where an individual's consumption does not interfere with another's consumption of the same good. Public goods, sometimes referred to as social goods (Johnson, 1971, p.26) or social wants (Musgrave, 1959, p.9) are those goods which must satisfy the conditions of nonexcludability and nonrival consumption.

The nonexcludability of a public good, however, means that it cannot be provided exclusively to consumers willing to pay, without unintentionally providing it to those consumers who do not pay. This is known as the free-rider phenomenon (Johnson, 1971, p.117). Because of an inability to recover the costs of production from all those who enjoy the benefits of consumption, this invariably leads to costs
exceeding revenues, which results in *market failure*. This phenomenon is caused by the generation of positive externalities, which is discussed in detail in section 3.3.

A hypothetical example follows. The activities of theatre companies in Perth contribute to the generation of a cultural ambience. This attracts individuals to certain entertainment districts. The direct consumption and benefit of the shows is excludable to those who pay for admission. The indirect benefits (positive externalities), in the form of a cultural ambience, however, are not excludable to only those who pay. These benefits (cultural ambience) are generated at cost by the theatres and other entertainment establishments. The notion of cultural activities generating external benefits to other activities within metropolitan districts is supported by Cwi (1982, p. 25) and Myerscough (1988, p. 145).

The notion of nonrival consumption means that those who enjoy the atmosphere in the district, at no charge, do not interfere with others consumption of the same. Nonexcludability means that the benefits cannot be efficiently charged for, so those (free-riders) who do not actually watch the shows, can still enjoy some of the benefits without paying. Since the theatres cannot charge all those who consume the benefits of their efforts, the cost of production tends to exceed box office revenue. An additional source of funding may be required.
In reality, few goods strictly correspond to the conditions of public and private goods. This gives rise to mixed goods, that have some characteristics of each (Musgrave & Musgrave, 1984, p.71). Since the theatres can charge admission, but cannot charge all those who enjoy consumption benefits, these services display characteristics of mixed goods.
3.2 Market Efficiency

The notion of efficient allocation in markets rests on assumptions about the rational behaviour of individuals in ideal market environments. It endeavours to explain the means by which goods and services are produced according to consumer preferences. Producers seek to maximise profits, and therefore produce what consumers want to buy, on a least cost basis. The competition between producers ensures that a mix of goods and services satisfies the needs of consumers. This relationship between producers and consumers is refereed to as the market mechanism. (Musgrave & Musgrave, 1984. p.48)

Efficiency in this context, means best use of available resources to satisfy the preferences of consumers. The concept of efficiency in this context, is based on the notion of Pareto Optimality. Alt and Chrystal (1983) explain, "Pareto efficiency exists if no transaction is available which would at least make one person better off and no one else worse off." (p.183)

This means that the ideal notion of market efficiency rests on the decision that it is always efficient to allocate resources, whether it be by the method of production, the mix of goods supplied, or the activities of the public sector, in such a way that the benefit of person A is not to the detriment of persons B or C. If this cannot be
achieved, the existing situation is inefficient, and should be changed (Musgrave & Musgrave, 1984, p.55). In the context of the arts, it would be efficient to provide public funding if it did not result in detriment to anyone else. In reality Pareto Optimality does not exist. It is does, however, serve a purpose as a theoretical concept.

The notion of the market mechanism suggests that there should be no need to fund the arts out of the public budget. This is because the arts would reflect the preferences of consumers, and earn enough revenue from those willing to purchase. The presence of positive externalities, however, suggests that the market mechanism fails. The reason for this is discussed in section 3.3.
3.3 Public Goods and Market Failure

The notion of an efficient market is a theoretical ideal. In reality, there exists circumstances where the market mechanism functions inefficiently. For example, this may happen where consumers are without the benefit of being fully informed, barriers to entry exist, producer coercion gives rise to unbalanced competition, and the benefits or costs of production or consumption cannot be fully internalised, which gives rise to externalities.

The concept of externality is where the consumption or production of a good or service has an indirect effect on those who are not a party to the transaction. Externalities may be positive, in the form of benefits, or negative, in the form of costs (Laffont, 1989, p.113). In the case of positive externalities, producers are unable to recover their costs from all those who benefit from the transaction. They are not able to provide the goods exclusively to those who are paying consumers. This was evident in the example in section 3.1. Here, individuals benefited from the cultural ambience of an entertainment district at no cost. This meant that the theatres were providing consumption benefits at no charge.

Where negative externalities arise, producers are unable (or unwilling) to pass on all the costs of production to the consumer. Consumers themselves may also ignore the
negative effects on others as a result of their consumption (Tisdell, 1972, p.289). For example, this occurs when pollution is generated in a production process, but the costs of the pollution (to everyone) are not reflected in the price of the goods produced.

*Market failure* is a situation where the actions of the efficient market (market mechanism) fail to provide goods and services in the quantities and price that consumers want. Markets tend to work efficiently where the exclusion principle applies, and where the production or consumption of goods does not give rise to externalities (Musgrave & Musgrave, 1984, p.48). In section 3.1, the hypothetical example of theatres being unable to recover costs from all those who enjoyed consumption benefits, is an example of market failure due to the generation of positive externalities.

In the case of public goods, market failure can occur on two as counts as discussed: where consumption is nonrival, and where consumption is nonexcludable (Musgrave & Musgrave, 1984, p.49). Although the arts are not pure public goods, the notion of nonexcludability is central to many of the market failure arguments for subsidy to the arts. This is because these arguments are based on the premise that the arts cannot be provided exclusively to those who are willing to pay, without benefit to those who don't pay.
3.4 The Theory of Public Finance

Musgrave (1959, p.5) points out three fundamental functions of government budgetary policy: firstly, to ensure an efficient allocation of resources that provide a mix of private and public goods; secondly, to ensure a just distribution of income and wealth; thirdly, to secure a reasonable degree of price stability and employment. The discussion will be restricted to the stabilisation and allocation functions of government, as they are the most relevant issue to this study.

The stabilisation function of budget policy, in terms of employment, means that it is desirable to generate employment through public expenditures. Public subsidies to activities such as the arts, are justified if it contributes to the objective of full employment (Musgrave & Musgrave, 1984, p.13). It is important, however, not to overlook other reasons for public patronage of the arts, such as the aesthetic benefits that are generated (Patronage, Power, and the Muse, 1986, p. 26).

While the employment stabilisation is important, the allocation function of budgetary policy is of greater relevance to this study, and is discussed in more detail.

Private goods can be efficiently provided by way of the market mechanism, where consumers display their preferences
by bidding for the goods and services, which in turn motivates the profit conscious producers to compete for the preferences of the consumers. This relationship, in favour of the consumer is known as the principle of consumer sovereignty (Gold, 1983, p.208; Tisdell, 1972, p. 13). An example of this is the programming of commercial television stations. In Australia, programs are put to air on the basis of past knowledge of audience preferences. This is done by audience surveys, which indicate from past experience, those programs which are most likely to be accepted. The programming tends to reflect the preferences of the wider market.

Public goods are subject to market failure, where nonexclusive consumption is the case. In situations where benefits are freely available to all consumers, there is no motivation for individuals to contribute to the cost of providing the public good. An example of a pure public good is the police force. Benefits from the presence of the police, are not excludable only to those who may be willing to pay. Because of this, consumers do not feel an obligation to pay as you use. This is where the market mechanism may fail. Governments find it necessary to intervene and provide the public goods through the budget.
The basic problem with the provision of public goods, is to decide first which are public goods, and then decide what quantity and quality of the public good is to be provided. The political process provides a solution. In a democratic environment, voting becomes a surrogate for the market mechanism in order to identify the preferences of the community. If the government is providing the right type, quantity, and quality of public goods, this will be affirmed by the voting preferences of the community. The success of this system is dependent on the fairness and efficiency of the voting process. (Musgrave & Musgrave, 1984, p.63)
3.5 Public Decision Making

Governments generally use cost benefit analysis to evaluate alternative applications of public funds (Musgrave & Musgrave, 1984, p.209). Cost benefit analysis consists of the summation of the costs and benefits that flow from an alternative, which result in either a net benefit or net cost. The decision rule is to adopt the alternative that maximises the public benefit. This normative decision rule is based on the Utilitarian doctrine of J. Bentham and J.S. Mill (Shaw & Barry, 1989, p.55). The decision rule in Utilitarianism is to adopt a course of action that results in a maximization of net benefit to the majority in society.

Costs and Benefits may be real or pecuniary. Real costs and benefits may be: direct, indirect, tangible, or intangible. Real costs and benefits are those that directly effect individuals. Pecuniary costs and benefits change market values of assets as a result of the alternative taken. Tangible costs and benefits are those to which a monetary value can be placed, while intangible costs and benefits are those that do not have monetary values. In the context of the arts, real costs would be government funding, while real benefits would be employment. Intangible benefits would be things like the aesthetic value, national prestige, and cultural ambience.
It is important for arts advocates to be aware of the methods from which economists use to evaluate public benefit from the allocation of government funds. Cost benefit analysis is a framework from which arguments for the public patronage of arts is made.
The provision of public goods involves some form of value judgement. The framework from which these value judgements are based is philosophical. Liberalism is an appropriate philosophy to discuss in the context of Australian political economics. Horne (1988, p.4) describes Australia as a liberal democracy. The fundamental tenets in liberalism are: individualism, pluralism of values, the importance of rights, social contract theory, and equality of the citizen. These tenets provide the framework for the government's economic and political decisions. (Sugden, 1981, p.10) This is particularly relevant in respect to the value judgements taken in the decisions to provide public finance for merit goods, such as the arts.

Individualism is where, what is good for the individual is good for society. Pluralism of values means that there is no absolute truth, we accept that those with different values to our own are neither ignorant or irrational. The importance of rights means that the individual has a right to be free from the interference of others. Social contract theory implies that the collective decisions of majority rule are right, only if it can be said that everybody had the choice to participate or not in the system of voting. Equality is where everyone's values and rights are treated equally. (Sugden, 1981, p.10)
Sugden describes two models of value judgements in public choice theory: The End State Model, and The Procedural Model (1981, p.11). The End State Model bases its justification of an argument on the resulting end state. For example, the objective of public funding for the arts (end state) may be more important than the democratic system of voting (procedure), which may result in no public arts funding. The following example will show the logic in simple notation:

Value judgement: x should do y and not z.
Fact: the existing state is a.
Implications: If x does y, this will lead to end state b, alternatively, if x does z, this will lead to end state c.
Premise: End state b is more desirable than end state c.
Conclusion: x should do y.

The Procedural Model bases its justification of an argument on the procedure by which the aim is achieved. An example is where the public funding of the arts is desirable. The process of a democratic voting process (procedure) may not result in the arts being publicly funded (end state). It is more important, however, to abide by the democratic process than it is to attain our objectives (end state). The following example will show the logic in simple notation:
Value Judgement: x should do y and not z.

Fact #1: The procedure for achieving y is a, and the outcome (end state) of y is b.

Fact #2: The procedure for achieving z is f, and the outcome (end state) is g.

Premise 1: b is an undesirable outcome, whilst g is a desirable outcome.

Conclusion: It is imperative to use procedure a, even though it results in an undesirable end state b. This is because it is more important that the desirable outcome g.

Both models have different approaches to the reasoning for value judgements. The End State Model essentially disregards the means of achieving an aim, whilst the Procedural Model subordinates the end state to the procedure by which the end state is achieved. Both approaches provide a framework in which decisions can be made. There are implications for the arts subsidy debate, as the following hypothetical examples illustrate:

End State Model: Arts funding is imperative since it results (end state) in net public benefits, irrespective of the fact that the majority of voters may think that the way (procedure) of allocating funds (public decision makers value judgements for arts subsidy on their behalf) is undesirable.
Procedural Model: Arts funding is not justified because the system of voting shows that voters do not think it a public good, and vote for governments which do not fund the arts (democratic procedure). The democratic process may be held as more important than the net public benefits (end state) that may be generated by the arts.
3.7 Input-Output Analysis

The economist Wassily Leontief is primarily responsible for the recent development and application of Input-Output (I-O) analysis. In 1973, he was awarded the Nobel prize for his contribution to I-O analysis (Port Authority of New York and New Jersey and Cultural Assistance Centre Inc [PA of NYNJ & CAC], 1983, p. A1).

I-O analysis involves the compilation of I-O tables. These tables are basically a mathematical matrix showing the relationship between productive sectors of an economy. The tables are the basis for a calculus of coefficients. One of these coefficients is a multiplier. I-O tables show the economy disaggregated into economic sectors, and quantifies the transactional relationship between them. I-O tables are not unlike a balance sheet snapshot of the economy (Jensen & West, 1986, p.3). I-O tables are taken from the National Accounts, and show the relationships between different sectors of the economy, identifying patterns of sales and consumption.

I-O analysis can be used to identify the economic impact of an industry on different sectors in the economy. Jensen and West (1986) define an economic impact as "The effect of a change in an economic entity on the economy in question." (p.4)
North (1982, p.3) shows there are three main methods from which to quantify an economic impact.

1) Keynesian Multiplier Analysis
2) The Export Base Model
3) Inter-Industry Analysis

The application of I-O analysis allows forecasting of the economic effect of a given change in the economy. This is the economic impact.

For example, I-O analysis can be used to estimate the effect that the establishment of new aircraft industry will have on input industries such as: aluminium, glass, paint, aircraft instruments, and the like. Another example is the estimation of the effects that a decrease in iron ore sales will have on the whole economy, or specific sectors such as, mining equipment and explosives sales.

I-O analysis is an important tool in regional economic planning and policy development. I-O analysis may become crucial if it is important to know what will be the effect from a change in one sector, on other sectors within the economy.
3.7.1 Input-Output Analysis: Assumptions

The following assumptions in I-O analysis are important to consider when multipliers are used on two counts. Firstly, some limitations of multipliers are observed when considering the homogeneity and linearity assumptions. Secondly, the type of multiplier used is dependent on the choice of an open or closed I-O model, with direct or indirect allocation of competing imports.

Some basic assumptions used in I-O analysis are homogeneity and linearity (Australian Bureau of Statistics [ABS], 1990, p.141). Since economic sectors have to be grouped together, an assumption is made about their common characteristics. Aggregated sectors are assumed to be homogenous. As aggregation is enlarged, homogeneity of the sectors is less likely to hold true. Conversely, the disaggregation of economic sectors would imply that homogeneity would be more likely to hold true. Disaggregation of the economy is desirable. A trade-off, however, must be made between the accuracy, time, and cost of compiling I-O tables.

For example, the aggregation of the Entertainment and Recreational Services sector in the economy includes 13 classes of activities, ranging from motion picture production to lotteries. One class is live theatre, orchestras and bands. Deck Chair and Spare Parts Puppet
Theatre would be best represented in this class. The homogeneity assumption holds that these activities are closely related, and therefore will be similar. This means that a $100 million increase in final demand, will have the same effect on each of these 13 classes of activities, without regard to individual differences between them. As a sector is disaggregated, the assumption would be more accurate, but become more expensive to compile. As the aggregation is enlarged, it would become less accurate, but a less expensive to compile.

The second assumption is that of linearity, or otherwise known as proportionality. This assumes that the transactional relationship between economic sectors holds constant over time. This means that a change in one sector's output will result in a proportionally identical change from other input sectors. The linearity assumption does not account for economies of scale, input substitution and mix, or technology changes. For example, if there is a 20% increase in locally produced vehicle sales, this will translate into a 20% increase in input industries to vehicle manufacture, such as: glass, plastics, tyres, cloth trim, and the like.

I-O analysis requires an assumption to be made as to whether the model (I-O tables) is closed or open. Coughlin and Mandelbaum (1991, p.21) say that the choice is arbitrary. A closed model treats household as an part of
the productive sector of the economy. This means that household re-spending contributes to the multiplier effect.

An open model treats household consumption as part of final demand, that is exogenous to the productive economy. This means that household re-spending is considered a leakage, and does not contribute to the multiplier effect (Coughlin & Mandelbaum, 1991, p.21).

The treatment of imports is another important assumption in I-O analysis. There are two types of imports: competing, and complimentary. Competing imports exist where locally produced goods are a substitute for the imported good. Complimentary imports are where there is no locally produced goods that are a substitute for the imported product.

The treatment of imports requires the researcher to decide whether to use a direct allocation of competing imports, or an indirect allocation of competing imports. Direct allocation of imports is appropriate where the researcher has reason to believe that there are a lot of competing imports in the economic sector under investigation. Indirect allocation of imports is appropriate where the researcher has reason to believe that competing imports are negligible or do not exist in the sector being examined.
The calculations can be made proportionally, depending on the mix of competing and complementary imports. (ABS, 1990, p.138)

For example, Deck Chair and Spare Parts Puppet Theatre produce live theatre locally. If there is not a lot of competing imported products (live foreign theatre shows) that the theatres have to compete with, the appropriate multipliers would be taken from the I-O tables that account for an indirect allocation of competing imports. (I. Bobbin, personal communication, October, 1992).

3.7.2 Input-Output Tables: Multipliers

As part of this research study relies on the application of an economic multiplier, it is appropriate to discuss the concept. An income multiplier is a coefficient that shows the effect that an initial injection of income in a region has on total income for that region. The initial increase in income results in a multiplied increase in income. This is because the output of one sector is the input of another sector, as detailed in I-O tables. The re-spending of income results in an increase in income for others, and the effect is repeated. This is known as the ripple effect (Jensen & West, 1986, p.48). There are direct, indirect, and induced effects. These effects, known as flow-ons, are repeated until the change from the original increase in
income becomes insignificant. The amount of this increase is expressed as a multiple (a coefficient) of the initial figure, hence it is called a multiplier (Cwi, 1981, p.15).

For example, an initial injection of income into the regional economy of Fremantle may be caused by an international arts festival. The injection may be $12 million. Local business such as hotels, theatres, and restaurants may directly benefit from the expenditure of tourists that visit the region to see the festival. These businesses would in turn increase their purchases of supplies to cope with the increased demand. The same increase in sales is experienced by the suppliers of the local business. And in both cases, increased employment may be generated for employees.

This effect is continued throughout the regional economy until the effect is insignificant. This is because, in each successive case, the multiplier effect is diminished because some of the income is saved and some spent. This depends on individual's propensity to save and consume. The total effect of the original $12 million may have grown into $18 million expenditure in Fremantle. This would imply an income multiplier of 1.5 \( (18/12 = 1.5) \).

The main types of multiplier coefficients are: income, output, and employment. They are derived from the I-O tables in the National Accounts. Employment multipliers are
derived from the same. If the dollar value of the output of one sector can be related to its level of employment, then an initial change in one sector’s employment can be translated into a change in employment in another sector (Coughlin & Mandelbaum, 1991, p.24).

A hypothetical example follows. If we know that for every $1 million of revenue in the performing arts, this results in 12.6 jobs generated in all other sectors of the economy, that are inputs to performing arts (scenery makers, writers, technicians and the like). One of these sectors, may be theatre lighting services. This accounts for 0.3 of the total 12.6 jobs per $1 million of sales. If revenue for the performing arts had increased by $5 million, this would translate into 63 (5 times 12.6) jobs in all inputs, and therefore 1.5 (5 times 0.3) jobs being generated in the theatre lighting services industry.

In the Australian National Accounts, the treatment of employment multipliers is to identify a series of effects from an initial change in income. These are: initial effects, first round effects, industrial support effects, production induced effects, and consumption induced effects. These effects are summed to yield the relationship between the total effect and the initial effect, which as described earlier, is a multiple of the initial change.
There are four different types of multiplier coefficients, the choice from which is dependent upon certain assumptions. These are Types: 1A and 1B, 2A and 2B. Type 1 multipliers assume an open model of the economy, and therefore disregard the consumption induced effects (flow-on effects) from household consumption. Type 2 multipliers assume a closed model of the economy, and account for these flow-on effects. (ABS, 1991, p.10)

Type A multipliers account for the total effects: initial effects, first round effects, industrial support effects, and consumption induced effects. The type B accounts for all the effects in the type A, less the initial effect. (ABS, 1991, p.10)

For example, if the researcher is interested in the total effects of a $1 million increase in income in the live theatre sector, and wanted to know the total employment generated from this increase (including the live theatre sector itself), the appropriate multiplier would be the type A. If on the other hand, the researcher only wanted to know the effect on employment on all other industries outside of the live theatre sector (not including live theatre itself), the appropriate multiplier would be a type B. An example calculation explains. A $1,000 increase in output of the live theatre sector is directly responsible (in live theatre sector) for 0.018 jobs (initial effects). This change gives rise to, 0.005 jobs in the first round
effects, 0.003 jobs in the industrial support effects.

The sum of the first round and industrial support effects is the production induced effects \((0.005 + 0.003 = 0.008)\). 0.007 jobs are generated by the consumption induced effects. The total effect is that the $1,000 change in income results in 0.033 jobs being generated \((0.018 + 0.005 + 0.003 + 0.007)\). Figure 1 shows the effects in a diagram.

**Figure 1.** The Multiplier effect on employment.

\[
\begin{array}{cccc}
\text{Live Theatre} & \text{Scenery Builders} & \text{Suppliers to Scenery Builders} & \text{Households} \\
\text{Jobs} & \text{Jobs} & \text{Jobs} & \text{Jobs} \\
0.018 & 0.005 & 0.003 & 0.007 \\
\text{Initial Effects} & \text{First Round Effects} & \text{Industrial Support Effects} & \text{Consumption Induced Effects} \\
\end{array}
\]

The multiplier effect (type 2A) is 1.833 \((0.033/0.018)\). However, if we only want to know the multiplier effects outside the live theatre sector, use the type B multiplier and disregard the initial effects \((0.018)\).

The Type B multiplier is 0.833 \((0.033-0.018)/0.018)\). For a more detailed example of the calculation for a type 2B employment multiplier (see Appendix 12).
4.0 Methodology

4.1 Research Design

This is a descriptive research design. A computation has been developed to quantify the amount of employment generation as a result of government funding to two local arts organisations: Deck Chair and Spare Parts Puppet Theatres.

4.2 Operational Definitions

A Full-Time Job

52 weeks of paid work within a 12 month period, consisting of: 5 days per week, 8 hours per day, 40 hours per week, 2,080 hours per annum.

Direct Employment

This includes persons on the theatre payroll (Artists & Support, Production & Venue), and those not on the payroll but who contract their artistic services that directly contribute to a production or an artistic performance. In this study, contracting artists include: Production Designers, Music Composers, Writers, and Choreographers.

Indirect Employment

Excepting those contracting artists specified in the definition of direct employment, indirect employment is:
those persons not on the theatre payroll, and who are employed outside of Deck Chair and Spare Parts Puppet Theatre, as a result of the multiplier effect. This includes all direct and indirect suppliers to the theatres. For example, scenery builders, suppliers to scenery builders, printers and printer suppliers, lighting hire services, and theatrical lighting manufacturers.

The following definitions are consistent with the Australia Council's 1993 Application for Government Assistance Schedules.

**Artists and Support**

(full-time, part-time, casual, short-term contract)

**Performing Artists:** Persons on the theatre payroll, directly involved in an artistic performance activities, including: musicians, actors, dancers, puppeteers.

**Support Artists:** Persons on the theatre payroll, not directly involved in an artistic performance, including: Dramaturgs, Music Composers, Directors, Choreographers, Production Designers.

**Production and Venue:** Persons on the theatre payroll involved in technical, production, backstage, box office, and support areas of theatre (including front of house).
Administration and Marketing

(full-time, part-time)

Administration and Marketing: Persons on the theatre payroll, engaged in administrative and marketing work.

Contract Artistic Services

Persons not on the theatre payroll, including: Production Designers, Music Composers, Writers, and Choreographers. Contracting Artistic Services is where payment is made to individuals for original work directly contributing to a production or an artistic performance (cited as: Fees, Scores and Scripts in the Australia Council Application for Government Assistance schedules) and that are not categorised as either: Artists and Support, Administration and Marketing.

Government Funding

Government funding refers to all levels of Australian government: Federal, State, and Local. This means grants from the Australia Council and Department for the arts. Funding from statutory authorities is ignored because it
represented an insignificant proportion of total government
grants over the research period (see Appendix 17).
4.3 Data Collection

The definition of a *full-time job* was established through discussion with the theatre managements and the relevant union, The Media, Entertainment and Arts Alliance.

The employment multiplier was taken from the Australian Bureau of Statistics' (ABS) National Accounts Input–Output Tables for 1986–87 (ABS, 1991, p.6). The relevant coefficient is 1.667 (see Appendix 12).


The employment data was aggregated directly from the pay sheets from each theatre. The methodology was as follows:

**Step 1**

Employment was segregated into:

- Artist and Support
- Administration and Marketing

The total amount of employment was calculated by summing the number of weeks, days, and hours. Weekly payments consisted of a seven day period. Care was taken so as not
to confuse fortnightly payments with weekly payments, and payments of less than a week with weekly payments, by reference to the dates and the periods between payments.

**Step 2**
In the case of casual and part-time work where the dollar amounts were known, but the period of employment or rate of pay per hour were unknown, a substitute rate per hour was used. This was a representative rate per hour taken from the relevant union award for the category of employment. Payments were divided by this surrogate rate to calculate an effective period of employment (see Appendix 1).

**Step 3**
The total employment for Artist and Support, Administration and Marketing in weeks, days, and hours was recalculated into total hours by multiplying weeks by 40 hours, and days by 8 hours. These were added to the balance of hours. This yielded total hours of employment generated for the research period: 1989, 1990, 1991 (see Appendices 2 and 3).

**Step 4**
The employment category of Contract Artistic Services was identified from individual employment contracts and the contract expenditures in the Australia Council Application for Assistance schedules, cited as: *fees/scores and scripts*. Groups were categorised on the basis of the type of work done. The following categories were used:
Production Designers, Music Composers, Choreographers, and Writers. The objective was to recalculate all the contracts back into weeks of employment generated.

In cases where a time period for the contract was specified, this was regarded as the term of employment. In cases where no time period was specified, however, a substitute weekly rate was established for each type of employment group: Writers (see Appendix 9), Production Designers and Composers (see Appendix 4). These contract payments were divided by this substitute rate in order to recalculate the contracts into weeks of work generated. The total employment for the Contract Artistic Services category was recalculated from weeks and days into total hours by multiplying weeks by 40, and days by 8 (see Appendices 2 and 3).

**Step 5**
The total hours of employment for each category:

- Artist and Support
- Administration and Marketing
- Contract Artistic Services

were summed to yield total hours of employment over the research period. This figure was divided by 2,080, the total hours for a full-time job over one year, to yield the total number of equivalent full-time jobs. (see Appendices 2 and 3).
4.4 Measuring Instrument

The measuring instrument is the Government Arts Funding - Employment Ratio. This computation calculates government funding to Deck Chair and Spare Parts Puppet Theatre that translates into equivalent full-time employment. The computation is presented in two versions for each theatre company.

The first version accounts for direct and indirect employment by the inclusion of an employment multiplier. The second version only accounts for direct employment, and does not include the multiplier. Both versions are presented in the employment categories: Artist and Support, Administration and Marketing, Contract Artistic Services, and total employment, as well as presented for each of the following periods: 1989, 1990, 1991, and 1989-1991. The following are the variables:

Variables

\[ E_1 = \text{Total employment expenditure on the Artists and Support employment category.} \]

\[ E_2 = \text{Total employment expenditure on the Administration and Marketing employment category.} \]

\[ E_3 = \text{Total employment expenditure on the Contract Artistic Services employment category.} \]

\[ E_4 = \text{Total employment expenditure} \ (E_1 + E_2 + E_3) \]
A_1= Equivalent full-time jobs in the Artist and Support employment category.

A_2= Equivalent full-time jobs in the Administration and Marketing employment category.

A_3= Equivalent full-time jobs in the Contract Artistic Services employment category.

A_4= Equivalent full-time jobs, total employment.


* See section 4.4.2.4 for explanation. See also appendix 12 for the method of adjustment.

Y_1= Government funding contribution per equivalent full-time job: Artist and Support.

Y_2= Government funding contribution per equivalent full-time job: Administration and Marketing.

Y_3= Government funding contribution per equivalent full-time job: Contract Artistic Services.

Y_4= Government funding contribution per equivalent full-time job: total employment.
\( X_{1m} \) = Total number of equivalent full-time jobs that represent direct and indirect employment in the Artist and Support employment category.

\( X_{2m} \) = Total number of equivalent full-time jobs that represent direct and indirect employment in the Administration and Marketing employment category.

\( X_{3m} \) = Total number of equivalent full-time jobs that represent direct and indirect employment in the Contract Artistic Services employment category.

\( X_{4m} \) = Total number of equivalent full-time jobs that represent direct and indirect employment.

\( X_1 \) = Total number of equivalent full-time jobs that represent direct employment in the Artist and Support employment category.

\( X_2 \) = Total number of equivalent full-time jobs that represent direct employment in the Administration and Marketing employment category.

\( X_3 \) = Total number of equivalent full-time jobs that represent direct employment in the Contract Artistic Services employment category.

\( X_4 \) = Total number of equivalent full-time jobs that represent direct employment.

\( X_{1e} \) = One equivalent full-time job in the Artist and Support employment category.

\( X_{2e} \) = One equivalent full-time job in the Administration and Marketing employment category.
\( X_{3e} = \) One equivalent full-time job in the Contract Artistic Services employment category.

\( X_{4e} = \) One equivalent full-time job, total employment.

**Figure 2.**

The Government Arts Funding-Employment Ratio.

<table>
<thead>
<tr>
<th>Version 1: (with multiplier)</th>
<th>Version 2: (without multiplier)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{E_n}{(A_nB)} = \frac{E_n}{X_{nm}} \Rightarrow Y_n : X_{ne} )</td>
<td>( \frac{E_n}{A_n} = \frac{E_n}{X_n} \Rightarrow Y_n : X_{ne} )</td>
</tr>
</tbody>
</table>
4.4.1 Reliability

The definition of a full-time job may change over time, in accordance with changes in the market for labour, this may effect the reliability of this instrument. Coughlin and Mandelbaum (1991, p.26) warn the researcher that the reliability of multipliers may be suspect because they don't take account of longer-term economic restructuring. They are short term in nature. For example, changes in technology can cause, first, a change in productivity, and accordingly the amount of labour used in the process. Second, changes in productivity of one industry that may cause the amount of labour in another related industry to change. Each factor will mean that the employment multiplier will become dated over time.

In practice, however, the calculus for generating multipliers, I-O Tables, are an expensive and time consuming task to compile. It is not undertaken all that often. As a result, the latest multipliers are not always available (Coughlin & Mandelbaum, 1991, p.26). This study intentionally uses the 1986-87 ABS Entertainment and Recreational Services employment multiplier in the context of 1992, for the purpose of demonstrating the differences that will arise with its use. The reliability of a multiplier computed 7 years ago is used with appropriate caution.
4.4.2 Validity

4.4.2.1 Comparison with official data

The most practical way to validate the number of equivalent full-time jobs that are derived from this study, is to compare the results against the estimates given in the schedules of the Australia Council Application for Assistance schedules. This can be done only for the Artist and Support, Administration and Marketing employment categories, because the Contract Artistic Services category is not accounted for in the schedules. This comparison is made because in this study the jobs were calculated by direct reference to pay sheet data, and not the Australia Council schedules. Because this study accounts for the amount of part-time employment, while the Australia Council schedules account for the number of part-time positions held, not the amount of employment, a small variation, +10 percent, was expected.

A comparison was made between the number of equivalent full-time jobs as shown in the Australia Council schedules and the results of this study, together with the percentage deviation from the official estimates. Data sets from both theatres were aggregated. Over the research period, 1989-1991, this study shows that 20.7 full-time jobs were generated, against 18.9 jobs in the official estimates. The deviations in the Administration and Marketing category are
within reasonable limits, ranging from plus 5 to plus 13 percent (see Appendix 5).

The deviation of results in the Artist and Support category is unexpectedly large. The range is from minus 7 to minus 61 percent, which suggests that the official estimates overstate employment. In 1990 and during 1989-1991 the largest deviations occur, minus 61 and 38 percent respectively. Translated into numbers of jobs, this means 13 versus 33 in 1991 and 44 versus 72 in 1989-1991 (see Appendix 5). As a precaution, all raw data was double-checked for errors, and all spreadsheet formulae used to calculate the final results were re-checked. No calculation errors were found.

One way to put these differences in perspective, is to compare the cost per equivalent full-time job, ignoring the effects of the employment multiplier. A comparison of the cost per job, between the study and the official results is made. For 1989-1991, this study shows that the cost per job was $31,029, while official estimates show $19,062 (see Appendix 6). The study result is congruent with yearly incomes typical of those sighted in the pay sheets. This suggests that the study results represent a more realistic estimate, which supports the validity of the measurement used in this study.
4.4.2.2 Non-government funding ignored

The Government Arts Funding-Employment Ratio computation does not account for the proportion of non-government funding and box office revenue that contributes to employment generation. The assumption is made because government funding over the research period accounts for 71 percent of total revenue. It is reasonable to consider that in the absence of government funding, therefore, the organisations would in all probability cease operation.

4.4.2.3 The employment multiplier: assumptions

The employment multiplier used in version one of the computations is a type 2B, derived from the 1986-87 I-O tables (ABS, 1991, p.6). The choice of this multiplier is based upon certain assumptions as follows:

The use of a type 2 multiplier assumes a closed model of the economy (derived from the I-O tables). This assumption is supported by Jensen and West (1986, p.53), who believe that most I-O analysts prefer to make this assumption when using multipliers.

The use of the type B multiplier assumes that we want to know the employment generation effects outside the economic sector in question. This will show the increase in the
number of jobs in all other sectors of the economy, as a result of an increase in one job in the Entertainment and Recreational Services sector of the economy.

The employment multiplier used assumes an indirect allocation of competing imports. This means that there are no competing imports, that can directly substitute the goods and services being examined. In this case, live theatre performances.

4.4.2.4 Definition of direct employment

Archer (cited in Mitchell & Wall, 1989) points out that there are alternative ways to define primary and secondary impacts in an economic impact analysis. Mitchell and Wall (1989, p.32) treat direct employment as jobs created within the organisation in question, and indirect employment as jobs created as a result of the existence of direct suppliers to the cultural organisation, and those (indirect) suppliers, who supply the direct suppliers.

If this view is taken, the employment category of contracting artists would be considered as indirect employment. However, this study adopts the view that contracting artists should be represented in direct
employment. This is done because it is felt that contracting artists form an integral part of the employment structure at the two theatres under investigation.

This treatment of direct employment means that the employment multiplier should be adjusted. The ABS type 2B Employment multiplier is calculated by summing: the first round effects, the industrial support effects, and the consumption induced effects. Using this method, contracting artists would be considered the first round effects. To avoid double counting of the multiplier effect, an adjustment must be made by subtracting the first round effects from the calculation (see Appendix 12).

This adjustment of the multiplier presupposes that contracting artists constitute the total effects in the first round. This is not true, as it ignores other inputs such as scenery suppliers, stationary supply, and other direct suppliers to the theatres. The view is taken that it is preferable to understate, rather than overstate the multiplier effect by double counting the effects from contracting artists, who in this case, represent a large part of the first round effects.
4.5 Data Analysis

4.5.1 Procedure for Computation

There are two versions of The Government Arts Funding - Employment Ratio for each theatre. Version one, accounts for direct and indirect employment. Version two, accounts only for direct employment. Note that version one includes the employment multiplier in the denominator. The procedure for computation is as follows:

Step 1 (variable $E_n$)
Total employment expenditure for each employment category: Artist and Support, Administration and Marketing, Contract Artistic Services, and total employment is taken from the income and expenditure statements of Deck Chair and Spare Parts Puppet Theatre (see Appendices 7 and 8).

Step 2 (variable $A_n$)
The employment for each category, as described in step 1, is calculated by dividing the aggregate of hours of work by 2,080 to yield the number of equivalent full-time jobs for each category (see Appendices 2 and 3). As noted 2,080 hours represents the duration of employment for an equivalent full-time job over a 12 month period.
**Step 3** (variable B)

This variable relates only to version 1. The number of equivalent full-time jobs for each employment category (variable $A_n$) is multiplied by 1.667. This is the adjusted ABS employment multiplier for the Entertainment and Recreational Services sector.

**Step 4** (variables: $X_{nm}$, $X_n$, $E_n$)

From the results in Step 3, $X_{nm}$ is the number of equivalent full-time jobs that represents direct and indirect employment (for version 1). $X_n$ is the number of equivalent full-time jobs that represents only direct employment (for version 2). $E_n$ is divided by $X_{nm}$ (version 1), and $E_n$ by $X_n$ (version 2) to yield the government funding contribution per equivalent full-time job in each employment category.

**Step 5** (variables: $Y_n$, $X_{ne}$)

$Y_n$ is the government funding contribution per equivalent full-time job. When $Y_n$ and $X_{ne}$ are both divided by $X_{ne}$, this yields a ratio of government funding ($Y_n$) that translates into one equivalent full-time job ($X_{ne}$).
4.6 Limitations

The Government Arts Funding-Employment Ratios rest upon certain assumptions. Some limitations are discussed.

4.6.1 Substitute Rates of Income

The employment category of Contract Artistic Services presented some difficulties as some contracts only specified payments, and made no reference to periods of employment. A survey of professions would identify a representative rate of income for work done in each field. This was not conducted because theatre management felt that it may be a sensitive issue, and such an enquiry would be met with a low response. It was agreed that a survey of incomes would not be done. In this case, a substitute rate of income had to be derived to calculate the effective term of employment, and applied across these professions.

Union awards do not apply to individuals who contract their services. The relevant guilds and associations, with exception of the Writer's Guild, did not have data on rates of income for their members. In the case of writers, the minimum rates per week for experienced writers in residence were used as an income substitute (see Appendix 9). The experienced rate was used because the theatres noted that all writers used were experienced. In the other employment
categories. Production Designers and Music Composers. ABS statistics showing the average weekly earnings were used as substitute rate where the term of employment was unknown (see Appendix 4). Of all the contracts within the research period, 50 percent were subject to substituted income estimates (see Appendix 13).

Both approaches have been used with caution. This is because the application of a substitute rate of income, to all members of a group, presupposes that the substitute would be considered a satisfactory and representative income by all members. The substitute rate does not account for the amount an individual can charge as a function of their expectations and professional reputation. This treatment is defended on the grounds that it is the most practical way to estimate the amount of employment, aside from a artist employment survey.

In addition, the substitute rates for Production Designers and Composers are subject to limitation because the ABS average weekly earnings used, are an aggregate of 5 to 6 similar types of occupations (see Appendix 14). This aggregation is not sensitive to the individual differences between professions.

The same issue arises when using a substitute rate of income to generalise across the population of casual and part-time employees in the Artist and Support.
Administration and Marketing employment categories. Where periods and rates of pay were unknown, union award rates were applied to the relevant types of employment (see Appendix 1). The substitute rate of income presupposes no deviation from the award rates of pay. Where individual negotiation may have taken place, the substitute rate would result in possible inaccuracies.

For Artist and Support employment, the category of actors presented no difficulties. This was not the case for the category of Production and Venue personnel. It was not possible to identify whether the payments were paid at the day or night rates. A mean of the two rates was taken as the substitute (see Appendix 1).

4.6.2 Contracting Artists: Measurement Problems

The Government Arts Funding-Employment Ratios shown in the Findings (section 5.0), produced some unexpected results. Some of the problems are discussed.

Some large year by year variations in the Contract Artistic Services category are essentially the result of methodological and accounting errors. To help explain this, a comparison has been made between:
- Expenditure on Contracting Artists according to the income and expenditure statements.

- The amounts of contract fees paid, together with the estimated weeks of employment generated.

Large variations occur because the ratio computations are based on data drawn from the income and expenditure statements, and individual contracts. Since these figures do not reconcile, some ratios are biased. This causes some large variations in the ratios tabled in the Findings (section 5.0). These problems are discussed.

There is an unexpectedly low ratio for Contracting Artists in 1989 at Spare Parts Puppet Theatre (see Appendix 10). The explanation for this is that the number of equivalent full-time jobs for Contracting Artists in 1989 was 2.9 (see Appendix 2). For the same period, the income and expenditure statement shows that only $28,000 was expended on contracting artists (see Appendix 7).

The reason why there were so many jobs generated by such a small amount is that in 1989, 9 out of 11 artist contracts was translated into periods of employment by referring to the period of contract (see Appendix 13). This treatment assumes that the period of contract means that the artist is be fully employed by the theatre. It ignores the fact that the contract may only constitute a portion of the artist's working time. It does not account for the fact
that the artist may be working on other projects at the same time. The true amount of employment may have been overstated, resulting in unrealistically low ratio for 1989 and accordingly the whole research period 1989-1991.

A high ratio for Contracting Artists in 1991 at Spare Parts Puppet Theatre (see Appendix 10) occurs because of the variation between the reported expenditure and contract fees paid (see Appendix 15). Here, $21,000 was reported in the expenditure statement, but only $9,174 and 4 weeks of a term contract were observed. This resulted in $21,000 being divided by 0.3 equivalent full-time jobs. This appears to be primarily an accounting error. A methodological error, however, may partly contribute because of the problems with using substitute rates of income.

For Deck Chair Theatre, there were accounting problems in 1989 and 1991. The Contract Artist ratios would have shown zero values. This is because, according to the income and expenditure statement, $0 was expended on Contract Artistic Services in 1989 and 1991 (see Appendix 8). The contract fees observed, show that in 1989 and 1991 $5600 and $29,041 was expended on artist contracts respectively (see Appendix 15). These values ($5600 and $29,041), though not the official expenditure data, were used to calculate the ratios in section 5.0 (Tables 3 and 4) and Appendix 11.
At Deck Chair Theatre, an unexpectedly high ratio of $65,520 for Contracting Artists in 1990 is noted (see Appendix 11). This has occurred because the number of equivalent full-time jobs have been calculated on the basis of $6800 sighted in individual contracts (see Appendix 13), however $12,600 is stated as Contract Artist expenditure in the income and expenditure statement (see Appendix 8). Because these figures do not match, the ratio is overstated.

Finally, variation in the Artist and Support, and Administration and Marketing ratios for Deck Chair Theatre is difficult to explain. This may be due to the application of substitute rates of income, and problems in translating pay sheet data from Deck Chair Theatre into periods of employment. The same ratios for Spare Parts Puppet Theatre were generally subject to less variation.

4.6.3 Definition of a Full-Time Job

The approach of converting casual and part-time employment into full-time equivalent employment is supported by Mitchell and Wall's 1989 study of employment generation at an arts festival in Ontario, Canada, and Cwi and Lyall's 1977 study on cultural institutions in Baltimore, USA.
A definition of a full-time job was made by consultation with both theatre managements. This was agreed to be: 52 weeks per annum, 5 days per week, 8 hours per day. The relevant union, The Media, Entertainment and Arts Alliance, agreed with this definition. This consultative approach is supported by CWI and Lyall (1977, p. 86).

Generalising an artificial definition across individuals, however, presupposes that all have the same view as to what constitutes full-time employment. It is recognised that artists may have different expectations from their work loads, and may not necessarily conform to artificial definitions of full-time hours of work. This approach is defended because, for practicality sake, some reference point must be established.

4.6.4 Problems with Multipliers

Coughlin and Mandelbaum (1991) point out some of the limitations in using I-O Analysis and the resulting regional multipliers. The practicality of this problem is explained well by Stevens & Lahr (cited in Coughlin & Mandelbaum, 1991, p. 26) who point out that since inter-industry coefficients are not always known, and it is an expensive practice to survey and identify them, it leads to researchers applying national multipliers to regional models, with adjustment. The practise is not criticised. It
is more a warning that skilful judgement must be used, and that bias may result.

In this study, an adjusted national employment multiplier is used in version one of *The Government Arts Funding Employment Ratio*. This adjustment is made because of the way direct employment is treated, not for regional variations.

The multiplier is used with the intention to demonstrate the difference between direct and indirect employment. The validity of applying this multiplier is questionable on two counts. First, applying a national multiplier to a regional situation does not account for regional differences in employment, productivity and technology (Coughlin & Mandelbaum, 1991, p.27).

Second, the multiplier used is a national aggregate of industries within the scope of *Entertainment and Recreational Services* (ASIC code: Division L, subdivision No. 91, classes 9131-9144). This is an aggregate of 15 related economic activities, ranging from motion picture production to sport and recreation. This level of aggregation cannot account for the specific characteristics of theatre companies.
As a result, using an employment multiplier for this aggregate of activities assumes homogeneity of the sectors involved. The ASIC code: Division L, class No. 9136 titled: Live Theatre, Orchestra and Bands would have been a more obvious choice. No multipliers from the Australian I-O tables, however, are available at this level of disaggregation. This leaves the researcher with little choice, except to use a multiplier that is derived from such a large aggregate. This is done with appropriate caution.

4.6.5 Leakages

The assumption is made that there are no leakages of employment outside of Australia. If employment has been generated offshore as a result of the operation of the two theatres during the research period, version 1 of the ratio computation will overstate the multiplier effect on indirect employment.

4.6.6 Qualitative Benefits Ignored

A Canada Council (1982, p.1) research note points out a limitation of what it describes as the conventionalist
approach to economic impact studies, that are essentially quantitative, opposed to qualitative studies. Luxton (n.d.) calls the latter "the social approach." (p.4)

The limitation is that emphasis on the economic value of the arts essentially ignores the aesthetic value of the arts in the community. Lee-Owen (1980, p.317), says that economic impact studies are necessary, but not sufficient argument, in defence of public subsidy to the arts. A potential limitation of this study may be, that it does not account for these qualitative issues related to the generation of employment.

4.6.7 Opportunity Cost of Employment

This study disregards the opportunity cost of arts organisation employment. The opportunity cost is the next best alternative that public funding to the arts could be used for, other than arts funding. In the context of employment, this means that in the absence of the arts, it is assumed that individuals would not necessarily find employment of an alternate kind. This is a common assumption made by most researchers when conducting economic impact on the arts (Canada Council, 1982). In defence, this is a reasonable assumption, apart from the purpose of comparison, because the opportunity costs would be subject to pure speculation.
This study is designed to establish a methodology to identify the relationship between employment and government funding, using a sample of two different theatre companies in Fremantle. The ratios can be applied to other performing arts companies, but in each case, the ratios can only apply to the particular company. While the method can be applied to the other arts organisations, the ratios in this study obviously cannot.