Melbourne Route Bus Contracts

The impact of change from local to non-local ownership

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Prepared by the National Institute of Economic and Industry Research
416 Queens Parade, Clifton Hill, Victoria, 3068 Telephone: (03) 9488 8444;
Facsimile: (03) 9482 3262 Email: admin@nieir.com.au ABN: 72 006 234 626

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Executive summary

The objective of this study is to assess the costs and benefits of changing the ownership of a bus operator contract from a local (that is, Victorian owner) to an out of Victoria owner and of most relevance to a foreign based owner.

In the course of the study a survey of experts (Government administrators, suppliers to the industry, consultants) was undertaken. The core view was that the biggest risk to the bus industry from changing ownership to out of state owners would come if the change of ownership occurred because of margin reduction in the bid to secure the contract where the bid margin was below the level for long-run sustainability.

In this case the new operator would attempt to restore some profitability by:

(i) changing the characteristics of the workforce input below the levels for optimum productivity (eg by requiring unpaid overtime and/or same output by reduced headcount);

(ii) reducing dollar per hour labour costs by the substitution of less experienced, younger less qualified employees for experienced, older local qualified employees; and

(ii) outsourcing overhead services to jurisdiction of the head office which is becoming more common with the introduction of high speed broadband.

The ultimate cost to the Victorian community of this will be a decline in service quality, declining patronage, a decline in suppliers' commitment to the operator which in the long-run could well offset the benefits to Victoria residents if not the Government.

The evidence for this view is anchored in fact. It reflects the experience in Victoria and elsewhere in Australia with the British operator National Express which took up a bus operation in Victoria in 1998 and walked away from the contract five years later.

It is also based on what has happened in other international jurisdictions, such as the Netherlands, where the costs reduction focus in bus contracts is now viewed as outweighing the benefits.

The study methodology

The study methodology involved building a model of a bus franchise where the structure reflected the views of the industry experts of the important transmission mechanisms for cost/benefit outcomes for a change in ownership of a contract. Also the requirement was to set parameter values within reasonable bounds of empirical estimates or export assessment.

The model was benchmarked to the contract size and cost structure of the Melbourne contracts that have the potential to have a change of ownership by open bids after 2012.

The study findings: the default case

The default case involves a change of contract ownership from a local to another local owner with a reduction in margin assumed to be 2 percentage points.

For the 2 percentage point reduction in margin (that is, from 9 to 7 percent) the results are as follows.

- In terms of the welfare indicator (measurable or headline private and public consumption) the benefits to Victoria would range from zero percent of the contract value up to 1.7 percent, depending on whether the cost savings were allocated to expanding the bus network or channelled into general public consumption such as health and education. If the contract benchmarks set the standard for the rest of the Melbourne bus industry, then the benefits could reach 20 percent of the contract value, in terms of the consumption indicator.
- In the case of the wider social benefits that are not directly incorporated in measures of economic activity and consumption, for the 2 percentage point margin reduction with the savings channelled into network expansion, the benefits would be around 6 percent of the contract value and double this if ample attention was paid to expanding the network in localities of under-servicing. If the cost savings were extended over the rest of the industry, then the benefits could be between 3 and 6 percent and above the total metropolitan contracts value.
- In the case of a transfer of ownership to an out of state owner, the outcome would be a loss of between 0.8 and 4.3 percent of the contract value for no spillover effects to the rest of the industry. This comes from the outflow of all the margin income to outside Victoria.

Study findings – the most likely case

It is unlikely, however, that margins will be able to be reduced below 9 percent on a sustainable basis.

Assuming that this is the case and the assumptions that:

(i) margins are reduced by 2 percentage points;

(ii) ownership is transferred to an out of state operator;

(iii) cost savings are transferred into bus network expansion; and

(iv) taking into account reasonable expectations for cost reduction, overhead outsourcing out of state and reduction in service quality,

then the expected outcome would be a headline net welfare loss to Victoria of between 5 and 7 percent of the contract value. The best case of the change-over in terms of the social benefits/passenger bus trips would be a gain of just under 2 percent of the contract value.

For a 5 percentage point margin reduction, the loss of headline welfare would be between 5 and 11 percent of the contract value.

1. Background and study objectives

The Melbourne Metropolitan Bus System is supplied by around 25 independent operators (including school buses) which have exclusive access to a defined route network. The contracts are generally for seven years with contracts negotiated by an "open book" negotiation process and a three year rollover opportunity. That is, payments to contractors to operate services are based on assessment of the operator's actual costs and benchmarking against what the costs should be if practical efficiency improvements were undertaken. The contract sets out the payments that will be made to the operator during a contract period based on the kilometres of service, hours of operation and peak bus requirements. All fare revenue is returned to the Government. There is also a KPI regime that will provide incentive payments for new patronage growth and incentive/penalty provisions for operational performance.

The bus system to the 1990s was a mixture of public and private operators. When the operational responsibility for the trains was privatised, the public bus services were separated into two operations which were privatised by public tender.

One of these purchasers was by the British operator National Express, which purchased the previously public bus services that operated in the northern, north-eastern and eastern suburbs of Melbourne. This purchase occurred in 1998. The operation was named National Bus. The remainder of the public bus system in 1998 was taken over by a consortium of local operators under the name of Melbourne Bus Link (MBL). The National and MBL contracts are five year contracts.

Since the privatisations there have been no open tender contract renegotiations. This stems from the 1988 attempt by the then Melbourne Transit Authority to call tenders for all Melbourne's bus routes. Some routes were taken away from existing operators and given to a company, which until then operated only school and charter buses. This was successfully challenged in the courts and the routes restored to the original operators. One reason for the judgement was that the licences to operate bus routes as well as the routes themselves were the property of the established operator and not the State Government.

The judgement took into account the fact that the buses and supporting infrastructure was owned by the bus operators. To be able to put the contracts out to competitive tender at the end of each contract period, the Government would have to make sufficient payments to purchase the assets from the operators and achieve certain other requirements about expectations of operators to continue in business. In the new contracts, from 2008, this was not done with explicit recognition given that the open book roll-over negotiation process would follow the initial seven year period.

This situation does not prevail for the two privatised contracts as the Government maintains substantial equity in these assets and the possibility of open tender renegotiation has been provided for post 2012 in the 2008 renegotiations.

1.1 The National Express withdrawal

In 2003 National Express relinquished its National Bus contract to an existing locally owned operation. Indeed, National Express walked away from many of its Australian bus, rail and tram contracts at the same time. The National Express experience has left a deep imprint on the bus industry, in terms of the costs of what happens when companies aggressively bid for contracts, that is when margins are set at below minimum market acceptable commercial requirements. National Express bid is understood to have been significantly under the prevailing industry benchmarks in terms of margin. The flow-on effect can be cost cutting, declines in employee morale, a decline in performance, safety risks and lost market opportunities.

The stakeholder views of the advantages of local ownership vis-a-vis non-local ownership, and especially foreign ownership, given below in this study was influenced by the National Express experience.

1.2 Study objectives

In the event that the two eligible Melbourne route contracts are put out to tender, the objective of this study is to assess the costs and benefits of local versus non-local ownership of bus contracts.

2. Locally owned versus non-locally owned business

The Issue as to the most appropriate firm structure and ownership in terms of maximising regional economic growth has been part and parcel of the economic debate from time immemorial. The truth of the matter is that the issue can never be resolved in terms of one unqualified conclusion. The reason for this is straightforward. The appropriate firm structure and ownership for an industry is not independent of the technological base and the drivers of unit costs that prevail at a given point in time.

In terms of the long-running economic debate, the main thread of argument has been between small scale enterprises and large scale enterprises. The ownership issue has been more indirect since small scale enterprises are more likely to be locally owned than large scale enterprises. That is, does a region with small scale enterprises (and by implication more locally owned enterprises) have a faster growth rate measured in terms of real income per capita than regions dominated by large scale enterprises? The findings in the literature are mixed, as one would expect given that the outcome depends on the industry structure prevailing in a particular region.

For example, in a region where retail is an important contributor to economic activity the introduction of a large investment by a national or international retail chain which significantly reduces the contribution of locally owned small scale retailers is not unexpectedly found to be a negative for regional development.

This comes from the reduction in real incomes retained in the region, not only because of the elimination of locally owned capacity and therefore income to local households, but also because of the reduction in total hours of work required from scale efficiencies and because of the monopsony power of the retail chain in terms of labour demand which enables the chain to reduce real income on a dollar per hour basis. Even if the retail chain uses its market power by passing on the efficiency gains to local consumers, the real income gains from this source have limited impact on the regional economy because of the leakage of expenditure to other regions in the nation as a result of the narrow focus of the industrial base.

Another polar example would be the case of the electronics industry, or at least the mass market electronics industry. For mass produced electronic equipment the only regions where such activities will exert a positive sustainable impact on employment and real income growth per capita will be enterprises operating facilities at new world class scale. That is, very large enterprises that, because of scale, can never have significant local ownership.

In contrast regions which depend on consumer electronic production for facilities which are significantly below best practice scale, even if significantly locally owned, face lengthy periods of stagnation and then contraction when plants are finally closed.

In a recent paper using a data base that had not been employed before, D. Fleming and S.J. Goetz, "*Does Local Firm Ownership Matter*", The Northeast Regional Centre for Rural Development, The Pennsylvania State University, 2010, found that local ownership did matter with qualification.

The data base lists firm size and ownership structure of firms by United States counties which have not been previously used in regional economic growth modelling. Using the per capita income growth over the period 2000 to 2007 by county as the variable to be explained, the study found that along with standard core variables, such as county resident educational attainment, density, etc. that economic growth was strongly correlated with the density of locally owned firms. The impact of non-locally owned firms was weak and relatively insignificant. In terms of firm size, locally owned small firms of up to 99 employees were a particularly strong driver of economic growth, while medium and large non-locally owned firms exerted a particularly significant negative impact on regional economic growth.

There are a number of reasons that are cited in the literature for the benefits of locally owned businesses.

2.1 Retained local income

Locally owned businesses tend to be a positive for regional development because of their greater capacity to retain income within a region. This comes from:

(i) the owners/managers living in the region which means all net surplus from their region activity goes into regional household income;

(ii) the local firms are, from necessity or because of membership of local networks, more likely to outsource to local firms rather than import goods and services from other regions; and

(iii) community involvement by the owner/managers could well mean $/hour employee rates are higher for locally owned enterprises than for similar non-locally owned enterprises.

In relation to (ii) above, although products are now supplied on a national or international platform, the fast broadband age is increasingly globalising services. As fast broadband becomes increasingly available there is increased risk that non-locally owned enterprises will import services from head offices, or the supply chain members of the enterprise which are likely to be located outside the region. Element (iii) is more likely to apply in non-metropolitan regions than in metropolitan regions.

2.2 Benefits from direct community involvement

Direct involvement in the community by owner/managers can improve productivity and spill-over regional economic benefits because of:

(i) short distances between owners and customers enabling rapid response to developing business opportunities;

(ii) an incentive to run the businesses in the best interests of the local community;

(iii) more flexibility in working decisions which substitute short run bottom line outcomes for wider community benefits and, therefore, better able to maximise the long run profitability of the enterprise to the long run benefit of the community; and

(iv) to greater commitment of employees which reduces labour turnover costs and increases institutional knowledge and commitment to the enterprise.

3. A survey of stakeholders

A survey of stakeholders in the bus industry was undertaken. The survey focused on industry experts who were not contract operators. The main points made, in terms of the downside of non-locally owned operators, were:

(i) risk of increased dead running costs (if change of ownership involves the need to develop new depot sites). The risk is that bus operational costs could increase by between 5 and 15 percent;

(ii) risk that orders for new business will be directed from local suppliers to interstate or overseas suppliers involving loss of carriage investment of around $0.3 million per bus;

(iii) reduction in unit wage costs which may, in the longer run, impact on service quality;

(iv) missed productivity increase opportunities (patronage increases) from absence of local knowledge;

(v) costs to suppliers and representatives of the industry if an operator terminates a contract because of under-bidding. The risk of this is perceived to be greater for non-local owners.

There was an additional element that those who thought local ownership was important, at least local ownership in the context of a long term perspective that is allowed for by the open book negotiation process. The longer the horizon for decision making, the more likely that decisions and investments which have a long lead time in reaching maximum benefit will be taken. This is particularly important to ensure long term cost minimisation in the industry.

On the other side, those who did not see advantages in local ownership were:

(i) sceptical about the advantages of local knowledge;

(ii) stressed that non-local owners could improve performance benchmarks from new innovations, although modern communications and efficiency was reducing these probabilities; and

(iii) noted that in terms of their observations that there was little difference between performance standards of locally owned and foreign operators.

In this regard one of the stakeholder surveyed made the comment that the Dutch experience is that competitive tendering does not lead to much service innovation, mainly because authorities do not relinquish sufficient control to enable operators to innovate. Authorities tend to specify the routes and timetables, with operators just running the services and looking to fine-tune routeing, to minimise dead running. In short, the focus is on maximising profits by cutting costs, rather than improving services – this at a time when the goal is to grow patronage, which needs a focus on service improvement, not cost containment. As a result, many Dutch operators are now interested in contract mechanisms focused on lifting service quality.

4. The bus contract model

A simple bus contract model will be developed in this chapter that captures the key practical elements that can give an insight into the benefit of local versus non-local (especially foreign) ownership of bus contracts. The model will be representative of the scale of the two contracts that could possibly be put out to open tender in 2012. The details of the resultant operation are given in Table 1.

Table 1 Representative contract characteristics

Total revenue ($m)	40
Trips (million)	8
Cost structure (percent)	
Driver costs	45
Fuel	12
Maintenance	10
Overhaul (labour)	6
Other overhaul	9
Capital	9
Margin	9

If all other costs were at optimum efficiency on an hours basis and since the Government will determine the capital contribution, or at least the resale value if the operator loses the contract in subsequent renegotiations, then the only variable that can be adjusted in a competitive tender is the margin or the rate of remuneration on a dollar per hour basis. However if the workforce output was stretched through unpaid overtime (maximum technical efficiency) productivity would decline. Optimum hours input is the average hours per employee that maximises productivity defined in terms of service quality.

The model developed below assumes that if the contract had continued on in the hands of the original owner the level of patronage would have remained the same in the new contract period as the previous contract period. All dollar values are in terms of 2010 year prices.

4.1 Direct cost reduction

Even if the operator of the contract is working at optimum efficiency, in terms of hours input, a new operator can attempt to reduce nominal costs by reducing benefits and substituting less experienced for more experienced staff and less skilled for higher skilled staff. Hours input could be also reduced below optimum standards. Hence, the cost savings will be given by:

$$cs = r_1 . (dc + mc) \quad (1)$$

Where:

cs = potential cost savings;

r_1 = cost savings coefficient;

dc = driver costs; and

mc = maintenance costs.

Further, provided that the 9 percent prevailing margin is near a market required average, then the pressure to reduce savings will not be independent of the successful bid margin. That is:

$r_1 = r_0 . ((.09 - bm) / 0.09)^{**}0.55$ (2)

Where:

bm = the successful bid margin which will be 9 percent or less.

That is, the greater the bid margin is below the prevailing and market justified margin, then the greater the proportional incentive to reduce nominal costs which is reflected in the assumption of the 0.55 elasticity. Equation (2) assumes that the maximum incentive to exploit the potential for nominal cost reduction is at the zero bid margin case.

4.2 Patronage reduction

The greater the loss of the skills, experience and morale of staff the greater the likelihood of maintenance problems, service termination, schedule disruption, etc. That is, patronage is likely to decline.

That is:

$pat_1 = pat0 . (1 - r_1)^{**}r_2$ (3)

Where:

pat_1 = patronage under new contract holder;

pat_0 = patronage under previous contract owner; and

r_2 = elasticity of patronage with respect to cost reduction efforts.

If the previous contract owner indulged in feather bedding practices, then r_2 would equal zero. That is, nominal cost reduction could be achieved without patronage loss.

4.3 Outsourcing potential

In the age of high speed internet, a non-local operator has substantial opportunities to outsource overhead activities, either currently carried out from within the firm or purchased from the local community, to their head office's support infrastructure in another State or country, or to the local supply chain supporting the head office. Overhead costs are assumed to account for 13 percent of total revenues.

$os = osr . (ol + oo) \times 0.9$ (4)

Where:

os = outsourced costs to other jurisdictions;

osr = outsourcing ratio;

ol = overhead labour costs

oo = other overhead costs,

and:

$osr = r_3 . ((.09 - bm) / 0.09)^{**}0.55$ (5)

That is the pressure for outsourcing will be a function of the reduction of margin below normal.

The 0.9 coefficient assumes a 10 percent import of services by previous contract owner.

A non-local owner can reduce headline margins significantly and not reduce effective margins because of the economics of sale from outsourcing. Assume that the new contract owners will outsource half of overhead costs to their non-local head office and associated local supply chain. Also assume that the outsourced costs of the outsourced services are effectively reduced by half because of increased utilisation of head office staff and volume discounts from the local supply chain. This means that the new operator would have been able to reduce the headline bid margins by 3.3 percentage points and not in effect have altered the realised margin from the 14 percent benchmark. All the income from the outsourced cost would accrue to a non-Victorian jurisdiction.

4.4 Use of Government savings

The Government savings from margin reduction are assumed to be allocated to expand the network which in turn will increase patronage.

That is:

$pat_2 = pat0 (1.0 + 0.14 - bm)^{**}r_4$ (6)

Where:

pat_2 = patronage (that is person bus trips) after Government uses cost savings to expand network; and

r_4 = elasticity of patronage with respect to network expansion.

The network is expanded by placing more buses on the road.

4.5 Benefits of network expansion

By expanding the network the Government increases community benefits from bus travel from:

(i) reduced congestion costs to the community overall;

(ii) reduced CO^2 and insurance costs from lower accidents; and

(iii) reduced costs of social exclusion.

The total increase in community welfare from these reduced costs is:

$cw = (pat_2 + pat_1 - pat_0)^{*}r_5$ (7)

Where:

cw = community welfare benefits in $m from increased bus patronage; and

r_5 = community benefit per passenger bus trip in dollars.

4.6 Headline consumption: the welfare minimum

In order to reach overall conclusions, the impact on the Victorian economy of non-local ownership of bus contracts vis-a-vis local ownership sum of the outcomes needs to be able to be expressed in terms of one indicator. For this study "headline" consumption expenditure is adopted, or the sum of private and public consumption expenditure as shown in the National and State Accounts.

The impact on Victorian consumption expenditure in terms of the variables from above is:

$$hc = (((0.14 - bm) \,.\, R_0) \,.\, (1 - D_1) + 0.14 \,.\, R_0 \,.\, D_1 + D_1 (os + cs)) * r_7 + cw * r_6$$

Where:

hc = impact of change in bus contract ownership on Victorian headline consumption expenditure, in $m;

R0 = total annual revenue for original contract;

D1 = 1 if new contract owner is non-local and 0 if new contract holder is local;

R_7 = multiplier for Victorian consumption expenditure with respect to bus industry activity; and

r6 = conversion ratio from total real benefits per bus trips into headline consumption.

5. Evaluation methodology: uncertainty and probability

The model developed above relies on seven parameters. However, a great deal of uncertainty surrounds the settings of the parameters and, in some cases, the literature offers little guidance. The parameter values will determine:

(i) the trade-off between margin reduction and operating cost reduction;

(ii) the potential for outsourcing;

(iii) the response of the community to increased bus services in terms of enhanced patronage;

(iv) the social benefits of bus services; and

(v) the relationship between social benefits and economic benefits.

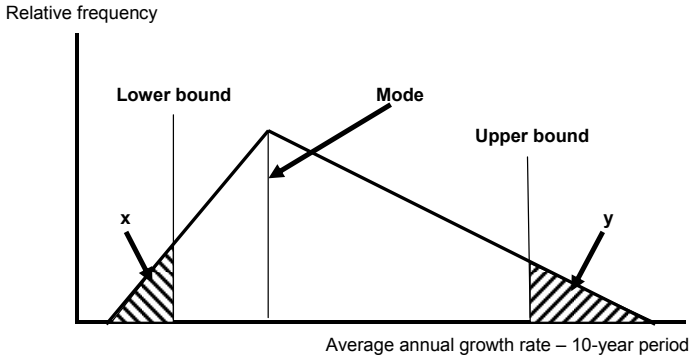
The interactions of all the parameters will determine the overall outcome.

One practical way to accommodate uncertainty into the analysis is to adopt explicit probability density functions which will define the degree of uncertainty involved.

5.1 The quantification of uncertainty: the Trigen distribution

To program the development of the quantitative framework requires a probability distribution which can be easily adopted to capture the probabilities of outcomes for any 10-year period which reflects the experiences from the historical record. Such a distribution is the Trigen distribution.

Figure 1: The Trigen distribution



The Trigen distribution is depicted in Figure 1. It is a triangular distribution which requires the specification of five parameter values to define its proportions. The five parameter values are:

(i) the mode;

(ii) the lower bound;

(iii) the upper bound;

(iv) the probability that the lower bound will be exceeded (in a lower outcome), or area x in Figure 1; and

(v) the probability that values will be taken which are lower than the upper bound (or 1 minus the area y in Figure 1).

The methodology involved specifying Trigen distribution for each of the parameters, that is, r_1 to r_7 in the model. The Trigen probability parameter settings are given in Table 2.

Thus, from Table 2, the lower bound for a bus trip in social value terms is set at $12 a trip with zero probability that the outcome can be lower. The upper bound value is set at just under $30 with zero probability it can be higher. The mode value is set at $18 a trip with a mean value, in terms of the Trigen distribution, of just under $20. The selection of the parameter values in Table 2 will be explained. In short the upper and lower bounds follow the outcomes of John Stanley's work on the value of reducing social exclusion. Stanley's work indicates that the upper bound applies to one third of passenger bus trips. The lower bound estimate applies to the remaining two thirds of passenger bus trips. The movement across the Trigen distribution captures the benefit of putting an extra bus on the road. At worst it will carry passengers where only the lower bound social value applies. At best it will carry passengers where only the upper bound applies. The mode value reflects the outcome where a bus will carry one third of passengers where the upper bound value applies and two thirds where the lower bound applies.

Table 2 Trigen probability distribution parameter settings

Variable	Coefficient	Lower bound	Mode	Upper bound	Probability of lower outcomes: Lower bound	Probability of lower outcomes: Upper bound	Mean
Final labour cost reduction	r_0	0.0	0.08	0.15	0	100	0.077
Trip reduction elasticity	r_2	0.1	0.2	0.5	0	100	0.267
Outsourcing rate	r_3	0	0.4	0.5	0	100	0.30
Network expansion elasticity	r_4	0.1	0.31	0.5	0	100	0.300
Social benefit per bus trip ($)	r_5	12.0	18.0	29.8	0	100	19.9
Consumption conversion rate	r_6	0.10	0.20	0.35	0	100	0.22
Consumption multiplier	r_7	0.4	0.51	0.60	5	90	0.51

6. The selection of probability distribution parameters

This section discusses the selection of the variables given in Table 2.

6.1 The network elasticity (the r_4 parameter)

The network expansion elasticity is given by coefficient r_4 in the model. This elasticity produces the increase in patronage from an increase in network scale.

The literature suggests the parameter is around 0.3. This value has been embedded in the bus contract patronage incentive agreed with DOT as a reasonable broad service elasticity. This is why the mode of the Trigen distribution for r_4 in Table 2 is set at this value. However, there will be considerable variation around the value depending on which segments of the network are expanded. Some local areas would produce relatively high elasticities if:

(i) car ownership was low;

(ii) other modes of public transport were not available; and

(iii) local employment was relatively low.

In the reverse case the patronage increase from network enhancement would be low. The range of these possible outcomes are incorporated into the analysis by setting the lower bound for r_4 at 0.1 and the upper bound at 0.5, which produces an overall mean value near to what is suggested by the literature.

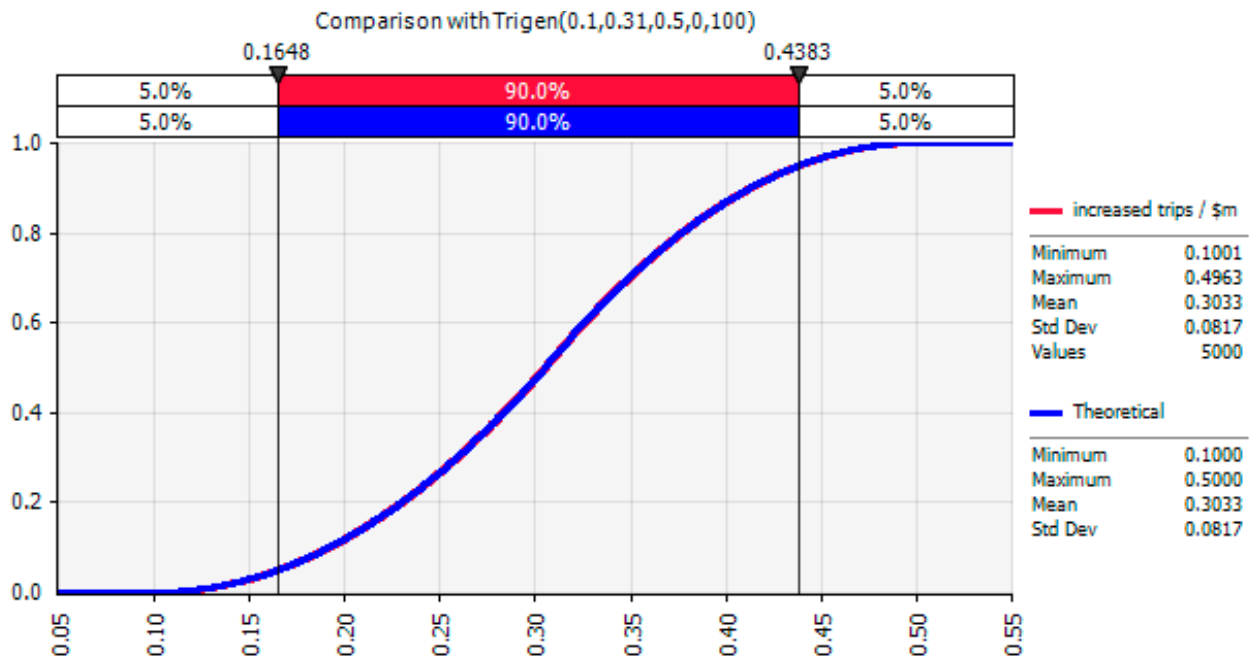
The shape of the cumulative probability distribution that is generated by these parameter settings is given in Figure 2. The cumulative distribution indicates that there is only a 5 percent probability that the elasticity will be below 0.16 and a 5 percent probability it will be above 0.44.

6.2 The outsourcing rate (r_3)

The overhead component of bus industry employment consists of:

- corporate service managers;
- finance and planning managers;
- supply and distribution managers;
- transport service managers; and
- accountants.

Figure 2: Cumulative probability distribution
Patronage network elasticity ($ million) – 5 percentage point margin reduction



The outsourced overhead components consist of accounting, legal, information technology, marketing and business service support services. These are all services which are being outsourced because of the availability of high speed broadband and the rate of outsourcing will increase as the capacity of high speed broadband increases and the productivity of associated applications increases. Increasingly, bus service operators will be able to secure these services from anywhere in the world. Non-local owners with access to capture or supporting overhead services in other jurisdictions will be able to import these services into Victoria.

The capacity therefore to outsource will be a function of the characteristics of any new non-local operator.

From Table 2, the probability parameter settings imply a mean outsourcing rate of 30 percent. However the extent to which this technical rate of outsourcing is exploited will depend on the margin reduction pressure as per equation (5). The full potential rate of outsourcing (out of State) will only be exploited at zero margin.

6.3 The cost reduction potential rate (r0)

The potential for reduction of driver and maintenance costs in man hour terms is limited. The potential reduction from this source will be less than 5 percent. There is also scope for reduction in non-award benefits. The most fruitful potential for cost reduction would be the employment of lower skilled and relatively inexperienced employees compared to the previous contract owner.

Then, together the maximum cost reduction of driver and maintenance costs is set at 15 percent with zero chance of exceedence. The mean value is 7.7 percent.

Such a reduction, for a variety of reasons maybe achievable, but would involve a loss of efficiency and performance which will ultimately reduce patronage. The same comment applies here as per the outsourcing rate. The extent to which this technical rate of nominal cost reduction is exploited will depend on the margin reduction pressure as per equation (2). The full potential rate of nominal cost reduction will only be exploited at zero margin.

6.4 The trip reduction elasticity (r_2)

The trip reduction elasticity measures the extent that cost reductions impact on patronage. From Table 2, the lower bound is set at 0.1 while the upper bound is set at 0.5. The mean value is 0.27. Some stakeholders surveyed for this study would place this elasticity value considerably higher, in terms of a mean expected outcome, as summed up by the statement "overseas owners simply do not understand the Australian labour market and practices".

6.5 The social benefit consumption conversion rate (r_δ)

In J.K. Stanley and D.A. Hensher, "Economic Modelling", estimates are given to the value of bus trips in Melbourne. The results are summarised in Table 3. The calculations are based on 100 million trips.

The key issue here is to convert these benefits to increases in household consumption. Congestion costs will perversely increase household consumption because of increased fuel and mechanical repair costs. However, assuming this is offset by reductions in other expenditures, the main transmission cost for congestion time savings to consumption expenditure is via the use of the time to work longer hours or work the same hours more productivity. This potentially can be large given the high rate of gross product produced to the value of travel time allocated to the bus passengers, or at least the motor vehicle users who benefit from additional bus patronage. However, as can be seen from Table 3, the conversion rate from travel time savings into real consumption expenditure is assumed to be one quarter. This is also conservative in that it does take into account the costs on real incomes from increased road projects that will be needed to offset congestion cost increases.

Currently passenger motor vehicle traffic is exempt from carbon taxes. However, this is unlikely to remain the case over the medium term. A conversion rate of 0.5 is assumed.

Annual savings will translate into lower insurance pressures. Because of imported insurance services a conversion rate of 0.5 is also assumed.

The benefits from reduced social inclusion will vary. Reduced crimes and social security support directly will reduce taxes and increase consumption. Increased employment will reduce the need for migration and associated infrastructure costs. On the grounds of conservatism, a conversion rate of 0.2 is adopted. For other bus users' benefits a minimal conversion ratio is adopted.

The above logic produces a weighted average conversion rate of 0.2. From Table 3 this is adopted as the mode for the probability distribution. From Table 3 the lower and upper bounds for the conversion ratio are set at 0.1 and 0.35 to give a mean value of 0.22. Again, the actual value would be significantly higher if congestion rates were higher and there was substantial under-provision of public transport infrastructure in some regions subject to increased bus services.

	$ million annual	Conversion rate
Congestion time and fuel savings	588	0.25
Greenhouse gas emissions	21	0.5
Accident cost savings	15	0.5
Bus user benefits from social exclusion	784	0.2
Bus user other benefits	394	0.05
Total benefits	**1,802**	**0.19**

6.6 The average trip benefit value (r_5)

In the modelling framework the conversion rate is applied to the average trip total social benefit which, from Table 3, is $18 per trip. However, the minimum resulting from this value could be where there is no social inclusion concept from the trips which would reduce the $784 million social exclusion benefits to zero and increase the other bus user benefits to $591 million. This would give a maximum bound for the average trip benefit of $12. The upper bound is where all trips reduce social exclusion. This gives a total upper value of $29.8 per trip. Hence, the probability distribution settings in Table 3.

6.7 The consumption multiplier (r_7)

In NIEIR's, "*The Economic Contribution of the Bus Industry to Victoria by Local Government Area*", February 2010, the contribution of the Victorian bus industry to economic activity in Victoria was estimated. For a total industry revenue of $870 million, the contribution was:

(i) 10,900 to employment;

(ii) $931 million to gross state product at factor cost; and

(iii) $440 million to consumption at factor cost.

As explained above, the analysis here is using consumption (either Government or household) as the welfare indicator. Hence, the critical ratio here is the Victorian Bus Industry consumption to revenue ratios. This is 0.51.

However, there will be considerable variation in this ratio depending on enterprise structure, the allocation of income between direct household income and superannuation funds, etc. Accordingly, a lower bound of 0.4 is set from Table 2 and an upper bound of 0.6.

7. The default cases: margin reduction from contract ownership change

The two default cases are:

(i) change of contract between two local resident organisations; and

(ii) change of contract from a local organisation to a non-local organisation.

Nothing else changes and the Government uses the savings to expand the bus network. That is, the default cases involve setting r_0, r_2 and r_3 all to zero. The default case also adopts only the mean value for the other parameters.

Table 4 shows the impact for two variants in terms of margin reduction, that is, either a 2 percentage point or 5 percentage point reduction, and two variants in terms of quarantined and non-quarantined outcomes. In the former, the benefits are limited to a particular contract, while in the latter, the benefits accrue to all other contracts. That is, the margin struck in the contract forms the new benchmark for all other contracts applying to metropolitan bus route contracts.

It should be noted in the Table that the costs of extra bus trips are financed out of contract cost savings. All the cost saving are allocated to this purpose.

Table 4 shows that for the default case of a margin reduction, the change in ownership that is restricted to local enterprises generates $1 million trip benefits for a marginal decline in headline consumption. The reduction in headline consumption would be neutralised if the expansion in the bus network was focussed on areas where the patronage response was likely to be higher than what is implied by the mean settings of the parameters, or social advantage from bus trips were higher than the Trigen distribution mean rates.

Table 4 Impact of changes in bus ownership: default cases ($ million)

	Change from local to local ownership	Change from local to non-local ownership
Quarantined impact – 2 percentage point margin reduction		
Government cost savings	0.8	0.8
Benefits from passenger trips	1.0	1.0
Net consumption gain	-0.2	-1.7
Non-quarantined impact – 2 percentage point margin reduction		
Government cost savings	8.8	8.8(a)
Benefits from passenger trips	11.0	11.0(a)
Net consumption gain	-2.2	-3.9(a)
Quarantined impact – 5 percentage point margin reduction		
Government cost savings	2.0	2.0
Benefits from passenger trips	2.4	2.4
Net consumption gain	-0.6	-1.4

Note: (a) Assumes all other contracts stay in local ownership

It would also be neutralised if the conversion rate setting was higher. For example, if the consumption conversion rate was set at its upper bound value of 0.35 instead of its mean value of 0.22, then the headline consumption loss would be zero for the 2 percentage point margin reduction and for the change to a local owner. A change for a non-local owner still leaves the headline consumption loss at -$1.4 million.

For the non-quarantined case the cost saving would extend over the entire metropolitan route network. For the non-local ownership transfer case, the gains are assumed to be repeated from the other contracts which are assumed to stay in local ownership. That is, it sets a new benchmark for negotiations.

Clearly, from Table 4, in terms of the default case, if the lower margin outcome can be achieved without any other adverse consequences, then it is significantly more advantageous to achieve the outcome by change in ownership from local to local.

Finally the case of a change in contract ownership from local to local ownership that save costs always have at least a neutral, and most likely a positive, outcome on the economy if the Government uses the savings to increase government current expenditure. This is because the direct and indirect current government expenditure impact on consumption is likely to be greater than the impact of margin income, dollar for dollar, on consumption. For example, assuming that the (household) consumption multiplier of direct government consumption expenditure in Victoria is 0.35, then the expenditure of $0.8 million on general public consumption expenditures would yield a total consumption benefit of $1.1 million. This would offset the direct consumption loss for margin reduction for the 2 percentage point reduction case and transfer to local operators by a gain of 2 to 1. That is, a net gain in headline consumption of $0.7 million.

For the case of a change in contract ownership from a local owner to a non-local owner even if all the cost savings are transferred into current government expenditure this will not make up from the direct transfer of the total margin income to non-local entities. The net loss in consumption would still be $0.3 million, even if all the cost savings were allocated to government consumption expenditure rather than increased bus services.

In the executive summary the $ million values given above are expressed as a ratio to the initial contract value of $40 million.

The analysis of this section assumes that it is feasible to significantly reduce margins without damage done to the quality of bus services. What happens, however, if this is infeasible and any margin reduction below the 9 percent benchmark does result in deterioration to the quality of bus services?

8. Change of contract ownership from local to non-local owners: general cases

In contrast to the default cases, the general cases for change in contract ownership from local to non-local owners allows the values of r_0, r_2 and r_3 to take non-zero values as specified by the probability distribution. As for the default case, two margin reduction cases are explored, namely:

(i) a 2 percentage point reduction; and

(ii) a 5 percentage point reduction.

8.1 Cost reductions

Figure 3(a) and Figure 3(b) show the impact on direct cost reduction. These figures show the net impact from equation (2). That is, the impact on r1.

Figure 3(a) shows that the cost reduction can vary between 1.0 to 5.2 percent for the 5 percent probability benchmark for the 2 percentage point margin reduction case and from Figure 3(b) the corresponding range is between 1.7 and 8.7 percent for the 5 percentage reduction case.

8.2 Net change in patronage

The distribution of the net change in trips is the sum of the trip change from the Government case of savings to expand the network and the change in trips because of cost reduction leading to a reduction in service quality.

For the 2 percentage point margin reduction case the range of net trip change at the 5 percent probability benchmark is between -0.1 to 0.04 million, while the range for the 5 percentage point margin reduction case is between -0.13 to 0.10 million, or a total variation of 230,000 trips. The high end of the range would occur when r0 takes values near zero while the lower end outcomes, that is outcomes when the number of trips declines by values close to -0.13 million, would occur when r_1 takes values near the upper limit values of 0.10 from Figure 3(b).

What is of interest is that the mean of the trip change for the two cases are similar, that is, close to zero. This suggests the mean expected outcome is from whatever the positive benefit of cost savings from margin savings it is offset by loss of patronage from cost savings. However, there are possibilities, albeit for low levels of probability, for substantial net trip gains and substantial net trip losses.

8.3 Net social benefits from trip change

Figure 5(a) and Figure 5(b) show the net change in social benefits from the net change in trips. The profiles follow the profiles of Figures 4(a) and 4(b). The range in social benefits for the 2 percentage margin case is from -$1.9 to $0.7 million, while for the 5 percentage point case it is between -$2.4 and $2.1 million.

8.4 Headline consumption expenditure

Figures 6(a) and 6(b) show the impact on total headline consumption expenditure for the two margin reduction cases.

The range for the 2 percentage point reduction case is between -$3.5 and -$2.0 million (figure 6(a)). The range for the 5 percentage point case is between -$4.2 and -$2.0 million (figure 6(b)).

The two cases are close in range and mean outcomes. The reason for this is that the main damage is done in the substitution of a local owner for a non-local owner, irrespective of the margin decline. However, there will be some additional consumption losses for higher levels of margin reduction because of the increased intensity of the reduction in cost effect.

Figure 7 shows that the outcome for headline consumption, after the transfer to non-local ownership occurs, is most sensitive to the r_1 parameter and the impact of margin squeeze on the realisation of the potential. That is, to the extent costs and revenue standards decline and the impact of this on patronage or r_2. This on reflection should not surprise. Any benefit from cost reduction is transferred out of Victoria and the loss of efficiency has flow on impacts for further consumption in Victoria.

Not unexpectedly, the general case outcome is significantly inferior to the default outcomes. This echoes the warnings from stakeholders that a switch to non-local owners in pursuit of margin reduction involves potential costs which are all too often ignored. However, as can be seen from the figures, the model output coverage to the default case outcomes is in terms of maximum/minimum outcomes.

Figure 3(a): Impact of change from local to non-local operator

– Cost reduction in eligible costs from contract change to non-local operator (r_1 parameter)
– 2 percentage point margin reduction

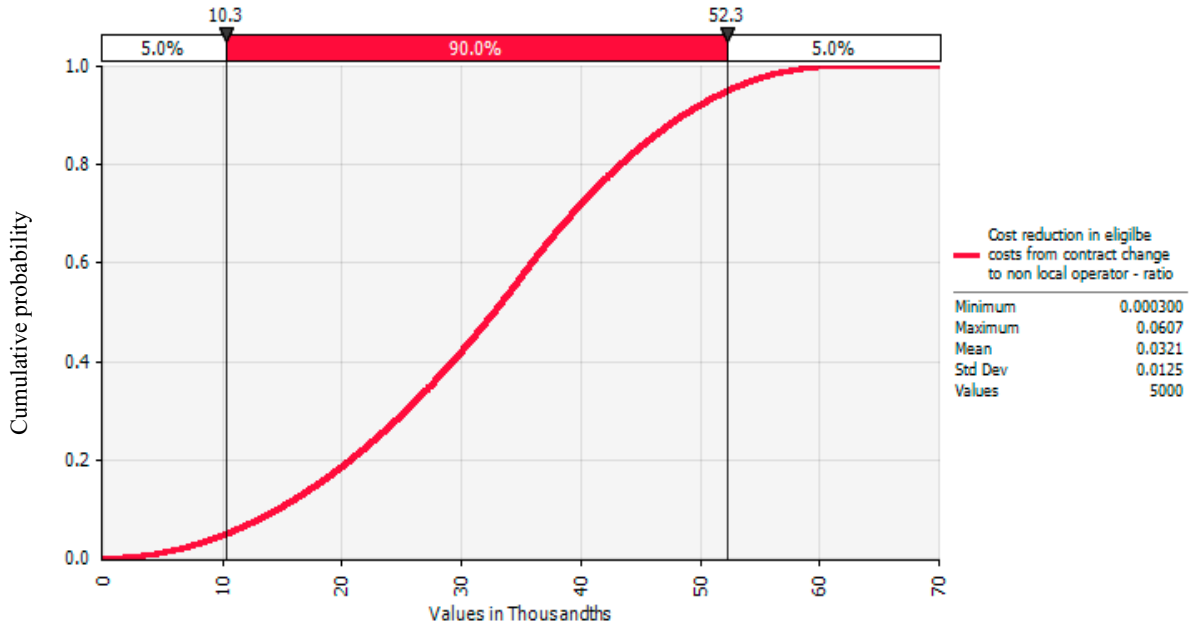


Figure 3(b): Impact of change from local to non-local operator

– Cost reduction in eligible costs from contract change to non-local operator (r_1 parameter)
– 5 percentage point margin reduction

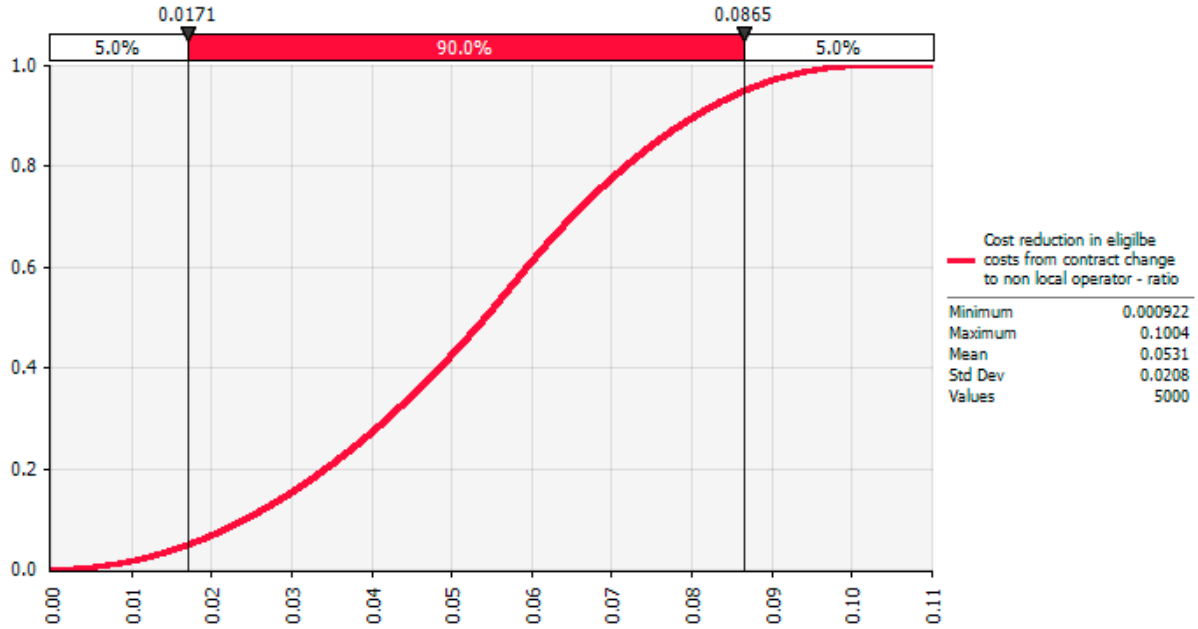


Figure 4(a): Impact of change from local to non-local operator

– Net change in passenger trips (million) – 2 percentage point margin reduction

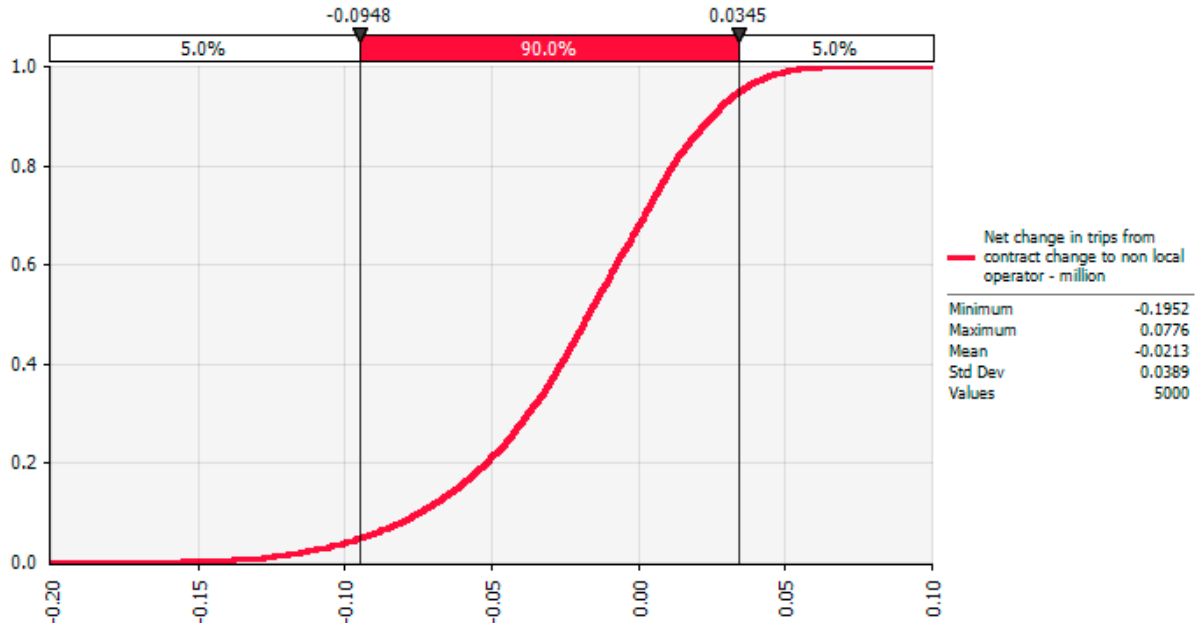


Figure 4(b): Impact of change from local to non-local operator –

Net change in trips (million) – 5 percentage point margin reduction

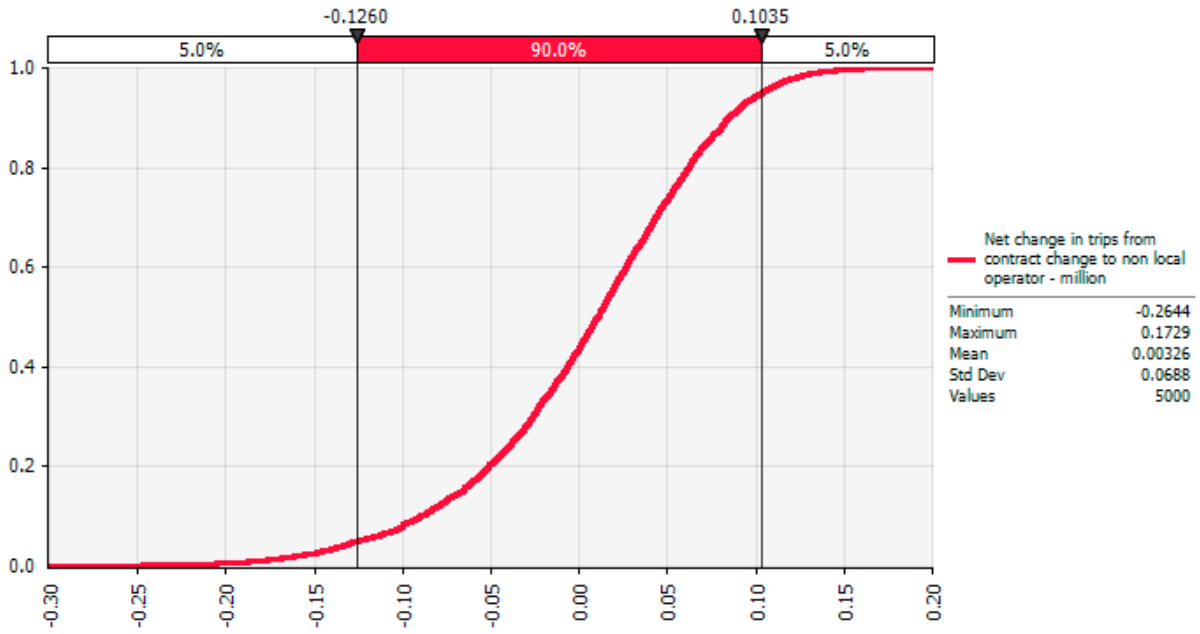


Figure 5(a): Impact of change from local to non-local operator –

Net social benefit ($m) – 2 percentage point margin reduction

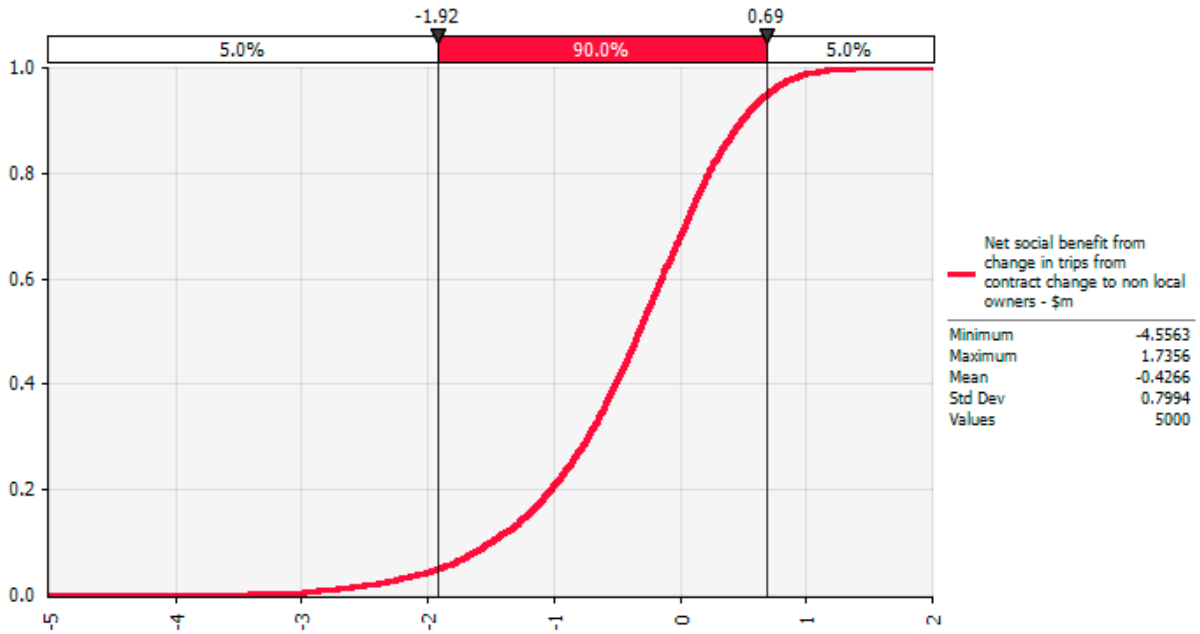


Figure 5(b): Impact of change from local to non-local operator –

Net social benefit ($m) – 5 percentage point margin reduction

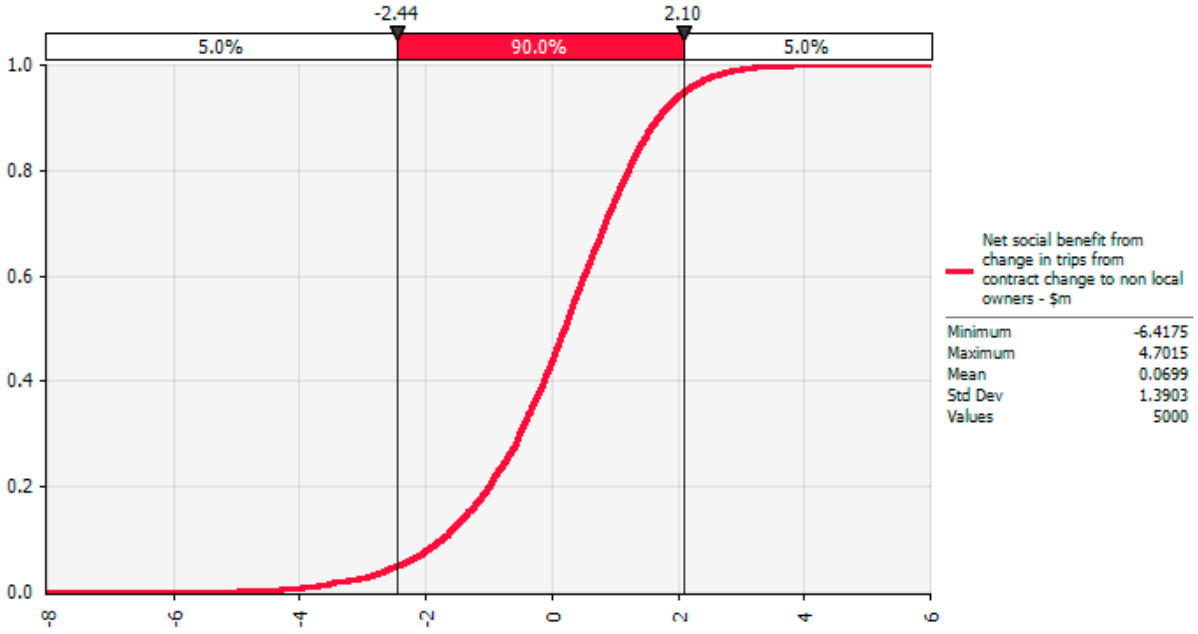


Figure 6(a): Impact of change from local to non-local operator –

Total headline consumption change ($m) – 2 percentage point margin reduction

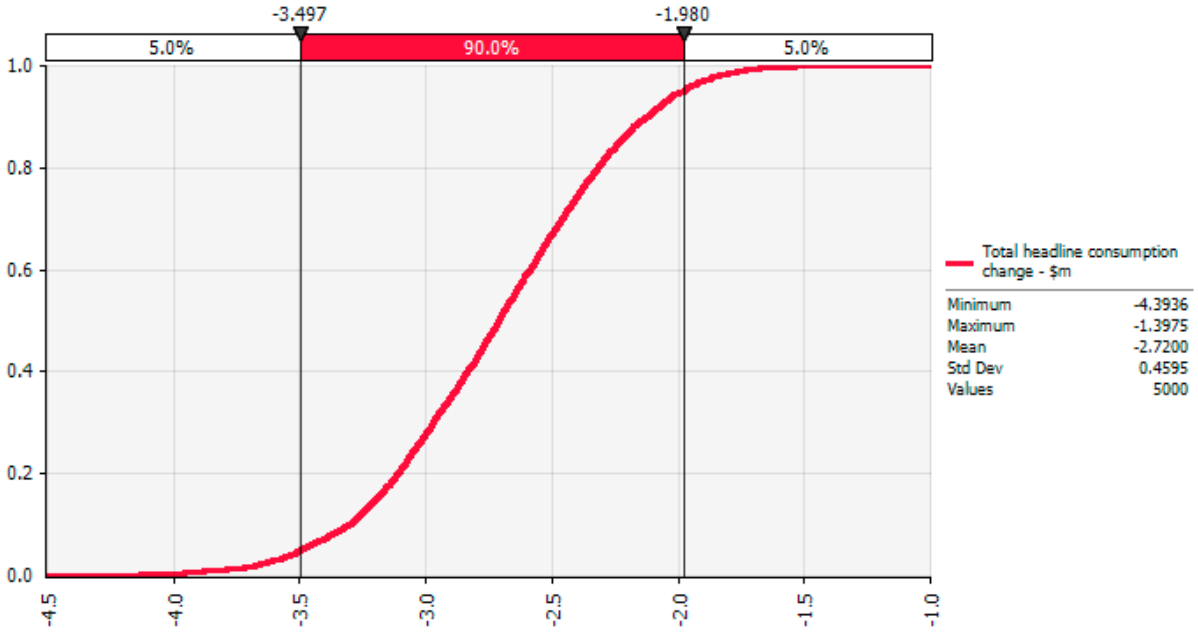


Figure 6(b): Impact of change from local to non-local operator –

Total headline consumption change ($m) – 5 percentage point margin reduction

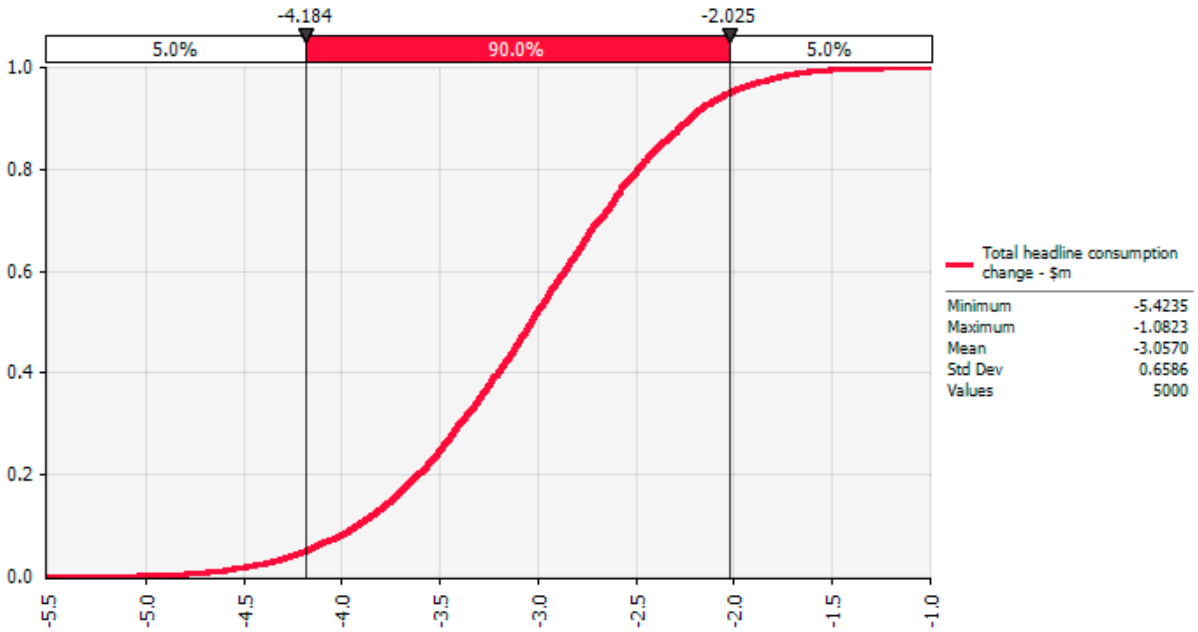
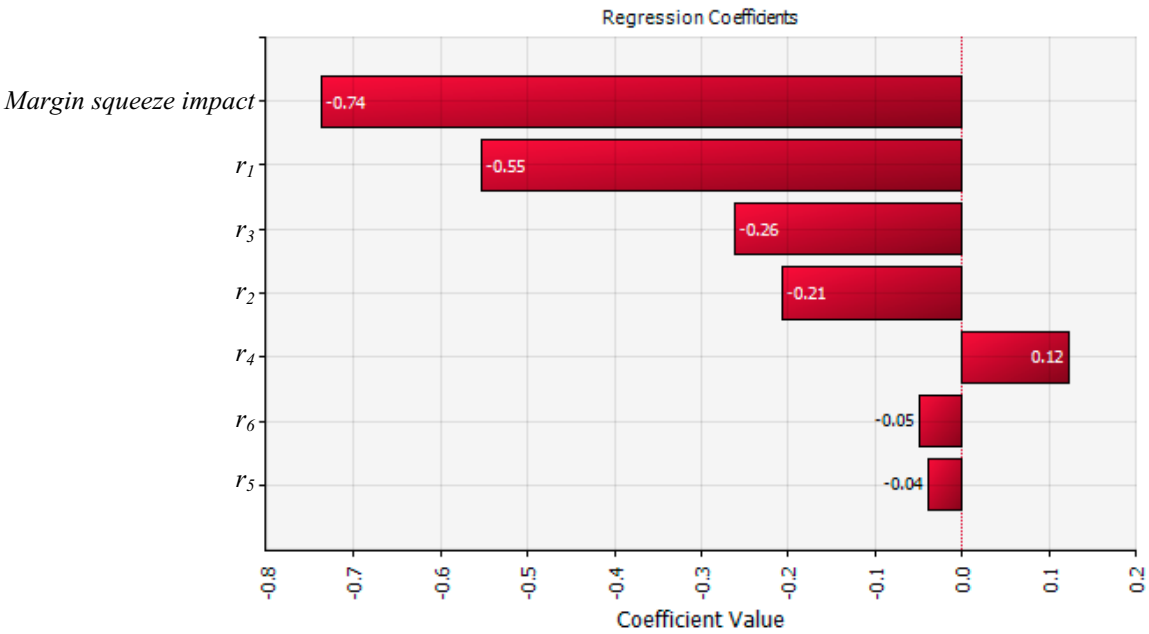


Figure 7: The sensitivity of total headline consumption change to parameters ($m)



CITY
203
286
MAN
1184 AO
XER 704

Bus Association Victoria Inc.
450 Graham Street Port Melbourne Victoria 3207
PO Box 125, Port Melbourne, Victoria 3207 Australia
T: +61 (0) 3 9645 3300 F: +61 (0) 3 9645 4455
TOLLFREE: 1800 136 854 E: buses@busvic.asn.au
or visit our website **www.busvic.asn.au**