COST BENEFIT ANALYSIS OF SUPERGOLD CARD FREE PUBLIC TRANSPORT SCHEME

For New Zealand Transport Agency

Brown, Copeland & Co Ltd

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INTRODUCTION

1. The first objective of this report is to compare the national economic costs and benefits of the SuperGold Card free public transport scheme. In adopting a national viewpoint transfers between entities within New Zealand are excluded from the analysis.

2. The second objective of this report is to identify the financial and social benefits of the scheme to SuperGold card holders.

3. The data in this report relate to the costs and benefits of the scheme in calendar year 2009 and are presented in 2009 prices.

NATIONAL ECONOMIC BENEFITS

4. A report[1] by McDermott Miller prepared for the New Zealand Transport Agency (NZTA) derives a value of $76 million for the benefits of the SuperGold Card scheme, based upon a contingent valuation questionnaire survey addressing how much users of the scheme would accept in cash to give up the free off-peak travel on public transport for a year. The average value for SuperGold Card holders who used public transport was $552 per year and there are an estimated 138,000 SuperGold Card holders in the cities and towns covered by the survey who use public transport.

5. The contingent valuation approach to valuing benefits is subject to criticism in that the question put is hypothetical and there is no market transaction that "verifies" answers. Therefore there is the suspicion that those surveyed may exaggerate the value of the scheme to them, since they know that they will not in fact be offered a sum of money to forgo their travel benefits. Also their valuation of how much they would be prepared to pay to give up the SuperGold Card's public transport benefits may be greater than how

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[1] Review of the SuperGold Card free Public Transport Travel Scheme: Social and Economic Benefits to Users and the Wider Economy; Prepared for New Zealand Transport Agency; McDermott Miller Limited; 14 January 2010.

much they would be prepared to pay for those same benefits. These concerns are addressed via sensitivity testing later in this report.

6. However in addition the component parts of the benefits to users of the scheme are considered below to come up with a lower bound or conservative estimate using the traditional approach to measuring benefits of transport projects.

7. <u>Savings in the Cost of Car Travel.</u> The McDermott Miller report calculates savings in vehicle operating costs as $4.7 million per annum. This is based on the survey results showing 24% of the 5.8 million journeys would have been made by car if the scheme was not available; an average journey length of 11 kilometres; and a vehicle operating cost estimate of 30 cents per kilometre (from NZTA's Economic Evaluation Manual).

8. The McDermott Miller report estimates parking cost savings at $1 million per annum giving a total estimated cost for private car vehicle operating costs and parking costs of $5.7 million per annum.

9. Not included in this $5.7 million per annum is any allowance for other cost savings associated with car travel. Savings in road accident costs, congestion costs, pollution costs and road maintenance costs associated with private motor vehicle costs are also likely to accrue. (Little if any of these costs will be included in the $76 million per annum contingent valuation figure since these costs are largely externalities associated with private motor vehicle use given that NZTA's vehicle operating costs exclude taxes on fuel.)

10. <u>Travel Time Savings.</u> For those persons who would otherwise have walked (estimated at 4% of the 5.8 million trips per annum) the free public transport trips will provide savings in travel time costs. On the other hand for those persons who would otherwise travel by car (24% of the 5.8 million trips) travel time per trip will in most cases have lengthened once waiting time and getting to and from public transport is taken into account. For those persons who would otherwise have travelled by public transport (58% of the 5.8 million trips)[2] it is likely travel time remains largely unchanged, although it is possible for those persons who shift from peak to non peak public transport, travel times may be lower.

11. In summary it would appear that the net effect on travel times is not a significant factor.[3]

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[2] The total split is 58% from public transport, 24% from private motor vehicles, 11% generated new travel, 4% from walking and 3% "don't knows".
[3] It is possible to consider differences in travel time values with and without the scheme in terms of differences in "convenience." Under this general heading not only differences in the quantity of travel times would be included but also differences in the quality of travel time.

12. <u>Savings in Fare Revenues.</u> SuperGold Card holders who would otherwise have travelled by public transport will receive a benefit in the form of saved fares. Although at the same time Government will fund these fare saving benefits, this is dealt with in the national economic costs of the scheme so it is not a transfer payment from the national economic viewpoint. The McDermott Miller report estimates the value of these savings at $13.1 million per annum based on an average fare for trips under the scheme of $3.11 and 58% of the 5.8 million trips being those by persons who would have otherwise made the same or a similar[4] public transport trip.[5]

13. <u>Generated Travel.</u> Generated trips are those which would not have occurred if the SuperGold Card free public transport was not available. The McDermott Miller report estimates these at 11% of the 5.8 million trips per annum. The benefits of these trips can be estimated using the "rule of half", which relies on the reasonable presumption that the benefits of a trip is on average half way between the cost of making the trip when it is taken and the (higher) cost of making the trip when it is not taken. The McDermott Miller report gives the average fare as $3.11 per trip implying annual benefits for generated travel of $1 million. These benefits will be incorporated in the $76 million figure from the contingent valuation exercise.

14. <u>Potential Travel Benefits.</u> Holders of the SuperGold Cards derive a measure of benefit through knowing that they are able to undertake free travel on off-peak public transport services even when they do not use the services. There are potential travel benefits for those who are currently using the scheme (as they have the potential to make more free trips) and those Card holders who have not yet used the scheme at all but have access to public transport services. It is not possible to estimate the value of this benefit. Its value is incorporated in the $76 million per annum contingent valuation figure for existing users of the scheme but not for Card holders who do not use the scheme, since the average contingent valuation figure of $552 per annum was only applied to the number of SuperGold Card holders who use the scheme.

15. <u>Summary.</u> Therefore the national economic benefits are:
    - Savings in the cost of car travel plus parking ($5.7 million per annum);
    - Savings in fares by those who would still have used public transport without the scheme ($13.1 million per annum);
    - Generated travel benefits ($1 million per annum);

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[4] For example they may switch from peak to off peak travel.
[5] No account is taken of the benefits from increased profitability for businesses supplying goods and services to SuperGold card holders who spend their saved fares on other goods and services. Similar "downstream" effects (albeit with different distributional impacts) would result from Government instead using its funding of the scheme for other purposes (e.g. reducing taxes).

- Savings in road accident costs, congestion costs, pollution costs, and road maintenance costs (not quantified);
- Net travel time savings (not quantified – overall figure may be positive or negative but not likely to be significant);
- Potential travel benefits for all SuperGold Card holders whether current users of the scheme or not.

As an alternative to the contingent valuation estimate for the benefits of the scheme, a minimum value for the benefits of the scheme using the traditional method of measuring benefits is $20 million per annum. This is a minimum value since it excludes a number of additional benefits which have not been quantified.

NATIONAL ECONOMIC COSTS

16. NZTA estimates the total cost to Government of the scheme in 2009 was $18 million. This is made up of $17.4 million paid to operators for trips taken using the SuperGold Card and $0.6 million for the administration costs of Councils and NZTA. Payments by NZTA to public transport operators are based on 75% of the full adult cash fares[6]. Whilst the cost to Government of $18 million can be used as a proxy for the scheme's national economic cost, this may overstate the true national economic cost. The additional costs to public transport operators may be less than the payments received from Government given the possibility of spare capacity available on off-peak services. In other words the incremental costs of providing free non peak services to SuperGold card holders may be less than the payments made by Government.

17. If this is the case then the economic cost from the national perspective is less than the $18 million per annum cost to Government, since whilst Government must each year find the $18 million financial cost for the scheme, there is an additional benefit to public transport operators in the form of additional profits (over and above a reasonable return on capital). The possibility of the $18 million overstating the cost of the scheme is considered in sensitivity testing for the benefit cost ratio calculation in the next section of this report.

BENEFIT COST RATIO

18. Base Case. If the contingent valuation approach to valuing the benefits is adopted and the $17.4 million payment by Government to public transport operators is accepted as reflecting their incremental costs in providing free public transport services to SuperGold Card holders, the benefit cost ratio for the scheme is 4.2 (76/18). If instead the traditional method for valuing benefits is used then a conservative estimate for the

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[6] Full adult cash fares are greater than average adult fares because of various concessions and discounts available with "day-trippers", weekly or monthly passes, electronic ticketing options, etc.

benefit cost ratio is 1.1 (20/18). This is a conservative measure for the benefit cost ratio because a number of additional benefits (savings in road accident costs, congestion costs, pollution costs and road maintenance costs and potential travel benefits) have not been included in the quantification of scheme economic benefits.[7]

19. Treasury in its Cost Benefit Primer recommends considering on a case by case basis whether or not to include deadweight losses in cost benefit analyses involving public expenditure. This is to account for the move away from an economy's competitive equilibrium as a consequence of imposing taxes to raise revenue for public expenditure. Treasury suggests a rate of 20% as a default deadweight loss value in the absence of an alternative evidence based value. If this is applied the benefit cost ratio using the contingent valuation benefits measure reduces from 4.2 to 3.5 (76/(18x1.2)). Using the conservative traditional measure of benefits, the benefit cost ratio reduces from 1.1 to 0.9 (20/(18x1.2)). However the conservative traditional measure of benefits excludes a number of non-quantified benefits.

20. Sensitivity Testing. A significant reduction could be made to the contingency valuation benefits measure and the scheme would still have a benefit cost ratio greater than 1. For example if the benefits were reduced to only 25% of their estimated value from the survey questionnaire (this would imply the average value per Card holder who users public transport reduces from $552 to $138 per annum), the benefit cost ratio at 1.1 (19/18) is still greater than 1. If Treasury's deadweight loss value of 20% is applied, then the contigent valuation benefits measure can be reduced by 71% and the benefit cost ratio remains greater than 1.

21. The extent of any overcompensation of public transport operators by Government under the scheme is unknown. By way of example only, if the costs to Government of the scheme overstate the additional costs by say 50% (i.e. if $9 million of the $17.4 million per annum paid to operators is in fact only a transfer to public transport operators and their profitability increases by $9 million per annum), the benefit cost ratio with the contingent valuation measure of benefits becomes 8.4 (76/9) and with the conservative traditional measure of benefits 2.2 (20/9). If Treasury's deadweight loss value of 20% is applied, then the benefit cost ratio with the contingent valuation measure of benefits reduces to 6.0 (76/(9+3.6)) and with the conservative traditional measure of benefits to 1.6 (20/(9+3.6)).[8]

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[7] Note: The savings in road accident costs, congestion costs, pollution costs and road maintenance costs are also not included in the contingent valuation estimate of $76 million per annum.

[8] To the extent overcompensation of public transport operators leads to a reduction in net public transport costs which must be subsidised by Central and Local Government, some of this transfer will find its way back to Central and Local Government. From a national economic perspective these savings to Central and Local Government are only transfers and not an additional benefit. However to the extent these savings imply reductions in public expenditure funding requirements for the scheme,

FINANCIAL AND SOCIAL BENEFITS TO USERS OF THE SCHEME

22. The previous sections of this report have adopted a national viewpoint in assessing benefits and costs. From the perspective of only SuperGold Card holders most of the same benefits apply. The contingent valuation approach will incorporate savings in private car travel costs, the net savings in travel time costs, the savings in fares for those who would have otherwise made similar trips on public transport and potential travel costs for existing users of the scheme. The $76 million per annum figure, however, will not incorporate potential travel benefits of those who currently are not using the scheme.

23. The conservative traditional estimate of benefits ($20 million per annum) also includes the savings in private car travel costs, the net savings in travel time costs and the savings in fares for those who would have otherwise made similar trips on public transport. It does not include potential travel benefits for those who currently use the scheme or for those who currently do not use the scheme.

24. Therefore $20 million per annum is a lower bound estimate for the value of financial and social benefits for SuperGold Card holders.

CONCLUSIONS

25. A lower bound estimate for the benefit cost ratio of the SuperGold Card public transport subsidy scheme is 0.9. This excludes the benefits of potential travel and savings in road accident costs, congestion costs, pollution costs and road maintenance costs. It also incorporates the Treasury suggested 20% weighting on public expenditure to account for the deadweight losses associated with taxation.

26. Using the contingent valuation benefits measure, the benefit cost ratio is 3.5 (again including Treasury's suggested 20% weighting on public expenditure). This benefits measure includes potential travel benefits but excludes savings in road accident costs, congestion costs, pollution costs and road maintenance costs.

27. Therefore it is reasonable to conclude that the benefit cost ratio for the scheme is greater than 1, especially if the scheme also leads to increased profitability for transport operators.

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the Treasury 20% deadweight loss factor would be applied to a lesser amount and this would lift the benefit cost ratio estimates, when the Treasury 20% deadweight loss factor is applied.

28. $20 million per annum is a lower bound estimate for the scheme's financial and social benefits for SuperGold Card holders.

29. In general, subsidy schemes can be justified either on distributional grounds or because they correct for significant externalities. In the absence of these a subsidy scheme will not have a benefit cost ratio significantly greater than 1.

30. In this case it is likely that the SuperGold Card travel benefits were introduced to meet distributional objectives, although this has not been taken into account in the quantitative analysis of this paper by weighting upwards the value of benefits received by senior citizens relative to the costs to Government and taxpayers generally. Potential travel benefits are an externality as the public transport providers do not charge directly for them. They are included in the contingent valuation assessment of benefits but are not included in the traditional measure of benefits. Also there is an externality benefit from the scheme to the extent actual private vehicle costs exceed vehicle owners' perceived costs.

31. If costs to operators are substantially overstated by the payments they receive from Government (as tested in sensitivity testing above) then it is the ability of the scheme to essentially introduce differential pricing which is leading to a benefit cost ratio substantially greater than 1. It is possible that the limited competition for the provision of public transport services prevents greater differential pricing occurring without subsidy.